SAS Publishing

SAS® 9.1 Output Delivery System

User's Guide

The Power to Know®

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SAS® 9.1 Output Delivery System: User's Guide

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Contents

What's New

Overview

The Output Delivery System (ODS) provides an almost limitless number of choices for reporting and displaying analytical results with a greater variety of formatting selections and output destinations.

SAS 9 and 9.1 provide an array of markup languages including HTML4 and XML. The TEMPLATE procedure and the new tagset template enable you to modify any markup language that SAS provides, or to create your own markup language for output.

The new experimental ODS GRAPHICS statement enables you to produce graphics output.

The new DOCUMENT procedure enables you to customize or modify your output hierarchy and replay your output to different destinations without rerunning the PROC or DATA step.

Note:

- This section describes the features of the SAS Output Delivery System that are new or enhanced since SAS 8.2.
- z/OS is the successor to the OS/390 operating system. SAS 9.1 is supported on both OS/390 and z/OS operating systems and, throughout this document, any reference to z/OS also applies to OS/390, unless otherwise stated.

△

Details

SASEDOC Engine

The new SASEDOC libname engine enables you to associate a SAS libref (library reference) with one or more output objects that are stored in an ODS document as a SAS data set.

ODS Statements

The following ODS statements are new:

ODS CHTML
produces compact, minimal HTML output with no style information.

ODS CSVALL
produces output that contains columns of data values that are separated by commas. ODS CSVALL produces tabular output with titles, notes, and bylines.

ODS DECIMAL_ALIGN"ODS DECIMAL_ALIGN Statement" on page 85
aligns values by the decimal point in numeric columns when no justification is specified.

ODS DOCBOOK
produces XML output that conforms to the DocBook DTD by OASIS.

ODS DOCUMENT
produces a hierarchy of output objects that enables you to create multiple ODS output formats without rerunning a PROC or DATA step.

ODS GRAPHICS"ODS GRAPHICS Statement (Experimental)" on page 92
(Experimental)
enables ODS automatic graphic capabilities.

ODS HTMLCSS
produces HTML output with cascading stylesheets that is similar to ODS HTML output.

ODS IMODE
produces HTML output as a column of output that is separated by lines.

ODS MARKUP
produces SAS output that is formatted using one of many different markup languages.

ODS PCL
produces printable output for PCL (HP LaserJet) files.

ODS PDF
produces PDF output.

ODS PHTML
produces basic HTML output that uses twelve style elements and no class attributes.

ODS PS
produces PostScript (PS) output.

ODS USEGOPT"ODS USEGOPT Statement" on page 202
enables the use of graphics option settings for graphic output.

ODS WML
produces a Wireless Markup Language (WML) DTD with a simple list of URLs for a table of contents.

- The ODS PRINTER statement now supports the following options:

  BACKGROUND= on page 161
  specifies whether background colors are printed in text.

  BOOKMARKLIST= on page 162

specifies whether to generate and display the list of bookmarks for a PDF file.

BOOKMARKGEN= on page 162
: controls the generation of bookmarks in a PDF file.

COLUMNS=
: specifies the number of columns to create on each page of output.

TEXT=
: inserts text into your output.

- The ODS RTF statement now supports the following options:

  COLUMNS=
  : specifies the number of columns to create on each page of output.

  TEXT=
  : inserts text into your output.

- The ODS MARKUP statement now supports the following TAGSETS:

  GRAPH
  : produces markup for graphical output produced by SAS/GRAPH.

  SASFMT
  : produces user-defined format markup tags for the XML engine.

  SASXMISS
  : produces alternate missing-value markup tags for the XML engine.

  SASXMNSP
  : produces alternate "no space in text" value markup for the XML engine.

  STATGRAPH
  : produces markup for statistical graphs that are generated by SAS procedures.

ODS Procedures

- DOCUMENT procedure
  - The new DOCUMENT procedure enables you to do the following:
    - produce multiple reports with a single run of a procedure or data query.
    - modify and customize your output file hierarchy by rearranging, duplicating, or removing specific tables.
    - modify and customize your output file hierarchy by rearranging, duplicating, or removing the entire output of procedures and data queries.
    - generate output for one or more ODS destinations, using the newly transformed output hierarchy.
    - store the ODS output objects in raw form. The output is kept in the original internal representation as a data component plus a table definition.
  - The new LIB= option in the DOC statement enables you to list documents that are in the specified library.
  - The #BYLINE, #BYVAL, and #BYVAR directives can now be used in seven of the PROC DOCUMENT statements.
  - The new AFTER option in the OBPAGE statement adds or deletes page breaks after output objects.

- TEMPLATE procedure
  - The following new statements are provided in the TEMPLATE procedure.
    - The DEFINE TAGSET statement creates and modifies tagset definitions using a new definition statement and the new tagset attribute statements.
    - The DEFINE EVENT statement determines what is written to the output file using the new definition statement and the new event attribute statements.
  - The new boolean ABSTRACT= attribute can be applied to styles. If this attribute is set to TRUE, then the style will not appear in the CSS files or LaTeX style files.
  - The new ALT, LONGDESC, ACRONYM, and ABBR options in the DEFINE TABLE, DEFINE COLUMN, and DEFINE HEADER statements provide accessibility features in PROC TEMPLATE.
  - The following accessibility attributes have been added to the TEMPLATE procedure.

    ABBR= is a column, header, and footer attribute that provides an abbreviated form of the cell's content, which can be displayed in place of a cell's content.

    SUMMARY= is a table attribute that provides a summary of the purpose and structure of a table.
  - The new INDENT style element enables you to specify the distance from the left side of a cell for indentation purposes. The INDENT style element specifies where to begin the text.
  - The _LABEL_ keyword is now treated as a dynamic variable, and it can be used just like any other dynamic variable in PROC TEMPLATE. Previously, _LABEL_ was a keyword that could only be used by itself in table and column headers.
  - In the TEMPLATE procedure, if you create HTML4 output, then the BORDERCOLORDARK and BORDERCOLORLIGHT style attributes are ignored because they are not part of the HTML4 standard. If you want a color border, then use the BORDER= style attribute.

PART 1

Introduction

CHAPTER
1

Getting Started with the Output Delivery System

Welcome to the Output Delivery System

Prior to Version 7, most SAS procedures generated output that was designed for a traditional line-printer. This type of output has limitations that prevent you from getting the most value from your results:

- Traditional SAS output is limited to monospace fonts. In a time of desktop document editors and publishing systems, you want more versatility in printed output.
- Some commonly used procedures produce printed output but do not create an output data set. Many times it would be very convenient to produce not only printed output but also an output data set that you could use as input to another SAS procedure or to a DATA step.

ODS is designed to overcome these limitations and make it easier for you to format your output. The SAS Output Delivery System (ODS) gives you greater flexibility in generating, storing, and reproducing SAS procedure and DATA step output along with a wide range of formatting options. ODS provides formatting functionality that is not available when using individual procedures or the DATA step without ODS.

A Quick Start to Using ODS

The Purpose of These Examples

The following examples are designed to help you get up and running quickly with ODS. Use them to learn how to produce output that contains more interesting formatting. Then, to learn more about the depth, breadth, and true power of ODS, see “What Is the Output Delivery System?” on page 13.

Creating Listing Output

Creating the listing output is simple –just run a DATA step or PROC step as usual. By default, the LISTING destination is on, and the DATA step and Base SAS procedures create listing output through ODS:

```
options source pagesize=60 linesize=80 nodate;

data employee_data;
   input IdNumber $ 1-4 LastName $ 9-19 FirstName $ 20-29
         City $ 30-42 State $ 43-44 /
         Gender $ 1 JobCode $ 9-11 Salary 20-29 @30 Birth date9.
         @43 Hired date9. HomePhone $ 54-65;
   format birth hired date9.;

            datalines;
1919    Adams      Gerald    Stamford     CT
M       TA2        34376     15SEP48      07JUN75    203/781-1255
1653    Alexander  Susan     Bridgeport   CT
F       ME2        35108     18OCT52      12AUG78    203/675-7715
1400    Apple      Troy      New York     NY
M       ME1        29769     08NOV55      19OCT78    212/586-0808
1350    Arthur     Barbara   New York     NY
F       FA3        32886     03SEP53      01AUG78    718/383-1549
1401    Avery      Jerry     Paterson     NJ
M       TA3        38822     16DEC38      20NOV73    201/732-8787
1499    Barefoot   Joseph    Princeton    NJ
M       ME3        43025     29APR42      10JUN68    201/812-5665
1101    Baucom     Walter    New York     NY
M       SCP        18723     09JUN50      04OCT78    212/586-8060
1333    Blair      Justin    Stamford     CT
M       PT2        88606     02APR49      13FEB69    203/781-1777
1402    Blalock    Ralph     New York     NY
M       TA2        32615     20JAN51      05DEC78    718/384-2849
1479    Bostic     Marie     New York     NY
F       TA3        38785     25DEC56      08OCT77    718/384-8816
1403    Bowden     Earl      Bridgeport   CT
M       ME1        28072     31JAN57      24DEC79    203/675-3434
1739    Boyce      Jonathan  New York     NY
M       PT1        66517     28DEC52      30JAN79    212/587-1247
1658    Bradley    Jeremy    New York     NY
M       SCP        17943     11APR55      03MAR80    212/587-3622
1428    Brady      Christine Stamford     CT
F       PT1        68767     07APR58      19NOV79    203/781-1212
1407    Grant      Daniel    Mt. Vernon   NY
M       PT1        68096     26MAR57      21MAR78    914/468-1616
1114    Green      Janice    New York     NY
F       TA2        32928     21SEP57      30JUN75    212/588-1092
;

proc print data=employee_data(obs=12);
   id idnumber;
   title 'Personnel Data';
run;
```

Output 1.1 Listing Output

```
                                    Personnel Data                                   5

   Id           First                            Job
 Number LastName  Name        City    State Gender Code Salary     Birth     Hired  HomePhone

  1919  Adams     Gerald   Stamford    CT     M    TA2   34376 15SEP1948 07JUN1975 203/781-1255
  1653  Alexander Susan    Bridgeport  CT     F    ME2   35108 18OCT1952 12AUG1978 203/675-7715
  1400  Apple     Troy     New York    NY     M    ME1   29769 08NOV1955 19OCT1978 212/586-0808
  1350  Arthur    Barbara  New York    NY     F    FA3   32886 03SEP1953 01AUG1978 718/383-1549
  1401  Avery     Jerry    Paterson    NJ     M    TA3   38822 16DEC1938 20NOV1973 201/732-8787
  1499  Barefoot  Joseph   Princeton   NJ     M    ME3   43025 29APR1942 10JUN1968 201/812-5665
  1101  Baucom    Walter   New York    NY     M    SCP   18723 09JUN1950 04OCT1978 212/586-8060
  1333  Blair     Justin   Stamford    CT     M    PT2   88606 02APR1949 13FEB1969 203/781-1777
  1402  Blalock   Ralph    New York    NY     M    TA2   32615 20JAN1951 05DEC1978 718/384-2849
  1479  Bostic    Marie    New York    NY     F    TA3   38785 25DEC1956 08OCT1977 718/384-8816
  1403  Bowden    Earl     Bridgeport  CT     M    ME1   28072 31JAN1957 24DEC1979 203/675-3434
  1739  Boyce     Jonathan New York    NY     M    PT1   66517 28DEC1952 30JAN1979 212/587-1247
```

Listing output is the default format; therefore, when you request another format, your programs will create both listing output and output in the requested format. To prevent listing output from being created, use this statement:

```
ods listing close;
```

Creating Output in HTML Format

If you want to display output from a SAS program from the web, you can use ODS to create output that is formatted in Hypertext Markup Language (HTML). To create HTML output, use the ODS HTML statement:

```
ods html file='external-file-for-HTML-output'
```

If you do not want to generate listing output in addition to the HTML output, then use this statement:

```
ods listing close;
```

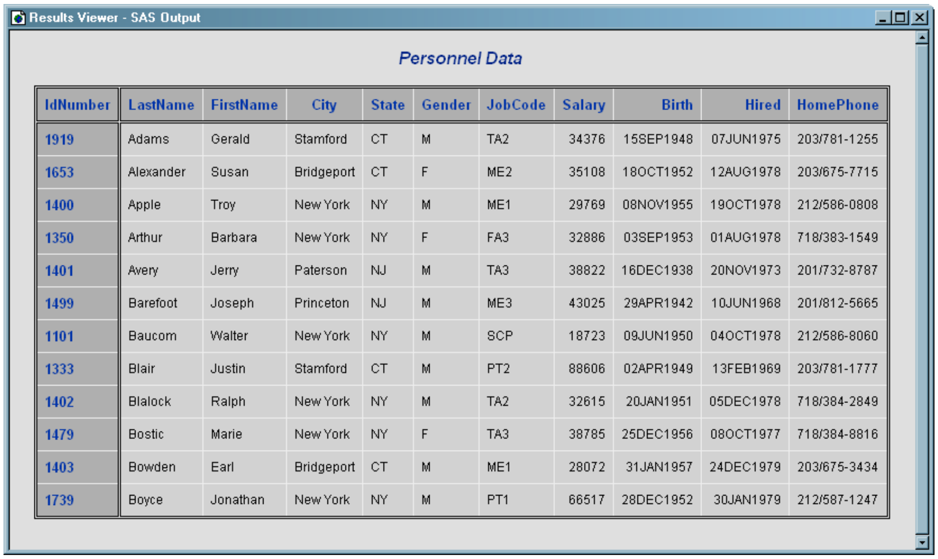
The following program contains a PROC PRINT step that produces output in HTML, but does not produce the default listing output. You can browse this output with Internet Explorer, Netscape, or any other browser that fully supports HTML 3.2 or later.

```
ods listing close;
ods html file='external-file-for-HTML-output';


proc print data=employee_data(obs=12);
   id idnumber;
   title 'Personnel Data';
run;

ods html close;
ods listing;
```

Note the two ODS statements that follow the PROC PRINT step. To be able to browse your HTML files in a browser, you must execute the ODS HTML CLOSE statement. It is simply good practice to reset ODS to listing output, which is the default setting.

Display 1.1 HTML 3.2 Output

The following output is formatted in HTML 3.2 output and viewed in an Internet Explorer 5.0 browser.


Results Viewer - SAS Output

Personnel Data

IdNumber	LastName	FirstName	City	State	Gender	JobCode	Salary	Birth	Hired	HomePhone
1919	Adams	Gerald	Stamford	CT	M	TA2	34376	15SEP1948	07JUN1975	203/781-1255
1653	Alexander	Susan	Bridgeport	CT	F	ME2	35108	18OCT1952	12AUG1978	203/675-7715
1400	Apple	Troy	New York	NY	M	ME1	29769	08NOV1955	19OCT1978	212/586-0808
1350	Arthur	Barbara	New York	NY	F	FA3	32886	03SEP1953	01AUG1978	718/383-1549
1401	Avery	Jerry	Paterson	NJ	M	TA3	38822	16DEC1938	20NOV1973	201/732-8787
1499	Barefoot	Joseph	Princeton	NJ	M	ME3	43025	29APR1942	10JUN1968	201/812-5665
1101	Baucom	Walter	New York	NY	M	SCP	18723	09JUN1950	04OCT1978	212/586-8060
1333	Blair	Justin	Stamford	CT	M	PT2	88606	02APR1949	13FEB1969	203/781-1777
1402	Blalock	Ralph	New York	NY	M	TA2	32615	20JAN1951	05DEC1978	718/384-2849
1479	Bostic	Marie	New York	NY	F	TA3	38785	25DEC1956	08OCT1977	718/384-8816
1403	Bowden	Earl	Bridgeport	CT	M	ME1	28072	31JAN1957	24DEC1979	203/675-3434
1739	Boyce	Jonathan	New York	NY	M	PT1	66517	28DEC1952	30JAN1979	212/587-1247

Producing Output in Multiple Formats at the Same Time

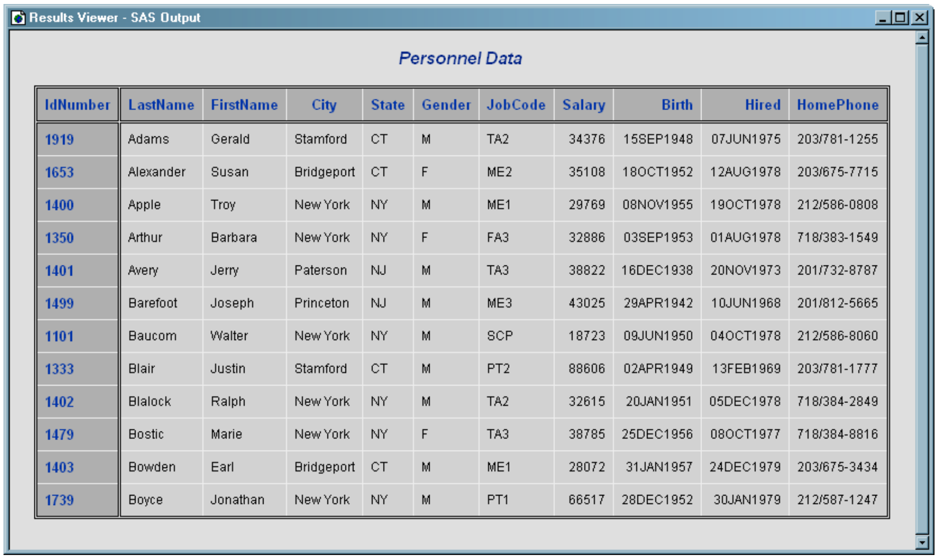
A simple way to produce output in multiple formats at one time is to produce the default listing output and then request an additional format, such as HTML, PDF, RTF, or PostScript.

```
ods html file='HTML-file-pathname.html';
ods pdf file='PDF-file-pathname.pdf';
ods rtf file='RTF-file-pathname.rtf';
ods ps file='PS-file-pathname.ps';

proc print data=employee_data(obs=12);
   id idnumber;
   title 'Personnel Data';
run;

ods  _all_  close;
ods listing;
```

Note the two ODS statements that follow the PROC statement. The first one closes all files so that you can use them (for example, you could browse the HTML file or send the PDF file to a printer). The final statement opens the LISTING destination so that ODS returns to producing listing output for subsequent DATA or PROC steps in the current session.

Display 1.2 HTML 3.2 Output

The following output is formatted in HTML 3.2 output and viewed in an Internet Explorer 5.0 browser.

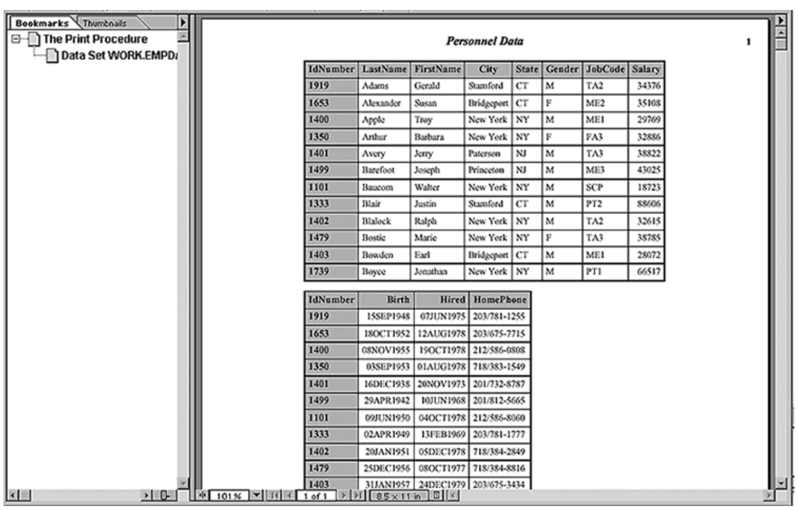


Personnel Data

IdNumber	LastName	FirstName	City	State	Gender	JobCode	Salary	Birth	Hired	HomePhone
1919	Adams	Gerald	Stamford	CT	M	TA2	34376	15SEP1948	07JUN1975	203/781-1255
1653	Alexander	Susan	Bridgeport	CT	F	ME2	35108	18OCT1952	12AUG1978	203/675-7715
1400	Apple	Troy	New York	NY	M	ME1	29769	08NOV1955	19OCT1978	212/586-0808
1350	Arthur	Barbara	New York	NY	F	FA3	32886	03SEP1953	01AUG1978	718/383-1549
1401	Avery	Jerry	Paterson	NJ	M	TA3	38822	16DEC1938	20NOV1973	201/732-8787
1499	Barefoot	Joseph	Princeton	NJ	M	ME3	43025	29APR1942	10JUN1968	201/812-5665
1101	Baucom	Walter	New York	NY	M	SCP	18723	09JUN1950	04OCT1978	212/586-8060
1333	Blair	Justin	Stamford	CT	M	PT2	88606	02APR1949	13FEB1969	203/781-1777
1402	Blalock	Ralph	New York	NY	M	TA2	32615	20JAN1951	05DEC1978	718/384-2849
1479	Bostic	Marie	New York	NY	F	TA3	38785	25DEC1956	08OCT1977	718/384-8816
1403	Bowden	Earl	Bridgeport	CT	M	ME1	28072	31JAN1957	24DEC1979	203/675-3434
1739	Boyce	Jonathan	New York	NY	M	PT1	66517	28DEC1952	30JAN1979	212/587-1247

Display 1.3 PDF Output

The following output is formatted in PDF and viewed with Adobe Acrobat Reader.



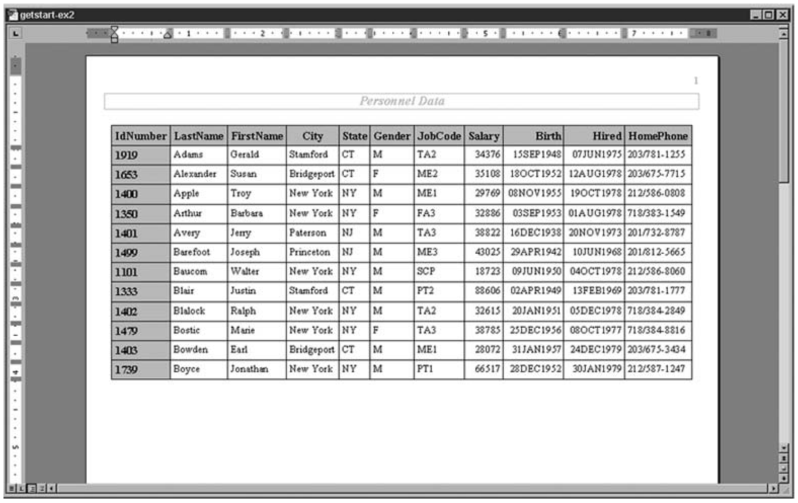
Personnel Data

IdNumber	LastName	FirstName	City	State	Gender	JobCode	Salary
1919	Adams	Gerald	Stamford	CT	M	TA2	34376
1653	Alexander	Susan	Bridgeport	CT	F	ME2	35108
1400	Apple	Troy	New York	NY	M	ME1	29769
1350	Arthur	Barbara	New York	NY	F	FA3	32886
1401	Avery	Jerry	Paterson	NJ	M	TA3	38822
1499	Barefoot	Joseph	Princeton	NJ	M	ME3	43025
1101	Baucom	Walter	New York	NY	M	SCP	18723
1333	Blair	Justin	Stamford	CT	M	PT2	88606
1402	Blalock	Ralph	New York	NY	M	TA2	32615
1479	Bostic	Marie	New York	NY	F	TA3	38785
1403	Bowden	Earl	Bridgeport	CT	M	ME1	28072
1739	Boyce	Jonathan	New York	NY	M	PT1	66517

IdNumber	Birth	Hired	HomePhone
1919	15SEP1948	07JUN1975	203/781-1255
1653	18OCT1952	12AUG1978	203/675-7715
1400	08NOV1955	19OCT1978	212/586-0808
1350	03SEP1953	01AUG1978	718/383-1549
1401	16DEC1938	20NOV1973	201/732-8787
1499	29APR1942	10JUN1968	201/812-5665
1101	09JUN1950	04OCT1978	212/586-8060
1333	02APR1949	13FEB1969	203/781-1777
1402	20JAN1951	05DEC1978	718/384-2849
1479	25DEC1956	08OCT1977	718/384-8816
1403	31JAN1957	24DEC1979	203/675-3434

Display 1.4 RTF Output

The following RTF output is viewed with Microsoft Word 2000.



getstart-ex2

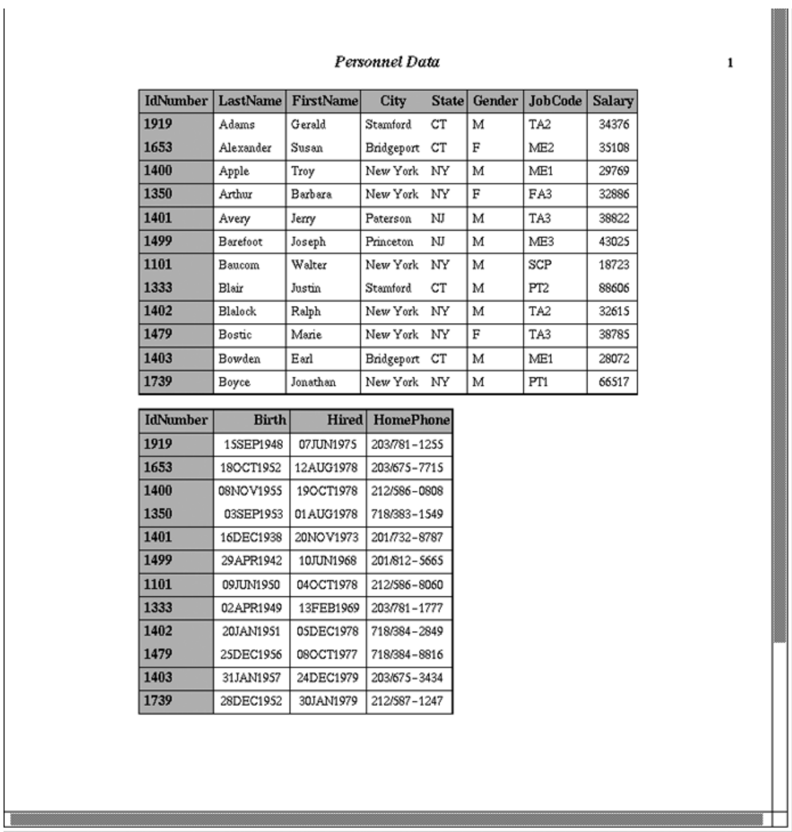
1

Personnel Data

IdNumber	LastName	FirstName	City	State	Gender	JobCode	Salary	Birth	Hired	HomePhone
1919	Adams	Gerald	Stamford	CT	M	TA2	34376	15SEP1948	07JUN1975	203/781-1255
1653	Alexander	Susan	Bridgeport	CT	F	ME2	35108	18OCT1952	12AUG1978	203/675-7715
1400	Apple	Troy	New York	NY	M	ME1	29769	08NOV1955	19OCT1978	212/586-0808
1350	Arthur	Barbara	New York	NY	F	FA3	32886	03SEP1953	01AUG1978	718/383-1549
1401	Avery	Jerry	Paterson	NJ	M	TA3	38822	16DEC1938	20NOV1973	201/732-8787
1499	Barefoot	Joseph	Princeton	NJ	M	ME3	43025	29APR1942	10JUN1968	201/812-5665
1101	Baucom	Walter	New York	NY	M	SCP	18723	09JUN1950	04OCT1978	212/586-8060
1333	Blair	Justin	Stamford	CT	M	PT2	88606	02APR1949	13FEB1969	203/781-1777
1402	Blalock	Ralph	New York	NY	M	TA2	32615	20JAN1951	05DEC1978	718/384-2849
1479	Bostic	Marie	New York	NY	F	TA3	38785	25DEC1956	08OCT1977	718/384-8816
1403	Bowden	Earl	Bridgeport	CT	M	ME1	28072	31JAN1957	24DEC1979	203/675-3434
1739	Boyce	Jonathan	New York	NY	M	PT1	66517	28DEC1952	30JAN1979	212/587-1247

Display 1.5 PostScript Output

The following PostScript output is viewed with Ghostview.



Personnel Data 1

IdNumber	LastName	FirstName	City	State	Gender	JobCode	Salary
1919	Adams	Gerald	Stamford	CT	M	TA2	34376
1653	Alexander	Susan	Bridgeport	CT	F	ME2	35108
1400	Apple	Troy	New York	NY	M	ME1	29769
1350	Arthur	Barbara	New York	NY	F	FA3	32886
1401	Avery	Jerry	Paterson	NJ	M	TA3	38822
1499	Barefoot	Joseph	Princeton	NJ	M	ME3	43025
1101	Baucom	Walter	New York	NY	M	SCP	18723
1333	Blair	Justin	Stamford	CT	M	PT2	88606
1402	Blalock	Ralph	New York	NY	M	TA2	32615
1479	Bostic	Marie	New York	NY	F	TA3	38785
1403	Bowden	Earl	Bridgeport	CT	M	ME1	28072
1739	Boyce	Jonathan	New York	NY	M	PT1	66517

IdNumber	Birth	Hired	HomePhone
1919	15SEP1948	07JUN1975	203/781-1255
1653	18OCT1952	12AUG1978	203/675-7715
1400	08NOV1955	19OCT1978	212/586-0808
1350	03SEP1953	01AUG1978	718/383-1549
1401	16DEC1938	20NOV1973	201/732-8787
1499	29APR1942	10JUN1968	201/812-5665
1101	09JUN1950	04OCT1978	212/586-8060
1333	02APR1949	13FEB1969	203/781-1777
1402	20JAN1951	05DEC1978	718/384-2849
1479	25DEC1956	08OCT1977	718/384-8816
1403	31JAN1957	24DEC1979	203/675-3434
1739	28DEC1952	30JAN1979	212/587-1247

Output 1.2 Listing Output

This output is traditional SAS listing output.

```
                                   Personnel Data                                       5

  Id             First                            Job
Number LastName  Name        City    State Gender Code Salary     Birth     Hired   HomePhone

 1919  Adams     Gerald   Stamford    CT     M    TA2   34376 15SEP1948 07JUN1975 203/781-1255
 1653  Alexander Susan    Bridgeport  CT     F    ME2   35108 18OCT1952 12AUG1978 203/675-7715
 1400  Apple     Troy     New York    NY     M    ME1   29769 08NOV1955 19OCT1978 212/586-0808
 1350  Arthur    Barbara  New York    NY     F    FA3   32886 03SEP1953 01AUG1978 718/383-1549
 1401  Avery     Jerry    Paterson    NJ     M    TA3   38822 16DEC1938 20NOV1973 201/732-8787
 1499  Barefoot  Joseph   Princeton   NJ     M    ME3   43025 29APR1942 10JUN1968 201/812-5665
 1101  Baucom    Walter   New York    NY     M    SCP   18723 09JUN1950 04OCT1978 212/586-8060
 1333  Blair     Justin   Stamford    CT     M    PT2   88606 02APR1949 13FEB1969 203/781-1777
 1402  Blalock   Ralph    New York    NY     M    TA2   32615 20JAN1951 05DEC1978 718/384-2849
 1479  Bostic    Marie    New York    NY     F    TA3   38785 25DEC1956 08OCT1977 718/384-8816
 1403  Bowden    Earl     Bridgeport  CT     M    ME1   28072 31JAN1957 24DEC1979 203/675-3434
 1739  Boyce     Jonathan New York    NY     M    PT1   66517 28DEC1952 30JAN1979 212/587-1247
```

Where to Go from Here

- *Examples of ODS output:* To see the types of output that you can create with ODS, see “Gallery of ODS Samples” on page 14.
- *Essential concepts in ODS:* For concepts that will help you to understand and to use ODS to your best advantage, see “What Is the Output Delivery System?” on page 13.
- *Creating more complex HTML pages:* With ODS, you can create HTML pages that include a frame and a table of contents. For more information, see “ODS HTML Statement” on page 95 and Appendix 2, “ODS and the HTML Destination,” on page 637. You can see many examples of HTML output in *Base SAS Procedures Guide* online documentation.
- *ODS statements:* For reference information on the ODS statements, see Chapter 5, “Dictionary of ODS Language Statements,” on page 67. These statements control the many features of the Output Delivery System.
- *Using ODS with the DATA step:* With the addition of ODS-related options to the FILE and PUT statements, you can use ODS to produce enhanced DATA step reports. See Chapter 3, “Output Delivery System and the DATA Step,” on page 39 .
- *Creating your own templates:* For even more control over formatting, you can create your own templates for formatting output. See Chapter 7, “TEMPLATE Procedure: Overview,” on page 261.

PART 2

Concepts

CHAPTER

2

Output Delivery System: Basic Concepts

What Is the Output Delivery System?

The Output Delivery System (ODS) gives you greater flexibility in generating, storing, and reproducing SAS procedure and DATA step output, with a wide range of formatting options. ODS provides formatting functionality that is not available from individual procedures or from the DATA step alone. ODS overcomes these limitations and enables you to format your output more easily.

Prior to Version 7, most SAS procedures generated output that was designed for a traditional line-printer. This type of output has limitations that prevents you from getting the most value from your results:

- Traditional SAS output is limited to monospace fonts. With today's desktop document editors and publishing systems, you need more versatility in printed output.
- Some commonly used procedures do not produce output data sets. Prior to ODS, if you wanted to use output from one of these procedures as input to another procedure, then you relied on PROC PRINTTO and the DATA step to retrieve results.

Gallery of ODS Samples

Introduction to the ODS Samples

This section shows you samples of the different kinds of formatted output that you can produce with ODS. The input file contains sales records for TruBlend Coffee Makers, a company that distributes coffee machines.

Listing Output

Traditional SAS output is Listing output. You do not need to change your SAS programs to create listing output. By default, you continue to create this kind of output even if you also create a type of output that contains more formatting.

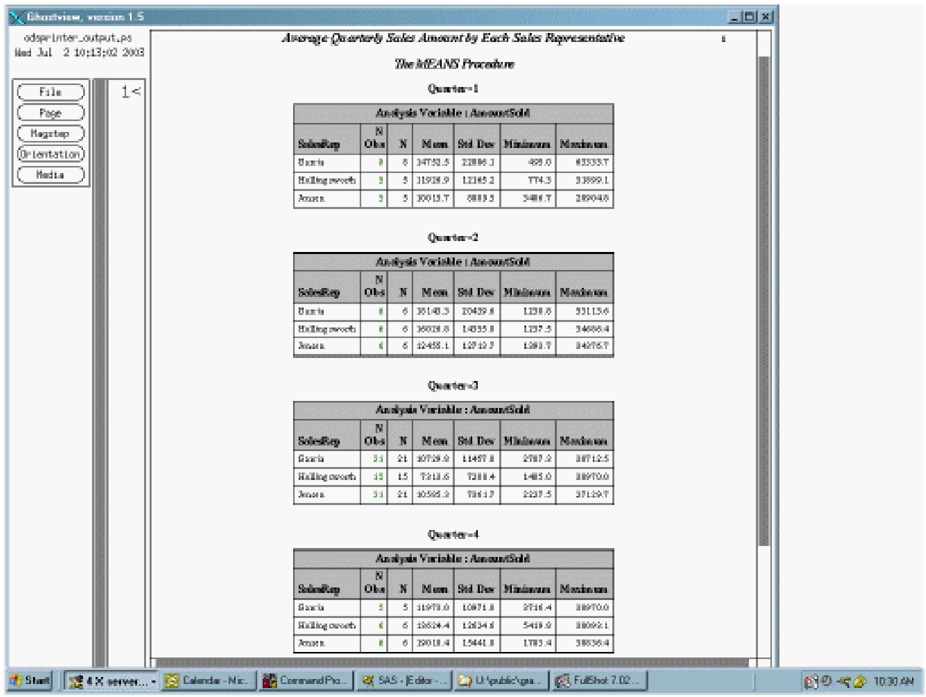
Output 2.1 Listing Output

```
        Average Quarterly Sales Amount by Each Sales Representative        1

--------------------------------- Quarter=1 ----------------------------------

                              The MEANS Procedure

                        Analysis Variable : AmountSold

                       N
SalesRep             Obs      N         Mean      Std Dev      Minimum      Maximum
------------------------------------------------------------------------------------
Garcia                 8      8      14752.5      22806.1        495.0      63333.7

Hollingsworth          5      5      11926.9      12165.2        774.3      31899.1

Jensen                 5      5      10015.7       8009.5       3406.7      20904.8
------------------------------------------------------------------------------------

        Average Quarterly Sales Amount by Each Sales Representative        2

--------------------------------- Quarter=2 ----------------------------------

                              The MEANS Procedure

                        Analysis Variable : AmountSold

                       N
SalesRep             Obs      N         Mean      Std Dev      Minimum      Maximum
------------------------------------------------------------------------------------
Garcia                 6      6      18143.3      20439.6       1238.8      53113.6

Hollingsworth          6      6      16026.8      14355.0       1237.5      34686.4

Jensen                 6      6      12455.1      12713.7       1393.7      34376.7
------------------------------------------------------------------------------------

        Average Quarterly Sales Amount by Each Sales Representative        3

--------------------------------- Quarter=3 ----------------------------------

                              The MEANS Procedure

                        Analysis Variable : AmountSold

                       N
SalesRep             Obs      N         Mean      Std Dev      Minimum      Maximum
------------------------------------------------------------------------------------
Garcia                21     21      10729.8      11457.0       2787.3      38712.5

Hollingsworth         15     15       7313.6       7280.4       1485.0      30970.0

Jensen                21     21      10585.3       7361.7       2227.5      27129.7
------------------------------------------------------------------------------------

        Average Quarterly Sales Amount by Each Sales Representative        4

--------------------------------- Quarter=4 ----------------------------------

                              The MEANS Procedure

                        Analysis Variable : AmountSold

                       N
SalesRep             Obs      N         Mean      Std Dev      Minimum      Maximum
------------------------------------------------------------------------------------
Garcia                 5      5      11973.0      10971.8       3716.4      30970.0

Hollingsworth          6      6      13624.4      12624.6       5419.8      38093.1

Jensen                 6      6      19010.4      15441.0       1703.4      38836.4
------------------------------------------------------------------------------------
```

PostScript Output

With ODS, you can produce output in PostScript format.

Display 2.1 PostScript Output Viewed with Ghostview

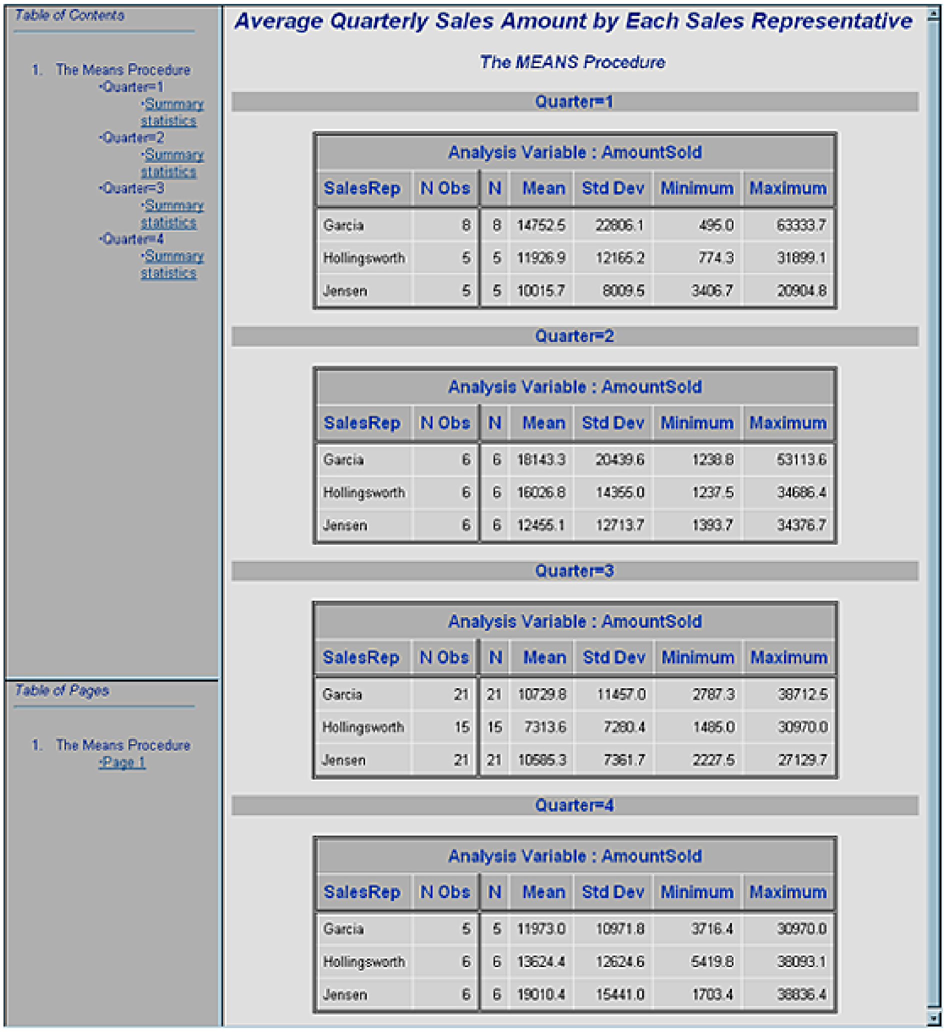


HTML Output

With ODS, you can produce output in HTML (Hypertext Markup Language.) You can browse these files with Internet Explorer, Netscape, or any other browser that fully supports the HTML 3.2 tagset.

Note: To create HTML 4.0 tagsets, use the ODS HTML4 statement. In SAS 9, the ODS HTML statement generates HTML 3.2 tagsets. In future releases of SAS, the ODS HTML statement will support the most current HTML tagsets available. △

Display 2.2 HTML Output Viewed with Microsoft Internet Explorer



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1. The Means Procedure
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Average Quarterly Sales Amount by Each Sales Representative

The MEANS Procedure

Quarter=1

Analysis Variable : AmountSold						
SalesRep	N Obs	N	Mean	Std Dev	Minimum	Maximum
Garcia	8	8	14752.5	22806.1	495.0	63333.7
Hollingsworth	5	5	11926.9	12165.2	774.3	31899.1
Jensen	5	5	10015.7	8009.5	3406.7	20904.8

Quarter=2

Analysis Variable : AmountSold						
SalesRep	N Obs	N	Mean	Std Dev	Minimum	Maximum
Garcia	6	6	18143.3	20439.6	1238.8	53113.6
Hollingsworth	6	6	16026.8	14355.0	1237.5	34686.4
Jensen	6	6	12455.1	12713.7	1393.7	34376.7

Quarter=3

Analysis Variable : AmountSold						
SalesRep	N Obs	N	Mean	Std Dev	Minimum	Maximum
Garcia	21	21	10729.8	11457.0	2787.3	38712.5
Hollingsworth	15	15	7313.6	7280.4	1485.0	30970.0
Jensen	21	21	10585.3	7361.7	2227.5	27129.7

Quarter=4

Analysis Variable : AmountSold						
SalesRep	N Obs	N	Mean	Std Dev	Minimum	Maximum
Garcia	5	5	11973.0	10971.8	3716.4	30970.0
Hollingsworth	6	6	13624.4	12624.6	5419.8	38093.1
Jensen	6	6	19010.4	15441.0	1703.4	38836.4

RTF Output

With ODS, you can produce RTF (Rich Text Format) output which is used with Microsoft Word.

Display 2.3 RTF Output Viewed with Microsoft Word

Average Quarterly Sales Amount by Each Sales Representative

The MEANS Procedure

Quarter=1

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	8	8	14752.49	22806.09	495.0000000	63333.65
Hollingsworth	5	5	11926.94	12165.18	774.2500000	31899.10
Jensen	5	5	10015.70	8009.46	3406.70	20904.75

Quarter=2

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	6	6	18143.26	20439.58	1238.80	53113.55
Hollingsworth	6	6	16026.76	14355.04	1237.50	34686.40
Jensen	6	6	12455.10	12713.73	1393.65	34376.70

Quarter=3

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	21	21	10729.82	11457.05	2787.30	38712.50
Hollingsworth	15	15	7313.62	7280.44	1485.00	30970.00
Jensen	21	21	10585.29	7361.68	2227.50	27129.72

Quarter=4

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	5	5	11973.00	10971.77	3716.40	30970.00
Hollingsworth	6	6	13624.42	12624.61	5419.75	38093.10
Jensen	6	6	19010.42	15440.98	1703.35	38836.38

PDF Output

With ODS, you can produce output in PDF (Portable Document Format), which can be viewed with the Adobe Acrobat Reader.

Display 2.4 PDF Output Viewed with Adobe Acrobat Reader

Average Quarterly Sales Amount by Each Sales Representative 1

The MEANS Procedure

Quarter=1

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	8	8	14752.49	22806.09	495.0000000	63333.65
Hollingsworth	5	5	11926.94	12165.18	774.2500000	31899.10
Jensen	5	5	10015.70	8009.46	3406.70	20904.75

Quarter=2

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	6	6	18143.26	20439.58	1238.80	53113.55
Hollingsworth	6	6	16026.76	14355.04	1237.50	34686.40
Jensen	6	6	12455.10	12713.73	1393.65	34376.70

Quarter=3

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	21	21	10729.82	11457.05	2787.30	38712.50
Hollingsworth	15	15	7313.62	7280.44	1485.00	30970.00
Jensen	21	21	10585.29	7361.68	2227.50	27129.72

Quarter=4

Analysis Variable : AmountSold						
SalesRep	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Garcia	5	5	11973.00	10971.77	3716.40	30970.00
Hollingsworth	6	6	13624.42	12624.61	5419.75	38093.10
Jensen	6	6	19010.42	15440.98	1703.35	38836.38

XML Output

With ODS, you can produce output that is tagged with XML (Extensible Markup Language) tags.

Output 2.2 XML Output file

```
<?xml version="1.0" encoding="windows-1252"?>

<odsxml>
<head>
<meta operator="user"/>
</head>
<body>
<proc name="Print">
<label name="IDX"/>
<title class="SystemTitle" toc-level="1">US Census of Population and Housing</title>
<branch name="Print" label="The Print Procedure" class="ContentProcName" toc-level="1">
<leaf name="Print" label="Data Set SASHELP.CLASS" class="ContentItem" toc-level="2">
<output name="Print" label="Data Set SASHELP.CLASS" clabel="Data Set SASHELP.CLASS">
<output-object type="table" class="Table">

  <style>
    <border spacing="1" padding="7" rules="groups" frame="box"/>
  </style>
<colspecs columns="6">
<colgroup>
<colspec name="1" width="2" align="right" type="int"/>
</colgroup>
<colgroup>
<colspec name="2" width="7" type="string"/>
<colspec name="3" width="1" type="string"/>
<colspec name="4" width="2" align="decimal" type="double"/>
<colspec name="5" width="4" align="decimal" type="double"/>
<colspec name="6" width="5" align="decimal" type="double"/>
</colgroup>
</colspecs>
<output-head>
<row>
<header type="string" class="Header" row="1" column="1">
<value>Obs</value>
</header>
<header type="string" class="Header" row="1" column="2">
<value>Name</value>
</header>
<header type="string" class="Header" row="1" column="3">
<value>Sex</value>
</header>
<header type="string" class="Header" row="1" column="4">
<value>Age</value>
</header>
<header type="string" class="Header" row="1" column="5">
<value>Height</value>
</header>
<header type="string" class="Header" row="1" column="6">
<value>Weight</value>
</header>
</row>
</output-head>
<output-body>
<row>
<header type="double" class="RowHeader" row="2" column="1">
<value> 1</value>
</header>
<data type="string" class="Data" row="2" column="2">
<value>Alfred</value>
</data>
... more xml tagged output...
<
/odsxml>
```

Commonly Used ODS Terminology

data component
: is a form, similar to a SAS data set, that contains the results (numbers and characters) of a DATA step or PROC step that supports ODS.

table definition
: is a set of instructions that describes how to format the data. This description includes but is not limited to

- the order of the columns
- text and order of column headings
- formats for data
- font sizes and font faces.

output object
: is an object that contains both the results of a DATA step or PROC step and information about how to format the results. An output object has a name, label, and path. For example, the Basic Statistical Measurement table generated from the UNIVARIATE procedure is an output object. It contains the data component and formatted presentation of the mean, median, mode, standard deviation, variance, range, and interquartile range.

Note: Although many output objects include formatting instructions, not all of them do. In some cases the output object consists of only the data component. △

ODS destinations
: are designations that produce specific types of output. ODS supports a number of destinations, including the following:

LISTING
: produces traditional SAS output (monospace format).

Markup Languages
: produce SAS output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX that you can access with a web browser. SAS supplies many markup languages for you to use ranging from DOCBOOK to TROFF. You can specify a markup language that SAS supplies or create one of your own and store it as a user-defined markup language.

DOCUMENT
: produces a hierarchy of output objects that enables you to produce multiple ODS output formats without rerunning a PROC or DATA step and gives you more control over the structure of the output.

OUTPUT
: produces a SAS data set.

Printer Family
: produces output that is formatted for a high-resolution printer such as a PostScript (PS), PDF, or PCL file.

RTF
: produces output that is formatted for use with Microsoft Word.

ODS output
ODS output consists of formatted output from any of the ODS destinations. For example, the OUTPUT destination produces SAS data sets; the LISTING destination produces listing output; the HTML destination produces output that is formatted in Hypertext Markup Language.

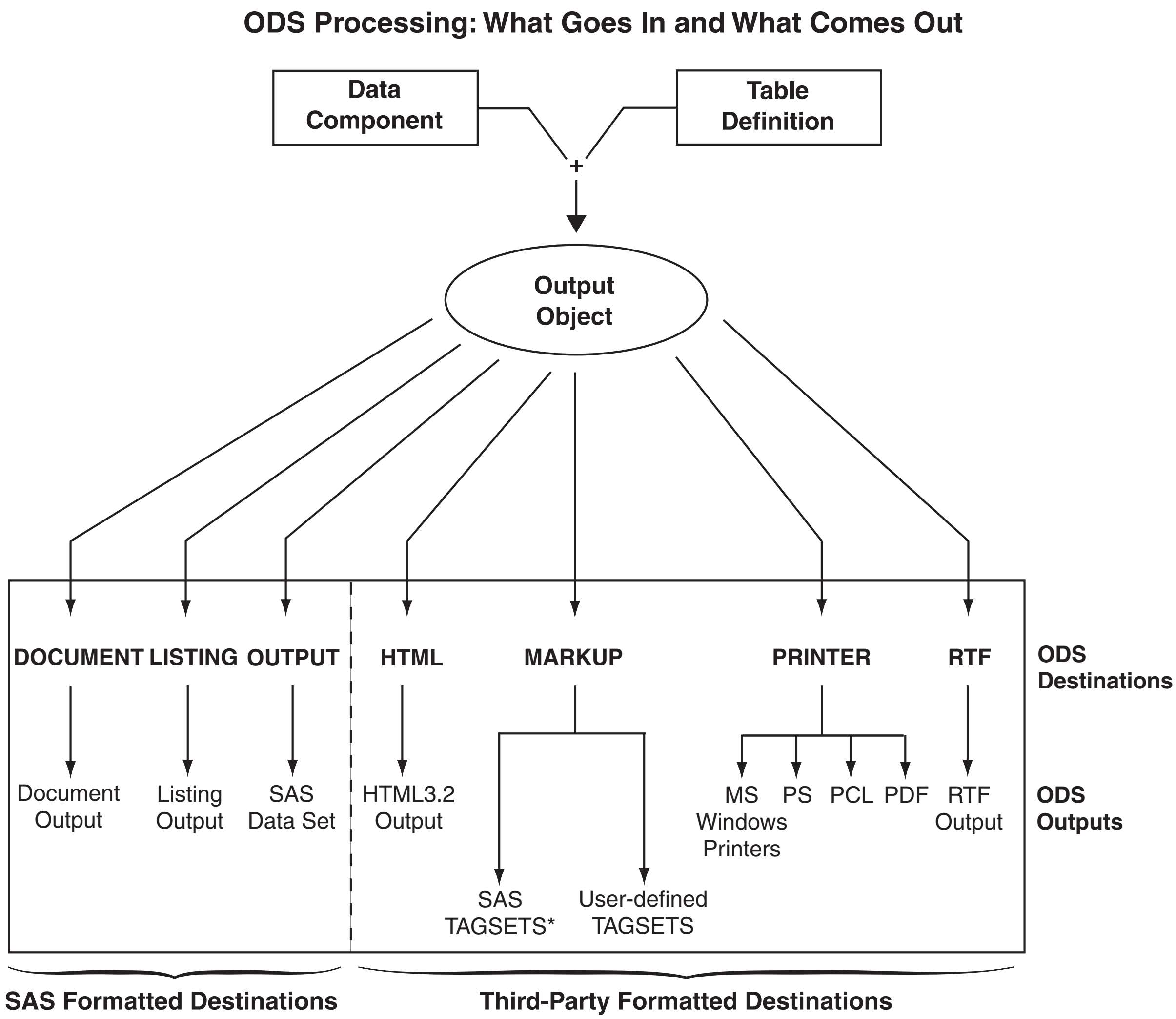
How Does ODS Work?

Components of SAS Output

The PROC or DATA step supplies raw data and the name of the table definition that contains the formatting instructions, and ODS formats the output. You can use the Output Delivery System to format output from individual procedures and from the DATA step in many different forms other than the default SAS listing output.

The following figure shows how SAS produces ODS output.

Figure 2.1 ODS Processing: What Goes in and What Comes Out



* List of Tagsets that SAS Supplies and Supports

Table 2.1 * List of Tagsets that SAS Supplies and Supports

CHTML	HTML4	SASIOXML	SASXMOH
CSVALL	HTMLCSS	SASREPORT	SASXMOIM
DEFAULT	IMODE	SASXML	SASXMOR
DOCBOOK	PHTML	SASXMOG	WML
EVENT_MAP			

* List of Tagsets that SAS Supplies but Does Not Support

Table 2.2 Additional Tagsets that SAS Supplies but Does Not Support

COLORLATEX	LATEX	SHORT_MAP	TPL_STYLE_MAP
CSV	LATEX2	STYLE_DISPLAY	TROFF
CSVBYLINE	NAMEDHTML	STYLE_POPUP	WMLOLIST
GRAPH	ODSSTYLE	TEXT_MAP	
GTABLEAPPLET	PYX	TPL_STYLE_LIST	

CAUTION:

These tagsets are experimental tagsets. Do not use these tagsets in production jobs. △

Features of ODS

ODS is designed to overcome the limitations of traditional SAS output and to make it easy to access and create the new formatting options. ODS provides a method of delivering output in a variety of formats, and makes the formatted output easy to access.

Important features of ODS include the following:

- ODS combines raw data with one or more table definitions to produce one or more output objects. These objects can be sent to any or all ODS destinations. You control the specific type of output from ODS by selecting an ODS destination. The currently available ODS destinations can produce
  - traditional monospace output
  - an output data set
  - an ODS document that contains a hierarchy file of the output objects
  - output that is formatted for a high-resolution printer such as PostScript and PDF
  - output that is formatted in various markup languages such as HTML
  - RTF output that is formatted for use with Microsoft Word.
- ODS provides table definitions that define the structure of the output from SAS procedures and from the DATA step. You can customize the output by modifying these definitions, or by creating your own.
- ODS provides a way for you to choose individual output objects to send to ODS destinations. For example, PROC UNIVARIATE produces five output objects. You can easily create HTML output, an output data set, traditional listing output, or printer output from any or all of these output objects. You can send different output objects to different destinations.
- In the SAS windowing environment, ODS stores a link to each output object in the Results folder in the Results window.
- Because formatting is now centralized in ODS, the addition of a new ODS destination does not affect any procedures or the DATA step. As future destinations are added to ODS, they will automatically become available to the DATA step and all procedures that support ODS.
- With ODS, you can produce output for numerous destinations from a single source, but you do not need to maintain separate sources for each destination. This feature saves you time and system resources by enabling you to produce multiple kinds of output with a single run of your procedure or data query.

What Are the ODS Destinations?

Overview of ODS Destination Categories

ODS enables you to produce SAS procedure and DATA step output to many different destinations. ODS destinations are organized into two categories.

SAS Formatted destinations
: produce output that is controlled and interpreted by SAS, such as a SAS data set, SAS output listing, or an ODS document.

Third-Party Formatted destinations
: produce output which enables you to apply styles, markup languages, or enables you to print to physical printers using page description languages. For example, you can produce output in PostScript, HTML, XML, or a style or markup language that you created.

The following table lists the ODS destination categories, the destination that each category includes, and the formatted output that results from each destination.

Table 2.3 Destination Category Table

Category	Destinations	Results
SAS Formatted	DOCUMENT	ODS document
	LISTING	SAS output listing
	OUTPUT	SAS data set
Third-Party Formatted	HTML	HTML file for online viewing
	MARKUP	markup language tagsets
	PRINTER	printable output in one of three different formats: PCL, PDF, or PS (PostScript)
	RTF	output written in Rich Text Format for use with Microsoft Word 2000

As future destinations are added to ODS, they automatically will become available to the DATA step and to all procedures that support ODS.

Definition of Destination-Independent Input

Destination-independent input means that one destination can support a feature even though another destination does not support it. In this case, the request is ignored by the destination that does not support it. Otherwise, ODS would support a small subset of features that are only common to all destinations. If this was true, then it would be difficult to move your reports from one output format to another output format. ODS provides many output formatting options, so that you can use the appropriate format for the output that you want. It is best to use the appropriate destination suited for your purpose.

The SAS Formatted Destinations

The SAS formatted destinations create SAS entities such as a SAS data set, a SAS output listing, or an ODS document. The statements in the ODS SAS Formatted category create the SAS entities.

The three SAS formatted destinations are:

DOCUMENT Destination

The DOCUMENT destination enables you to restructure, navigate, and replay your data in different ways and to different destinations as you like without needing to rerun your analysis or repeat your database query. The DOCUMENT destination makes your entire output stream available in "raw" form and accessible to you to customize. The output is kept in the original internal representation as a data component plus a table definition. When the output is in a DOCUMENT form, it is possible to rearrange, restructure, and reformat without rerunning your analysis. Unlike other ODS destinations, the DOCUMENT destination has a GUI interface. However, everything that you can do through the GUI, you can also do with batch commands using the ODS DOCUMENT statement and the DOCUMENT procedure.

Prior to SAS 9, each procedure or DATA step produced output that was sent to each destination that you specified. While you could always send your output to as many destinations as you wanted, you needed to rerun your procedure or data query if you decided to use a destination that you had not originally designated. The DOCUMENT destination eliminates the need to rerun procedures or repeat data queries by enabling you to store your output objects and replay them to different destinations.

LISTING Destination

The LISTING destination produces output that looks the same as the traditional SAS output. The LISTING destination is the default destination that opens when you start your SAS session. Thus ODS is always being used, even when you do not explicitly invoke ODS.

The LISTING destination enables you to produce traditional SAS output with the same look and presentation as it had in previous versions of SAS.

Because most procedures share some of the same table definitions, the output is more consistent. For example, if you have two different procedures producing an ANOVA table, they will both produce it in the same way because each procedure uses the same template to describe the table. However, there are four procedures that do not use a default table definition to produce their output: PRINT procedure, REPORT procedure, TABULATE procedure, and FREQ procedure's n-way tables. These procedures use the structure that you specified in your program code to define their tables.

OUTPUT Destination

The OUTPUT destination produces SAS output data sets. Because ODS already knows the logical structure of the data and its native form, ODS can output a SAS data set that represents exactly the same resulting data set that the procedure worked with internally. The output data sets can be used for further analysis, or for sophisticated reports in which you want to combine similar statistics across different data sets into a single table. You can easily access and process your output data sets using all of the SAS data set features. For example, you can access your output data using variable names and perform WHERE-expression processing just as you would process data from any other SAS data set.

The Third-Party Formatted Destinations

The third-party formatted destinations enable you to apply styles to the output objects that are used by applications other than SAS. For example, these destinations support attributes such as "font" and "color."

Note: For a list of style elements and valid values, see the style elements table in the *SAS Output Delivery System: User's Guide*. △

The four categories of third-party formatted destinations are:

- *HTML (Hypertext Markup Language)*

  The HTML destination produces HTML 3.2-compatible output. You can, however, produce (HTML 4 stylesheet) output using the HTML4 tagsets.

  The HTML destination can create some or all of the following:

  - an HTML file (called the *body file*) that contains the results from the procedure
  - a table of contents that links to the body file
  - a table of pages that links to the body file
  - a frame that displays the table of contents, the table of pages, and the body file.

  The body file is required with all ODS HTML output. If you do not want to link to your output, then you do not have to create a table of contents, a table of pages, or a frame file. However, if your output is very large, you might want to create a table of contents and a table of pages for easier reading and transversing through your file.

  The HTML destination is intended only for on-line use, not for printing. To print hard-copies of the output objects, use the PRINTER destination.

- *Markup Languages (MARKUP) Family*

  Just as table definitions describe how to lay out a table, and style attributes describe the style of the output, *tagsets* describe how to produce a markup language output. You can use a tagset that SAS supplies or you can create your own using the TEMPLATE procedure. Like table definitions and style attributes, tagsets enable you to modify your markup language output. For example, each variety of XML can be specified as a new tagset. SAS supplies you with a collection of XML tagsets and enables you to produce a customized variety of XML. The important point is that you can implement a tagset that SAS supplies or a customized tagset that you created without having to wait for the next release of SAS. With the addition of modifying and creating your own tagsets by using PROC TEMPLATE, now you have greater flexibility in customizing your output.

  Because the MARKUP destination is so flexible, you can use either the SAS tagsets or a tagset that you created. For a complete listing of the markup language tagsets that SAS supplies, see the section on listing tagset names in the *SAS Output Delivery System: User's Guide*. To learn how to define your own tagsets, see the section on methods to create your own tagsets in the *SAS Output Delivery System: User's Guide*.

  The MARKUP destination cannot replace ODS PRINTER or ODS RTF destinations because it cannot do text measurement. Therefore, it cannot produce output for a page description language or a hybrid language like RTF which requires all of the text to be measured and placed at a specific position on the page.

- *PRINTER Family*

  The PRINTER destination produces output for

  - printing to physical printers such as Windows printers under Windows, PCL, and PostScript printers on other operating systems
  - producing portable PostScript, PCL, and PDF files.

  The PRINTER destinations produce ODS output that contain page description languages: they describe precise positions where each line of text, each rule, and each graphical element are to be placed on the page. In general, you cannot edit or alter these formats. Therefore, the output from ODS PRINTER is intended to be the final form of the report.

- *Rich Text Format (RTF)*

  RTF produces output for Microsoft Word. While there are other applications that can read RTF files, the RTF output might not work successfully with them.

  The RTF destination enables you to view and edit the RTF output. ODS does not define the "vertical measurement," meaning that SAS does not determine the optimal place to position each item on the page. For example, page breaks are not always fixed, so when you edit your text, you do not want your RTF output tables to split at inappropriate places. Your tables can remain whole and intact on one page or can have logical breaks where you specified.

  However, because Microsoft Word needs to know the widths of table columns and it cannot adjust tables if they are too wide for the page, ODS measures the width of the text and tables (horizontal measurement). Therefore, all the column widths can be set properly by SAS and the table can be divided into panels if it is too wide to fit on a single page.

  In short, when producing RTF output for input to Microsoft Word, SAS determines the horizontal measurement and Microsoft Word controls the vertical measurement. Because Microsoft Word can determine how much room there is on the page, your tables will display consistently as you specified even after you modified your RTF file.

What Controls the Formatting Features of Third-Party Formats?

All of the formatting features that control the appearance of the third-party formatted destinations beyond what the LISTING destination can do are controlled by two mechanisms:

- ODS statement options
- ODS style attributes

The ODS statement options control three features:

1. Features that are specific to a given destination, such as stylesheets for HTML.
2. Features that are global to the document, such as AUTHOR and table of contents generation.
3. Features that we expect users to change on each document, such as the output file name.

The ODS style attributes control the way that individual elements are created. Attributes are aspects of a given style, such as type face, weight, font size, and color. The values of the attributes collectively determine the appearance of each part of the document to which the style is applied. With style attributes, it is unnecessary to insert destination-specific code (such as raw HTML) into the document. Each output destination will interpret the attributes that are necessary to generate the presentation of the document. Because not all destinations are the same, not all attributes can be interpreted by all destinations. Style attributes that are incompatible with a selected destination are ignored. For example, PostScript does not support active links, so the URL= attribute is ignored when producing PostScript output.

ODS Destinations and System Resources

ODS destinations can be open or closed. You open and close a destination with the appropriate ODS statement. When a destination is open, ODS sends the output objects to it. An open destination uses system resources even if you use the selection and exclusion features of ODS to select or exclude all objects from the destination. Therefore, to conserve resources, close unnecessary destinations. For more information about using each destination, see the topic on ODS statements in the *SAS Output Delivery System: User's Guide*.

By default, the LISTING destination is open and all other destinations are closed. Consequently, if you do nothing, your SAS programs run and produce listing output looking just as they did in previous releases of SAS before ODS was available.

What Are Table Definitions, Table Elements, and Table Attributes?

A *table definition* describes how to generate the output for a tabular output object. (Most ODS output is tabular.) A table definition determines the order of column headers and the order of variables, as well the overall look of the output object that uses it. For information about customizing the table definition, see the topic on the TEMPLATE procedure in the *SAS Output Delivery System: User's Guide*.

In addition to the parts of the table definition that order the headers and columns, each table definition contains or references *table elements*. A table element is a collection of table attributes that apply to a particular header, footer, or column. Typically, a *table attribute* specifies something about the data rather than about its presentation. For example, FORMAT specifies the SAS format, such as the number of decimal places. However, some table attributes describe presentation aspects of the data, such as how many blank characters to place between columns.

Note: The attributes of table definitions that control the presentation of the data have no effect on output objects that go to the LISTING or OUTPUT destination. However, the attributes that control the structure of the table and the data values do affect listing output. △

For information on table attributes, see the section on table attributes in the *SAS Output Delivery System: User's Guide*.

What Are Style Definitions, Style Elements, and Style Attributes?

To customize the output at the level of your entire output stream in a SAS session, you specify a style definition. A *style definition* describes how to generate the presentation aspects (color, font face, font size, and so on) of the entire SAS output. A style definition determines the overall look of the documents that use it.

Each style definition is composed of *style elements*. A style element is a collection of style attributes that apply to a particular part of the output. For example, a style element may contain instructions for the presentation of column headers, or for the presentation of the data inside the cells. Style elements may also specify default colors and fonts for output that uses the style definition.

Each *style attribute* specifies a value for one aspect of the presentation. For example, the BACKGROUND= attribute specifies the color for the background of an HTML table or for a colored table in printed output. The FONT_STYLE= attribute specifies whether to use a Roman or an italic font. For information on style attributes, see the section on style attributes in the *SAS Output Delivery System: User's Guide*.

Note: Because style definitions control the presentation of the data, they have no effect on output objects that go to the LISTING or OUTPUT destination. △

What Style Definitions Are Shipped with SAS Software?

Base SAS software is shipped with many style definitions. To see a list of these styles, you can view them in the SAS Explorer Window, use the TEMPLATE procedure, or use the SQL procedure.

- *SAS Explorer Window:*

  To display a list of the available styles using the SAS Explorer Window, follow these steps:

  1. From any window in an interactive SAS session, select

     View ▶ Results

  2. In the Results window, select

     View ▶ Templates

  3. In the Templates window, select and open **`Sashelp.tmplmst`**.
  4. Select and open the **`Styles`** folder, which contains a list of available style definitions. If you want to view the underlying SAS code for a style definition, then select the style and open it.

     Operating Environment Information: For information on navigating in the Explorer window without a mouse, see the section on "Window Controls and General Navigation" in the SAS documentation for your operating environment. △

- *TEMPLATE Procedure:*

  You can also display a list of the available styles by submitting the following PROC TEMPLATE statements:

```
proc template;
   list styles;
run;
```

- *SQL Procedure:*

  You can also display a list of the available styles by submitting the following PROC SQL statements:

```
proc sql;
select * from styles.style-name;
```

  The *style–name* is the name of any style from the template store (for example, **`styles.default`** or **`styles.beige`**).

For more information on how ODS destinations use styles and how you can customize styles, see the section on the DEFINE STYLE statement in the *SAS Output Delivery System: User's Guide*.

How Do I Use Style Definitions with Base SAS Procedures?

- Most Base SAS Procedures

  Most Base SAS procedures that support ODS use one or more table definitions to produce output objects. These table definitions include definitions for table elements: columns, headers, and footers. Each table element can specify the use of one or more style elements for various parts of the output. These style elements cannot be specified within the syntax of the procedure, but you can use customized styles for the ODS destinations that you use. For more information about customizing tables and styles, see the TEMPLATE procedure in the *SAS Output Delivery System: User's Guide*.
- The PRINT, REPORT and TABULATE Procedures

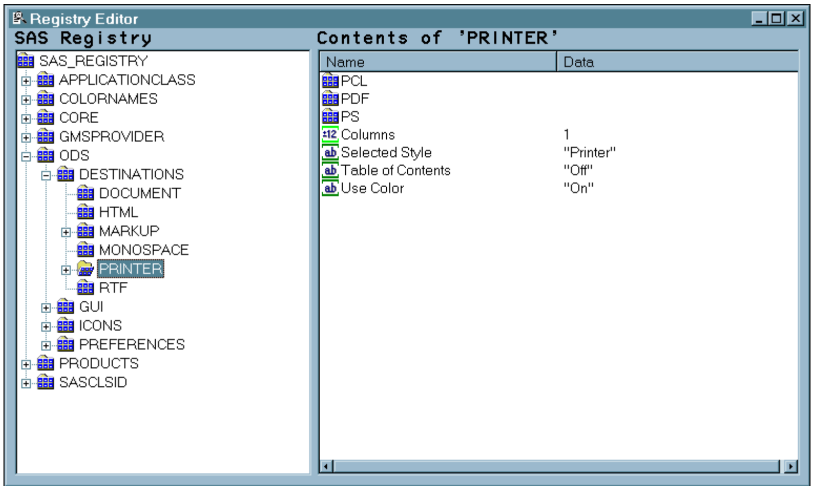
  The PRINT, REPORT and TABULATE procedures provide a way for you to access table elements from the procedure step itself. Accessing the table elements enables you to do such things as specify background colors for specific cells, change the font face for column headers, and more. The PRINT, REPORT, and TABULATE procedures provide a way for you to customize the markup language and printed output directly from the procedure statements that create the report. For more information about customizing the styles for these procedures, see the *Base SAS Procedures Guide*.

Changing SAS Registry Settings for ODS

Overview of ODS and the SAS Registry

The SAS registry is the central storage area for configuration data that ODS uses. This configuration data is stored in a hierarchical form, which works in a similar manner to the way directory-based file structures work under UNIX, Windows, VMS, and the z/OS UNIX system. However, the SAS registry uses keys and subkeys as the basis for its structure, instead of using directories and subdirectories, like similar file systems in DOS or UNIX. A key is a word or a text string that refers to a particular aspect of SAS. Each key may be a place holder without values or subkeys associated with it, or it may have many subkeys with associated values. For example, the ODS key has DESTINATIONS, GUI, ICONS, and PREFERENCES subkeys. A subkey is a key inside another key. For example, PRINTER is a subkey of the DESTINATIONS subkey.

Display 2.5 SAS Registry of ODS Subkeys



Changing Your Default HTML Version Setting

By default, the SAS registry is configured to generate HTML4 output when you specify the ODS HTML statement. To permanently change the default HTML version, you can change the setting of the HTML version in the SAS registry.

CAUTION:

If you make a mistake when you modify the SAS registry, then your system might become unstable or unusable. You will not be warned if an entry is incorrect. Incorrect entries can cause errors, and can even prevent you from bringing up a SAS session. For more information about how to configure the SAS registry, see the SAS registry section in *SAS Language Reference: Concepts*. △

To change the default setting of the HTML version in the SAS registry:

1 Select

Solutions ▶ Accessories ▶ Registry Editor

or

Issue the command **REGEDIT**.

2 Select

ODS ▶ Default HMTL Version

3 Select

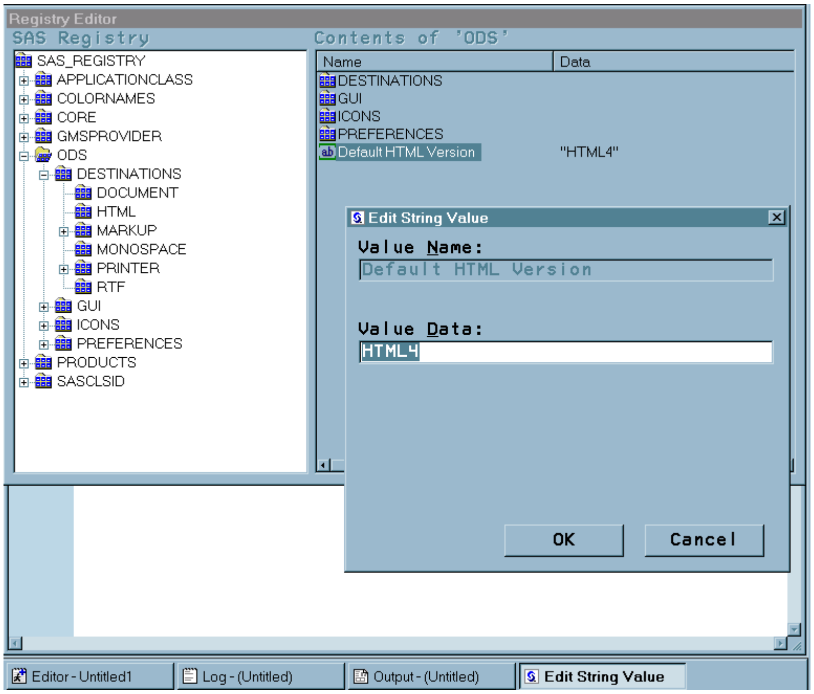
Edit ▶ Modify

or

Click the right mouse button and select **MODIFY**. The Edit String Value window appears.

4 Type the HTML version in the **Value Data** text box and select **OK**.

Display 2.6 SAS Registry Showing HTML Version Setting



Changing ODS Destination Default Settings

ODS destination subkeys are stored in the SAS registry. To change the values for these destinations subkeys:

1 Select

   ODS ▶ Destinations

2 Select a destination subkey

3 Select a subkey in the Contents of window

4 Select

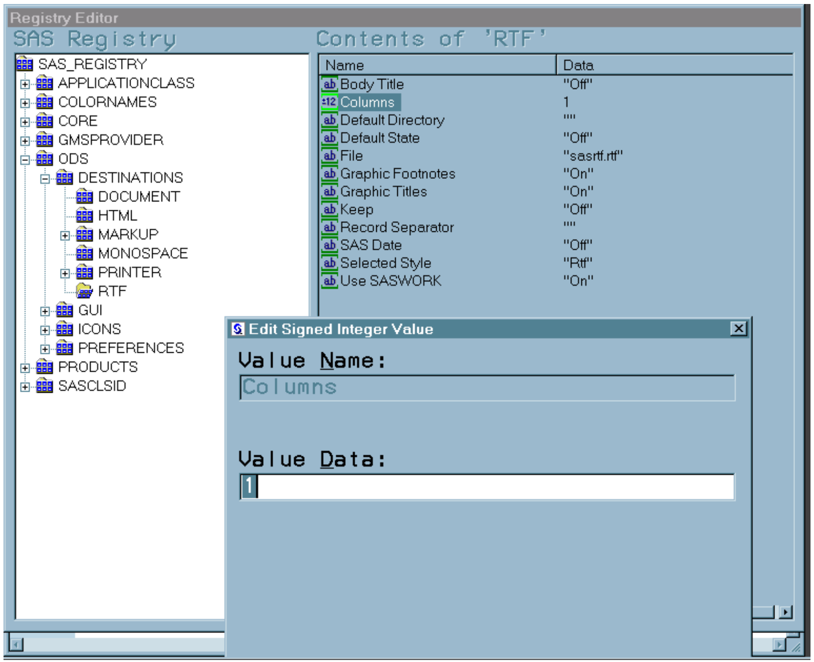
   Edit ▶ Modify

   or

   Click the right mouse button and select **MODIFY**.

5 Type in the Value Data entry into the Edit Value String or Edit Signed Integer Value window and select **OK**.

Display 2.7 Registry Editor Window



Customized ODS Output

SAS Output

By default, ODS output is formatted according to instructions that a PROC step or DATA step defines. However, ODS provides ways for you to customize the output. You can customize the output for an entire SAS job, or you can customize the output for a single output object.

Selection and Exclusion Lists

You can specify which output objects that you want to produce by selecting or excluding them in a list. For each ODS destination, ODS maintains either a selection list or an exclusion list. A selection list is a list of output objects that are sent to the destination. An exclusion list is a list of output objects that are excluded from the destination. ODS also maintains an overall selection list or an overall exclusion list. You can use these lists to control which output objects go to the specified ODS destinations.

To see the contents of the lists use the ODS SHOW statement. The lists are written to the SAS log. The following table shows the default lists:

Table 2.4 Default List for Each ODS Destination

ODS Destination	Default List
OUTPUT	EXCLUDE ALL
All others	SELECT ALL

How Does ODS Determine the Destinations for an Output Object?

To specify an output object, you need to know which output objects your SAS program produces. The ODS TRACE statement writes to the SAS log a trace record that includes the path, the label, and other information about each output object that is produced. For more information, about the ODS TRACE statement see *SAS Output Delivery System: User's Guide*. You can specify an output object as any of the following:

- a full path. For example,

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  is the full path of the output object.

- a partial path. A partial path consists of any part of the full path that begins immediately after a period (.) and continues to the end of the full path. For example, if the full path is

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  then the partial paths are:

  ```
  City_Pop_90.TestsForLocation
  TestsForLocation
  ```

- a label that is enclosed in quotation marks.

  For example,

  ```
  "Tests For Location"
  ```

- a label path. For example, the label path for the output object is

  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"

  Note: The trace record shows the label path only if you specify the LABEL option in the ODS TRACE statement. △

- a partial label path. A partial label path consists of any part of the label that begins immediately after a period (.) and continues to the end of the label. For example, if the label path is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  then the partial label paths are:

  ```
  "CityPop_90"."Tests For Location"
  "Tests For Location"
  ```

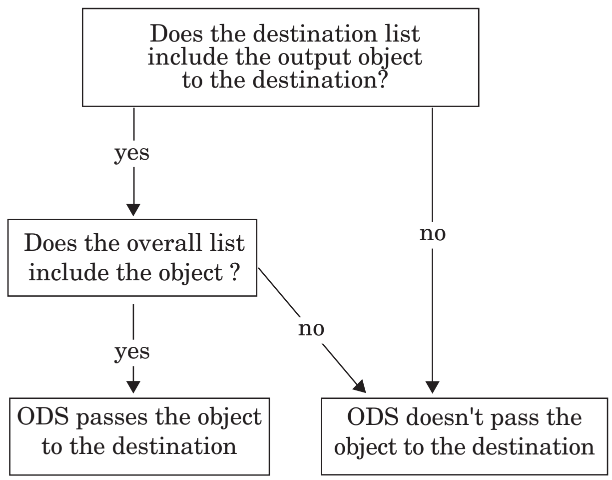
- a mixture of labels and paths.

- any of the partial path specifications, followed by a pound sign (#) and a number. For example, TestsForLocation#3 refers to the third output object that is named TestsForLocation.

As each output object is produced, ODS uses the selection and exclusion lists to determine which destination or destinations the output object will be sent to. The following figure illustrates this process:

Figure 2.2 Directing an Output Object to a Destination

For each destination, ODS first asks if the list for that destination includes the object. If it does not, ODS does not send the output object to that destination. If the list for that destination does include the object, ODS reads the overall list. If the overall list includes the object, ODS sends it to the destination. If the overall list does not include the object, ODS does not send it to the destination.



Note: Although you can maintain a selection list for one destination and an exclusion list for another, it is easier to understand the results if you maintain the same types of lists for all the destinations where you route output. △

Customized Output for an Output Object

For a procedure, the name of the table definition that is used for an output object comes from the procedure code. The DATA step uses a default table definition unless you specify an alternative with the TEMPLATE= suboption in the ODS option in the FILE statement. For more information, see the section on the TEMPLATE= suboption in the *SAS Output Delivery System: User's Guide*.

To find out which table definitions a procedure or the DATA step uses for the output objects, you must look at a trace record. To produce a trace record in your SAS log, submit the following SAS statements:

```
ods trace on;
your-proc-or-DATA-step
ods trace off;
```

Remember that not all procedures use table definitions. If you produce a trace record for one of these procedures, no definition appears in the trace record. Conversely, some procedures use multiple table definitions to produce their output. If you produce a trace record for one of these procedures, more than one definition appears in the trace record.

The trace record refers to the table definition as a template. For a detailed explanation of the trace record, see the section on the ODS TRACE statement in the *SAS Output Delivery System: User's Guide*.

You can use PROC TEMPLATE to modify an entire table definition. When a procedure or DATA step uses a table definition, it uses the elements that are defined or referenced in its table definition. In general, you cannot directly specify a table element for your procedure or DATA step to use without modifying the definition itself.

Note: Three Base SAS procedures, PROC PRINT, PROC REPORT and PROC TABULATE, do provide a way for you to access table elements from the procedure step itself. Accessing the table elements enables you to customize your report. For more information about these procedures, see the *Base SAS Procedures Guide* △

Summary of ODS

In the past, the term "output" has generally referred to the outcome of a SAS procedure and DATA step. With the advent of the Output Delivery System, "output" takes on a much broader meaning. ODS is designed to optimize output from SAS procedures and the DATA step. It provides a wide range of formatting options and greater flexibility in generating, storing, and reproducing SAS output.

Important features of ODS include the following:

- ODS combines raw data with one or more table definitions to produce one or more *output objects*. An output object tells ODS how to format the results of a procedure or DATA step.
- ODS provides table definitions that define the structure of the output from SAS procedures and from the DATA step. You can customize the output by modifying these definitions, or by creating your own definitions.
- ODS provides a way for you to choose individual output objects to send to ODS destinations.
- ODS stores a link to each output object in the Results folder for easy retrieval and access.
- As future destinations are added to ODS, they will automatically become available to the DATA step and all procedures that support ODS.

One of the main goals of ODS is to enable you to produce output for numerous destinations from a single source, without requiring separate sources for each destination. ODS supports many destinations:

DOCUMENT
: enables you to capture output objects from single run of the analysis and produce multiple reports in various formats whenever you want without re-running your SAS programs.

LISTING
: produces output that looks the same as the traditional SAS output.

HTML
: produces output for online viewing.

MARKUP
: produces output for markup language tagsets.

OUTPUT
: produces SAS output data sets, thereby eliminating the need to parse PROC PRINTTO output.

PRINTER
: produces presentation-ready printed reports.

RTF
: produces output suitable for Microsoft Word reports.

By default, ODS output is formatted according to instructions that the procedure or DATA step defines. However, ODS provides ways for you to customize the presentation of your output. You can customize the presentation of your SAS output, or you can customize the look of a single output object. ODS gives you greater flexibility in generating, storing, and reproducing SAS procedure and DATA step output with a wide range of formatting options.

CHAPTER 3

Output Delivery System and the DATA Step

Why Use ODS with the DATA Step?

If you are writing DATA step reports now, you are already using ODS. Simple listing output, the traditional DATA step output, is routed though ODS by default. For over 20 years, SAS users have been able to create highly customized reports as simple listing output, which uses a monospace typefont. With the advent of ODS, however, you have a broad range of choices for printing your customized DATA step reports:

- You can produce DATA step reports in many different formats, such as HTML, RTF, PS (PostScript), or PDF.
- You can create the report in multiple formats at the same time.
- You can also produce the report in different formats at a later time without rerunning the DATA step.

To take advantage of these enhanced reporting capabilities, you can combine DATA step programming with the formatting capabilities of ODS.

To create PDF output, for example, start with the DATA steps tools that you are already familiar with:

- the DATA _NULL_ statement

- the FILE statement
- the PUT statement

Then, add a few simple ODS statements and options. In addition, you can choose from several ODS formatting statements to format the output in other presentation styles, such as HTML, RTF, and PS. For more information on ODS statements, see Chapter 5, "Dictionary of ODS Language Statements," on page 67.

How ODS Works with the DATA Step

Here are the basic steps for using ODS in conjunction with the DATA step to produce reports with enhanced formatting:

Table 3.1 Steps to Producing Enhanced ODS Output With the DATA Step

Steps	Tools	Comments
Specify formatting for your output.	ODS formatting statements can specify formats such as listing, HTML, RTF, PS, and PDF.	You can also produce output in multiple formats at the same time by specifying more than one format. Note: If you want only the simple default listing output, then you don't need the ODS statement.
Specify structure.	The ODS option in the FILE statement lists the variables and their order in the output.	Additional suboptions give you even more control over the resulting structure.
Connect the data to the template.	The FILE PRINT ODS statement creates an output object by binding a data component to a table definition (template).	You can specify other details by using various ODS suboptions in the FILE PRINT ODS statement.
Output data.	The PUT statement writes variable values to the data component.	A simple way to output all variables is to use PUT _ODS_.

First, use ODS statements to specify how you want ODS to format your output, for example, as HTML, RTF or PDF. Then, in the DATA step, use the FILE PRINT ODS and PUT statements, with appropriate ODS-specific suboptions, to produce your report.

The PUT statement writes variable values, and the FILE PRINT ODS statement directs the output.* You can use ODS to produce the same output in multiple formats, and to produce output at a later time in a different format, without rerunning the DATA step.

You control the formatting that is applied to your reports by using the ODS formatting statements. They control the opening and closing of ODS destinations, which apply formatting to the output objects that you create with ODS and the DATA step.

Here is a list of topics, with sources for additional information.

* If you do not specify a FILE statement, then the PUT statement writes to the SAS log by default. If you use multiple PUT and FILE statements, then in addition to creating ODS-enhanced output, you can write to the log, to the regular DATA step output buffer, or to another external file in the same DATA step.

Table 3.2 Where to Find More Information on How to Use ODS in the DATA Step

Topic	Where to learn more
ODS formatting statements	Chapter 5, "Dictionary of ODS Language Statements," on page 67
ODS destinations	"What Are the ODS Destinations?" on page 25
How ODS works	"How Does ODS Work?" on page 22

Syntax for ODS Enhanced Features in a DATA Step

Restriction:
To use the DATA step and ODS to produce output that contains more enhanced formatting features than the default listing output, you must use both the FILE PRINT ODS statement and the PUT statement.

FILE PRINT ODS<=(*ODS-suboption(s)*)><*options*>;

PUT <*specification(s)*> <_ODS_ <@|@@>> ;

Examples

Example 1: Creating a Report with the DATA Step and the Default Table Definition

ODS features:
FILE PRINT ODS statement:
PUT _ODS_ statement

ODS destinations:
LISTING

This example uses the DATA step and ODS to create a listing report. It uses the default table definition (template) for the DATA step and writes an output object to the LISTING destination (the default).

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The PAGENO= option specifies the starting page number. The LINESIZE= option specifies the output line length, and the PAGESIZE= option specifies the number of lines on an output page.

```
options nodate pageno=1 linesize=64 pagesize=60;
```

Specify a title. The TITLE statement specifies a title for the output.

```
title 'Leading Grain Producers';
```

Create a user-defined format. PROC FORMAT creates the format $CNTRY. for the variable COUNTRY.

```
proc format;
   value $cntry 'BRZ'='Brazil'
                'CHN'='China'
                'IND'='India'
                'INS'='Indonesia'
                'USA'='United States';
run;
```

Begin a DATA step that does not create an output data set. Using _NULL_ saves computer resources because it prevents the DATA step from creating an output data set.

```
data _null_;
```

Define variables, assign lengths and formats, read a record, and assign values to four variables. The LENGTH statement defines a length that is shorter than the default to two character variables. The FORMAT statement assigns a user-defined format to the variable COUNTRY. The LABEL statement assigns a label to the variable TYPE. The INPUT statement reads a record from the datalines and assigns a value to four variables.

```
   length Country $ 3 Type $ 5;
   format country $cntry.;
   label type='Grain';
   input Year country $ type $ Kilotons;
```

Use the default table definition (template) to create simple listing output. The combination of the fileref PRINT and the ODS option in the FILE statement routes the DATA step output to ODS. The only open ODS destination is the LISTING destination, which is open by default when you begin your SAS session. Because no suboptions are specified, ODS uses the default DATA step table definition (template). This FILE PRINT ODS statement creates an output object and binds it to the default template.

```
   file print ods;
```

Write the variables to the data component. The _ODS_ option in the PUT statement writes every variable to the buffer that the PUT statement writes to the data component. Because no formats or labels are specified for individual columns, ODS uses the defaults.

```
   put _ods_;
```

The data provide information on the amounts of wheat, rice, and corn that five leading grain-producing nations produced during 1995 and 1996.

```
   datalines;
1995 BRZ  Wheat    1516
1995 BRZ  Rice     11236
1995 BRZ  Corn     36276
1995 CHN  Wheat    102207
1995 CHN  Rice     185226
1995 CHN  Corn     112331
```

```
1995 IND  Wheat    63007
1995 IND  Rice     122372
1995 IND  Corn     9800
1995 INS  Wheat    .
1995 INS  Rice     49860
1995 INS  Corn     8223
1995 USA  Wheat    59494
1995 USA  Rice     7888
1995 USA  Corn     187300
1996 BRZ  Wheat    3302
1996 BRZ  Rice     10035
1996 BRZ  Corn     31975
1996 CHN  Wheat    109000
1996 CHN  Rice     190100
1996 CHN  Corn     119350
1996 IND  Wheat    62620
1996 IND  Rice     120012
1996 IND  Corn     8660
1996 INS  Wheat    .
1996 INS  Rice     51165
1996 INS  Corn     8925
1996 USA  Wheat    62099
1996 USA  Rice     7771
1996 USA  Corn     236064
;
```

Listing Output

Output 3.1 Listing Output Created with the Default DATA Step Table Definition

The default table definition produces a column for each variable in the DATA step. The order of the columns is determined by their order in the program data vector. Because no attributes are specified for individual columns, ODS uses the default column headers and formats.

```
                 Leading Grain Producers                       1
       Country       Grain        Year         Kilotons

    Brazil           Wheat            1995            1516
    Brazil           Rice             1995           11236
    Brazil           Corn             1995           36276
    China            Wheat            1995          102207
    China            Rice             1995          185226
    China            Corn             1995          112331
    India            Wheat            1995           63007
    India            Rice             1995          122372
    India            Corn             1995            9800
    Indonesia        Wheat            1995               .
    Indonesia        Rice             1995           49860
    Indonesia        Corn             1995            8223
    United States    Wheat            1995           59494
    United States    Rice             1995            7888
    United States    Corn             1995          187300
    Brazil           Wheat            1996            3302
    Brazil           Rice             1996           10035
    Brazil           Corn             1996           31975
    China            Wheat            1996          109000
    China            Rice             1996          190100
    China            Corn             1996          119350
    India            Wheat            1996           62620
    India            Rice             1996          120012
    India            Corn             1996            8660
    Indonesia        Wheat            1996               .
    Indonesia        Rice             1996           51165
    Indonesia        Corn             1996            8925
    United States    Wheat            1996           62099
    United States    Rice             1996            7771
    United States    Corn             1996          236064
```

Example 2: Producing ODS Output That Contains Selected Variables

ODS features:

- FILE PRINT ODS statement:
  - VARIABLES= suboption
- ODS HTML statement:
  - BODY= option
    - URL= suboption
- PUT _ODS_ statement

ODS destinations:

- HTML
- LISTING

Format:
$CNTRY. on page 42

This example selects variables to include in the output. The resulting output is produced in two formats, listing and HTML. The listing output is produced by default, and the HTML output is requested by the ODS HTML statement.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The PAGENO= option specifies the starting page number. The LINESIZE= option specifies the output line length, and the PAGESIZE= option specifies the number of lines on an output page. None of these options affects the HTML output.

```
options nodate pageno=1 linesize=64 pagesize=60;
```

Specify that you want ODS to create HTML output and store it in the specified file. The ODS HTML statement opens the HTML destination; any procedure or DATA step output created will be routed to this destination (and any others that are open) and will, therefore, format the output in HTML. The BODY= option sends all output objects to the HTML file that you specify. Some browsers require an extension of HTM or HTML on the filename.

```
ods html body='your-html-file.html';
```

Specify the titles. The TITLE statements provide titles for the output.

```
title 'Leading Grain Producers';
title2 'for 1996';
```

Begin a DATA step that does not create an output data set. Using _NULL_ saves computer resources because it prevents the DATA step from creating an output data set.

```
data _null_;
```

Assign lengths other than the default to two character variables. Also assign a user defined format to one variable and a label to another. The FORMAT statement assigns a format to the variable COUNTRY. The LABEL statement assigns a label to the variable TYPE.

```
   length Country $ 3 Type $ 5;
   format country $cntry.;
   label type='Grain';
```

Read a record from the input data, assign values to four variables. Continue to process only observations that meet the criterion. The INPUT statement reads a single record and assigns values to four variables. The subsetting IF statement causes the DATA step to continue to process only those observations that contain the value 1996 for YEAR.

```
input Year country $ type $ Kilotons;
if year=1996;
```

Send the DATA step output to whatever ODS destinations are open. Specify the variables and their order in the data component that is created. The combination of the fileref PRINT and the ODS option in the FILE statement sends the results of the DATA step to ODS. Two ODS destinations, the LISTING and the HTML destinations, are open. Because no table definition is specified, ODS uses the default DATA step definition. The VARIABLES= suboption specifies that the resulting data component will contain three columns in the order that is listed.

```
file print ods=(variables=(country
                           type
                           kilotons));
```

Write values for all variables that are specified with the VARIABLES= suboption in the FILE statement. The _ODS_ option in the PUT statement writes variable values to the data component. It writes only those variables that were specified with the VARIABLES= suboption in the FILE statement. Because no formats or labels are specified for these ODS columns, ODS uses the defaults.

```
   put _ods_;
```

The data provides information on the amounts of wheat, rice, and corn that were produced by the five leading grain-producing nations during 1995 and 1996.

```
   datalines;
1995 BRZ  Wheat    1516
1995 BRZ  Rice     11236
1995 BRZ  Corn     36276
1995 CHN  Wheat    102207
1995 CHN  Rice     185226
1995 CHN  Corn     112331
1995 IND  Wheat    63007
1995 IND  Rice     122372
1995 IND  Corn     9800
1995 INS  Wheat    .
1995 INS  Rice     49860
1995 INS  Corn     8223
1995 USA  Wheat    59494
1995 USA  Rice     7888
1995 USA  Corn     187300
1996 BRZ  Wheat    3302
1996 BRZ  Rice     10035
1996 BRZ  Corn     31975
1996 CHN  Wheat    109000
1996 CHN  Rice     190100
1996 CHN  Corn     119350
1996 IND  Wheat    62620
1996 IND  Rice     120012
1996 IND  Corn     8660
```

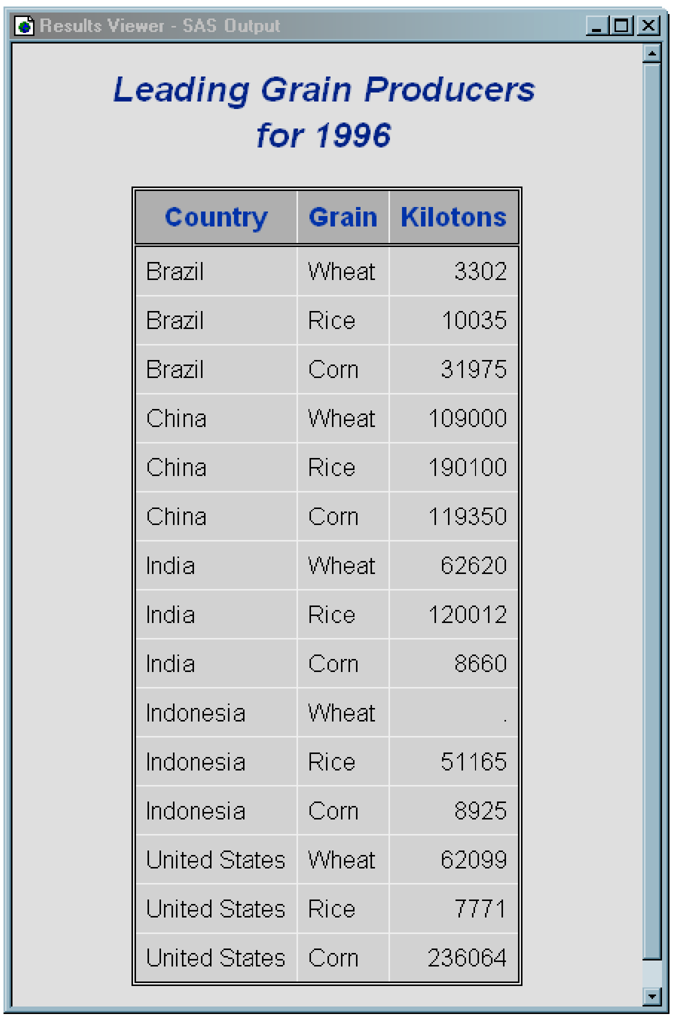
```
1996 INS  Wheat    .
1996 INS  Rice     51165
1996 INS  Corn     8925
1996 USA  Wheat    62099
1996 USA  Rice     7771
1996 USA  Corn     236064
;
```

Close the HTML destination so that you can view the output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser. Also, closing the destination prevents all subsequent ODS jobs from automatically producing HTML output.

```
ods html close;
```

HTML Output

Display 3.1 HTML Body File Produced by ODS


Results Viewer - SAS Output

Leading Grain Producers
for 1996

Country	Grain	Kilotons
Brazil	Wheat	3302
Brazil	Rice	10035
Brazil	Corn	31975
China	Wheat	109000
China	Rice	190100
China	Corn	119350
India	Wheat	62620
India	Rice	120012
India	Corn	8660
Indonesia	Wheat	.
Indonesia	Rice	51165
Indonesia	Corn	8925
United States	Wheat	62099
United States	Rice	7771
United States	Corn	236064

Listing Output

Output 3.2 Listing Output Produced by the LISTING Destination

```
                  Leading Grain Producers                    1
                         for 1996
               Country        Grain      Kilotons

            Brazil           Wheat            3302
            Brazil           Rice            10035
            Brazil           Corn            31975
            China            Wheat          109000
            China            Rice           190100
            China            Corn           119350
            India            Wheat           62620
            India            Rice           120012
            India            Corn             8660
            Indonesia        Wheat               .
            Indonesia        Rice            51165
            Indonesia        Corn             8925
            United States    Wheat           62099
            United States    Rice             7771
            United States    Corn           236064
```

Example 3: Assigning Attributes to Columns in ODS Output

ODS features:

- FILE PRINT ODS statement:
  - OBJECTLABEL= suboption
  - VARIABLES= suboption
    - LABEL= suboption
    - FORMAT= suboption
- PUT _ODS_ statement

ODS destinations:

- HTML
- Listing
- Printer (PS)

Format:
$CNTRY. on page 42

This example assigns a label to the output object that it creates. It also specifies a label and a format for individual columns.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, “ODS HTML Statements for Running Examples in Different Operating Environments,” on page 649. △

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The PAGENO= option specifies the starting page number. The LINESIZE= option specifies the output line length, and the PAGESIZE= option specifies the number of lines on an output page. These options affect the listing output, but none of them affects the HTML output.

```
options pagesize=60 linesize=64 nodate pageno=1;
```

Specify that you want to create HTML output. Also specify where to store the HTML output: the body file, the contents file, and the frame file. The ODS HTML statement opens the HTML destination and creates HTML output. The BODY= option identifies the file that contains the HTML output. The CONTENTS= option identifies the file that contains a table of contents to the HTML output. The contents file links to the body file. The FRAME= option identifies the file that integrates the table of contents, the page contents, and the body file. If you open the frame file, you see a table of contents, a table of pages, or both, as well as the body file.

```
ods html body='your_body_file.html'
         contents='your_contents_file.html'
         frame='your_frame_file.html';
```

Specify that you want PostScript output. Also specify where to store the PostScript output. The ODS PRINTER statement opens the PRINTER destination and creates PostScript output by default. The FILE= option sends all output objects to the external file in the current directory.

```
ods printer file='your_postscript_file.ps';
```

Specify the titles. The TITLE statements provide titles for the output.

```
title 'Leading Grain Producers';
title2 'for 1996';
```

Begin a DATA step that does not create an output data set. Using _NULL_ saves computer resources because it prevents the DATA step from creating an output data set.

```
data _null_;
```

Assign lengths other than the default to two character variables. Also assign a user defined format to one variable and a label to another. The LENGTH statement assigns lengths to COUNTRY and TYPE. The FORMAT statement assigns a format to the variable COUNTRY. The LABEL statement assigns a label to the variable TYPE.

```
   length Country $ 3 Type $ 5;
   format country $cntry.;
   label type='Grain';
```

Read a record from the input data, assign values to four variables. Continue to process only observations that meet the criterion. The INPUT statement reads a single record and assigns values to four variables. The subsetting IF statement causes the DATA step to continue to process only those observations that contain the value 1996 for YEAR.

```
   input Year country $ type $ Kilotons;
   if year=1996;
```

Send the DATA step output to the open destinations, specify a label for the output object, and specify the variables to write to the data component and the order in which to write them. The combination of the fileref PRINT and the ODS option in the FILE statement sends the results of the DATA step to ODS. The LISTING, the HTML, and the PRINTER destinations are open. Because no table definition is specified, ODS uses the default DATA step definition.

- The OBJECTLABEL= suboption specifies the label '1996 Grain Production' to the output object. This label appears in the Results folder and in the HTML contents file.
- The VARIABLES= suboption specifies the variables to write to the data component and the order in which to write them.
- The LABEL= suboption specifies a label for the variable TYPE. The label specified here takes precedence over the LABEL statement assignment that was made previously in the DATA step, so it is used as the column header for TYPE.
- The FORMAT= suboption assigns a format for the variable KILOTONS.

```
   file print ods= (objectlabel='1996 Grain Production'
           variables=(country
                      type(label='Type of Grain')
                      kilotons(format=comma12.))
      );
```

Write the variables to the buffer. The _ODS_ option in the PUT statement writes all of the variables that are defined to ODS (in the FILE PRINT ODS statement) to a special buffer. It uses default attributes for COUNTRY, and it uses any attributes specified in the VARIABLES= suboption for the other variables. For attributes that might be specified elsewhere in the DATA step but are not specified in VARIABLES=, it uses the defaults.

```
   put _ods_;
```

The data provides information on the amounts of wheat, rice, and corn that five leading grain-producing nations produced during 1995 and 1996.

```
   datalines;
1995 BRZ  Wheat    1516
1995 BRZ  Rice     11236
1995 BRZ  Corn     36276
1995 CHN  Wheat    102207
1995 CHN  Rice     185226
1995 CHN  Corn     112331
1995 IND  Wheat    63007
1995 IND  Rice     122372
1995 IND  Corn     9800
1995 INS  Wheat    .
1995 INS  Rice     49860
1995 INS  Corn     8223
1995 USA  Wheat    59494
1995 USA  Rice     7888
1995 USA  Corn     187300
1996 BRZ  Wheat    3302
1996 BRZ  Rice     10035
1996 BRZ  Corn     31975
1996 CHN  Wheat    109000
1996 CHN  Rice     190100
1996 CHN  Corn     119350
1996 IND  Wheat    62620
```

```
1996 IND  Rice     120012
1996 IND  Corn     8660
1996 INS  Wheat    .
1996 INS  Rice     51165
1996 INS  Corn     8925
1996 USA  Wheat    62099
1996 USA  Rice     7771
1996 USA  Corn     236064
;
```

To view the HTML output and print the PostScript output, close both the HTML and PRINTER destinations. This statement closes the LISTING, HTML and PRINTER destinations and all the files that are associated with them. You must close the HTML destination before you can view the output with a browser. You must close the PRINTER destination before you can print the output on a physical printer. If you do not close these destinations, then output created in subsequent sessions will be routed to them, and you might inadvertently continue to generate both HTML and PostScript output.

```
ods _all_ close;
```

HTML Output

Display 3.2 HTML Frame File Produced by ODS

In this HTML frame file, the object's label, '1996 Grain Production' was supplied by the OBJECTLABEL= suboption. It appears in the table of contents as the link to the output object.

In the body file, the label 'Type of Grain' that was supplied by the LABEL= suboption for the variable TYPE becomes its column header.

The format for KILOTONS was supplied by the FORMAT= suboption in the FILE statement.

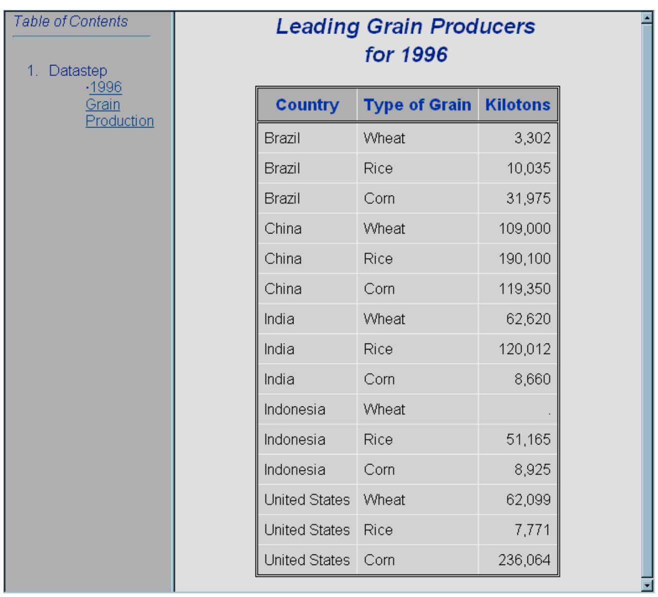


Table of Contents

1. Datastep
   ·1996 Grain Production

Leading Grain Producers for 1996

Country	Type of Grain	Kilotons
Brazil	Wheat	3,302
Brazil	Rice	10,035
Brazil	Corn	31,975
China	Wheat	109,000
China	Rice	190,100
China	Corn	119,350
India	Wheat	62,620
India	Rice	120,012
India	Corn	8,660
Indonesia	Wheat	.
Indonesia	Rice	51,165
Indonesia	Corn	8,925
United States	Wheat	62,099
United States	Rice	7,771
United States	Corn	236,064

Printer Output

Display 3.3 Printer Output Viewed with Ghostview

Just as in the HTML body file and in the listing output, the PostScript output displays the label 'Type of Grain' that was supplied by the LABEL= suboption for the variable TYPE as its column header.

The format for KILOTONS was supplied by the FORMAT= suboption in the FILE statement.

Leading Grain Producers for 1996

Country	Type of Grain	Kilotons
Brazil	Wheat	3,302
Brazil	Rice	10,035
Brazil	Corn	31,975
China	Wheat	109,000
China	Rice	190,100
China	Corn	119,350
India	Wheat	62,620
India	Rice	120,012
India	Corn	8,660
Indonesia	Wheat	.
Indonesia	Rice	51,165
Indonesia	Corn	8,925
United States	Wheat	62,099
United States	Rice	7,771
United States	Corn	236,064

Listing Output

Just as in the HTML body file and the PostScript output, the listing output displays the label 'Type of Grain' that was supplied by the LABEL= suboption for the variable TYPE. The format for KILOTONS was supplied by the FORMAT= suboption in the FILE statement.

```
                    Leading Grain Producers                    1
                            for 1996
                              Type
                               of
                Country       Grain      Kilotons

             Brazil           Wheat         3,302
             Brazil           Rice         10,035
             Brazil           Corn         31,975
             China            Wheat       109,000
             China            Rice        190,100
             China            Corn        119,350
             India            Wheat        62,620
             India            Rice        120,012
             India            Corn          8,660
             Indonesia        Wheat             .
             Indonesia        Rice         51,165
             Indonesia        Corn          8,925
             United States    Wheat        62,099
             United States    Rice          7,771
             United States    Corn        236,064
```

Example 4: Creating and Using a User-Defined Table Definition Template

ODS features:
- PROC TEMPLATE
- FILE PRINT ODS statement:
  - COLUMNS= suboption:
    - FORMAT= suboption
    - DYNAMIC= suboption
    - GENERIC= suboption
  - TEMPLATE=
- PUT _ODS_ statement:
  - column pointer controls
  - line pointer controls

ODS destination:
- RTF

This example shows how to:

- □ create a simple user-defined template (table definition) with PROC TEMPLATE
- □ use a simple user-defined template in the DATA step
- □ use pointer controls in the PUT _ODS_ statement.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, “ODS HTML Statements for Running Examples in Different Operating Environments,” on page 649. △

Program: Creating the User-Defined Table Definition (Template)

Define the table definition PHONELIST. This PROC TEMPLATE step defines a table definition named PHONELIST.

The template defines two columns: NAME and PHONE.

The GENERIC=ON attribute defines the column for NAME as one that the DATA step can use for multiple variables.

The column definition uses dynamic headers; that is, a variable that uses this column definition takes the value of the header at run time from the DATA step that uses this template. Thus, each variable can have a different column header.

The STYLE= attribute specifies that the style element DATA be used as the basis for generating the data in this column. The font face and font size that DATA normally uses are replaced by the ones that are specified in the STYLE= attribute.

The header for PHONE is hard-coded as Telephone. The STYLE= attribute specifies a style element to use for the data in this column. For information on PROC TEMPLATE, see Chapter 7, “TEMPLATE Procedure: Overview,” on page 261.

```
proc template;
define table phonelist;
      column name phone;
      dynamic colheader;
   define name;
      generic=on;
      header=colheader;

      style=data{font_style=italic font_size=5};
   end;

   define phone;
      header='Telephone';
      style=datafixed;
   end;
end;
run;
```

Program: Using the User-Defined Template (Table Definition)

Specify that you do not want to produce the default listing output. The ODS LISTING CLOSE statement closes the listing destination to conserve resources. The listing destination is open by default when you open your SAS session.

```
ods listing close;
```

Specify that you want the output formatted in RTF. The ODS RTF statement opens the RTF destination and creates RTF output for use by Microsoft Word. Subsequent output objects are sent to the body file.

```
ods rtf body='your_rtf_file.rtf';
```

Specify a title. The TITLE statement provides a title for the output.

```
title 'New Subscriber Telephone List';
```

Create a format for telephone numbers. PROC FORMAT creates a user-defined format for telephone numbers.

```
proc format;
   picture phonenum .='Not available'
                other='0000)000-0000' (prefix='(');
run;
```

Create the PHONES data set. The data set PHONES contains names and their corresponding phone numbers. Some observations contain missing values for the business or home phone numbers.

```
data phones;
   length first_name $20 last_name $25;
   input first_name $ last_name $ business_phone home_phone;
   datalines;
Jerome Johnson 9193191677 9198462198
Romeo Montague 8008992164 3609736201
Imani Rashid 5088522146 5083669821
Palinor Kent . 9197823199
Ruby Archuleta . .
Takei Ito 7042982145 .
Tom Joad 2099632764 2096684741
;
```

Sort the PHONES data set by last name. PROC SORT sorts the data set PHONES by LAST_NAME and replaces the original data set with the sorted data set.

```
proc sort data=phones;
   by last_name;
run;
```

Begin a DATA step that does not create an output data set. Read an observation from the PHONES data set. Using _NULL_ saves computer resources because it prevents the DATA step from creating an output data set.

```
data _null_;
    set phones;
```

Request that ODS output be created and use the template named PHONELIST. The combination of the fileref PRINT and the ODS option in the FILE statement sends the results of the DATA step to ODS. ODS creates an output object and binds it to the PHONELIST template. Only RTF output is created because only the RTF destination is open.

The TEMPLATE= suboption tells ODS to use the template PHONELIST, which was created previously in the PROC TEMPLATE step.

```
file print ods=(template='phonelist'
```

Place variable values in columns. The COLUMNS= suboption places values of variables into columns that are defined in the template.

Values for both the LAST_NAME and FIRST_NAME variables are written to columns that are defined as NAME in the template.

The GENERIC=ON suboption must be set in both the template and the ODS= option in order for you to use a column definition for more than one column.

The value of the variable BUSINESS_PHONE is placed in a column that is defined as PHONE.

The DYNAMIC= suboption assigns a value to the variable COLHEADER. This value is passed to the template when the output object is created, and the template uses it for the column header. Thus, even though the variables use the same column definition from the template, the columns in the output object have different column headers.

The FORMAT= suboption assigns the format PHONENUM. to the column named PHONE.

```
                  columns=
                           (name=last_name
                             (generic=on
                              dynamic=(colheader='Last Name'))
                            name=first_name
                             (generic=on
                              dynamic=(colheader='First Name'))
                            phone=business_phone
                              (format=phonenum.)
                            )
                 );
```

The following IF/THEN-ELSE statements execute a different PUT _ODS_ statement based on the specified conditions:

- If BUSINESS_PHONE contains missing values, then the PUT statement writes values for LAST_NAME, FIRST_NAME, and BUSINESS_PHONE (the columns that are defined in the ODS= option) into the output buffer. The PUT statement then writes the value for HOME_PHONE in column 3, overwriting the missing value of BUSINESS_PHONE.
- If HOME_PHONE contains a missing value, then the PUT statement simply writes values for LAST_NAME, FIRST_NAME, and BUSINESS_PHONE to the buffer.
- Finally, if both phone numbers have values, then the PUT statement writes values for LAST_NAME, FIRST_NAME, and BUSINESS_PHONE to the buffer in the first line. SAS then goes to the next line (as directed by the line pointer control /) and writes the value of HOME_PHONE in the third column of the next line.

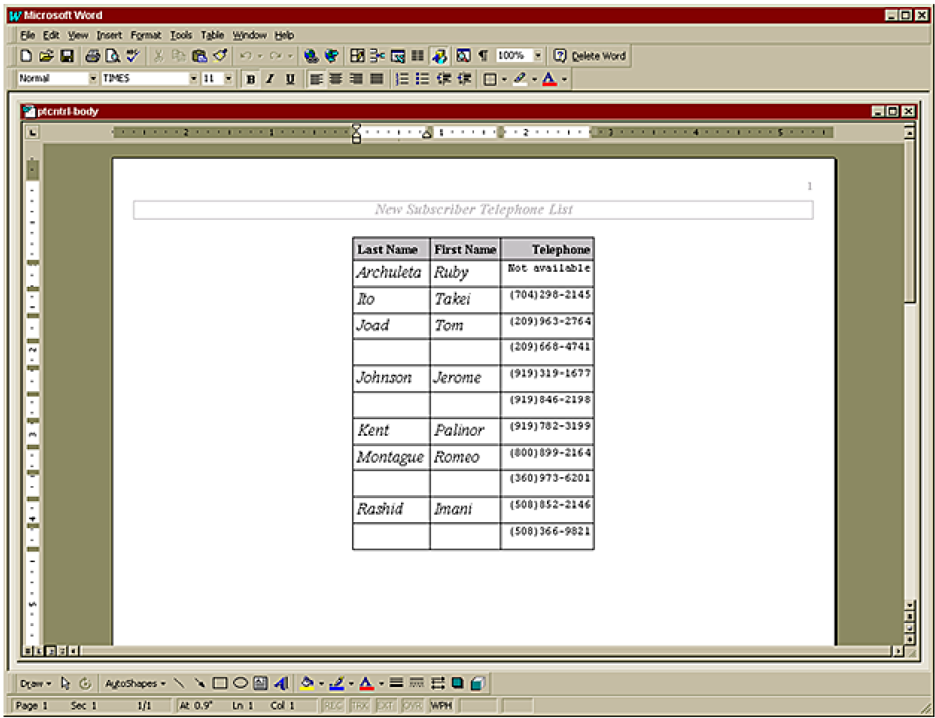
```
if (missing(business_phone)) then
   put _ods_ @3 home_phone;
else if (missing(home_phone)) then
   put _ods_;
else
   put _ods_ / @3 home_phone;
run;
```

Close the RTF destination so that you can view the output. The ODS RTF statement closes the RTF destination and all the files that are associated with it. You must close the destination before you can view the output in Microsoft Word. Also, closing the output prevents all subsequent ODS jobs from automatically producing RTF output.

```
ods RTF close;
```

RTF Output

Display 3.4 RTF Output Viewed with Microsoft Word



PART 3

ODS Language Statements

CHAPTER 4

Introduction to ODS Language Statements

Definition of ODS Statements

ODS statements provide greater flexibility in generating, storing, and reproducing SAS procedure and DATA step output. You can use the ODS statements to control different features of the Output Delivery System. ODS statements can be used anywhere in your SAS program. Some ODS statements remain in effect until you explicitly change them. Others are automatically cleared at particular times (see the documentation for individual statements).

Types of ODS Statements

DATA Step Statements

DATA step statements are either executable or declarative statements that appear in the DATA step. The ODS statements that are used in the DATA step are executable statements. Executable statements result in some action during individual iterations of the DATA step. For information about declarative statements, see *SAS Language Reference: Dictionary*.

Global Statements

Global statements

- provide information to SAS
- request information or data
- move between different modes of execution
- set values for system options.

The global ODS statements deliver or store output in a variety of formats. You can use global statements anywhere in a SAS program. Global Statements are not executable; they take effect as soon as SAS compiles program statements.

Global ODS statements are organized into three categories:

ODS: Output Control
: statements that provide descriptive information about the specified output objects and indicate whether or not the style definition or table definition is supplied by SAS. The Output Control statements can do the following:

- select or exclude specific output objects for specific destinations
- specify the location where you want to search for or store style definitions or table definitions
- verify if you are using a style definition or a table definition that is supplied by SAS
- provide descriptive information about each specified output object, such as name, label, template, path, and label path.

ODS: SAS Formatted
: statements that enable you to produce SAS specific items such as a SAS data set, SAS output listing, or an ODS document. The statements in the ODS SAS Formatted category create the SAS entities. For more information, see “The SAS Formatted Destinations” on page 26.

ODS: Third-Party Formatted
: statements that enable you to apply styles and markup languages, or produce output to physical printers, using page description languages. For more information, see “The Third-Party Formatted Destinations” on page 27.

Procedure Statements

For information about the TEMPLATE procedure, see Chapter 7, “TEMPLATE Procedure: Overview,” on page 261. For information about the DOCUMENT procedure, see Chapter 6, “The DOCUMENT Procedure,” on page 211.

ODS Statement Category Descriptions

The following table lists and describes the categories of ODS global statements:

Table 4.1 Global Statements by Category

Statement category …	Function …
ODS: Output Control	Provide descriptive information about the specified output objects and their locations.
ODS: SAS Formatted	Produce listing output, a SAS output data set, or a hierarchy file.
ODS: Third-party Formatted	Produce files that are formatted in the proper destination format.

ODS Statements by Category

Table 4.2 Categories and Descriptions of ODS Statements

Category	Dictionary of ODS Language Statement	Description
File-handling	"FILE Statement for ODS" on page 68	Creates an ODS output object by binding the data component to the table definition (template). Optionally, lists the variables to include in the ODS output, and specifies options that control the way that the variables are formatted.
	"PUT Statement for ODS" on page 80	Writes data values to a special buffer from which they can be written to the data component and then formatted by ODS
ODS: Output Control	"LIBNAME Statement, SASEDOC" on page 76	Uses the SASEDOC engine to associate a SAS libref (library reference) with one or more ODS output objects that are stored in an ODS document
	"ODS _ALL_ CLOSE Statement" on page 84	Closes all open ODS output destinations
	"ODS DOCUMENT Statement" on page 87	Opens, manages, or closes the DOCUMENT destination, which produces a hierarchy of output objects that enables you to produce multiple ODS output formats without rerunning a PROC or DATA step
	"ODS EXCLUDE Statement" on page 90	Specifies output objects to exclude from ODS destinations
		Enables ODS automatic graphic capabilities
	"ODS PATH Statement" on page 149	Specifies locations to write to or read from when creating or using PROC TEMPLATE definitions and the order in which to search for them
	"ODS PROCLABEL Statement" on page 175	Enables you to change a procedure label
	"ODS PROCTITLE Statement" on page 176	Determines whether or not to write the title that identifies the procedure that produces the results in the output
	"ODS RESULTS Statement" on page 179	Tracks ODS output in the Results window
	"ODS SELECT Statement" on page 188	Specifies output objects for ODS destinations
	"ODS SHOW Statement" on page 197	Writes the specified selection or exclusion list to the SAS log
	"ODS TRACE Statement" on page 197	Writes to the SAS log a record of each output object that is created, or suppresses the writing of this record
	"ODS USEGOPT Statement" on page 202	Determines whether or or not ODS uses graphics option settings

Category	Dictionary of ODS Language Statement	Description
	"ODS VERIFY Statement" on page 205	Prints or suppresses a message indicating that a style definition or a table definition being used is not supplied by SAS
ODS: SAS Formatted	"ODS DECIMAL_ALIGN Statement" on page 85	Controls the justification of numeric columns when no justification is specified
	"ODS LISTING Statement" on page 107	Opens, manages, or closes the LISTING destination
	"ODS OUTPUT Statement" on page 135	Produces a SAS data set from an output object and manages the selection and exclusion lists for the OUTPUT destination
ODS: Third-Party Formatted	"ODS CHTML Statement" on page 84	Opens, manages, or closes the CHTML destination, which produces a compact, minimal HTML that does not use style information
	"ODS CSVALL Statement" on page 85	Opens, manages, or closes the CSVALL destination, which produces output containing columns of data values that are separated by commas, and produces tabular output with titles, notes, and bylines
	"ODS DOCBOOK Statement" on page 86	Opens, manages, or closes the DOCBOOK destination, which produces XML output that conforms to the DocBook DTD by OASIS
	"ODS HTML Statement" on page 95	Opens, manages, or closes the HTML destination, which produces HTML 4.0 output that contains embedded stylesheets
	"ODS HTMLCSS Statement" on page 105	Opens, manages, or closes the HTMLCSS destination, which produces HTML output with cascading style sheets
	"ODS HTML3 Statement" on page 105	Opens, manages, or closes the HTML3 destination, which produces HTML 3.2 formatted output
	"ODS IMODE Statement" on page 106	Opens, manages, or closes the IMODE destination, which produces HTML output as a column of output, separated by lines
	"ODS MARKUP Statement" on page 109	Opens, manages, or closes the MARKUP destination, which produces SAS output that is formatted using one of many different markup languages
	"ODS PCL Statement" on page 150	Opens, manages, or closes the PCL destination, which produces printable output for PCL (HP LaserJet) files
	"ODS PDF Statement" on page 153	Opens, manages, or closes the PDF destination, which produces PDF output, a form of output that is read by Adobe Acrobat Reader and other applications
	"ODS PHTML Statement" on page 159	Opens, manages, or closes the PHTML destination, which produces simple HTML output that uses twelve style elements and no class attributes
	"ODS PRINTER Statement" on page 159	Opens, manages, or closes the PRINTER destination, which produces printable output
	"ODS PS Statement" on page 177	Opens, manages, or closes the PS destination, which Produces PostScript (PS) output

Category	Dictionary of ODS Language Statement	Description
	“ODS RTF Statement” on page 180	Opens, manages, or closes the RTF destination, which produces output written in Rich Text Format for use with Microsoft Word 2000
	“ODS WML Statement” on page 206	Opens, manages, or closes the WML destination, which uses the Wireless Application Protocol (WAP) to produce a Wireless Markup Language (WML) DTD with a simple list for a table of contents

CHAPTER

5

Dictionary of ODS Language Statements

FILE Statement for ODS

Creates an ODS output object by binding the data component to the table definition (template). Optionally, lists the variables to include in the ODS output, and specifies options that control the way that the variables are formatted.

Valid: in a DATA step

Category: File-handling

Type: Executable

Default: ODS sends the output object to all open ODS destinations.

Syntax

FILE PRINT ODS <=(*ODS-suboption(s)*)><*options*> ;

Note: This syntax shows only the ODS form of the FILE statement. For the complete syntax, see the FILE statement in *SAS Language Reference: Dictionary*. △

Required Arguments

PRINT
is a reserved fileref that you must use when you direct output to ODS.

Requirement: You must use PRINT in a FILE statement that uses the ODS option.

Featured in: "Example 1: Creating a Report with the DATA Step and the Default Table Definition" in *SAS Output Delivery System: User's Guide*

ODS<=(*ODS-suboptions*)>
Defines the structure of the data component and binds the data component to a table definition. The result is an ODS output object. ODS sends this object to all open ODS destinations.

See Also: For information about the ODS suboptions, see "ODS Suboptions" on page 69.

Featured in: All examples

Options

N=*number*
specifies the number of lines that are available to the output pointer in the current iteration of the DATA step.

overflow-control
determines the PUT statement behavior when the output pointer attempts to move past the last ODS column in the buffer.

overflow-control is one of the following:

DROPOVER
discards items when a PUT statement attempts to write beyond the last ODS column in the buffer. A message in the log at the end of the DATA step informs you if data were not written to the buffer.

FLOWOVER
moves the output pointer to a new line if a PUT statement attempts to write an item beyond the last ODS column in the buffer. The PUT statement writes the next item in the first ODS column of the new line.

STOPOVER
stops processing the DATA step immediately if a PUT statement attempts to write beyond the last ODS column in the buffer. SAS discards the data item, writes the portion of the buffer that was built before the error occurred, and issues an error message.

Default: FLOWOVER

Without ODS Suboptions

If you do not specify any ODS suboptions, then the DATA step uses a default table definition (BASE.DATASTEP.TABLE) that is stored in the SASHELP.TMPLMST template store. This definition defines two generic columns: one for character variables and one for numeric variables. ODS associates each variable in the DATA step with one of these columns and displays the variables in the order in which they are defined in the DATA step.

If there are no suboptions, the default table definition uses the variable's label as its column header. If no label exists, then the definition uses the variable's name as the column header.

ODS Suboptions

Task	Suboption
Specify one or more columns for the data component	COLUMNS= or VARIABLES=
Specify default values for column attributes that exist in the table definition, but that get their values from the data component	DYNAMIC=
Specify whether all column definitions in the table definition can be used by more than one variable	GENERIC=
Specify a column header to use for any column that does not have a column header specified in the COLUMNS= or VARIABLES= suboption	LABEL=
Specify a name for the output object that the DATA step produces	OBJECT=
Specify a label for the output object that the DATA step produces	OBJECTLABEL=
Specify the table definition to use with the data component to produce the output object	TEMPLATE=

COLUMNS=(*column-specification(s)*)
specifies one or more columns for the data component and determines their order in the data component.

Restriction: You can use only one COLUMNS= suboption in a FILE PRINT ODS statement.

Restriction: You can use either the COLUMNS= suboption or the VARIABLES= suboption, but not both, in a single FILE PRINT ODS statement.

Requirement: You must enclose *column-specification(s)* in parentheses.

Tip: The order of the columns in the output object is determined by their order in the table definition, not by their order in the data component.

Tip: You can override the default order by using the ORDER_DATA= table attribute in the PROC TEMPLATE step that creates the definition. The default DATA step table definition uses this attribute. For more information see the discussion of ORDER_DATA= on page 419 table attribute.

Tip: If you do not specify COLUMNS= or VARIABLES=, then the order of columns in the data component matches the order of the corresponding variables in the program data vector.

Each *column-specification* associates a DATA step variable with a column that is defined in the table definition. *column-specification* has this general form:

(*column-name-1*<=*variable-name-1*<(*attribute-suboptions*)>> <. . .
column-name-n<=*variable-name-n*<(*attribute-suboptions*)>>>)

column-name
is the name of a column. This name must match the name that is defined in the table definition that you use.

Restriction: *column-name* must conform to the rules for SAS variable names. For information see the *SAS Language Reference: Dictionary*.

Requirement: You must enclose *column-name* in parentheses.

Tip: You can use list notation (for example, `score1-score5`) to specify multiple column names.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

variable-name
specifies a variable in the DATA step to place in the specified column.

Default: If you omit *variable-name*, then ODS looks for a DATA step variable named *column-name* to place in the specified column. If no such variable exists, then ODS returns an error.

Tip: You can use list notation (for example, `score1-score5`) to specify a range of variable names.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

(*attribute-suboptions*)
assigns a characteristic, such as a label or a format, to a particular column in the data component. These individual specifications override any attributes that is set by the DATA step.

The following table lists the attribute suboptions that are available for the COLUMNS= suboption. For a complete description, see “Attribute Suboptions” on page 75.

Task	Suboption
Specify a value for a column attribute that exists in the table definition, but that gets its value from the data component	DYNAMIC=
Specify a format for the current column	FORMAT=
Specify whether the DATA step uses this column definition for multiple variables	GENERIC=
Specify a label for a particular column	LABEL=

Requirement: You must enclose *attribute-suboptions* in parentheses.

DYNAMIC=(*dynamic-specification(s)*)
specifies default values for dynamic attribute values.

A dynamic attribute value is defined in the table definition. Its name serves as a placeholder for the value that is supplied to the data component with the DYNAMIC= suboption. When ODS creates the output object from the table definition and the data component, it substitutes the appropriate value from the data component for the value’s name in the table definition.

Each *dynamic-specification* has the following form:

dynamic-value-name<=*variable-name* | *constant*>

dynamic-value-name
is the name that the table definition gives to a dynamic attribute value.

variable-name
specifies a variable whose value is assigned to *dynamic-value-name* and passed to ODS to substitute for the placeholder in the table definition when it creates the output object.

constant
specifies a constant to assign to *dynamic-value-name* and to pass to ODS to substitute for the placeholder in the table definition when it creates the output object.

Default: By default, the DYNAMIC= suboption applies to all columns in the data component.

Interaction: Columns that do not contain their own DYNAMIC= suboption specifications use these *dynamic-specifications*.

Tip: You can override the default specification for an individual column by specifying the DYNAMIC= suboption as an attribute for that column in the COLUMNS= or the VARIABLES= suboption.

GENERIC=ON | OFF

indicates whether the DATA step uses all column definitions for multiple variables.

ON

indicates whether the DATA step uses all column definitions for multiple variables.

OFF

indicates whether the DATA step uses no column definitions for multiple variables.

Default: OFF

Default: By default, the GENERIC= suboption applies to all columns in the data component.

Restriction: ODS does not recognize the column names as a match unless you specify the (COLUMNS=(GENERIC=ON)) suboption.

Interaction: If you do not specify a table definition, then the GENERIC= suboption is set to ON.

Tip: You can override the default specification for an individual column by specifying the GENERIC= suboption as an attribute for that column in the COLUMNS= or the VARIABLES= suboption.

LABEL='*column-label*'

specifies a label for any column that does not have a label specified in the COLUMNS= or VARIABLES= suboption.

Default: If you use the LABEL= suboption, then ODS uses the first of these labels that it finds:

- a label that is specified with HEADER= attribute for a particular column in the table definition (see HEADER= on page 382 column attribute).
- a label that is specified for a particular column with LABEL= suboption in the COLUMNS= or VARIABLES= suboption
- a label that is specified with LABEL= suboption in the ODS= option
- a label that is assigned with the LABEL statement in the DATA step.

Tip: If you omit the LABEL= suboption, then the contents of the table definition determines whether the column header contains the variable name or is blank.

Featured in: "Example 3: Assigning Attributes to Columns in ODS Output" in *SAS Output Delivery System: User's Guide*

OBJECT= *object-name*

specifies a name for the output object.

The Results window and the HTML contents file both contain a description of, and a link to, each output object. The description contains the first of the following items that ODS finds:

- the object's label
- the current title if it is not the default title, "The SAS System"
- the object's name
- the string `FilePrint#`, where # increases by 1 for each DATA step that you run in the current SAS process without specifying an object name or an object label.

Restriction: *object-name* must conform to the rules for SAS variable names. For information about these rules, see Rules for Words and Names in the SAS Language in *SAS Language Reference: Concepts*.

OBJECTLABEL='*object-label*'

specifies a label for the output object.

The Results window and the HTML contents file both contain a description of, and a link to, each output object. The description contains the first of the following items that ODS finds:

- the object's label
- the current title if it is not the default title, "The SAS System"
- the object's name (see OBJECT= on page 72)
- the string `FilePrint#`, where # increases by 1 for each DATA step that you run in the current SAS process without specifying an object name or an object label.

Requirement: You must enclose *object-label* in quotation marks.

Featured in: "Example 3: Assigning Attributes to Columns in ODS Output" in *SAS Output Delivery System: User's Guide*

TEMPLATE= *'table-definition-name'*

specifies the table definition to use with the data component to produce the output object.

table-definition-name

is the path to the table definition. SAS stores a table definition as an item in an item store.

Default: If you do not specify the TEMPLATE= option, ODS uses BASE.DATASTEP.TABLE, the default table definition.

Default: If you do specify the TEMPLATE= suboption, ODS first looks for *table-definition-name* in SASUSER.TEMPLAT, and then it looks in SASHELP.TMPLMST.

Requirement: You must enclose *table-definition-name* in quotation marks.

Interaction: When you use the default table definition, the GENERIC= suboption is set to ON for all columns in the data component. For more information see GENERIC= on page 72.

Tip: When you use the BASE.DATASTEP.TABLE template, character values are left-justified. If you want character values to be right-justified, specify the BASE.DATASTEP.TABLENOJUST template.

Tip: You can change the locations that ODS searches for the *table-definition-name* by using the "ODS PATH Statement" on page 149.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

VARIABLES=(*variable-specification(s)*)

specifies one or more columns for the data component of the output object. Each *variable-specification* associates a DATA step variable with a column that is defined in the table definition. The *variable-specification* value has this general form:

(*variable-name-1*<=*column-name-1*<(*attribute-suboptions*)>> <. . .
variable-name-n<=*column-name-n*<(*attribute-suboptions*)>>>)

variable-name

specifies a variable in the DATA step to use as a column in the data component.

Tip: You can use list notation (for example, `score1-score5`) to specify a range of variable names.

Featured in: "Example 2: Producing ODS Output That Contains Selected Variables" and "Example 3: Assigning Attributes to Columns in ODS Output" in *SAS Output Delivery System: User's Guide*

column-name

is the name of a column. This name must match a name that is defined in the table definition.

Default: If you are using the default table definition and you omit *column-name*, then ODS uses the variable label to name the column. If the variable has no label, then ODS uses the variable name.

Default: If you using a table definition other than the default table definition and you omit *column-name*, then ODS looks in the table definition for a column that is named *variable-name* and places the variable in that column. If no such column exists, then ODS returns an error.

Restriction: *column-name* must match a column name in the table definition that you are using. It must also conform to the rules for SAS variable names. For information about these rules, see Rules for Words and Names in the SAS Language in *SAS Language Reference: Concepts*.

Tip: You can use list notation (for example, `score1-score5`) to specify a range of column names.

(*attribute-suboptions*)
assigns a characteristic, such as a label or a format, to a particular column in the data component. These individual specifications override any attributes that are set in the DATA step for the entire data component.

The following table lists the attribute suboptions available for the VARIABLES= suboption. For a complete description, see "Attribute Suboptions" on page 75.

Task	Suboption
Specify a value for a column attribute that exists in the table definition, but that gets its value from the data component	DYNAMIC=
Specify a format for the current column	FORMAT=
Specify whether the DATA step uses this column definition for multiple variables	GENERIC=
Specify a label for a particular column	LABEL=

Default: If you specify the VARIABLES= suboption, then the order of the columns in the output object is determined by their order in the table definition, not by their order in the data component. If you do not specify COLUMNS= or VARIABLES= suboptions, then the order of columns in the data component matches the order of the corresponding variables in the program data vector.

Restriction: You can use only one VARIABLES= suboption in a FILE PRINT ODS statement.

Restriction: You can use either the COLUMNS= suboption or the VARIABLES= suboption to associate variables with columns. However, you cannot use both suboptions in the same FILE PRINT ODS statement.

Tip: You can override the default order by using the ORDER_DATA table attribute in the PROC TEMPLATE step that creates the definition. The default DATA step table definition uses this attribute. For more information see the ORDER_DATA= on page 419 table attribute.

Tip: The VARIABLES= suboption is primarily for use with the default DATA step table definition. When you are using the default definition, the DATA step can map variables to the appropriate column in the definition so you do not need to specify a column name.

Featured in: "Example 2: Producing ODS Output That Contains Selected Variables" and "Example 3: Assigning Attributes to Columns in ODS Output" in *SAS Output Delivery System: User's Guide*.

Attribute Suboptions

DYNAMIC=*dynamic-specification(s)*
specifies a value for a column attribute that exists in the table definition, but that get its value from the data component.

Main discussion: DYNAMIC= on page 71

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

FORMAT=*format-name*
specifies a format for the current column.

Default: ODS uses the first of these formats for the variable that it finds:

- □ for nongeneric columns, a format that is specified in the column definition
- □ a format that is specified in the FORMAT= column attribute
- □ a format that is specified in a FORMAT statement
- □ the default format ($*w*. for character variables; BEST12. for numeric variables).

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

Note: Formats for generic columns that are specified in the table definition are ignored by the DATA step interface to ODS. △

GENERIC=ON|OFF
specifies whether the DATA step uses this column definition for multiple variables.

Default: OFF

Main discussion: GENERIC= on page 72

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

LABEL='*column-label*'
specifies a label for the specified column.

Main discussion: LABEL= on page 72

Featured in: "Example 3: Assigning Attributes to Columns in ODS" in *SAS Output Delivery System: User's Guide*

Details

The following restrictions apply to the FILE statement when you use it with ODS:

- □ These arguments affect only listing output:
  - □ FOOTNOTES and NOFOOTNOTES
  - □ LINESIZE
  - □ PAGESIZE
  - □ TITLE and NOTITLES
- □ Do not use these arguments:
  - □ DELIMITER=

- □ DSD
- □ _FILE_=
- □ FILEVAR=
- □ HEADER=
- □ PAD

See Also

Statement:

"PUT Statement for ODS" on page 80

"Output Delivery System and the DATA Step" in *SAS Output Delivery System: User's Guide*

"Examples" in *SAS Output Delivery System: User's Guide*

LIBNAME Statement, SASEDOC

Uses the SASEDOC engine to associate a SAS libref (library reference) with one or more ODS output objects that are stored in an ODS document

Valid: Anywhere

Category: ODS: Output Control

Restriction: The LIBNAME statement used with the SASEDOC engine provides read access to an output object. You cannot write an output object to a library with the SASEDOC engine. However, you can delete or rename a data set.

Syntax

LIBNAME *libref* **SASEDOC** '*path*' <sasedoc-engine-option> <*options*>;

Arguments

libref
is a shortcut name or a "nickname" for the aggregate storage location where your SAS files are stored. It is any SAS name that you choose for assigning a new libref. When you are disassociating a libref from a SAS data library, or when you are listing attributes, specify a libref that was previously assigned or else use the CLEAR argument.

Tip: The association between a libref and a SAS data library lasts only for the duration of the SAS session or until you change it or discontinue it with another LIBNAME statement for the same libref.

SASEDOC
is the name of the engine that associates a SAS libref (library reference) with one or more ODS output objects that are stored in an ODS document.

path
is the fully specified location of an ODS document directory.

SASEDOC Engine Option

DOC_SEQNO=*sequence-number*
: permits you to specify the sequence number of the output object to be accessed. This is necessary when multiple output objects that are in the same directory have the same name. By default, the SASEDOC libname engine can access only the most recently created output object, which might not be the one that you want to access. Specify DOC_SEQNO to override the default.

sequence-number
: is a number which, when combined with a path name, uniquely identifies the entry in the director.

See also: the DOCUMENT procedure in *SAS Output Delivery System: User's Guide*

Additional LIBNAME Statement Arguments and Options

For additional arguments and options that are valid for the LIBNAME statement, see the LIBNAME statement in *SAS Language Reference: Dictionary*.

Details

Using the LIBNAME Statement The SASEDOC libname engine permits you to access output objects that are stored in an ODS document. A data set that is accessed by using the SASEDOC libname engine might differ structurally from one created by replaying the ODS document output object to the ODS OUTPUT destination. This is because the ODS OUTPUT destination recognizes the output object's template, but the SASEDOC LIBNAME engine does not.

Examples

Example 1: Assigning a LIBNAME to an ODS DOCUMENT

LIBNAME statement
- Option:
  - DOC_SEQNO=

ODS DOCUMENT statement
- Option:
  - NAME=

Other SAS features:
- PROC DATASETS
- PROC GLM
- PROC PRINT

Program Description This example assigns a libname to an ODS document directory that contains four output objects created by PROC GLM. The four output objects are tables:

Overall ANOVA
Fit statistics
Type I model ANOVA
Type III model ANOVA

Program

Create the ODS document *sasuser.odsglm* and open the DOCUMENT destination. The ODS DOCUMENT statement opens the document destination. The NAME= option assigns the name **sasuser.odsglm** to the ODS document that will contain the output from the PROC GLM program. The access-option WRITE provides write access to the document. Note that **odsglm** will be created in the SASUSER library.

```
ods document name=sasuser.odsglm(write);
```

The **plant_stats** data set contains the statistical information that PROC GLM uses to create the output objects.

```
data plant_stats;
  do month = 1 to 12;
    age  = 2 + 0.3*rannor(345467);
    age2 = 3 + 0.3*rannor(345467);
    age3 = 4 + 0.4*rannor(345467);
    output;
  end;
run;
```

Create the output objects. The GLM procedure creates the output objects. For information about viewing a record of each output object that is created, see the ODS TRACE statement in **SAS Output Delivery System: User's Guide**.

```
proc glm;
  class month;
  model age age2 age3=month / nouni;
  manova h=month /printe;
run;
```

The **plants** data set contains the statistical information that PROC GLM uses to create the output objects.

```
data plants;
   input type $ @;
   do block=1 to 3;
      input stemleng @;
      output;
   end;
   datalines;
   clarion  32.7 32.3 31.5
   clinton  32.1 29.7 29.1
   knox     35.7 35.9 33.1
   o'neill  36.0 34.2 31.2
   compost  31.8 28.0 29.2
   wabash   38.2 37.8 31.9
```

```
   webster  32.5 31.1 29.7
   ;
run;
```

Create the output objects. The GLM procedure creates the output objects. For information about viewing a record of each output object that is created, see the ODS TRACE statement in **SAS Output Delivery System: User's Guide**.

```
proc glm order=data;
   class type block;
   model stemleng=type block;
   means type;
   contrast 'compost vs others'  type -1 -1 -1 -1  6 -1 -1;
   contrast 'river soils vs.non' type -1 -1 -1 -1  0  5 -1,
                                 type -1  4 -1 -1  0  0 -1;
   contrast 'glacial vs drift'   type -1  0  1  1  0  0 -1;
   contrast 'clarion vs webster' type -1  0  0  0  0  0  1;
   contrast 'knox vs oneill'     type  0  0  1 -1  0  0  0;
quit;
```

Close the DOCUMENT destination. If you do not close the DOCUMENT destination, you will be unable to see DOCUMENT procedure output.

```
ods document close;
```

Associate the libref *mylib* with the directory *stemleng*. The LIBNAME statement uses the SASEDOC engine to associate the SAS libref **mylib** with the directory **stemleng** that is stored in the ODS document **sasuser.odsglm**. Notice that the path includes **anova#1** and not just **anova**. This is because there are two **anova** directories, and this code is specifying the first directory. If the sequence number was omitted, then ODS would associate the libref with the second directory.

```
libname mylib sasedoc "\sasuser.odsglm\glm\anova#1\stemleng";
```

The LIBRARY= option specifies **mylib** as the procedure input library. The QUIT statement stops the DATASETS procedure.

```
proc datasets lib=mylib;
run;
quit;
```

Print the data sets. Since two output objects have the same name (ModelANOVA), the SASEDOC libname engine recognizes only the second table, because it was created more recently than the first table. The DOC_SEQNO= data set option specifies a sequence number of 1 in order to access the first table .

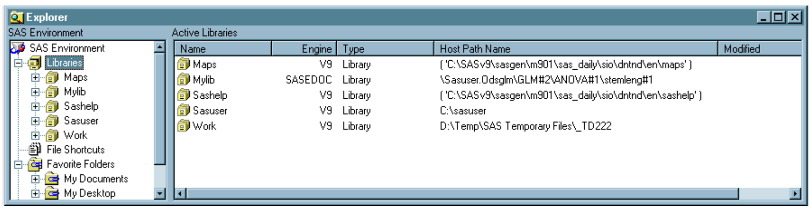
```
proc print data=mylib.modelanova;
run;
```

```
proc print data=mylib.modelanova(doc_seqno=1);
run;
```

Output

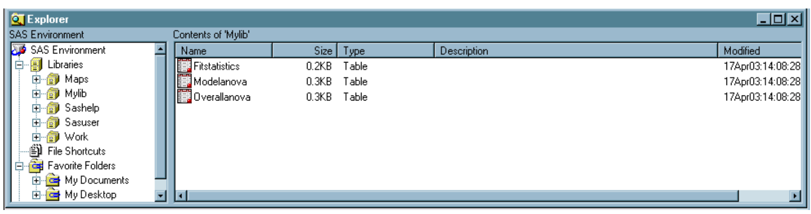
Display 5.1 Explorer Window

The following display shows the Explorer window that contains the SAS library **`Mylib`** which is associated with the directory **`stemleng`**. The **`stemleng`** directory is stored in the ODS document **`sasuser.odsglm`**.



Display 5.2 The Contents of Mylib

The following display shows the Explorer window that contains the contents of the SAS library **`Mylib`**. The three output objects are actually stored in an ODS document.



See Also

Procedures:

DOCUMENT procedure in *SAS Output Delivery System: User's Guide*

Statements:

ODS DOCUMENT statement in *SAS Output Delivery System: User's Guide*

ODS TRACE statement in *SAS Output Delivery System: User's Guide*

PUT Statement for ODS

Writes data values to a special buffer from which they can be written to the data component and then formatted by ODS

Valid: in a DATA step

Category: File-handling

Type: Executable

Requirement: If you use the _ODS_ option in the PUT statement, then you must use the FILE PRINT ODS statement.

Syntax

PUT <*specification*><_ODS_><@|@@>;

Note: This syntax shows only the ODS form of the PUT statement when you are binding to a template. For the complete syntax, see the PUT statement in *SAS Language Reference: Dictionary*. △

Options

specification

specifies one or more variables to write and where to write them. Specification has the following form:

<*ods-pointer-control-1*> *variable-1* <*...*<*ods-pointer-control-n*>*variable-n*>

ods-pointer-control

moves the pointer in the buffer to a specified line or column.

See also: "When the Pointer Moves Past the End of a Line" on page 83

variable

identifies the variable to write.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

ODS

specifies that the PUT statement writes values to the data component for each of the variables that were defined as columns with the FILE PRINT ODS COLUMNS= statement.

Default: The order of these columns is determined by the order that is specified by the COLUMNS= suboption in the FILE PRINT ODS statement. If you omit the COLUMNS= suboption, then the order of the variables in the program data vector determines their order in the output object.

Requirement: If you specify the _ODS_ option, then you must use the FILE PRINT ODS statement and the FILE PRINT ODS statement must precede the PUT _ODS_ statement. For more information, see ODS<=(ODS-suboptions)> on page 68.

Interaction: You can use _ODS_ in a PUT statement that specifies the placement of individual variables. _ODS_ writes to a particular row and column only if another PUT statement has not already written a variable to that same row and column. The position of _ODS_ in the PUT statement does not affect the outcome in the data component.

Tip: By default, the order of the columns in the data component matches the order of the columns in the buffer. However, if you have specified a table definition, it might override this order. For more information, see the discussion of the ORDER_DATA= on page 419 in the TEMPLATE procedure section.

@ | @@

holds an output line for the execution of the next PUT statement across iterations of the DATA step. The line-hold specifiers are called *trailing* @ and *double trailing* @.

Default: If you do not use @ or @@, then each PUT statement in a DATA step writes a new line to the buffer.

Main discussion: "When the Pointer Moves Past the End of a Line" on page 83

Details

ODS Column Pointer Controls ODS column pointer controls differ slightly from column pointer controls in a PUT statement that does not use ODS. An ODS column refers not to a single character space but to a column that contains an entire variable value. Therefore, an ODS column pointer control moves from one entire value to the next, not from one character space to another. Column 1 contains values for the first variable in the output; column 2 contains values for the second variable, and so on.

ODS column pointer controls have the following general forms:

@*ods-column*

moves the pointer to the specified ODS column. *ods-column* can be a number, a numeric variable, or an expression that identifies the column to write to.

Requirement: If *ods-column* is a number, then it must be a positive integer.

If *ods-column* is a numeric variable or an expression, then SAS treats it as follows:

Variable or expression	SAS response
not an integer	truncates the decimal portion and uses only the integer value
0 or negative	moves the pointer to column 1

Default: If *ods-column* exceeds the number of columns in the data component, then ODS

1. writes the current line
2. moves the pointer to the first ODS column on the next line
3. continues to process the PUT statement.

Tip: You can alter the default behavior with options in the FILE PRINT ODS statement. For more information, see the discussion of overflow control on page 68.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

+*ods-column*

moves the pointer by the specified number of ODS columns. *ods-column* can be a number, a numeric variable, or an expression that specifies the number of columns to move the pointer.

Requirement: If *ods-column* is a number, then it must be an integer.

If *ods-column* is a numeric variable or an expression, then it does not have to be an integer. If it is not an integer, then SAS truncates the decimal portion and uses only the integer value.

ods-column	SAS response
a positive integer	moves the pointer to the right
a negative integer	moves the pointer to the left
0	pointer does not move

Tip: If the current column position becomes less than 1, then the pointer moves to column 1. If the current column position exceeds the number of columns in the data component, then ODS:

1. writes the current line
2. moves the pointer to the first ODS column on the next line
3. continues to process the PUT statement.

See also: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

@ '*column-name*'

moves the pointer to the ODS column identified by '*column-name*'. The column name is a data component variable name.

Requirement: *column-name* must be enclosed in quotation marks.

ODS Line Pointer Controls Line pointer controls in a DATA step that uses ODS are the same as line pointer controls in a DATA step that does not use ODS. However, you can use only those listed below with ODS. Line pointer controls have the following general forms:

#*line*

moves the pointer to the specified line. *line* can be a number, a numeric variable, or an expression that identifies the line that specifies where to write.

Requirement: If *line* is a number, then it must be an integer. If *line* is a numeric variable or an expression, it does not have to be an integer. If it is not an integer, then SAS truncates the decimal portion and uses only the integer value.

/

moves the pointer to the first column of the next line.

Featured in: "Example 4: Creating and Using a User-Defined Table Definition Template" in *SAS Output Delivery System: User's Guide*

Note: If you use a line pointer control to skip lines in ODS output, then SAS sets to a missing value all columns that are not referenced on the current line or skipped lines to a missing value. Columns that contain numeric values will display a period for the missing value. If you prefer not to include these periods in your ODS output, you can display missing numeric values as a blank by using the MISSING statement or the MISSING= system option. For more information about this statement or option, see *SAS Language Reference: Dictionary*. △

When the Pointer Moves Past the End of a Line In a DATA step that uses ODS, the number of columns in the buffer and in the data component are determined in one of three ways:

- By default, the number of variables in the program data vector determines the number of ODS columns.
- You can override the default by defining ODS columns with the COLUMNS= suboption in the FILE PRINT ODS statement.
- If you associate a template with the data component, then the specifications in the template take precedence and might change the number of columns that actually appear in the output object.

When using pointer controls and the @ or @@, you might inadvertently position the pointer beyond the last ODS column. You can control how SAS handles this situation with options in the FILE PRINT ODS statement. For more information see the discussion of overflow control on page 68.

See Also

"FILE Statement for ODS" on page 68

"Output Delivery System and the DATA Step" in *SAS Output Delivery System: User's Guide*

"Examples" in *SAS Output Delivery System: User's Guide*

ODS _ALL_ CLOSE Statement

Closes all open ODS output destinations

Valid: anywhere

Category: ODS: Output Control

Syntax

ODS _ALL_ CLOSE;

Details

The ODS _ALL_ CLOSE statement closes all open ODS output destinations.

Note: Be sure to open one or more ODS destinations before you execute your next program so that you can view or print your output within the same SAS session. △

ODS CHTML Statement

Opens, manages, or closes the CHTML destination, which produces a compact, minimal HTML that does not use style information

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS CHTML<(<ID=>*identifier*)> <*action*>;

ODS CHTML <(<ID=>*identifier*)> <*file-specification(s)*> <*option(s)*>;

Options

The ODS CHTML statement is part of the MARKUP statement family. For a complete list of options, see the "ODS MARKUP Statement" on page 109.

Details

The ODS CHTML statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS CSVALL Statement

Opens, manages, or closes the CSVALL destination, which produces output containing columns of data values that are separated by commas, and produces tabular output with titles, notes, and bylines

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS CSVALL < (<ID=>*identifier*)> <*action*>;

ODS CSVALL <(<ID=>*identifier*)> <*file-specification(s)*><*option(s)*>;

Options

For a complete list of options, see the "ODS MARKUP Statement" on page 109.

Details

The ODS CSVALL statement is part of the ODS markup family of statements. ODS statements in the markup family open the markup destination and produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS DECIMAL_ALIGN Statement

Controls the justification of numeric columns when no justification is specified

Valid: anywhere

Category: ODS: SAS Formatted

See: "How Are Values in Table Columns Justified?" on page 512

Interaction: The ODS DECIMAL_ALIGN statement only effects the RTF destination and the printer family of destinations.

Default: ODS NO_DECIMAL_ALIGN

Syntax

ODS DECIMAL_ALIGN | NO_DECIMAL_ALIGN;

ODS DECIMAL_ALIGN
aligns values by the decimal point in numeric columns when no justification is specified.

Alias: ODS DECIMAL_ALIGN=YES

ODS NO_DECIMAL_ALIGN
right justifies numeric columns when no justification is specified.

Alias: ODS DECIMAL_ALIGN=NO

Details

The ODS DECIMAL_ALIGN statement has no effect on any column that is assigned a justification from a procedure or column definition.

ODS DOCBOOK Statement

Opens, manages, or closes the DOCBOOK destination, which produces XML output that conforms to the DocBook DTD by OASIS

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS DOCBOOK < (<ID=>*identifier*)> <*action*>;

ODS DOCBOOK <(<ID=>*identifier*)> <*file-specification(s)*> <*option(s)*>;

Options

For a complete list of options, see the "ODS MARKUP Statement" on page 109.

Details

The ODS DOCBOOK statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. SAS supplies many markup languages for you to use ranging from DOCBOOK to TROFF. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS DOCUMENT Statement

Opens, manages, or closes the DOCUMENT destination, which produces a hierarchy of output objects that enables you to produce multiple ODS output formats without rerunning a PROC or DATA step

Valid: anywhere

Category: ODS: Output Control

Syntax

ODS DOCUMENT *action*;

ODS DOCUMENT <**NAME=**<*libname.*>*memname*
<(*access–option*)>><**DIR**=(<PATH=*path*<(*access-option*)> <LABEL="*label*">>)>
<**CATALOG**=*permanent-catalog* | _NULL_>;

Actions

An *action* does one of the following:

- closes the destination.
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

An *action* can be any one of the following:

CLOSE
closes the destination and any files that are associated with it.

Tip: When an ODS destination is closed, ODS does not send output to that destination. Closing an unneeded destination frees some system resources.

EXCLUDE *exclusion(s)* | ALL | NONE
excludes one or more output objects from the DOCUMENT destination.

Default: NONE

Restriction: The DOCUMENT destination must be open for this action to take effect.

Main discussion: "ODS EXCLUDE Statement" on page 90

SELECT *selection(s)* | ALL | NONE
selects one or more output objects for the DOCUMENT destination.

Default: ALL

Restriction: The DOCUMENT destination must be open for this action to take effect.

Main discussion: "ODS SELECT Statement" on page 188

SHOW
writes the current selection or exclusion list for the destination to the SAS log.

Restriction: The destination must be open for this action to take effect.

Tip: If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

See also: "ODS SHOW Statement" on page 197

Options

CATALOG=*permanent-catalog* | _NULL_

CAUTION:

If you do not specify a value (other than _NULL_) for this option, then you can replay temporary GRSEGs only during the session in which they are created, not in subsequent sessions. △

permanent-catalog

copies any temporary GRSEG to the specified permanent catalog and keeps a reference to the permanent GRSEG in the document. This value persists until the ODS DOCUMENT statement is closed, or until you delete it by specifying CATALOG=_NULL_.

The *permanent catalog* has the following form:

<*libname.*><*memname*>;

NULL

deletes the catalog name that was previously specified for the CATALOG= option. Thereafter, temporary GRSEGs are not copied into the permanent catalog, and thus are unavailable in subsequent sessions.

Alias: CAT=

Default: By default, no value is assigned to CATALOG=, which means that temporary GRSEGs are not copied to a permanent catalog.

DIR=

(<PATH=*path* <(*access-option*)>> <LABEL='label'>);

specifies the directory path and/or label for ODS output.

LABEL=*label*

assigns a label to a path.

Requirement: The label that you assign must be enclosed in quotation marks.

Interaction: If LABEL= is used with the PATH= option, then the label applies to the path. If LABEL= is used without the PATH= option, then the label applies to the entire document.

PATH=

path <(*access-option*)>

is specified as a sequence of entries that are delimited by backslashes.

path

can have the form:

path<*#sequence–number*>

where

path

is the name of the path.

#sequence–number

is a number which, when combined with a path name, uniquely identifies the entry in the directory that contains it.

Default: The default path is “\” (root).

Tip: You can specify a directory that contains entries that do not exist in the document.

access-option
specifies the access mode for the ODS document.

WRITE
opens a document and provides write access as well as read access.

Caution: If the ODS document already exists, then it will be overwritten.

Interaction: If a label has been specified with the LABEL= option, then it will override any existing label assigned to the document.

Tip: If the ODS document does not exist, then it will be created.

UPDATE
opens an ODS document and appends new content to the document. UPDATE provides update access as well as read access.

Caution: If the document already exists, then its contents will not be changed.

Interaction: If a label has been specified with the LABEL= option, then it will be assigned to the document.

Tip: If the ODS document does not exist, then the document will be created.

Default: UPDATE

Note: Procedure output or data queries will be added at the end of the directory. △

NAME=

<*libname.*>*memname*<(access-option)>

libname
specifies the SAS library where the document is stored.

Default: If no library name is specified, the WORK library is used.

memname
specifies the document name.

Default: If no NAME= is specified, the specified options apply to the currently open document.

Default: If you do not specify an *access-option* with NAME=, then your directories will open in UPDATE mode.

access-option
specifies the access mode for the ODS document.

WRITE
opens a document and provides write access as well as read access.

Caution: If the ODS document already exists, then it will be overwritten.

Interaction: If a label has been specified with the LABEL= option, then it will override any existing label assigned to the document.

Tip: If the ODS document does not exist, then it will be created.

UPDATE
opens an ODS document and appends new content to the document. UPDATE provides update access as well as read access.

Caution: If the document already exists, then its contents will not be changed.

Interaction: If a label has been specified with the LABEL= option, then it will be assigned to the document.

Tip: If the ODS document does not exist, then the document will be created.

Default: UPDATE

Interaction: If you use the NAME= option in an ODS DOCUMENT statement without closing any instances of the DOCUMENT destination that are already open, the option will force ODS to close the destination and all files associated with it, and to open a new instance of the destination.

ODS EXCLUDE Statement

Specifies output objects to exclude from ODS destinations

Valid: anywhere

Category: ODS: Output Control

Syntax

ODS <*ODS-destination*> **EXCLUDE** *exclusion(s)* | ALL | NONE;

Arguments

exclusion(s)
specifies one or more output objects to add to an exclusion list.

By default, ODS automatically modifies exclusion lists at the end of a DATA step that uses ODS, or at the end of a procedure step. For information about modifying these lists, see "Selection and Exclusion Lists" on page 34.

For information ending a procedure or DATA step, see the section on DATA Step Processing in *SAS Language Reference: Concepts*.

Each exclusion has the following form:

output-object <(PERSIST)>

output-object
specifies one or more output objects to exclude. To specify an output object, you need to know which output objects your SAS program produces. The ODS TRACE statement writes to the SAS log a trace record that includes the path, the label, and other information about each output object that is produced. You can specify an output object as

- a full path. For example,

```
Univariate.City_Pop_90.TestsForLocation
```

  is the full path of the output object.

- a partial path. A partial path consists of any part of the full path that begins immediately after a period (.) and continues to the end of the full path. For example, if the full path is

```
Univariate.City_Pop_90.TestsForLocation
```

  then the partial paths are:

```
City_Pop_90.TestsForLocation
TestsForLocation
```

- a label that is enclosed by quotation marks.

  For example,

  ```
  "The UNIVARIATE Procedure"
  ```

- a label path. For example, the label path for the output object is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  Note: The trace record shows the label path only if you specify the LABEL option in the ODS TRACE statement. △

- a partial label path. A partial label path consists of any part of the label that begins immediately after a period (.) and continues to the end of the label. For example, if the label path is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  then the partial label paths are:

  ```
  "CityPop_90"."Tests For Location"
  "Tests For Location"
  ```

- a mixture of labels and paths.
- any of the partial path specifications, followed by a pound sign (#) and a number. For example, TestsForLocation#3 refers to the third output object that is named TestsForLocation.

See also: “ODS TRACE Statement” on page 197.

(PERSIST)

keeps the *output-object* that precedes the PERSIST option in the exclusion list, even if the DATA or procedure step ends, until you explicitly modify the list with

- any ODS SELECT statement
- ODS EXCLUDE NONE
- ODS EXCLUDE ALL
- an ODS EXCLUDE statement that applies to the same output object but does not specify PERSIST.

Requirement: You must enclose PERSIST in parentheses.

ALL

specifies that ODS does not send any output objects to the open destination.

Alias: ODS EXCLUDE DEFAULT

Interaction: If you specify ALL without specifying a destination, ODS sets the overall list to EXCLUDE ALL and sets all other lists to their defaults.

Tip: Using ODS EXCLUDE ALL is different from closing a destination. The destination remains open, but no output objects are sent to it.

Tip: To temporarily suspend a destination, use ODS SELECT NONE. Use ODS SELECT ALL when you want to resume sending output to the suspended destination.

NONE

specifies that ODS send all of the output objects to the open destination.

Interaction: If you specify the NONE argument without specifying a destination, ODS sets the overall list to EXCLUDE NONE and sets all other lists to their defaults.

Tip: ODS EXCLUDE NONE has the same effect as ODS SELECT ALL.

Tip: To temporarily suspend a destination, use ODS SELECT NONE. Use ODS SELECT ALL when you want to resume sending output to the suspended destination.

Options

ODS-destination

specifies which ODS destination's exclusion list to write to, where *ODS-destination* can be any valid ODS destination. For a discussion of ODS destinations, see "What Are the ODS Destinations?" on page 25.

Default: If you omit *ODS-destination*, ODS writes to the overall exclusion list.

Tip: To set the exclusion list for the Output destination to something other than the default, use the "ODS OUTPUT Statement" on page 135.

Details

Although you can maintain a selection list for one destination and an exclusion list for another, the results are less complicated if you maintain the same types of lists for all the destinations that you route output to.

See Also

Statements:

"ODS SELECT Statement" on page 188

"ODS SHOW Statement" on page 197

"ODS TRACE Statement" on page 197

ODS GRAPHICS Statement (Experimental)

Enables ODS automatic graphic capabilities

CAUTION:

The ODS GRAPHICS statement is an experimental feature that is available in SAS 9.1. Do not use the ODS GRAPHICS statement in production jobs. △

Valid: anywhere

Category: ODS: Output Control

Default: OFF

Restriction: ODS statistical graphics do not create output for the LISTING destination. You must send your output to at least one other ODS destination (such as HTML, RTF, DOCUMENT, Printer family) to obtain output.

Restriction: ODS statistical graphics do not support any SAS/GRAPH global statements (such as GOPTIONS, SYMBOL, PATTERN).

Restriction: ODS statistical graphics do not support the GTITLE or GFOOTNOTE options available with the ODS destinations HTML, RTF, and MARKUP.

Restriction: ODS statistical graphics do not support the ODS USEGOPT statement.

See also: For more information about ODS statistical graphics and the procedures that produce them, see the section about statistical graphics using ODS in *SAS/STAT User's Guide*.

Syntax

ODS GRAPHICS < OFF | ON </ *options*>>;

Arguments

OFF
turns off the automatic ODS graphic generation.

ON
turns on the automatic ODS graphic generation.

Options

ANTIALIAS = OFF | ON
controls the smoothing of the components in a graph. All text displayed on the graph will always be anti-aliased.

OFF
does not smooth jagged edges of components other than text in the graph.

Alias: NOANTIALIAS

ON
smooths jagged edges of all components in the graph.

Alias: ANTIALIAS

Restriction: If the number of observations in the data set exceeds 250, then ANTIALIAS= is turned off, even if you specify the option ANTIALIAS=ON.

IMAGEFMT= *image–file–type* | STATIC | STATICMAP
specifies the image format to display graphics in ODS output. If the image format is not valid for the active output destination, the device is automatically remapped to the default image format.

Note: This feature only effects the ODS statistical graphics features, and has no effect on standard graphics features that already rely on the GOPTIONS values. △

image-file-type
specifies the type of image you want to add to your graph. For a list of image file types and their descriptions, see "Supported Image File Types for Output Destinations" on page 94.

STATIC
dynamically uses the best quality static image format for the active output destination.

STATICMAP
dynamically uses the best quality image map format for the active output destination, and provides a map file for tool tips.

Restriction: If the number of observations in the data set exceeds 500, then the map file is not generated.

Default: STATIC

IMAGENAME= *filename*

specifies the base image filename. By default, the name of the output object will be used. You can determine the name of the output object by using the ODS TRACE statement. For more information, see “ODS TRACE Statement” on page 197.

Restriction: The base image name should not contain extension information. ODS automatically adds the increment value and the appropriate extension (which is specific to the output destination that has been selected).

PERSIST | PERSIST=

determines when ODS clears the data cache that it is created when the ODS graphics feature is enabled.

PERSIST

clears the data cache on every RUN boundary.

PERSIST=PROC | RUN

maintains the data cache across either procedure boundaries or RUN boundaries.

PROC

maintains the data cache across procedure boundaries.

RUN

maintains the data cache across RUN boundaries.

Restriction: This value only yields different results when an interactive PROC is active; otherwise the DEFAULT/RUN settings are equivalent.

Default: PERSIST

RESET

Resets the index counter that is appended to static image files.

Details

Supported Image File Types for Output Destinations The following table lists all of the supported image file types for ODS output destinations.

Output Destination	Supported Image File Types
HTML	GIF (default), JPEG, PNG
LATEX	PS (default), EPSI, GIF, JPEG, PNG
Printer Family	Contained in PostScript file
RTF	Contained in RTF file

Description of Supported Image File Types

Image File Type	Description
EPSI (Microsoft NT Enhanced Metafile)	An extended version of the standard PostScript (PS) format. Files that use this format can be printed on PostScript printers and can also be imported into other applications. Notice that EPSI files can be read, but PS files cannot be read.
GIF (Graphics Interchange Format)	Supports only color-mapped images. GIF is owned by CompuServe, Inc.
JFIF (JPEG File Interchange Format)	Supports JPEG image compression. JFIF software is developed by the Independent JPEG Group.
PNG (Portable Network Graphic)	Supports true color, gray-scale, and 8-bit images.
PS (PostScript Image File Format)	The Image classes use only PostScript image operators. A level II PS printer is required for color images. PostScript was developed by Adobe Systems, Inc.

ODS HTML Statement

Opens, manages, or closes the HTML destination, which produces HTML 4.0 output that contains embedded stylesheets

Valid: anywhere

Category: ODS: Third-Party Formatted

CAUTION:

After SAS 9, the ODS HTML statement produces HTML 4.0 output that differs considerably from the HTML 3.2 output that is produced by previous versions of SAS. If you want HTML 3.2 formatting, use the ODS HTML3 statement or change the setting of the HTML version in the SAS registry. See "Changing Your Default HTML Version Setting" on page 32for more information. △

Restriction: When you open the destination, a stylesheet is written and linked to the body file. Therefore, you cannot make stylesheet changes from within your SAS program. For example, after the destination is open, changing the value of the STYLE= option has no effect. You can make style changes in either of the following ways::

- Close the destination, edit or create a new stylesheet, then submit the program again specifying the new or modified stylesheet.
- Edit the body file, changing the stylesheet url to the desired stylesheet.

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

Syntax

ODS HTML <(<ID=>*identifier*)> <*action*>;

ODS HTML <(<ID=>*identifier*)> <*html-file-specification(s)* ><*option(s)*>;

Options

For a complete list of the options, see the “ODS MARKUP Statement” on page 109.

Details

The ODS HTML statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

Examples

Example 1: Creating a Separate Body File for Each Page of Output

ODS features:
- ODS HTML statement:
  - Action:
    - CLOSE
  - Arguments:
    - CONTENTS=
    - BODY=
    - FRAME=
    - PAGE=
  - Options:
    - BASE=
    - NEWFILE=

Other SAS features:
- #BYVAL parameter in titles
- NOBYLINE|BYLINE system option
- OPTIONS statement
- PROC FORMAT
- PROC SORT
- PROC REPORT

PROC TABULATE
TITLE statement

Program Description The following example creates a separate HTML file for each page of procedure output, as well as a table of contents, a table of pages, and a frame file. The table of contents and table of pages do not appear any different or behave any differently from those that would be created if all the output were in a single file. Because the output is in separate files, you cannot scroll from one page of output to the next. However, you can select individual HTML files to include in a report.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program

Create the input data set. The data set GRAIN_PRODUCTION contains data on the amounts of wheat, rice, and corn that the five leading grain-producing nations produced during 1995 and 1996.

```
data grain_production;
   length Country $ 3 Type $ 5;
   input Year country $ type $ Kilotons;
   datalines;
1995 BRZ  Wheat    1516
1995 BRZ  Rice     11236
1995 BRZ  Corn     36276
1995 CHN  Wheat    102207
1995 CHN  Rice     185226
1995 CHN  Corn     112331
1995 IND  Wheat    63007
1995 IND  Rice     122372
1995 IND  Corn     9800
1995 INS  Wheat    .
1995 INS  Rice     49860
1995 INS  Corn     8223
1995 USA  Wheat    59494
1995 USA  Rice     7888
1995 USA  Corn     187300
1996 BRZ  Wheat    3302
1996 BRZ  Rice     10035
1996 BRZ  Corn     31975
1996 CHN  Wheat    109000
1996 CHN  Rice     190100
1996 CHN  Corn     119350
1996 IND  Wheat    62620
1996 IND  Rice     120012
1996 IND  Corn     8660
1996 INS  Wheat    .
1996 INS  Rice     51165
1996 INS  Corn     8925
1996 USA  Wheat    62099
1996 USA  Rice     7771
```

```
1996 USA  Corn     236064
;
```

Sort the data set. PROC SORT sorts the data, first by values of the variable **Year**, then by values of the variable **Country**, and finally by values of the variable **Type**.

```
proc sort data=grain_production;
   by year country type;
run;
```

Create a user-defined format. PROC FORMAT creates the user-defined format **$CNTRY**.

```
proc format;
   value $cntry 'BRZ'='Brazil'
                'CHN'='China'
                'IND'='India'
                'INS'='Indonesia'
                'USA'='United States';
run;
```

Close the LISTING destination so that no listing output is produced. The LISTING destination is open by default. The ODS LISTING statement closes the LISTING destination to conserve resources.

```
ods listing close;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output.

The FRAME=, CONTENTS=, and PAGE= options create a frame that includes a table of contents and a table of pages that link to the contents of the body file. The body file also appears in the frame. BASE= specifies a string to use as the first part of all links and references to the HTML files. Because no URL is specified for individual files, the final part of the link will match the filename.

CAUTION:
The string that you specify must be a valid path to your HTML files. △

```
ods html body='grain-body.htm'
     contents='grain-contents.htm'
        frame='grain-frame.htm'
         page='grain-page.htm'
         base='http://www.yourcompany.com/local-address/'
```

Specify that SAS create a new body file for each page of output. The NEWFILE=PAGE option opens and creates a new body file for each page of output.

```
     newfile=page;
```

Suppress the default BY line and specify a new value into the BY line. The NOBYLINE option suppresses the default BY line variable. The #BYVAL parameter specification inserts the current value of the BY variable **Year** into the title.

```
options nobyline;
title 'Leading Grain-Producing Countries';
title2 'for #byval(year)';
```

Produce a report. This PROC REPORT step produces a report on grain production. Each BY group produces a page of output, so ODS creates a new body file for each BY group. The NOWINDOWS option specifies that PROC REPORT runs without the REPORT window and sends its output to the open output destination(s).

```
proc report data=grain_production nowindows;
   by year;
   column country type kilotons;
   define country  / group width=14 format=$cntry.;
   define type     / group 'Type of Grain';
   define kilotons / format=comma12.;
   footnote 'Measurements are in metric tons.';
run;
```

Restore the default BY line and clear the second TITLE statement. The BYLINE option restores the default BY line. The TITLE2 statement clears the second TITLE statement.

```
options byline;
title2;
```

Produce a report. The TABLE statement in this PROC TABULATE step has the variable **`Year`** as the page dimension. Therefore, PROC TABULATE explicitly produces one page of output for 1995 and one for 1996. ODS starts a new body file for each page.

```
proc tabulate data=grain_production format=comma12.;
   class year country type;
   var kilotons;
   table year,
         country*type,
         kilotons*sum=' ' / box=_page_ misstext='No data';
   format country $cntry.;
   footnote 'Measurements are in metric tons.';
run;
```

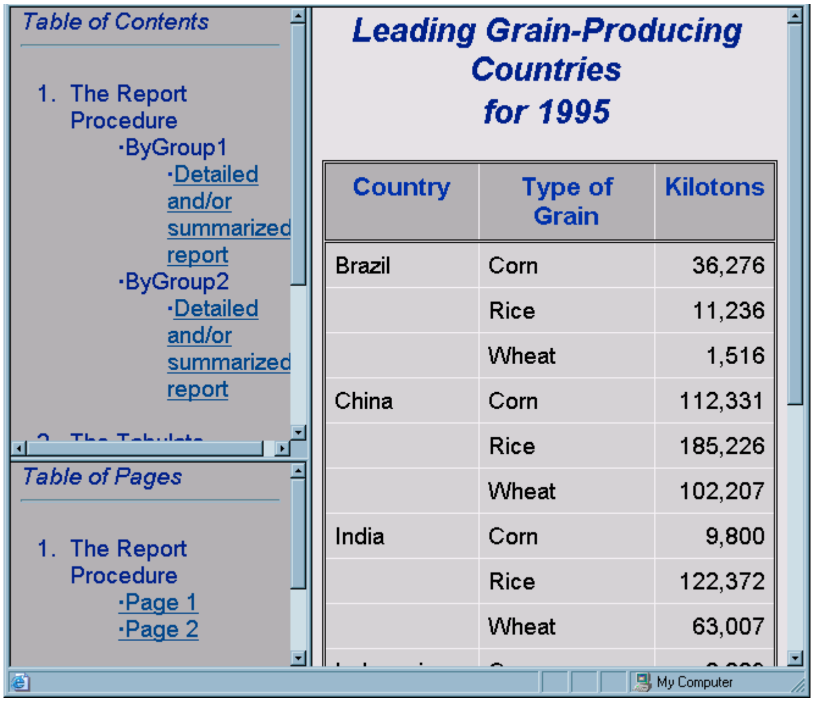
Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all the files that are associated with it. If you do not close the destination, then you will not be able to view the files in a browser window.

```
ods html close;
```

HTML Output

Display 5.3 HTML Frame File

This frame file shows the first body file. Links in the table of contents and the table of pages point to the other body files.



Links That Are Created in the HTML Output These HREF= attributes from the links in the contents file point to the HTML tables that ODS creates from the PROC REPORT and PROC TABULATE steps.

```
HREF='http://www.yourcompany.com/local-address/grain-body.htm#IDX'
HREF='http://www.yourcompany.com/local-address/grain-body1.htm#IDX1'
HREF='http://www.yourcompany.com/local-address/grain-body2.htm#IDX2'
HREF='http://www.yourcompany.com/local-address/grain-body3.htm#IDX3'
```

Notice how these HREF attributes are constructed:

- □ The value of the BASE= option provides the first part of the HREF, which is http://*www.yourcompany.com/local-address/*. This part of the HREF is the same for all the links that ODS creates.
- □ The value of the BODY= option, **grain-body**, provides the basis for the next part of the HREF. However, because the NEWFILE= option creates a new file for each output object, ODS increments this base value each time that it creates a file. The resulting file names become part of the HREF. They are **grain-body.htm**, **grain-body1.htm**, **grain-body2.htm**, and **grain-body3.htm**.
- □ The value of the ANCHOR= option provides the basis for the last part of the HREF, which follows the pound sign (#). Because the ANCHOR= option is not used in this example, ODS uses the default value of IDX. With each use, ODS increments the value of the anchor.

Example 2: Appending to HTML Files

ODS features:

- ODS HTML statement:
  - Argument:
    - BODY= with a fileref
      - NO_BOTTOM_MATTER suboption
      - NO_TOP_MATTER suboption
  - Options:
    - ANCHOR=
    - STYLE=

Other SAS features:

- FILENAME statement
- PROC PRINT
- PROC REPORT
- DATA _NULL_ statement

Data set:
GRAIN_PRODUCTION on page 97

Format:
$CNTRY. on page 98

Program Description The following example creates HTML output from PROC PRINT and PROC REPORT. It also uses the DATA step to write customized HTML code to the file that contains the HTML output. The DATA step executes between procedure steps.

Program

Close the LISTING destination so that no listing output is produced. The ODS LISTING statement closes the LISTING destination to conserve resources. If the destination is left open, then ODS will produce both Listing and HTML output.

```
ods listing close;
```

Assign a fileref to the file GrainReport.html. The FILENAME statement assigns the fileref REPORTS to the file `GrainReport.html` that will contain the HTML output.

```
filename reports 'GrainReport.html';
```

Create HTML output and suppress the writing of the default HTML code that would be written at the end of the file. The ODS HTML statement opens the HTML destination and creates HTML output. The NO_BOTTOM_MATTER option suppresses the writing of the default HTML code that, by default, ODS writes at the end of a file.

```
ods html body=reports (no_bottom_matter)
```

Specify the style definition for formatting the HTML output. The STYLE= option specifies that the style D3D be used.

```
         style=D3D;
```

Create a report that contains only the data from 1996. Select and format the variables that you want to include, specify a title, and specify a footnote. This PROC PRINT step prints the observations in the data set GRAIN_PRODUCTION that have a value of 1996 for the variable **Year**. The VAR statement selects **country**, **type**, and **kilotons** as the variables that you want to be displayed in the output. The TITLE and FOOTNOTE statements specify the title and footnote.

```
proc print data=grain_production;
   var country type kilotons;
   format country $cntry. kilotons comma12.;
   where year=1996;
   title 'Leading Grain-Producing Countries';
   footnote 'Measurements are in metric tons.';
run;
```

Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all the files that are associated with it.

```
ods html close;
```

Assign the fileref REPORTS to the file 'GrainReport.html'. This FILENAME statement assigns a fileref to the file to be updated, **GrainReport.html**. The MOD option opens the file in update mode.

Operating Environment Information: The MOD option might not be valid in all operating environments. See your operating environment documentation for more information. △

```
filename reports 'GrainReport.html' mod;
```

Append text to the HTML file REPORTS. This DATA step writes to the file that is referenced by REPORTS. The PUT statements create an H1 header in the HTML file.

```
data _null_;
   file reports;
   put ''<h1>The preceding output is from PROC PRINT.'';
   put ''I am going to try a variety of procedures.'';
   put ''Let me know which procedure you prefer.'';
   put ''By the way, this report uses the D3D style.</h1>'';
run;
```

Create HTML output. This ODS HTML statement opens the HTML destination and creates HTML output. The NO_TOP_MATTER and the NO_BOTTOM_MATTER suboptions suppress the default HTML code that ODS writes to the top and the bottom of a file.

```
ods html body=reports (no_top_matter no_bottom_matter)
```

Specify the root name for the HTML anchor tags. The ANCHOR= option specifies **report** as the root name for the HTML anchor tags.

Note: When you use ODS to append to an HTML file that ODS created, you must specify a new anchor name each time that you open the file from ODS so that you do not write the same anchors to the file again. (ODS cannot recognize anchors that are already in the file when it opens it, and by default it uses **IDX** as the base for anchor names). △

```
         anchor='report';
```

Create a report that contains only the 1996 data. The PROC REPORT step prints the data set. ODS adds HTML output to the body file. The NOWINDOWS option specifies that PROC REPORT runs without the REPORT window and sends its output to the open output destination(s).

```
proc report data=grain_production nowindows;
   where year=1996;
   column country type kilotons;
   define country / group width=14 format=$cntry.;
   define type / group 'Type of Grain';
   define kilotons / format=comma12.;
run;
```

Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all the files that are associated with it.

```
ods html close;
```

Append text to the HTML file REPORTS. This DATA step writes to the file that is referenced by REPORTS. The PUT statements create an H1 header in the HTML file.

```
data _null_;
   file reports;
   put ''<h1>The preceding output is from PROC REPORT.'';
   put ''It doesn't repeat the name of the country on every line.'';
   put ''This report uses the default style.</h1>'';
run;
```

Create HTML output to write the bottom matter to the file, repress the printing of the top matter, and provide a new root name for the anchor tags. In order to write the bottom matter to the HTML file so that it contains valid HTML code, you must open the HTML destination one more time. NO_TOP_MATTER ensures that the top matter is not placed in the file again. ANCHOR= provides a new root name for the anchors in the bottom matter.

```
ods html body=reports(no_top_matter)anchor='end';
```

Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all the files that are open for that destination.

```
ods html close;
```

HTML Output

Display 5.4 HTML Output with Appended HTML

This output is created by appending HTML output to an existing HTML file.

Leading Grain-Producing Countries

Obs	Country	Type	Kilotons
16	Brazil	Wheat	3,302
17	Brazil	Rice	10,035
18	Brazil	Corn	31,975
19	China	Wheat	109,000
20	China	Rice	190,100
21	China	Corn	119,350
22	India	Wheat	62,620
23	India	Rice	120,012
24	India	Corn	8,660
25	Indonesia	Wheat	.
26	Indonesia	Rice	51,165
27	Indonesia	Corn	8,925
28	United States	Wheat	62,099
29	United States	Rice	7,771
30	United States	Corn	236,064

Measurements are in metric tons.

The preceding output is from PROC PRINT. I am going to try a variety of procedures. Let me know which procedure you prefer. By the way, this report uses the D3D style.

Leading Grain-Producing Countries

Country	Type of Grain	Kilotons
Brazil	Corn	31,975
	Rice	10,035
	Wheat	3,302
China	Corn	119,350
	Rice	190,100
	Wheat	109,000
India	Corn	8,660
	Rice	120,012
	Wheat	62,620
Indonesia	Corn	8,925
	Rice	51,165
	Wheat	.
United States	Corn	236,064
	Rice	7,771
	Wheat	62,099

Measurements are in metric tons.

The preceding output is from PROC REPORT. It doesn't repeat the name of the country on every line. This report uses the default style.

See Also

Statements:

Appendix 2, “ODS and the HTML Destination,” on page 637

“ODS MARKUP Statement” on page 109

ODS HTMLCSS Statement

Opens, manages, or closes the HTMLCSS destination, which produces HTML output with cascading style sheets

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS HTMLCSS< (<ID=>*identifier*)> <*action*>;

ODS HTMLCSS < (<ID=>*identifier*)> <*file-specification(s)*><*option(s)*>;

Options

The ODS HTMLCSS statement is part of the MARKUP statement family. For a complete list of options, see the “ODS MARKUP Statement” on page 109.

Details

The ODS HTMLCSS statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS HTML3 Statement

Opens, manages, or closes the HTML3 destination, which produces HTML 3.2 formatted output

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS HTML3<(<ID=>*identifier*)> <*action*>;

ODS HTML3 <(<ID=>*identifier*)> <*html-file-specification(s)* ><*option(s)*>;

Options

For a complete list of options, see the “ODS MARKUP Statement” on page 109.

Details

The ODS HTML3 statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

By default, the SAS registry is configured to generate HTML 4 output when you specify the ODS HTML statement. To permanently change the default HTML version to 3.2, you can change the setting of the HTML version in the SAS registry. The ODS HTML statement will then produce HTML 3.2 output. For information about how to change your default HTML version, see “Changing Your Default HTML Version Setting” on page 32.

See Also

Statements:
“ODS MARKUP Statement” on page 109
“ODS HTML Statement” on page 95
Appendix 2, “ODS and the HTML Destination,” on page 637
“Changing SAS Registry Settings for ODS” on page 31

ODS IMODE Statement

Opens, manages, or closes the IMODE destination, which produces HTML output as a column of output, separated by lines

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS IMODE < (<ID=>*identifier*)> <*action*>;

ODS IMODE (<ID=>*identifier*) <*file-specification(s)*><*option(s)*>;

Options

For a complete list of options, see the “ODS MARKUP Statement” on page 109.

Details

The ODS IMODE statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX . You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS LISTING Statement

Opens, manages, or closes the LISTING destination

Valid: anywhere

Category: ODS: SAS Formatted

Syntax

ODS LISTING <*action*>;

ODS LISTING <DATAPANEL=*number* | DATA | PAGE > <FILE=*file-specification*>;

Without an Action or Options

If you use the ODS LISTING statement without an action or options, it opens the LISTING destination.

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

An *action* can be one of the following:

CLOSE
closes the LISTING destination and any files that are associated with it.

Tip: When an ODS destination is closed, ODS does not send output to that destination. Closing an unneeded destination frees some system resources.

EXCLUDE *exclusion(s)* | ALL | NONE
excludes one or more output objects from the LISTING destination.

Default: NONE

Restriction: The LISTING destination must be open for this action to take effect.

Main discussion: "ODS EXCLUDE Statement" on page 90

SELECT *selection(s)* | ALL | NONE
selects output objects for the LISTING destination.

Default: ALL

Restriction: The LISTING destination must be open for this action to take effect.

Main discussion: "ODS SELECT Statement" on page 188

SHOW
writes the current selection or exclusion list for the LISTING destination to the SAS log.

Restriction: The LISTING destination must be open for this action to take effect.

Tip: If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

See also: "ODS SHOW Statement" on page 197

Options

DATAPANEL=*number* | DATA | PAGE
suggests how to split a table that is too wide to fit on a single page into sections of columns and rows. Each section of columns and rows is a *data panel*. Each data panel has column headers at the top.

Note: In this context, a page is what the procedure uses as a page in creating the Listing output. The SAS system options LINESIZE= and PAGESIZE= generally determine the page size, although some procedures (PROC REPORT, for example) can temporarily override the values that the system options specify. △

number
writes the specified number of observations in a panel, if possible. More than one panel can occur on every page if space permits.

Range: 1 to the largest integer that the operating system supports

DATA
bases the size of the panel on the way the table is stored in memory. This value provides the fastest performance. However, if the table contains many columns, the number of rows in each panel might be small.

PAGE
tries to make panels that match the page size. If the table contains more columns than can fit on a page, the first page is filled with as many observations as possible for as many columns as will fit on a single line. The second page contains the same observations for the next group of columns, and so on until all rows and columns have been printed.

This arrangement will minimize the amount of space used for column headers because most pages will contain observations for only one set of columns.

Restriction: If the page size is greater than 200, ODS uses DATAPANEL=200.

Default: PAGE

FILE=*file-specification*
specifies the file to write to. *file-specification* can be one of the following:

'*external-file*'
is the name of an external file to write to.

fileref
is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref. (For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.)

Default: If you do not specify a file to write to, ODS writes the output to the LISTING window.

ODS MARKUP Statement

Opens, manages, or closes the MARKUP destination, which produces SAS output that is formatted using one of many different markup languages

Valid: anywhere

Category: ODS: Third-Party Formatted

Interaction: The output type is determined by the TAGSET | TYPE= option, which specifies the kind of markup language that is applied to the output.

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

Syntax

ODS MARKUP <(<ID=>*identifier*)> <*action*>;

ODS MARKUP <(<ID=>*identifier*)> <*markup-file-specification(s)*> <*option(s)*><TAGSET=*tagset-name*>;

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

An *action* can be one of the following:

CLOSE
closes the destination and any files that are associated with it.

Tip: When an ODS destination is closed, ODS does not send output to that destination. Closing an unneeded destination conserves system resources.

EXCLUDE *exclusion(s)* | ALL | NONE
excludes one or more output objects from the destination.

Default: NONE

Restriction: A destination must be open for this action to take effect.

Main discussion: "ODS EXCLUDE Statement" on page 90

SELECT *selection(s)* | ALL | NONE
selects output objects for the specified destination.

Default: ALL

Restriction: A destination must be open for this action to take effect.

Main discussion: "ODS SELECT Statement" on page 188

SHOW

writes the current selection or exclusion list for the destination to the SAS log .

Restriction: A destination must be open for this action to take effect.

See also: "ODS SHOW Statement" on page 197

Tip: If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list. For information about selection and exclusion lists, see "Selection and Exclusion Lists" on page 34.

Options

ANCHOR= '*anchor-name*'

specifies a unique base name for the anchor tag that identifies each output object in the current body file.

Each output object has an anchor tag for the contents, page, and frame files to reference. The links and references, which are automatically created by ODS, point to the name of an anchor. Therefore, each anchor name in a file must be unique.

anchor-name

is the base name for the anchor tag that identifies each output object in the current body file.

ODS creates unique anchor names by incrementing the name that you specify. For example, if you specify ANCHOR= 'tabulate', then ODS names the first anchor **`tabulate`**. The second anchor is named **`tabulate1`**; the third is named **`tabulate2`**, and so on.

Requirement: You must enclose *anchor-name* in quotation marks.

Tip: You can change anchor names as often as you want by specifying the ANCHOR= option in a Markup Family statement anywhere in your program. Once you have specified an anchor name, it remains in effect until you specify a new one.

Restriction: Each anchor name in a file must be unique.

Interaction: If you open a file to append to it, then be sure to specify a new anchor name so that you do not write the same anchors to the file again. ODS does not recognize anchors that are already in a file when it opens the file.

Tip: Specifying new anchor names at various points in your program is useful when you want other web pages to link to specific parts of your markup language output. Because you can control where the anchor name changes, you know in advance what the anchor name will be at those points.

ARCHIVE='*string*'

The ARCHIVE= option is only valid for the GOPTIONS java device. The ARCHIVE= option allows you to specify which applet to use in order to view the ODS HTM Loutput.

The string must be one that the browser can interpret. For example, if the archive file is local to the machine that you are running SAS on, you can use the FILE protocol to identify the file. If you want to point to an archive file that is on a web server, use the HTTP protocol .

Default: If you do not specify ARCHIVE= and you are using the JAVA device driver, ODS uses the value of the SAS system option APPLETOC=. This value points to the location of the Java archive files that ship with the SAS system. To find out what the value of this option is, you can either look in the Options window in the Files folder under Environment Control, or you can submit the following procedure step:

```
proc options option=appletloc;
run;
```

There is no default if you are using the ACTIVEX device driver.

Requirement: The ARCHIVE attribute is a feature of Java 1.1. Therefore, if you are using the Java device driver, your browser must support this version of Java. Both Internet Explorer 4.01 and Netscape 4.05 support Java 1.1.

Interaction: Use ARCHIVE= in conjunction with SAS/GRAPH procedures and the DEVICE=JAVA or DEVICE=ACTIVEX option in the GOPTIONS statement.

Tip: Typically, this option should not be used, because the SAS server automatically determines the correct SAS/Graph applets to view the ODS HTML output . However, if you have renamed the .jar files, or have other applets with which to view the ODS HTML output, this option allows you to access these applets.

Tip: As stated in the CODEBASE= documentation, it is recommend that you do not put a file path in your ARCHIVE option. Instead, use the CODEBASE option to specify the file path.

ATTRIBUTES= (*attribute-pair-1 ... attribute-pair-n*)

writes the specified attributes between the tags that generate dynamic graphics output.

attribute-pair

specifies the name and value of each attribute. *attribute-pair* has the following form:

'*attribute-name*'= '*attribute-value*'

attribute-name

is the name of the attribute.

attribute-value

is the value of the attribute.

Requirement: You must enclose *attribute-name* and *attribute-value* in quotation marks.

Interaction: Use the ATTRIBUTES= option in conjunction with SAS/GRAPH procedures and with the DEVICE=JAVA, JAVAMETA, or ACTIVEX options in the GOPTIONS statement.

See also: *SAS/GRAPH Reference, Volumes 1 and 2* for valid attributes for the following applets:

- Graph Applet
- Map Applet
- Contour Applet
- MetaView Applet

BASE= '*base-text*'

Specifies the text to use as the first part of all links and references that ODS creates in the output files.

base-text

is the text that ODS uses as the first part of all links and references that ODS creates in the file.

Consider this specification:

```
BASE= 'http://www.your-company.com/local-url/'
```

In this case, ODS creates links that begin with the string **`http://www.your-company.com/local-url/`**. The appropriate *anchor-name* completes the link.

Requirement: You must enclose *base-text* in quotation marks.

CHARSET= *character-set*

specifies the character set to be generated in the META declaration for the HTML output.

See: For information about the CHARSET option, see *SAS National Language Support (NLS): User's Guide*.

CODEBASE='*string*'

creates a file path that is used by the GOPTIONS devices. The CODEBASE file path option has two definitions, depending on the GOPTIONS device used.

For the Java device:

The CODEBASE file path points to the directory that contains the java applets (.jar files). If a CODEBASE file path is not specified, the SAS server generates a default CODEBASE file path that is based on the install location for the applets. The install location for the applets is recorded in the SAS option APPLETLOC and can be modified by a user. It is important to note that if the default path created by the SAS install is used, the HTML output file must be viewed on the machine from which the output was generated. A typical use of CODEBASE would be to specify an HTTP:// reference to the installed applets so that the output can be viewed from any machine on the Web.

Interaction: If you only specify CODEBASE, the SAS server will automatically generate the correct ARCHIVE= for the HTML output. This feature allows you to put the applets in one location on the web and easily generate output that points to that location. This is regardless of the type of java graphs that are generated on the ODS HTML output page. The ARCHIVE= option can be set with or without a file path. It is recommended that you do not put paths in your ARCHIVE= option. If you set an ARCHIVE= that contains a file path, that path is used in the place of any CODEBASE specification. Instead, use the CODEBASE option to specify the file path. If you specify both CODEBASE= and ARCHIVE= options, they will be used as you specified them.

For the ActiveX device:

If a CODEBASE= file path (including a required filename) is specified for an ActiveX control, then the browser will attempt to install the control from the location (including the filename) specified in the CODEBASE= file path. This happens if the control is not already installed on the user's machine. By default, the SAS server does not generate a CODEBASE= file path for the ActiveX control. A typical use for this functionality is for a user to put the install setup for the control on the web. All web users can then generate their HTML output with a CODEBASE that points to this location. If another user (who does not have the control installed) tries to view the output, then the user will be prompted to install the control on their machine.

ENCODING= *local-character-set-encoding*

overrides the encoding for input or output processing (transcodes) of external files.

See: For information about the ENCODING= option, see *SAS National Language Support (NLS): User's Guide*.

GFOOTNOTE | NOGFOOTNOTE
controls the location where footnotes are printed in the graphics output.

GFOOTNOTE
prints footnotes that are created by SAS/GRAPH, which appear inside the graph borders.

NOGFOOTNOTE
prints footnotes that are created by ODS, which will appear outside the graph borders.

Default: GFOOTNOTE

Restriction: Footnotes that are displayed by a markup language statement support all SAS/GRAPH FOOTNOTE statement options. The font must be valid for the browser. Options that ODS cannot handle, such as text angle specifications, are ignored. For details about the SAS/GRAPH FOOTNOTE statement, see *SAS/GRAPH Reference, Volumes 1 and 2*.

Restriction: This option applies only to SAS programs that produce SAS/GRAPH output files.

GPATH= *file-specification* <(url='*Uniform-Resource-Locator*' | NONE)>
specifies the location for all graphics output that is generated while the destination is open.

file-specification
specifies the file or SAS catalog to write to. Each output object that ODS places in the file is named automatically using the SAS/GRAPH catalog entry name as the base name and incrementing the name as necessary. For more information about how ODS names catalog entries and external files, see *SAS/GRAPH Reference, Volumes 1 and 2*. *file-specification* can be one of the following:

external-file
is the name of an external file to write to.

Requirement: You must enclose *external-file* in quotation marks.

fileref
is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref. For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.

Interaction: If you specify a fileref in the GPATH= option, then ODS does not use information from the GPATH= option when it constructs links.

libref.catalog
specifies a SAS catalog to write to.

URL= '*Uniform-Resource-Locator*' | NONE
provides a URL for *file-specification*.

Uniform-Resource-Locator
is the URL you specify. ODS uses this URL instead of the file name in all the links and references that it creates to the file.

Requirement: You must enclose *Uniform-Resource-Locator* in quotation marks.

NONE
specifies that no information from the GPATH= option appears in the links or references.

Tip: This option is useful for building output files that may be moved from one location to another. If the links from the contents and page files are constructed with a simple URL (one name), then they will resolve, as long as the contents, page, and body files are all in the same location.

Default: If you omit the GPATH= option, then ODS stores graphics in the location that is specified by the PATH= option. If you do not specify the PATH= option, then ODS stores the graphics in the current directory. For more information, see the PATH= option on page 119.

GTITLE | NOGTITLE
controls the location where titles are printed in the graphics output.

GTITLE
prints the title that is created by SAS/GRAPH, which will appear inside the graph borders

NOGTITLE
prints the title that is created by ODS, which will appear outside the graph borders.

Default: GTITLE

Restriction: Titles that are displayed by any markup language statement support most SAS/GRAPH TITLE statement options. The font must be valid for the browser. Options that ODS cannot handle, such as text angle specifications, are ignored. For details about the SAS/GRAPH TITLE statement, see *SAS/GRAPH Reference, Volumes 1 and 2*.

Restriction: This option applies only to SAS programs that produce one or more SAS/GRAPH output files.

HEADTEXT= '*markup-document-head*'
specifies markup tags to place between the <HEAD> and </HEAD> tags in all the files that the destination writes to.

markup-document-head
is the markup tags to place between the <HEAD> and </HEAD> tags.

Tip: ODS cannot parse the markup that you supply. It should be well-formed markup that is correct in the context of the <HEAD> and </HEAD> tags.

Tip: Use the HEADTEXT= option to define programs (such as JavaScript) that you can use later in the file.

(ID= *identifier*)
enables you to run multiple instances of the same destination at the same time. Each instance can have different options.

identifier
specifies another instance of the destination that is already open. *identifier* can be numeric or a series of characters that begin with a letter or an underscore. Subsequent characters can include letters, underscores, and numeric characters.

Restriction: If *identifier* is numeric, it must be a positive integer.

Requirement: The ID= option must be specified immediately after the ODS *MARKUP/TAGSET* statement keywords.

Tip: You can omit the ID= option, and instead use a name or a number to identify the instance.

Featured in: Example 1 on page 155

markup-file-specification

opens a markup family destination and specifies the markup file(s) to write to. These files remain open until you do one of the following:

- close the destination with either an ODS *Markup-family-destination* CLOSE statement or ODS _ALL_ CLOSE statement.
- open the same destination with a second markup family statement. This closes the first file and opens the second file.

markup-file-specification has the following form:

file-type= '*file-specification*' <(*file-specification-suboption(s)*)>

file-type=

associates a type of markup file with a particular *file-specification*. *file-type* can be one of the following:

BODY=

specifies the file that contains the primary output that is created by the ODS statement.

Note: For some values of TAGSET=, this output will be an HTML file, for other TAGSET= values, the output will be an XML file, and so on. △

Alias: FILE=

Interaction: If you use the BODY= option in an ODS markup family statement that refers to an open ODS markup destination, the option will force ODS to close the destination and all files associated with it, and then to open a new instance of the destination. For more information see "Opening and Closing the MARKUP Destination" on page 125.

Featured in: All examples

CODE=

specifies the file that contains relevant style information, such as XSL (Extensible Stylesheet Language).

CONTENTS=

specifies the file that contains a table of contents for the output.

FRAME=

for HTML output, specifies the file that integrates the table of contents, the page contents, and the body file. If you open the frame file, then you see a table of contents, a table of pages, or both, as well as the body file.

For XLM output, FRAME= specifies the file that contains the DTD.

Restriction: If you specify the FRAME= argument, then you must also specify CONTENTS=, PAGE=, or both.

PAGE=

specifies the file that contains a description of each page of the body file, and contains links to the body file. ODS produces a new page of output whenever a procedure requests a new page.

Interaction: The SAS system option PAGESIZE= has no effect on pages in HTML output except when you are creating batch output. For information on the PAGESIZE= option see *SAS Language Reference: Dictionary*.

STYLESHEET=
places the style information for markup output into an external file, or reads stylesheet information from an existing file.

Note: By default, if you do not specifically send the information to a separate file, then the stylesheet information is included in the specified HTML file. △

file-specification
specifies the file, fileref, or SAS catalog to write to.
file-specification can be one of the following:

external-file
is the name of an external file to write to.

Requirement: You must enclose *external-file* in quotation marks.

fileref
is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

See: For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.

entry.markup
specifies an entry in a SAS catalog to write to.

Interaction: If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= argument.

(*file-specification-suboption(s)*)
provide instructions for writing the output files.
file-specification-suboptions can be one of the following:

NO_BOTTOM_MATTER
specifies that no ending markup language source code be added to the output file or.

Alias: NOBOT

Requirement: If you append text to an external file you must use a FILENAME statement with the appropriate option for the operating environment.

Interaction: The NO_BOTTOM_MATTER suboption, in conjunction with the NO_TOP_MATTER suboption, makes it possible for you to add output to an existing file and then to put your own markup language between output objects in the file.

Interaction: When you are opening a file that ODS has previously written to, you must use the ANCHOR= option to specify a new base name for the anchors in order to avoid duplicate anchors.

Tip: If you want to leave a body file in a state that you can append to with ODS, then use NO_BOTTOM_MATTER with the *file-specification* in the BODY= option in any markup language statement.

See also: NO_TOP_MATTER on page 116

NO_TOP_MATTER
specifies that no beginning markup language source code be added to the top of the output file. For HTML 4.0, the NO_TOP_MATTER option removes the stylesheet.

Alias: NOTOP

Requirement: If you append text to an external file you must use a FILENAME statement with the appropriate option for the operating environment.

Interaction: The NO_TOP_MATTER suboption, in conjunction with the NO_BOTTOM_MATTER suboption, makes it possible for you to add output to an existing file and then to put your own markup language between output objects in the file.

Interaction: When you are opening a file that ODS has previously written to, you must use the ANCHOR= option to specify a new base name for the anchors in order to avoid duplicate anchors.

See also: NO_BOTTOM_MATTER on page 116 and ANCHOR= on page 110

URL= '*Uniform-Resource-Locator*'

provides a URL for the *file-specification*. ODS uses this URL (instead of the file name) in all the links and references that it creates and that point to the file.

Tip: This option is useful for building HTML files that can be moved from one location to another. The links from the contents and page files must be constructed with a single name URL, and the contents, page, and body files must all be in the same location.

Tip: You never need to specify this suboption with the FRAME= option because ODS files do not reference the frame file.

DYNAMIC

enables you to send output directly to a web server instead of writing it to a file. This option sets the value of the HTMLCONTENTTYPE= attribute. For more information see the HTMLCONTENTTYPE= attribute on page 311.

Default: If you do not specify DYNAMIC, then ODS sets the value of HTMLCONTENTTYPE= for writing to a file.

Restriction: If you specify the DYNAMIC suboption with any *file-type*= *file-specification* in the ODS HTML statement, then you must specify it for all the *file-type*= *file-specification* in the statement.

Restriction: You must specify *file-specification-suboption(s)* inside parentheses, next to the *file-specification* in the BODY=, CONTENTS=, PAGE=, or FRAME= option.

METATEXT= '*metatext-for-document-head*'

specifies HTML code to use as the <META> tag between the <HEAD> and </HEAD> tags of all the HTML files that the destination writes to.

'*metatext-for-document-head*'

specifies the HTML code that provides the browser with information about the document that it is loading. For example, this attribute could specify the content type and the character set to use.

Default: If you do not specify METATEXT=, then ODS writes a simple <META> tag, which includes the content-type of the document and the character set to use, to all the HTML files that it creates.

Tip: ODS cannot parse the HTML code that you supply. It should be well-formed HTML code that is correct in the context of the <HEAD> tags. If you are using METATEXT= as it is intended, then your META tag should look like this:

```
<META your-metatext-is-here>
```

Restriction: METATEXT= cannot exceed 256 characters.

NEWFILE= *starting-point*
creates a new body file at the specified *starting-point*.

starting-point
is the location in the output where you want to create a new body file.

ODS automatically names new files by incrementing the name of the body file. In the following example, ODS names the first body file **REPORT.XML**. Additional body files are named **REPORT1.XML**, **REPORT2.XML**, and so on.

Example:

```
BODY= 'REPORT.XML'
```

starting-point can be one of the following:

BYGROUP
starts a new file for the results of each BY group.

NONE
writes all output to the body file that is currently open.

OUTPUT
starts a new body file for each output object. For SAS/GRAPH this means that ODS creates a new file for each SAS/GRAPH output file that the program generates.

Alias: TABLE

PAGE
starts a new body file for each page of output. A page break occurs when a procedure explicitly starts a new page (not because the page size was exceeded) or when you start a new procedure.

PROC
starts a new body file each time that you start a new procedure.

Default: NONE

Tip: If you end the file name with a number, then ODS begins incrementing with that number. In the following example, ODS names the first body file **MAY5.XML**. Additional body files are named **MAY6.XML**, **MAY7.XML**, and so on.

Example:

```
BODY= 'MAY5.XML'
```

NOGFOOTNOTE

See: GFOOTNOTE | NOGFOOTNOTE options

NOGTITLE

See: GTITLE | NOGTITLE options

PARAMETERS= (*parameter-pair-1 ... parameter-pair-n*)
writes the specified parameters between the tags that generate dynamic graphics output.

parameter-pair
specifies the name and value of each parameter. *parameter-pair* has the following form:

'*parameter-name*'= '*parameter-value*'

parameter-name

is the name of the parameter.

parameter-value
is the value of the parameter.

Requirement: You must enclose *parameter-name* and *parameter-value* in quotation marks.

Interaction: Use PARAMETERS= in conjunction with SAS/GRAPH procedures and the DEVICE=JAVA, JAVAMETA, or ACTIVEX options in the GOPTIONS statement.

See also: *SAS/GRAPH Reference, Volumes 1 and 2* for valid parameters for the following applets:

- Graph Applet
- Map Applet
- Contour Applet
- MetaView Applet

PATH= *file-specification* (URL= '*Uniform-Resource-Locator*' | NONE)
specifies the location of an external file or a SAS catalog for all markup files.

file-specification
specifies the file or SAS catalog to write to.
file-specification can be one of the following:

external-file
is the name of an external file to write to.

Requirement: You must enclose *external-file* in quotation marks.

fileref
is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

Interaction: If you use a fileref in the PATH= option, then ODS does not use information from PATH= when it constructs links.

See: For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.

libname.catalog
specifies a SAS catalog to write to.

See: For information about the LIBNAME statement, see *SAS Language Reference: Dictionary*.

URL= '*Uniform-Resource-Locator*' | NONE
provides a URL for the *file-specification*.

Uniform-Resource-Locator
is the URL you specify. ODS uses this URL instead of the file name in all the links and references that it creates to the file.

NONE
specifies that no information from the PATH= option appears in the links or references.

Tip: This option is useful for building output files that can be moved from one location to another. The links from the contents and page files must be constructed with a single-name URL, and the contents, page, and body files must be in the same location.

RECORD_SEPARATOR= '*alternative-separator*' | NONE

specifies an alternative character or string that separates lines in the output files.

Different operating environments use different separator characters. If you do not specify a record separator, then the files are formatted for the environment where you run the SAS job. However, if you are generating files for viewing in a different operating environment that uses a different separator character, then you can specify a record separator that is appropriate for the target environment.

alternative-separator

represents one or more characters in hexadecimal or ASCII format. For example, the following option specifies a record separator for a carriage return character and a linefeed character for use with an ASCII file system:

```
RECORD_SEPARATOR= '0D0A'x
```

Requirement: You must enclose *alternative-separator* in quotation marks.

NONE

produces the markup language that is appropriate for the environment where you run the SAS job.

Operating Environment Information: In a mainframe environment, by default, ODS produces a binary file that contains embedded record separator characters. This binary file is not restricted by the line-length restrictions on ASCII files. However, if you view the binary files in a text editor, then the lines run together.

If you want to format the files so that you can read them with a text editor, then use RECORD_SEPARATOR= NONE. In this case, ODS writes one line of markup language at a time to the file. When you use a value of NONE, the logical record length of the file that you are writing to must be at least as long as the longest line that ODS produces. If the logical record length of the file is not long enough, then the markup language might wrap to another line at an inappropriate place. △

Alias:

RECSEP=

RS=

STYLE= *style-definition*

specifies the style definition to use in writing the output files.

style-definition

describes how to display the presentation aspects (color, font face, font size, and so on) of your SAS output. A style definition determines the overall appearance of the documents that use it. Each style definition is composed of style elements.

Main discussion: For a complete discussion of style definitions, see Chapter 9, "TEMPLATE Procedure: Creating a Style Definition," on page 285.

See also: For information about creating your own style definitions, see Chapter 9, "TEMPLATE Procedure: Creating a Style Definition," on page 285.

Interaction: The STYLE= option is not valid when you are creating XML output.

Default: If you do not specify a style definition, then ODS uses the file that is specified in the SAS registry subkey

ODS ► DESTINATIONS ► MARKUP ► Selected Style

By default, this value specifies **`styles.default`**.

Interaction: If you specify the STYLE= option on an ODS HTML4 statement and wish to change the style definition with another ODS HTML4 statement , you must close the first statement before specifying the second statement, in order for any PROC PRINT output to use the second style definition.

TAGSET= *tagset-name*

specifies a keyword value for a tagset. A tagset is a template that defines how to create a markup language output type from a SAS format. Tagsets produce markup output such as Hypertext Markup Language (HTML), Extensible Markup Language (XML), and LaTeX.

An alternate form for specifying a tagset is as follows:

ODS *directory.tagset-name file-specification(s)*<*option(s)*>;

ODS *directory.tagset-name action*;

A *directory* can be TAGSETS, a user defined entry, or a libref. By default, the tagsets that SAS supplies are located in the directory TAGSETS, which is within the item store SASUSER.TMPLMST. For more information about user defined tagsets and item stores, see Chapter 7, "TEMPLATE Procedure: Overview," on page 261.

Alias: TYPE=

Default: If you do not specify a TAGSET= value, then the ODS MARKUP statement defaults to XML output.

Interaction: If you use the TAGSET= option in an ODS markup family statement that refers to an open ODS markup destination, then the option will force ODS to close the destination and all files associated with it, and then to open a new instance of the destination. For more information, see "Opening and Closing the MARKUP Destination" on page 125.

Tip: SAS provides a set of tagset definitions. To get a list of the tagset names that SAS supplies, plus any tagsets that you created and stored in the SASUSER.TMPLMST template store, submit the following SAS statements:

```
proc template;
   list tagsets;
run;
```

See also: For additional information about specifying tagsets, see Chapter 11, "TEMPLATE Procedure: Creating Markup Language Tagsets," on page 551.

The values for TAGSET= can be one of the following, which are the tagsets (templates) supplied by SAS:

CHTML

produces compact, minimal HTML output that does not use style information. It does produce a hierarchical table of contents.

See: "ODS CHTML Statement" on page 84

COLORLATEX

produces color LaTeX, which is a document preparation system for high quality typesetting. It also generates a stylesheet. The output can be generated as PDF.

CAUTION:

COLORLATEX is an experimental tagset. Do not use this tagset in production jobs. △

CSV

produces tabular output that contains columns of data values that are separated by commas.

CAUTION:
CSV is an experimental tagset. Do not use this tagset in production jobs. △

Featured in: Creating Different Data Delimiters in a TagsetExample 8 on page 605

CSVALL
produces tabular output with titles that contain columns of data values that are separated by commas.

See also: “ODS CSVALL Statement” on page 85

CSVBYLINE
produces output with comma-separated values and columns of data that are separated by commas.

CAUTION:
CSVBYLINE is an experimental tagset. Do not use this tagset in production jobs. △

XML
produces XML output.

DOCBOOK
produces XML output that conforms to the DocBook DTD by OASIS.

See also: “ODS DOCBOOK Statement” on page 86

EVENT_MAP
creates XML output that shows which events are being triggered and which variables are used by an event to send output from a SAS process to an output file. When you run a SAS process with EVENT_MAP, ODS writes XML to an output file that shows all event names and variable names as tags. The output helps you to create your own tagsets.

GRAPH
produces markup for graphical output that is produced by SAS/GRAPH.

HTML4
produces HTML 4.0 embedded stylesheets.

See also: “ODS HTML Statement” on page 95

HTMLCSS
produces HTML output with cascading stylesheets that is similar to ODS HTML output.

See also: “ODS HTMLCSS Statement” on page 105

IMODE
produces HTML output as a column of output that is separated by lines. This tagset is used by the Japanese telephone service provider, NTT.

See also: “ODS IMODE Statement” on page 106

LATEX
produces LaTeX, which is a document preparation system for high-quality typesetting. It also generates a stylesheet. The output can be generated as PDF.

CAUTION:
LATEX is an experimental tagset. Do not use this tagset in production jobs. △

MSOFFICE_HTML
produces HTML code for output generated by ODS for Microsoft Office products.

MVSHTML
produces URLs within HTML files that are used in the OS/390 operating environment.

CAUTION:
MVSHTML is an experimental tagset. Do not use this tagset in production jobs. △

NAMEDHTML
creates HTML output similar to STYLE_POPUP on page 124, but with all the objects labeled as they are when using ODS TRACE.

CAUTION:
NAMEDHTML is an experimental tagset. Do not use this tagset in production jobs. △

ODSSTYLE
creates PROC TEMPLATE code for the STYLESHEET= option. The output helps you to create and modify style definitions.

CAUTION:
ODSSTYLE is an experimental tagset. Do not use this tagset in production jobs. △

ODSXRPCS
produces an ODS XML remote program command stream.

CAUTION:
ODSXRPCS is an experimental tagset. Do not use this tagset in production jobs. △

PHTML
produces simple HTML output that uses twelve style elements and no class attributes.

See also: "ODS PHTML Statement" on page 159

PYX
produces PYX, which is a simple, line-oriented notation used by Pyxie to describe the information communicated by an XML parser to an XML application. Pyxie is an Open Source library for processing XML with the Python programming language.

CAUTION:
PYX is an experimental tagset. Do not use this tagset in production jobs. △

SASFMT
produces format markup tags that you create for the XML engine.

SASXMISS
produces alternate missing-value markup tags for the XML engine.

SASXMNSP
produces alternate "no space in text" value markup for the XML engine.

SASXMOG
produce generic XML code that is similar to the Oracle8iXML implementation used by ORACLE.

Note: This is the tagset used by the SAS XML LIBNAME engine for the XMLTYPE= GENERIC option. △

SASXMOH
produces very simple HTML output.

Note: This is the tagset used by the SAS XML LIBNAME engine for XMLTYPE= HTML. △

SASXMOIM
: produces XML code that is supported by the Open Information Model (Database Schema Model) proposed by the Metadata Coalition (MDC) as vendor- and technology-independent, conforming to the XML 1.0 specification.

Note: This is the tagset used by the SAS XML LIBNAME engine for the XMLTYPE= OIMDBM option. △

SASXMOR
: produces XML that is equivalent to the Oracle8iXML implementation, which is used by ORACLE.

Note: This is the tagset used by the SAS XML LIBNAME engine for XMLTYPE= ORACLE. △

SHORT_MAP
: creates a subset of the XML output that is created by the EVENT_MAP tagset.

CAUTION:
SHORT_MAP is an experimental tagset. Do not use this tagset in production jobs. △

STATGRAPH
: produces markup for statistical graphs that are generated by SAS procedures.

STYLE_DISPLAY
: creates a sample page of HTML output that is similar to STYLE_POPUP output. The output helps you to create and modify styles.

CAUTION:
STYLE_DISPLAY is an experimental tagset. Do not use this tagset in production jobs. △

See also: STYLE_POPUP on page 124

STYLE_POPUP
: creates HTML like HTMLCSS, but if you're using Internet Explorer, STYLE_POPUP displays a window that shows the resolved ODS style definition for any item that you select.

CAUTION:
STYLE_POPUP is an experimental tagset. Do not use this tagset in production jobs. △

TEXT_MAP
: creates text output that shows which events are being triggered as ODS handles the output objects.

CAUTION:
TEXT_MAP is an experimental tagset. Do not use this tagset in production jobs. △

Tip: You can use the TEXT_MAP output as an alternative to the output that is created by the EVENT_MAP tagset.

See also: EVENT_MAP on page 122

TPL_STYLE_LIST
: creates HTML output in a bulleted list similar to EVENT_MAP but lists only a subset of the possible attributes.

CAUTION:
TPL_STYLE_LIST is an experimental tagset. Do not use this tagset in production jobs. △

Tip: The output helps you to understand tagsets and styles.

TPL_STYLE_MAP
creates XML output similar to EVENT_MAP but lists only a subset of the possible attributes.

CAUTION:
TPL_STYLE_MAP is an experimental tagset. Do not use this tagset in production jobs. △

Tip: The output helps you to understand tagsets and styles.

TROFF
produces Troff code, which is a text-formatting language used for high-quality photo typesetters and laser printers.

CAUTION:
TROFF is an experimental tagset. Do not use this tagset in production jobs. △

user-defined-tagset
specifies the tagset that you created using PROC TEMPLATE.

Main discussion: “Creating Your Own Tagsets” on page 585

WML
uses the Wireless Application Protocol (WAP) to produce a Wireless Markup Language (WML) DTD with a list of URLs as a table of contents.

See also: “ODS WML Statement” on page 206

WMLOLIST
uses the Wireless Application Protocol (WAP) to produce a Wireless Markup Language (WML) DTD with an option list for the table of contents. For more information, see Wireless Application Protocol.

CAUTION:
WMLOLIST is an experimental tagset. Do not use this tagset in production jobs. △

Default: XML

TRANTAB= '*translation-table*'
specifies the translation table to use when transcoding a file for output.

See: For information about the TRANTAB= option, see *SAS National Language Support (NLS): User's Guide*.

Details

Opening and Closing the MARKUP Destination You can modify an open MARKUP destination with many ODS MARKUP options. However, the BODY= and TAGSET= options will automatically close the open destination that is referred to in the ODS MARKUP statement, and will also close any files associated with it, and then will open a new instance of the destination. If you use one of these options, it is best if you explicitly close the destination yourself.

Specifying Multiple ODS Destinations The ODS MARKUP statement opens or closes one destination. Like all single output destinations, you can have only one markup destination open at one time, unless you use the ID= option.

However, you can specify multiple simultaneous ODS destinations to produce multiple markup output by doing both of the following::

- specifying some of the TAGSET= value keywords as a destination
- specifying any two-level tagset name, such as TAGSETS.PYX, TAGSETS.STYLE_DISPLAY, or one of your own tagset names.

Specifying a Tagset Keyword as an ODS Destination

You can specify some tagset keywords as ODS destinations. The tagset determines the type of markup that you will have in your output file. For example, either of the following sets of statements are acceptable:

```
ods markup body='class.html' tagset=phtml;
...more SAS statements...
ods markup close;


ods phtml body='class.html';
...more SAS statements...
ods phtml close;
```

The ODS statement that you use to close a destination must be in the same form as the ODS statement that you used to open the destination. Therefore, the following is not acceptable, because SAS considers MARKUP and PHTML as separate destinations.

```
ods markup body='class.html' tagset=phtml;
...more SAS statements...
ods phtml close;
```

The tagsets that you can specify as both a TAGSET= value for ODS MARKUP or as a separate ODS destination are as follows:

CHTML

CSV

CSVALL

DOCBOOK

HTML4

HTMLCSS

IMODE

LATEX

PHTML

SASREPORT

TROFF

WML

WMLOLIST

Specifying a Two-Level Tagset Name as an ODS Destination

You can open a destination by specifying the markup that you want to produce by naming its two-level tagset name. You can specify all tagsets in this manner. For example, the following ODS statements open the SASIOXML and MYTAGSET destinations. The ODS _ALL_ CLOSE statement closes the SASIOXML and MYTAGSET destinations as well as all other open destinations.

```
ods tagsets.sasioxml body='test1.xml';
ods tagsets.mytagset body='test2.xml';
...more SAS statements...
ods _all_ close;
```

You can also specify tagset names as follows, using the TYPE= option with a two-level tagset name:

```
ods markup type=tagsets.sasioxml body='test.xml';
```

Examples

Example 1: Creating an XML FILE

ODS features:
- ODS LISTING statement:
  - Action:
    - CLOSE
- ODS MARKUP statement:
  - Action:
    - CLOSE
  - Arguments:
    - BODY=

Other SAS features:
- PROC PRINT

Data Set:
"Creating the Statepop Data Set" on page 620

Program Description The following is an ODS MARKUP example that creates XML markup from PRINT procedure output. The TAGSET= option for the ODS MARKUP statement is not specified, which defaults to XML output.

Program

Close the LISTING destination so that no listing output is produced. The LISTING destination is open by default. The ODS LISTING statement closes the LISTING destination to conserve resources.

```
ods listing close;
```

Create XML output. The ODS MARKUP BODY= statement creates an XML file.

```
ods markup body='population.xml';
```

Print the data set. The PRINT procedure prints the data set **`state.pop`**.

```
proc print data=statepop;
run;
```

Close the MARKUP destination. The ODS MARKUP CLOSE statement closes the MARKUP destination and all the files that are associated with it. If you do not close the destination, then you will not be able to view the files.

```
ods markup close;
```

XML Output The following partial output is tagged with XML (Extensible Markup Language) tags.

Output 5.1 XML Markup from PRINT Procedure Output

```
<?xml version="1.0" encoding="windows-1252"?>

<odsxml>
<head>
<meta operator="user"/>
</head>
<body>
<proc name="Univariate">
<label name="IDX"/>
<title class="SystemTitle" toc-level="1">US Census of Population and Housing</title>
<proc-title class="ProcTitle" toc-level="1">The UNIVARIATE Procedure</proc-title>
<proc-title class="ProcTitle" toc-level="1">Variable:  CityPop_90  (1990 metropolitan pop in millions)</proc-title>
<branch name="Univariate" label="The Univariate Procedure" class="ContentProcName" toc-level="1">
<branch name="CityPop_90" label="CityPop_90" class="ContentFolder" toc-level="2">
<leaf name="Moments" label="Moments" class="ContentItem" toc-level="3">
<output name="Moments" label="Moments" clabel="Moments">
<output-object type="table" class="Table">

  <style>
    <border spacing="1" padding="7" rules="groups" frame="box"/>
  </style>
<colspecs columns="4">
<colgroup>
<colspec name="1" width="15" type="string"/>
<colspec name="2" width="10" align="right" type="string"/>
<colspec name="3" width="16" type="string"/>
<colspec name="4" width="10" align="right" type="string"/>
</colgroup>
</colspecs>
<output-head>
<row>
<header type="string" class="Header" row="1" column="1" column-end="4">
  <style>
    <span columns="4"/>
  </style>
<value>Moments</value>
</header>
</row>
</output-head>
<output-body>

... more tagged output ...

<data raw-value="P8jU/fO2RaI=" name="Low" type="double" class="Data" row="8" column="1">
<value>0.194</value>
</data>
<data raw-value="QEIAAAAAAAA=" name="LowObs" type="double" class="Data" row="8" column="2">
<value>36</value>
</data>
<data raw-value="QDboMSbpeNU=" name="High" type="double" class="Data" row="8" column="3">
<value>22.907</value>
</data>
<data raw-value="QEiAAAAAAAA=" name="HighObs" type="double" class="Data" row="8" column="4">
<value>49</value>
</data>
</row>
</output-body>
</output-object>
</output>
</leaf>
</branch>
</branch>
<footnote class="SystemFooter" toc-level="1">^{super *}This is a  ^S={foreground=black}footnote.</footnote>
</proc>
</body>
</odsxml>
```

Example 2: Creating an XML File and a DTD

ODS features:
- ODS LISTING statement:
  - Action:
    - CLOSE
- ODS MARKUP statement:
  - Action:
    - CLOSE
  - Arguments:
    - BODY=
    - FRAME=
    - TAGSET=

Other SAS features:
- PROC UNIVARIATE

Data Set:
"Creating the Statepop Data Set" on page 620

Program Description The following ODS MARKUP example creates an XML file and its Document Type Definition (DTD) related information document from PROC UNIVARIATE output.

Program

Close the LISTING destination so that no listing output is produced. The LISTING destination is open by default. The ODS LISTING statement closes the LISTING destination to conserve resources.

```
ods listing close;
```

Create XML output and a DTD. The ODS MARKUP BODY= statement creates an XML file. The FRAME= option specifies that you want the DTD in a frame file, and the TAGSET= option specifies that you want the default tagset, which is XML.

```
ods markup body='statepop.xml'
           frame='statepop.dtd' tagset=default;
```

Generate the statistical tables for the analysis variables. The PROC UNIVARIATE statement calculates univariate statistics for numeric variables in the STATEPOP data set. The VAR statement specifies the analysis variables and their order in the output. The TITLE statement specifies a title for the output object.

```
proc univariate data=statepop;
   var citypop_90 citypop_80;
title 'US Census of Population and Housing';
run;
```

Close the MARKUP destination. The ODS MARKUP CLOSE statement closes the MARKUP destination and all the files that are associated with it. If you do not close the destination, then you will not be able to view the files.

```
ods markup close;
```

Output This DTD specifies how the markup tags in a group of SGML or XML documents should be interpreted by an application that displays, prints, or otherwise processes the documents.

Output 5.2 DTD Created by the ODS MARKUP Statement

```
<!ELEMENT odsxml (head?,body)>

<!ELEMENT head (meta|css)*>

<!ELEMENT body ((label|page)*|proc)+>

<!ELEMENT meta EMPTY>
<!ATTLIST meta
          operator  CDATA  #IMPLIED
          author    CDATA  #IMPLIED>

<!ELEMENT css EMPTY>
<!ATTLIST css
          file  CDATA  #IMPLIED>

<!ELEMENT label EMPTY>
<!ATTLIST label
          name      ID    #IMPLIED>

<!ELEMENT proc (title|proc-title|note|page|label|style|branch|output)*>
<!ATTLIST proc
          class    CDATA    #IMPLIED>

... more tagged output ...

<!ELEMENT br EMPTY>
<!ELEMENT page EMPTY>

<!ELEMENT b (#PCDATA|it|b|ul)*>
<!ELEMENT ul (#PCDATA|it|b|ul)*>
<!ELEMENT it (#PCDATA|it|b|ul)*>
<!ELEMENT style (span|align|border)*>

<!ELEMENT span EMPTY>
<!ATTLIST span
          columns    CDATA    #IMPLIED
          rows       CDATA    #IMPLIED>

<!ELEMENT align EMPTY>
<!ATTLIST align
          horiz  (left|center|right|justify)    "left">

<!ELEMENT border EMPTY>
<!ATTLIST border
          rules    (none|groups|rows|cols|all)    #IMPLIED
          frame    (void|above|below|hsides|lhs|rhs|vsides|box|border) #IMPLIED
          padding  CDATA                          #IMPLIED
          spacing  CDATA                          #IMPLIED>
```

Example 3: Creating Multiple Markup Output

ODS features:
- ODS LISTING statement:
  - Action:
    - CLOSE
- ODS CSVALL statement:
  - Arguments:
    - BODY=
- ODS MARKUP statement:
  - Arguments:
    - BODY=
    - TAGSET=

Other SAS features:
- OPTIONS statement
- PROC PRINT
- TITLE statement

Data set:
GRAIN_PRODUCTION on page 97

Format:
$CNTRY on page 98

Program Description The following ODS example creates two different types of markup output from the same procedure output. To create two markup outputs requires two ODS destinations. Because ODS MARKUP is considered one destination, you cannot specify two tagsets without the use of the ID= option. However, you can specify one output using ODS MARKUP, then specify the other output using ODS syntax in which you specify the tagset as the destination.

Program

Close the LISTING destination so that no listing output is produced. The LISTING destination is open by default. The ODS LISTING statement closes the LISTING destination to conserve resources. The OPTIONS statement specifies that only fifteen observations be used.

```
ods listing close;
options obs=15;
```

Create tabular output. The ODS CSVALL statement produces tabular output with titles that contain columns of data values that are separated by commas

```
ods csvall body='procprintcsvall.csv';
```

Create CHTML output. The ODS MARKUP TAGSET=CHTML statement produces compact, minimal HTML output that does not use style information, and a hierarchical table of contents.

```
ods markup tagset=chtml body='procprintchtml.html';
```

Print the data set. The PRINT procedure prints the data set **grain_production**. The TITLE statement specifies the title.

```
title 'Leading Grain-Producing Countries';
proc print data=grain_production;
run;
```

Close the open destinations so that you can view or print the output. The ODS CSVALL CLOSE statement closes the CSVALL destination and all of the files that are associated with it. The ODS MARKUP TAGSET=CHTML L CLOSE statement closes the MARKUP destination and all of the files that are associated with it. You must close the destinations before you can view the output with a browser or before you can send the output to a physical printer.

```
ods csvall close;
ods markup tagset=chtml close;
```

Output

Display 5.5 CHTML Output

The following output was created by specifying the MARKUP TAGSET=CHTML statement.

Leading Grain-Producing Countries

Obs	Country	Type	Year	Kilotons
1	BRZ	Wheat	1995	1516
2	BRZ	Rice	1995	11236
3	BRZ	Corn	1995	36276
4	CHN	Wheat	1995	102207
5	CHN	Rice	1995	185226
6	CHN	Corn	1995	112331
7	IND	Wheat	1995	63007
8	IND	Rice	1995	122372
9	IND	Corn	1995	9800
10	INS	Wheat	1995	.
11	INS	Rice	1995	49860
12	INS	Corn	1995	8223
13	USA	Wheat	1995	59494
14	USA	Rice	1995	7888
15	USA	Corn	1995	187300

Display 5.6 CSVALL Output Viewed in Microsoft Excel

The following output was created by specifying the ODS CSVALL statement.

Note: Note that you cannot specify ODS MARKUP TAGSET=CSVALL and ODS MARKUP TAGSET=CHTML together, or ODS CSVALL and ODS CHTML together. △

procprintcsvall.csv

	A	B	C	D	E	F
1	Leading Grain-Producing Countries					
2						
3	Obs	Country	Type	Year	Kilotons	
4	1	BRZ	Wheat	1995	1516	
5	2	BRZ	Rice	1995	11236	
6	3	BRZ	Corn	1995	36276	
7	4	CHN	Wheat	1995	102207	
8	5	CHN	Rice	1995	185226	
9	6	CHN	Corn	1995	112331	
10	7	IND	Wheat	1995	63007	
11	8	IND	Rice	1995	122372	
12	9	IND	Corn	1995	9800	
13	10	INS	Wheat	1995	.	
14	11	INS	Rice	1995	49860	
15	12	INS	Corn	1995	8223	
16	13	USA	Wheat	1995	59494	
17	14	USA	Rice	1995	7888	
18	15	USA	Corn	1995	187300	
19						
20						

procprintcsvall

Example 4: Specifying Tagset Names as ODS Destinations When you specify tagsets and two-level tagset names as destinations, you can open and close multiple destinations, producing multiple markup output. For example:

```
ods htmlcss body='test1.html';
ods phtml body='test2.html';
ods chtml body='test3.html';
ods markup body='test1.xml';
ods tagsets.event_map  body='test2.xml';
...more SAS statements...
ods htmlcss close;
...more SAS statements...
ods chtml close;
...more SAS statements...
ods _all_ close;
```

ODS OUTPUT Statement

Produces a SAS data set from an output object and manages the selection and exclusion lists for the OUTPUT destination

Valid: anywhere

Category: ODS: SAS Formatted

Syntax

ODS OUTPUT *action*;

ODS OUTPUT *data-set-definition(s)*;

Actions

An *action* can be one of the following:

CLEAR
sets the list for the OUTPUT destination to EXCLUDE ALL.

CLOSE
closes the OUTPUT destination. When an ODS destination is closed, ODS does not send output to that destination. Closing a destination frees some system resources.

SHOW
writes to the SAS log the current selection or exclusion list for the OUTPUT destination. If the list is the default list (EXCLUDE ALL), then SHOW also writes the current overall selection or exclusion list.

Arguments

data-set-definition
provides instructions for turning an output object into a SAS data set. ODS maintains a list of these definitions. This list is the selection list for the OUTPUT destination. For information about how ODS manages this list, see "Selection and Exclusion Lists" on page 34. Each *data-set-definition* has the following form:

output-object-specification<=*SAS-data-set*>

where

output-object-specification
has the following form:

output-object<(MATCH_ALL<=*macro-var-name*> PERSIST=PROC | RUN)>

output-object
identifies one or more output objects to turn into a SAS data set.

To specify an output object, you need to know which output objects your SAS program produces. The ODS TRACE statement writes to the SAS log a trace record that includes the path, the label, and other information about each output object that is produced. For more information, about the ODS TRACE statement see *SAS Output Delivery System: User's Guide*. You can specify an output object as any of the following:

- a full path. For example,

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  is the full path of the output object.

- a partial path. A partial path consists of any part of the full path that begins immediately after a period (.) and continues to the end of the full path. For example, if the full path is

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  then the partial paths are:

  ```
  City_Pop_90.TestsForLocation
  TestsForLocation
  ```

- a label that is enclosed in quotation marks.

  For example,

  ```
  "Tests For Location"
  ```

- a label path. For example, the label path for the output object is

  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"

  Note: The trace record shows the label path only if you specify the LABEL option in the ODS TRACE statement. △

- a partial label path. A partial label path consists of any part of the label that begins immediately after a period (.) and continues to the end of the label. For example, if the label path is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  then the partial label paths are:

  ```
  "CityPop_90"."Tests For Location"
  "Tests For Location"
  ```

- a mixture of labels and paths.

- any of the partial path specifications, followed by a pound sign (#) and a number. For example, TestsForLocation#3 refers to the third output object that is named TestsForLocation.

Tip: To create multiple data sets from the same output object, list the output object as many times as you want. Each time that you list the output object, specify a different data set.

MATCH_ALL=<*macro-var-name*>

creates a new data set for each output object. For an explanation of how ODS names these data sets, see the discussion of SAS-data-set on page 137.

macro-var-name

specifies the macro variable where a list of all the data sets that are created are stored. Thus, if you want to concatenate all the data sets after the PROC step, then you can use the macro variable to specify all the data sets in a DATA step.

Tip: The MATCH_ALL option is not needed to merge conflicting output objects into one data set.

CAUTION:
A data set that is produced by SAS 9.1 without MATCH_ALL will not necessarily be identical to a data set produced by SAS 9.0 with MATCH_ALL and then concatenated in a data step. With SAS 9.0, merging dissimilar output objects with the MATCH_ALL option could result in missing columns or truncated variables. With SAS 9.1, these restrictions do not apply. For more information about merging output objects, see "Merging Dissimilar Output Objects into One Data Set" on page 137. △

PERSIST=PROC | RUN
determines when ODS closes any data sets that it is creating, and determines when ODS removes output objects from the selection list for the OUTPUT destination.

PROC
maintains the list of definitions even after the procedure ends, until you explicitly modify it. To modify the list, use ODS OUTPUT with one or more *data-set-specifications*. To set the list for the OUTPUT destination to EXCLUDE ALL, use the following statement:

```
ods output clear;
```

RUN
maintains the list of definitions and keeps open the data sets that it is creating even if the procedure or DATA step ends, or until you explicitly modify the list.

See also: "How Does ODS Determine the Destinations for an Output Object?" on page 35

SAS-data-set
names the output data set. You can use a one-level or two-level (with a libref) name.

If you are creating a single data set, then the ODS OUTPUT statement simply uses the name that you specify. If you are creating multiple data sets with MATCH_ALL, then the ODS OUTPUT statement appends numbers to the name. For example, if you specify **test** as *SAS-data-set* and you create three data sets, then ODS names the first data set **test**. The additional data sets are named **test1** and **test2**.

Note: If you end the file name with a number, then ODS begins incrementing the name of the file with that number. For example, if you specify **may5** as *SAS-data-set* and you create three data sets, then ODS names the first data set **may5**. The additional data sets are named **may6** and **may7**. △

Default: If you do not specify a data set, then ODS names the output data set DATA*n*, where *n* is the smallest integer that makes the name unique.

Tip: You can specify data set options in parentheses immediately after *SAS-data-set*.

SHOW
functions just like the ODS SHOW statement except that it writes only the selection or exclusion list for the OUTPUT destination.

Details

Merging Dissimilar Output Objects into One Data Set By default, the ODS OUTPUT statement puts all output objects that have the same *output-path* into one SAS data set, regardless of any conflictions between variables in the output objects. Variables created by a later output object will get a value of missing in the observations created by the earlier output object. Variables created by an earlier output object that do not exist in a subsequent output object will get a value of missing in the observations added by the later output object. If a variable created by an output object has a different type than a variable with the same name created by an earlier output object, it will be added to the output data set using a new name formed by adding a numeric suffix.

Examples

Example 1: Creating a Combined Output Data Set

ODS features:
- ODS _ALL_ CLOSE statement
- ODS HTML statement:
  - BODY=
  - CONTENTS=
  - FRAME=
  - PAGE=
- ODS LISTING statement:
  - CLOSE
- ODS OUTPUT statement

Other SAS features:
- PROC FORMAT
- PROC PRINT
- PROC TABULATE
- KEEP= data set option

Program Description This example routes two output objects that PROC TABULATE produces to both the OUTPUT destination and the HTML destination. The result is two output objects that are combined by the ODS OUTPUT statement to create an output data set formatted as HTML output by the ODS HTML statement.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program

Create the input data set. The data set ENERGY contains data on expenditures of energy for business and residential customers in individual states in the Northeast and West regions of the United States.

```
data energy;
   length State $2;
   input Region Division state $ Type Expenditures @@;
```

```
   datalines;
1 1 ME 1 708  1 1 ME 2 379  1 1 NH 1 597   1 1 NH 2 301
1 1 VT 1 353  1 1 VT 2 188  1 1 MA 1 3264  1 1 MA 2 2498
1 1 RI 1 531  1 1 RI 2 358  1 1 CT 1 2024  1 1 CT 2 1405
1 2 NY 1 8786 1 2 NY 2 7825 1 2 NJ 1 4115  1 2 NJ 2 3558
1 2 PA 1 6478 1 2 PA 2 3695 4 3 MT 1 322   4 3 MT 2 232
4 3 ID 1 392  4 3 ID 2 298  4 3 WY 1 194   4 3 WY 2 184
4 3 CO 1 1215 4 3 CO 2 1173 4 3 NM 1 545   4 3 NM 2 578
4 3 AZ 1 1694 4 3 AZ 2 1448 4 3 UT 1 621   4 3 UT 2 438
4 3 NV 1 493  4 3 NV 2 378  4 4 WA 1 1680  4 4 WA 2 1122
4 4 OR 1 1014 4 4 OR 2 756  4 4 CA 1 10643 4 4 CA 2 10114
4 4 AK 1 349  4 4 AK 2 329  4 4 HI 1 273   4 4 HI 2 298
;
```

Format the variables Region, Division, and Type. PROC FORMAT creates formats for **Region**, **Division**, and **Type**.

```
proc format;
   value regfmt 1='Northeast'
                2='South'
                3='Midwest'
                4='West';
   value divfmt 1='New England'
                2='Middle Atlantic'
                3='Mountain'
                4='Pacific';
   value usetype 1='Residential Customers'
                 2='Business Customers';
run;
```

Do not produce listing output. The ODS LISTING statement closes the LISTING destination to conserve resources. (Otherwise, output would be written to the LISTING destination by default.)

```
ods listing close;
```

Create the SAS output data set. The ODS OUTPUT statement creates the SAS data set **energyoutput** from the output objects that PROC TABULATE produces. The name of each output object is **Table**. You can determine the name of the output objects by using the ODS TRACE ON statement. For information about the ODS TRACE statement, see "ODS TRACE Statement" on page 197.

Specify the variables that you want to be written to the output SAS data set. The KEEP= data set option limits the variables in the output data set **energyoutput** to **Region**, **Division**, **Type**, and **Expenditures_sum**. The variable name **Expenditures_sum** is generated by PROC TABULATE to indicate that the **sum** statistic was generated for the **Expenditures** variable.

```
ods output Table=energyoutput(keep=region division type expenditures_sum);
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC TABULATE is sent to the body file. FRAME=, CONTENTS=, and PAGE= create a frame that includes a table of contents and a table of pages that link to the contents of the body file. The body file also appears in the frame.

```
ods html body='your_body_file.html'
        frame='your_frame_file.html'
```

```
      contents='your_contents_file.html'
         page='your_page_file.html';
```

Create output data sets and an HTML report. This PROC TABULATE step creates two output objects named **Table**, one for each BY group, and adds them to the **energyoutput** data set. Because the HTML destination is open, ODS writes the output to the body file.

```
proc tabulate data=energy format=dollar12.;
   by region;
   class division type;
   var expenditures;
   table division,
         type*expenditures;

   format region regfmt. division divfmt. type usetype.;
   title 'Energy Expenditures for Each Region';
   title2 '(millions of dollars)';
run;
```

Close the current body file and open a new file. The ODS HTML BODY= statement closes the original body file and opens a new one. The contents, page, and frame files remain open. The contents and page files will contain links to both body files.

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC TABULATE is sent to the body file. FRAME=, CONTENTS=, and PAGE= create a frame that includes a table of contents and a table of pages that link to the contents of the body file. The body file also appears in the frame.

```
ods html body='your_body_file_2.html';
```

Print the combined data set. This PROC PRINT step prints the data set **energyoutput** that contains both BY groups. The output is added to the current body file, **your_body_file_2.html**.

```
proc print data=energyoutput noobs;
   title 'Combined Output Data Set';
run;
```

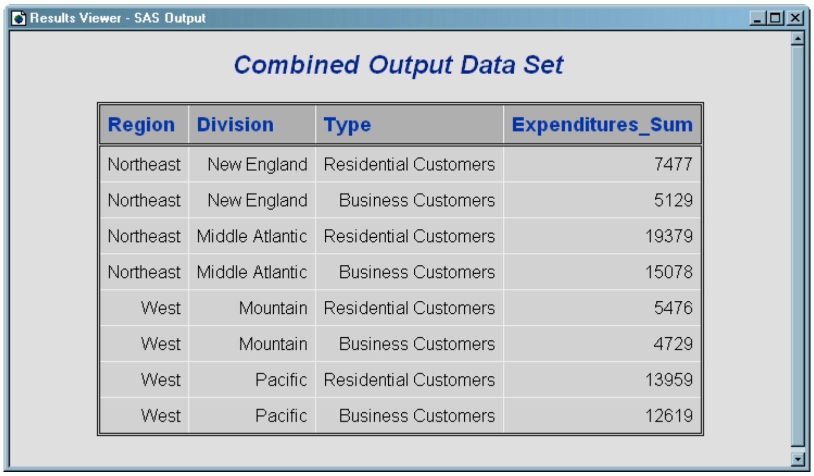
Close all of the open destinations. The ODS _ALL_ CLOSE statement closes all open ODS output destinations. To return ODS to its default setup, the ODS LISTING statement opens the LISTING destination.

```
ods _all_ close;
ods listing;
```

HTML Output

Display 5.7 Combined Data Set

The following HTML output shows the output DATA set that is created by the ODS OUTPUT statement.


Results Viewer - SAS Output

Combined Output Data Set

Region	Division	Type	Expenditures_Sum
Northeast	New England	Residential Customers	7477
Northeast	New England	Business Customers	5129
Northeast	Middle Atlantic	Residential Customers	19379
Northeast	Middle Atlantic	Business Customers	15078
West	Mountain	Residential Customers	5476
West	Mountain	Business Customers	4729
West	Pacific	Residential Customers	13959
West	Pacific	Business Customers	12619

Display 5.8 Output Objects Created by PROC TABULATE

The following output shows the two separate BY groups that are created by the TABULATE procedure.

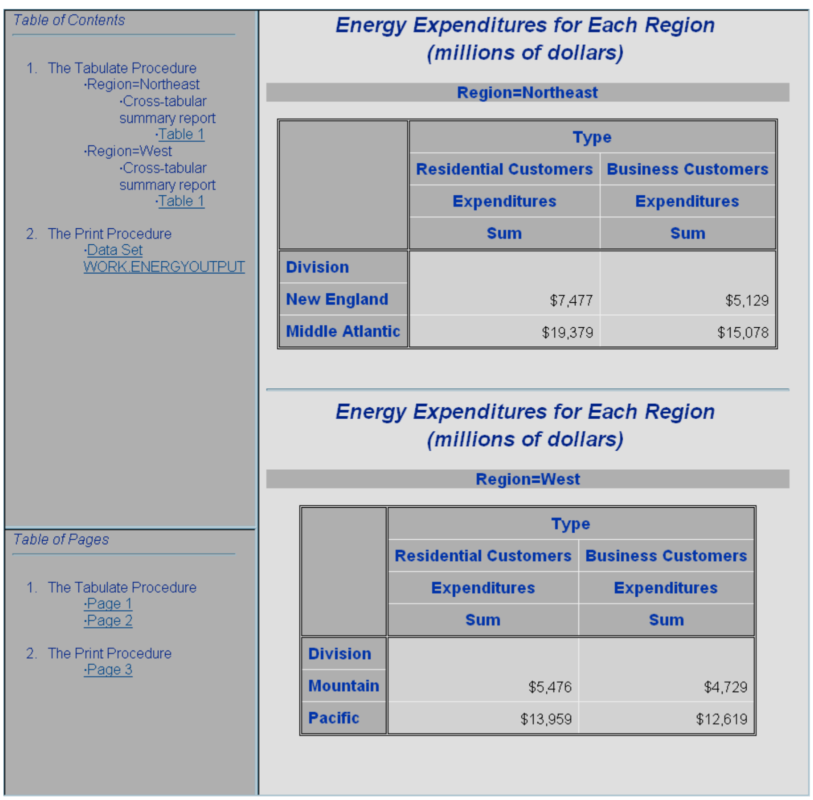


Table of Contents

1. The Tabulate Procedure
   - ·Region=Northeast
     - ·Cross-tabular summary report
       - ·Table 1
   - ·Region=West
     - ·Cross-tabular summary report
       - ·Table 1
2. The Print Procedure
   - ·Data Set WORK.ENERGYOUTPUT

Table of Pages

1. The Tabulate Procedure
   - ·Page 1
   - ·Page 2
2. The Print Procedure
   - ·Page 3

Energy Expenditures for Each Region
(millions of dollars)

Region=Northeast

	Type	
	Residential Customers	Business Customers
	Expenditures	Expenditures
	Sum	Sum
Division		
New England	$7,477	$5,129
Middle Atlantic	$19,379	$15,078

Energy Expenditures for Each Region
(millions of dollars)

Region=West

	Type	
	Residential Customers	Business Customers
	Expenditures	Expenditures
	Sum	Sum
Division		
Mountain	$5,476	$4,729
Pacific	$13,959	$12,619

Example 2: Using Different Procedures to Create a Data Set from Similar Output Objects

ODS features:

- ODS HTML statement:
  - BODY=
  - CONTENTS=
  - FRAME=
- ODS OUTPUT statement
- ODS SELECT statement

Other SAS features:

- PROC GLM
- PROC PRINT
- PROC REG

Data set: IRON on page 191

Program Description This example creates and prints a data set that is created from the parameter estimates that PROC REG and PROC GLM generate. These procedures are part of SAS/STAT software.

Note: This example uses file names that may not be valid in all operating environments. To successfully run the example in your operating environment, you may need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program

Set the SAS system options for the LISTING output. The NODATE option suppresses the display of the date and time in the LISTING output. PAGENO= specifies the starting page number. PAGESIZE= specifies the number of lines on an output page. LINESIZE= specifies the output line length.

```
options nodate pageno=1 pagesize=60 linesize=72;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output. The FRAME= and CONTENTS= options create a frame that includes a table of contents that links to the contents of the body file. The body file also appears in the frame.

```
ods html body='parameter-estimates-body.htm'
        frame='parameter-estimates-frame.htm'
     contents='parameter-estimates-contents.htm';
```

Specify the output objects to be sent to all open ODS destinations. The ODS SELECT statement specifies that output objects named ParameterEstimates should be sent to all open ODS destinations that do not specifically exclude them. The LISTING destination is open by default, and its default list is SELECT ALL. The ODS HTML statement has opened the HTML destination, and its default list is also SELECT ALL. Thus any object that is named ParameterEstimates will go to both these destinations. The PERSIST option specifies that ParameterEstimates should remain in the overall selection list until the list is explicitly modified.

```
ods select ParameterEstimates(persist);
```

Create the IronParameterEstimates data set. The ODS OUTPUT statement opens the OUTPUT destination and creates the SAS data set **IronParameterEstimates**. By default, the list for the OUTPUT destination is EXCLUDE ALL. This ODS OUTPUT statement puts ParameterEstimates in the selection list for the destination. The PERSIST=PROC option specifies that ParameterEstimates should remain in the overall selection list until the procedure ends or the list is explicitly modified.

```
ods output ParameterEstimates=IronParameterEstimates (persist=proc);
```

Create the output objects. PROC REG and PROC GLM each produce an output object named ParameterEstimates. Because the data set definition persists when the procedure ends, ODS creates a output object from each one.

```
proc reg data=iron;
   model loss=fe;
title 'Parameter Estimate from PROC REG';
run;
quit;

proc glm data=iron;
   model loss=fe;
title 'Parameter Estimate from PROC GLM';
run;
quit;
```

Allow all open destinations to receive output objects. The ODS SELECT ALL statement sets the lists for all destinations to their defaults so that ODS sends all output objects to the HTML and LISTING destinations. (Without this statement, none of the output objects from the following PROC PRINT steps would be sent to the open destinations.)

```
ods select all;
```

Print the reports. The PROC PRINT steps print the data set that ODS created from PROC REG and PROC GLM. The output from these steps goes to both the HTML and the LISTING destinations. Links to the HTML output are added to the contents file.

```
proc print data=IronParameterEstimates noobs;
title 'PROC PRINT Report of the Data set from PROC REG';
run;
```

Close the OUTPUT and HTML destinations. The ODS _ALL_ CLOSE statement closes all open destinations except for the LISTING destination, which is open by default.

```
ods _all_ close;
```

HTML Output

Display 5.9 HTML Output from the REG, GLM, and PRINT Procedures

The HTML output includes the parameter estimates from PROC REG, the parameter estimates from PROC GLM, and a report of the data set that ODS created from each set of parameter estimates.

The table of contents identifies output objects by their labels. The label for ParameterEstimates in PROC REG is Parameter Estimates. The corresponding label in PROC GLM is Solution. Notice how the column widths in the HTML output are automatically adjusted to fit the data. Compare this layout to the layout of the columns in the listing output.

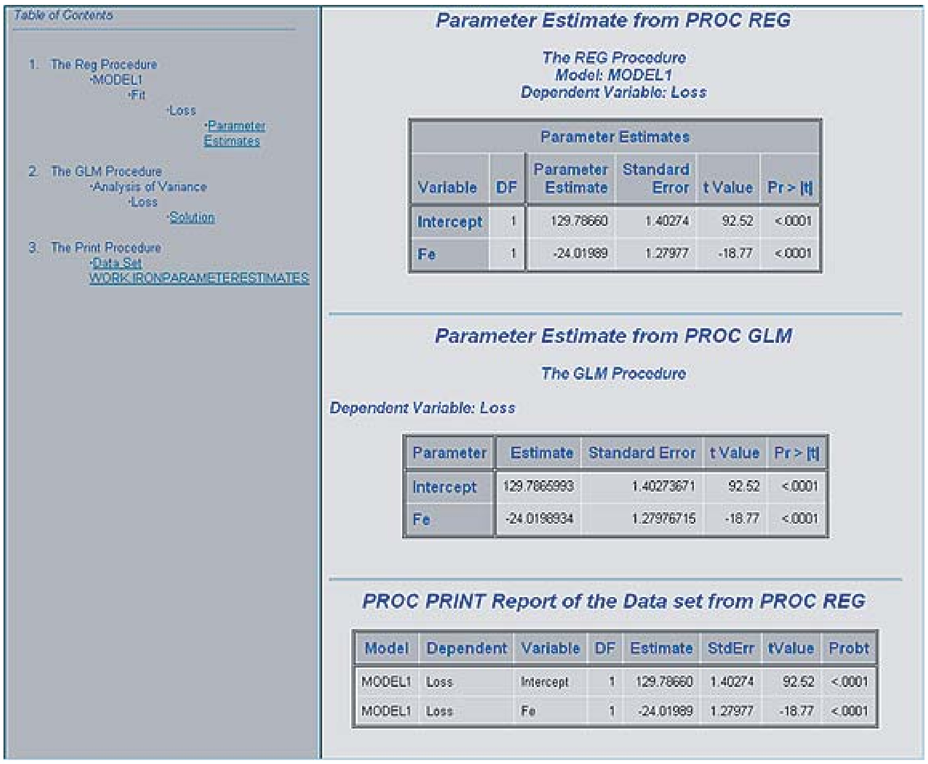


Table of Contents

1. The Reg Procedure
   - MODEL1
     - Fit
       - Loss
         - Parameter Estimates
2. The GLM Procedure
   - Analysis of Variance
     - Loss
       - Solution
3. The Print Procedure
   - Data Set WORK.IRONPARAMETERESTIMATES

Parameter Estimate from PROC REG

The REG Procedure
Model: MODEL1
Dependent Variable: Loss

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	129.78660	1.40274	92.52	<.0001
Fe	1	-24.01989	1.27977	-18.77	<.0001

Parameter Estimate from PROC GLM

The GLM Procedure

Dependent Variable: Loss

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	129.7865993	1.40273671	92.52	<.0001
Fe	-24.0198934	1.27976715	-18.77	<.0001

PROC PRINT Report of the Data set from PROC REG

Model	Dependent	Variable	DF	Estimate	StdErr	tValue	Probt
MODEL1	Loss	Intercept	1	129.78660	1.40274	92.52	<.0001
MODEL1	Loss	Fe	1	-24.01989	1.27977	-18.77	<.0001

Listing Output

Output 5.3 Listing Output from the REG, GLM, and PRINT Procedures

```
                     Parameter Estimate from PROC REG                    1

                            The REG Procedure
                              Model: MODEL1
                        Dependent Variable: Loss

                           Parameter Estimates

                          Parameter       Standard
Variable      DF           Estimate          Error     t Value     Pr > |t|

Intercept      1          129.78660        1.40274       92.52       <.0001
Fe             1          -24.01989        1.27977      -18.77       <.0001
```

```
                    Parameter Estimate from PROC GLM                  2

                           The GLM Procedure

Dependent Variable: Loss

                                         Standard
   Parameter         Estimate               Error    t Value    Pr > |t|

   Intercept      129.7865993      1.40273671      92.52      <.0001
   Fe             -24.0198934      1.27976715     -18.77      <.0001
```

```
        PROC PRINT Report of the Data Set Created from PROC GLM and PROC REG 3

  Model   Dependent Variable  DF    Estimate      StdErr  tValue  Probt

  MODEL1   Loss    Intercept  1   129.78660     1.40274   92.52 <.0001
  MODEL1   Loss    Fe         1   -24.01989     1.27977  -18.77 <.0001
```

Example 3: Creating a Data Set With and Without The MATCH_ALL Option

ODS features:
- ODS HTML statement:
  - BODY=
- ODS LISTING
- ODS OUTPUT statement:
  - MATCH_ALL
- ODS TRACE statement

Other SAS features:
- PROC PRINT
- PROC REG

Data set:
"Creating the Model Data Set" on page 621

Program Description This example illustrates the differences in the data sets created by specifying the MATCH_ALL option and by not specifying the MATCH_ALL option. The first program creates a merged data set by specifying the MATCH_ALL option. The second program creates a merged data set without specifying the MATCH_ALL option.

The data sets that are printed are parameter estimates that PROC REG generates. The PROC REG procedure is part of SAS/STAT software.

Note: This example uses file names that may not be valid in all operating environments. To successfully run the example in your operating environment, you may need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program 1

Do not create LISTING output. The ODS LISTING statement closes the LISTING destination to conserve resources. Otherwise, output would be written to the LISTING destination by default.

```
ods listing close;
```

Prepare a SAS data set to be created. The ODS OUTPUT statement opens the OUTPUT destination. By default, the list for the OUTPUT destination is EXCLUDE ALL. This ODS OUTPUT statement puts **SelectionSummary** in the selection list for the destination.

The MATCH_ALL option produces a SAS data set for each instance of **SelectionSummary**. The name of the first data set is **summary** , and the name of the second data set is **summary1**. ODS stores a list of these names in the macro variable **list**. This variable is used later in the example to combine the data sets.

```
ods output SelectionSummary(match_all=list) = summary;
title1 'Using the MATCH_ALL Option Produces Two Data Sets With Different Columns';
```

Create the output objects and view a record of them in the log. PROC REG creates the output objects.

The ODS TRACE statement writes to the SAS log a record of each output object that is created. The ODS TRACE OFF statement represses the printing of the records.

```
ods trace on;
proc reg data=model;
  model r33=a b r4 r8 c d e r23 r24 r29/ selection=forward
            sle=.5 maxstep=3;
  model r33=a b r4 r8 c d e r23 r24 r29/ selection=backward
            sls=0.05 maxstep=3;
run;
ods trace off;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output.

```
ods html body='combined.html';
```

Print the reports. The PROC PRINT steps print the data sets that ODS created from PROC REG. The output from these steps is sent to both the HTML destination.

```
title2 'The First Data Set Has the VARENTERED Column';
proc print data=summary;
run;

title1;
title2 'The Second Data Set Has the VERREMOVED Column';
proc print data=summary1;
run;
```

Create a data set that contains all of the data sets. The DATA set **summarym** combines all the data sets that were created by the ODS OUTPUT statement. The macro variable **list** contains the list of data set names.

```
data summarym;
   set &list;
run;
```

Print the merged report and specify the title. The PROC PRINT step prints the merged data set created from the data step. The output from this step is sent to the HTML destination.

The TITLE1 statement cancels the first title, and the TITLE2 statements specify a new title for the output.

```
title1;
title2 'The Merged Data Set Has Both Columns';
proc print data=summarym;
run;
```

Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all of the files that are associated with it.

```
ods html close;
```

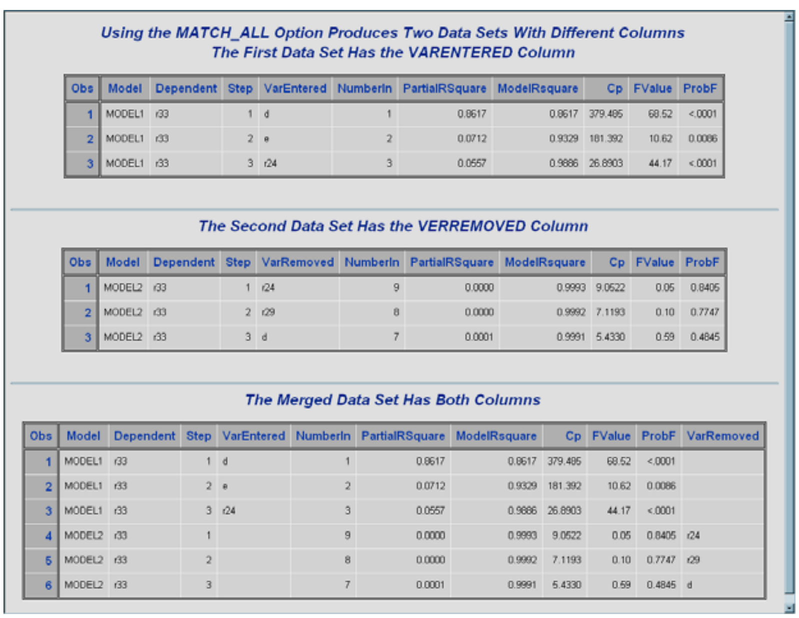
HTML Output

Display 5.10 Three Data Sets Created When Using the MATCH_ALL option

The First Data Set Created When Using the MATCH_ALL Option This HTML output contains a printed report of the **summary** data set created by the ODS OUTPUT statement with the MATCH_ALL option specified. It has no **VERREMOVED** column.

The Second Data Set Created When Using the MATCH_ALL Option This HTML output contains a printed report of the **summary1** data set created by the ODS OUTPUT statement with the MATCH_ALL option specified. It has no **VARENTERED** column.

The Merged Data Set Created When Using the MATCH_ALL Option This HTML output contains a printed report of the **summarym** data set created by the ODS OUTPUT statement with the MATCH_ALL option specified. This is the data set created from **summary** and **summary1**. It contains both the **VARENTERED** and **VERREMOVED** columns.



Using the MATCH_ALL Option Produces Two Data Sets With Different Columns
The First Data Set Has the VARENTERED Column

Obs	Model	Dependent	Step	VarEntered	NumberIn	PartialRSquare	ModelRsquare	Cp	FValue	ProbF
1	MODEL1	r33	1	d	1	0.8617	0.8617	379.485	68.52	<.0001
2	MODEL1	r33	2	e	2	0.0712	0.9329	181.392	10.62	0.0086
3	MODEL1	r33	3	r24	3	0.0557	0.9886	26.8903	44.17	<.0001

The Second Data Set Has the VERREMOVED Column

Obs	Model	Dependent	Step	VarRemoved	NumberIn	PartialRSquare	ModelRsquare	Cp	FValue	ProbF
1	MODEL2	r33	1	r24	9	0.0000	0.9993	9.0522	0.05	0.8405
2	MODEL2	r33	2	r29	8	0.0000	0.9992	7.1193	0.10	0.7747
3	MODEL2	r33	3	d	7	0.0001	0.9991	5.4330	0.59	0.4845

The Merged Data Set Has Both Columns

Obs	Model	Dependent	Step	VarEntered	NumberIn	PartialRSquare	ModelRsquare	Cp	FValue	ProbF	VarRemoved
1	MODEL1	r33	1	d	1	0.8617	0.8617	379.485	68.52	<.0001	
2	MODEL1	r33	2	e	2	0.0712	0.9329	181.392	10.62	0.0086	
3	MODEL1	r33	3	r24	3	0.0557	0.9886	26.8903	44.17	<.0001	
4	MODEL2	r33	1		9	0.0000	0.9993	9.0522	0.05	0.8405	r24
5	MODEL2	r33	2		8	0.0000	0.9992	7.1193	0.10	0.7747	r29
6	MODEL2	r33	3		7	0.0001	0.9991	5.4330	0.59	0.4845	d

Program 2

Prepare a SAS data set to be created. The ODS OUTPUT statement opens the OUTPUT destination and creates the SAS data set **Summary**. Because the MATCH_ALL option is not specified, ODS creates one data set that contains all instances of the output object **SelectionSummary**.

```
ods output SelectionSummary=summary;
title1 'Without the MATCH_ALL Option, ODS Produces a Single Data Set With All
        Of the Columns';
```

Create the output objects and view a record of them in the log. PROC REG creates the output objects.
The ODS TRACE statement writes to the SAS log a record of each output object that is created. The ODS TRACE OFF statement represses the printing of the records.

```
ods trace on;
proc reg data=model;
  model r33=a b r4 r8 c d e r23 r24 r29/ selection=forward
            sle=.5 maxstep=3;
  model r33=a b r4 r8 c d e r23 r24 r29/ selection=backward
            sls=0.05 maxstep=3;
run;
ods trace off;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output.

```
ods html body='combined2.html';
```

Print the combined data set. The PROC PRINT step prints the merged data set created by ODS. The output from this step is sent to the HTML destination.

```
proc print data=summary;
run;
```

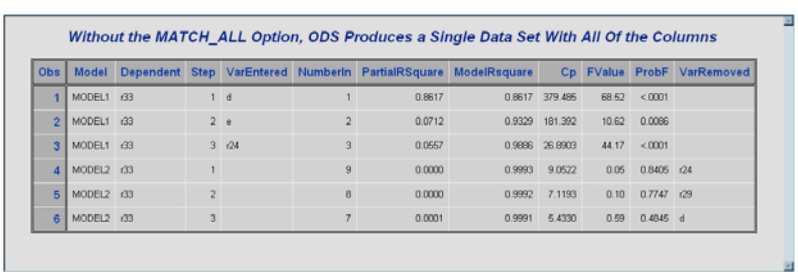
Close the HTML destination. The ODS HTML CLOSE statement closes the HTML destination and all of the files that are associated with it.

```
ods html close;
```

HTML Output

Display 5.11 Using the ODS OUTPUT Statement Without the MATCH_ALL Option to Combine Data Sets

This HTML output contains a printed report of the **summary** data set created by the ODS OUTPUT statement without the MATCH_ALL option specified. Note that to merge data sets, you do not have to specify the MATCH_ALL option.



Without the MATCH_ALL Option, ODS Produces a Single Data Set With All Of the Columns

Obs	Model	Dependent	Step	VarEntered	NumberIn	PartialRSquare	ModelRsquare	Cp	FValue	ProbF	VarRemoved
1	MODEL1	r33	1	d	1	0.8617	0.8617	379.485	68.52	<.0001	
2	MODEL1	r33	2	e	2	0.0712	0.9329	181.392	10.62	0.0086	
3	MODEL1	r33	3	r24	3	0.0557	0.9886	26.8903	44.17	<.0001	
4	MODEL2	r33	1		9	0.0000	0.9993	9.0522	0.05	0.8405	r24
5	MODEL2	r33	2		8	0.0000	0.9992	7.1193	0.10	0.7747	r29
6	MODEL2	r33	3		7	0.0001	0.9991	5.4330	0.59	0.4845	d

ODS PATH Statement

Specifies locations to write to or read from when creating or using PROC TEMPLATE definitions and the order in which to search for them

Valid: anywhere

Category: ODS: Output Control

Featured in: Example 1 on page 281 and Example 2 on page 283

Tip: This statement overrides the ODS PATH statement for the duration of a PROC TEMPLATE step.

Syntax

PATH <(APPEND) | (PREPEND) | (REMOVE) > *location(s)*;

PATH *path-argument*;

Required Arguments

location(s)

specifies one or more locations to write to or read from when creating or using PROC TEMPLATE definitions and the order in which to search for them. ODS searches the locations in the order that they appear on the statement. It uses the first definition that it finds that has the appropriate access mode (read, write, or update) set.

Each *location* has the following form:

<*libref.*>*item-store* <(READ | UPDATE | WRITE)>

<*libref.*>*item-store*

identifies an item store to read from, to write to, or to update. If an item store does not already exist, then the ODS PATH statement will create it.

(READ | UPDATE | WRITE)

specifies the access mode for the definition. The access mode is one of the following:

READ

provides read-only access.

WRITE

provides write access (always creating a new template store) as well as read access.

UPDATE

provides update access (creating a new template store only if the specified one does not exist) as well as read access.

Default: READ

Default:

SASUSER.TEMPLAT (UPDATE)

SASHELP.TMPLMST (READ)

Note: SAS stores all the definitions that it provides in SASHELP.TMPLMST. △

Interaction: You can use the PATH statement in a PROC TEMPLATE step to temporarily override the ODS PATH statement (see “PATH Statement” on page 276).

Tip: If you want to be able to ignore all definitions that you create, then keep them in their own item stores so that you can leave them out of the list of item stores that ODS searches.

path-argument
specifies the setting or displaying of the ODS path.

path-argument can be one of the following:

RESET
sets the ODS path to the default settings SASUSER.TEMPLAT (UPDATE) and SASHELP.TMPLMST (READ).

SHOW
displays the current ODS path.

VERIFY
sets the ODS path to include only templates supplied by SAS. VERIFY is the same as specifying ODS PATH SASHELP.TMPLMST (READ).

Options

(APPEND | PREPEND | REMOVE)
adds or removes one or more locations to a path.

APPEND
adds one or more locations to the end of a path. When you append a location to a path, all duplicate instances (same name and same permissions) of that item store are removed from the path. Only the last item store with the same name and permissions are kept.

PREPEND
adds one or more locations to the beginning of a path. When you prepend a location with update permissions to a path, all duplicate instances (same name and same permissions) of that item store are removed from the path. Only the first item store with the same name and permissions are kept.

REMOVE
removes one or more locations from a path.

Default: If you do not specify an APPEND, PREPEND, or REMOVE option, then the ODS PATH statement overwrites the complete path.

ODS PCL Statement

Opens, manages, or closes the PCL destination, which produces printable output for PCL (HP LaserJet) files

Valid: anywhere

Category: ODS: Third-Party Formatted

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

Syntax

ODS PCL <(<ID=>*identifier*)> <*action*>;

ODS PCL <(<ID=>*identifier*)> <*option(s)*>;

Without an Action or Options

If you use the ODS PCL statement without an action or options, then it opens the PCL destination and creates PCL output.

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

The following table lists the actions available for the ODS PCL statement. For complete descriptions of actions see"Actions" on page 160.

Table 5.1 ODS PCL Action Summary Table

Task	*action*
Close the PCL destination and the file that is associated with it.	CLOSE
Select output objects for the PCL destination.	SELECT
Exclude output objects from the PCL destination.	EXCLUDE
Write to the SAS log the current selection or exclusion list for the PCL destination.	SHOW

Options

The following table lists the options that are available for the ODS PCL statement. For more detailed descriptions of these options, see "ODS PRINTER Statement" on page 159.

Table 5.2 ODS PCL Option Summary Table

Task	Option
Specify whether or not background colors are printed in text.	BACKGROUND=
Apply a specified color scheme to your output.	COLOR=
Specify the number of columns to create on each page of output.	COLUMNS=
Specify the file to write to.	FILE=
Specify a scaling factor to apply to all the font sizes that do not have an explicit unit of measure.	FONTSCALE=
Open multiple instances of the same destination at the same time.	ID=
Specify that ODS use the printer drivers that SAS provides.	SAS
Control page breaks.	STARTPAGE=
Specify the style definition to use in writing the PCL output.	STYLE=
Insert text into your output.	TEXT=
For tables with multiple pages, ensure uniformity from page to page within a single table.	UNIFORM

Details

Opening and Closing the PCL Destination You can modify an open PCL destination with many ODS PCL options. However, the FILE= and SAS options will automatically close the open destination that is referred to in the ODS PCL statement, and will also close any files associated with it, and then open a new instance of the destination. If you use one of these options, it is best if you explicitly close the destination yourself.

The ODS Printer Family of Statements The ODS PCL statement is part of the ODS printer family of statements. Statements in the printer family open the PCL, PDF, PRINTER, or PS destination, producing output that is suitable for a high-resolution printer. The ODS PDF, ODS PRINTER, and ODS PS statements are also members of the ODS printer family of statements.

See Also

Statements:

"ODS PDF Statement" on page 153

"ODS PRINTER Statement" on page 159

"ODS PS Statement" on page 177

"The Third-Party Formatted Destinations" on page 27

"Commonly Used ODS Terminology" on page 21

ODS PDF Statement

Opens, manages, or closes the PDF destination, which produces PDF output, a form of output that is read by Adobe Acrobat Reader and other applications

Valid: anywhere

Category: ODS: Third-Party Formatted

CAUTION:

The PDF driver that SAS uses does not recognize all Microsoft Windows fonts. You must enter any such fonts into the SAS registry in order for SAS to find them. For information about the SAS registry, see *SAS Language Reference: Concepts*. △

Syntax

ODS PDF <(<ID=>*identifier*)> <*action*>;

ODS PDF <(<ID=>*identifier*)> <*option(s)*>;

Without an Action or Options

If you use the ODS PDF statement without an action or options, then it opens the PDF destination and creates PDF output.

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

The following table lists the actions available for ODS PDF statement. For complete descriptions see “Actions” on page 160.

Table 5.3 ODS PDF Action Summary Table

Task	*action*
Close the PDF destination and the file that is associated with it.	CLOSE
Select output objects for the PDF destination.	SELECT
Exclude output objects from the PDF destination.	EXCLUDE
Write to the SAS log the current selection or exclusion list for the PDF destination.	SHOW

Options

The following table lists the options that are available for the ODS PDF statement. For more detailed descriptions of these options, see “Options” on page 161.

Table 5.4 ODS PDF Option Summary Table

Task	Option
Specify the root name for the anchor tag that identifies each output object in the current file.	ANCHOR=
Insert the text string that you specify as the author in the metadata of a file.	AUTHOR=
Specify whether or not background colors are printed in text.	BACKGROUND=
Specify a string to use as the first part of all references that ODS creates in the file.	BASE=
Specify whether or not to generate and display the list of bookmarks for a PDF file.	BOOKMARKLIST=
Control the generation of bookmarks in a PDF file.	BOOKMARKGEN=
Apply a specified color scheme to your output.	COLOR=
Specify the number of columns to create on each page of output.	COLUMNS=
Specify the file to write to.	FILE=
Specify a scaling factor to apply to all the font sizes that do not have an explicit unit of measure.	FONTSCALE=
Open multiple instances of the same destination at the same time.	ID=
Insert a string of keywords into the output file's metadata.	KEYWORDS=
Control whether notes are added to a PDF file for items that are associated with the FLYOVER= style attribute.	PDFNOTE
Specify that ODS use the printer drivers that SAS provides.	SAS
Control page breaks.	STARTPAGE=
Specify the style definition to use in writing the PDF output.	STYLE=
Insert the text string that you specify as the subject in the metadata of a file.	SUBJECT=
Insert the text string that you specify as the title in the metadata of a file.	TITLE=
Insert text into your output.	TEXT=
For multi-page tables, provide uniformity from page to page within a single table.	UNIFORM

Details

The ODS Printer Family of Statements The ODS PDF statement is part of the ODS printer family of statements. Statements in the printer family open the PCL, PDF, PRINTER, or PS destination, producing output that is suitable for a high-resolution printer. The ODS PCL, ODS PRINTER, and ODS PS statements are also members of the ODS printer family of statements.

Opening and Closing the PDF Destination You can modify an open PDF destination with many ODS PDF options. However, the FILE= and SAS options will automatically close the open destination that is referred to in the ODS PDF statement, and will also close any files associated with it, and then open a new instance of the destination. If you use one of these options, it is best if you explicitly close the destination yourself.

Examples

Example 1: Opening Multiple Instances of the Same Destination at the Same Time

ODS features:

- ODS PDF statement:
  - Options:
    - ID=
    - STYLE=
    - FILE=

Other SAS features:

- PROC FORMAT
- PROC SORT
- PROC REPORT
- NOBYLINE|BYLINE system option
- #BYVAL parameter in titles

This example opens multiple instances of the PDF destination to create PDF output. One instance uses the default style definition and the second instance uses the STYLE= option to specify the D3D style definition.

Program

Create the input data set. The data set **grain_production** contains data on the amounts of wheat, rice, and corn that five leading grain-producing nations produced during 1995 and 1996.

```
data grain_production;
   length Country $ 3 Type $ 5;
   input Year country $ type $ Kilotons;
   datalines;
1995 BRZ  Wheat    1516
1995 BRZ  Rice     11236
1995 BRZ  Corn     36276
1995 CHN  Wheat    102207
1995 CHN  Rice     185226
1995 CHN  Corn     112331
1995 IND  Wheat    63007
1995 IND  Rice     122372
1995 IND  Corn     9800
1995 INS  Wheat    .
1995 INS  Rice     49860
1995 INS  Corn     8223
1995 USA  Wheat    59494
```

```
1995 USA  Rice     7888
1995 USA  Corn     187300
1996 BRZ  Wheat    3302
1996 BRZ  Rice     10035
1996 BRZ  Corn     31975
1996 CHN  Wheat    109000
1996 CHN  Rice     190100
1996 CHN  Corn     119350
1996 IND  Wheat    62620
1996 IND  Rice     120012
1996 IND  Corn     8660
1996 INS  Wheat    .
1996 INS  Rice     51165
1996 INS  Corn     8925
1996 USA  Wheat    62099
1996 USA  Rice     7771
1996 USA  Corn     236064
;
```

Sort the data set. PROC SORT sorts the data first by values of Year, then by values of Country, and finally by values of Type.

```
proc sort data=grain_production;
   by year country type;
run;
```

Create a user-defined format. PROC FORMAT creates the user-defined format $CNTRY.

```
proc format;
   value $cntry 'BRZ'='Brazil'
                'CHN'='China'
                'IND'='India'
                'INS'='Indonesia'
                'USA'='United States';
run;
```

Close the LISTING destination so that no listing output is produced. The LISTING destination is open by default. The ODS LISTING statement closes the LISTING destination to conserve resources. (If the destination were left open, then ODS would produce both Listing and PDF output.)

```
ods listing close;
```

Create two different PDF output files at the same time. The ODS PDF statement opens the PDF destination and creates PDF output.

The file **grain-1.pdf** is created by the first ODS PDF statement. Because no style definition is specified, the default style, **styles.printer**, is used.

The file **grain-2.pdf** is created by the second ODS PDF statement with the ID= option specified. The STYLE= option specifies that ODS use the style definition D3D. The ID= option gives this instance of the PDF destination the name **d3dstyle**. If you do not specify the ID= option, this ODS PDF statement will close the instance of the PDF destination that was opened by the previous ODS PDF statement and open a new instance of the PDF destination. The file **grain-1.pdf** will contain no output.

```
ods pdf file="grain-1.pdf";
ods pdf (id=d3dstyle) style=D3d file="grain-2.pdf";
```

Suppress the default BY line, suppress the printing of the date, and use the BY value in a title. The NOBYLINE option suppresses the BY line. The #BYVAL specification inserts the current value of the BY variable **Year** into the title.

```
options nobyline nodate;
title 'Leading Grain-Producing Countries';
title2 'for #byval(year)';
```

Produce a report. This PROC REPORT step produces a report on grain production. Each BY group produces a page of output.

```
proc report data=grain_production nowindows;
   by year;
   column country type kilotons;
   define country  / group width=14 format=$cntry.;
   define type     / group 'Type of Grain';
   define kilotons / format=comma12.;
   footnote 'Measurements are in metric tons.';
run;
```

Restore the BY line and clear the second title statement. The BYLINE option restores the BY line. The TITLE2 statement clears the second TITLE statement.

```
options byline;
title2;
```

Produce a report that contains one table for each year. The TABLE statement in this PROC TABULATE step has Year as the page dimension. Therefore, PROC TABULATE explicitly produces one table for 1995 and one for 1996.

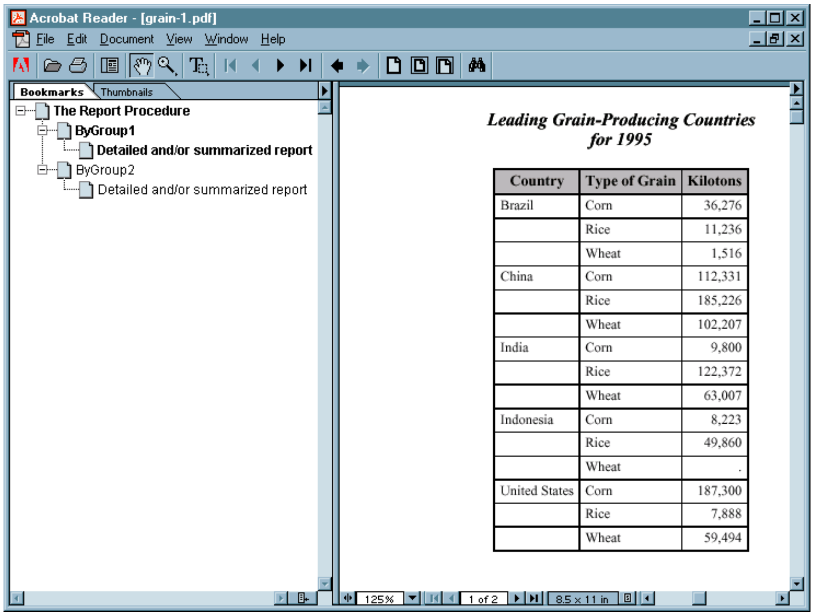
```
proc tabulate data=grain_production format=comma12.;
   class year country type;
   var kilotons;
   table year,
         country*type,
         kilotons*sum=' ' / box=_page_ misstext='No data';
   format country $cntry.;
   footnote 'Measurements are in metric tons.';
run;
```

Close the open destinations so that you can view or print the output. The ODS PDF CLOSE statement closes the first instance of the PDF destination and all of the files that are associated with it. The ODS PDF (ID=d3dstyle) statement closes the second instance of the PDF destination and all of the files that are associated with it. You must close the destinations before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
ods pdf(id=d3dstyle) close;
```

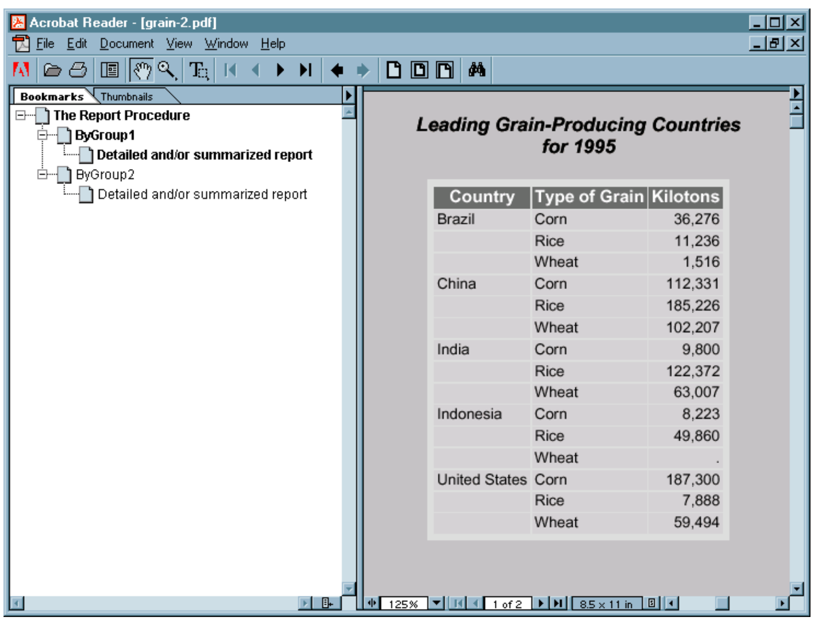
PDF Output

Display 5.12 PDF Output Without Style



Country	Type of Grain	Kilotons
Brazil	Corn	36,276
	Rice	11,236
	Wheat	1,516
China	Corn	112,331
	Rice	185,226
	Wheat	102,207
India	Corn	9,800
	Rice	122,372
	Wheat	63,007
Indonesia	Corn	8,223
	Rice	49,860
	Wheat	.
United States	Corn	187,300
	Rice	7,888
	Wheat	59,494

Display 5.13 PDF Output Using D3D Style



Country	Type of Grain	Kilotons
Brazil	Corn	36,276
	Rice	11,236
	Wheat	1,516
China	Corn	112,331
	Rice	185,226
	Wheat	102,207
India	Corn	9,800
	Rice	122,372
	Wheat	63,007
Indonesia	Corn	8,223
	Rice	49,860
	Wheat	.
United States	Corn	187,300
	Rice	7,888
	Wheat	59,494

See Also

Statements:

"ODS PCL Statement" on page 150
"ODS PRINTER Statement" on page 159
"ODS PS Statement" on page 177

"Commonly Used ODS Terminology" on page 21
"The Third-Party Formatted Destinations" on page 27

ODS PHTML Statement

Opens, manages, or closes the PHTML destination, which produces simple HTML output that uses twelve style elements and no class attributes

Valid: anywhere

Category: ODS: Third-Party Formatted

Syntax

ODS PHTML *action*;

ODS PHTML <*file-specification(s)*> <*option(s)*>;

Options

For a complete list of options, see the "ODS MARKUP Statement" on page 109.

Details

The ODS PHTML statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. SAS supplies many markup languages for you to use ranging from DOCBOOK to TROFF. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

ODS PRINTER Statement

Opens, manages, or closes the PRINTER destination, which produces printable output

Valid: anywhere

Category: ODS: Third-Party Formatted

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option, (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly, because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

CAUTION:

When you are producing PostScript output, verify that your online viewer or printer is set to use the same paper size as the value that is specified by the OPTIONS PAPERSIZE= statement. Otherwise, some parts of your output might appear to be missing. △

Syntax

ODS PRINTER <(<ID=>*identifier*)> <*action*>;

ODS PRINTER <(<ID=>*identifier*)> <*option(s)*>;

Without an Action or Options

If you use the ODS PRINTER statement in the UNIX, VMS, or OS/390 operating environments without an action or options, then it opens the PRINTER destination and creates PostScript output, unless otherwise configured by your system administrator.

If you use the ODS PRINTER statement in the Windows operating environment without an action or options, then it prints to the default Windows printer.

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

An *action* can be one of the following:

CLOSE

closes the destination and the file that is associated with it. You cannot print the file until you close the destination.

Tip: When an ODS destination is closed, ODS does not send output to that destination. Closing an unneeded destination frees some system resources.

EXCLUDE *exclusion(s)* | ALL | NONE

excludes output objects from the destination.

Default: NONE

Restriction: The destination must be open for this action to take effect.

Main discussion: “ODS EXCLUDE Statement” on page 90

SELECT *selection(s)* | ALL | NONE

selects output objects for the destination.

Default: ALL

Restriction: The destination must be open for this action to take effect.

Main discussion: “ODS SELECT Statement” on page 188

SHOW

writes the current selection or exclusion list for the destination to the SAS log.

Restriction: The destination must be open for this action to take effect.

Tip: If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

See also: "ODS SHOW Statement" on page 197

Options

ANCHOR='*anchor-name*'
specifies the root name for the anchor tag that identifies each output object in the current file.

Each output object must have an anchor tag for the bookmarks to reference. The references, which are automatically created by ODS, point to the name of an anchor. Therefore, each anchor name in a file must be unique.

anchor-name
is the root name for the anchor tag that identifies each output object in the current file.

ODS creates unique anchor names by incrementing the name that you specify. For example, if you specify ANCHOR='tabulate', then ODS names the first anchor **`tabulate`**. The second anchor is named **`tabulate1`**; the third is named **`tabulate2`**, and so on.

Requirement: You must enclose *anchor-name* in quotation marks.

Alias: NAMED_DEST= | BOOKMARK=

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Tip: You can change anchor names as often as you want by submitting the ANCHOR= option in a valid statement anywhere in your program. Once you have specified an anchor name, it remains in effect until you specify a new one.

Tip: Specifying new anchor names at various points in your program is useful when you want to link to specific parts of your PRINTER output. Because you can control where the anchor name changes, you know in advance what the anchor name will be at those points.

AUTHOR= '*author-text*'
inserts into the metadata of a file, the text string that you specify as the author.

author-text
is the text in the metadata of an open file that indicates the author.

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Requirement: You must enclose *author-text* in quotation marks.

BACKGROUND=NO | YES
specifies whether or not background colors are printed in text.

NO
suppresses the printing of background colors in text.

Alias: NOBACKGROUND is an alias for BACKGROUND=NO.

YES
allows the printing of background colors in text.

Alias: BACKGROUND is an alias for BACKGROUND=YES

Default: YES

BASE='*base-text*'
specifies the text to use as the first part of all references that ODS creates in the output file.

base-text
is the text that ODS uses as the first part of all references that ODS creates in the file.
Consider this specification:

```
BASE='http://www.your-company.com/local-url/'
```

In this case, ODS creates references that begin with the string **`http://www.your-company.com/local-url/`**. The appropriate *anchor-name* completes the link.

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Requirement: You must enclose *base-text* in quotation marks.

BOOKMARKLIST= HIDE | NONE | SHOW
specifies whether or not to generate and display the list of bookmarks for a PDF file.

Note: The generation of the bookmarks is not affected by the setting of this option. Bookmarks are generated by the BOOKMARKGEN= option. △

HIDE
generates a list of bookmarks for your PDF file. The bookmarks are not automatically displayed when you open the PDF file.

NONE
specifies not to generate a list of bookmarks for your PDF file.

Alias: NO | OFF

Alias: NOBOOKMARKLIST is an alias for BOOKMARKLIST=NONE | NO | OFF.

SHOW
generates a list of bookmarks for your PDF file. The bookmarks are automatically displayed when you open the PDF file.

Alias: YES | ON

Alias: BOOKMARKLIST is an alias for BOOKMARKLIST=SHOW | YES | ON.

Default: SHOW

Restriction: This option can only be set when you first open the destination.

Restriction: This option only has an affect only when creating PDF or PDFMARK output.

Interaction: The NOTOC option specifies BOOKMARKLIST= OFF and CONTENTS= OFF.

BOOKMARKGEN= NO | YES
controls the generation of bookmarks in a PDF file.

NO
does not generate bookmarks in the PDF file.

Alias: OFF

Alias: NOBOOKMARKGEN is an alias for BOOKMARKGEN=NO | OFF.

YES
generates bookmarks in the PDF file.

Alias: ON

Alias: BOOKMARKGEN is an alias for BOOKMARKGEN=YES | ON.

Default: YES

Restriction: This option can only be set when you first open the destination.

Interaction: If you set BOOKMARKGEN=NO, then the BOOKMARKLIST option is set to NO also.

COLOR=FULL | GRAY | MONO | NO | YES
applies the specified color scheme to your output.

FULL
creates full color output for both text and graphics.

GRAY
creates grayscale output for both text and graphics.

Alias: GREY

MONO
creates monochromatic output for both text and graphics.

Alias: BW

NO
does not use all the color information that the style definition provides.

Interaction: Specifying COLOR=NO is the same as specifying COLOR=GRAY and BACKGROUND=NO.

Tip: If you specify COLOR=NO, then the destination does this:

- generates black and white output
- creates all text and rules in black
- sets the SAS/GRAPH device to produce SAS/GRAPH output in grayscale
- ignores specifications for a background color from the style definition except for the purposes of determining whether to print rules for the table

YES
uses all the color information that a style definition provides, including background color.

Interaction: Specifying COLOR=YES is the same as specifying COLOR=FULL and BACKGROUND=YES.

Default: YES

Tip: If you choose color output for a printer that does not support color, then your output might be difficult to read.

Tip: In order to actually print in color, you must also

- use a printer that is capable of printing in color
- use the COLORPRINTING SAS system option. For information about the COLORPRINTING system option, see *SAS Language Reference: Dictionary*.

COLUMNS=*n*
specifies the number of columns to create on each page of output.

n
is the number columns per page.

Default: 1

COMPRESS=*n*
controls the compression of a PDF file. Compression reduces the size of the file.

n

specifies the level of compression. The larger the number, the greater the compression. For example, *n*=0 is completely uncompressed, and *n*=9 is the maximum compression level.

Default: 6

Range: 0–9

Restriction: Use this option only with the ODS PDF statement and the ODS PRINTER statement with the PDF option specified.

CONTENTS= NO | YES

CAUTION:

CONTENTS= is an experimental option. Do not use this option in production jobs. △

controls the generation of a printable table of contents.

NO

does not generate a printable table of contents.

Alias: NOCONTENTS is an alias for CONTENTS=NO

YES

generates a printable table of contents.

Alias: CONTENTS is an alias for CONTENTS=YES

FILE='*external-file*' | *fileref*

specifies the file that contains the output.

external-file

is the name of an external file to write to.

Requirement: You must enclose *external-file* in quotation marks.

fileref

is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

See: For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.

Default: If you do not specify a file to write to, then ODS writes to the file that is specified by one of two SAS system options:

SYSPRINT=

if you are using the Windows operating environment and do not specify any of the following options: PCL, PDF, PDFMARK, PS, or SAS.

PRINTERPATH=

in all other cases

If the system option does not specify a file, then ODS writes to the default printer. For more information, see the PRINTER= option on page 166.

Interaction: In an ODS printer family statement that refers to an open ODS printer destination, the FILE= option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

See: For information about the FILENAME statement, see *SAS Language Reference: Dictionary*.

FONTSCALE=*percent*

specifies a scaling factor to apply to all the font sizes that do not have an explicit unit of measure.

percent
is the percent specified. Some SAS style definitions specify the font size as an integer between 1 and 7. When ODS encounters such definitions, the PRINTER destination arbitrarily selects a font size for each integer.

Default: 100

Restriction: FONTSCALE= has no effect unless it is used in combination with the STYLE= option and a style definition that does not specify units of measure.

HOST
specifies that ODS use the printer drivers that the host system provides.

Interaction: In an ODS printer family statement that refers to an open ODS printer destination, the HOST option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

(<ID=> *identifier*)
enables you to open multiple instances of the same destination at the same time. Each instance can have different options.

identifier
can be numeric or can be a series of characters that begin with a letter or an underscore. Subsequent characters can include letters, underscores, and numerals.

Restriction: If *identifier* is numeric, it must be a positive integer.

Requirement: The ID= option must be specified immediately after the destination name.

KEYWORDS='*keywords-text*'
inserts into the output file's metadata, a string of keywords . The keywords enable a document management system to do topic-based searches.

keywords-text
is the string of keywords.

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Requirement: You must enclose *keywords-text* in quotation marks.

NOTOC
specifies that ODS omit the table of contents (Bookmark list) that is produced by default when producing PDF or PDFMARK output.

Interaction: The NOTOC option specifies BOOKMARKLIST=OFF and CONTENTS= OFF.

PCL
creates PCL output.

Restriction: Do not use this option in conjunction with the PDF or PS option.

Interaction: If you use the PCL option in an ODS PRINTER statement that refers to an open ODS printer destination, the option will force ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

PDF

creates PDF output.

Restriction: Do not use this option in conjunction with the PCL or PS options.

Interaction: If you use the PDF option in an ODS PRINTER statement that refers to an open ODS printer destination, the option will force ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

PDFMARK

enables ODS to insert special tags into a PostScript file. When you use software such as Adobe Acrobat (not Adobe Viewer), Acrobat Distiller interprets the tags to create a PDF file that contains the following items:

- bookmarks for each section of the output and for each table.
- references for items that are associated with the URL= style attribute.
- notes for items that are associated with the FLYOVER= style attribute. Notes are optional, and are based on the PDFNOTE option.
- author, keywords, subject, and title in the metadata of a file.

Default: Because using PDFMARK implies PostScript output, SAS automatically uses the PostScript driver that SAS supplies with this option.

Restriction: You cannot use the PRINTER= option with the PDFMARK option.

Requirement: To create a PDF file, you must use specialized software, such as Adobe Acrobat Distiller to convert the marked-up PostScript file into a PDF formatted file.

Interaction: In an ODS printer family statement that refers to an open ODS printer destination, the PDFMARK option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

Tip: Use this option only if you plan to distill the output. Otherwise, it uses excess resources and does not enhance the results.

PDFNOTE | NOPDFNOTE

controls whether notes are added to a PDF file for items that are associated with the FLYOVER= style attribute.

PDFNOTE

adds notes to a PDF file for items that are associated with the FLYOVER= style attribute.

NOPDFNOTE

modifies the behavior of PDFMARK so that notes are not added to the file for items that are associated with the FLYOVER= style attribute.

Default: PDFNOTE

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and ODS PRINTER statement with the PDFMARK option specified.

PRINTER='*printer-name*'

creates output that is formatted for the specified printer.

printer-name

is the name of the printer for which you want output formatted.

Requirement: You must enclose *printer-name* in quotation marks.

Restriction: *printer-name* must match a subkey in either the SAS registry or the Windows printer registry.

Tip: The description of the printer includes its destination and device type. If you are using the SAS printer drivers, then you can find a description of the printer in

CORE ▶ PRINTING ▶ PRINTERS ▶ *printer* ▶ PRINTER SETUP ▶ OUTPUT

If you are using the Windows operating environment and you do not specify the SAS option in the ODS PRINTER statement, then a description of the printer is located in the Windows registry.

Note: *printer-name* is not necessarily a physical printer. It is a description that tells SAS how to format the output, and where the output is located. For example, it could be a file on a disk. △

Alias: PRT

Default: If you do not specify a printer, then ODS formats the printer output for the printer that is specified by one of two SAS system options:

- SYSPRINT= if you are using the Windows operating environment and do not specify any of the following options: PCL, PDFMARK, POSTSCRIPT, PS, or SAS.
- PRINTERPATH= in all other cases.

If the system option does not specify a printer, then ODS writes to the default printer driver as specified in the SAS registry or the Windows registry. In the SAS registry, the default printer is specified in

CORE ▶ PRINTING ▶ Default Printer

Restriction: You cannot use the PRINTER= option with the PCL, PDF, PDFMARK, or PS options.

Interaction: In an ODS printer family statement that refers to an open ODS printer destination, the PRINTER= option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

Tip: To see a list of available printers for SAS printing, use the REGEDIT command. The printers are listed in the Registry Editor window under

CORE ▶ PRINTING ▶ PRINTERS

PS

creates PostScript output.

Alias: POSTSCRIPT

Restriction: Do not use this option in conjunction with the PDF or PCL options.

Tip: Specifying this option is equivalent to specifying both the SAS option and PRINTER= POSTSCRIPT.

Interaction: If you use the PS option in an ODS PRINTER statement that refers to an open ODS printer destination, the option will force ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the Printer Destination" on page 170.

SAS

specifies that ODS use the printer drivers that the SAS system provides.

Interaction: In an ODS printer family statement that refers to an open ODS printer destination, the SAS option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see “Opening and Closing the Printer Destination” on page 170.

STARTPAGE=NEVER | NO | NOW | YES

controls page breaks.

NEVER — specifies not to insert page breaks, even before graphics procedures.

CAUTION:
Each graph normally requires an entire page. The default behavior forces a new page after a graphics procedure, even if you use STARTPAGE=NO. STARTPAGE=NEVER turns off that behavior, so specifying STARTPAGE= NEVER might cause graphics to overprint. △

NO — specifies that no new pages be inserted at the beginning of each procedure, or within certain procedures, even if new pages are requested by the procedure code. A new page will begin only when a page is filled or when you specify STARTPAGE=NOW.

CAUTION:
Each graph normally requires an entire page. The default behavior forces a new page after a graphics procedure, even if you use STARTPAGE=NO. STARTPAGE=NEVER turns off that behavior. △

Alias: OFF

Tip: When you specify STARTPAGE=NO, system titles and footnotes are still produced only at the top and bottom of each physical page, regardless of the setting of this option. Thus, some system titles and footnotes that you specify might not appear when this option is specified.

NOW — forces the immediate insertion of a new page.

Tip: This option is useful primarily when the current value of the STARTPAGE= option is NO. Otherwise, each new procedure forces a new page automatically.

YES — inserts a new page at the beginning of each procedure, and within certain procedures, as requested by the procedure code.

Alias: ON

Default: YES

STYLE=*style-definition*

specifies the style definition to use in writing the printer output.

Default: If you do not specify a style definition, then ODS uses the style definition that is specified in the SAS registry subkey:

ODS ► DESTINATIONS ► PRINTER ► Selected Style

By default, this value is `styles.printer`.

Main discussion: For a complete discussion of style definitions, see “The Default Style Definition for HTML and Markup Languages” on page 320.

See also: For instructions on making your own user-defined style definitions, see Chapter 10, “TEMPLATE Procedure: Creating Tabular Output,” on page 367.

SUBJECT='*subject-text*'
inserts into the metadata of a file, the text string that you specify as the subject .

subject-text
is the text in the metadata of a file that indicates the subject.

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Requirement: You must enclose *subject-text* in quotation marks.

TEXT='*text-string*'
inserts a text string into your output.

text-string
is the text that you want to insert into your output.

Requirement: You must enclose *text-string* in quotation marks.

Tip: If you are submitting more than one procedure step and you do not specify the STARTPAGE=NO option, each procedure will force a new page before the output. Therefore, any text that you specify with TEXT= will be on the same page as the previous procedure.

TITLE='*title-text*'
inserts into the metadata of a file, the text string that you specify as the title.

title-text
is the text in the metadata of a file that indicates the title.

Restriction: Use this option only with the ODS PDF statement, the ODS PS statement with the PDFMARK option specified, and the ODS PRINTER statement with the PDFMARK option specified.

Requirement: You must enclose *title-text* in quotation marks.

UNIFORM
for multiple page tables, ensures uniformity from page to page within a single table. When the UNIFORM option is in effect, ODS reads the entire table before it starts to print it so that it can determine the column widths that are necessary to accommodate all the data. These column widths are applied to all pages of a multiple page table.

Note: With BY-group processing, SAS writes the results of each BY-group to a separate table, so the output might not be uniform across BY-groups. △

Default: If you do not specify the UNIFORM option, then ODS prints a table one page at a time. This approach ensures that SAS does not run out of memory while processing very large tables. However, it can also mean that column widths vary from one page to the next.

Tip: The UNIFORM option can cause SAS to run out of memory if you are printing a very large table. If this happens, then you can explicitly set the width of each of the columns in the table, and then print the table one page at a time. To do so, you must edit the table definition that you use. For more information, see “What Can You Do with a Table Definition?” on page 368.

Details

Opening and Closing the Printer Destination You can modify an open PRINTER destination with many ODS PRINTER options. However, any of the following options will automatically close the open destination that is referred to in the ODS PRINTER statement, and will also close any files that are associated with it, and then open a new instance of the destination: FILE=, HOST, PCL, PDF, PDFMARK, PRINTER=, PS, or SAS. If you use one of these options, it is best if you explicitly close the destination yourself.

For example, in the following ODS program, the second ODS PRINTER statement closes the PRINTER destination that is opened by the first ODS PRINTER statement. Therefore, the file **brickstyle.ps** will not contain output that is formatted with the **d3d** style. However, the second ODS PRINTER statement does not affect the PS destination that is opened by the ODS PS statement. The PS destination is still open and the file **nostyle.ps** could be modified.

The ODS PRINTER statement opens the PRINTER destination and creates PostScript output.

```
ods printer ps style=brick file='brickstyle.ps';
proc print data=statepop;
run;
```

The ODS PS statement opens the PS destination and creates PostScript output.

```
ods ps file='nostyle.ps';
proc print data=statepop;
run;
```

The ODS PRINTER statement closes the open PRINTER destination and the files that are associated with it. It then opens a new instance of the PRINTER destination and creates PostScript output.

```
ods printer ps style=d3d file='d3dstyle.ps';
proc print data=statepop;
run;
ods printer ps close;
ods ps close;
```

Printing Output Directly to a Printer Printing output directly to a printer using the ODS PRINTER statement depends on your host operating environment.

Note: To print directly to a printer in the OS/390, UNIX, or VMS operating environment, you can use the FILENAME statement. Specific information about your operating environment is required when using the FILENAME statement. See the SAS documentation for your operating environment before using this statement. Commands are also available in some operating environments that associate a fileref with a file and that break that association.
△

To send output to a printer when running SAS under this platform	Do this
OS/390	Use the FILENAME statement with the SYSOUT= DATA set option specified. You can then print to the fileref. Syntax: **filename *your-fileref* sysout=a dest=*printer-name*;** **ods printer file=*your-fileref*;** Example: **filename local sysout=a dest=chpljj21;** **ods printer file=local;**
UNIX	Use the FILENAME statement with the PIPE command to associate a fileref with your **lpr** print command. Syntax: **filename *your-fileref* pipe 'lpr -P *printer-name*';** **ods printer file=*your-fileref*;** Example: **filename local pipe 'lpr -p chpljj21';** **ods printer file=local;**
VMS	Use the FILENAME statement with the PRINTER device type specified to create a printer fileref that you can print to. Syntax: **filename *your-fileref* printer passall=yes queue=*printer-name*;** **ods printer file=*your-fileref*;** Example: **filename local printer passall=yes queue=chpljj21;** **ods printer file=local;**
Windows	If you want to print to your default printer use this code. Syntax: **ods printer;** If you want to print to a printer that is not the default, then use the PRINTER= option to specify the printer name. Syntax: **ods printer printer=*printer-name*;** Example: **ods printer printer=chpljj21;** *Note:* To find out what printers are available, select **Start -> Settings -> Printers** from the Taskbar. If a printer is listed there, then you can use it with the ODS PRINTER statement. If the printer name has spaces, then you must put the printer name in quotation marks. △

Using ODS PRINTER with Windows When you use the ODS PRINTER statement in the Windows operating environment, ODS will produce output that is formatted for your default Windows printer unless you specify a different printer by using the PRINTER= option on page 166. You can also produce printable output files in PCL, PDF, or PostScript format by using the appropriate option.

Using ODS PRINTER with All Other Hosts When you use the ODS PRINTER statement in any other operating environment, ODS uses the SAS drivers to produce output files in PCL, PDF, or PostScript formats. By default, the ODS PRINTER statement produces PostScript output files. You can also produce printable output files in PCL or PDF format by using the appropriate option or registry setting.

Example

Example 1: Selecting Output for the HTML and PRINTER Destinations

ODS features:

- ODS _ALL_ CLOSE
- ODS HTML statement:
  - BODY=
- ODS PRINTER statement:
  - FILE=
  - PS
- ODS LISTING statement:
  - CLOSE
- ODS SELECT statement:
  - with label
  - with name
  - with path

Other SAS features:

- PROC UNIVARIATE

Data set:

- "Creating the Statepop Data Set" on page 620

This example selects three output objects from a UNIVARIATE procedure step to send to both the HTML destination and to the PRINTER destination.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program

Prevent listing output from being created. The ODS LISTING statement closes the LISTING destination in order to conserve resources.

```
ods listing close;
```

Set the SAS system options. The OPTIONS statement controls several aspects of the PRINTER output. The NODATE system option specifies that SAS not print the date and the time. The NONUMBER system option specifies that SAS not print the page number on the first title line of each page of SAS output. These options do not affect the HTML output.

```
options nodate nonumber;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output. BODY= sends all output objects to the external file that you specify. Some browsers require an extension of HTM or HTML on the filename.

```
ods html body='your_file.html';
```

Create PostScript output. The ODS PRINTER statement opens the PRINTER destination and the PS option specifies PostScript output. FILE= sends all output objects to the external file that you specify.

```
ods printer ps file='your_file.ps';
```

Specify the output objects to send to the open destinations. The ODS SELECT statement specifies three output objects to send to all open destinations. The first output object is selected by its name, **`BasicMeasures`**. The second output object is selected by its label, **`Tests For Location`**. These two selection criteria select the output objects for the analysis of both variables. The third output object is selected by its full path **`Univariate.CityPop_90.ExtremeObs`**. This selection criterion selects the output object for only one variable, **`CityPop_90`**.

```
ods select BasicMeasures
           'Tests For Location'
           Univariate.CityPop_90.ExtremeObs;
```

Compute descriptive statistics for two variables. PROC UNIVARIATE computes descriptive statistics for two variables, CityPop_80 and CityPop_90. ODS routes the selected output objects to the HTML and PRINTER destinations.

```
proc univariate data=statepop mu0=3.5;
   var citypop_90 citypop_80;
run;
```

Close the open destinations so that you can view or print the output. The ODS _ALL_ CLOSE statement closes all of the open destinations and all of the files that are associated with them. You must close the destinations before you can view the output with a browser, or before you can send the output to a physical printer.

```
ODS _all_ close;
```

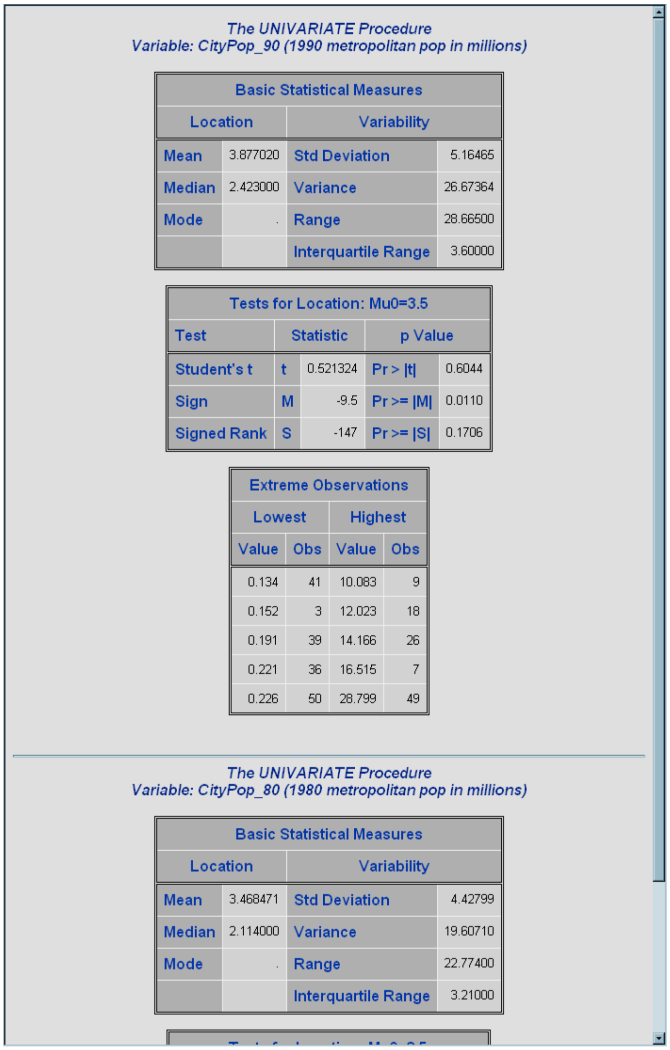
Reset the default output type to LISTING. The ODS LISTING statement opens the LISTING destination to return ODS to its default setup.

```
ods listing;
```

HTML Output

Display 5.14 HTML Output for the Variables CityPop_90 and CityPop_80

The HTML output includes three output objects for the variable CityPop_90, and two output objects for the variable CityPop_80.



The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Basic Statistical Measures			
Location		Variability	
Mean	3.877020	Std Deviation	5.16465
Median	2.423000	Variance	26.67364
Mode	.	Range	28.66500
		Interquartile Range	3.60000

Tests for Location: Mu0=3.5				
Test	Statistic		p Value	
Student's t	t	0.521324	Pr > |t|	0.6044
Sign	M	-9.5	Pr >= |M|	0.0110
Signed Rank	S	-147	Pr >= |S|	0.1706

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0.134	41	10.083	9
0.152	3	12.023	18
0.191	39	14.166	26
0.221	36	16.515	7
0.226	50	28.799	49

The UNIVARIATE Procedure
Variable: CityPop_80 (1980 metropolitan pop in millions)

Basic Statistical Measures			
Location		Variability	
Mean	3.468471	Std Deviation	4.42799
Median	2.114000	Variance	19.60710
Mode	.	Range	22.77400
		Interquartile Range	3.21000

Printer Output

Display 5.15 Partial PostScript Output for the Variables CityPop_90 and CityPop_80

The Printer output includes three output objects for the variable CityPop_90, and two output objects for the variable CityPop_80.

The SAS System

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Basic Statistical Measures			
Location		Variability	
Mean	3.877020	Std Deviation	5.16465
Median	2.423000	Variance	26.67364
Mode	.	Range	28.66500
		Interquartile Range	3.60000

Testsfor Location:Mu0=3.5				
Test	Statistic		p Value	
Student's t	t	0.521324	Pr > |t|	0.6044
Sign	M	-9.5	Pr >= |M|	0.0110
Signed Rank	S	-147	Pr >= |S|	0.1706

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0.134	41	10.083	9
0.152	3	12.023	18
0.191	39	14.166	26
0.221	36	16.515	7
0.226	50	28.799	49

ODS PROCLABEL Statement

Enables you to change a procedure label

Valid: anywhere

Category: ODS: Output Control

Interaction: This statement applies to all open destinations, except for the output destination where a procedure label is not an option. However, this setting lasts for only one procedure step. You must issue an ODS PROCLABEL statement for each procedure step that you have.

Syntax

ODS PROCLABEL '*string*';

Arguments

'string'
is the procedure label that you specify.

Details

ODS PROCLABEL affects the item names in the outer list of the table of contents.

ODS PROCTITLE Statement

Determines whether or not to write the title that identifies the procedure that produces the results in the output

Valid: anywhere

Category: ODS: Output Control

Interaction: This statement applies to all open destinations, except for the output destination where a procedure label is not an option. This setting persists until you issue an ODS NOPROCTITLE statement. You do not have to issue an ODS PROCTITLE statement for each procedure step.

Syntax

ODS PROCTITLE | NOPROCTITLE;

ODS PROCTITLE
writes, in the output, the name of the procedure that produces the results.

Note: Not all procedures use a procedure title. △

Default: ODS PROCTITLE is the default.

ODS NOPROCTITLE
suppresses the writing of the title of the procedure that produces the results.

Details

The following table lists the aliases for the ODS PROCTITLE statement:

Statement	Alias
ODS PROCTITLE	ODS PROCTITLE=ON ODS PTITLE ODS PTITLE=ON
ODS NOPROCTITLE	ODS PROCTITLE=OFF ODS NOPTITLE ODS PTITLE=OFF

ODS PS Statement

Opens, manages, or closes the PS destination, which Produces PostScript (PS) output

Valid: anywhere

Category: ODS: Third-Party Formatted

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option, (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly, because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

CAUTION:

When you are producing PostScript output, verify that your online viewer or printer is set to use the same paper size as the value that is specified by the OPTIONS PAPERSIZE= statement. Otherwise, some parts of your output might appear to be missing. △

Syntax

ODS PS <(<ID=>*identifier*)> <*action*>;

ODS PS <(<ID=>*identifier*)> <*option(s)*>;

Without an Action or Options

If you use the ODS PS statement without an action or options, then it opens the PS destination and creates PostScript output.

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects

- writes the current exclusion list or selection list to the SAS log

The following table lists the actions that are available for the ODS PS statement. For complete descriptions of actions see “Actions” on page 160.

Table 5.5 ODS PS Action Summary Table

Task	*action*
Close the PS destination and the file that is associated with it.	CLOSE
Select output objects for the PS destination.	SELECT
Exclude output objects from the PS destination.	EXCLUDE
Write to the SAS log the current selection or exclusion list for the PS destination.	SHOW

Options

The following table lists the options available for the ODS PS statement. For more detailed descriptions of these options, see “Options” on page 161.

Table 5.6 ODS PS Option Summary Table

Task	Option
Specify the root name for the anchor tag that identifies each output object in the current file.	ANCHOR=
Insert the text string that you specify as the author in the metadata of a file.	AUTHOR=
Specify whether or not background colors are printed in text.	BACKGROUND=
Specify a string to use as the first part of all references that ODS creates in the file.	BASE=
Specify whether or not to generate and display the list of bookmarks for a PS file.	BOOKMARKLIST=
Control the generation of bookmarks in a PS file.	BOOKMARKGEN=
Apply a specified color scheme to your output.	COLOR=
Specify the number of columns to create on each page of output.	COLUMNS=
Specify the file to write to.	FILE=
Specify a scaling factor to apply to all the font sizes that do not have an explicit unit of measure.	FONTSCALE=
Open multiple instances of the same destination at the same time.	ID=

Task	Option
Insert a string of keywords into the output file's metadata.	KEYWORDS=
Insert special markup which is used when converting a PostScript file to a PDF file.	PDFMARK
Control whether notes are added to a PDF file for items that are associated with the FLYOVER= style attribute.	PDFNOTE
Specify that ODS use the printer drivers that SAS provides.	SAS
Control page breaks.	STARTPAGE=
Specify the style definition to use in writing the PS output.	STYLE=
Insert text into your output.	TEXT=
For multi page tables, ensure uniformity from page to page within a single table.	UNIFORM

Details

The ODS PS statement is part of the ODS printer family of statements. Statements in the printer family open the PCL, PDF, PRINTER, or PS destination, producing output that is suitable for a high-resolution printer. The ODS PCL, ODS PDF, and ODS PRINTER statements are also members of the ODS printer family of statements.

Opening and Closing the PS Destination You can modify an open PS destination with many ODS PS options. However, the FILE=, PDFMARK, and SAS options will automatically close the open destination that is referred to in the ODS PS statement and will also close any files associated with it, and then open a new instance of the destination. If you use one of these options, it is best if you explicitly close the destination yourself.

See Also

Statements:
"ODS PCL Statement" on page 150
"ODS PDF Statement" on page 153
"ODS PRINTER Statement" on page 159
"Commonly Used ODS Terminology" on page 21
"The Third-Party Formatted Destinations" on page 27

ODS RESULTS Statement

Tracks ODS output in the Results window

Valid: anywhere

Category: ODS: Output Control

Restriction: Valid in a windowing environment only, not in batch mode.

Alias: ODS RESULTS | NORESULTS;

Syntax

ODS RESULTS ON | OFF;

Arguments

ON
Tracks output that is generated by ODS in the Results window.

OFF
Turns off the tracking of output that is generated by ODS in the Results window.

Details

Using ODS RESULTS ON sends all output to the Results window. This is the default setting. Using ODS RESULTS OFF disables ODS tracking, and output is not sent to the Results window. The OFF option is recommended for long running jobs such as regression analyses, when you don't want to track all of the output.

ODS RTF Statement

Opens, manages, or closes the RTF destination, which produces output written in Rich Text Format for use with Microsoft Word 2000

Valid: anywhere

Category: ODS: Third-Party Formatted

Interaction: By default, when you execute a procedure that uses the FORMCHAR system option, (for example, PROC PLOT or PROC CHART), ODS formats the output in SAS Monospace font. If you are creating output that will be viewed in an operating environment where SAS software is not installed, this output will not display correctly, because without SAS, the SAS Monospace font is not recognized. To make your document display correctly, include the following statement before your SAS program:

```
OPTIONS FORMCHAR="|----|+|---+=|-/\<>*";
```

Syntax

ODS RTF <(<ID=> *identifier*)> *action*;

ODS RTF <(<ID=> *identifier*)> <*option(s)*>;

Actions

An *action* does one of the following:

- closes the destination
- excludes output objects
- selects output objects
- writes the current exclusion list or selection list to the SAS log

An *action* can be one of the following:

CLOSE
closes the RTF destination and any files that are associated with it.

Tip: When an ODS destination is closed, ODS does not send output to that destination. Closing an unneeded destination frees some system resources.

EXCLUDE *exclusion(s)* | ALL | NONE
excludes output objects from the RTF destination.

Restriction: The destination must be open for this action to take effect.

Default: NONE

See also: "ODS EXCLUDE Statement" on page 90

SELECT *selection(s)* | ALL | NONE
selects output objects for the RTF destination.

Default: ALL

Restriction: The destination must be open for this action to take effect.

See also: "ODS SELECT Statement" on page 188

SHOW
writes the current selection or exclusion list for the destination to the SAS log .

Restriction: The destination must be open for this action to take effect.

See also: "ODS SHOW Statement" on page 197

Tip: If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

Options

ANCHOR= '*anchor-name*'
specifies the base name for the RTF anchor tag that identifies each output object in the current file.

Each output object must have an anchor tag for the contents, page, and frame files to link to or to reference. The references, which are automatically created by ODS, point to the name of an anchor. Therefore, each anchor name in a file must be unique.

anchor-name
is the base name for the RTF anchor tag that identifies each output object in the current file.

ODS creates unique anchor names by incrementing the name that you specify. For example, if you specify ANCHOR= 'tabulate', then ODS names the first anchor **`tabulate`**. The second anchor is named **`tabulate1`**; the third is named **`tabulate2`**, and so on.

Requirement: You must enclose *anchor-name* in quotation marks.

Alias: NAMED_DEST= | BOOKMARK=

Tip: Specifying new anchor names at various points in your program is useful when you want other RTF files to link to specific parts of your RTF output. Because you can control where the anchor name changes, you know in advance what the anchor name will be at those points.

Tip: You can change anchor names as often as you like by submitting the ANCHOR= option in an ODS RTF statement anywhere in your program. Once you have specified an anchor name, it remains in effect until you specify a new one.

AUTHOR= *'author-text'*
inserts into the metadata of a file, the text string that you specify as the author.

author-text
is the text in the metadata of an open file that indicates the author.

Requirement: You must enclose *author-text* in quotation marks.

BASE= *'base-text'*
specifies the text to use as the first part of references which ODS creates in the output file

base-text
is the text that ODS uses as the first part of all references that ODS creates in the file.

Consider this specification:

```
BASE='http://www.your-company.com/local-url/'
```

In this case, ODS creates links that begin with the string **http://www.*your-company.com/local-url*/**.

Requirement: You must enclose *base-text* in quotation marks.

COLUMNS= *n*
specifies the number of columns to create on each page of output.

n
is the number of page columns.

Default: 1

ENCODING= *local- character–set–encoding*
overrides the encoding for input or output processing (transcodes) of external files.

See: For information about the ENCODING= option, see *SAS National Language Support (NLS): User's Guide*.

FILE= *'external-file'* | *'fileref'*
opens the RTF destination and specifies the RTF file or SAS catalog to write to. This file remains open until you do one of the following actions:

- close the RTF destination with ODS RTF CLOSE or ODS _ALL_ CLOSE
- specify another file to write to instead.

external-file
is the name of an external file to write to.

Requirement: You must enclose *external-file* in quotation marks.

fileref
is a fileref that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

See also: For information about the FILENAME statement, see the section on statements in *SAS Language Reference: Dictionary*.

Requirement: You must enclose *fileref* in quotation marks.

Alias: BODY=

Interaction: In an ODS RTF statement that refers to an open RTF destination, the FILE= option forces ODS to close the destination and all files that are associated with it, and to open a new instance of the destination. For more information, see "Opening and Closing the RTF Destination" on page 186.

See also: NEWFILE=

FONTSCALE= ***percent***

specifies a scaling factor to apply to all the font sizes that do not have an explicit unit of measure.

percent

is the percent specified. Some SAS style definitions specify the font size as an integer between 1 and 7. When ODS encounters such definitions, the RTF destination arbitrarily selects a font size for each integer.

Default: 100

Restriction: FONTSCALE= has no effect unless it is used in combination with the STYLE= option.

GFOOTNOTE | NOGFOOTNOTE

controls the location of the footnotes that are defined by the graphics program that generates the RTF output.

GFOOTNOTE

includes all the currently defined footnotes within the graphics output.

NOGFOOTNOTE

suppresses all the currently defined footnotes from appearing in the graphics file. Instead, they become part of the RTF file.

Default: GFOOTNOTE

Restriction: This option applies only to SAS programs that produce one or more graph outputs.

GTITLE | NOGTITLE

controls the location of the titles that are defined by the graphics program that generates the RTF output.

GTITLE

includes all the currently defined titles within the graphics output that is called by the body file.

NOGTITLE

suppresses all the currently defined titles from appearing in the graphics output. Instead, they become part of the RTF file.

Default: GTITLE

Restriction: This option applies only to SAS programs that produce one or more graph files.

(ID= ***identifier*****)**

identifier

can be a number, or a series of characters that begin with a letter or an underscore.

Restriction: If *identifier* is a number, it must be a positive.

Requirement: The ID= option must be specified immediately after the destination name.

Tip: You can omit the ID= option, and instead use a name or a number to identify the instance.

Featured in: Example 1 on page 155

KEEPN | NOKEEPN
controls how tables split at pages.

KEEPN
ODS does not allow a table to split at a page break unless the entire table cannot fit on one page.

NOKEEPN
ODS allows a table to split at a page break.

Tip: Although KEEPN minimizes page breaks in tables, it might use substantially more paper than NOKEEPN because it issues a page break before starting to print any table that does not fit on the remainder of the page.

NEWFILE= ***starting-point***
creates a new file at the specified *starting-point*.
starting-point can be one of the following:

BYGROUP
starts a new file for the results of each BY group.

NONE
writes all output to the next file that is opened, and then stops incrementing.

OUTPUT
starts a new file for the results of each BY group.

Alias: TABLE

PROC
starts a new file each time that you start a new procedure.

Default: NONE

ODS automatically names new files by incrementing the name of the body file. For example, if you specify FILE= 'REPORT.RTF', then ODS names the first file REPORT.RTF. Additional files are named REPORT1.RTF, REPORT2.RTF, and so on. If you end the file name with a number, then ODS begins incrementing with that number. For example, if you specify FILE= 'MAY5.RTF', then ODS names the first file MAY5.RTF. Additional files are named MAY6.RTF, MAY7.RTF, and so on.

Restriction: The NEWFILE= and TEXT= options cannot be used together in the same ODS RTF statement. You must use a separate ODS RTF statement for each of these options.

NOGFOOTNOTE
See the description of GFOOTNOTE | NOFOOTNOTE in this section.

NOGTITLE
See the description of GTITLE | NOGTITLE in this section.

OPERATOR= '*text-string*'
inserts into the metadata of the RTF file, the text you specify.

text-string
is the text in the metadata of a file that indicates the author.

Requirement: You must enclose *text-string* in quotation marks.

RECORD_SEPARATOR= '*alternative-separator*' | NONE
specifies an alternative record separator, which is a character or string that separates lines in the output files.

Different operating environments use different separator characters. If you do not specify a record separator, then the RTF files are formatted for the environment in which you run the SAS job. However, if you are generating files in one operating environment for viewing in another operating environment that uses a different separator character, then you can specify a record separator that is appropriate for the target environment.

alternative-separator
represents one or more characters, in hexadecimal or ASCII format. For example, the following option specifies a record separator of a carriage-return character and a linefeed character (on an ASCII file system):

```
RECORD_SEPARATOR= '0D0A'x
```

Requirement: You must enclose *alternative-separator* in quotation marks.

NONE
produces RTF output that is appropriate for the environment in which you run the SAS job.

Operating Environment Information: In many operating environments, using a value of NONE is the same as omitting the RECORD_SEPARATOR option. △

Operating Environment Information: In a mainframe environment, by default, ODS produces a binary file that contains embedded record-separator characters. While this approach means that the file is not restricted by the line-length restrictions on ASCII files, it also means that if you view the file in an editor, then the lines are concatenated.

If you want to format the RTF files so that you can read them with an editor, then use RECORD_SEPARATOR= NONE. In this case, ODS writes one line of RTF at a time to the file. When you use a value of NONE, the logical record length of the file that you are writing to must be at least as long as the longest line that ODS produces. Otherwise, RTF might wrap to another line at an inappropriate place. △

Alias:

RECSEP=

RS=

SASDATE
writes to the RTF file that the time and the date that you submitted your SAS program, instead of the time that the RTF file was opened.

Restriction: You can only specify SASDATE when a new file is opened. If you specify the option at any other time, a warning message is written to the SAS log.

STARTPAGE= YES | NO | NOW
controls page breaks.

YES
inserts a new page at the start of each procedure and within certain procedures, as requested by the procedure code.

Alias: ON

NO
specifies that no new pages be inserted explicitly at the start of each procedure or within certain procedures, even if new pages are requested by the procedure code. A new page will begin only when a page is filled or when you specify STARTPAGE= NOW.

Alias: NEVER

Tip: This option prints only the first set of titles and the first set of footnotes to the RTF file.

NOW
forces the immediate insertion of a new page.

Tip: This option is useful primarily when the current value of the STARTPAGE= option is NO. Otherwise, each new procedure forces a new page automatically.

Tip: Specifying STARTPAGE= NO suppresses forced page breaks. You can turn on forced page breaking again by specifying STARTPAGE= YES. You can insert a page break by specifying STARTPAGE=NOW when you want a page break.

Default: YES

STYLE= '*style-definition*'
specifies the style definition to use in writing the RTF files.

style-definition
describes how to display the presentation aspects (color, font face, font size, and so on) of your SAS output. A style definition determines the overall appearance of the documents that use it. Each style definition is composed of style elements.

Main discussion: For a complete discussion of style definitions, see “Overview: ODS Style Definitions” on page 285.

See also: For instructions on making your own user-defined style definitions, see Chapter 9, “TEMPLATE Procedure: Creating a Style Definition,” on page 285.

Default: If you do not specify a style definition, then ODS uses the file that is specified in the SAS registry subkey:

ODS ► DESTINATIONS ► RTF ► Selected Style

By default, this value specifies **`styles.RTF`**.

TEXT= '*text-string*'
inserts text into your RTF output.

text-string
is the text that you want to insert into your RTF output. You can also use TEXT= to annotate other output.

Restriction: The NEWFILE= and TEXT= options cannot be used together in the same ODS RTF statement. You must use a separate ODS RTF statement for each of these options.

Requirement: You must enclose *text-string* in quotation marks.

TITLE= '*title-text*'
inserts into the metadata of a file, the text string that you specify as the title.

title-text
is the text in the metadata of a file that indicates the title.

Requirement: You must enclose *title-text* in quotation marks.

TRANTAB= *translation-table*
specifies the translation table to use when transcoding a file for output.

See: For information about the TRANTAB= option see *SAS National Language Support (NLS): User’s Guide*.

Details

Opening and Closing the RTF Destination You can modify an open RTF destination with many ODS RTF options. However, the FILE= option will automatically close the open destination that is referred to in the ODS RTF statement and will also close any files associated with it, and then open a new instance of the destination. If you use one of these options, it is best if you explicitly close the destination yourself.

How Does RTF Format Output? RTF produces output for Microsoft Word 2000. Although there are other applications that can read RTF files, the RTF output might not work successfully with them.

The RTF destination enables you to view and edit the RTF output. ODS does not define the "vertical measurement," meaning that SAS does not determine the optimal place to position each item on the page. For example, page breaks are not always fixed because when you edit your text, you do not want your RTF output tables to split at inappropriate places. Your tables can remain intact on one page, or can have logical breaks where you specified.

However, because Microsoft Word needs to know the widths of table columns and it cannot adjust tables if they are too wide for the page, ODS measures the width of the text and tables (horizontal measurement). Therefore, all the column widths can be set properly by SAS and the table can be divided into panels if it is too wide to fit on a single page.

In short, when producing RTF output for input to Microsoft Word, SAS determines the horizontal measurement and Microsoft Word controls the vertical measurement. Because Microsoft Word can determine how much room there is on the page, your tables will display consistently even after you modify your RTF file.

Note: The creation of complex tables that contain a large number of observations can reduce system efficiencies and slow down processing time. △

ODS RTF and Graphics ODS RTF produces output in “rich text format”, that supports three formats for graphics that can be read by MS Word.

Format for graphics	Corresponding SAS graphics driver
emfblips	SASEMF
pngblips	PNG
jpegblips	JPEG

When no target device is specified, the default target is SASEMF . The SASEMF graphics device is used as the default when you specify a driver other than SASEMF, PNG, or JPEG.

You can also use the ACTIVEX, ACTXIMG, JAVAIMG graphics drivers to generate graphics in your RTF documents. The ACTIVEX driver generates an ActiveX control. The ACTXIMG and JAVAIMG drivers generate PNG files. For more information about graphics devices, see *SAS/GRAPH Reference, Volumes 1 and 2*.

ODS SELECT Statement

Specifies output objects for ODS destinations

Valid: anywhere

Category: ODS: Output Control

See Also: “ODS EXCLUDE Statement” on page 90

Tip: Although you can maintain a selection list for one destination and an exclusion list for another, it is easier to understand the results if you maintain the same types of lists for all the destinations that you route output to.

Syntax

ODS <*ODS-destination*> **SELECT** *selection(s)* | ALL | NONE;

Arguments

selection(s)

specifies output objects to add to a selection list. ODS sends the items in the selection list to all active ODS destinations. By default, ODS automatically modifies selection lists when a DATA step that uses ODS or a procedure step ends. For information about modifying these lists, see “Selection and Exclusion Lists” on page 34. For information about ending DATA and procedure steps, see the section on DATA Step Processing in *SAS Language Reference: Concepts*.

Each *selection* has the following form:

output-object <(PERSIST)>

output-object

specifies the output object to select.

To specify an output object, you need to know which output objects your SAS program produces. The ODS TRACE statement writes to the SAS log a trace record that includes the path, the label, and other information about each output object that is produced. You can specify an output object as

- a full path. For example,

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  is the full path of the output object.

- a partial path. A partial path consists of any part of the full path that begins immediately after a period (.) and continues to the end of the full path. For example, if the full path is

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  then the partial paths are:

  ```
  City_Pop_90.TestsForLocation
  TestsForLocation
  ```

- a label that is enclosed by quotation marks.

  For example,

```
"The UNIVARIATE Procedure"
```

- a label path. For example, the label path for the output object is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  Note: The trace record shows the label path only if you specify the LABEL option in the ODS TRACE statement. △

- a partial label path. A partial label path consists of any part of the label that begins immediately after a period (.) and continues to the end of the label. For example, if the label path is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  then the partial label paths are:

  ```
  "CityPop_90"."Tests For Location"
  "Tests For Location"
  ```

- a mixture of labels and paths.
- any of the partial path specifications, followed by a pound sign (#) and a number. For example, TestsForLocation#3 refers to the third output object that is named TestsForLocation.

See also: "ODS TRACE Statement" on page 197

(PERSIST)
keeps the *output-object* that precedes the PERSIST option in the selection list, even if the DATA or procedure step ends, until you explicitly modify the list with

- any ODS EXCLUDE statement
- ODS SELECT NONE
- ODS SELECT ALL
- an ODS SELECT statement that applies to the same output object but does not specify PERSIST.

Requirement: You must enclose PERSIST in parentheses.

ALL
specifies that ODS send all of the output objects to the open destination.

Alias: ODS SELECT DEFAULT

Interaction: If you specify ALL without specifying a destination, ODS sets the overall list to SELECT ALL and sets all other lists to their defaults.

NONE
specifies that ODS does not send any output objects to the open destination.

Interaction: If you specify NONE without specifying a destination, ODS sets the overall list to SELECT NONE and sets all other lists to their defaults.

Tip: Using the NONE action is different from closing a destination. The output destination is still open, but ODS is restricting the output that it sends to the destination.

Tip: To temporarily suspend a destination, use ODS SELECT NONE. Use ODS SELECT ALL when you want to resume sending output to the suspended destination.

Options

ODS-destination

specifies which ODS destination's selection list to write to, where *ODS-destination* can be any valid ODS destination. For a discussion of ODS destinations, see "What Are the ODS Destinations?" on page 25.

Default: If you omit *ODS-destination*, ODS writes to the overall selection list.

Tip: To set the selection list for the Output destination to something other than the default, see the "ODS OUTPUT Statement" on page 135.

Example

Example 1: Using a Selection List with Multiple Procedure Steps

ODS features:

- ODS SELECT statement:
  - with label
  - with name
  - with and without PERSIST
  - ALL
- ODS SHOW statement
- ODS HTML statement:
  - BODY=
  - CONTENTS=
  - FRAME=
  - PAGE=

Other SAS features:

- PROC GLM
- PROC PRINT
- PROC PLOT

This example runs the same procedures multiple times to illustrate how ODS maintains and modifies a selection list. The ODS SHOW statement writes the overall selection list to the SAS log. The example does not alter selection lists for individual destinations, so the contents file that is generated by the ODS HTML statement shows which output objects are routed to both the HTML and the LISTING destinations.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

This example creates and prints data sets from the parameter estimates that PROC GLM generates. This procedure is part of SAS/STAT software.

Program

Create the input data set. The data set IRON contains data from Draper and Smith (p. 98).* Thirteen specimens of 90/10 copper-nickel alloys were tested in a corrosion-wheel setup in order to examine corrosion. Each specimen had a specified iron content. The wheel was rotated in salt sea water at 30 ft/sec for 60 days. Weight loss was used to quantify the corrosion. FE represents the iron content, and LOSS denotes the weight loss in milligrams/square decimeter/day.

```
data iron;
   input Fe Loss @@;
   datalines;
0.01 127.6   0.48 124.0   0.71 110.8   0.95 103.9
1.19 101.5   0.01 130.1   0.48 122.0   1.44  92.3
0.71 113.1   1.96  83.7   0.01 128.0   1.44  91.4
1.96  86.2
;
```

Create HTML output. The ODS HTML statement opens the HTML destination and creates HTML output. The output from the procedures is sent to the file **`odspersist-body.htm`**. The FRAME=, CONTENTS=, and PAGE= options create the files **`odspersist-frame.htm`**, **`odspersist-contents.htm`**, and **`odspersist-page.htm`**, respectively. These files, together with the file **`odspersist-body.htm`**, create a frame that includes a table of contents and a table of pages that link to the contents of the body file.

```
ods html body='odspersist-body.htm'
        frame='odspersist-frame.htm'
     contents='odspersist-contents.htm'
         page='odspersist-page.htm'
;
```

Write the overall selection list to the SAS log. The ODS SHOW statement writes to the SAS log the overall list, which is set to SELECT ALL by default. See [1] in “SAS Log” on page 194.

```
ods show;
```

Specify the output objects that will be sent to the open destinations. The ODS SELECT statement determines which output objects ODS sends to the LISTING and HTML destinations. In this case, ODS sends all output objects that are named **`ParameterEstimates`** and all output objects that are labeled **`Type III Model ANOVA`** to the two destinations.

```
ods select ParameterEstimates
           "Type III Model ANOVA";
```

Write the modified overall selection list to the SAS log. The ODS SHOW statement writes to the SAS log the overall selection list, which now contains the two items that were specified in the ODS SELECT statement. See [2] in the “SAS Log” on page 194.

```
ods show;
```

* Draper, N. and Smith, H. (1998), *Applied Regression Analysis, Second Edition*, New York: John Wiley & Sons.

Create the output objects and send the selected output objects to the open destinations. As PROC GLM sends each output object to the Output Delivery System, ODS sends the two output objects from PROC GLM that match the items in the selection list to the open destinations. See **1.** in the table of contents in "HTML Output" on page 196. Note that it is the label of an output object, not its name, that appears in the table of contents. The label for ParameterEstimates is "Solution".

```
proc glm data=iron;
   model loss=fe;
   title 'Parameter Estimates and Type III Model ANOVA';
run;
```

Write the overall selection list to the SAS log. PROC GLM supports run-group processing. Therefore, the RUN statement does not end the procedure, and ODS does not automatically modify the selection list. See [3] in the "SAS Log" on page 194.

```
ods show;
```

End the GLM procedure. The QUIT statement ends the procedure. ODS removes all objects that are not specified with PERSIST from the selection list. Because this action removes all objects from the list, ODS sets the list to its default, SELECT ALL.

```
quit;
```

Write the current selection list to the SAS log. The ODS SHOW statement writes the current selection list to the SAS log. See [4] in the "SAS Log" on page 194.

```
ods show;
```

Create the output objects, send the selected output objects to the open destinations, and end the procedure. As PROC GLM sends each output object to the Output Delivery System, ODS sends all the output objects to the HTML and LISTING destinations. See **2.** in the table of contents in "HTML Output" on page 196.

The QUIT statement ends the procedure. Because the list uses the argument ALL, ODS does not automatically modify it when the PROC step ends.

```
proc glm data=iron;
   model loss=fe;
   title 'All Output Objects Selected';
run;
quit;
```

Modify the overall selection lists. This ODS SELECT statement modifies the overall selection list so that it sends all output objects that are named **OverallANOVA**, and all output objects that are labeled **Fit Statistics**, to both the HTML and LISTING destinations. The PERSIST option specifies that **OverallANOVA** should remain in the selection list when ODS automatically modifies it.

```
ods select OverallANOVA(persist) "Fit Statistics";
```

Create the output objects and send the selected output objects to the open destinations. As PROC GLM sends each output object to the Output Delivery System, ODS sends the two output objects from PROC GLM that match the items in the selection list to the HTML and LISTING destinations. See **3.** the table of contents in "HTML Output" on page 196.

```
proc glm data=iron;
   model loss=fe;
```

```
   title 'OverallANOVA and Fitness Statistics';
run;
```

End the GLM procedure and automatically modify the selection list. When the QUIT statement ends the procedure, ODS automatically modifies the selection list. Because **OverallANOVA** was specified with the PERSIST option, it remains in the selection list. Because **Fitness Statistics** was not specified with the PERSIST option, ODS removes it from the selection list.

```
quit;
```

Write the current selection list to the SAS log. The ODS SHOW statement writes the current selection list to the SAS log. See [5] in the “SAS Log” on page 194.

```
ods show;
```

Create the output objects and send the selected output objects to the open destinations. As PROC GLM sends each output object to the Output Delivery System, ODS sends only the output object that is named **OverallANOVA** to the HTML and LISTING destinations. See **4.** in the table of contents in “HTML Output” on page 196.

```
proc glm data=iron;
   model loss=fe;
   title 'OverallANOVA';
   title2 'Part of the Selection List Persists';
run;
```

End the GLM procedure and automatically modify the selection list. When the QUIT statement ends the procedure, ODS automatically modifies the selection list. Because **OverallANOVA** was specified with the PERSIST option, it remains in the selection list.

```
quit;
```

PROC PRINT does not produce any output that is named **OverallANOVA**. Therefore, no PROC PRINT output is sent to the ODS destinations.

```
proc print data=iron;
   title 'The IRON Data Set';
run;
```

Reset all selection lists. This ODS SELECT statement resets all selection lists to their defaults.

```
ods select all;
```

Create the plots. As PROC PLOT creates and sends each output object to the Output Delivery System, ODS sends each one to the HTML and LISTING destinations because their lists and the overall list is set to SELECT ALL (the default).

```
proc plot data=iron;
   plot fe*loss='*' / vpos=25 ;
   label fe='Iron Content'
       loss='Weight Loss';
   title 'Plot of Iron Versus Loss';
run;
```

End the PLOT procedure. The QUIT statement ends the PLOT procedure. Because the list uses the argument ALL, ODS does not automatically modify the list when the PROC step ends.

```
quit;
```

Close the HTML destination. This ODS HTML statement closes the HTML destination and all the files that are associated with it.

```
ods html close;
```

SAS Log

Output 5.4 The ODS SHOW Statement Writes the Current Selection List to the SAS Log.

```
10   ods html body='odspersist-body.htm'
11        contents='odspersist-contents.htm'
12           frame='odspersist-frame.htm'
13            page='odspersist-page.htm';
NOTE: Writing HTML Body file: odspersist-body.htm
NOTE: Writing HTML Contents file: odspersist-contents.htm
NOTE: Writing HTML Pages file: odspersist-page.htm
NOTE: Writing HTML Frames file: odspersist-frame.htm
14   ods show;
Current OVERALL select list is: ALL   [1]
15   ods select ParameterEstimates
16               "Type III Model ANOVA";
17   ods show;
Current OVERALL select list is:    [2]
1. ParameterEstimates
2. "Type III Model ANOVA"
18   proc glm data=iron;
19      model loss=fe;
20      title 'Parameter Estimates and Type III Model ANOVA';
21   run;
22   ods show;
Current OVERALL select list is:    [3]
1. ParameterEstimates
2. "Type III Model ANOVA"
23   quit;
NOTE: PROCEDURE GLM used:
      real time           x.xx seconds
      cpu time            x.xx seconds

24   ods show;
Current OVERALL select list is: ALL   [4]
25   proc glm data=iron;
26      model loss=fe;
27      title 'All Output Objects Selected';
28   run;
29   quit;
NOTE: PROCEDURE GLM used:
      real time           x.xx seconds
      cpu time            x.xx seconds
```

```
30   ods select OverallANOVA(persist) "Fit Statistics";
31   proc glm data=iron;
32      model loss=fe;
33      title 'OverallANOVA and Fitness Statistics';
34   run;
35   quit;
NOTE: PROCEDURE GLM used:
      real time           x.xx seconds
      cpu time            x.xx seconds

36
37  ods show;
Current OVERALL select list is:    [5]
1. OverallANOVA(PERSIST)
38  proc glm data=iron;
39     model loss=fe;
40     title 'OverallANOVA';
41     title2 'Part of the Selection List Persists';
42  run;
43  quit;
NOTE: PROCEDURE GLM used:
      real time           x.xx seconds
      cpu time            x.xx seconds

44  proc print data=iron;
45     title 'The IRON Data Set';
46  run;
NOTE: PROCEDURE PRINT used:
      real time           x.xx seconds
      cpu time            x.xx seconds

47  ods select all;
48  proc plot data=iron;
49     plot fe*loss='*' / vpos=25 ;
50     label fe='Iron Content'
51         loss='Weight Loss';
52     title 'Plot of Iron Versus Loss';
53  run;
54  quit;
```

HTML Output

Display 5.16 Contents File Produced by the ODS HTML Statement

The contents file shows which output objects from each procedure were sent to the open ODS destinations. You can see that no output was written to the HTML destination for PROC PRINT (because it did not produce anything whose name matched the name in the selection list). You can also see that the PROC PLOT output was written to the HTML destination after the ODS SELECT ALL statement was executed.

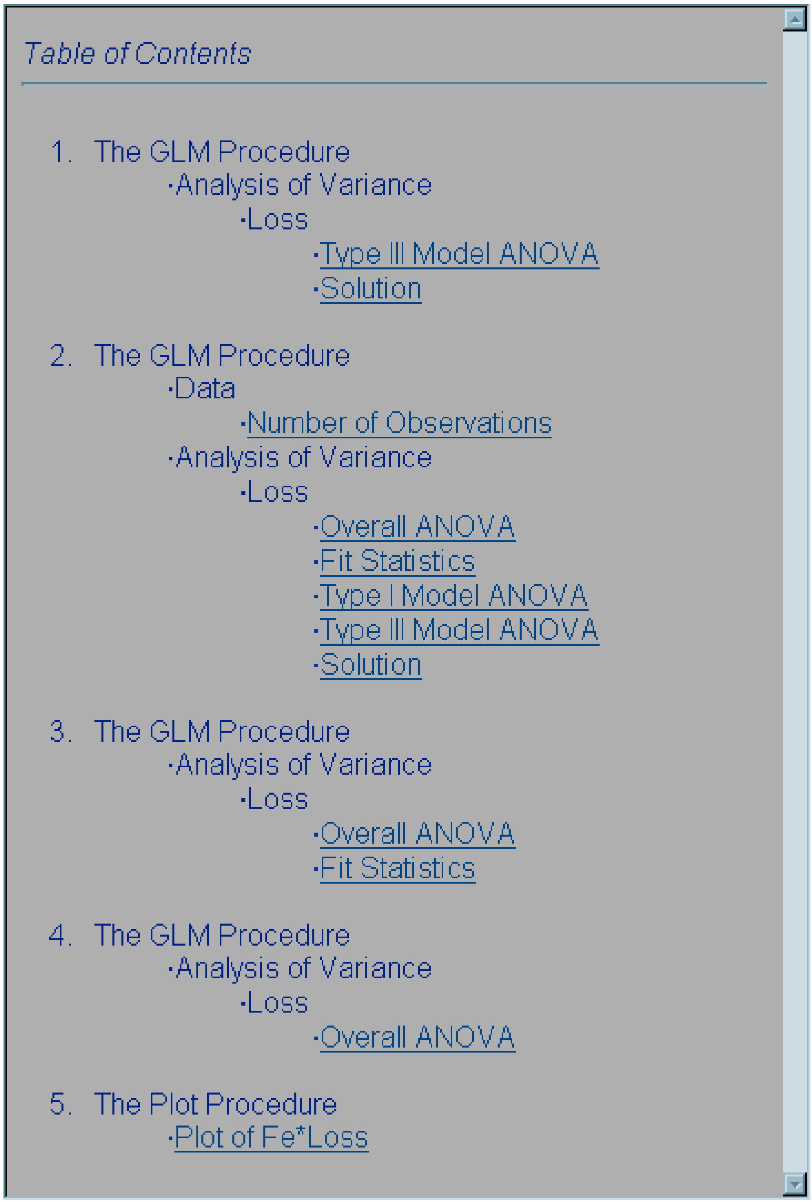


Table of Contents

1. The GLM Procedure
   - Analysis of Variance
     - Loss
       - Type III Model ANOVA
       - Solution
2. The GLM Procedure
   - Data
     - Number of Observations
   - Analysis of Variance
     - Loss
       - Overall ANOVA
       - Fit Statistics
       - Type I Model ANOVA
       - Type III Model ANOVA
       - Solution
3. The GLM Procedure
   - Analysis of Variance
     - Loss
       - Overall ANOVA
       - Fit Statistics
4. The GLM Procedure
   - Analysis of Variance
     - Loss
       - Overall ANOVA
5. The Plot Procedure
   - Plot of Fe*Loss

See Also

Statements:

“ODS EXCLUDE Statement” on page 90
“ODS SHOW Statement” on page 197

"ODS TRACE Statement" on page 197

ODS SHOW Statement

Writes the specified selection or exclusion list to the SAS log

Valid: anywhere

Category: ODS: Output Control

Syntax

ODS <*ODS-destination*> **SHOW**;

Options

ODS-destination

specifies which ODS destination's selection or exclusion list to write to the SAS log, where *ODS-destination* can be any valid ODS destination. For information about ODS destinations, see "What Are the ODS Destinations?" on page 25. For information on selection and exclusion lists, see "Selection and Exclusion Lists" on page 34.

Default: If you omit *ODS-destination*, ODS SHOW writes the overall selection or exclusion list.

See Also

Statements:

"ODS EXCLUDE Statement" on page 90

"ODS SELECT Statement" on page 188

"ODS TRACE Statement" on page 197

ODS TRACE Statement

Writes to the SAS log a record of each output object that is created, or else suppresses the writing of this record

Valid: anywhere

Category: ODS: Output Control

Default: OFF

Featured in: Example 3 on page 145

Syntax

ODS TRACE ON</*option(s)*>;

ODS TRACE OFF;

Arguments

OFF
turns off the writing of the trace record.

ON
turns on the writing of the trace record.

Alias: OUTPUT

Options

LABEL
includes the label path for the output object in the record. You can use a label path anywhere that you can use a path.

Tip: This option is most useful for users who are running a localized version of SAS because the labels are translated from English to the local language. The names and paths of output objects are not translated because they are part of the syntax of the Output Delivery System.

LISTING
writes the trace record to the Listing destination, so that each part of the trace record immediately precedes the output object that it describes.

Details

Contents of the Trace Record ODS produces an output object by combining data from the data component with a table definition. The trace record provides information about the data component, the table definition, and the output object. By default, the record that the ODS TRACE statement produces contains these items:

Name
is the name of the output object. You can use the name to reference this output object and others with the same name. For details on how to reference an output object, see "How Does ODS Determine the Destinations for an Output Object?" on page 35. For example, you could use this name in an ODS OUTPUT statement to make a data set from the output object, or you could use it in an ODS SELECT or an ODS EXCLUDE statement.

Tip: The name is the rightmost part of the path that appears in the trace record.

Label
briefly describes the contents of the output object. This label also identifies the output object in the Results window.

Data name
: is the name of the data component that was used to create this output object. The data name appears only if it differs from the name of the output object.

Data label
: describes the contents of the data.

Template
: is the name of the table definition that ODS used to format the output object. You can modify this definition with PROC TEMPLATE. See the EDIT statement“EDIT Statement” on page 373 for more information.

Path
: is the path of the output object. You can use the path to reference this output object. For example, you could use the path in the ODS OUTPUT statement to make a data set from the output, or you could use it in an ODS SELECT or an ODS EXCLUDE statement.

The LABEL option modifies the trace record by including the label path for the object in the record. See the discussion of the LABEL option.

Specifying an Output Object Once you have determined which output objects your SAS program produces, you can specify the output objects in statements such as ODS EXCLUDE, ODS SELECT, and so on. You can specify an output object by using one of the following:

- a full path. For example,

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  is the full path of the output object.

- a partial path. A partial path consists of any part of the full path that begins immediately after a period (.) and continues to the end of the full path. For example, if the full path is

  ```
  Univariate.City_Pop_90.TestsForLocation
  ```

  then the partial paths are:

  ```
  City_Pop_90.TestsForLocation
  TestsForLocation
  ```

- a label that is enclosed by quotation marks.

  For example,

  ```
  "The UNIVARIATE Procedure"
  ```

- a label path. For example, the label path for the output object is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

  Note: The trace record shows the label path only if you specify the LABEL option in the ODS TRACE statement. △

- a partial label path. A partial label path consists of any part of the label that begins immediately after a period (.) and continues to the end of the label. For example, if the label path is

  ```
  "The UNIVARIATE Procedure"."CityPop_90"."Tests For Location"
  ```

then the partial label paths are:

```
"CityPop_90"."Tests For Location"
"Tests For Location"
```

- □ a mixture of labels and paths.
- □ any of the partial path specifications, followed by a pound sign (#) and a number. For example, TestsForLocation#3 refers to the third output object that is named TestsForLocation.

Example

Example 1: Determining Which Output Objects a Procedure Creates

ODS features:

ODS TRACE statement:

LABEL

OFF

ON

Other SAS features:
PROC UNIVARIATE

Data set:
STATEPOP“Creating the Statepop Data Set” on page 620

This example shows how to determine the names and labels of the output objects that a procedure creates. You can use this information to select and exclude output objects.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, “ODS HTML Statements for Running Examples in Different Operating Environments,” on page 649. △

Program

Specify that SAS write the trace record to the SAS log and include label paths. This ODS TRACE statement writes the trace record to the SAS log. The LABEL option includes label paths in the trace record.

```
ods trace on / label;
```

Create descriptive statistics for two variables. PROC UNIVARIATE computes descriptive statistics for two variables, CityPop_80 and CityPop_90. As PROC UNIVARIATE sends each output object to the Output Delivery System, ODS writes the pertinent information for that output object to the trace record.

```
proc univariate data=statepop mu0=3.5;
   var citypop_90 citypop_80;
run;
```

Specify that SAS stop writing the trace record. The ODS TRACE OFF statement stops the writing of the trace record to the SAS log.

```
ods trace off;
```

SAS Log

This partial SAS log shows the trace record that the ODS TRACE statement creates. For each analysis variable PROC UNIVARIATE creates five output objects : **`Moments`**, **`BasicMeasures`**, **`TestsForLocation`**, **`Quantiles`**, and **`ExtremeObs`**.

Notice that an output object has the same name and label, regardless of which variable is analyzed. Therefore, you can select all the moments tables that PROC UNIVARIATE produces by using the name or label in an ODS SELECT statement. On the other hand, the path and label path are unique for each output object because they include the name of the variable that is analyzed. You can, therefore, select an individual moments table by using the path or the label path in an ODS SELECT statement.

```
Output Added:
-------------
Name:       Moments
Label:      Moments
Template:   base.univariate.Moments
Path:       Univariate.CityPop_90.Moments
Label Path: "The Univariate Procedure"."CityPop_90"."Moments"
-------------

Output Added:
-------------
Name:       BasicMeasures
Label:      Basic Measures of Location and Variability
Template:   base.univariate.Measures
Path:       Univariate.CityPop_90.BasicMeasures
Label Path: "The Univariate Procedure"."CityPop_90"."Basic Measures of Location and Variability"
-------------

Output Added:
-------------
Name:       TestsForLocation
Label:      Tests For Location
Template:   base.univariate.Location
Path:       Univariate.CityPop_90.TestsForLocation
Label Path: "The Univariate Procedure"."CityPop_90"."Tests For Location"
-------------

Output Added:
-------------
Name:       Quantiles
Label:      Quantiles
Template:   base.univariate.Quantiles
Path:       Univariate.CityPop_90.Quantiles
Label Path: "The Univariate Procedure"."CityPop_90"."Quantiles"
-------------
Output Added:
-------------
Name:       ExtremeObs
Label:      Extreme Observations
Template:   base.univariate.ExtObs
Path:       Univariate.CityPop_90.ExtremeObs
Label Path: "The Univariate Procedure"."CityPop_90"."Extreme Observations"
-------------
```

```
Output Added:
-------------
Name:       Moments
Label:      Moments
Template:   base.univariate.Moments
Path:       Univariate.CityPop_80.Moments
Label Path: "The Univariate Procedure"."CityPop_80"."Moments"
-------------

Output Added:
-------------
Name:       BasicMeasures
Label:      Basic Measures of Location and Variability
Template:   base.univariate.Measures
Path:       Univariate.CityPop_80.BasicMeasures
Label Path: "The Univariate Procedure"."CityPop_80"."Basic Measures of Location and Variability"
-------------

Output Added:
-------------
Name:       TestsForLocation
Label:      Tests For Location
Template:   base.univariate.Location
Path:       Univariate.CityPop_80.TestsForLocation
Label Path: "The Univariate Procedure"."CityPop_80"."Tests For Location"
-------------

Output Added:
-------------
Name:       Quantiles
Label:      Quantiles
Template:   base.univariate.Quantiles
Path:       Univariate.CityPop_80.Quantiles
Label Path: "The Univariate Procedure"."CityPop_80"."Quantiles"
-------------

Output Added:
-------------
Name:       ExtremeObs
Label:      Extreme Observations
Template:   base.univariate.ExtObs
Path:       Univariate.CityPop_80.ExtremeObs
Label Path: "The Univariate Procedure"."CityPop_80"."Extreme Observations"
-------------
```

See Also

Statements:

"ODS EXCLUDE Statement" on page 90

"ODS SELECT Statement" on page 188

ODS USEGOPT Statement

Determines whether or not ODS uses graphics option settings

Valid: anywhere

Category: ODS: Output Control

See also: *SAS/GRAPH Reference, Volumes 1 and 2*

Syntax

ODS USEGOPT | NOUSEGOPT;

ODS USEGOPT
specifies that ODS use graphics option settings for non-graphical output.

ODS NOUSEGOPT
specifies that ODS not use graphics option settings for non-graphical output.

Details

Enabling Graphics Options While ODS USEGOPT is in effect, the settings for the following graphics options will affect all of your ODS output, including tables:

CTEXT=

CTITLE=

FTITLE=

FTEXT=

HTEXT=

HTITLE=

If ODS NOUSEGOPT is in effect, the settings for these graphics options will not override the value in the style definition for titles and footnotes in your ODS output.

Examples

Example 1: Enabling and Disabling Graphics Options

ODS features:
- ODS HTML statement:
  - FILE=
- ODS LISTING statement:
  - CLOSE
- ODS NOUSEGOPT statement
- ODS USEGOPT statement

Other SAS features:
- GOPTIONS statement:
  - FCTEXT=
  - FTITLE=
  - HTEXT=
- PROC PRINT
- TITLE statement

Data set:
- sashelp.class

Program Description This example creates two HTML reports, one with the GOPTIONS enabled by using the ODS USEPGOT statement, and one with GOPTIONS disabled by using the ODS NOUSEGOPT statement.

Program

Specify the GOPTIONS. The RESET=ALL option sets all graphics options to their default values and cancels all global statements. The HTEXT= option specifies that the text height for titles and footnotes be two units. The FTITLE= option specifies the font for titles and footnotes. The FTEXT option specifies the font for the text.

```
goptions reset=all  htext=2 ftitle=script ftext=script;
```

Do not produce listing output. The ODS LISTING statement closes the LISTING destination to conserve resources. Otherwise, output would be written to the LISTING destination by default.

```
ods listing close;
```

Enable the graphics options. While ODS USEGOPT is in effect, the settings for HTEXT= and CTEXT= graphics options will override values that are specified for titles and footnotes in the style definition.

```
ods usegopt;
```

Create HTML output, specify titles, and print the data set. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC PRINT is sent to the body file specified by the FILE= option.

The TITLE statements specify the titles for your output.

The PRINT procedure prints the SAS data set from the SASHELP library. The OBS= option specifies two observations to be printed.

```
ods html file="opts.html";
title "This Title Was Created With the USEGOPT Option Specified " ;
title2 "The Graphics Option Settings are Turned On";
proc print data=sashelp.class (obs=2);
run;
```

Disable the graphics options. The NOUSEGOPT statement suppresses the use of the HTEXT= and CTEXT= graphics option settings for your output.

```
ods nousegopt;
```

Create HTML output, specify titles, and print the data set. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC PRINT is sent to the body file specified by the FILE= option.

The TITLE statements specify the titles for your output.

The PRINT procedure prints the SAS data set from the SASHELP library. The OBS= option specifies two observations to be printed.

```
title "This Title Was Created With the NOUSEGOPT Option Specified" ;
title2 "The Graphics Option Settings are Turned Off";
```

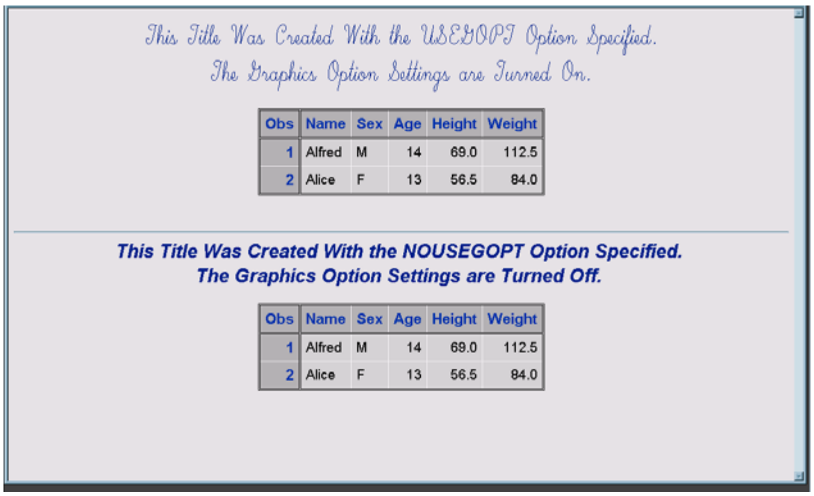
```
proc print data=sashelp.class (obs=2) ;
run;
```

Close the HTML destination and open the LISTING destination. The ODS HTML CLOSE statement closes the HTML destination. To return ODS to its default setup, the ODS LISTING statement opens the LISTING destination.

```
ods html close;
ods listing;
```

Display 5.17 HTML Output

In the following example, the heights and fonts for the titles of the first table are specified by the FTITLE, FTEXT, and HTEXT options in the GOPTIONS statement. The heights and fonts for the titles of the second table are specified by the default style definition.



ODS VERIFY Statement

Prints or suppresses a message indicating that a style definition or a table definition being used is not supplied by SAS

Valid: anywhere

Category: ODS: Output Control

Syntax

ODS VERIFY <ON | OFF | ERROR | WARN>;

Options

ON | OFF | ERROR | WARN

ON
prints the warning and sends output objects to open destinations.
Alias: ODS VERIFY

OFF
suppresses the warning.
Alias: ODS NOVERIFY

ERROR
prints an error message instead of a warning message and does not send output objects to open destinations.

WARN
prints a warning message and does not send output objects to open destinations.

Default: If you do not specify the ODS VERIFY statement, then ODS runs with the verification process turned off. If you specify the ODS VERIFY statement but do not specify an argument, then ODS runs with verification turned on.

Tip: For information about how to ignore user-created definitions, see "ODS PATH Statement" on page 149.

Details

Why Use the ODS VERIFY Statement? PROC TEMPLATE can modify the values in an output object. None of the definitions that SAS provides modifies any values. If you receive a warning from the ODS VERIFY statement, then look at the source code to verify that the values have not been modified.

ODS WML Statement

Opens, manages, or closes the WML destination, which uses the Wireless Application Protocol (WAP) to produce a Wireless Markup Language (WML) DTD with a simple list for a table of contents

Valid: anywhere
Category: ODS: Third-Party Formatted

Syntax

ODS WML < (<ID=>*identifier*)> *action*;

ODS WML< (<ID=>*identifier*)> <*file-specification(s)*> <*option(s)*><*option(s)*>;

Options

For a complete list of options, see the "ODS MARKUP Statement" on page 109.

Details

The ODS WML statement is part of the ODS markup family of statements. ODS statements in the markup family produce output that is formatted using one of many different markup languages, such as HTML (Hypertext Markup Language), XML (Extensible Markup Language), and LaTeX. You can specify a markup language that SAS supplies, or create one of your own and store it as a user-defined markup language.

PART 4

The DOCUMENT Procedure

CHAPTER
6

The DOCUMENT Procedure

Overview: DOCUMENT Procedure

Why Use the DOCUMENT Procedure?

When your output is in an ODS document, the DOCUMENT procedure enables you to rearrange, duplicate, or remove output from the results of a procedure or a database query. Also, you can generate output for one or more ODS destinations using the newly transformed output hierarchy file. Thus, the DOCUMENT procedure enables you to

- transform your report without having to rerun your analysis or repeat your database query.
- have more control over the structure of your output.
- display your output to any ODS output format without executing your SAS programs again.
- navigate the current file location and list entries.
- open and list ODS documents.
- manage output.
- store the ODS output objects in raw form. The output is kept in the original internal representation as a data component plus a table definition.

The DOCUMENT procedure is an interactive procedure that enables you to use ODS and global statements within the PROC DOCUMENT step.

Unlike other ODS destinations, the DOCUMENT destination has a graphical user interface (GUI) for performing tasks. However, you can also do the same tasks with batch statement syntax using the DOCUMENT procedure.

DOCUMENT Procedure Terminology

current document
: is the open document.

current path
: is the location in the open document where you currently reside.

entry
: is one or more links, output objects, files, or partitioned data sets.

graph segment
: is a file type or output object that contains a graph. Graphs are created in some SAS procedures, including those in SAS/GRAPH. The graph output object is referenced as a GRSEG.

See: For more information about GRSEG and SAS/GRAPH procedures, see *SAS/GRAPH Reference, Volumes 1 and 2*.

path
: is the route through a hierarchal file system, leading to a particular file or file location of an entry. *path* refers to the physical location of an entry.

replay
: occurs when you generate your output again, in the same or different format, without rerunning your analyses or data queries.

root file location
: is the top level of a file location in an ODS document. A root file location is not contained within another file location and does not have a name assigned. A root file location is similar to the root directory of a Windows operating environment.

Syntax: DOCUMENT Procedure

PROC DOCUMENT <*options*>;

COPY *path* <, *path-2, ...path-n*> **TO** *path* </*option(s)*>;

DELETE *path* <, *path-2, ...path-n*>;

DIR <*path*>;

DOC <*options*>;

DOC CLOSE;

HIDE *path* <, *path-2, ...path-n*>;

IMPORT DATA= *data-set-name* **|** **GRSEG=** *grseg* **TO** *path* </*options*>;

LINK *path* **TO** *path* </*options* >;

LIST <*path-1, path-2, ...path-n*> </*option(s)*>;

MAKE *path* <, *path-2, ...path-n*> </*options*>;

MOVE *path* <, *path-2, ...path-n*> **TO** *path* </*option(s)* >;

NOTE *path* <*'text'*> </*option(s)*>;

OBANOTE<*n*> *output-object* <*'text'*> </*option*>;

OBBNOTE<*n*> *output-object* <*'text'*> </*option*>;

OBFOOTN<*n*> *output-object* <*'text'*>;

OBPAGE *output-object* </*option(s)*>;

OBSTITLE<*n*> *output-object* <*'text'*> </*options*>;

OBTITLE<*n*> *output-object* <*'text'*>;

RENAME *path-1* **TO** *path-2*;

REPLAY <*path* <, *path-2, ...path-n*>> </*options*>;

SETLABEL *path 'label'*;

UNHIDE *path* <, *path-2, ...path-n*>;

QUIT;

Task	Statement
Insert a copy of an entry into a specified path	COPY
Delete entries from a specified path or paths	DELETE
Set or display the current directory	DIR
Open a document and its contents to browse or edit	DOC
Close the current document	DOC CLOSE
Prevent output from being displayed when the document is replayed	HIDE
Import a data set or graph segment into the current directory	IMPORT
Create a symbolic link from one output object to another output object	LINK
List the content of one or more entries	LIST
Create one or more new directories	MAKE
Move entries from one directory to another directory	MOVE
Create text strings in the current directory	NOTE
Create or modify lines of text after the specified output object	OBANOTE
Create or modify lines of text before the specified output object	OBBNOTE
Create or modify lines of text at the bottom of the page in which the output object is displayed	OBFOOTN
Create or delete a page break for an output object	OBPAGE
Create or modify subtitles	OBSTITLE
Create or modify lines of text at the top of the page where the output object is displayed	OBTITLE
Assign a different name to a directory or output object	RENAME
Replay one or more entries to the specified open ODS destination(s)	REPLAY
Assign a label to the current entry	SETLABEL
Enable the output of a hidden entry to be displayed when it is replayed	UNHIDE

PROC DOCUMENT Statement

Creates or opens a document to modify

Default: Documents are opened in the UPDATE access mode.

Caution: If you do not explicitly close the DOCUMENT destination with an ODS DOCUMENT CLOSE statement, then ODS continues to append files to your document.

PROC DOCUMENT <*options* <*access-options*>>;

Without Options

If no options are specified, then the PROC DOCUMENT statement opens the last document that was created in the current SAS session.

Options

NAME= ***<libref.>memname <access-options>***
specifies the name that you assign to a new or existing document and its access mode.

<libref.>memname
identifies a new or existing ODS document.

Default: If no library is specified, then the WORK library is used.

Restriction: The ODS document must be a valid SAS library member.

access-options
specifies the access mode for the ODS document.

Default: UPDATE

READ
opens a document and provides read-only access.

Requirement: To open a document in the READ access mode, the document must already exist.

Interaction: If a label has been specified with the LABEL= option, then the label is ignored.

WRITE
opens a document and provides write access as well as read access.

Caution: If the ODS document already exists, then it will be overwritten.

Interaction: If a label has been specified with the LABEL= option, then it will override any existing label assigned to the document.

Tip: If the ODS document does not exist, then it will be created.

UPDATE
opens an ODS document and appends new content to the document. UPDATE provides update access as well as read access.

Caution: If the document already exists, then its contents will not be changed.

Interaction: If a label has been specified with the LABEL= option, then it will be assigned to the document.

Tip: If the ODS document does not exist, then the document will be created.

LABEL='*label*'
assigns a label to your document.

Restriction: You can assign a label to your document only if you have write access permissions.

Requirement: The label that you assign to your document must be enclosed in quotation marks.

COPY Statement

Copies an entry into the specified path

Default: If you do not specify a location where to insert an entry into a path, then the entry is inserted at the end of the path.

COPY *path* <, *path-2, ...path-n*> **TO** *path* <**/**<**LEVELS=** *value* **| ALL** ><**FIRST |**
LAST | BEFORE= *path* **| AFTER=** *path*>>;

Required Arguments

path
is the location where a link, output object, or file is copied.

Requirement: When you specify more than one path, you must separate the paths with a comma.

Options

AFTER= *path*
inserts a copy of an entry after the specified path.

BEFORE= *path*
inserts a copy of an entry before the specified path.

FIRST
inserts a copy of an entry at the beginning of the specified path.

LAST
inserts a copy of an entry at the end of the specified path.

LEVELS= ALL | *value*
specifies the depth of the file location.

Restriction: The LEVELS= option is a valid option only when you specify a file location.

ALL
specifies all levels of the file location.

value
specifies the numeric value of the file location level.

DELETE Statement

Deletes entries from the current file location

Restriction: You cannot delete or move the root file location.

Caution: The DELETE statement affects all levels of a file location below the specified path.

DELETE *path* <, *path-2, ...path-n*>;

Required Arguments

path
specifies the location of one or more links, output objects, or file locations.

Requirement: When you specify more than one path, you must separate the paths with a comma.

DIR Statement

Sets or displays the current file location

Featured In: Example 1 on page 244, Example 2 on page 248, and Example 3 on page 253

DIR <*path*>;

Without Options

If no options are specified, then the DIR statement displays the current path.

Options

path
sets the current file location.

DOC Statement

Opens a document and its contents to browse or edit

Default: Documents are opened in the UPDATE access mode.

Featured In: Example 1 on page 244 and Example 2 on page 248

DOC <*options* <*access-options*>>;

Without Options

If no options are specified, then the DOC statement lists the ODS documents that exist in all SAS libraries.

Options

LABEL= *'label'*
assigns a label to your document.

Restriction: You can assign a label to your document only if you have write access permission.

Requirement: To use the LABEL= option, you must specify the NAME= option on the DOC statement.

Requirement: The label that you assign to your document must be enclosed in quotation marks.

LIBRARY=*library-name*
specifies that only the documents in the specified *library-name* are listed.

Alias: LIB=

Interaction: You cannot specify the LIBRARY= option with the NAME= or LABEL= options.

NAME= *libref.memname <access-options>*
specifies the name that you assign to a document and its access mode.

<libref.>memname
identifies a document.

Default: If no library is specified, then the WORK library is used.

Restriction: The document must be a valid SAS library member.

access-options
specifies the access mode for the document.

READ
opens a document and provides read-only access.

Interaction: If a label has been specified with the LABEL= option, then the label is ignored.

WRITE
opens a document and provides write access, but only if you have write permission.

Caution: If the document already exists, then it will be overwritten. If the document does not exist, then it will be created.

Interaction: If a label has been specified with the LABEL= option, then it will override any existing label assigned to the document.

UPDATE

opens a document and provides update access, but only if you have update permission.

Interaction: If a label has been specified with the LABEL= option, then it will be assigned to the document.

Tip: If the document already exists, then its contents will not be changed and the new contents will be appended to the document. If the document does not exist, then it will be created.

DOC CLOSE Statement

Closes the current document

DOC CLOSE;

HIDE Statement

Prevents output from being displayed when the document is replayed

Tip: To see entries that might be hidden in the current document, use the LIST statement.

HIDE *path* <, *path-2, ...path-n*>;

Required Arguments

path

specifies the location of the file or files that you want to hide.

Requirement: When you specify more than one path, separate the paths with a comma.

IMPORT Statement

Imports the specified SAS data set or graph segment to the current file location

IMPORT DATA= *data-set-name<data-set-options>* **|** **GRSEG=** *grseg* **TO** *path* **</**
<FIRST | LAST | BEFORE= *path* **| AFTER=***path***>>**;

Required Arguments

DATA= ***data-set-name***
specifies an existing SAS data set that you want to import.

GRSEG= ***grseg***
stores a reference to a graph segment.

grseg
specifies the 3-level catalog path name. For example, GRSEG=SASUSER.grseg.mygraph.

See: GRSEG= option in the *SAS/GRAPH Reference, Volumes 1 and 2*.

path
specifies the location where you want to import the data set or graph segment.

Options

AFTER= ***path***
imports the data set or graph segment into the file location after the specified path.

BEFORE= ***path***
imports the data set or graph segment into the file location before the specified path.

data-set-options
specify actions that apply only to the SAS data set.

See also: For information about SAS data sets and their options, see *SAS Language Reference: Dictionary*

FIRST
imports the data set or graph segment at the beginning of the file location.

LAST
imports the data set or graph segment at the end the file location.

LINK Statement

Creates a symbolic link from one specified output object to another in the current file location

LINK *path* **TO** *path* <**/** <**HARD**> <**LABEL**> <**FIRST** | **LAST**| **BEFORE=** *path* | **AFTER=** *path*>>;

Required Arguments

path
specifies the locations of the output objects that you want to link to one another.

Options

AFTER= ***path***
links to the entry that is after the specified path in the current file location.

BEFORE= ***path***
links to the entry that is before the specified path in the current file location.

FIRST
links to the first entry in the current file location.

HARD
specifies a type of link that refers to a copy of an output object within the ODS document. All data is shared between the link and the target, except names and labels.

Restriction: A hard link can only reference an output object, and the source and target paths must be in the same ODS document. The target must exist when you create the hard link.

Interaction: A hard link and its target exist independently. If you delete a hard link, you do not effect the target. Similarly, if you delete a target, you do not affect the link.

LABEL
copies the source label to the link.

Default: The source label is not copied unless you use the LABEL option.

LAST
links to the last entry in the current file location.

LIST Statement

Lists the contents of one or more entries

Default: If you omit the DETAILS option, then only summary information is displayed.

Default: If you omit the ORDER= option, then the contents of the specified entries are listed in INSERT order (the order in which you arranged the entries.)

Tip: To see any entries that might be hidden in the current file location, use the LIST statement.

Featured In: Example 1 on page 244, Example 2 on page 248, and Example 3 on page 253

LIST <*path-1, path-2, ...path-n*> </<**DETAILS**><**FOLLOW**><**LEVELS=** *value* | **ALL**><**ORDER= ALPHA | DATE | INSERT**>>;

Required Arguments

path

specifies the location of an entry. An entry can be one or more file locations, links, or output objects.

Requirement: When you specify more than one path, separate the paths with a comma.

Options

DETAILS

specifies the properties of the entries.

FOLLOW

resolves all links and lists the contents of the entries.

LEVELS= ***value*** **| ALL**

specifies the depth of the file locations that you want to list.

Default : If you omit the LEVELS= option, then the default value of the level is 1.

Restriction : The LEVELS= option is a valid option only when you specify a file location.

value

specifies the numeric value of the file location level.

ALL

specifies all levels of the file location.

ORDER= ALPHA | DATE | INSERT

specifies the order in which the entries are listed.

ALPHA

lists the entries in alphabetical order.

DATE
lists the file locations in order of ascending date/time stamp when the entries were created.

INSERT
lists the file locations in the order in which you arranged the entries.

MAKE Statement

Creates one or more new file locations

Default: If no location is specified, the newly created file location is appended to the end of the current file location.

MAKE *path* <, *path-2, ...path-n*> <**/**<**FIRST | LAST | BEFORE=***path* **| AFTER=** *path*>>;

Required Arguments

path
specifies the newly created file location.

Requirement: When you specify more than one path, separate the paths with a comma.

Options

AFTER= ***path***
adds the newly created file location after the specified path in the current file location.

BEFORE= ***path***
adds the newly created file location before the specified path in the current file location.

FIRST
adds the newly created file location to the beginning of the current file location.

LAST
adds the newly created file location to the end of the current file location.

MOVE Statement

Moves entries from the specified location to another location

Restriction: You can not move or delete the root file location.

Requirement: When you specify more than one path, separate the paths with a comma.

Caution: The MOVE statement effects all levels of a file location below the specified starting level.

MOVE *path* <, *path-2, ...path-n*> **TO** *path* <**/**<**LEVELS=** *value* **|** **ALL** ><**FIRST** | **LAST** | **BEFORE=** *path* **|** **AFTER=** *path*>>;

Required Arguments

path
specifies the location of links, output objects, or files that you want to move.

Options

AFTER= ***path***
moves the entry after the specified entry in the path.

BEFORE= ***path***
moves the entry before the specified entry in the path.

FIRST
moves the entry to the beginning of the specified file location.

LAST
moves the entry to the end of the specified file location.

LEVELS= ***value*** **|** **ALL**
specifies the level in the file hierarchy.

value
specifies the numeric value of the file location level. For example, “3” indicates the third level in the hierarchy.

ALL
specifies all levels of the file location.

NOTE Statement

Creates text strings in the current file location

Default: If you omit the JUST= option, then the note is centered between the left and right margins.

Default: If no location is specified, then the note is added to the end of the current location.

Featured In: Example 3 on page 253

NOTE *path* <'*text*'> **</<JUST= LEFT | CENTER | RIGHT>** <**FIRST | LAST | BEFORE=** *path* **| AFTER=** *path*>>;

Without Options

If no text is specified, then the NOTE statement creates a blank note.

Required Arguments

path
specifies the location where the note is stored.

Options

AFTER= *path*
inserts the text string after the specified path.

BEFORE= *path*
inserts the text string before the specified path.

FIRST
inserts the text string at the beginning of the path.

JUST= LEFT | CENTER | RIGHT
specifies the alignment of the text string.

LEFT
aligns the text string with the left margin.

CENTER
aligns the text string in the center between the left and right margins.

RIGHT
aligns the text string with the right margin.

LAST
inserts the text string at the end of the path.

text
specifies the text string.

Requirement: All text strings must be enclosed in quotation marks.

OBANOTE Statement

Creates or modifies an object footer (lines of text) after the specified output object

Featured In: Example 3 on page 253

OBANOTE<*n*> *output-object* <'*object–footer-text*'> <**/JUST= LEFT | CENTER | RIGHT**>;

Required Arguments

output-object
specifies the name of the ODS output object.

Options

JUST= LEFT | CENTER | RIGHT
specifies the alignment of the object-footer.

LEFT
aligns the object-footer-text with the left margin.

CENTER
aligns the object-footer-text in the center between the left and right margins.

RIGHT
aligns the object-footer-text with the right margin.

n
specifies the relative line that contains the note.

Default: If you omit *n*, SAS assumes a value of 1. Therefore, you can specify OBANOTE or OBANOTE1 for the first text line.

Range: 1–10

Tip: The OBANOTE line with the highest number appears on the bottom line.

Tip: You can create notes that contain blank lines between them. For example, if you specify text with an OBANOTE1 statement that is followed by an OBANOTE3 statement, then a blank line separates the two lines of text.

object-footer-text
specifies the text string.

You can customize object footers by inserting BY variable values (#BYVALn), BY variable names (#BYVARn), or BY lines (#BYLINE) into object footers that are specified in PROC DOCUMENT steps. After you specify the object footer text, you can embed the items at the position where you want them to appear. For more information, see "The DOCUMENT PROCEDURE and BY-Groups" on page 233.

Requirement: All object-footer-text must be enclosed in quotation marks.

Caution: If no object-footer-text is specified, then the OBANOTE statement deletes all existing footer notes for the specified output object only.

OBBNOTE Statement

Creates or modifies an object header (lines of text) before the output object

Featured In: Example 3 on page 253

OBBNOTE<*n*> *output-object* <*object-header-text*> <**/JUST= LEFT | CENTER | RIGHT**>;

Required Arguments

output-object
specifies the name of the ODS output object.

Options

JUST= LEFT | CENTER | RIGHT
specifies the alignment of the object-header-text.

LEFT
aligns the object-header-text with the left margin.

CENTER
aligns the object-header-text in the center between the left and right margins.

RIGHT
aligns the object-header-text with the right margin.

n
specifies the relative line that contains the note.

Default: If you omit *n*, SAS assumes a value of 1. Therefore, you can specify OBBNOTE or OBBNOTE1 for the first text line.

Range: 1– 10

Tip: The OBBNOTE line with the highest number appears on the bottom line.

Tip: You can create notes that contain blank lines between them. For example, if you specify text with an OBBNOTE statement that is followed by an OBBNOTE3 statement, then a blank line separates the two lines of text.

object-header-text
specifies the text string.

You can customize object headers by inserting BY variable values (#BYVALn), BY variable names (#BYVARn), or BY lines (#BYLINE) into object headers that are specified in PROC DOCUMENT steps. After you specify the object header text, you can embed the items at the position where you want them to appear. For more information, see “The DOCUMENT PROCEDURE and BY-Groups” on page 233.

Requirement: All object-header-text must be enclosed in quotation marks.

Caution: If no object-header-text is specified, then the OBBNOTE statement deletes all existing header notes for the specified output object only.

OBFOOTN Statement

Creates or modifies lines of text at the bottom of the page on which the output object is displayed

Restriction: You can print up to ten lines of text.

Tip: The OBFOOTN statement is similar to the global FOOTNOTE statement.

Featured In: Example 3 on page 253

OBFOOTN<*n*> *output-object* <*'text'*>;

Required Arguments

output-object
specifies the ODS output object.

Options

n
specifies the relative line that contains the footnote.

Range: 1–10

Tip: The OBFOOTN line with the highest number appears on the bottom line. If you omit *n*, SAS assumes a value of 1. Therefore, you can specify OBFOOTN or OBFOOTN1 for the first text line.

Tip: You can create footnotes that contain blank lines between them. For example, if you specify text with an OBFOOTN statement that is followed by an OBFOOTN3 statement, then a blank line separates the two lines of text.

text
specifies the text string.

You can customize footnotes by inserting BY variable values (#BYVALn), BY variable names (#BYVARn), or BY lines (#BYLINE) into footnotes that are specified in PROC DOCUMENT steps. After you specify the text, you can embed the items at the position where you want them to appear. For more information, see "The DOCUMENT PROCEDURE and BY-Groups" on page 233.

Requirement: All text strings must be enclosed by quotation marks.

Caution: If you use the OBFOOTN statement without a text string, then all existing footnotes for the specified output object are deleted.

OBPAGE Statement

Creates or deletes a page break for an output object

Featured In: Example 3 on page 253

OBPAGE *output-object* <**/DELETE AFTER**>;

Required Arguments

output-object
specifies the name of the output object.

Without Options

If no options are specified, then the OBPAGE statement inserts a page break before an output object.

Options

AFTER
inserts a page break after an output object.

Tip: To delete a page break after an output object, you must use the AFTER option as well as the DELETE option.

DELETE
removes the page break for an output object.

OBSTITLE Statement

Creates or modifies subtitles

Featured In: Example 3 on page 253

OBSTITLE<*n*> *output-object* <*'text'*> <**/JUST= LEFT | CENTER | RIGHT**>;

Required Arguments

output-object
specifies the ODS output object.

Options

JUST= LEFT | CENTER | RIGHT
specifies the alignment of the text string.

LEFT
aligns the text string with the left margin.

CENTER
aligns the text string in the center between the left and right margins.

RIGHT
aligns the text string with the right margin.

n
specifies the relative line that contains the subtitle.

Range: 1–10

Tip: The OBSTITLE line with the highest number appears on the bottom line. If you omit *n*, SAS assumes a value of 1. Therefore, you can specify OBSTITLE or OBSTITLE1 for the first text line.

Tip: You can create subtitles that contain blank lines between them. For example, if you specify text with an OBSTITLE statement that is followed by an OBSTITLE3 statement, then a blank line separates the two lines of text.

text
specifies the text string.

You can customize subtitles by inserting BY variable values (#BYVALn), BY variable names (#BYVARn), or BY lines (#BYLINE) into subtitles that are specified in PROC DOCUMENT steps. After you specify text, you can embed the items at the position where you want them to appear. For more information, see "The DOCUMENT PROCEDURE and BY-Groups" on page 233.

Requirement: All text strings must be enclosed in quotation marks.

Caution: If no arguments are specified, then the OBSTITLE statement deletes all existing subtitles for the specified output object only.

OBTITLE Statement

Creates or modifies title lines for the output

Tip: The OBTITLE is similar to the global TITLE statement.

Featured In: Example 3 on page 253

OBTITLE<*n*> *output-object* <*'text'*>;

Required Arguments

output-object
specifies the name of the output object.

Options

n
specifies the relative line that contains the title.

Range: 1–10

Tip: The OBTITLE line with the highest number appears on the bottom line. If you omit *n*, SAS assumes a value of 1. Therefore, you can specify OBTITLE or OBTITLE1 for the first text line.

Tip: You can create titles that contain blank lines between them. For example, if you specify text with an OBTITLE statement that is followed by an OBTITLE3 statement, then a blank line separates the two lines of text.

text
specifies the text string.

You can customize titles by inserting BY variable values (#BYVALn), BY variable names (#BYVARn), or BY lines (#BYLINE) into output titles that are specified in PROC DOCUMENT steps. After you specify the text, you can embed the items at the position where you want them to appear. For more information, see “The DOCUMENT PROCEDURE and BY-Groups” on page 233.

Requirement: All text strings must be enclosed in quotation marks.

Caution: If no text is specified, then the OBTITLE statement deletes all existing titles for the specified output object only.

RENAME Statement

Assigns a different name to a file location or output object

RENAME *path-1* **TO** *path-2*;

Required Arguments

path-1
specifies the current file location or output object.

path-2
specifies the new name of the file location or output object.

REPLAY Statement

Displays one or more entries to the specified open ODS destination(s)

Default: If you omit the LEVELS= option, then all levels of the file are displayed to all open destinations.

Featured In: Example 2 on page 248 and Example 3 on page 253

REPLAY <*path* <, *path-2, ...path-n*>> </<**LEVELS=** *value* **|** **ALL**> <**DEST=** **(***ODS-destination(s)***)**>>;

Options

ACTIVEFOOTN
specifies that footnotes that are active in a SAS session will override the footnotes that are stored in an ODS document.

Alias: ACFOOTN

ACTIVETITLE
specifies that titles that are active in a SAS session will override the titles that are stored in an ODS document.

Alias: ACTITLE

DEST= (*ODS-destination(s)*)
specifies one or more ODS destinations where you want your output objects to be displayed.

Requirement: When you specify the DEST= option, you must surround the ODS destinations with parentheses and separate each destination with a blank space. For example, DEST=(HTML RTF LISTING)

Tip: When you specify only one destination, you do not need to use parentheses. For example, DEST=HTML

See Also: For information about ODS destinations, see *SAS Output Delivery System: User's Guide*.

LEVELS= ALL | *value*
specifies the depth of the path.

ALL
specifies that all levels of the path are displayed to all open destinations.

value
specifies the numeric value of the level.

path
specifies the location of an entry. An entry can be one or more file locations, links, or output objects.

Requirement: When you specify more than one path, separate the paths with a comma.

SETLABEL Statement

Assigns a label to the specified path

SETLABEL *path 'label'*;

Required Arguments

label
specifies the text of the label. You can customize labels by inserting BY variable values (#BYVAL), BY variable names (#BYVAR), or BY lines (#BYLINE) into labels

that are specified in PROC DOCUMENT steps. For more information, see "The DOCUMENT PROCEDURE and BY-Groups" on page 233.

Requirement: The label must be enclosed in quotation marks.

path
specifies the location of a link, output object, or file location.

UNHIDE Statement

Enables the output of a hidden entry to be displayed when it is replayed

UNHIDE *path <, path-2, ...path-n>*;

Required Arguments

path
specifies the location of a link, output object, or file.

Requirement: When you specify more than one path, separate the paths with a comma.

The DOCUMENT PROCEDURE and BY-Groups

You can customize labels, titles, and footnotes with the following statements by inserting BY variable values (#BYVAL), BY variable names (#BYVAR), or BY lines (#BYLINE) in labels that are specified in PROC DOCUMENT steps:

OBANOTE statement

OBBNOTE statement

OBFOOTN statement

OBSTITLE statement

OBTITLE statement

SETLABEL statement

Note: The #BYVAL, #BYVAR, and #BYLINE substitutions will only show up for replayed output objects that belong to a BY group. Examples of output objects that do not belong to a BY group are:

data sets that are imported into a document with IMPORT statement

notes created with the NOTES statement

△

To create these substitutions, embed the items in the specified object text string at the position where you want the substitution text to appear. The #BYVAL, #BYVAR, and #BYLINE substitutions have the following form:

#BYVAL*n* | #BYVAL(*variable-name*)

substitutes the current value of the specified BY variable for #BYVAL in the text string and displays the value in the label.

Follow these rules when you use #BYVAL in a valid statement of a PROC DOCUMENT step:

- Specify the variable that is used by #BYVAL in the BY statement.
- Insert #BYVAL in the specified text string at the position where you want the substitution text to appear.
- Follow #BYVAL with a delimiting character, either a space or other nonalphanumeric character (for example, a quotation mark) that ends the text string.
- If you want the #BYVAL substitution to be followed immediately by other text, with no delimiter, use a trailing dot (as with macro variables).

Specify the variable with one of the following:

n

specifies which variable in the BY statement that #BYVAL should use. The value of *n* indicates the position of the variable in the BY statement.

Example: #BYVAL2 specifies the second variable in the BY statement.

variable-name

names the BY variable.

Example: #BYVAL(YEAR) specifies the BY variable, YEAR.

Tip: *Variable-name* is not case sensitive.

Requirement: You must enclose *variable-name* in parentheses.

#BYVAR*n* | #BYVAR(*variable-name*)

substitutes the name of the BY variable or label that is associated with the variable (whatever the BY line would normally display) for #BYVAR in the text string and displays the name or label.

Follow these rules when you use #BYVAR in a valid statement of a PROC DOCUMENT step:

- Specify the variable that is used by #BYVAR in the BY statement.
- Insert #BYVAR in the specified text string at the position where you want the substitution text to appear.
- Follow #BYVAR with a delimiting character, either a space or other nonalphanumeric character (for example, a quotation mark) that ends the text string.
- If you want the #BYVAR substitution to be followed immediately by other text, with no delimiter, use a trailing dot (as with macro variables).
- Specify the variable with one of the following:

  n

  specifies which variable in the BY statement that #BYVAR should use. The value of *n* indicates the position of the variable in the BY statement.

  Example: #BYVAR2 specifies the second variable in the BY statement.

  variable-name

  names the BY variable.

  Example: #BYVAR(SITES) specifies the BY variable SITES.

Tip: *Variable-name* is not case sensitive.

Requirement: You must enclose *variable-name* in parentheses.

#BYLINE
substitutes the entire BY line without leading or trailing blanks for #BYLINE in the text string and displays the BY line in the label.

Concepts: DOCUMENT Procedure

What Is an ODS Document?

Definition

An ODS document is a hierarchical file of output objects that is created from a procedure or data query. The hierarchy is controlled by the internal logic of the procedure or data query.

What Does an ODS Document Include?

In an ODS document, each level of the hierarchical file represents a path which refers to the location of a file, link, or output object. An output object can be a

- table
- graph
- equation
- note.

What Is Not Included in an ODS Document?

An ODS document does not store

- SAS logs
- SAS system options
- procedure options
- ODS options
- SAS/GRAPH options
- SAS/GRAPH external graph titles
- GRSEGs (references to GRSEGs, but not GRSEGs themselves, are stored.)

ODS Document Persistence

An ODS document is a member of a SAS library. Therefore, you can browse, edit, and replay the output contained in the ODS document to any ODS destination without rerunning your SAS programs that created the initial output. An ODS document persists in the SAS System until the document, or the SAS library containing the document, is deleted. Thus an ODS document that was created in the SASUSER library, or in another permanent SAS library, can persist indefinitely because it is considered a permanent archive of SAS procedure output. However, an ODS document that is created in the WORK library does not persist longer than the SAS session that created it. For information about SAS data libraries, see *SAS Language Reference: Concepts*

What Is an ODS Document Path?

Definition of ODS Document Path

Because an ODS document is stored as an item store, this file format enables client applications to define a "hierarchal file system within a file." This is similar to a directory system in a Windows operating environment, or a partitioned data set in a mainframe operating environment. Therefore, an ODS document path means the location of an entry.

Entry Names

Entry names

- must be alphanumeric
- must begin with an alphabetical character
- can contain underscores
- can have no more than 32 characters
- are preserved with casing (uppercase, lowercase, or mixed case) that is specified in the mainframe operating environment
- can have labels which are no more than 256 characters.

Entries are inserted into an ODS document in the following three ways:

- ordered by insertion, which is the default order
- ordered by ascending date-time stamp
- ordered alphabetically.

Understanding Sequence Numbers

Entry names are not required to be unique within an ODS document. However, they are uniquely identifiable because they contain sequence numbers. Every entry in an ODS document, except for the root file location, has a sequence number. A sequence number is a positive integer that is unique with respect to the name of the entry within the same file location level. Entries are assigned sequence numbers according to the sequence in which they are added to a file location. For example, the first entry **`myname`** is assigned a sequence number 1, **`myname#1`**. The second entry **`myname`** is assigned a sequence number 2, **`myname#2`**. Sequence numbers are never reassigned, unless all entries with the same name are deleted. In this case, the sequence numbers are reset to an initial number of 1.

ODS Documents and Base SAS Procedures

You can create an ODS document from almost any Base SAS procedure. The FREQ, PRINT, REPORT, and TABULATE procedures use table definitions that are created by the user, and not defined by a template in ODS. These procedures use custom table definitions, custom data components, and custom formats for their output objects.

Nevertheless, the ODS document and all of its features are supported for the TABULATE procedure. Except for the crosstabs tables in the FREQ procedure, the remaining output objects are supported in an ODS document. ODS documents support some features of PROC PRINT. For example, BY-group processing is not supported, and the REPORT procedure is not supported.

Getting Familiar with Output Objects

An output object can be one of the following:

- table
- note
- equation.

Output objects have associated information and attributes. Some or all of these attributes pertain to output objects.

after-note
: is the note assigned to the output object by the procedure that produced the object. This note is displayed every time the output object is displayed. After-notes display after the output object.

before-note
: is the note assigned to the output object by the procedure that produced the object. This note is displayed every time the output object is displayed. Before-notes display before the output object.

footnote
: is created by the FOOTNOTE statement and is displayed when the output object is created.

page break
: causes a page break prior to displaying the output object and any associated titles and notes.

subtitle
: is the title that is assigned to the output object by the procedure that produced the output object. This title is displayed every time a new page of output is started.

title
: is created by the TITLE statement and is displayed when the output object is created.

Here is the order in which the attributes of an output object are displayed:

1. page break
2. titles
3. subtitles
4. before-notes
5. output object
6. after-notes
7. footnotes

How Do ODS Documents Interact across Operating Environments?

Compatibility across SAS Versions

An ODS document that is created in the current version of SAS is compatible with later versions of SAS. In most cases, an ODS document created in a later version of SAS will still be compatible with today's version of SAS.

ODS documents are not portable across operating environments. For example, an ODS document created in a Windows operating environment cannot be used in a mainframe operating environment.

Results: DOCUMENT Procedure

ODS Documents in the Documents Window

Why Use the Documents Window?

The Documents window displays your ODS documents in a hierarchical tree structure. You can use the Documents window to do the following:

- view all of your ODS documents including ODS documents stored in SAS libraries
- organize, manage, and customize the layout of the entries contained in your ODS documents
- view the property information of your ODS documents
- replay entries
- rename, copy, move, or delete your ODS documents
- create shortcuts to your ODS documents.

For a comparison of the Documents window to the Results Window, see "Comparisons between the Documents Window and the Results Window" on page 242

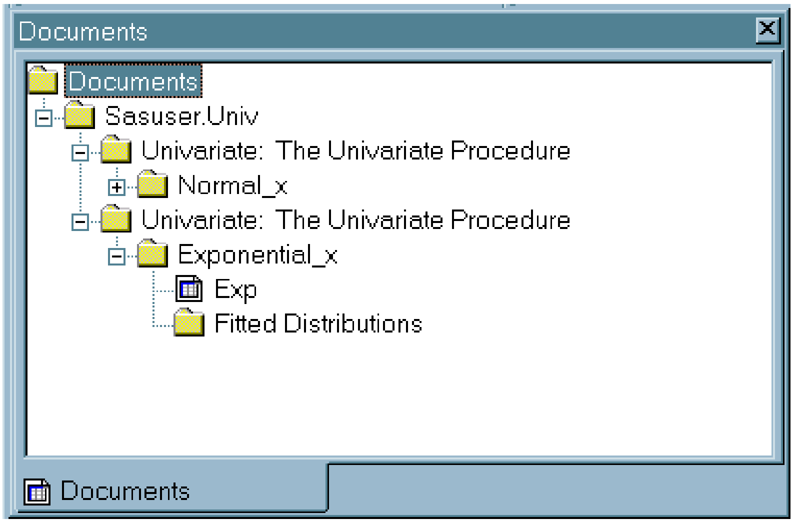
Viewing an ODS Document in the Documents Window

To view the Documents window, submit the following command in the command bar:

```
odsdocuments
```

The following display shows the Documents window that contains the ODS document named **Sasuser.Univ**. In the display, you can see that **Sasuser.Univ** contains several file location levels. The **Exponential_x** file location contains the **Exp** output object. When you double-click an output object, such as **Exp**, that output object is replayed in the Results Viewer window to all open destinations.

Display 6.1 Documents Window



A Documents window contains the following items:

entry
: is an output object, link, or file location.

  Note: Only output objects of the type *document* are displayed in the Documents window. △

file location
: is a grouping of ODS document entries.

link
: is a symbolic link from one specified output object to another output object.

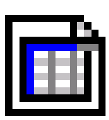
  Note: Within the Documents window, a link is called a *shortcut*. △

ODS document
: is the name of your ODS document.

ODS Document Icon

The Results window and the Documents window use the following icon to indicate an ODS document output object:

Display 6.2 ODS Document Icon



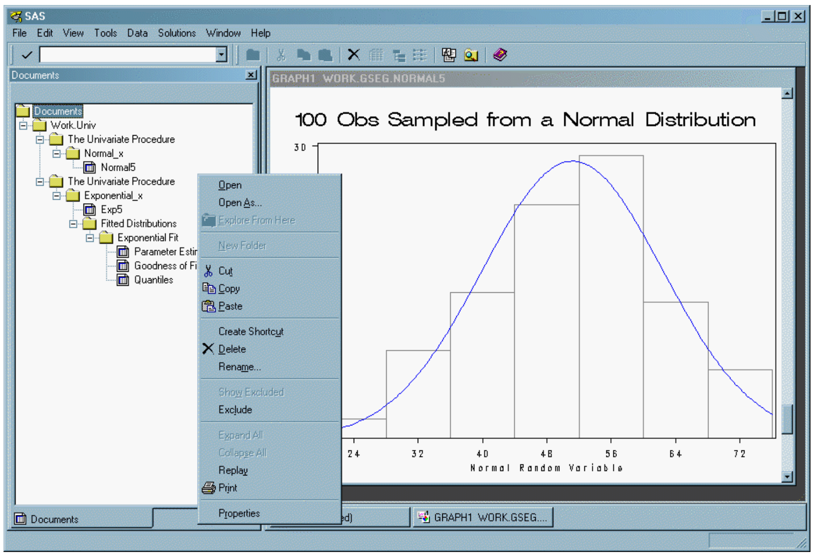
Operating Environment Information: The ODS Documents window on z/OS has the same functionality, but does not use graphical icons. △

Using the Documents Window Pop-up Menu

The Documents window has a pop-up menu with features that are also available through batch processing. To view the Documents window pop-up menu, follow these steps:

1. Type **odsdocuments** in the command bar. The Documents window appears.
2. Right-click any entry in the Documents window. The pop-up menu appears.

Display 6.3 Pop-up Menu for the Documents Window



The following table describes the pop-up menu item features. The availability of each pop-up menu item depends on which entry you select in the Documents window.

Table 6.1 Tasks You Can Do with the Documents Window Pop-up Menu *

Task	Menu item
Open the selected object in the Results Viewer	Open
Select a new ODS destination output type	Open As
Open a window in tree view and list view	Explore From Here
Create a new folder	New Folder
Remove the selected entry from the Documents window	Cut
Copy the selected entry to system memory	Copy
Paste the copied entry to the selected location	Paste
Create a shortcut to the entry	Create Shortcut
Delete the selected entry	Delete
Rename the selected entry	Rename
Show the entries that were previously excluded	Show Excluded

Task	Menu item
Remove from the tree, but do not delete the selected entry	Exclude
Expand all the levels of the tree	Expand All
Collapse all the levels in the tree	Collapse All
Replay the selected entry to all open ODS destinations	Replay
Print the selected entry	Print
Display the properties of the selected entry	Properties

* Available menu choices vary, depending on the selected entry.

ODS Documents in the Results Window

Why Use the Results Window?

Although the Results window (like the Documents window) lists ODS documents, the Results window also lists other types of output objects, such as PDF and HTML. You can use the Results window to do the following:

- view the output object types that are created when you run a SAS program in your current SAS session. SAS creates an output object for each ODS destination that was open at the time you executed a procedure during your current SAS session only
- view the results after you create a new output object from the Documents window using the **Open As** or **Replay** feature
- view the properties of an entry
- delete or rename entries.

See "Comparisons between the Documents Window and the Results Window" on page 242.

Viewing Entries in the Results Window

To view the Results window, submit the following command in the command bar:

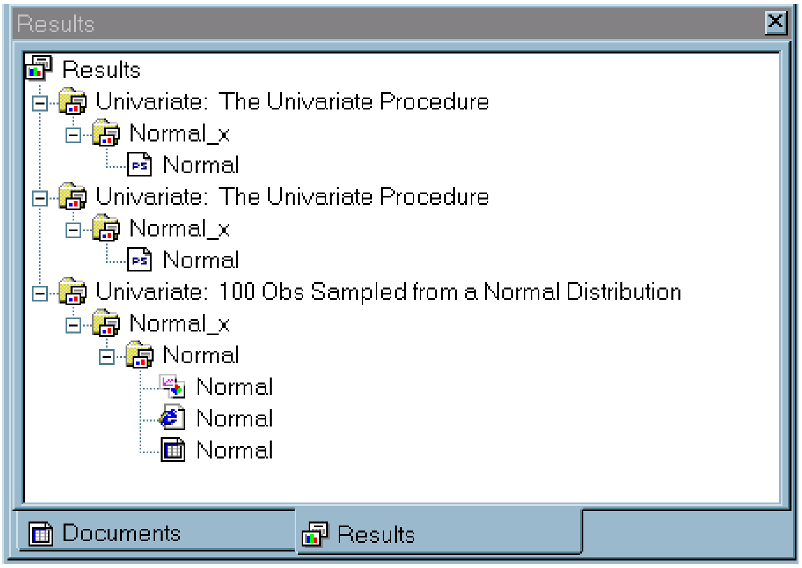
```
odsresults
```

You can also view the Results window by selecting:

View ► Results

The following display shows the Results window with files and output objects. The last file is **Univariate:100 Obs Sampled from a Normal Distribution**. Under this file is the same output object sent to three different destinations. Each output object is named **Normal** and the destinations are Listing, HTML and Document.

Display 6.4 Results Window Showing the Output Object *Normal* in Three Formats



For more information about using the Results window, make the Results window the active window and select

Help ► Using This Window

Comparisons between the Documents Window and the Results Window

The following table shows you the tasks that you can and cannot do in the Documents window and in the Results Window.

Task	Documents window	Results window
View all SAS documents including those stored in SAS libraries	yes	yes
View output object types that are created when you run a SAS program, such as HTML, PDF, and SAS document	no	yes
View the results after you create a new output object	yes	yes
Customize the layout of your output objects	yes	no
View the property information of your SAS documents	yes	yes
View the properties of an output object	no	yes
Delete or rename entries	yes	yes
Copy or move your SAS documents	yes	no

Task	Documents window	Results window
Create shortcuts to your SAS documents	yes	no
Drag and drop output objects	yes	no

Viewing the Properties of an Entry

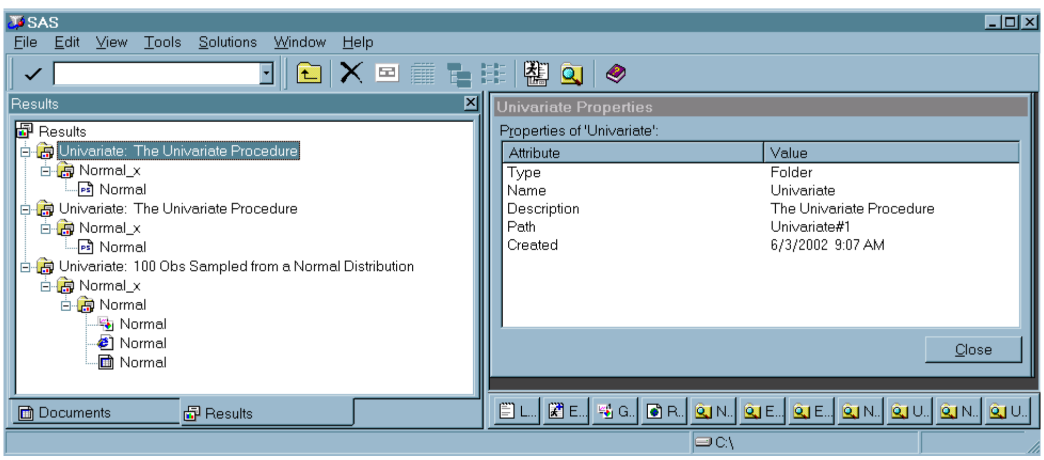
Any entry that you select either in the Results window or in the Documents window has an associated Properties window. To view the properties of an entry, follow these steps:

1 Select an entry either from the Results Window or from the Documents window.

2 Right-click the entry. A pop-up menu appears.

3 Select **Properties**. The Properties window for the entry appears.

Display 6.5 Entry Properties Window



Items will vary, depending on the entry that you select in the Documents or Results windows. The Properties window for an ODS document output object can contain the following items:

Created — is the date that the entry was created.

Document — is the SAS filename where the entry is located. The filename is in the form of *libref.filename*

Document path — the location of the entry in the tree structure. If you move the entry to another location in the Documents window, then this path will change.

Modified — is the date that the entry was modified.

Name — is the name of the entry.

Path — is the storage location inside the document of the entry.

Type — is the classification of the entry.

Creating Shortcuts in the Documents Window

The Documents window pop-up menu provides you with a **Create Shortcut** option. Shortcut links are useful when you are creating output that uses the same entry in more than one place. Instead of copying the entry to each location, consider using a shortcut. Shortcuts have the following advantages:

- Because a shortcut is a link to the original entry, any changes that you make to the original entry will appear when you select the shortcut..
- A shortcut uses fewer computer resources.

To create a shortcut, do the following:

1. Right-click an entry in the Documents window. A pop-up menu appears.
2. Select **Create Shortcut**. A new shortcut entry appears below the selected entry.

Examples: DOCUMENT Procedure

Example 1: Navigating the File Location and Listing the Entries

Procedure features:

ODS DOCUMENT statement options:

NAME=

DOC statement option:

NAME=

LIST statement options:

entry
LEVELS=
DETAILS

DIR statement option:

path

ODS Destinations:

DOCUMENT

LISTING

HTML

Procedure output:

PROC DOCUMENT

This example shows you how to do the following:

- name an ODS document
- see what ODS documents exist
- open a document for browsing or editing purposes
- list one or more entries
- change file locations.

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The NONUMBER option suppresses the printing of page numbers.

```
options nodate nonumber;
```

Create the DISTRDATA data set. The DISTRDATA data set contains the statistical information that PROC UNIVARIATE uses to create the histograms.

```
data distrdata;
  drop n;
  label Normal_x='Normal Random Variable'
        Exponential_x='Exponential Random Variable';
  do n=1 to 100;
     Normal_x=10*rannor(53124)+50;
     Exponential_x=ranexp(18746363);
     output;
  end;
run;
```

Create the ODS document UNIV and open the DOCUMENT destination. The ODS DOCUMENT statement opens the document destination. The NAME= option assigns the name UNIV to the ODS document that contains the information from this PROC UNIVARIATE program.Note that by default UNIV will be created in the WORK library. You must assign a libref if you want UNIV to be created in a permanent library.

```
ods document name=univ;
```

Create a normal distribution histogram. The TITLE statement specifies the title of the normal distribution histogram. The PROC UNIVARIATE step creates a normal distribution histogram from the DISTRDATA data set.

```
title '100 Obs Sampled from a Normal Distribution';
proc univariate data=distrdata noprint;
  var Normal_x;

  histogram Normal_x /normal(noprint) cbarline=grey name="normal";
run;
```

Create an exponential distribution histogram. The TITLE statement specifies the title of the exponential histogram. The PROC UNIVARIATE step creates an exponential distribution histogram from the DISTRDATA data set.

```
title '100 Obs Sampled from an Exponential Distribution';

proc univariate data=distrdata noprint;
  var Exponential_x;

  histogram /exp(fill l=3) cfill=yellow midpoints=.05 to 5.55 by .25
             name="exp";
run;
```

Close the DOCUMENT destination. If you do not close the DOCUMENT destination, you will be unable to see DOCUMENT procedure output.

```
ods document close;
title;
```

View your documents, choose a document, and list the entries of the document you open. The DOC statement (with no arguments specified) prints a listing of all of the available documents that are in the SAS System (see).

The DOC statement with the NAME= option specifies the current document, WORK.UNIV. The LIST statement with the LEVELS=ALL option lists detailed information on all levels of the document WORK.UNIV (see).

```
proc document;
   doc;
   doc name=univ;
   list/levels=all;
```

Set the path to EXPONENTIAL, list the contents of the EXPONENTIAL file location, select a table, and list the details of the table you selected. The DIR statement changes your current file location to **`univariate#2\exponential_x\fitteddistributions\exponential`**. The path **`univariate#2\exponential_x\fitteddistributions\exponential`** was obtained from the listing of the WORK.UNIV document (see Display 1.6).

The LIST statement (with no arguments) lists the contents of **`EXPONENTIAL`** (see List of the EXPONENTIAL#1 Entry). The LIST fitquantiles/details statement specifies that ODS opens the FitQuantiles table and lists its details (see Details of the FitQuantiles#1 Table).

```
   dir univariate#2\exponential_x\fitteddistributions\exponential;
   list;
   list fitquantiles/details;
run;
```

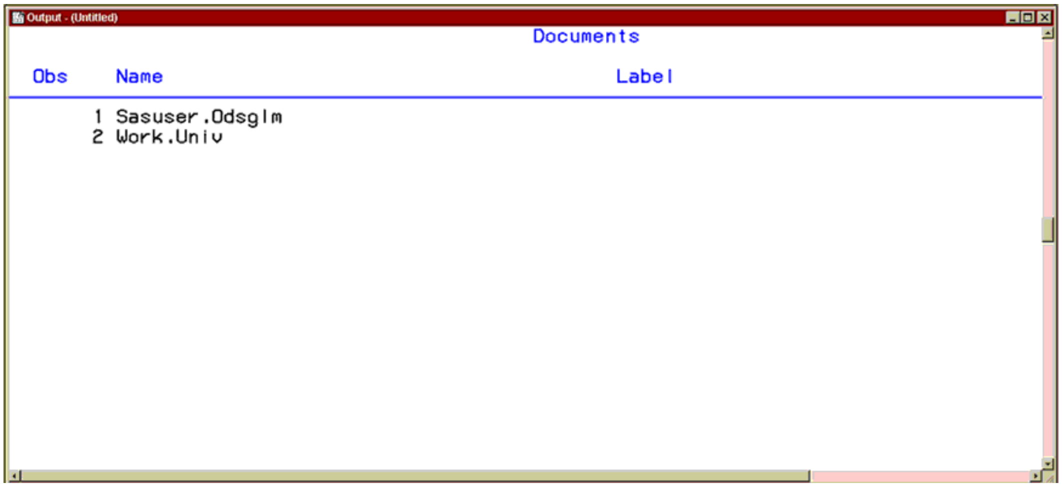
Terminate the DOCUMENT procedure. You must specify the QUIT statement to terminate the DOCUMENT procedure. If you do not specify QUIT, then you will not be able to view DOCUMENT procedure output.

```
quit;
```

Output

Display 6.6 List of ODS Documents

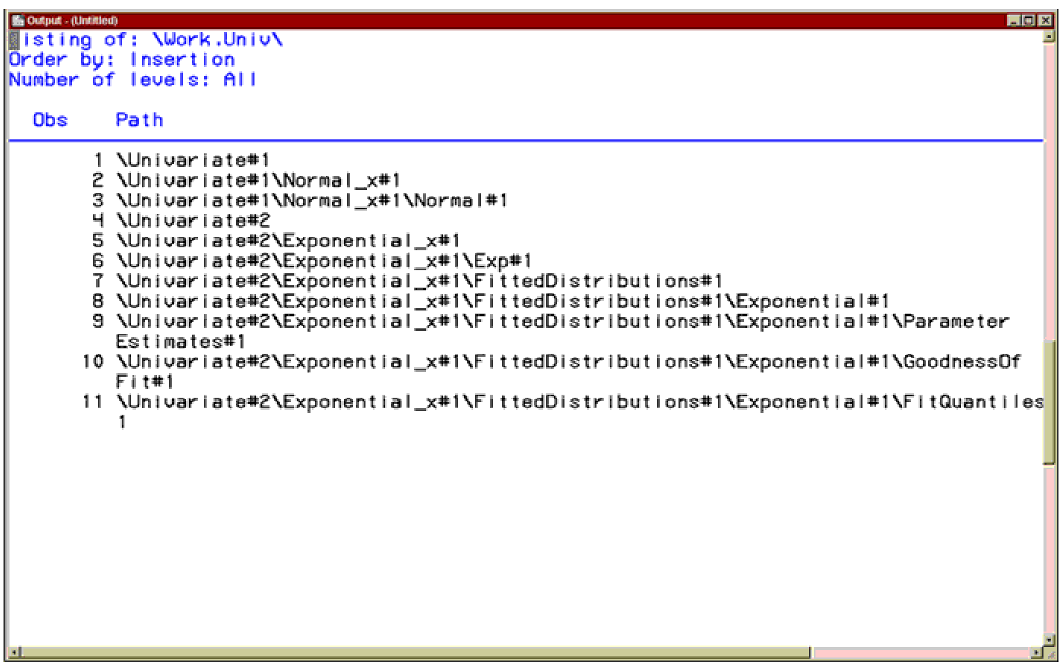
The following display shows that there are currently two ODS documents, SASUSER.ODSGLM and WORK.UNIV.



```
Output - (Untitled)
                                   Documents

 Obs    Name                                    Label

   1    Sasuser.Odsglm
   2    Work.Univ
```

Display 6.7 List of the Contents of WORK.UNIV

The following display shows the entries of the ODS document WORK.UNIV and the properties of those entries.



```
Output - (Untitled)
Listing of: \Work.Univ\
Order by: Insertion
Number of levels: All

 Obs    Path

   1    \Univariate#1
   2    \Univariate#1\Normal_x#1
   3    \Univariate#1\Normal_x#1\Normal#1
   4    \Univariate#2
   5    \Univariate#2\Exponential_x#1
   6    \Univariate#2\Exponential_x#1\Exp#1
   7    \Univariate#2\Exponential_x#1\FittedDistributions#1
   8    \Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1
   9    \Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\Parameter
        Estimates#1
  10    \Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\GoodnessOf
        Fit#1
  11    \Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\FitQuantiles
        1
```

Display 6.8 List of the EXPONENTIAL#1 Entry

The following display shows a list of entries of the EXPONENTIAL#1 entry and the properties of those entries.

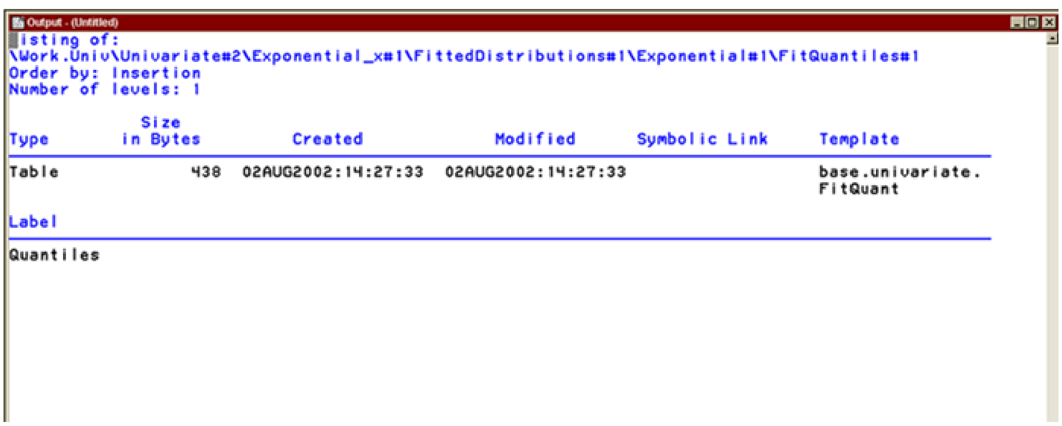
Output - (Untitled)

Listing of: \Work.Univ\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1
Order by: Insertion
Number of levels: 1

Obs	Path	Type
1	ParameterEstimates#1	Table
2	GoodnessOfFit#1	Table
3	FitQuantiles#1	Table

Display 6.9 Details of the FitQuantiles#1 Table

The following display is a list of the details of the FitQuantiles table.



Output - (Untitled)

Listing of:
\Work.Univ\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\FitQuantiles#1
Order by: Insertion
Number of levels: 1

Type	Size in Bytes	Created	Modified	Symbolic Link	Template
Table	438	02AUG2002:14:27:33	02AUG2002:14:27:33		base.univariate.FitQuant

Label
Quantiles

Example 2: Opening and Listing ODS Documents

Procedure features:

PROC DOCUMENT statement option:

NAME=

DIR statement

LIST statement option:

DETAILS
LEVELS

REPLAY statement

ODS Destinations:

DOCUMENT

LISTING
PDF

Procedure output:
PROC DOCUMENT
PROC UNIVARIATE

DATA SET: DISTRDATA on page 245

This example shows you how to do these tasks:

- open an ODS document
- replay a table and send the output to the LISTING and PDF destinations
- list the entries in an ODS document
- change file locations
- list the details of a specified entry
- replay an ODS document to a PDF file.

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The NONUMBER option suppresses the printing of page numbers.

```
options nodate nonumber;
```

Open the ODS document WORK.UNIV. The PROC DOCUMENT statement with the NAME= option specified, opens the ODS document WORK.UNIV for updates.

```
proc document name=univ;
```

Specify that you want to replay your output to a PDF file. The ODS PDF statement opens the PRINTER destination and replays the histogram to the PDF destination. The FILE= statement sends all output objects to the external file that you specify.

```
ods pdf file= "your_file.pdf";
```

List the entries that are associated with the current document and replay a histogram. The LIST statement with the LEVELS=ALL option specified, lists detailed information on all levels of the current document WORK.UNIV (see Display 6.7 on page 247).

The REPLAY statement replays the NORMAL#1 entry to all open ODS destinations (see Display 6.11 on page 251).

```
   list/levels=all;
   replay univariate#1\Normal_x#1\Normal#1;
```

View the file EXPONENTIAL, list the details of the FitQuantiles table, and replay the FitQuantiles table. The DIR statement changes the current file location to **`univariate#2\exponential_x\fitteddistributions\exponential#1`**. The LIST statement (with no arguments) lists the entries in the EXPONENTIAL file location (see Display 6.12 on page 251).

The LIST statement with the DETAILS option specifies the listing of the properties of the entry FitQuantiles table (see).

The REPLAY statement replays FITQUANTILES to the PDF destination.

```
   dir univariate#2\exponential_x\fitteddistributions\exponential#1;
   list;
   list fitquantiles/details;
   replay fitquantiles;
run;
```

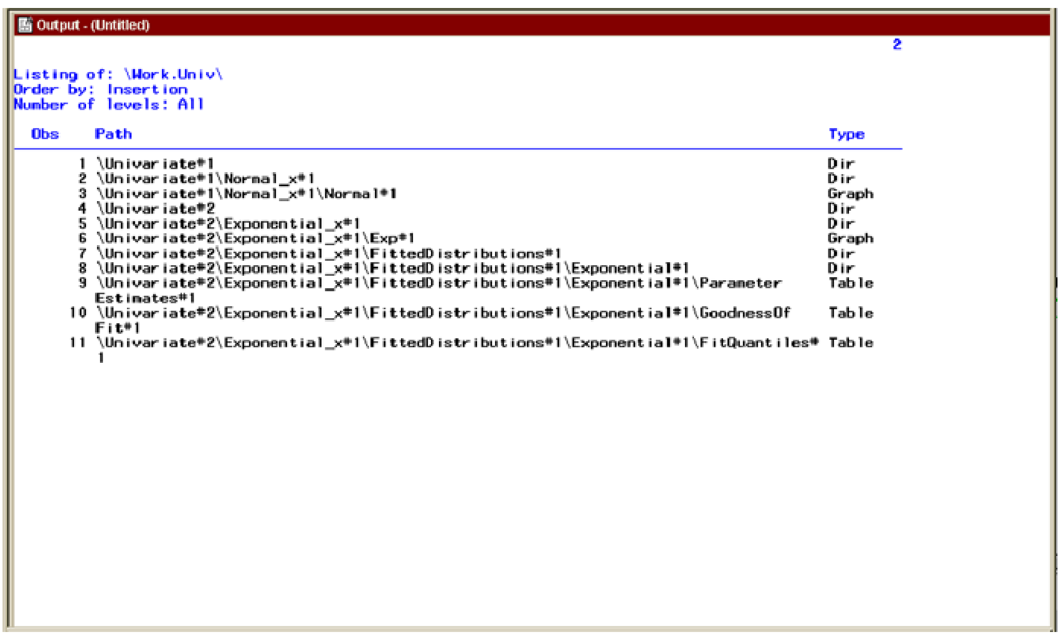
Terminate the DOCUMENT procedure and close the PDF destination. You must specify the QUIT statement to terminate the DOCUMENT procedure. If you do not specify QUIT, then you will not be able to view DOCUMENT procedure output. The ODS PDF CLOSE statement closes the PDF destination and all the files that are associated with it. If you do not close the destination, then you will not be able to view the files.

```
quit;
ods pdf close;
```

Output

Display 6.10 List of the Contents of WORK.UNIV

The following display shows the contents of WORK.UNIV.

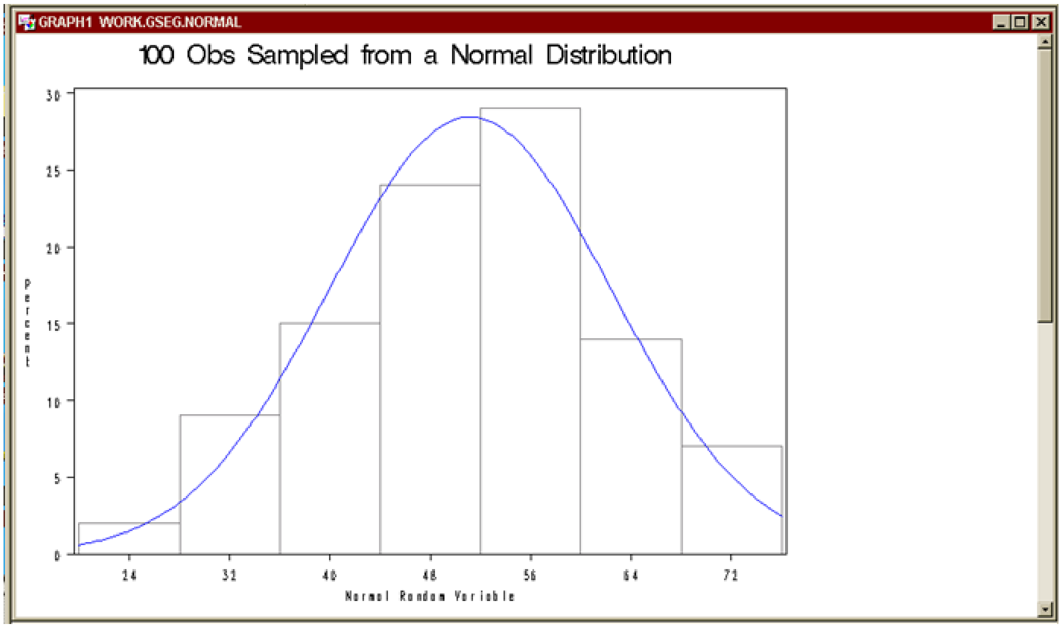

Output - (Untitled)

2

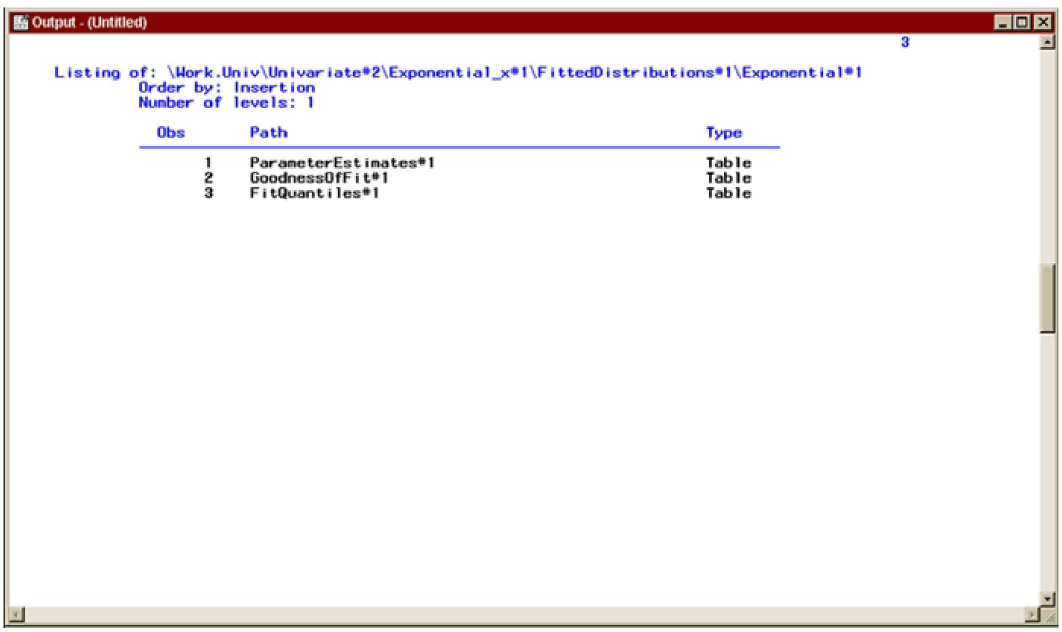
Listing of: \Work.Univ\
Order by: Insertion
Number of levels: All

Obs	Path	Type
1	\Univariate#1	Dir
2	\Univariate#1\Normal_x#1	Dir
3	\Univariate#1\Normal_x#1\Normal#1	Graph
4	\Univariate#2	Dir
5	\Univariate#2\Exponential_x#1	Dir
6	\Univariate#2\Exponential_x#1\Exp#1	Graph
7	\Univariate#2\Exponential_x#1\FittedDistributions#1	Dir
8	\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1	Dir
9	\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\Parameter Estimates#1	Table
10	\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\GoodnessOf Fit#1	Table
11	\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\FitQuantiles# 1	Table

Display 6.11 Replayed Normal Distribution Histogram



Display 6.12 List of the EXPONENTIAL#1 File Location


Output - (Untitled)

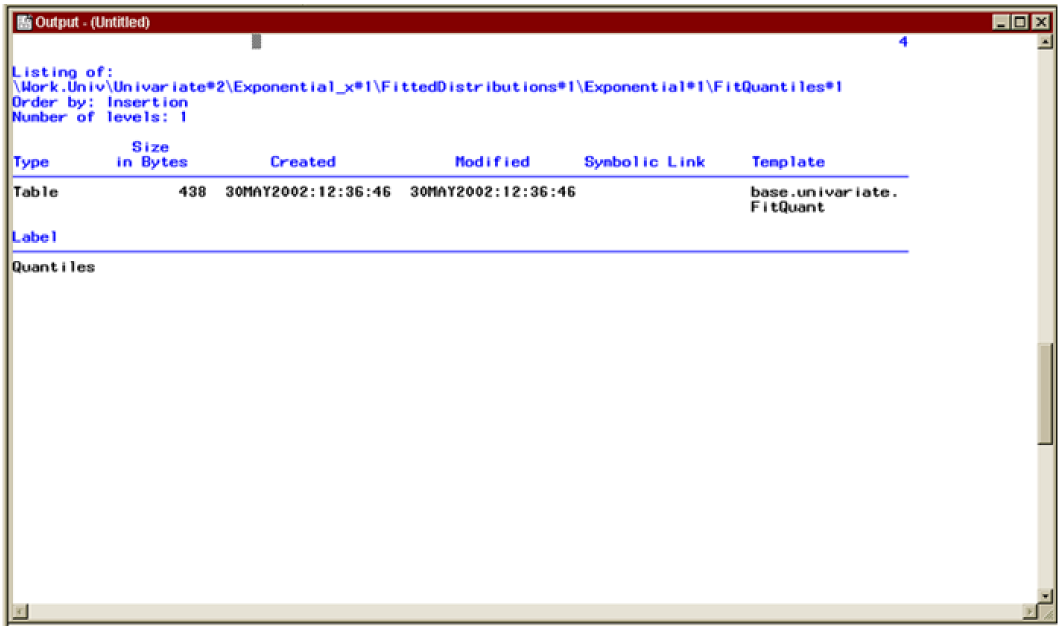
3

Listing of: \Work.Univ\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1
Order by: Insertion
Number of levels: 1

Obs	Path	Type
1	ParameterEstimates#1	Table
2	GoodnessOfFit#1	Table
3	FitQuantiles#1	Table

Display 6.13 Details of the FitQuantiles#1 Table

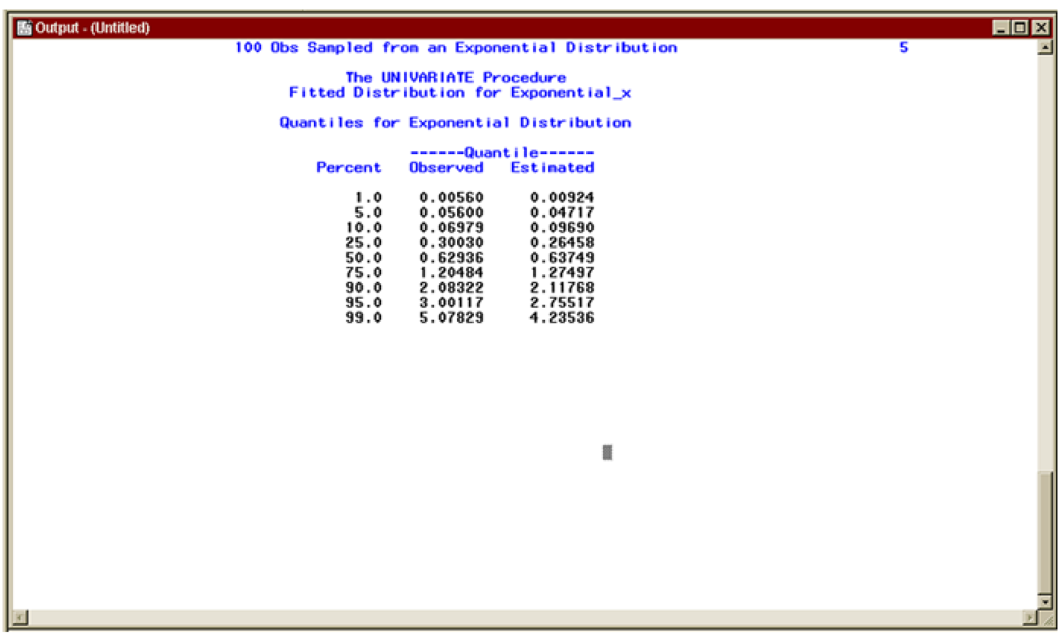
The following display shows the properties of the FitQuantiles#1 table, viewed in the SAS Output window.



```
Output - (Untitled)
                                                                          4

Listing of:
\Work.Univ\Univariate#2\Exponential_x#1\FittedDistributions#1\Exponential#1\FitQuantiles#1
Order by: Insertion
Number of levels: 1

              Size
Type        in Bytes       Created              Modified          Symbolic Link      Template
---------------------------------------------------------------------------------------------------
Table            438   30MAY2002:12:36:46   30MAY2002:12:36:46                       base.univariate.
                                                                                     FitQuant

Label
---------------------------------------------------------------------------------------------------
Quantiles
```

Display 6.14 Replayed FitQuantiles#1 Table

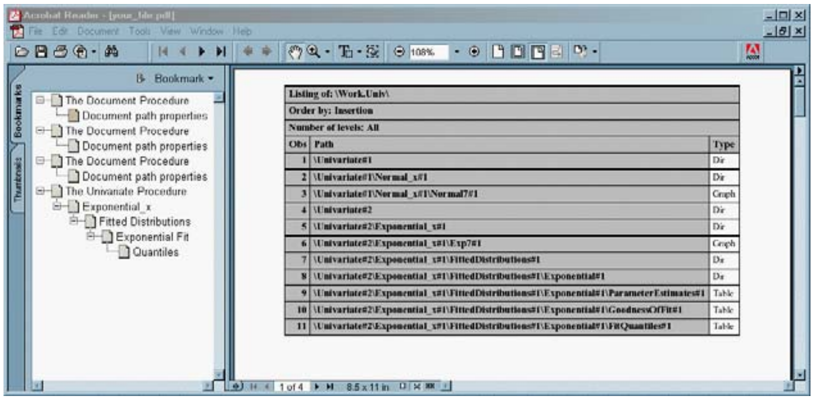
The following display shows the replayed FitQuantiles#1 table that was sent to the LISTING destination.



```
Output - (Untitled)
                     100 Obs Sampled from an Exponential Distribution                     5

                                  The UNIVARIATE Procedure
                             Fitted Distribution for Exponential_x

                            Quantiles for Exponential Distribution

                                        ------Quantile------
                              Percent    Observed   Estimated

                                  1.0     0.00560     0.00924
                                  5.0     0.05600     0.04717
                                 10.0     0.06979     0.09690
                                 25.0     0.30030     0.26458
                                 50.0     0.62936     0.63749
                                 75.0     1.20484     1.27497
                                 90.0     2.08322     2.11768
                                 95.0     3.00117     2.75517
                                 99.0     5.07829     4.23536
```

Display 6.15 ODS Document WORK.UNIV, Viewed in Acrobat Reader

The following display is page 1 of the ODS document WORK.UNIV that was sent to the PDF destination. You can browse the output by clicking the entries.



Example 3: Managing Entries

Procedure features:

PROC DOCUMENT statement option:

NAME=

DIR statement

LIST statement option:

LEVELS=

NOTE statement

OBANOTE statement

OBBNOTE statement

OBFOOTN statement

OBPAGE statement

OBSTITLE statement

OBTITLE statement

REPLAY statement

ODS Destinations:

DOCUMENT

HTML

LISTING

Procedure output:

PROC CONTENTS

This example shows you how to do these tasks:

- □ generate PROC CONTENTS output to the DOCUMENT destination
- □ change the title and footnote of the output
- □ add a before-note and an after-note to the output
- □ change the subtitle of the output

- add a note to the document
- add a page break to the output.

Program

Set the SAS system options. The NODATE option suppresses the display of the date and time in the output. The PAGENO= option specifies the starting page number.

```
options nodate pageno=1;
```

Close the LISTING destination and open the DOCUMENT destination. The NAME= option creates an ODS document named **CLASS**.

```
ods listing close;
ods document name=class;
```

Specify a global title and footnote. The TITLE statement creates a title that is used until you change it with another statement. The FOOTNOTE statement creates a footnote that is used until you change it with another statement. For information about the global FOOTNOTE and TITLE statements, see **SAS Language Reference: Dictionary**.

```
title 'Title Specified with the Global TITLE Statement';
footnote 'Footnote Specified with the Global FOOTNOTE Statement';
```

View the contents of the SAS data set. The CONTENTS procedure shows the contents of a SAS data set **sashelp.class**.

```
proc contents data=sashelp.class;
run;
```

Close the DOCUMENT destination. The entries in the ODS document CLASS are used in the remainder of this example.

```
ods document close;
```

Create LISTING and HTML output. The ODS LISTING statement opens the LISTING destination and creates listing output.

The ODS HTML statement opens the HTML destination and creates HTML 4.0 output. The STYLE= option specifies that ODS use the style definition D3D.

```
ods listing;
ods html file='your_file.html' style=d3d;
```

Change the global title. The OBTITLE statement assigns a new title to the **`Attributes#1`** object. See Title, Subtitle, and Before-note on page 257.

- ☐ The NAME= option specifies the current ODS document.
- ☐ The LIST statement with the LEVELS=ALL option shows a list of entries in the CLASS document. Note that PROC DOCUMENT is still running after the RUN statement executes.
- ☐ The DIR statement changes the current path to \Contents#1\DataSet#1.
- ☐ REPLAY generates output for all open ODS destinations.
- ☐ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   list /levels=all;
run;
   dir \Contents#1\DataSet#1;
run;
   obtitle Attributes#1 'Title Specified with the OBTITLE Statement';
   replay;
run;
quit;
```

Add a before-note to the output. The OBBNOTE statement assigns a before-note to the **`Attributes#1`** object. See Title, Subtitle, and Before-note on page 257.

- ☐ The NAME= option specifies the current ODS document.
- ☐ The DIR statement changes the current file location to \Contents#1\DataSet#1.
- ☐ The REPLAY statement generates output for all open ODS destinations.
- ☐ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   dir \Contents#1\DataSet#1;
run;
   obbnote Attributes#1 'Add Before Note using the OBBNOTE Statement';
   replay;
run;
quit;
```

Change the global footnote. The OBFOOTN statement assigns a new footnote to the object **`Variables#1`**.

- ☐ The NAME= option specifies the current ODS document.
- ☐ The DIR statement changes the current file location to \Contents#1\DataSet#1.
- ☐ The REPLAY statement generates output for all open ODS destinations.
- ☐ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   dir \Contents#1\DataSet#1;
run;
   obfootn Variables#1 'Change Footnote using the OBFOOTN Statement';
   replay;
run;
quit;
```

Add an after-note. The OBANOTE statement assigns an after-note to the **Attributes#1** object. See Display 6.18 on page 258.

- □ The NAME= option specifies the current ODS document.
- □ The DIR statement changes the current file location to \Contents#1\DataSet#1.
- □ The REPLAY statement generates output for all open ODS destinations.
- □ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   dir \Contents#1\DataSet#1;
run;
   obanote Attributes#1 'After Note Specified by the OBANOTE Statement';
   replay;
run;
quit;
```

Change the subtitle of the output. The OBSTITLE statement changes the subtitle. The subtitle identifies the procedure that produced the output. See Title, Subtitle, and Before-note on page 257.

- □ The NAME= option specifies the current ODS document.
- □ The DIR statement changes the current file location to \Contents#1\DataSet#1.
- □ The REPLAY statement generates output for all open ODS destinations.
- □ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   dir \Contents#1\DataSet#1;
run;
   obstitle Attributes#1 'Subtitle Specified with the OBSTITLE Statement';
   replay;
run;
quit;
```

Add a note to the document. The NOTE statement adds a note object named ADDNOTE to the ODS document. See Note Is Added and Footnote Is Changed on page 258.

- □ The NAME= option specifies the current ODS document.
- □ The LIST statement with the LEVELS=ALL option shows a list of entries in the CLASS document.
- □ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   note addnote 'Note added to the document';
   list /levels=all;
 run;
 quit;
```

Add a page break to the output. The OBPAGE statement inserts a page break.

- □ The NAME= option specifies the current ODS document.
- □ The REPLAY statement generates output for all open ODS destinations.
- □ The QUIT statement terminates PROC DOCUMENT.

```
proc document name=class;
   obpage \Contents#1\DataSet#1\Variables#1;
   replay;
run;
quit;
```

Close the HTML and LISTING destinations. The ODS _ALL_ CLOSE statement closes all open ODS output destinations so that you can view the output.

```
ods _all_ close;
```

Output

Display 6.16 Global Title and Footnote

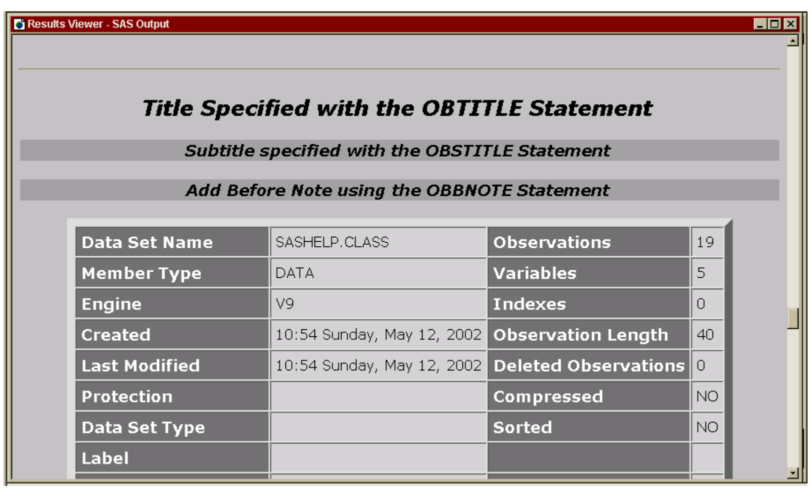
Results Viewer - SAS Output

Title Specified with the Global TITLE Statement

Listing of: \Work.Class\		
Order by: Insertion		
Number of levels: All		
Obs	**Path**	**Type**
1	\Contents#1	Dir
2	\Contents#1\DataSet#1	Dir
3	\Contents#1\DataSet#1\Attributes#1	Table
4	\Contents#1\DataSet#1\EngineHost#1	Table
5	\Contents#1\DataSet#1\Variables#1	Table

Footnote Specified with the Global FOOTNOTE Statement

Display 6.17 Title, Subtitle, and Before-note



Results Viewer - SAS Output

Title Specified with the OBTITLE Statement

Subtitle specified with the OBSTITLE Statement

Add Before Note using the OBBNOTE Statement

Data Set Name	SASHELP.CLASS	**Observations**	19
Member Type	DATA	**Variables**	5
Engine	V9	**Indexes**	0
Created	10:54 Sunday, May 12, 2002	**Observation Length**	40
Last Modified	10:54 Sunday, May 12, 2002	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label			

Display 6.18 After-note Is Specified by the OBANOTE Statement

Results Viewer - SAS Output

Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	10:54 Sunday, May 12, 2002	Observation Length	40
Last Modified	10:54 Sunday, May 12, 2002	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS		
Encoding	us-ascii ASCII (ANSI)		

After Note Specified by the OBANOTE Statement

Engine/Host Dependent Information	
Data Set Page Size	4096
Number of Data Set	

Display 6.19 Note Is Added

Results Viewer - SAS Output

Title Specified with the Global TITLE Statement

The CONTENTS Procedure

Alphabetic List of Variables and Attributes			
#	Variable	Type	Len
3	Age	Num	8
4	Height	Num	8
1	Name	Char	8
2	Sex	Char	1
5	Weight	Num	8

Note added to the document

PART 5

The TEMPLATE Procedure

CHAPTER

7

TEMPLATE Procedure: Overview

Introduction

Why Use the TEMPLATE Procedure?

The TEMPLATE procedure enables you to customize the appearance of your SAS output. For example, you can create, extend, or modify existing definitions for various types of output:

- styles
- tables
- columns
- headers
- footers
- tagsets

ODS then uses these definitions to produce formatted output.

You can also use the TEMPLATE procedure to navigate and manage the definitions stored in templates stores. Here are some tasks that you can do with PROC TEMPLATE:

- edit an existing definition
- create links to an existing definition
- change the location where you write new definitions
- search for existing definitions
- view the source code of a definition

What Can You Do with the TEMPLATE Procedure?

Modify a Table Definition that a SAS Procedure Uses

The following output shows the use of a customized table definition for the Moments output object from PROC UNIVARIATE. The program used to create the modified table definition

- creates and edits a copy of the default table definition.
- edits a header within the table definition.
- sets column attributes to enhance the appearance of both the HTML and the Listing output.

Output 7.1 Listing Output (Customized Moments Table) from PROC UNIVARIATE

```
                      Custom Moments Table                         1

                    The UNIVARIATE Procedure
   Variable:  CityPop_90  (1990 metropolitan pop in millions)

Moments
---------------------------------------------------------------
N                            51    Sum Weights                51

Mean                 3.87701961    Sum Observations      197.728

Std Deviation        5.16465302    Variance           26.6736408

Skewness             2.87109259    Kurtosis            10.537867

Uncorrected SS       2100.27737    Corrected SS       1333.68204

Coeff Variation       133.21194    Std Error Mean     0.72319608
---------------------------------------------------------------
```

Display 7.1 Customized HTML Output (Customized Moments Table) from PROC UNIVARIATE (Viewed with Microsoft Internet Explorer)

Custom Moments Table

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Moments			
N	51	Sum Weights	51
Mean	3.87701961	Sum Observations	197.728
Std Deviation	5.16465302	Variance	26.6736408
Skewness	2.87109259	Kurtosis	10.537867
Uncorrected SS	2100.27737	Corrected SS	1333.68204
Coeff Variation	133.21194	Std Error Mean	0.72319608

Modify a Style Definition

When you are working with style definitions, you are more likely to modify a style definition that SAS supplies than to write a completely new style definition. The output below uses the Styles.Default definition that SAS provides, but includes changes made to the style definition in order to customize the output's appearance. The Display 7.2 on page 264 shows changes made to both the contents file and the body file in the HTML output. In the contents file, the modified style definition makes changes to the following:

- the text of the header and the text that identifies the procedure that produced the output
- the colors for some parts of the text
- the font size for some parts of the text
- the spacing in the list of entries in the table of contents.

In the body file, the modified style definition makes changes to the following:

- two of the colors in the color list. One of these colors is used as the foreground color for the table of contents, the byline, and column headers. The other is used for the foreground of many parts of the body file, including SAS titles and footnotes.
- the font size for titles and footnotes
- the font style for headers
- the presentation of the data in the table by changing attributes like cellspacing, rules, and borderwidth.

Display 7.2 HTML Output (Viewed with Microsoft Internet Explorer)

Energy Expenditures for Each Region
(millions of dollars)

Division=Middle Atlantic

State	Type	Expenditures
NY	Residential Customers	8,786
NY	Business Customers	7,825
NJ	Residential Customers	4,115
NJ	Business Customers	3,558
PA	Residential Customers	6,478
PA	Business Customers	3,695

Division=Mountain

State	Type	Expenditures
MT	Residential Customers	322
MT	Business Customers	232
ID	Residential Customers	392
ID	Business Customers	298
WY	Residential Customers	194
WY	Business Customers	184
CO	Residential Customers	1,215
CO	Business Customers	1,173
NM	Residential Customers	545
NM	Business Customers	578
AZ	Residential Customers	1,694
AZ	Business Customers	1,448
UT	Residential Customers	621
UT	Business Customers	438
NV	Residential Customers	493
NV	Business Customers	378

Create Your Own Tagset

Tagsets are used to create custom markup. You can create your own tagsets, extend existing tagsets, or modify a tagset definition that SAS supplies. The following display shows the results from a new tagset **TAGSET.MYTAGS**.

Display 7.3 MYTAGS.CHTML Output (Viewed with Microsoft Internet Explorer)

To see the customized CHTML tagset, view the source from your web browser:

□ Select from your browser's tool bar:

View ▶ Source

These are my new colspecs

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83.0
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84.0
10	John	M	12	59.0	99.5
11	Joyce	F	11	51.3	50.5
12	Judy	F	14	64.3	90.0
13	Louise	F	12	56.3	77.0
14	Mary	F	15	66.5	112.0
15	Philip	M	16	72.0	150.0
16	Robert	M	12	64.8	128.0
17	Ronald	M	15	67.0	133.0
18	Thomas	M	11	57.5	85.0
19	William	M	15	66.5	112.0

Terminology: TEMPLATE Procedure

The following terms frequently appear in discussions of PROC TEMPLATE:

aggregate storage location
: is a location on an operating system that can contain a group of distinct files. Different host operating systems call an aggregate grouping of files different names, such as a directory, a maclib, or a partitioned data set. The standard form for referencing an aggregate storage location from within SAS is fileref(name), where fileref is the entire aggregate and (name) is a specific file or member of that aggregate.

item store
: is a member of a SAS data library. An item store is a hierarchical file system that is implemented as a single physical file. An item store can contain directories and files (called items) similar to the file systems in the UNIX and Windows operating environments. An item store is referenced by a two-level name: a libref and the name of the item store in the SAS data library that the libref references. For example, the SAS registry is stored in two items stores, SASUSER.REGISTRY and SASHELP.REGISTRY.

template store
: is an item store which stores definitions that were created by the TEMPLATE procedure. Definitions that SAS provides are in the item store SASHELP.TMPLMST. You can store definitions that you create in any template store where you have write access.

  Note: A template store can contain multiple levels known as directories. When you specify a template store in the ODS PATH statement, however, you specify a two-level name that includes a libref and the name of a template store in the SAS data library that the libref references. △

style definition
: describes how to display the presentation aspects (color, font face, font size, and so on) of your SAS output. A style definition determines the overall appearance of the documents that use it. Each style definition is composed of style elements. Style definitions do not apply to the LISTING destination, which produces plain text output.

style element
: is a collection of style attributes that apply to a particular part of the output. For example, a style element may contain instructions for the presentation of column headers or for the presentation of the data inside cells. Style elements may also specify default colors and fonts for output that uses the style definition. Each style attribute specifies a value for one aspect of the presentation. For example, the BACKGROUND= attribute specifies the color for the background of an HTML table, and the FONT_STYLE= attribute specifies whether to use a Roman, a slant, or an italic font.

table definition
: describes how to display the output for a tabular output object. (Most ODS output is tabular.) A table definition determines the order of table headers and footers, the order of columns, and the overall appearance of the output object that uses it. Each table definition contains or references table elements.

table element
: is a collection of attributes that apply to a particular column, header, or footer. Typically, these attributes specify something about the data rather than about its

presentation. For example, FORMAT= specifies the SAS format to use in a column. However, some attributes describe presentation aspects of the data.

Note: You can also define table elements such as columns, headers, and footers outside of a table definition. Any table definition can then reference these table elements. For more information about defining columns, headers, and footers outside of the table definition, see Chapter 10, "TEMPLATE Procedure: Creating Tabular Output," on page 367. △

tagset definition
: specifies instructions for creating a markup language for your SAS output. The resulting output contains embedded instructions in order to define layout and some content. Each tagset definition contains event definitions and event attributes that control the generation of the output. SAS provides tagset definitions for a variety of markup languages. With the TEMPLATE procedure, you can modify any of these SAS tagsets, or you can create your own tagsets.

event
: specifies the text that the markup destination produces when the specified event occurs. For example, the definition of an event called ROW might specify to place the appropriate tags for starting a row at the beginning of an event and the appropriate tags for ending a row at the end of the event. SAS procedures that generate ODS output use a standard set of events, which you can customize with the TEMPLATE procedure.

PROC TEMPLATE Statements by Category

The following table lists and describes the categories and statements used in the TEMPLATE procedure.

Task	Statements Category	Statements	Description
Navigate template stores and manage ODS definitions	Template store	DELETE	Deletes the specified definition
		LINK	Creates a link to an existing definition
		LIST	Lists items in one or more template stores
		PATH	Specifies the locations to write to or read from when creating or using PROC TEMPLATE definitions, and the order in which to search for them
		SOURCE	Writes the source code for the specified definition
		TEST	Tests the most recently created definition by binding it to the specified data set

Task	Statements Category	Statements	Description
Create or modify ODS style definitions	Style	DEFINE STYLE	Creates a style definition for any destination that supports the STYLE= option
Create and modify ODS table, column, header, and footer definitions	Tabular	EDIT	Edits an existing definition
		DEFINE COLUMN	Creates a definition for a column
		DEFINE FOOTER	Creates a definition for a table footer
		DEFINE HEADER	Creates a definition for a header
		DEFINE TABLE	Creates a definition for a table
Create or modify markup language tagsets	Markup language tagsets	DEFINE TAGSET	Creates a definition for a tagset

Syntax: TEMPLATE Procedure

PROC TEMPLATE;

DEFINE COLUMN *column-path* </ STORE=*libref.template-store*>;
<*column-attribute-1*; <*...column-attribute-n*;>>
statements
END;

DEFINE FOOTER *footer-path* </ STORE=*libref.template-store*>;
<*footer-attribute-1*; <*...footer-attribute-n*;>>
statements
END;

DEFINE HEADER *definition-name* </ STORE=*libref.template-store*>;
<*header-attribute-1*; <*...header-attribute-n*;>>
statements
END;

DEFINE STYLE *style-path* </ STORE=*libref.template-store*>;
<**PARENT=***style-path*;>
statements
END;

DEFINE TABLE *table-path* </ STORE=*libref.template-store*>;
<*table-attribute-1*; <*...table-attribute-n*;>>
statements
END;

DEFINE TAGSET *tagset-path* </ STORE=*libref.template-store*>;
DEFINE EVENT *event-name*;
<*event-attribute-1*; <*...event-attribute-n*;>>

statements
END;

DELETE *definition-path* </ STORE=*libref.template-store* >;

EDIT *definition-path-1* <AS *definition-path-2*> </ STORE=*libref.template-store* > ;
statements-and-attributes
END;

LINK *definition-path-1* **TO***definition-path-2* </ *option(s)*>;

LIST <*starting-path*></ *option(s)*>;

PATH *location(s)*;

SOURCE *definition-path* </ option(s)>;

TEST DATA= *SAS-data-set* </ STORE=*libref.template-store*>;

Task	Statement
Create a column definition	"DEFINE COLUMN Statement" on page 374
Create a footer definition	"DEFINE FOOTER Statement" on page 395
Create a header definition	"DEFINE HEADER Statement" on page 395
Create a style definition	"DEFINE STYLE Statement" on page 288
Create a table definition	"DEFINE TABLE Statement" on page 410
Create a tagset definition	"DEFINE TAGSET Statement" on page 552
Delete the specified definition	"DELETE Statement" on page 273
Edit an existing definition	"EDIT Statement" on page 373
Create a link to an existing definition	"LINK Statement" on page 273
List items in one or more template stores	"LIST Statement" on page 274
Specify the locations to write to or read from when creating or using PROC TEMPLATE definitions, and the order in which to search for them	"PATH Statement" on page 276
Write the source code for the specified definition to the SAS log	"SOURCE Statement" on page 277
Test the most recently created definition by binding it to the specified data set	"TEST Statement" on page 279

Where to Go from Here

- *Managing the various definitions stored in template stores*: For reference information about the PROC TEMPLATE statements that help you manage and navigate around the many ODS definitions, see Chapter 8, "TEMPLATE Procedure: Managing Template Stores," on page 271.

- *Modifying an existing style definition or creating your own style definition* : For reference information about the style definition statements in PROC TEMPLATE, see Chapter 9, "TEMPLATE Procedure: Creating a Style Definition," on page 285.
- *Creating and modifying ODS tabular output*: For reference information about the tabular definition statements in PROC TEMPLATE, see Chapter 10, "TEMPLATE Procedure: Creating Tabular Output," on page 367.
- *Modifying markup language tagsets that SAS provides or creating your own tagsets*: For reference information about the markup language tagset statements in PROC TEMPLATE, see Chapter 11, "TEMPLATE Procedure: Creating Markup Language Tagsets," on page 551.

CHAPTER

8

TEMPLATE Procedure: Managing Template Stores

Overview: Template Stores

What Is a Template Store?

A template store is an item store which stores definitions that were created by the TEMPLATE procedure. Definitions that SAS provides are in the item store SASHELP.TMPLMST. You can store definitions that you create in any template store where you have write access.

Note: A template store can contain multiple levels known as directories. When you specify a template store in the ODS PATH statement, however, you specify a two-level name that includes a libref and the name of a template store in the SAS data library that the libref references. △

Why Use the TEMPLATE Procedure to Manage Template Stores?

You can use the TEMPLATE procedure to manage and navigate the template stores that store the definitions that SAS supplies or that you create. The TEMPLATE procedure enables you to manage the template stores by

- deleting column, header, footer, style, table, or tagset definitions

- listing items in one or more template stores
- viewing the source code of a column, header, footer, style, table, or tagset definition
- testing the most recently created definition.

To navigate your way around the template stores you can

- create links to existing definitions
- specify which locations to write to or read from when you create or use PROC TEMPLATE definitions, and specify the order in which to search for them.

Terminology

For definitions of terms used in this section, see “Terminology: TEMPLATE Procedure” on page 266.

Template Store Syntax: TEMPLATE Procedure

PROC TEMPLATE;
  DELETE *definition-path*< / STORE=*libref.template-store*>;
  LINK *definition-path-1* **TO** *definition-path-2* </*option(s)*>;
  LIST <*starting-path*></ *option(s)*>;
  PATH *location(s)*;
  SOURCE *definition-path* </*option(s)*><STORE=*libref.template-store*>;
  TEST DATA=*SAS-data-set*< / STORE=*libref.template-store*>;

Task	Statement
Delete the specified definition	“DELETE Statement” on page 273
Create a link to an existing definition	“LINK Statement” on page 273
List items in one or more template stores	“LIST Statement” on page 274
Specify which locations to write to or read from when you create or use PROC TEMPLATE definitions, and specify the order in which to search for them	“PATH Statement” on page 276
Write the source code for the specified definition to the SAS log	“SOURCE Statement” on page 277
Test the most recently created definition by binding it to the specified data set	“TEST Statement” on page 279

PROC TEMPLATE Statement

PROC TEMPLATE;

DELETE Statement

Deletes the specified definition

DELETE *definition-path*;

Required Arguments

definition-path

specifies a definition to delete. A definition-path consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) If the same definition exists in multiple template stores, PROC TEMPLATE deletes the definition from the first template store in the current path where you have write access.

CAUTION:

Deleting a directory in a template store, deletes all subdirectories and definitions in the directory. If the path that you specify is a directory rather than a definition, PROC TEMPLATE deletes all the directories and all the definitions in that directory. △

LINK Statement

Creates a link to an existing definition

LINK *definition-path-1* **TO** *definition-path-2* </ *option(s)*>;

Creating a link to a definition has the same effect as creating a new definition that inherits its characteristics from another definition (see the discussion of PARENT= on page 419 option). However, using a link is more efficient than using inheritance because linking does not actually create a new definition.

Note: To maximize efficiency, PROC TEMPLATE implements any definition that consists solely of the declaration of a parent and of notes as a link. △

Required Arguments

definition-path-1

specifies the path of the definition to create. PROC TEMPLATE creates the definition in the first template store in the path that you can write to.

definition-path-2

specifies the path of the definition to link to. If the same definition exists in multiple template stores, PROC TEMPLATE uses the one from the first template store in the current path that you can read.

Tip: PROC TEMPLATE does not confirm that *definition-path-2* exists when it compiles the definition.

Options

NOTES= *'text'*
specifies notes to store in the definition.

Requirement: You must enclose the text in quotation marks.

Tip: Notes of this type become part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

STORE=*libref.template-store*
specifies the location where the link will be created.

Restriction: The STORE= option syntax does not become part of the compiled definition.

Tip: The link always points to the first definition with the same name that it finds in the ODS path.

LIST Statement

Lists the definitions in one or more template stores

Featured in: Example 1 on page 281

LIST <*starting-path*></ *option(s)*>;

Options

starting-path
specifies a level within each template store where PROC TEMPLATE starts listing definitions. For example, if *starting-path* is **`base.univariate`**, PROC TEMPLATE lists only **`base.univariate`** and the items within it and within all the levels that it contains.

Default: If you do not specify a *starting-path*, then the LIST statement lists all definitions in all template stores unless the ODS PATH statement is used to confine the search to the specified template stores.

Restriction: This option must precede the forward slash (/) in the LIST statement.

SORT=*statistic <sorting-order>*
sorts the list of definitions by the specified statistic in the specified sorting order.

statistic
can be one of the following:

CREATED
is the date that the definition was created.

NOTES
is the content of any NOTES statement in the PROC TEMPLATE step that created the item.

Alias: LABEL

LINK
is the name of the definition that the current definition links to (see "LINK Statement" on page 273).

PATH
is the path to the current definition in the template store. (The path does not include the name of the template store).

SIZE
is the size of the definition.

TYPE
is the type of definition: COLUMN, FOOTER, HEADER, STYLE, TABLE, or LINK. If the item is not a definition, but simply a level in the item store, its type is DIR.

Default: PATH

sorting-order
specifies whether SORT= sorts from low values to high values or from high values to low values.

ASCENDING
sorts from low values to high values.

Alias: A

DESCENDING
sorts from high values to low values.

Alias: D

Default: ASCENDING

STATS=ALL | *(statistic-1 <, ... statistic-n>)*
specifies the information to include in the list of definitions.

ALL
includes all available information.

(statistic-1 <, ... statistic-n>)
includes the specified information. *statistic* can be one or more of the following:

CREATED
is the date that the definition was created.

NOTES
is the content of any NOTES statement in the PROC TEMPLATE step that created the item.

Alias: LABEL

LINK
is the name of the definition that the current definition links to (see "LINK Statement" on page 273).

SIZE
is the size of the definition.

Default: Whether or not you specify STATS=, the list of definitions always includes an observation number, the path to the definition, and its type.

STORE=*libref.template-store*
specifies the template store to process.

Default: all template stores in the current template path (see “PATH Statement” on page 276).

PATH Statement

Specifies locations to write to or read from when you create or use PROC TEMPLATE definitions, and specifies the order in which to search for them. This statement overrides the ODS PATH statement for the duration of the PROC TEMPLATE step.

Featured in: Example 1 on page 281 and Example 2 on page 283

PATH <(APPEND) | (PREPEND) | (REMOVE) > *location(s)*;

PATH *path-argument*;

Required Arguments

location(s)
specifies one or more locations to write to or read from when creating or using PROC TEMPLATE definitions and the order in which to search for them. ODS searches the locations in the order that they appear on the statement. It uses the first definition that it finds that has the appropriate access mode (read, write, or update) set.

Each *location* has the following form:

<*libref.*>*item-store* <(READ | UPDATE | WRITE)>

<*libref.*>*item-store*
identifies an item store to read from, to write to, or to update. If an item store does not already exist, then the PATH statement will create it.

(READ | UPDATE | WRITE)
specifies the access mode for the definition. An access mode is one of the following:

READ
provides read-only access.

WRITE
provides write access (always creating a new template store) as well as read access.

UPDATE
provides update access (creating a new template store only if the specified one does not exist) as well as read access.

Default: READ

Default:

SASUSER.TEMPLAT (UPDATE)

SASHELP.TMPLMST (READ)

Note: SAS stores all the definitions that it provides in SASHELP.TMPLMST. △

Tip: If you want to be able to ignore all the definitions that you create, then keep them in their own item stores so that you can leave them out of the list of item stores that ODS searches.

path-argument

sets or displays the ODS path.

path-argument can be one of the following:

RESET
sets the ODS path to the default settings SASUSER.TEMPLAT (UPDATE) and SASHELP.TMPLMST (READ).

SHOW
displays the current ODS path.

VERIFY
sets the ODS path to include only templates supplied by SAS. VERIFY is the same as specifying ODS PATH SASHELP.TMPLMST (READ).

Options

(APPEND | PREPEND | REMOVE)

adds one or more locations to a path, or removes one or more locations from a path.

APPEND
adds one or more locations to the end of a path. When you append a location to a path, all duplicate instances (with the same name and same permissions) of that item store are removed from the path. Only the last item store with the same name and permissions are kept.

PREPEND
adds one or more locations to the beginning of a path. When you prepend a location to a path, all duplicate instances (with the same name and same permissions) of that item store are removed from the path. Only the first item store with the same name and permissions are kept.

REMOVE
removes one or more locations from a path.

Default: If you do not specify an APPEND, PREPEND, or REMOVE option, then the PATH statement overwrites the complete path.

SOURCE Statement

Writes the source code for the specified definition to the SAS log

Featured in: Example 2 on page 283

SOURCE *definition-path* </ *option(s)*>;

Required Arguments

definition-path
specifies the path of the definition that you want to write to the SAS log. If the same definition exists in multiple template stores, PROC TEMPLATE uses the one from the first template store that you can read in the current path.

Tip: PROC TEMPLATE stores definitions in compiled form. The SOURCE statement actually decompiles the definition. Because SAS comments are not compiled, comments that are in the source code do not appear when you decompile the definition. If you want to annotate your definition, use the NOTES statement inside the definition or the block of editing instructions, or use the NOTES= option in the LINK statement. These notes do become part of the compiled definition. (See "NOTES Statement" on page 429 and the discussion of the NOTES= option on page 274. You can also specify notes as quoted strings in the DYNAMIC, MVAR, NMVAR, REPLACE, and STYLE statements.)

Options

FILE= *'file-specification'* | *fileref*
specifies a file to write the definition to.

'file-specification'
is the name of an external file to write to.

Requirement: The *external-file* that you specify must be enclosed in quotation marks.

fileref
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref. (For information on the FILENAME statement, see "Statements" in *SAS Language Reference: Dictionary*.)

Default: If you do not specify a filename where you want the source code written, then the SOURCE statement writes the source code to the SAS log.

NOFOLLOW
specifies that the program not resolve links in the PARENT= option, which specifies the definition that the current definition inherits from. For information about the PARENT= option, see the PARENT= option in the styles attribute section.

STORE= *libref.template-store*
specifies the template store where the definition is located.

Interaction: In most cases, the STORE= option is added to the definition statement when PROC TEMPLATE displays the source code. However, if the template store specified in the STORE= option is in the ODS path with only read permission, then PROC TEMPLATE does not include the STORE= option in the source code that it displays. There will be no STORE= option, which means that if you run the code, then the definition that it creates will go to the first template store in your ODS path that has update permission.

TEST Statement

Tests the most recently created definition by binding it to the specified data set

TEST DATA= *SAS-data-set* </ STORE=*libref.template-store*>;

Required Arguments

DATA=*SAS-data-set*
specifies the data set to bind to the most recently created definition. ODS sends this output object to all open ODS destinations.

Options

STORE=*libref.template-store*
specifies the template store where the definition is located.

Requirement: If you specify this option, then the template store that you specify must match the template store in the DEFINE statement that created the definition.

Concepts: Template Stores and the TEMPLATE Procedure

The Contents of Definitions (Templates) that SAS Supplies

SAS provides definitions (templates) for these items:

- tables
- styles
- tagsets

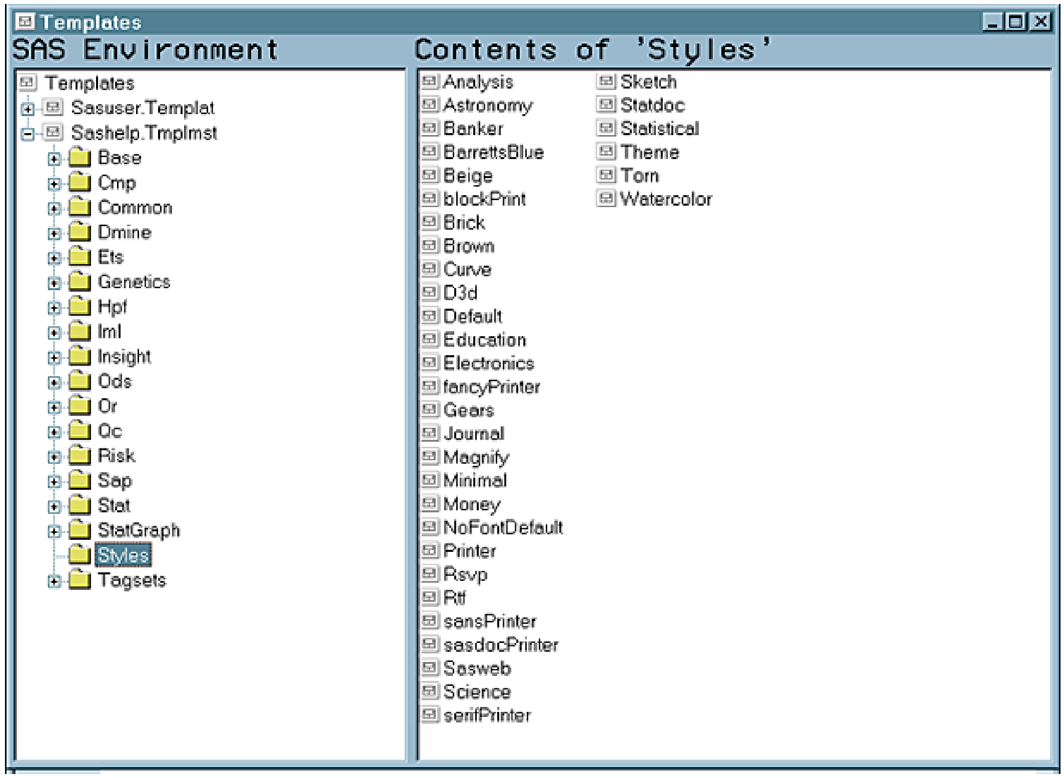
To view the contents of a definition (template), you can use the SAS windowing environment, the SAS window command *odstemplates*, or the TEMPLATE procedure.

- *SAS Windowing Environment*
  1. From the SAS Explorer, select

     View ► Results

  2. In the Results window, select the Results folder. Right click to open the Templates window.
  3. To view the definitions (templates) that SAS supplies, click on the plus sign that is next to the SASHELP.TMPLMST item store.
  4. Click on the plus sign that is next to an icon to view the contents of that template store or directory in a template store. If there is no plus sign next to the icon, double click the icon to view the contents of that directory.

Display 8.1 Definitions (Templates) that SAS Supplies



□ *SAS Windowing Command*

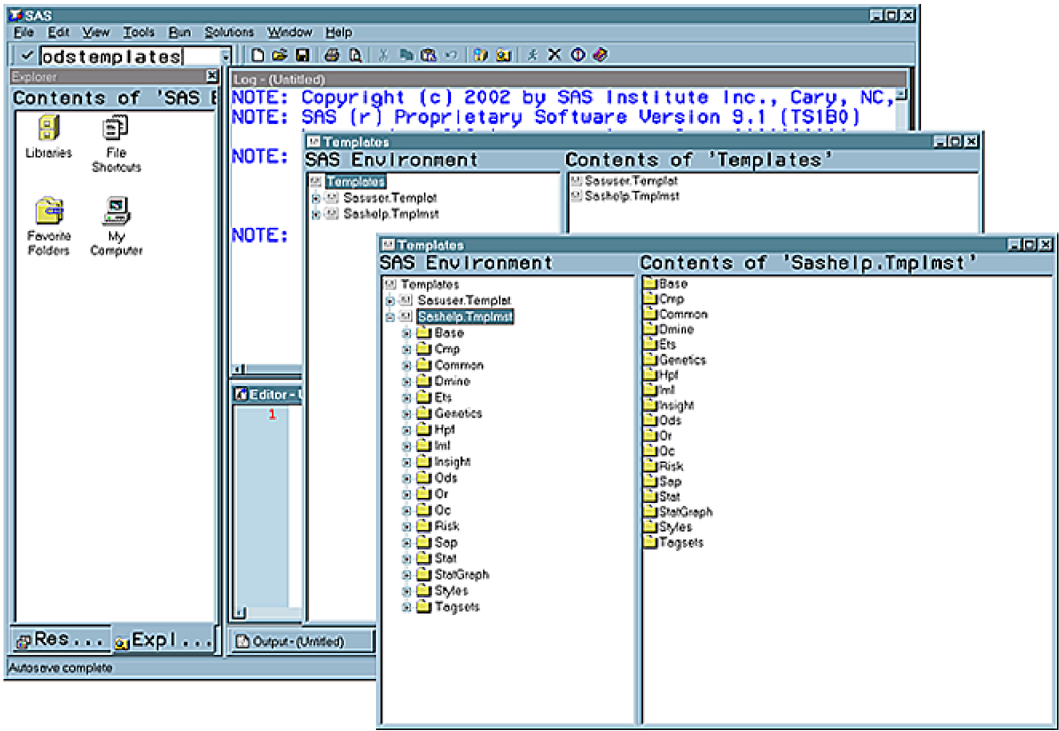
1 To view the Templates window, submit the following command in the command bar:

```
odstemplates
```

The following display shows the Templates window that contains the item stores **Sasuser.Templat** and **Sashelp.Tmplmst**.

2 When you double-click an item store, such as **Sashelp.Tmplmst**, that item store expands to list the directories where ODS templates are stored. The templates that SAS provides are in the item store Sashelp.Tmplmst.

Display 8.2 Odstemplates Command



□ *TEMPLATE Procedure*

The SOURCE statement writes the source code for the specified definition to the SAS log. For example, if you want to view the source for all the objects in Base SAS, submit the following code.

```
proc template;
source base;
run;
```

Note: For more information, see "SOURCE Statement" on page 277 △

Examples: Managing Template Stores Using TEMPLATE Procedure

Example 1: Listing Definitions in a Template Store

PROC TEMPLATE features:

PATH statement

LIST statement

starting-path option

SORT= option

Program Description

This example lists the items for the Base.Univariate directory in the item store SASHELP.TMPLMST.

Program

Set the SAS system options. The OPTIONS statement controls several aspects of the Listing output. None of these options affects the HTML output.

```
options nodate pageno=1 pagesize=60 linesize=72;
```

Specify which locations to search for definitions that were created by PROC TEMPLATE. The PATH statement specifies to search for definitions that were created by PROC TEMPLATE in the SASHELP.TMPLMST item store.

```
proc template;
path sashelp.tmplmst;
```

List in descending order the definitions that are stored within a specified level of the template store. The LIST statement lists the definitions in one or more template stores. The starting path **base.univariate** specifies the level within the template store where PROC TEMPLATE is to start listing the definitions. The SORT= option sorts the list of definitions. The definitions are sorted in descending order.

```
list base.univariate / sort=path descending;
run;
```

Display 8.3 Listing of *Base.Univariate* Template Store

```
                              The SAS System                              1

                 Listing of: SASHELP.TMPLMST
                 Path Filter is: Base.Univariate
                 Sort by: PATH/DESCENDING

                 Obs    Path                              Type
                 ---------------------------------------------
                   1    Base.Univariate.Wins              Table
                   2    Base.Univariate.Trim              Table
                   3    Base.Univariate.Robustscale       Table
                   4    Base.Univariate.Quantiles         Table
                   5    Base.Univariate.PValue            Link
                   6    Base.Univariate.Normal            Table
                   7    Base.Univariate.Moments           Link
                   8    Base.Univariate.Modes             Table
                   9    Base.Univariate.Missings          Table
                  10    Base.Univariate.Measures          Table
                  11    Base.Univariate.Location          Table
                  12    Base.Univariate.LocCount          Table
                  13    Base.Univariate.Frequency         Table
                  14    Base.Univariate.FitQuant          Table
                  15    Base.Univariate.FitParms          Table
                  16    Base.Univariate.FitGood           Table
                  17    Base.Univariate.ExtVal            Table
                  18    Base.Univariate.ExtObs            Table
                  19    Base.Univariate.ConfLimits        Table
                  20    Base.Univariate.Bins              Table
                  21    Base.Univariate.BinPercents       Table
                  22    Base.Univariate                   Dir
```

Example 2: Viewing the Source of a Definition

PROC TEMPLATE features:
PATH statement
SOURCE statement

Program Description

This example displays the source code for the tagset definition Xhtml that SAS provides.

Program

Specify which locations to search for definitions that were created by PROC TEMPLATE. The PATH statement specifies to search for definitions that were created by PROC TEMPLATE in the SASHELP.TMPLMST item store.

```
proc template;
path sashelp.tmplmst;
```

Write the source code of the specified definition. The SOURCE statement writes the source code for the tagset Xhtml that SAS provides. The source code is written to the SAS log.

```
source Tagsets.Xhtml;
run;
```

Display 8.4 Source Code of the Definition *Tagset Xhtml* That Is Written to the SAS Log

```
NOTE: Path 'Tagsets.Xhtml' is in: SASHELP.TMPLMST.
define tagset Tagsets.Xhtml;
   notes "XHTML 1.0";
   define event doc;
      start:
         set $empty_tag_suffix " /";
         set $doctype
               "<!DOCTYPE html PUBLIC ""-//W3C//DTD XHTML 1.0 Transition
al//EN"">";
         set $framedoctype
               "<!DOCTYPE html PUBLIC ""-//W3C//DTD XHTML 1.0 Frameset//
EN"">";
         put $doctype NL;
         put "<html>" NL;
      finish:
         put "</html>" NL;
   end;
   split = "<br/>";
   parent = tagsets.html4;
end;
116  run;
NOTE: PROCEDURE TEMPLATE used (Total process time):
      real time           0.10 seconds
      cpu time            0.11 seconds
```

CHAPTER

9

TEMPLATE Procedure: Creating a Style Definition

Overview: ODS Style Definitions

Why Use the TEMPLATE Procedure to Create a Style Definition?

The TEMPLATE procedure enables you to customize the look of your SAS output. The TEMPLATE procedure creates and modifies style definitions. The Output Delivery System then uses these style definitions to produce customized formatted output.

By default, ODS output is formatted according to the various style definitions that the procedure or DATA step specify. However, you can also customize the appearance of your output by using the DEFINE STYLE statement in the TEMPLATE procedure.

Terminology

For definitions of terms used in this section, see "Terminology: TEMPLATE Procedure" on page 266.

What Can You Do with a Style Definition?

Default Style Definition for HTML

By default, ODS uses style definitions to display the procedure or DATA step results. You can modify the appearance of your output by customizing these style definitions. Display 9.1 on page 286 shows the HTML output from PROC PRINT using the default style definition. Display 9.2 on page 287 shows the same HTML output from PROC PRINT with a customized style definition.

Display 9.1 HTML Output from PROC PRINT That Uses the Default Style Definition (Viewed with Microsoft Internet Explorer)

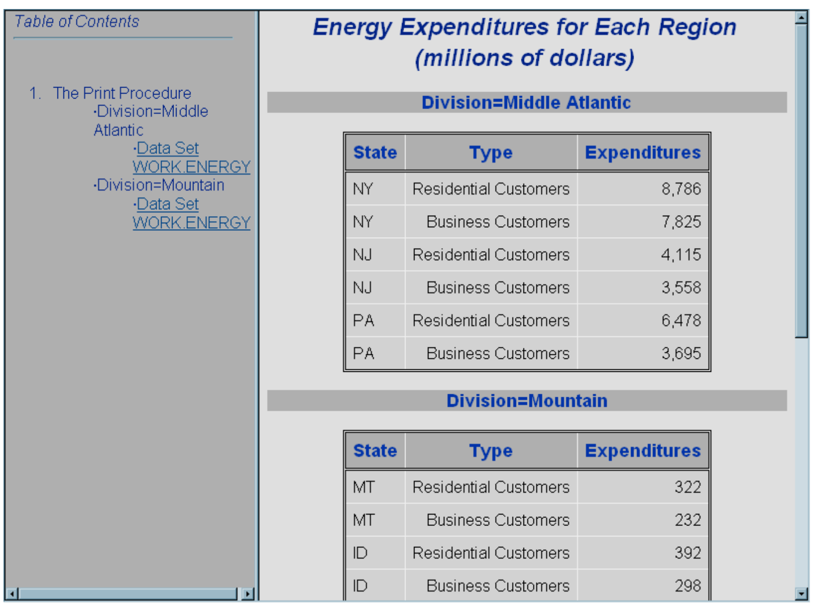


Table of Contents

1. The Print Procedure
   - Division=Middle Atlantic
     - Data Set WORK.ENERGY
   - Division=Mountain
     - Data Set WORK.ENERGY

Energy Expenditures for Each Region
(millions of dollars)

Division=Middle Atlantic

State	Type	Expenditures
NY	Residential Customers	8,786
NY	Business Customers	7,825
NJ	Residential Customers	4,115
NJ	Business Customers	3,558
PA	Residential Customers	6,478
PA	Business Customers	3,695

Division=Mountain

State	Type	Expenditures
MT	Residential Customers	322
MT	Business Customers	232
ID	Residential Customers	392
ID	Business Customers	298

Customized Version of the HTML Style Definition

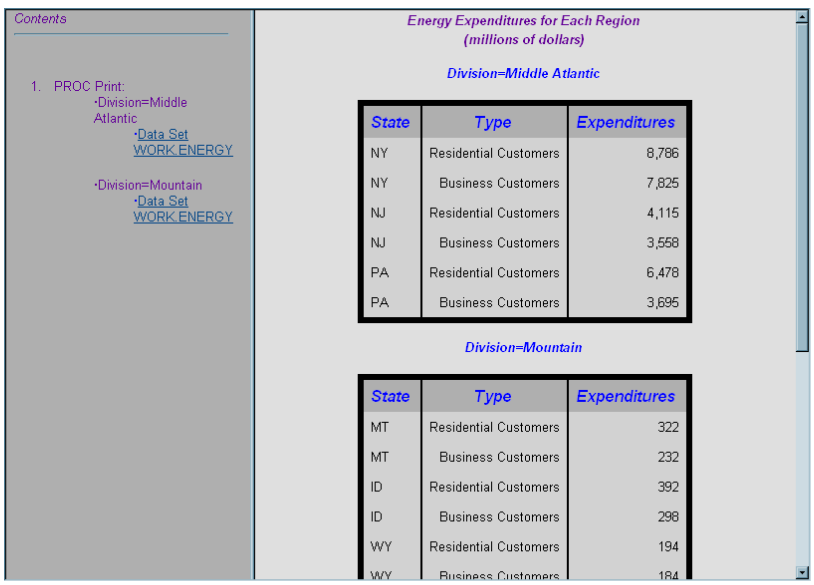
When you are working with style definitions, you are more likely to modify a SAS style definition than to write a completely new style definition. The next display shows the kinds of changes that you can make to the default style definition for the HTML output. The new style definition affects both the contents file and the body file in the HTML output. In particular, in the contents file, the style definition makes changes to

- two of the colors in the color list. One of these colors is used as the foreground color for the table of contents, the byline, and column headers. The other is used for the foreground of many parts of the body file, including SAS titles and footnotes.
- the font size for titles and footnotes
- the font style for headers
- the presentation of the data in the table, by changing attributes such as cell spacing, rules, and border width.

In the body file, the new style definition makes changes to

- the text of the header and the text that identifies the procedure that produced the output
- the colors for some parts of the text
- the font size of some parts of the text
- the spacing in the list of entries in the table of contents.

Display 9.2 HTML Output from PROC PRINT with the Customized Style Definition (Viewed with Microsoft Internet Explorer)



Style Syntax: TEMPLATE Procedure

PROC TEMPLATE;

PROC TEMPLATE Statement

PROC TEMPLATE;

DEFINE STYLE *style-path* </ STORE=*libref.template-store*>;

statements-and-attributes

END;

DEFINE STYLE Statement

Creates a style definition for any destination that supports the STYLE= option

Requirement: An END statement must be the last statement in the definition.

Featured in: Example 1 on page 342

DEFINE STYLE *style-path* </ STORE=*libref.template-store*>;

<PARENT=*style-path*;>

NOTES '*text*';

REPLACE *new-style-element-name* <FROM *existing-style-element-name*><'*text*'>
< / *style-attribute-specification(s)*>;

STYLE *new-style-element-name* <FROM *existing-style-element-name*><'*text*'>
</ *style-attribute-specification(s)*>;

END;

Task	Statement
Provide information about the style definition.	NOTES
Add a style element to the child style definition from the parent style definition.	REPLACE
Create a new style element.	STYLE
End the style definition.	END

Required Arguments

style-path

specifies where to store the style definition. A *style-path* consists of one or more names, separated by periods. Each name represents a directory in a *template store*.

PROC TEMPLATE writes the definition to the first template store that you can write to in the current path.

Options

STORE=*libref.template-store*
specifies the template store in which to store the definition. If the template store does not exist, then it is created.

Restriction: The syntax of the STORE= option does not become part of the compiled definition.

Style Definition Attributes

PARENT=*style-path*
specifies the style definition for which the current definition is inherited from. A *style-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. The current style definition inherits from the specified style definition in the first template store that you can read from in the current path.

When you specify a parent, all the style elements, style attributes, and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

SAS provides some style definitions. You can specify one of these style definitions for *style-path*, or you can specify a user-defined style definition. Some of the style definitions that are currently shipped with SAS include:

- styles.default
- styles.beige
- styles.brick
- styles.brown
- styles.d3d
- styles.minimal
- styles.printer
- styles.statdoc.

For information about finding an up-to-date list of the style definitions and for viewing a style definition, see “Viewing the Contents of a Style Definition” on page 319.

NOTES Statement

Provides information about the style definition

Tip: The NOTES statement becomes part of the compiled style definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES ’*text*’;

Required Arguments

text
provides information about the style definition.

REPLACE Statement

Adds a style element to the child style definition from the parent style definition

Restriction: To use the REPLACE statement, you must specify a parent style definition with the PARENT= attribute in the DEFINE STYLE statement.

See also: "About Style Definition Inheritance and Style Element Inheritance" on page 322

Featured in: Example 3 on page 355

Tip: You can think of the REPLACE statement as replacing the statement that defines the like-named style element in the parent style definition. The REPLACE statement does not actually change the parent style definition, but PROC TEMPLATE builds the child style definition as if it had changed the parent. All style elements that inherit attributes from this style element inherit the attributes that are specified in the REPLACE statement, not those used in the parent style definition.

REPLACE *style-element-name-1* <FROM *style-element-name-2*><'*text*'>
</ *style-attribute-specification(s)*>;

Required Arguments

style-element-name-1
names the style element to replace. A like-named style element must exist in the parent style definition. PROC TEMPLATE stores *style-element-name-1* in the current style definition and replaces all its attributes with the attributes that you specify in the REPLACE statement. If an attribute is defined in the like-named style element in the parent style definition and you do not explicitly specify it in the REPLACE statement, then the value of the attribute defaults to the value that was inherited from the parent of the like-named style element.

Options

style-element-name-2
names the style element that *style-element-name-1* inherits from. The style element must exist in the current style definition or in the parent of the current style definition. PROC TEMPLATE looks first in the current style definition for the style element. If PROC TEMPLATE does not find the style element, then it looks in the parent style definition.

style-attribute-specification(s)
specifies the style attributes for *style-element-name-1*. The new style element inherits from the parent style element all the attributes that the parent inherits. However, all the attributes that are explicitly specified in the definition of *style-element-name-2* must be respecified in the REPLACE statement if you want to keep them. You can override any attribute of the parent style element, whether it is inherited or explicitly defined, by specifying it in the REPLACE statement. Each *style-attribute-specification* has the following general form:

style-attribute-name=style-attribute-value

style-attribute-name
can be the name of an attribute that is listed in "Style Attributes and Their Values" on page 292, or it can be the name of a user-defined attribute.

Restriction: If *style-attribute-name* refers to a user-defined attribute, then you must enclose the name in quotation marks. If *style-attribute-name* refers to an attribute that is listed in "Style Attributes and Their Values" on page 292 , then you do not enclose the name in quotation marks. For more information about user-defined attributes, see "Style Attributes and Their Values" on page 292.

style-attribute-value
assigns the value to the attribute. For information about style-attribute values, see "Style Attributes and Their Values" on page 292.

'text'
provides information about the REPLACE statement. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

STYLE Statement

Creates a new style element

Featured in: Example 1 on page 342

STYLE *new-style-element-name* <FROM *existing-style-element-name*><*'text'*>
</ *style-attribute-specification(s)*>;

Required Arguments

new-style-element-name
names the style element to create. PROC TEMPLATE stores the style element in the current style definition.

Options

existing-style-element-name
names an existing style element to inherit from. The style element must exist in the current style definition or in the parent of the current style definition.

style-attribute-specification(s)
specify new style attributes or modifications to existing style attributes for the new style element. The new style element inherits all of the style attributes of *existing-style-element-name*. You can override any of these attributes by specifying attributes in the STYLE statement. Each *style-attribute-specification* has the following general form:

style-attribute-name=style-attribute-value

style-attribute-name
can be the name of an attribute that is listed in “Style Attributes and Their Values” on page 292, or it can be the name of a user-defined style attribute.

Restriction: If *style-attribute-name* refers to a user-defined attribute, then you must enclose the name in quotation marks. If *style-attribute-name* refers to an attribute that is listed in “Style Attributes and Their Values” on page 292, then do not enclose the name in quotation marks.

style-attribute-value
assigns the value to the attribute. If you use an attribute from the list in “Style Attributes and Their Values” on page 292, then you must use the kind of value that the attribute expects.

For more information about style-attribute values, see “Style Attributes and Their Values” on page 292.

’text’
provides information about the REPLACE statement. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

Style Attributes and Their Values

The default value that is used for an attribute depends on the style definition that is in use. For information about viewing the attributes in a style definition, see “Viewing the Contents of a Style Definition” on page 319. The implementation of an attribute depends on the ODS destination that formats the output. In addition, if you are creating HTML output, then the implementation of an attribute depends on the browser that you use.

Data Values
Values for style attributes are one of the following:

color
is a string that identifies a color. A color can be

- any of the color names that are supported by SAS/GRAPH. These names include
  - a predefined SAS color (for example, blue or VIYG)
  - a red/green/blue (RGB) value (for example, CX0023FF)
  - a hue/light/saturation (HLS) value (for example, H14E162D)
  - a gray-scale value (for example, GRAYBB).
- an RGB value with a leading pound sign (#) rather than CX (for example, #0023FF).
- one of the colors that exists in the SAS session when the style definition is used:
  - DMSBLUE

- DMSRED
- DMSPINK
- DMSGREEN
- DMSCYAN
- DMSYELLOW
- DMSWHITE
- DMSORANGE
- DMSBLACK
- DMSMAGENTA
- DMSGRAY
- DMSBROWN
- SYSBACK
- SYSSECB
- SYSFORE.

Note: Use these colors only if you are running SAS in the windowing environment. △

- an English description of an HLS. Such descriptions use a combination of words to describe the lightness, the saturation, and the hue (in that order). You can use the Color Naming System to form a color by
  - combining a chromatic hue with a lightness, a saturation, or both
  - combining the achromatic hue gray with a lightness
  - combining the achromatic hue black or white without qualifiers.

The words that you can use are shown in the following table:

Lightness	Saturation	Chromatic Hue	Achromatic Hue
		blue	black *
very dark	grayish	purple	
dark	moderate	red	
medium	strong	orange | brown	gray **
light	vivid	yellow	
very light		green	
			white *

* Black and white cannot be combined with a lightness or a saturation value.
** Gray cannot be combined with a saturation value.

You can combine these words to form a wide variety of colors. Some examples are

- light vivid green
- dark vivid orange
- light yellow.

Note: The Output Delivery System first tries to match a color with a SAS/GRAPH color. Thus, although brown and orange are interchangeable in the table, if you use them as unmodified hues, then they are different. The reason for this is that ODS interprets them as SAS colors, which are mapped to different colors. △

You can also specify hues that are intermediate between two neighboring colors. To do so, combine one of the following adjectives with one of its neighboring colors:

- reddish
- orangish
- brownish
- yellowish
- greenish
- bluish
- purplish.

For example, you can use the following as hues:

- bluish purple
- reddish orange
- yellowish green.

See also: *SAS/GRAPH Reference, Volumes 1 and 2* for information about SAS/GRAPH colors.

dimension

is a nonnegative number, optionally followed by one of the following units of measure:

cm	centimeters
em	standard typesetting measurement unit for width
ex	standard typesetting measurement unit for height
in	inches
mm	millimeters
pt	a printer's point

Default: For the Printer destination, units of 1/150 of an inch

font-definition

is the name of a font, the font size, and font keywords. A font definition has the following general format:

("*font-face-1* <... , *font-face-n*>", *font-size*, *keyword-list*)

If you specify only one font and if its name does not include a space character, then you can omit the quotation marks. If you specify more than one font , then the destination device uses the first one that is installed on your system.

font-size specifies the size of the font. *font-size* can be a dimension or a number without units of measure. If you specify a dimension, then you must specify a unit of measure. Without a unit of measure the number becomes a size that is relative to all other font sizes in the document. For more information see dimensions on page 294.

keyword-list specifies the font weight, font style, and font width. You can include one value for each, in any order. The following table shows the keywords that you can use:

Keywords for Font Weight	Keywords for Font Style	Keywords for Font Width
MEDIUM	ITALIC	NORMAL*
BOLD	ROMAN	COMPRESSED*
DEMI_BOLD*	SLANT	EXTRA_COMPRESSED*
EXTRA_BOLD*		NARROW*
LIGHT		WIDE*
DEMI_LIGHT*		EXPANDED*
EXTRA_LIGHT*		

* Few fonts honor these values.

Featured in: Example 2 on page 348

format
is a SAS format or a user-defined format.

reference
is a reference to an attribute that is defined in the current style definition or in the parent style definition (or beyond). The value that you use is the name of the style element followed by the name of an attribute, in parentheses, within that element. For example, suppose that you create a style element called DATACELL that uses the FOREGROUND= and BACKGROUND= style elements this way:

```
style datacell / background=blue
                 foreground=white;
```

Later, you can ensure that another style element, NEWCELL, uses the same background color by defining it this way:

```
style newcell / background=datacell(background);
```

Similarly, suppose that you create a style element called HIGHLIGHTING that defines three attributes this way:

```
style highlighting /
   "go"=green
   "caution"=yellow
   "stop"=red;
```

Later, you can define a style element called MESSAGES that uses the colors that are defined in HIGHLIGHTING:

```
style messages;
   "note"=highlighting("go")
   "warning"=highlighting("caution")
   "error"=highlighting("stop");
```

In this way, multiple style elements could use the colors that you define in HIGHLIGHTING. If you decide to change the value of **go** to blue, you simply change its value in the definition of HIGHLIGHTING, and every style element that references highlighting (“go”) will use blue instead of green.

Note: In the first example, the style attribute BACKGROUND= is a predefined style attribute. Therefore, when you reference it, you do not put it in quotation marks. However, in the second example, **go** is a user-defined attribute. You define it with quotation marks, and when you reference it, you must use quotation marks. △

You can use a special form of reference to get a value for a style attribute from the macro table at the time that the style element is used. For example, the following STYLE statement uses the current value of the macro variable **bkgr** for the background color of the style element **cell**:

```
style cell / background=symget("bkgr");
```

Featured in: Example 2 on page 348

'*string*'
is a quoted character string.

Style Attributes

Table 9.1 Table of Style Attributes

Task	Attribute	Valid destinations ...
Influence the characteristics of individual cells		
Specify how to handle leading spaces and line breaks.	ASIS=	HTML, RTF,PDF, PCL, and PS
Specify the height of the cell.	CELLHEIGHT=	HTML, RTF, PDF, PCL, and PS
Specify the width of the cell.	CELLWIDTH=	HTML, PCL, PDF, PS, and RTF
Specify the text to show in a tool tip for the cell.	FLYOVER=	HTML, PDF
Specify the window or frame in which to open the target of the link.	HREFTARGET=	HTML
Specify how to handle space characters.	NOBREAKSPACE=	HTML, PCL, PDF, PS, and RTF
Specify text to insert in the HTML	TAGATTR=	HTML
Specify a URL to link to.	URL=	HTML, RTF, and PDF
Specify vertical justification.	VJUST=	HTML, PCL, PDF, PS, and RTF
Influence the characteristics of individual tables or cells		
Specify the color of the background.	BACKGROUND=	HTML, PCL, PDF, PS, and RTF
Specify an image to use as the background.	BACKGROUNDIMAGE=	HTML, PCL and PS

Task	Attribute	Valid destinations ...
Specify the color of the border if the border is just one color.	BORDERCOLOR	HTML, PCL, PDF, PS, and RTF
Specify the darker color to use in a border that uses two colors to create a three-dimensional effect.	BORDERCOLORDARK	HTML, PCL, PDF, PS, and RTF
Specify the lighter color to use in a border that uses two colors to create a three-dimensional effect.	BORDERCOLORLIGHT	HTML, PCL, PDF, PS, and RTF
Specify the width of the border of the table.	BORDERWIDTH	HTML, PCL, PDF, PS, and RTF
Specify a font definition.	FONT=	HTML, PCL, PDF, PS, and RTF
Specify the font to use.	FONT_FACE=	HTML, PCL, PDF, PS, and RTF
Specify the size of the font.	FONT_SIZE=	HTML, PCL, PDF, PS, and RTF
Specify the style of the font.	FONT_STYLE=	HTML, PCL, PDF, PS, and RTF
Specify the font weight.	FONT_WEIGHT=	HTML, PCL, PDF, PS, and RTF
Specify the font width compared to the width of the usual design.	FONT_WIDTH=	HTML, PCL, PDF, PS, and RTF
Specify the color of the foreground, which is primarily the color of the text.	FOREGROUND=	HTML, PCL, PDF, PS, and RTF
Specify the name of the stylesheet class to use for the table or cell.	HTMLCLASS=	HTML
Specify an ID for the table or cell.	HTMLID=	HTML
Specify individual attributes and values for the table or cell.	HTMLSTYLE=	HTML
Specify justification.	JUST=	HTML, PCL, PDF, PS, and RTF
Specify the HTML code to place after the HTML table or cell.	POSTHTML=	HTML
Specify an image to place after the table or cell.	POSTIMAGE=	HTML, PCL, PDF, PS, and RTF

Task	Attribute	Valid destinations ...
Specify text to place after the cell or table.	POSTTEXT=	HTML, PCL, PDF, PS, and RTF
Specify the HTML code to place before the HTML table or cell.	PREHTML=	HTML
Specify an image to place before the table or cell.	PREIMAGE=	HTML, PCL, PDF, PS, and RTF
Specify text to place before the cell or table.	PRETEXT=	HTML, PCL, PDF, PS, and RTF
Determine how less-than signs (<), greater-than signs (>), and ampersands (&) are interpreted.	PROTECTSPECIALCHARACTERS=	HTML, MARKUP family, Printer family, and RTF
Influence the characteristics of tables		
Specify the amount of white space on each of the four sides of the text in a cell.	CELLPADDING=	HTML, PCL, PDF, PS, and RTF
Specify the thickness of the spacing between cells.	CELLSPACING=	HTML, PCL, PDF, PS, and RTF
Specify the type of frame to use on an HTML table.	FRAME=	HTML, PRINTER family, and RTF
Specify the width of the table.	OUTPUTWIDTH=	HTML, PCL, PDF, PS, and RTF
Specify the types of rules to use in a table.	RULES=	HTML, PCL, PDF, PS, and RTF
Influence the characteristics of individual frames in HTML output		
Specify whether or not to put a scrollbar in the frame that references the body file.	BODYSCROLLBAR=	HTML
Specify the width of the frame that displays the body file in the HTML frame file.	BODYSIZE=	HTML
Specify the string to use for bullets in the contents file.	BULLETS=	HTML
Specify the position of the frames in the frame file that displays the contents and the page files.	CONTENTPOSITION=	HTML
Specify whether or not to put a scrollbar in the frames in the frame file that displays the contents and the page files.	CONTENTSCROLLBAR=	HTML

Task	Attribute	Valid destinations ...
Specify the width of the frames in the frame file that display the contents and the page files.	CONTENTSIZE=	HTML
Specify whether or not to put a border around the HTML frame for an HTML file.	FRAMEBORDER=	HTML
Specify the width of the border around the HTML frames for an HTML file.	FRAMEBORDERWIDTH=	HTML
Specify the width of the space between HTML frames for HTML files.	FRAMESPACING=	HTML
Influence the characteristics of the document		
Specify whether or not graph styles are used in CSS or LaTex style files.	ABSTRACT=	HTML and MARKUP
Specify the color for links that are active.	ACTIVELINKCOLOR=	HTML and RTF
Specify the bottom margin for the document.	BOTTOMMARGIN=	HTML, PCL, PDF, PS, and RTF
Cause a rule of the specified width to be placed into the space around the text (or entire cell if there is no text) where white space would otherwise appear.	FILLRULEWIDTH=	PS, PDF, PCL
Provide the value of the content type for pages that you send directly to a web server rather than to a file.	HTMLCONTENTTYPE=	HTML
Specify the entire doctype declaration for the HTML document, including the opening "<!DOCTYPE" and the closing ">".	HTMLDOCTYPE=	HTML
Set a numeric value to use as the indention depth.	INDENT=	MARKUP, RTF and PRINTER Family
Specify the left margin for the document.	LEFTMARGIN=	HTML, PCL, PDF, PS, and RTF
Specify the color for links that have not yet been visited.	LINKCOLOR=	HTML, RTF, and PDF

Task	Attribute	Valid destinations ...
Specify whether or not to make this entry in the table of contents a link to the body file.	LISTENTRYANCHOR=	HTML
Specify whether or not to double space between entries in the table of contents.	LISTENTRYDBLSPACE=	HTML
Specify the height for graphics in the document.	OUTPUTHEIGHT=	HTML, PCL, PDF, PS, and RTF
Specify an upper limit for extending the width of the column.	OVERHANGFACTOR=	HTML, PCL, PDF, PS, and RTF
Specify HTML to place at page breaks.	PAGEBREAKHTML=	HTML
Specify the right margin for the document.	RIGHTMARGIN=	HTML, PCL, PDF, PS, and RTF
Specify the top margin for the document.	TOPMARGIN=	HTML, PCL, PDF, PS, and RTF
Specify the color for links the visited links.	VISITEDLINKCOLOR=	HTML and RTF
Specify whether or not to make the image that is specified by BACKGROUNDIMAGE= into a "watermark." A watermark appears in a fixed position as the window is scrolled.	WATERMARK=	HTML
Influence the characteristics of graphs		
Specify the background color of the graph. [1]	BACKGROUND=	HTML, RTF, PRINTER family
Specify the image to appear in the background. This image will be stretched. [1]	BACKGROUNDIMAGE=	HTML, PCL, and PS
Specify the alternate colors for maps. The alternate colors are applied to the blocks on region areas in block maps.	CONTRASTCOLOR=	HTML, RTF, PRINTER family
Specify whether to use a drop shadow effect for text in a graph.	DROPSHADOW=	HTML, RTF, PRINTER family
Specify the end color for a gradient effect in a graph.	ENDCOLOR=	HTML, RTF, PRINTER family

Task	Attribute	Valid destinations ...
Specify a font definition. [1]	FONT=	HTML, RTF, PRINTER family
Specify the font to use. [1]	FONT_FACE=	HTML, RTF, PRINTER family
Specify the size of the font to use. [1]	FONT_SIZE=	HTML, RTF, PRINTER family
Specify the style of the font.[1]	FONT_STYLE=	HTML, RTF, PRINTER family
Specify the font weight.[1]	FONT_WEIGHT=	HTML, RTF, PRINTER family
Specify the font width compared to the width of the usual design.[1]	FONT_WIDTH=	HTML, RTF, PRINTER family
Specify the color of text or data items[1]	FOREGROUND=	HTML, RTF, PRINTER family
Specify the direction of the gradient effect in either the X or Y axis direction to influence the graph background, legend background, charts, walls, floors, etc.	GRADIENT_DIRECTION=	HTML, RTF, PRINTER family
Specify the image to appear in the background. This image can be positioned or tiled.	IMAGE=	HTML, RTF, PRINTER family
Specify the image's horizontal positioning. [1]	JUST=	HTML, PCL, PDF, PS, and RTF
Specify the line type to use in a graph. You can use SAS/GRAPH line types 1–46.	LINESTYLE=	HTML, RTF, PRINTER family
Specify the thickness (width) of a line that is part of a graph.	LINETHICKNESS=	HTML, RTF, PRINTER family
Specify the size of the symbol used to represent data values.	MARKERSIZE=	HTML, RTF, PRINTER family
Specify the symbol used to represent data values.	MARKERSYMBOL=	HTML, RTF, PRINTER family
Specify the height of the graph.[1]	OUTPUTHEIGHT=	HTML, RTF, PRINTER family
Specify the width of the graph or line thickness. [1]	OUTPUTWIDTH=	HTML, RTF, PRINTER family
Specify the start color for a gradient effect in a graph.	STARTCOLOR=	HTML, RTF, PRINTER family

Task	Attribute	Valid destinations ...
Specify the level of transparency for a graph.	TRANSPARENCY=	HTML, RTF, PRINTER family
Specify the image's vertical positioning.[1]	VJUST	HTML, RTF, PRINTER family

[1] This attribute can also be used to influence other characteristics as described in another section of the table.

Note: You can use the value _UNDEF_ for any style attribute. ODS treats an attribute that is set to _UNDEF_ as if its value had never been set, even in the parent or beyond. △

ABSTRACT= ON | OFF
determines whether or not styles are used in CSS or LaTex style files.

ON
specifies that styles are used in CSS or LaTex style files.

OFF
specifies that styles are not used in CSS or LaTex style files.

Applies to: document

ODS Destination: HTML, MARKUP, and LaTex

ACTIVELINKCOLOR=*color*
specifies the color that a link changes to after you click on it, but before the browser opens that file.

Applies to: document

ODS Destination: HTML

See: color on page 292

ASIS=ON|OFF
specifies how to handle leading spaces and line breaks.

ON
prints text with leading spaces and line breaks, in the same manner as the listing output.

OFF
trims leading spaces and ignores line breaks.

Default: OFF

Applies to: document

ODS Destinations: HTML, RTF, PS, PCL, and PDF

BACKGROUND=*color*
specifies the color of the background.

Tip: Generally, the background color of the cell overrides the background color of the table. You see the background color for the table only as the space between cells (see CELLSPACING= on page 305).

Applies to: tables or cells and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Overridden by: CBACK= option in the SAS/GRAPH GOPTIONS statement

Featured in: Example 1 on page 342 and Example 3 on page 355

See: *color on page 292*

BACKGROUNDIMAGE='*string*'

specifies an image to use as the background. Viewers can tile or stretch the image as the background for the HTML table or graph that the procedure creates. For graphs, the specified image is stretched. *string* is the name of a GIF or JPEG file. You can use a simple file name, a complete path, or a URL. However, the most versatile approach is to use a simple filename and to place all image files in the local directory.

Applies to: tables or cells and graphs

ODS Destinations: HTML, PCL, and PS

Overridden by: IBACK= and IMAGESTYLE=FIT options in the SAS/GRAPH GOPTIONS statement

See: *string on page 296*

BODYSCROLLBAR=YES | NO | AUTO

specifies whether or not to put a scrollbar in the frame that references the body file.

YES

places a scrollbar in the frame that references the body file.

NO

specifies not to put a scrollbar in the frame that references the body file.

AUTO

places a scrollbar in the frame that references the body file only if needed.

Tip: Typically, BODYSCROLLBAR is set to AUTO.

Applies to: frame

ODS Destinations: HTML

BODYSIZE=*dimension* | *number %* | *

specifies the width of the frame that displays the body file in the HTML frame file. (For information about the HTML files that ODS creates, see "HTML Links and References Produced by the HTML Destination" on page 637.)

dimension

is a nonnegative number. The unit of measure is pixels.

See: *dimension on page 294*

number %

specifies the width of the frame as a percentage of the entire display.

*

specifies to use whatever space is left after displaying the content and page files as specified by the CONTENTSIZE= attribute.

Applies to: frame

ODS Destinations: HTML

BORDERCOLOR=*color*

specifies the color of the border if the border is just one color.

Applies to: tables or cells

ODS Destinations: HTML, RTF, PRINTER family

See: color on page 292

BORDERCOLORDARK=*color*
specifies the darker color to use in a border that uses two colors to create a three-dimensional effect.

Interaction: If you create HTML4 output, then the BORDERCOLORDARK style attribute is ignored because it is not part of the HTML4 standard. If you want a color border, then use the BORDERCOLOR= style attribute.

Applies to: tables or cells

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 4 on page 361

See also: *color on page 292*

BORDERCOLORLIGHT=*color*
specifies the lighter color to use in a border that uses two colors to create a three-dimensional effect.

Interaction: If you create HTML4 output, then the BORDERCOLORLIGHT style attribute is ignored because it is not part of the HTML4 standard. If you want a color border, then use the BORDERCOLOR= style attribute.

Applies to: tables or cells

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 4 on page 361

See: *color on page 292*

BORDERWIDTH=*dimension*
specifies the width of the border of the table.

Applies to: tables

ODS Destinations: HTML, RTF, PRINTER family

Tip: Typically, when BORDERWIDTH=0, the ODS destination sets RULES=NONE (see the discussion about RULES= on page 317) and FRAME=VOID (see the discussion about FRAME= on page 310).

Featured in: Example 1 on page 342 and Example 3 on page 355

See: *dimension on page 294*

BOTTOMMARGIN=*dimension*
specifies the bottom margin for the document.

Applies to: document

ODS Destinations: HTML, RTF, PRINTER family

See: *dimension on page 294*

BULLETS='*string*'
specifies the string to use for bullets in the contents file. ODS uses bullets in the contents file. *string* can be one of the following:

- circle
- decimal
- disc
- lower-alpha
- lower-roman
- none
- square
- upper-alpha
- upper-roman.

Applies to: contents

ODS Destinations: HTML

See: *string on page 296*

CELLHEIGHT=*dimension* | *integer%*

specifies the height of the cell. If you specify a percent, it represents a percentage of the height of the table. A row of cells will have the height of the highest cell in the row.

dimension

is a nonnegative number, optionally followed by one of the following units of measure.

See: *dimension on page 294*

integer%

specifies the height of the cell as a percentage of the height of the table.

Alias: OUTPUTHEIGHT=

Tip: HTML automatically sets cell height appropriately. You should seldom need to specify this attribute in the HTML destination.

Applies to: cells

ODS Destinations: HTML, RTF, PDF, PCL, and PS

CELLPADDING=*dimension* | *integer%*

specifies the amount of white space on each of the four sides of the text in a cell.

dimension

is a nonnegative number, optionally followed by one of the following units of measure.

See: *dimension on page 294*

integer%

specifies the amount of white space on each of the four sides of the text in a cell as a percentage of the table.

Applies to: tables

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 3 on page 355

CELLSPACING=*dimension*

specifies the thickness of the spacing between cells.

Applies to: tables

Interaction: If BORDERWIDTH= is nonzero, and if the background color of the cells contrasts with the background color of the table, then the color of the cell spacing is determined by the table's background.

Featured in: Example 1 on page 342 and Example 3 on page 355

See: *dimension on page 294*

CELLWIDTH=*dimension* | *integer%*

specifies the width of the cell. If you specify a percent, it represents a percentage of the width of the table. A column of cells will have the width of the widest cell in the column.

dimension

is a nonnegative number, optionally followed by one of the following units of measure.

See: *dimension on page 294*

integer%
specifies the width of the cell as a percentage of the width of the table.

Alias: OUTPUTWIDTH=

Applies to: cells

ODS Destinations: HTML, RTF, PRINTER family

CONTENTPOSITION= LEFT | RIGHT | TOP | BOTTOM
specifies the position, within the frame file, of the frames that display the contents and the page files. (For information about the HTML files that ODS creates, see "HTML Links and References Produced by the HTML Destination" on page 637.)

LEFT
places the frames on the left.

Alias: L

RIGHT
places the frames on the right.

Alias: R

TOP
places the frames at the top.

Alias: T

BOTTOM
places the frames at the bottom.

Alias: B

Applies to: frame

ODS Destinations: HTML

CONTENTSCROLLBAR=YES | NO |AUTO
specifies whether or not to put a scrollbar in the frames in the frame file that display the contents and the page files. (For information about the HTML files that ODS creates, see "HTML Links and References Produced by the HTML Destination" on page 637.)

YES
places a scrollbar in the frames in the frame file that display the contents and the page files.

NO
specifies not to put a scrollbar in the frames in the frame file that display the contents and the page files.

AUTO

Tip: Typically, CONTENTSCROLLBAR= is set to AUTO.

Applies to: frame

ODS Destinations: HTML

CONTENTSIZE=*dimension* | *number %* | *
specifies the width of the frames in the frame file that display the contents and the page files. (For information about the HTML files that ODS creates, see "HTML Links and References Produced by the HTML Destination" on page 637

dimension
is a nonnegative number. The unit of measure is pixels.

See: *dimension on page 294*

number %
specifies the width of the frames as a percentage of the entire display.

Requirement: *number %* must be a positive number between 0 and 100.

*

specifies to use whatever space is left after displaying the body file as specified by the BODYSIZE= attribute.

See also: BODYSIZE= on page 303

Applies to: frame

ODS Destinations: HTML

CONTRASTCOLOR=*color*
specifies the alternate colors for maps. The alternate colors are applied to the blocks on region areas in block maps.

Applies to: graphs

ODS Destinations: HTML

See: *color on page 292*

DROPSHADOW= ON | OFF
determines whether drop shadow effect is used with text.

ON
specifies that a drop shadow effect is used with text.

OFF
specifies that a drop shadow effect is not used with text.

Applies to: graphs

ODS Destinations: HTML

ENDCOLOR=*color*
indicates the end fill color for a graph. It is used to create a gradient effect.

Note: You can have either a start and end gradient effect or no gradient effect. If you specify a TRANSPARENCY level and you only specify the ENDCOLOR, then the start color will be completely transparent gradationally to the end color. △

Applies to: graphs

ODS Destinations: HTML

See: *color on page 292*

FILLRULEWIDTH= *dimension*
causes a rule of the specified width to be placed into the space around the text (or entire cell if there is no text) where white space would otherwise appear.

Tip: If no text is specified, then FILLRULEWIDTH= fills the space around the text with dash marks. For example: –this– or this ——.

Applies to: tables

ODS Destinations: PDF, PS, and PCL

See: *dimension on page 294*

FLYOVER='*string*'
specifies the text to show in a tool tip for the cell.

Applies to: cells

ODS Destinations: HTML and PDF

See: *string on page 296*

FONT=*font-definition*
specifies a font definition to use.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Tip: If the system does not recognize the font specified, then it will refer to your system's default font. This attribute does not accept concatenated fonts. SAS Graph Styles can only specify one font.

Applies to: tables, cells, and graphs

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 3 on page 355

See: font definition on page 294

FONT_FACE='*string-1*<..., *string-n*>'
specifies the font to use. If you supply multiple fonts, then the destination device uses the first one that is installed on your system.

You cannot be sure what fonts are available to someone who is viewing your output in a browser or printing it on a high-resolution printer. Most devices support

- times
- courier
- arial, helvetica.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: cells and graphs

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 1 on page 342

See: *string on page 296*

FONT_SIZE=*dimension* | *size*
specifies the size of the font.

dimension
is a nonnegative number.

See: *dimension on page 294*

Restriction: If you specify a dimension, then you must specify a unit of measure. Without a unit of measure, the number becomes a relative size.

size
The value of *size* is relative to all other font sizes in the document.

Range: 1 to 7, for *size*

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: table, cells, and graphs

ODS Destinations: HTML, RTF, PDF, PCL, and PS

Featured in: Example 1 on page 342

FONT_STYLE=ITALIC | ROMAN | SLANT

specifies the style of the font. In many cases, italic and slant map to the same font.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: tables, cells, and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Featured in: Example 1 on page 342 and Example 3 on page 355

FONT_WEIGHT=*weight*

specifies the font weight. *weight* can be any of the following:

- MEDIUM
- BOLD
- DEMI_BOLD
- EXTRA_BOLD
- LIGHT
- DEMI_LIGHT
- EXTRA_LIGHT.

Restriction: You cannot be sure what font weights are available to someone who is viewing your output in a browser or printing it on a high-resolution printer. Most devices support only MEDIUM and BOLD, and possibly LIGHT.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: tables, cells, and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Featured in: Example 1 on page 342

FONT_WIDTH=*relative-width*

specifies the font width compared to the width of the usual design. *relative-width* can be any of the following:

- NORMAL
- COMPRESSED
- EXTRA_COMPRESSED
- NARROW
- WIDE
- EXPANDED.

Restriction: Few fonts honor these values.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: tables, cells, and graphs

ODS Destinations: HTML, RTF, PCL, PDF, PS, and RTF

Featured in: Example 1 on page 342

FOREGROUND=*color*

specifies the color of the foreground, which is primarily the color of text.

Tip: When you specify this attribute for a table, it affects only the text that is specified with the PRETEXT=, POSTTEXT=, PREHTML=, and POSTHTML= attributes. To alter the font for the text that appears in the table, you must set the attribute for a cell.

Applies to: tables, cells, and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Overridden by: CBACK= option in the SAS/GRAPH GOPTIONS statement

Featured in: Example 3 on page 355

See: *color on page 292*

FRAME=*frame-type*

specifies the type of frame to use on a table. The following table shows the possible values for *frame-type* and their meanings:

Value for *frame-type* …	Frame type
ABOVE	a border at the top
BELOW	a border at the bottom
BOX	borders at the top, bottom, and both sides
HSIDES	borders at the top and bottom
LHS	a border at the left side
RHS	a border at the right side
VOID	no borders
VSIDES	borders at the left and right sides

Applies to: tables

ODS Destinations: HTML, PRINTER family, and RTF

Featured in: Example 3 on page 355

FRAMEBORDER=ON | OFF

specifies whether or not to put a border around the frame for an HTML file that uses frames.

ON

places a border around the frame for an HTML file that uses frames.

OFF

specifies not to put a border around the frame for an HTML file that uses frames.

Applies to: frame

ODS Destinations: HTML

FRAMEBORDERWIDTH=*dimension*

specifies the width of the border around the frames for an HTML file that uses frames.

Applies to: frame

ODS Destinations: HTML

See: *dimension on page 294*

FRAMESPACING=*integer*

specifies the width of the space between frames for HTML that uses frames.

Applies to: frame

ODS Destinations: HTML

GRADIENT_DIRECTION= XAXIS | YAXIS

specifies the direction for the gradient effect for a graph's background, legend background, charts, walls, and floors. Use XAXIS for a left-to-right gradient and YAXIS for a bottom-to-top gradient.

Applies to: graphs

ODS Destinations: HTML

HREFTARGET=*target*

specifies the window or frame in which to open the target of the link. *target* can be one of the following values.

_BLANK

opens the target in a new, blank window. The window has no name.

_PARENT

opens the target in the window from which the current window was opened.

_SEARCH

opens the target in the browser's search pane.

Restriction: Only available in Internet Explorer 5.0 or later.

_SELF

opens the target in the current window.

_TOP

opens the target in the topmost window.

'*name*'

opens the target in the specified window or the frame.

Default: _SELF

Applies to: cells

ODS Destinations: HTML

HTMLCLASS='*string*'

specifies the name of the style sheet class to use for the table or cell.

Applies to: document

ODS Destinations: HTML

See: *string on page 296*

HTMLCONTENTTYPE='*string*'

provides the value of the content type for pages that you send directly to a web server rather than to a file.

Tip: The value of *string* is usually "text/html".

Applies to: document

ODS Destinations: HTML

See: *string on page 296*

HTMLDOCTYPE='*string*'

specifies the entire doctype declaration for the HTML document, including the opening "<!DOCTYPE" and the closing ">".

Applies to: document

ODS Destinations: HTML

See: *string on page 296*

HTMLID='*string*'

specifies an id for the table or cell. The id is for use by a Javascript.

Applies to: tables and cells

ODS Destinations: HTML

See: *string on page 296*

HTMLSTYLE='*string*'

specifies individual attributes and values for the table or cell.

Applies to: document

ODS Destinations: HTML

See: *string on page 296*

IMAGE=*string*

specifies the image to appear in the graph. This image can be positioned or tiled.

Applies to: graphs

ODS Destinations: HTML

Overridden by: IBACK= and IMAGESTYLE=TILE options in the SAS/GRAPH GOPTIONS statement

See: *string on page 296*

INDENT=*n*

specifies that the output be indented one more indention level, using the number of spaces specified by the INDENT= statement.

Default: The default value for XML is 2. For all other ODS destinations, the default value is 0.

ODS Destinations: MARKUP, RTF and PRINTER family

n

specifies the number of spaces that you want the output to indent.

JUST=CENTER | DEC | LEFT | RIGHT

specifies justification. In graphs, this option specifies the justification of the image specified with the IMAGE= statement.

CENTER

specifies center justification.

Alias: C

DEC

specifies aligning the values by the decimal point.

Alias: D

LEFT

specifies left justification.

Alias: L

RIGHT

specifies right justification.

Alias: R

Restriction: Not all contexts support RIGHT. If RIGHT is not supported, it is interpreted as CENTER.

Interaction: If the column is numeric, then values are aligned to the right if you specify JUST=C and JUSTIFY=OFF.

Interaction: All destinations except LISTING justify the values in columns as if JUSTIFY=ON for JUST=R and JUST=L.

Main discussion: "How Are Values in Table Columns Justified?" on page 512

Applied to: tables, cells, and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Tip: For Printer Family destinations and the MARKUP destination, you can use the style attribute JUST= with the style attribute VJUST= in the style element PAGENO to control the placement of page numbers.

For example, the following statement would produce a page number that is centered at the bottom of the page:

```
style PageNo from TitleAndFooters / just=c vjust=b;
```

Tip: For Printer Family destinations and the MARKUP destination, you can control the placement of dates by using the style attribute JUST= with the style attribute VJUST= in any of the following style elements:

BODYDATE

DATE.

For example, the following statement would produce a date in the body file that is left justified at the top of the page:

```
style BodyDate from Date / just=l vjust=t;
```

LEFTMARGIN=*dimension*

specifies the left margin for the document.

Applies to: document

ODS Destinations: HTML, RTF, PRINTER family

See: *dimension on page 294*

LINESTYLE= *1...46*

controls the line style for a graph. Possible values are SAS/GRAPH line types one through 46. If LINESTYLE=1, then a solid line is drawn. Dashed lines are drawn when values between (and including) two and 46 are specified as the LINESTYLE= value.

Applies to: graphs

ODS Destinations: HTML, RTF, PRINTER family

See also: *SAS/GRAPH Reference, Volumes 1 and 2*

LINETHICKNESS= *dimension* | *number%*

specifies the thickness (width) of a line that is part of a graph. This attribute may appear in many style elements that pertain to graphs such as GraphAxisLines and GraphBorderLines. If you specify a percent, it represents a percentage of the width of the window or display.

dimension

is a nonnegative number.

See: *dimension on page 294*

number%

Restriction: The LINETHICKNESS= attribute does not apply to output generated as a result of GRSEG (graph segment) output.

Overridden by: WIDTH= option in the AXIS or SYMBOL statement, or other options that are specific to charts which set line width.

Applies to: graphs

ODS Destinations: HTML, RTF, Printer Family

See also: *SAS/GRAPH Reference, Volumes 1 and 2*

LINKCOLOR=*color*
specifies the color for links that have not yet been visited.

Applies to: document

ODS Destinations: HTML, RTF, and PDF

See: *color on page 292*

LISTENTRYANCHOR=ON | OFF
specifies whether or not to make this entry in the table of contents a link to the body file.

ON
specifies to make this entry in the table of contents a link to the body file.

OFF
specifies not to make this entry in the table of contents a link to the body file.

Applies to: document

ODS Destinations: HTML

LISTENTRYDBLSPACE=ON | OFF
specifies whether or not to double space between entries in the table of contents.

ON
specifies to double space between entries in the table of contents.

OFF
specifies not to double space between entries in the table of contents.

Applies to: document

ODS Destinations: HTML

NOBREAKSPACE=ON | OFF
specifies how to handle space characters.

ON
does not allow SAS to break a line at a space character.

OFF
allows SAS to break a line at a space character if appropriate.

Applies to: cells

ODS Destinations: All

OUTPUTHEIGHT=*dimension*
specifies the height for a graph or graphics in a document.

Note: When used with graphs, the OUTPUTHEIGHT=*dimension* must be specified as a pixel or percentage value. If a unit of measure is not specified with the *dimension*, then the value will be in pixels. If a unit of measure other than pixels or percentage is specified with the *dimension*, then the OUTPUTHEIGHT=*dimension* is not applied to the graph. △

Alias: CELLHEIGHT=

Restriction: The OUTPUTHEIGHT= option does not apply to output generated as a result of GRSEG (graph segment) output.

Applies to: graphs and documents

ODS Destinations: HTML, RTF, PRINTER family

Overridden by: YPIXELS= option in the SAS/GRAPH GOPTIONS statement

See: *dimension on page 294*

OUTPUTWIDTH=*dimension* | *number%*
specifies the width of a table, line, or a graph. If you specify a percent, it represents a percentage of the width of the window or display.

Note: When used with graphs, the OUTPUTHEIGHT=*dimension* must be specified as a pixel or percentage value. If a unit of measure is not specified with the *dimension*, then the value will be in pixels. If a unit of measure other than pixels or percentage is specified with the *dimension*, then the OUTPUTHEIGHT=*dimension* is not applied to the graph. △

dimension
is a nonnegative number.

See: *dimension on page 294*

number%

Alias: CELLWIDTH=

Restriction: The OUTPUTHEIGHT= option does not apply to output generated as a result of GRSEG (graph segment) output.

Tip: Use OUTPUTWIDTH=100% to make the table or graph as wide as the window that it is open in.

Applies to: tables and graphs

ODS Destinations: HTML, RTF, PRINTER family

Overridden by: XPIXELS= option in the SAS/GRAPH GOPTIONS statement

OVERHANGFACTOR=*nonnegative-number*
specifies an upper limit for extending the width of the column.

Tip: Typically, an overhang factor between 1 and 2 works well.

Tip: The HTML that is generated by ODS tries to ensure that the text in a column wraps when it reaches the requested column width. If you make the overhang factor greater than 1, then the text can extend beyond the specified width.

Applies to: document

ODS Destinations: HTML, RTF, PRINTER family

PAGEBREAKHTML='*string*'
specifies HTML to place at page breaks.

Applies to: document

ODS Destinations: HTML

See: *string on page 296*

POSTHTML='*string*'
specifies the HTML code to place after the table or cell.

Applies to: tables or cells

ODS Destinations: HTML

Featured in: Example 3 on page 355

See: *string on page 296*

POSTIMAGE= '*string*' | *fileref*
specifies an image to place before the table or cell.

string
names a GIF or JPEG file. You can use a simple filename, a complete path, or a URL.

See: *string on page 296*

fileref
is a reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref. (For information about the FILENAME statement, see “Statements” in *SAS Language Reference: Dictionary*.)

Applies to: tables or cells

ODS Destinations: HTML, PCL, PDF, PS, and RTF

POSTTEXT='*string*'
specifies text to place after the cell or table.

Applies to: tables or cells

ODS Destinations: HTML, PCL, PDF, PS, and RTF

See: *string on page 296*

PREHTML='*string*'
specifies the HTML code to place before the table or cell.

Applies to: tables or cells

ODS Destinations: HTML

See: *string on page 296*

PREIMAGE= '*string*' | *fileref*
specifies an image to place before the table or cell.

string
names a GIF or JPEG file. You can use a simple filename, a complete path, or a URL.

See: *string on page 296*

fileref
is a reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref. (For information about the FILENAME statement, see “Statements” in *SAS Language Reference: Dictionary*.)

Applies to: tables or cells

ODS Destinations: HTML, PCL, PDF, PS, and RTF

PRETEXT='*string*'
specifies text to place before the cell or table.

Applies to: tables or cells

ODS Destinations: HTML, PCL, PDF, PS, and RTF

See: *string on page 296*

PROTECTSPECIALCHARACTERS=ON | OFF | AUTO
determines how less-than signs (<), greater-than signs (>), and ampersands (&) are interpreted. In HTML and other markup languages, these characters indicate the beginning of a markup tag, the end of a markup tag, and the beginning of the name of a file or character entity.

ON
interprets special characters as the characters themselves. That is, when ON is in effect the characters are protected before they are passed to the HTML or other markup language destination so that the characters are not interpreted as part of the markup language. Using ON enables you to show markup language tags in your document.

OFF
interprets special characters as markup language tags. That is, when OFF is in effect, the characters are passed to the HTML or other markup language destination without any protection so that the special characters are interpreted as part of the markup language.

AUTO
interprets any string that starts with a < and ends with a > as a markup language tag (ignoring spaces that immediately precede the <, spaces that immediately follow the >, and spaces at the beginning and end of the string). In any other string, AUTO protects the special characters from their markup language meaning.

Applies to: cells

ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF

RIGHTMARGIN=*dimension*
specifies the right margin for the document.

Applies to: document

ODS Destinations: HTML, RTF, PRINTER family

See: *dimension on page 294*

RULES=*rule-type*
specifies the types of rules to use in a table. The following table shows the possible values for *rule* and their meanings:

This value of *rule* …	Creates rules in these locations
ALL	between all rows and columns
COLS	between all columns
GROUPS	between the table header and the table and between the table and the table footer, if there is one
NONE	no rules anywhere
ROWS	between all rows

Applies to: tables

ODS Destinations: HTML, RTF, PRINTER family

Featured in: Example 4 on page 361

STARTCOLOR= *color*
indicates the start fill color for a graph. It is used to create a gradient effect.

Note: You can have either a start and end gradient effect or no gradient effect. If you specify a TRANSPARENCY level and you only specify the STARTCOLOR, then the end color will be completely transparent gradationally to the specified start color. △

Applies to: graphs

ODS Destinations: HTML

See: color on page 292

TAGATTR='*string*'

specifies text to insert in the HTML. The string must be valid HTML for the context in which the style element is created. Many style elements are created between <TD> and </TD> tags. To determine how a style element is created, look at the source for the output.

Applies to: cells

ODS Destinations: HTML

See: *string on page 296*

TOPMARGIN=*dimension*

specifies the top margin for the document.

Applies to: document

ODS Destinations: HTML, RTF, PRINTER family

See: *dimension on page 294*

TRANSPARENCY=*dimension*

specifies a transparency level. Valid values are 0.0 (opaque) to 1.0 (transparent).

Applies to: graphs

ODS Destinations: HTML

See: *dimension on page 294*

URL='*uniform-resource-locator*'

specifies a URL to link to from the current cell.

Applies to: cells

ODS Destinations: HTML, RTF, and PDF

VISITEDLINKCOLOR=*color*

specifies the color for links that have been visited.

Applies to: document

ODS Destinations: HTML and RTF

See: color on page 292

VJUST=BOTTOM | MIDDLE | TOP

specifies vertical justification. In graphs, this option specifies the vertical justification of the image specified with IMAGE=.

BOTTOM

specifies bottom justification.

Alias: B

MIDDLE

specifies center justification.

Alias: M

TOP

specifies top justification.

Alias: T

Applies to: cells and graphs

ODS Destinations: HTML, PCL, PDF, PS, and RTF

Tip: For Printer Family destinations and the MARKUP destination, you can use the style attribute VJUST= with the style attribute JUST= in the style element PAGENO to control the placement of page numbers.

For example, the following statement produces a page number that is centered at the bottom of the page:

```
style PageNo from TitleAndFooters / just=c vjust=b;
```

Tip: For Printer Family destinations and the MARKUP destination, you can control the placement of dates by using the style attribute VJUST= with the style attribute JUST= in any of the following style elements:

BODYDATE

DATE

.

For example, the following statement produces a date in the body file that is left justified at the top of the page:

```
style BodyDate from Date / just=l vjust=t;
```

WATERMARK=ON | OFF

specifies whether or not to make the image that is specified by BACKGROUNDIMAGE= into a "watermark." A watermark appears in a fixed position as the window is scrolled.

ON

specifies to make the image that is specified by BACKGROUNDIMAGE= into a "watermark."

OFF

specifies not to make the image that is specified by BACKGROUNDIMAGE= into a "watermark."

Applies to: document

ODS Destinations: HTML

END Statement

Ends the style definition

END;

Concepts: Style Definitions and the TEMPLATE Procedure

Viewing the Contents of a Style Definition

To view the contents of a style definition, you can use the SAS windowing environment, the command line, or the TEMPLATE procedure.

- Using the SAS Windowing Environment
  1. From the SAS Explorer, select

     View ▶ Results

  2. In the Results window, select the Results folder. Right click and select Templates to open the Templates window.
  3. Double click on **`Styles`** to view the contents of that directory.
  4. Double click on the style definition that you want to view. For example, the Default style definition is the template store for HTML output. Similarly, the RTF style definition is the template store for RTF output.
- Using the Command Line
  1. To view the Templates window, submit the following command in the command bar:

     ```
     odstemplates
     ```

     The Templates window contains the item stores **`Sasuser.Templat`** and **`Sashelp.Tmplmst`**.
  2. When you double-click an item store, such as **`Sashelp.Tmplmst`**, that item store expands to list the directories where ODS templates are stored. The templates that SAS provides are in the item store Sashelp.Tmplmst.
  3. To view the style definitions that SAS provides, double-click the Styles item store.
  4. Right-click the style definition, such as **`Journal`**, and select Open. The style definition is displayed in the Template Browser window.
- Using the TEMPLATE Procedure
  1. Submit the following code to view the contents of the default HTML style definition that SAS supplies.

     ```
     proc template;
     source styles.default;
     run;
     ```

  2. You can view any of the SAS style definitions by specifying the styles.*style-definition* in the SOURCE statement. The SAS style definitions are in the SASHELP.TMPLMST item store.

The Default Style Definition for HTML and Markup Languages

Where Is the Default Style Definition for HTML and Markup Languages?

The default style definition for the HTML and markup languages destinations are stored in STYLES.DEFAULT in the template store SASHELP.TMPLMST. You can view the style definition from the TEMPLATE window, or you can submit this PROC TEMPLATE step to write the style definition to the SAS log:

```
proc template;
   source styles.default;
run;
```

Modifying Style Elements in the Default Style Definition for HTML and Markup Languages

When you are working with style definitions, you are more likely to modify a SAS style definition than to write a completely new style definition. Example 3 on page 355 shows you how to modify the default style definition.

When you want to customize the style definition for use at your site, it is helpful to know what each style element in the style definition specifies. For a list of the default HTML and markup languages style elements, see Appendix 4, "HTML, Printer Family, and Markup Languages Style Elements and Their Inheritances," on page 651.

Note: The default style definition for the PRINTER destination is stored in STYLES.PRINTER in the template store SASHELP.TMPLMST. Similarly, the default style definition for the RTF destination is stored in STYLES.RTF in the template store SASHELP.TMPLMST. △

ODS Styles with Graphical Style Information

SAS provides ODS styles that incorporate graph style information. See "Viewing the Contents of a Style Definition" on page 319 for information about viewing the code for the ODS styles delivered with SAS. In addition to using defined ODS styles, you can also modify an existing style or create an entirely new style using the new graph style elements. Example 4 on page 361 describes how a defined ODS style was generated. See "Style Attributes and Their Values" on page 292 for a complete listing of style attributes. For a complete list of style elements see Appendix 4, "HTML, Printer Family, and Markup Languages Style Elements and Their Inheritances," on page 651.

Note: The graph styles (attributes and elements) are at the bottom of the style attributes and style elements tables. △

While graph styles utilize a number of attributes that are also used by other styles generated with PROC TEMPLATE, several attributes are unique to graph styles. For example, you can use STARTCOLOR and ENDCOLOR to produce a gradient effect that gradually changes from the starting color to the ending color in a specified element. When only either a STARTCOLOR or ENDCOLOR, but not both, is specified, then the attribute that was not specified is transparent when TRANSPARENCY is being used. In Example 4 on page 361, only an ENDCOLOR is specified; therefore, the starting color is transparent.

TRANSPARENCY is another attribute unique to graph styles. With transparency, you can specify the level of transparency (from 0.0 to 1.0) to indicate the percentage of transparency (0 to 100 %) for the graph element. While you can use BACKGROUNDIMAGE in other styles to stretch an image, in graph styles you can also use IMAGE to position or tile an image.

With graph styles you can also combine images and colors to create a blending affect. The blending works best when you use a grayscale image with a specified color. Blending can be done in the following elements: GraphLegendBackground, GraphCharts, GraphData#, GraphFloor, and GraphWalls. To blend, specify a color using the BACKGROUND or FOREGROUND attribute and specify an image using the BACKGROUNDIMAGE or IMAGE attribute.

Note: When using the GraphData# element, you can use the FOREGROUND attribute, but not the BACKGROUND attribute to specify a color value. △

About Style Definition Inheritance and Style Element Inheritance

Definitions

To help you become familiar with style definition inheritance and style element inheritance, let's review the definitions of a style definition and a style element.

style definition
: describes how to display the presentation aspects (color, font, font size, and so on) of the output for an entire SAS job. A style definition determines the overall appearance of the documents that use it. Each style definition is composed of style elements.

style element
: is a collection of style attributes that apply to a particular part of the output for a SAS job. For example, a style element may contain instructions for the presentation of column headers or for the presentation of the data inside cells. Style elements may also specify default colors and fonts for output that uses the style definition. Each style attribute specifies a value for one aspect of the presentation. For example, the BACKGROUND= attribute specifies the color for the background of an HTML table, and the FONT_STYLE= attribute specifies whether to use a Roman, a slant, or an italic font.

When you use PROC TEMPLATE to create style definitions, it is important to understand inheritance. There are two types of inheritance:

style definition inheritance
: specifies that the child style definition receives all of the style elements and attributes and statements that are specified in the parent's definition. They are used in the new definition unless the new definition overrides them.

style element inheritance
: specifies that the child style element receives all of the elements and their attributes that are specified in another style definition. They are used in the new style definition unless the new definition overrides them. Each style attribute specifies a value for one aspect of the presentation. For example, a style element may contain instructions for the presentation of column headers or for the presentation of the data inside cells. Style elements may also specify default colors and fonts for output that uses the style definition.

Note: For a list of the default style elements used for HTML and markup languages and their inheritance, see Appendix 4, "HTML, Printer Family, and Markup Languages Style Elements and Their Inheritances," on page 651. △

How to Determine Style Definition Inheritance

A style definition determines the overall appearance of the documents that use it. Each style definition is composed of style elements. A style definition is created with the DEFINE STYLE statement and its substatements and attributes.

The PARENT= attribute, used with the DEFINE STYLE statement, determines style definition inheritance. When you specify a parent for a style definition, all the style elements, attributes, and statements that are specified in the parent's definition are used in the new definition unless the new definition overrides them.

How to Determine Style Element Inheritance

The STYLE and REPLACE statements, used with the DEFINE STYLE statement, determine style element inheritance. They augment or override the attributes of a particular style element. You can use the STYLE statement in either a style definition that has no parent or a style definition that has a parent. However, you can use the REPLACE statement only in a style definition that has a parent.

Creating a Style Definition with No Parent, Using Style Element Inheritance

This section explains style definition inheritance and style element inheritance, beginning with the simpler case of style element inheritance in a style definition that has no parent and progressing to more complicated cases. The focus here is on PROC TEMPLATE and the DEFINE STYLE statement, so only the PROC TEMPLATE code that creates the style definitions appears in the text. However, in order to produce the HTML output that is shown here, it is necessary to create a customized table and to bind that table to a data set. The complete code that produces each piece of output is in "Programs that Illustrate Inheritance" on page 622.

- *Creating a Style Element in a Style Definition*

  Use a DEFINE STYLE statement to create each style element in the style definition. The following PROC TEMPLATE step creates the style definition, **concepts.style1**, that contains one style element, **celldatasimple**.

  Example Code 9.1 Creating a Style Definition with One Style Element

  This style element contains the following style attributes:

  - Arial font
  - light blue background
  - white foreground.

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
   end;
run;
```

  The style element **celldatasimple** does not inherit any attributes from any other element. It is simply created with the three attributes shown. All other attributes are set by the browser when a table is displayed in HTML with this style definition. The following HTML output uses the following style definition.

Display 9.3 Using a Style Definition with One Style Element

The style definition for this HTML output uses contains only one style element: **celldatasimple**. All three columns use this style element. **celldatasimple** contains the following style attributes:

FONT_FACE=arial

BACKGROUND=very light vivid blue

FOREGROUND=white.

Country	Grain	Kilotons
Brazil	Rice	10035
China	Rice	190100
India	Rice	120012
Indonesia	Rice	51165
United States	Rice	7771

- *Creating a Second Style Element in a Style Definition*

  You can create a second style element in a style definition either independently of any other style element or from an existing style element.

  Suppose that you want an additional style element that emphasizes the data for cells by using an italic font. The style element uses the same font and background color as **celldatasimple**, but it uses blue instead of white for the foreground color. Program 1 shows you how you can create the new style element independently. Alternatively, you can create **celldataemphasis** from **celldatasimple** as shown in program 2.

Example Code 9.2 Program 1: Creating a Second Style Element Independently or from an Existing Style Element

The PROC TEMPLATE steps in the following code produces identical results. In both cases, **celldatasimple** contains the following style attributes:

- FONT_FACE=arial
- BACKGROUND=very light vivid blue
- FOREGROUND=white.

celldataemphasis contains the following style attributes:

- FONT_FACE=arial (inherited from **celldatasimple**)
- BACKGROUND=very light vivid blue (inherited from **celldatasimple**)
- FOREGROUND=blue (modified in **celldataemphasis**)
- FONT_STYLE=italic (added in **celldataemphasis**).

```
1 proc template;
   define style concepts.style1;
```

```
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis /
         font_face=arial
         background=very light vivid blue
         foreground=blue
         font_style=italic;
   end;
run;
```

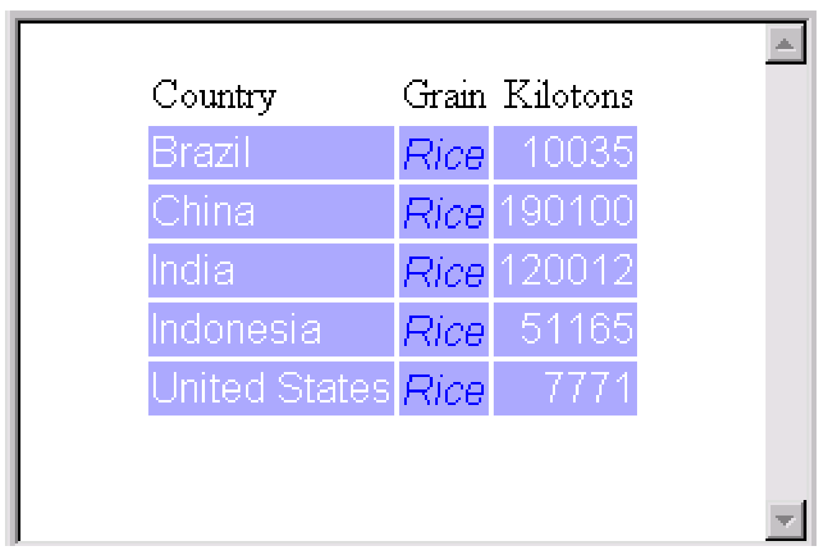
Example Code 9.3 Program 2: Creating a Second Style Element from an Existing Style Element

```
❷proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
   end;
run;
```

The following HTML output uses the style definition **concepts.style1**.

Display 9.4 A Style Definition with Two Style Elements

The style definition that this HTML output contains two style elements: **celldatasimple** and **celldataemphasis**. The columns for **Country** and **Kilotons** use **celldatasimple**. The column for **grain** uses **celldataemphasis**.



□ *Comparing the Two Methods*

Although the two PROC TEMPLATE steps above produce identical HTML output, there is an important difference between them that is illustrated by programs ❸ and ❹.

Program ❸ below does not use style element inheritance. **celldataemphasis** is created independently of **celldatasimple**, so a change to **celldatasimple** does not affect **celldataemphasis**. Even if you change the STYLE statement that creates **celldatasimple** so that the font is Times, then the program still creates **celldataemphasis** with Arial as the font.

However, in program ❹, if you change the font for **celldatasimple** from Arial to Times , then **celldataemphasis** does use the Times font. This is because the change to FONT_FACE= is passed to **celldataemphasis**, which inherits all the attributes from **celldatasimple**.

Example Code 9.4 Program 3: Changing the Font in Only One Style Element

```
❸proc template;
   define style concepts.style1;
      style celldatasimple  /
         font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis /
         font_face=arial
         background=very light vivid blue
         foreground=blue
         font_style=italic;
end;
```

Example Code 9.5 Program 4: Changing the Font in the Parent and Child Style Elements

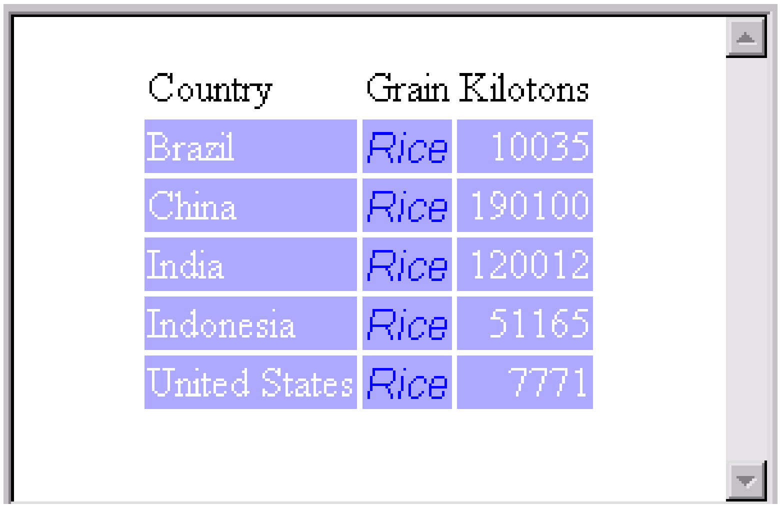
```
❹proc template;
   define style concepts.style1;
      style celldatasimple   /
         font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
end;
```

□ *Output For Comparing The Two Methods*

The following HTML output uses the style definition created by program ❸.

Display 9.5 Changing the Font in Only One Style Element

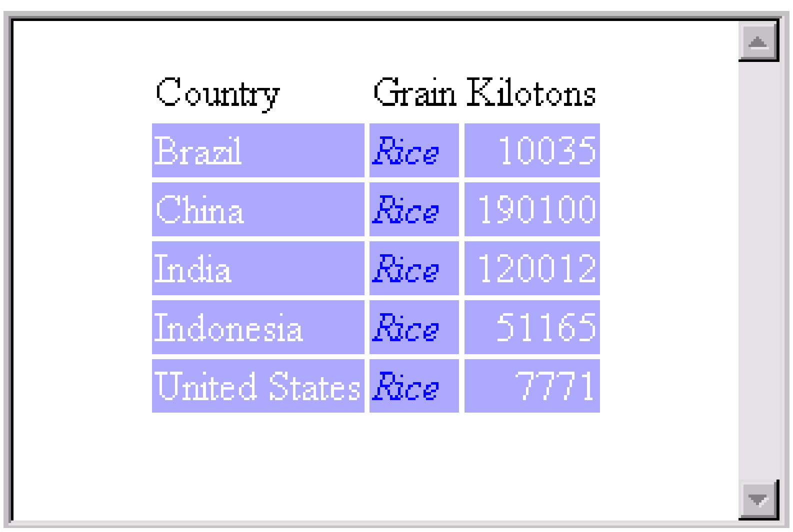
Here, the font in the style element **`celldatasimple`**, which is used for the first and third columns in the HTML output, has changed from Arial to Times. However, **`celldataemphasis`**, which is used for the second column, still uses the Arial font because it does not inherit any attributes from **`celldatasimple`**.



The following HTML output uses this style definition created by program ❹.

Display 9.6 Inheriting a Change to a Style Element

In this case, the change to the Times font in **`celldatasimple`** is inherited by **`celldataemphasis`**. Both style elements use the Times font . The only attributes that differ between the two style elements are attributes that were explicitly redefined in the definition of **`celldataemphasis`** (the FOREGROUND= attribute, which was changed, and the FONT_STYLE= attribute, which was added). The columns for **`Country`** and **`Kilotons`** use **`celldatasimple`**. The column for **`Grain`** uses **`celldataemphasis`**.



□ *Adding a Third Style Element*

In this example, a third style element is added to the style definition. This style element further emphasizes the data by using a large, bold, italic font. Again, you can create the new style element from scratch, or you can derive it from either of the other style elements. The following program creates **celldatalarge** from **celldataemphasis**:

Example Code 9.6 Program 5: Creating the Style Element *celldatalarge*

```
❺proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;
```

The style elements **celldatasimple** and **celldataemphasis** have not changed. **celldatasimple** has these attributes:

- FONT_FACE=arial
- BACKGROUND=very light vivid blue
- FOREGROUND=white.

celldataemphasis has these attributes:

- FONT_FACE=arial (inherited from **celldatasimple**)
- BACKGROUND=very light vivid blue (inherited from **celldatasimple**)
- FOREGROUND=blue (modified in **celldataemphasis**)
- FONT_STYLE=italic (added in **celldataemphasis**).

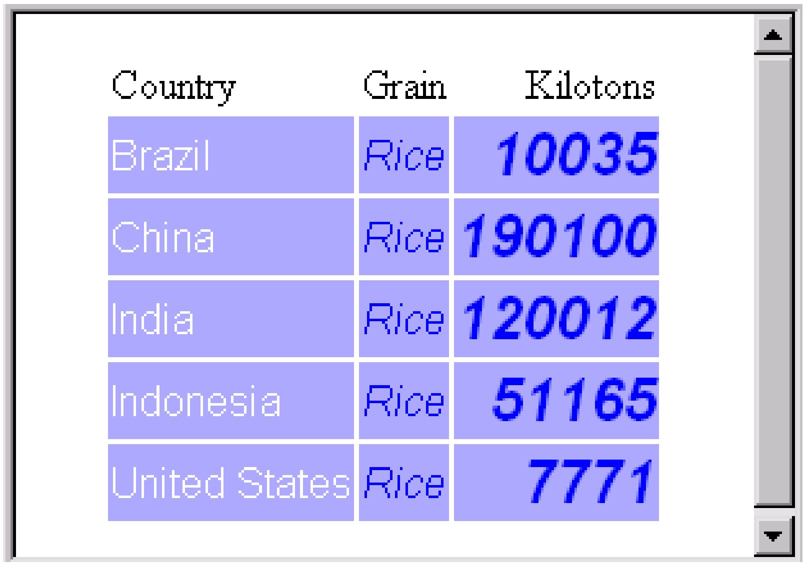
The new style element, **celldatalarge**, has these attributes:

- FONT_FACE=arial (inherited from **celldataemphasis**, which inherited it from **celldatasimple**)
- BACKGROUND=very light vivid blue (inherited from **celldataemphasis**, which inherited it from **celldatasimple**)
- FOREGROUND=blue (inherited from **celldataemphasis**)
- FONT_STYLE=italic (inherited from **celldataemphasis**)
- FONT_WEIGHT=bold (added in **celldatalarge**)
- FONT_SIZE=5 (added in **celldatalarge**).

The following HTML output uses the new style definition created by program ❺.

Display 9.7 Adding the Style Element *celldatalarge*

The style definition that this HTML output uses contains three style elements: **celldatasimple**, **celldataemphasis**, and **celldatalarge**. The column for **Country** uses **celldatasimple**. The column for **Grain** uses **celldataemphasis**. The column for **Kilotons** uses **celldatalarge**.



In this case, **celldatalarge** inherits style attributes from **celldataemphasis**, and **celldataemphasis** inherits from **celldatasimple**. If you change the font in **celldatasimple**, then the font in the other style elements also changes. If you change the font style or foreground color in **celldataemphasis**, then the font style or foreground color in **celldatalarge** also changes. Changes to **celldatalarge** affect only **celldatalarge** because no style element inherits from it.

Summary of Style Element Inheritance in a Style Definition with No Parent

The following points summarize style element inheritance in a style definition that does not have a parent:

- You can create a new style element from any existing style element.
- The new style element inherits all the attributes from its parent.
- You can specify additional attributes in the new style definition. The attributes are added to the attributes that the element inherits.
- You can change the value of an inherited attribute by respecifying it in the definition of the new style element.

Creating a Style Definition with a Parent Using Style Element Inheritance

- *Using One Style Definition to Create Another Style Definition*

  Use the PARENT= attribute in a new style definition to inherit an entire style definition.

  This example uses **concepts.style1**, which was created in "Creating a Style Definition with No Parent, Using Style Element Inheritance" on page 323. The following program creates a new style definition, **concepts.style2**, which inherits the entire style definition from its parent, **concepts.style1**. At this point, the two style definitions are identical:

Example Code 9.7 Using Style Definition Inheritance to Create a New Style Definition

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
   end;
run;
```

You can change the new style definition either independently of any other style definitions with a parent by simply overriding the style elements, or by using a style element from another parent style definition.

Creating a Style Element in a Style Definition with a Parent

□ *Creating a New Style Definition with a Parent*

You can control the style definition inheritance with the PARENT= attribute of the DEFINE STYLE statement. When you specify a parent for a style definition, all the style elements, attributes, and statements that are specified in the parent's definition are used in the new definition unless the new definition overrides them.

In this example, a new style element is added to **concepts.style2**. The following program adds **celldatasmall**, a style element that does not exist in the parent style definition. Its definition is not based on any other style element.

Example Code 9.8 Creating a Style Element Independently in a Style Definition with a Parent

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
```

```
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall /
         font_face=arial
         background=very light vivid blue
         foreground=blue
         font_style=italic
         font_weight=bold
         font_size=2;
   end;
run;
```

If you look at the attributes for **celldatasmall**, you can see that they match the attributes for **celldatalarge** in the parent style definition, except for FONT_SIZE=.

□ *Creating a Style Element from a Style Element in a Parent Definition*

Another way to create this new style element, is to create it from **celldatalarge**. You do this just as you did when you created a style element in a style definition that did not have a parent:

Example Code 9.9 Creating a New Style Element from a Style Element in the Parent Style Definition

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

When you specify the FROM option in the STYLE statement of a style definition with a parent, PROC TEMPLATE first searches in the child style definition for the style element that you specify . If no such style element exists, it searches in the parent style definition and continues searching up through the hierarchy of parents. In this case, because no style element called **celldatalarge** exists in **concepts.style2**, PROC TEMPLATE uses the style element from the parent style definition.

□ *Comparing the Style Element* **celldatasmall**

The style definition **concepts.style2** that is produced in program ❻ below is identical to the one that is produced in program ❼. In both cases, the style element **celldatasmall** has these attributes:

- □ FONT_FACE=arial (inherited from **celldatalarge** through **celldataemphasis** and **celldatasimple**)
- □ BACKGROUND=very light vivid blue (inherited from **celldatalarge** through **celldataemphasis** and **celldatasimple**)
- □ FOREGROUND=blue (inherited from **celldatalarge** through **celldataemphasis**)
- □ FONT_STYLE=italic (inherited from **celldatalarge** through **celldataemphasis**)
- □ FONT_WEIGHT=bold (inherited from **celldatalarge**)
- □ FONT_SIZE=2 (modified in **celldatasmall**).

Example Code 9.10 Program 6: Creating a Style Element Independently in a Style Definition with a Parent

```
❻proc template;
   define style concepts.style1;
      style celldatasimple/
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall /
         font_face=arial
         background=very light vivid blue
         foreground=blue
         font_style=italic
         font_weight=bold
         font_size=2;   end;
run;
```

Example Code 9.11 Program 7: Creating a New Style Element from a Style Element in the Parent Style Definition

```
❼proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
```

```
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

The following HTML output uses the style definition **concepts.style2**.

Display 9.8 Creating a New Style Element from a Style Element in the Parent Style Definition

The style definition **concepts.style2** contains four style elements. The style definition inherits **celldatasimple**, **celldataemphasis**, and **celldatalarge** from the parent style definition, **concepts.style1**. The column for **Country** uses **celldatasimple**. The column for **grain** uses **celldataemphasis**. The first column for **Kilotons** uses **celldatalarge**. The fourth style element in the new style definition is **celldatasmall**. This style element is created in **concepts.style2**. It inherits from **celldatalarge** in **concepts.style1**. The fourth column, which repeats the values for **Kilotons**, uses **celldatasmall**.

Country	Grain	Kilotons	Kilotons
Brazil	*Rice*	***10035***	***10035***
China	*Rice*	***190100***	***190100***
India	*Rice*	***120012***	***120012***
Indonesia	*Rice*	***51165***	***51165***
United States	*Rice*	***7771***	***7771***

Although program ❻ and program ❼ above produce the same style definition for **concepts.style2**, they will produce different style definitions if you change the definition of **celldatalarge** in the parent (or the definition of any of the style elements that **celldatalarge** inherits from). In program ❻, changes to **celldatalarge** do not affect **celldatasmall** because **celldatasmall** is created independently in the new style definition. It does not inherit from any style element in the parent style definition.

However, in program ❼, changes that you make to **celldatalarge** in the parent style definition do affect **celldatasmall** because **celldatasmall** inherits (and adds to) the attributes of **celldatalarge**. Similarly, changes to other style elements in the parent style definition do not affect **celldatasmall** in program ❻, but they do affect **celldatasmall** in program ❼.

For example, program❽ below is based on Creating a New Style Element from a Style Element in the Parent Style Definition on page 331. It changes the font in **celldatasimple** from Arial to Times. All the other style elements, in both the parent and the child style definitions, inherit this change. The program also changes the foreground color of **celldataemphasis** to black. The style elements **celldatalarge** (in the parent style definition) and **celldatasmall** (in the new style definition) both inherit this foreground color.

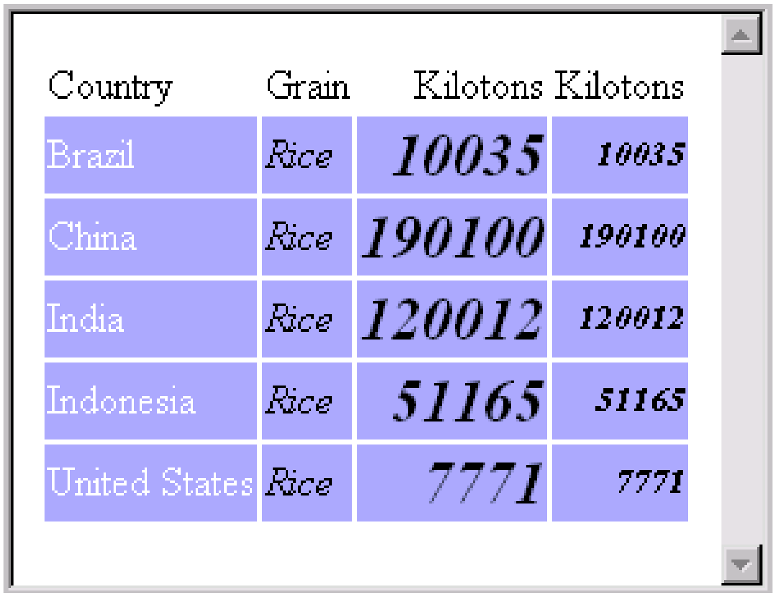
Example Code 9.12 Program 8: Inheriting Changes from Style Elements in the Parent Style Definition

```
❽proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=black
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;
proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

The following HTML output uses the new style definition created by program ❽.

Display 9.9 Inheriting Changes to the Parent Style Definition

Changes to the style elements in the parent style definition are passed to style elements that inherit from these elements in both the parent and the child style definitions.



Country	Grain	Kilotons	Kilotons
Brazil	Rice	10035	10035
China	Rice	190100	190100
India	Rice	120012	120012
Indonesia	Rice	51165	51165
United States	Rice	7771	7771

Creating a new style element in a style definition that has a parent is not very different from creating a new style element in a style definition that does not have a parent. The only difference is that the style element that you specify with FROM in the STYLE statement can be in either the parent or the child style definition.

Modifying Existing Style Elements with a Parent

When you create a new style definition from a parent style definition you can, in addition to adding new style elements, modify existing style elements. There are two ways to do this:

- change only the style element that you specify by using the STYLE statement
- change the style element that you specify and all the style elements that inherit from that element by using the REPLACE statement.

The following programs show the results of these methods.

- *Modifying a Style Element by Using the STYLE Statement*

  The following program uses the STYLE statement to redefine the style element **celldataemphasis** in **concepts.style2**. It changes the background color to white:

  Example Code 9.13 Redefining a Style Element with the STYLE Statement

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
```

```
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;
proc template:
   define style concepts.style2;
      parent=concepts.style1;
      style celldataemphasis from celldataemphasis /
         background=white;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

In this case, **celldataemphasis** in **concepts.style2** initially inherits all the attributes of **celldataemphasis** in **concepts.style1** because it is created from this style element. The inherited attributes are

- FONT_FACE=Arial (which **celldataemphasis** inherits from **celldatasimple**)
- BACKGROUND= very light vivid blue, (which **celldataemphasis** inherits from **celldatasimple**)
- FOREGROUND=white
- FONT_STYLE=italic.

The STYLE statement that creates **celldataemphasis** in **concepts.style1** changes the background color to white. The background color is the only difference between the **celldataemphasis** style elements in **concepts.style2** and **concepts.style1**.

But, what about **celldatalarge**in **concepts.style2**? The **celldatalarge** style element is not redefined in **concepts.style2**. It is defined only in**concepts.style1**, where it inherits all the attributes of **celldataemphasis**. So the question is, from which style definition is **celldataemphasis** inherited—from the parent style definition (**concepts.style1**), or from the child style definition (**concepts.style2**)? Is the white background inherited or not?

The answer is that the white background is not inherited because the STYLE statement that creates **celldataemphasis** in the **concepts.style2** affects only those style elements that inherit from **celldataemphasis** *and that are defined in the new style definition*. Because **celldatalarge** is defined only in **concepts.style1**, it does not inherit the changes that are specified in**concepts.style2**. Similarly, **celldatasmall** does not inherit the white background because it inherits the background from **celldatalarge**. The following HTML output uses this modified version of **concepts.style2**:

Display 9.10 Using the STYLE Statement to Alter an Existing Style Element in the Child Style Definition

A style element that is defined with the STYLE statement in the child style definition does not pass its attributes to style elements that inherit from the like-named style element in the parent style definition. In this case, the change of the background color for **celldataemphasis** is made in the child style definition. The new background color is not inherited by **celldatalarge** because although the background is inherited from **celldataemphasis**, the background is defined in the parent style definition, not the child definition. Nor is the change inherited by **celldatasmall**, which inherits all of its attributes from **celldatalarge** and from the parents of **celldatalarge**, which include **celldataemphasis** (as defined in the parent style definition) and **celldatasimple**.

Country	Grain	Kilotons	Kilotons
Brazil	Rice	10035	10035
China	Rice	190100	190100
India	Rice	120012	120012
Indonesia	Rice	51165	51165
United States	Rice	7771	7771

Now suppose that you want to pass the white background from **celldataemphasis** on to **celldatalarge** even though it is defined only in **concepts.style1**? You can do this by redefining **celldatalarge** in**concepts.style2** with a STYLE statement. This method works well when you are defining only a few style elements.

Example Code 9.14 Redefining a Style Element without Inheritance

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
```

```
   end;
run;
proc template:
   define style concepts.style2;
      parent=concepts.style1;
      style celldataemphasis from celldataemphasis /
         background=white;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

In this case, when PROC TEMPLATE processes the STYLE statement that creates **celldatalarge**, it looks for a style element named **celldataemphasis** to inherit from. Because there is such a style element in **concepts.style2**, PROC TEMPLATE uses that style element. (If there were no such element in **concepts.style2**, then PROC TEMPLATE would look for one in **concepts.style1** and use that one.) Therefore, **celldatalarge** inherits the new definition of **celldataemphasis**, which includes the white background. Similarly **celldatasmall**, which now inherits from **celldatalarge** in **concepts.style2**, inherits the white background.

- *Modifying a Style Element by Using the REPLACE Statement*

Now suppose that you have a large number of style elements that are inherited from **celldataemphasis**. It would be time-consuming to redefine all of them in**concepts.style2**.

Fortunately, there is a way to redefine **celldataemphasis** so that the changes are passed on to style elements that inherit from it. With PROC TEMPLATE you can choose whether you want to pass the new style attributes on to descendants or not.

To make a change in a child style definition that is passed in turn to the style elements that are defined in the parent, and that inherit from the style element that you redefine in the child style definition, then use the REPLACE statement. You can only use the REPLACE statement if you have specified a parent style definition. The following program changes the background color of **celldataemphasis** by using a REPLACE statement. You can think of this REPLACE statement as replacing the statement that defines the like-named style element in **concepts.style1**. The REPLACE statement does not actually change the **concepts.style1**, but PROC TEMPLATE builds **concepts.style2** as if it had changed **concepts.style1**.

Example Code 9.15 Redefining a Style Element with the REPLACE Statement

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
```

```
         font_weight=bold
         font_size=5;
   end;
run;

proc template:
   define style concepts.style2;
      parent=concepts.style1;       replace celldataemphasis from celldatasimple /
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
```

This is how PROC TEMPLATE constructs **concepts.style2**:

1 The PARENT= attribute makes **concepts.style1** the basis of the new style definition, **concepts.style2**. **concepts.style2** contains all the style elements that **concepts.style1**contains: **celldatasimple**, **celldataemphasis**, and **celldatalarge**.

2 **concepts.style2** does nothing to **celldatasimple**. Therefore, in **concepts.style2**, **celldatasimple** is the same as it is in **concepts.style1**.

3 The REPLACE statement essentially replaces the definition of **celldataemphasis** in **concepts.style1** while **concepts.style2** is being created. (It does not really alter **concepts.style1**, but **concepts.style2** is created as if it had.) Thus, not only does **celldataemphasis** now exist in **concepts.style2**, but also every style element that **concepts.style2** inherits from **concepts.style1** is based on the replaced definition.

A description of each style element in **concepts.style2** follows:

celldatasimple
is not redefined in **concepts.style2**. Nor does it inherit from any other style element. Therefore, it has the same attributes as **celldatasimple** in **concepts.style1**:

- FONT_FACE=arial
- BACKGROUND=very light vivid blue
- FOREGROUND=white.

celldataemphasis
is defined in **concepts.style2**. It inherits from **celldatasimple**, so initially it has these attributes:

- FONT_FACE=arial
- BACKGROUND=very light vivid blue
- FOREGROUND=white.

However, the REPLACE statement that creates **celldataemphasis** specifies a foreground color, a background color, and a font style. The foreground and background color specifications override the inherited attributes. Therefore, the final list of attributes for **celldataemphasis** is

- FONT_FACE=arial
- BACKGROUND=white
- FOREGROUND=blue
- FONT_STYLE=italic.

celldatalarge
is not redefined in **concepts.style2**. Therefore, **concepts.style2** uses the same definition as **concepts.style1** uses. The definition of **celldatalarge** is from **celldataemphasis**. Because **celldataemphasis** was created in **concepts.style2** with a REPLACE statement, **celldatalarge** inherits the following attributes from the replaced definition of **celldataemphasis**:

- FONT_FACE=arial (from **concepts.style1**)
- BACKGROUND=white (from **concepts.style2**)
- FOREGROUND=blue (from **concepts.style2**)
- FONT_STYLE=italic (from **concepts.style2**).

The definition of **celldatalarge** from **concepts.style1** adds these attributes:

- FONT_WEIGHT=bold (from **concepts.style1**)
- FONT_SIZE=5 (from **concepts.style1**).

celldatasmall
exists only in **concepts.style2**. It is created from **celldatalarge**. PROC TEMPLATE first looks for **celldatalarge** in **concepts.style2**, but because it does not exist, it uses the definition in the parent style definition. Therefore, **celldatasmall** is just like **celldatalarge** except that the font size of 2 replaces the font size of 5. The final list of attributes for **celldatasmall** is

- FONT_FACE=arial
  BACKGROUND=while
  FOREGROUND=blue
  FONT_STYLE=italic
  FONT_SIZE=2

The following HTML output uses this new style definition, **concepts.style2**:

Display 9.11 Using the REPLACE Statement to Alter a Style Element and Its Children

Country	Grain	Kilotons	Kilotons
Brazil	Rice	10035	10035
China	Rice	190100	190100
India	Rice	120012	120012
Indonesia	Rice	51165	51165
United States	Rice	7771	7771

Summary of Style Element Inheritance in a Style Definition with a Parent

The following points summarize style element inheritance in a style definition that has a parent:

- You can create a new style element from any style element in the parent or the child style definition.
- If you create a style element from another style element, then PROC TEMPLATE first looks in the current style definition for that element. If the style definition does not contain such an element, then PROC TEMPLATE looks in the parent (and in parent's parent, and so on).
- A new style element inherits all the attributes from its parent.
- You can specify additional attributes in the new style definition. The attributes are added to the attributes that the element inherits.
- You can change the value of an inherited attribute by respecifying it in the definition of the new style element.
- If you want to create a style element in the new style definition, then you must use the STYLE statement or the REPLACE statement
  - In the STYLE statement, you are creating a new style element. Only those style elements that explicitly inherit their attributes from the style element that you created inherit the changes. All other style elements inherit their attributes from the parent style definition.
  - In the REPLACE statement, you are replacing the like–named style element from the parent style definition in the new style definition. The REPLACE statement does not change the parent style definition. All style elements that inherit attributes from the style elements that inherit style elements that you created, inherit only the attributes that you specified in the REPLACE statement. All other attributes specified in the parent style definition are not used unless you specify them again in the style element that you created.

Examples: Creating and Modifying Styles Using the TEMPLATE Procedure

Example 1: Creating a Stand-Alone Style Definition

PROC TEMPLATE features:

- DEFINE STYLE statement
  - STYLE statement
    - BACKGROUND=
    - BORDERWIDTH=
    - CELLSPACING=
    - FONT_FACE=
    - FONT_SIZE=
    - FONT_STYLE=
    - FONT_WEIGHT=
    - FOREGROUND=
- DEFINE TABLE statement
  - CLASSLEVELS= table attribute
  - DYNAMIC statement
  - MVAR statement
- DEFINE COLUMN statement
  - BLANK_DUPS=
  - GENERIC=
  - HEADER=
  - STYLE=
- DEFINE FOOTER statement
  - TEXT statement

Other ODS features:

- ODS HTML statement
- ODS LISTING statement
- FILE statement with ODS= option
- PUT statement with _ODS_ argument

Data set: GRAIN_PRODUCTION on page 97

Format: $CNTRY. on page 98

Program Description

This example creates a style definition that is not based on any other style definition. When you create a style definition, you will usually base it on one of the definitions that SAS provides (see Example 3 on page 355). However, this example is provided to show you some of the basic ways to create a style definition.

It is important to understand that by default, certain table elements are created with certain style elements. For example, unless you specify a different style element with the STYLE= attribute, ODS produces SAS titles with the **systemtitle** style element. Similarly, unless you specify otherwise, ODS produces headers with the **header** style element. (For information about each style element, see Appendix 4, “HTML, Printer Family, and Markup Languages Style Elements and Their Inheritances,” on page 651.

Program

Create a new style definition *newstyle* with the style element *cellcontents*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE STYLE statement creates a new style definition called **newstyle**. This STYLE statement defines the style element **cellcontents**. This style element is composed of the style attributes that appear on the STYLE statement. The FONT_FACE= attribute tells the browser to use the Arial font if it is available, and to look for the Helvetica font if Arial is not available.

```
proc template;
   define style newstyle;
      style cellcontents /
         background=blue
         foreground=white
         font_face="arial, helvetica"
         font_weight=medium
         font_style=roman
         font_size=4;
```

Create the style element *header*. This STYLE statement creates the style element **header**. By default, ODS uses **header** to produce both spanning headers and column headers. This style element uses different foreground and background colors from **cellcontents**. It uses the same font (Arial or Helvetica) and the same font style (roman) as **cellcontents**. However, it uses a bold font weight and a large font size.

```
      style header /
         background=very light blue
         foreground=blue
         font_face="arial, helvetica"
         font_weight=bold
         font_style=roman
         font_size=5;
```

Create the style element *systemtitle*. This STYLE statement creates the style element **systemtitle**. By default, ODS uses **systemtitle** to produce SAS titles. This style element uses a color scheme of a red foreground on a white background. It uses the same font and font weight as **header**, but it adds an italic font style and uses a larger font size.

```
      style systemtitle /
         background=white
         foreground=red
         font_face="arial, helvetica"
         font_weight=bold
         font_style=italic
         font_size=6;
```

Create the style element *footer*. This STYLE statement creates the style element **footer**. This style element inherits all the attributes of **systemtitle**. However, the font size that it inherits is overwritten by the FONT_SIZE= attribute in its definition.

```
      style footer from systemtitle /
         font_size=3;
```

Create the style element *table*. This STYLE statement creates the style element **`table`**. By default, ODS uses this style element to display tables.

```
      style table /
         cellspacing=5
         borderwidth=10;
```

End the style definition. The END statement ends the style definition. The RUN statement executes the TEMPLATE procedure.

```
   end;
run;
```

Create the table definition *table1*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE TABLE statement creates a new table definition called **`table1`**.

```
proc template;
   define table table1;
```

Specify the symbol that references one macro variable. The MVAR statement defines a symbol, **`sysdate9`**, that references a macro variable. ODS will use the value of this macro variable as a string. References to the macro variable are resolved when ODS binds the table definition to the data component to produce an output object. SYSDATE9 is an automatic macro variable whose value is always available.

```
   mvar sysdate9;
```

Specify the symbol that references a value to be supplied by the data component. The DYNAMIC statement defines a symbol, **`colhd`**, that references a value that the data component supplies when ODS binds the definition and the data component to produce an output object. The values for **`colhd`** are provided in the FILE statement in the DATA step that appears later in the program. Using dynamic column headers gives you more flexibility than does hard-coding the headers in the table definition.

```
   dynamic colhd;
```

Control the repetition of values that do not change from one row to the next row. The CLASSLEVELS= attribute suppresses the display of the value in a column that is marked with BLANK_DUPS=ON if the value changes in a previous column that is also marked with BLANK_DUPS=ON. Because BLANK_DUPS= is set in a generic column, you should set this attribute as well.

```
   classlevels=on;
```

Create the column *char_var*. This DEFINE statement and its attributes create the column definition **`char_var`**.

GENERIC= specifies that multiple variables can use the same column definition.

BLANK_DUPS= suppresses the display of the value in the column if it does not change from one row to the next (and, because CLASSLEVELS=ON for the table, if no values in preceding columns that are marked with BLANK_DUPS=ON changes).

HEADER= specifies that the header for the column will be the text of the dynamic variable COLHD, whose value will be set by the data component.

The STYLE= attribute specifies that the style element for this column definition is **`cellcontents`**.

The END statement ends the definition.

```
   define column char_var;
      generic=on;
      blank_dups=on;
      header=colhd;
      style=cellcontents;
   end;
```

Create the column definition *num_var*. This DEFINE statement and its attributes create the column definition **`num_var`**. GENERIC= specifies that multiple variables can use the same column definition. HEADER= specifies that the header for the column will be the text of the dynamic variable COLHD, whose value will be set by the data component.

The STYLE= attribute specifies that the style element for this column definition is **`cellcontents`**.

The END statement ends the definition.

```
   define column num_var;
      generic=on;
      header=colhd;
      style=cellcontents;
   end;
```

Create the footer element *table_footer*. The DEFINE statement and its substatement define the table element **`table_footer`**. The FOOTER argument declares **`table_footer`** as a footer. The TEXT statement specifies the text of the footer. When ODS binds the data component to the table definition (in the DATA step that follows), it will resolve the value of the macro variable SYSDATE9.

```
   define footer table_footer;
      text 'Prepared on ' sysdate9;
   end;
```

End the table definition. This END statement ends the table definition. The RUN statement executes the PROC TEMPLATE step.

```
   end;
run;
```

Stop the creation of the listing output. The ODS LISTING statement closes the Listing destination in order to conserve resources. The Listing destination is open by default.

```
ods listing close;
```

Create HTML output and specify the location for storing the HTML output. Specify the style definition that you want to use for the output. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **newstyle-body.htm** in the current directory. The STYLE= option tells ODS to use **newstyle** as the style definition when it formats the output.

```
ods html body='newstyle-body.htm'
         style=newstyle;
```

Specify the titles for the report. The TITLE statements provide two titles for the output.

```
   title 'Leading Grain Producers';
   title2 'in 1996';
```

Create the data component. This DATA step does not create a data set. Instead, it creates a data component and, eventually, an output object.

The SET statement reads the data set GRAIN_PRODUCTION. The WHERE statement subsets the data set so that the output object contains information only for rice and corn production in 1996.

```
data _null_;
   set grain_production;
   where type  in ('Rice', 'Corn') and year=1996;
```

Route the DATA step results to ODS and use the *table1* table definition. The combination of the fileref PRINT and the ODS option in the FILE statement routes the results of the DATA step to ODS. (For more information about using the DATA step with ODS, see Chapter 3, "Output Delivery System and the DATA Step," on page 39.) The TEMPLATE= suboption tells ODS to use the table definition named **table1**, which was previously created with PROC TEMPLATE.

```
   file print ods=(
        template='table1'
```

Specify the column definition to use for each variable. The COLUMNS= suboption places DATA step variables into columns that are defined in the table definition. For example, the first *column-specification* specifies that the first column of the output object contains the values of the variable COUNTRY and that it uses the column definition named **char_var**. GENERIC= must be set to ON in both the table definition and each column assignment in order for multiple variables to use the same column definition. The FORMAT= suboption specifies a format for the column. The DYNAMIC= suboption provides the value of the dynamic variable COLHD for the current column. Notice that for the first column the column header is **Country**, and for the second column, which uses the same column definition, the column header is **Year**.

```
        columns=(
           char_var=country(generic=on format=$cntry.
                    dynamic=(colhd='Country'))
           char_var=type(generic dynamic=(colhd='Year'))
           num_var=kilotons(generic=on format=comma12.
                   dynamic=(colhd='Kilotons'))
           )
        );
```

Write the data values to the data component. The _ODS_ option and the PUT statement write the data values for all columns to the data component. The RUN statement executes the DATA step.

```
   put _ods_;
run;
```

Stop the creation of the HTML output and create the listing output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser. The ODS LISTING statement opens the Listing destination to return ODS to its default setup.

```
ods html close;
ods listing;
```

HTML Output: Specifying Colors and Fonts with User-Defined Attributes

Display 9.12 HTML Output (Viewed with Microsoft Internet Explorer)

You can use the fonts to confirm that SAS titles use the **`systemtitle`** style element, that column headers use the **`header`** style element, that the footer uses the **`table-footer`** style element, and that the contents of both character and numeric cells use the **`cellcontents`** style element. Use the width of the table border and the spacing between cells to confirm that the table itself is produced with the **`table`** style element.

Leading Grain Producers in 1996

Country	Year	Kilotons
Brazil	Corn	31,975
	Rice	10,035
China	Corn	119,350
	Rice	190,100
India	Corn	8,660
	Rice	120,012
Indonesia	Corn	8,925
	Rice	51,165
United States	Corn	236,064
	Rice	7,771

Prepared on 07APR2003

Example 2: Creating and Modifying a Style Definition with User-Defined Attributes

PROC TEMPLATE features:

- DEFINE STYLE statement
  - STYLE statement with user-defined attributes
  - DEFINE TABLE statement
    - CLASSLEVELS= table attribute
    - DYNAMIC statement
    - MVAR statement
  - DEFINE COLUMN statement
    - BLANK_DUPS=
    - GENERIC=
    - HEADER=
    - STYLE=
- DEFINE COLUMN statement
  - BLANK_DUPS= attribute
  - CELLSTYLE-AS statement
  - GENERIC= attribute
- DEFINE FOOTER statement
  - TEXT statement

Other ODS features:

- ODS HTML statement
- ODS LISTING statement
- FILE statement with ODS= option
- PUT statement with _ODS_ argument

Data set: GRAIN_PRODUCTION“Program” on page 97.

Format: $CNTRY. on page 98

Program 1: Description

This example creates a style definition that is equivalent to the style definition that Example 1 on page 342creates. However, this style definition uses user-defined attributes to specify colors and fonts. This technique makes it possible to easily make changes in multiple places in your output.

Program 1: Creating the Style Definition

Create the style definition *newstyle2*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE STYLE statement creates a new style definition called **`newstyle2`**. This STYLE statement defines the style element **`fonts`**.

This style element is composed of three user-defined attributes: **`cellfont`**, **`headingfont`**, and **`titlefont`**. Each of these attributes describes a font. This style definition specifies the font_face, font_size, font_weight, and the font_style for each of the three attributes. The font and font_width attributes are still defined by the default style definition.

```
proc template;
   define style newstyle2;
      style fonts /
         "cellfont"=("arial, helvetica", 4, medium roman)
         "headingfont"=("arial, helvetica", 5, bold roman)
         "titlefont"=("arial, helvetica", 6, bold italic);
```

Create the style element *colors*. This STYLE statement defines the style element **colors**. This style element is composed of four user-defined attributes: **light**, **medium**, **dark**, and **bright**. The values for **medium** and **dark** are RGB values equivalent to very light blue and blue.

```
      style colors /
         "light"=white
         "medium"=cxaaaaff
         "dark"=cx0000ff
         "bright"=red;
```

Create the three style elements: *cellcontents*, *header*, and *systemtitle*. Create the style element*footer* using inheritance. The style attributes are defined in terms of the user-defined attributes that were created earlier in the style definition. For example, the foreground color in **cellcontents** is set to **colors("light")**. Looking at the definition of **colors**, you can see that this is white. However, by setting the colors up in a style element with user-defined attributes, you can change the color of everything that uses a particular color by changing a single value in the style element **colors**.

```
      style cellcontents /
         background=colors("dark")
         foreground=colors("light")
         font=fonts("cellfont");
      style header /
         background=colors("medium")
         foreground=colors("dark")
         font=fonts("headingfont");
      style systemtitle /
         background=colors("light")
         foreground=colors("bright")
         font=fonts("titlefont");
      style footer from systemtitle /
         font_size=3;
      style table /
         cellspacing=5
         borderwidth=10;
```

End the style definition. The END statement ends the style definition. The RUN statement executes PROC TEMPLATE.

```
   end;
run;
```

Create the table definition *table1*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE TABLE statement creates a new table definition called **table1**.

```
proc template;
   define table table1;
```

Specify the symbol that references one macro variable. The MVAR statement defines a symbol, **sysdate9**, that references a macro variable. ODS will use the value of this macro variable as a string. References to the macro variable are resolved when ODS binds the table definition to the data component to produce an output object. SYSDATE9 is an automatic macro variable whose value is always available.

```
mvar sysdate9;
```

Specify the symbol that references a value to be supplied by the data component. The DYNAMIC statement defines a symbol, **colhd**, that references a value that the data component supplies when ODS binds the definition and the data component to produce an output object. The values for **colhd** are provided in the FILE statement in the DATA step that appears later in the program. Using dynamic column headers gives you more flexibility than hard-coding the headers in the table definition does.

```
dynamic colhd;
```

Control the repetition of values that do not change from one row to the next row. The CLASSLEVELS= attribute suppresses the display of the value in a column that is marked with BLANK_DUPS=ON if the value changes in a previous column that is also marked with BLANK_DUPS=ON. Because BLANK_DUPS= is set in a generic column, you should set this attribute as well.

```
classlevels=on;
```

Create the column *char_var*. This DEFINE statement and its attributes create the column definition **char_var**.

GENERIC= specifies that multiple variables can use the same column definition.

BLANK_DUPS= suppresses the display of the value in the column if it does not change from one row to the next (and, because CLASSLEVELS=ON for the table, if no values in preceding columns that are marked with BLANK_DUPS=ON changes).

HEADER= specifies that the header for the column will be the text of the dynamic variable COLHD, whose value will be set by the data component.

The STYLE= attribute specifies that the style element for this column definition is **cellcontents**.

The END statement ends the definition.

```
define column char_var;
   generic=on;
   blank_dups=on;
   header=colhd;
   style=cellcontents;
end;
```

Create the column *num_var*. This DEFINE statement and its attributes create the column definition **num_var**. GENERIC= specifies that multiple variables can use the same column definition.

HEADER= specifies that the header for the column will be the text of the dynamic variable COLHD, whose value will be set by the data component.

The STYLE= attribute specifies that the style element for this column definition is **cellcontents**.

The END statement ends the definition.

```
define column num_var;
   generic=on;
```

```
      header=colhd;
      style=cellcontents;
   end;
```

Create the footer element *table_footer*. The DEFINE statement and its substatement define the table element **table_footer**. The FOOTER argument declares **table_footer** as a footer. The TEXT statement specifies the text of the footer. When ODS binds the data component to the table definition (in the DATA step that follows), it will resolve the value of the macro variable SYSDATE9.

```
   define footer table_footer;
      text 'Prepared on ' sysdate9;
   end;
```

End the table definition. This END statement ends the table definition. The RUN statement executes the PROC TEMPLATE step.

```
   end;
run;
```

Stop the creation of the listing output. The ODS LISTING statement closes the Listing destination to conserve resources. The Listing destination is open by default.

```
ods listing close;
```

Create the HTML output and specify the style definition that you want to use for the output. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **newstyle2-body.htm** in the current directory. The STYLE= option tells ODS to use **newstyle2** as the style definition when it formats the output.

```
ods html body='newstyle2-body.htm'
         style=newstyle2;
```

Specify the titles for the report. The TITLE statements provide two titles for the output.

```
   title 'Leading Grain Producers';
   title2 'in 1996';
```

Create the data component. This DATA step does not create a data set. Instead, it creates a data component and, eventually, an output object.

The SET statement reads the data set GRAIN_PRODUCTION. The WHERE statement subsets the data set so that the output object contains information only for rice and corn production in 1996.

```
data _null_;
   set grain_production;
   where type  in ('Rice', 'Corn') and year=1996;
```

Route the DATA step results to ODS and use the *table1* table definition. The combination of the fileref PRINT and the ODS option in the FILE statement routes the results of the DATA step to ODS. (For more information about using the DATA step with ODS, see Chapter 3, "Output Delivery System and the DATA Step," on page 39. The TEMPLATE= suboption tells ODS to use the table definition named **table1**, which was previously created with PROC TEMPLATE.

```
   file print ods=(
        template='table1'
```

Specify the column definition to use for each variable. The COLUMNS= suboption places DATA step variables into columns that are defined in the table definition. For example, the first *column-specification* specifies that the first column of the output object contains the values of the variable COUNTRY and that it uses the column definition named **char_var**. GENERIC= must be set to ON in both the table definition and each column assignment in order for multiple variables to use the same column definition. The FORMAT= suboption specifies a format for the column. The DYNAMIC= suboption provides the value of the dynamic variable COLHD for the current column. Notice that for the first column the column header is **Country**, and for the second column, which uses the same column definition, the column header is **Year**.

```
         columns=(
            char_var=country(generic=on format=$cntry.
                     dynamic=(colhd='Country'))
            char_var=type(generic dynamic=(colhd='Year'))
            num_var=kilotons(generic=on format=comma12.
                    dynamic=(colhd='Kilotons'))
            )
         );
```

Write the data values to the data component. The _ODS_ option and the PUT statement write the data values for all columns to the data component. The RUN statement executes the DATA step.

```
   put _ods_;
run;
```

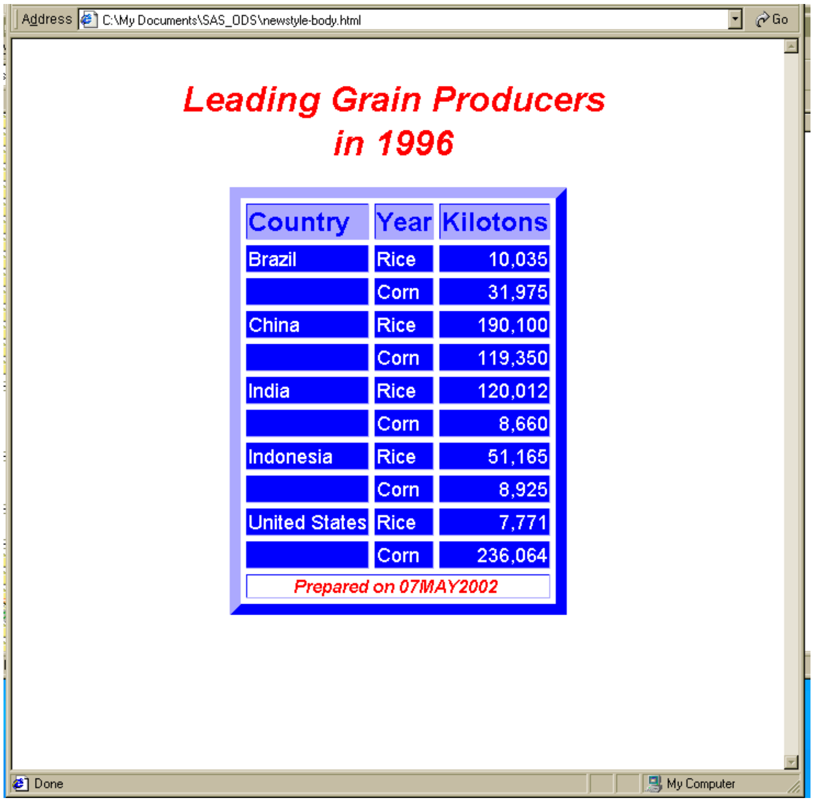
Stop the creation of the HTML output and create the listing output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser. The ODS LISTING statement opens the Listing destination to return ODS to its default setup.

```
ods html close;
ods listing;
```

Original HTML Output

Display 9.13 HTML Output (Viewed with Microsoft Internet Explorer)

This HTML output is identical to "HTML Output: Specifying Colors and Fonts with User-Defined Attributes" on page 347, which was produced with a style definition that used predefined style attributes. You can use the fonts to confirm that SAS titles use the **systemtitle** style element, that column headers use the **header** style element, that the footer uses the **table-footer** style element, and that the contents of both character and numeric cells use the **cellcontents** style element. Use the width of the table border and the spacing between cells to confirm that the table produced with the **table** style element.



Country	Year	Kilotons
Brazil	Rice	10,035
	Corn	31,975
China	Rice	190,100
	Corn	119,350
India	Rice	120,012
	Corn	8,660
Indonesia	Rice	51,165
	Corn	8,925
United States	Rice	7,771
	Corn	236,064
Prepared on 07MAY2002		

Program 2: Description

In the program Example 1 on page 342, if you want to change the color scheme so that the blues are replaced by pink and red, then you must change each occurrence of "blue" and "very light blue." In this program, because colors are defined as user-defined attributes, you need to make the change only once.

Program 2: Changing User-Defined Attributes

To make the color scheme change, you need to change only the following section of code:

```
style colors /
   "light"=white
   "medium"=cxaaaaff
   "dark"=cx0000ff
   "bright"=red;
```

Change the attributes as follows:

```
style colors /
   "light"=white
   "medium"=pink
   "dark"=red
   "bright"=red;
```

Similarly, to change the font in any style element that uses **`cellfont`**, you can change the following section of code:

```
"cellfont"=("arial, helvetica", 4, medium roman)
```

Here is one example of how you can change the code:

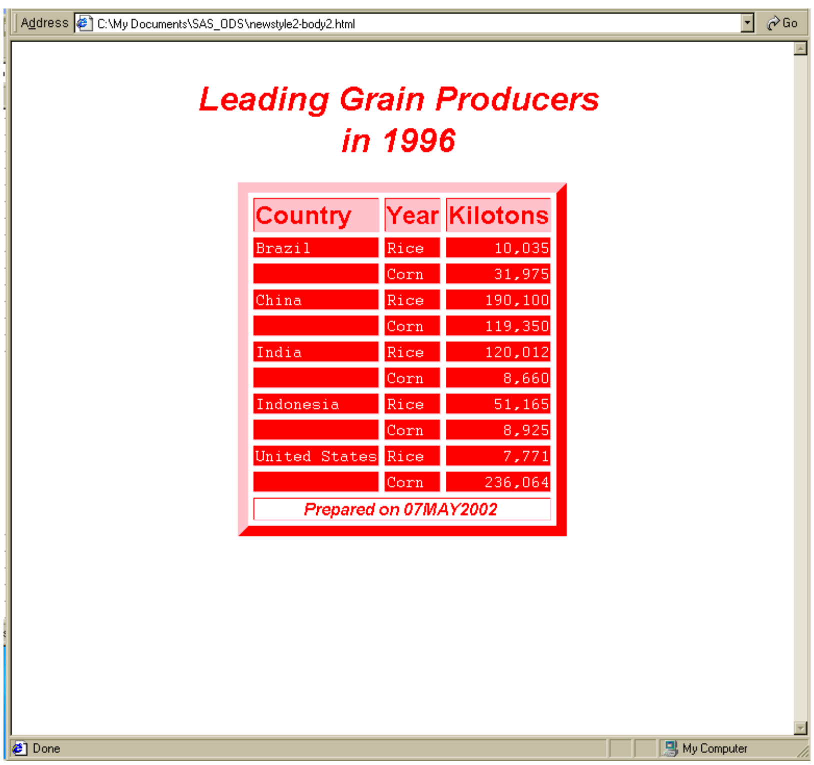
```
"cellfont"=("courier, arial, helvetica", 4, medium roman)
```

The following HTML output shows the results of running the same program with these changes.

HTML Output: Changing Colors and Fonts of User-Defined Attributes

Display 9.14 HTML Output with Changed Colors and Fonts (Viewed with Microsoft Internet Explorer)

You can see that the font that is used in the cells is now Courier. This change occurs in multiple places even though you made only one change to the code for the font.



Country	Year	Kilotons
Brazil	Rice	10,035
	Corn	31,975
China	Rice	190,100
	Corn	119,350
India	Rice	120,012
	Corn	8,660
Indonesia	Rice	51,165
	Corn	8,925
United States	Rice	7,771
	Corn	236,064

Prepared on 07MAY2002

Example 3: Modifying the Default Style Definition for the HTML and Markup Languages

PROC TEMPLATE features:

- DEFINE STYLE statement
  - PARENT= attribute
  - REPLACE statement
  - style attributes
    - user-defined attributes
    - BACKGROUND=
    - BORDERWIDTH=
    - CELLPADDING=
    - CELLSPACING=
    - FONT=
    - FONT_STYLE=
    - FOREGROUND=
    - FRAME=
    - POSTHTML=
    - RULES=

Other ODS features:

- ODS HTML statement
  - STYLE= option
- ODS LISTING statement
- ODS PATH statement

Data set: ENERGY“Program” on page 138

Formats: DIVFMT. and USETYPE. on page 139

Program 1: Description

When you are working with style definitions, you are more likely to modify a SAS style definition than to write a completely new style definition. This example shows you how to make changes to the default style definition for the HTML destination. The new style definition affects both the contents file and the body file in the HTML output. In the contents file, the modified style definition makes changes to the following:

- the text of the header and the text that identifies the procedure that produced the output
- the colors for some parts of the text
- the font size of some parts of the text
- the spacing in the list of entries in the table of contents.

In the body file, the modified style definition makes changes to the following:

- two of the colors in the color list. One of these colors is used as the foreground color for the table of contents, the byline, and column headers. The other is used for the foreground of many parts of the body file, including SAS titles and footnotes.
- the font size for titles and footnotes
- the font style for headers
- the presentation of the data in the table by changing attributes such as cellspacing, rules, and border width.

Note: Remember that when a STYLE statement creates a style element in the new style definition, only style elements that explicitly inherit from that style element in the new definition will inherit the change. When a REPLACE statement creates a style element in the new style definition, all style elements that inherit from that element inherit the definition that is in the new style definition, so the change appears in all children of the element. △

Program 1: Using the Default Style Definition with PROC PRINT

Specify the search path in order to locate the table definition. This statement specifies which locations to search for definitions that were created by PROC TEMPLATE, as well as the order in which to search for them. The statement is included to ensure that the example works correctly. However, if you have not changed the path, then you do not need to include this statement because it specifies the default path.

```
ods path sasuser.templat(update) sashelp.tmplmst(read);
```

Stop the creation of the listing output. The ODS LISTING statement closes the Listing destination to conserve resources. The Listing destination is open by default.

```
ods listing close;
```

Create the HTML output and specify the name of the HTML file. Specify the style definition that you want to use for the output. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC PRINT is sent to the body file. FRAME= and CONTENTS= create a frame that includes a table of contents that links to the contents of the body file. The body file also appears in the frame.

The STYLE= option tells ODS to use **styles.default** as the style definition when it formats the output. Strictly speaking, this option is unnecessary because it specifies the default style definition, but it is included for clarity.

```
ods html body='sasdefaultstyle-body.htm'
         contents='sasdefaultstyle-content.htm'
         frame='sasdefaultstyle-frame.htm'
         style=styles.default;
```

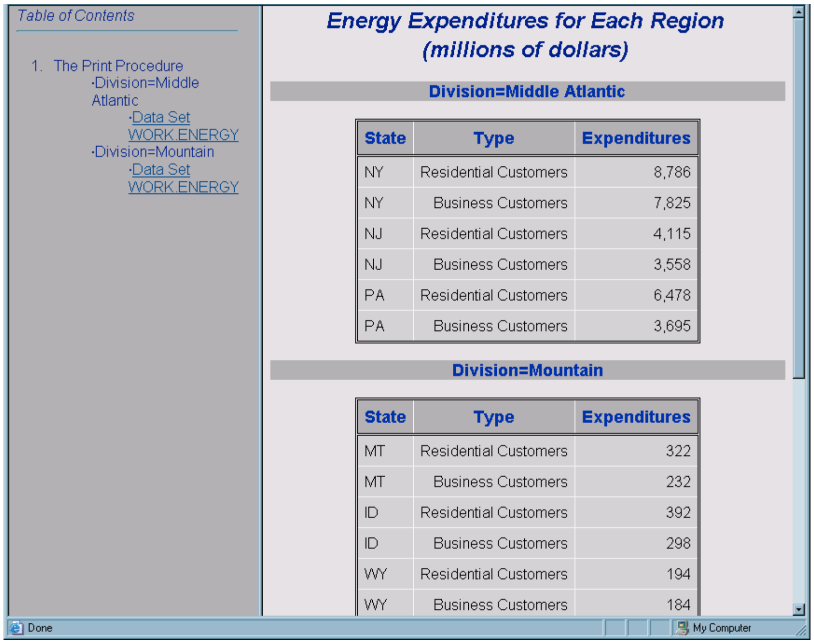
Specify the titles and footnote for the report. The TITLE and FOOTNOTE statements provide two titles and a footnote for the output. The FOOTNOTE statement uses double rather than single quotes so that the macro variable resolves.

```
title 'Energy Expenditures for Each Region';
title2 '(millions of dollars)';
footnote "Report prepared on &sysdate9";
```

Print the report. PROC PRINT creates a report that includes three variables. ODS writes the report to the BODY file.

```
proc print data=energy noobs;
   var state type expenditures;
   format division divfmt. type usetype. expenditures comma12.;
   by division;
   where division=2 or division=3;
run;
```

Display 9.15 HTML Output from PROC PRINT Using the Default Style Definition



Program 2: Modifying the Default Style Definition and Using It with PROC PRINT

Create the style definition *customdefault*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE STYLE statement creates a new style definition called **`customdefault`**.

```
proc template;
  define style customdefault;
```

Specify the parent style definition from which the *customdefault*style definition inherits its attributes. The PARENT= attribute specifies *styles.default* as the style definition from which the current style definition inherits. All the style elements, attributes, and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

```
    parent=styles.default;
```

Change the attributes of the style element *color_list*. This REPLACE statement adds to the child style definition the style element *color_list*, which also exists in the parent style definition. You can think of the REPLACE statement as replacing the definition of *color_list* in the parent style definition. The REPLACE statement does not actually change the parent style definition, but PROC TEMPLATE builds the child style definition as if it had changed the parent. All style elements that use the user-defined attributes that *color_list* defines (**`fgB2`**, **`fgB1`**, etc.) use the attributes that are specified in the REPLACE statement, not the ones that are specified in *styles.default*. Therefore, if you change a color here, then you change every occurrence of the color in the HTML output. This REPLACE statement changes the values of **`fgA2`** and**`fgA`** from a greenish blue to a pure blue and from a slightly darker greenish blue to a purple. (The first two digits of the hex value represent red, the next two represent green, and the last two represent blue.)

```
    replace color_list /
       'fgB2' = cx0066AA
```

```
      'fgB1' = cx004488
      'fgA4' = cxAAFFAA
      'bgA4' = cx880000
      'bgA3' = cxD3D3D3
 /* changed from cx0033AA */
      'fgA2' = cx0000FF
      'bgA2' = cxB0B0B0
      'fgA1' = cx000000
      'bgA1' = cxF0F0F0
/* changed from cx002288 */
      'fgA' = cx660099
      'bgA' = cxE0E0E0;
```

Change the attributes of the style element *titlesandfooters*. This REPLACE statement adds to the child style definition the style element *titlesandfooters*, which also exists in the parent style definition. The new definition does not inherit attributes from any style element, but it will pass its attributes to any style element that inherits from **titlesandfooters** or from a child of **titlesandfooters**. This style element uses **systitlefg** and **systitlebg** for colors, but it changes the font size from the relative size of 4 that is specified in **titlefont2** to a relative size of 3. As a result, the titles and footnotes in Display 9.16 on page 361 are smaller than the ones in Display 9.15 on page 357.

```
replace titlesandfooters /
   foreground=colors("systitlefg")
   background=colors("systitlebg")
   font=fonts("titlefont2") font_size=3;
```

Change the attributes of the style element *byline*. Specify that the style element *byline* inherits its attributes from the *titlesandfooters* style element. This REPLACE statement adds to the child style definition the style element **byline**, which also exists in the parent style definition. This style element inherits all attributes from **titlesandfooters** as it is specified in the previous REPLACE statement. Therefore, the initial definition for the byline includes the foreground and background colors that are used for system titles, and a smaller version of **titlefont2**. However, the FOREGROUND= attribute replaces the foreground color with the foreground color that is used for headers. Note that in the default style definition, the background color for the byline differs from the background color for the document, so it appears as a gray stripe in Display 9.15 on page 357. In this customized style definition, the stripe disappears because the background color for the byline and the document are the same.

```
replace byline from titlesandfooters /
   foreground=colors("headerfg");
```

Change one attribute in the style definition *header*. This STYLE statement adds the italic font style to the attributes that **header** inherits from the **header** style element that is defined in the parent style definition. The change does not affect **headerfixed** and the other style elements that inherit from **header** in the parent style definition.

```
style header from header /
   font_style=italic;
```

Customize the text that is used in parts of the output. This REPLACE statement alters the text that is used in parts of the HTML output. In the contents file, the default style definition uses “The” as the value of **prefix1** and “Procedure” as the value of **suffix1**. Thus, in HTML output that uses the default style definition, the output from PROC PRINT is identified by “1. The PRINT Procedure” (see Display 9.15 on page 357). In the customized style definition, the text that identifies the output reads “1. PROC PRINT”. The heading that appears at the top of the contents file has been changed from “Table of Contents” to “Contents”, and the heading at the top of the table of pages has been changed from “Table of Pages” to “Pages”. The banners have been changed to use mixed case. (Note that neither these banners nor the table of pages is visible in the HTML output from this example, but the attributes are included so that you can use the style definition in a variety of circumstances.)

```
replace text /
   "prefix1" = "PROC "
   "suffix1" = ":"
   "Content Title" = "Contents"
   "Pages Title" = "Pages"
   "Note Banner" = "Note:"
   "Warn Banner" = "Warning:"
   "Error Banner" = "Error:"
   "Fatal Banner" = "Fatal:"
   ;
```

Customize the presentation of the HTML table that contains the output from PROC PRINT. This STYLE statement changes the presentation of the HTML table that contains the output from PROC PRINT. The background color, the kind of box that surrounds the table, and the cell padding remain the same as in **styles.default**, but all the other attributes are changed. RULES=COLS draws rules only between the columns of the table. CELLSPACING=0 removes the spacing between the cells of the table so that the data appear on a continuous background. BORDERWIDTH= increases the width of the table’s border. The changes dramatically alter the appearance of the HTML output.

```
style table from table /
   rules=cols
   cellspacing=0
   borderwidth=5;
```

Change the color of links and the foreground. This STYLE statement changes the value of the VISITEDLINKCOLOR= attribute in the style element **contents** so that the links in the table of contents appear in the same color as the rest of the table of contents. It also changes the foreground color so that the title of the table of contents appears in the same color as system titles.

```
style contents from contents /
   visitedlinkcolor=colors("systitlefg")
   foreground = colors('systitlefg');
```

Add more space between the items in the table of contents. This STYLE statement adds the POSTHTML= attribute so that the items in the table of contents are displayed with extra space between them.

```
style contentitem from contentitem /
   posthtml='<p>';
```

Stop the creation of the customized style definition. The END statement ends the style definition. The RUN statement executes the PROC TEMPLATE step.

```
   end;
run;
```

Create the HTML output and specify the specify the style definition that you want to use for the output. The ODS HTML statement opens the HTML destination and creates HTML output. The output from PROC PRINT is sent to the body file. FRAME= and CONTENTS= create a frame that includes a table of contents that links to the contents of the body file. The body file also appears in the frame.

The STYLE= option tells ODS to use **customdefault** as the style definition when it formats the output.

```
ods html body='customdefaultstyle-body.htm'
         contents='customdefaultstyle-content.htm'
         frame='customdefaultstyle-frame.htm'
         style=customdefault;
```

Specify the titles and footnote for the report. The TITLE and FOOTNOTE statements provide two titles and a footnote for the output. The FOOTNOTE statement uses double rather than single quotes so that the macro variable resolves.

```
title 'Energy Expenditures for Each Region';
title2 '(millions of dollars)';
footnote "Report prepared on &sysdate9";
```

Print the customized report. PROC PRINT creates a report that includes three variables. ODS writes the report to the body file. This PROC PRINT step is the same one that was used with the default style definition earlier.

```
proc print data=energy noobs;
   var state type expenditures;
   format division divfmt. type usetype. expenditures comma12.;
   by division;
   where division=2 or division=3;
run;
```

Stop the creation of the HTML output and initiate the creation of listing output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser. The ODS LISTING statement opens the Listing destination to return ODS to its default setup.

```
ods html close;
ods listing;
```

Display 9.16 HTML Output from PROC PRINT with the Customized Style Definition

Energy Expenditures for Each Region
(millions of dollars)

Division=Middle Atlantic

State	Type	Expenditures
NY	Residential Customers	8,786
NY	Business Customers	7,825
NJ	Residential Customers	4,115
NJ	Business Customers	3,558
PA	Residential Customers	6,478
PA	Business Customers	3,695

Division=Mountain

State	Type	Expenditures
MT	Residential Customers	322
MT	Business Customers	232
ID	Residential Customers	392
ID	Business Customers	298
WY	Residential Customers	194
WY	Business Customers	184
CO	Residential Customers	1,215
CO	Business Customers	1,173
NM	Residential Customers	545
NM	Business Customers	578
AZ	Residential Customers	1,694
AZ	Business Customers	1,448
UT	Residential Customers	621
UT	Business Customers	438
NV	Residential Customers	493
NV	Business Customers	378

Example 4: Defining a Table and Graph Style

PROC TEMPLATE features:

DEFINE STYLE statement

- PARENT= attribute
- REPLACE statement
- style attributes

user defined attributes
BACKGROUND=
BORDERCOLORDARK=
BORDERCOLORLIGHT=
BORDERWIDTH=
CELLPADDING=
CELLSPACING=
DROPSHADOW=
ENDCOLOR=
FONT=
FOREGROUND=
FRAME=
GRADIENT_DIRECTION=
IMAGE=
JUST=
OUTPUTWIDTH=
RULES=
TRANSPARENCY=
VJUST=

style elements
GraphAxisLines
GraphBackground
GraphBorderLines
GraphCharts
GraphLabelText
GraphWalls

Program Description

When you are working with style definitions, you are more likely to modify a SAS style definition than to write a completely new style definition. This example shows you how the SAS defined graph style, **`Science`**, was created.

Note: Remember that when a STYLE statement creates a style element in the new style definition, only style elements that explicitly inherit from that style element in the new definition inherit the change. When a REPLACE statement creates a style element in the new style definition, all style elements that inherit from that element inherit the definition that is in the new style definition, so the change appears in all children of the element. △

Program

Create the style definition *Science*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE STYLE statement creates a new style definition in the STYLES catalog called **`Science`**.

```
proc template;
     define style Styles.Science;
```

Specify the parent style definition from where the *SCIENCE* style definitions inherits its attributes. The PARENT= attribute specifies STYLES.DEFAULT as the style definition that the current style definition inherits from. All the style elements and attributes and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

```
parent = styles.default;
```

Change the attributes fonts in the parent style definition by replacing it in the child style definition *Science*. The REPLACE statement adds to the child style definitions the style elements fonts, which also exist in the parent style definitions. While the REPLACE statement does not actually change the parent definition, PROC TEMPLATE builds the child style definition as if it had changed the parent. All style elements that use the user-defined attributes that fonts define use the attributes that are specified in the REPLACE statements, not the ones that are specified in the STYLES.DEFAULT style definition.

```
replace fonts /
   'TitleFont2' = ("Verdana, Verdana, Helvetica, sans-serif",14pt,Bold)
   'TitleFont' = ("Verdana, Verdana, Helvetica, sans-serif",18pt,Bold)
   'StrongFont' = ("Verdana, Verdana, Helvetica, sans-serif",14pt,Bold)
   'EmphasisFont' = ("Verdana, Verdana, Helvetica, sans-serif",10pt,
   Italic)
   'FixedEmphasisFont' = ("'Courier New', Courier, monospace",10pt,
   Italic)
   'FixedStrongFont' = ("'Courier New', Courier, monospace",10pt,Bold)
   'FixedHeadingFont' = ("'Courier New', Courier, monospace",10pt)
   'BatchFixedFont' = ("'Courier New', Courier, monospace",10pt)
   'FixedFont' = ("'Courier New', Courier, monospace",10pt)
   'headingEmphasisFont' = ("Verdana, Verdana, Helvetica, sans-serif",14
   pt,Bold Italic)
   'headingFont' = ("Verdana, Verdana, Helvetica, sans-serif",14pt,Bold)

   'docFont' = ("Verdana, Verdana, Helvetica, sans-serif",8pt,Bold);
```

Change the attributes for graph style specific fonts. The REPLACE statement adds to the child style definitions the style elements **GraphFonts**, which also exist in the parent style definitions. While the REPLACE statement does not actually change the parent definition, PROC TEMPLATE builds the child style definition as if it had changed the parent. All the style elements that use the user-defined attributes that **GraphFonts** define use the attributes specified in the REPLACE statement, not those specified in STYLES.DEFAULT style definition.

```
replace GraphFonts /
         'GraphValueFont' = ("Verdana",10pt)
         'GraphLabelFont' = ("Verdana",14pt,Bold);
```

Change the attributes *colors* in the parent style definition by replacing it in the child style definition *Science*. The REPLACE statement adds to the child style definitions the style elements **colors**, which also exist in the parent style definitions. While the REPLACE statement does not actually change the parent definition, PROC TEMPLATE builds the child style definition as if it had changed the parent. All style elements that use the user-defined attributes that **colors** define use the attributes that are specified in the REPLACE statements, not the ones that are specified in STYLES.DEFAULT style definition.

```
replace colors /
    'headerfgemph' = cx31035E
    'headerbgemph' = cxFFFFFF
```

```
            'headerfgstrong' = cx31035E
            'headerbgstrong' = cxFFFFFF
            'headerfg' = cx31035E
            'headerbg' = cxFFFFFF
            'datafgemph' = cx31035E
            'databgemph' = cxDFECE1
            'datafgstrong' = cx31035E
            'databgstrong' = cxDFECE1
            'datafg' = cx31035E
            'databg' = cxDFECE1
            'batchfg' = cx31035E
            'batchbg' = cxDFECE1
            'tablebg' = cx31035E
            'tableborderdark' = cx909090
            'tableborderlight' = cxFFFFFF
            'tableborder' = cxFFFFFF
            'notefg' = cx31035E
            'notebg' = cxDFECE1
            'bylinefg' = cx31035E
            'bylinebg' = cxDFECE1
            'captionfg' = cx31035E
            'captionbg' = cxDFECE1
            'proctitlefg' = cx31035E
            'proctitlebg' = cxDFECE1
            'titlefg' = cx31035E
            'titlebg' = cxDFECE1
            'systitlefg' = cx31035E
            'systitlebg' = cxDFECE1
            'Conentryfg' = cx31035E
            'Confolderfg' = cx31035E
            'Contitlefg' = cx31035E
            'link2' = cx800080
            'link1' = cx0000FF
            'contentfg' = cx31035E
            'contentbg' = cxDFECE1
            'docfg' = cx31035E
            'docbg' = cxDFECE1;
```

Change the attributes for graph style specific colors. The REPLACE statement adds to the child style definitions the style elements **GraphColors**, which also exist in the parent style definitions. While the REPLACE statement does not actually change the parent definition, PROC TEMPLATE builds the child style definition as if it had changed the parent. All the style elements that use the user-defined attributes that **GraphColors** define use the attributes that are specified in the REPLACE statement, not the attributes that are specified in STYLES.DEFAULT.

```
replace GraphColors /
            'gconramp3cend' = cxDD6060
            'gconramp3cneutral' = cxFFFFFF
            'gconramp3cstart' = cx6497EB
            'gramp3cend' = cxBED8D3
            'gramp3cneutral' = cxFFFFFF
            'gramp3cstart' = cxAAB6DF
            'gconramp2cend' = cx6497EB
            'gconramp2cstart' = cxFFFFFF
```

```
        'gramp2cend' = cx548287
        'gramp2cstart' = cxFFFFFF
        'gtext' = CX31035E
        'glabel' = CX31035E
        'gborderlines' = CX31035E
        'goutlines' = CX31035E
        'ggrid' = CX31035E
        'gaxis' = CX31035E
        'gshadow' = CX707671
        'glegend' = CXFFFFFF
        'gfloor' = CXDFECE1
        'gwalls' = CXFFFFFF
        'gcdata12' = cxFF667F
        'gcdata11' = cx5050CC
        'gcdata10' = cxE100BF
        'gcdata9' = cx007F00
        'gcdata8' = cxB99600
        'gcdata7' = cx7F7F7F
        'gcdata6' = cx984EA3
        'gcdata5' = cx4DAF4A
        'gcdata4' = cxA65628
        'gcdata3' = cxFF7F00
        'gcdata2' = cx377DB8
        'gcdata1' = cxE31A1C
        'gdata12' = CX4A5573
        'gdata11' = CXCFB1E2
        'gdata10' = CX8E829D
        'gdata9' = CX2952B1
        'gdata8' = CXAAB6DF
        'gdata7' = CX6771C2
        'gdata6' = CXBED8D3
        'gdata5' = CX8B65A3
        'gdata4' = CXBCD3AB
        'gdata3' = CX548287
        'gdata2' = CX7DC1C9
        'gdata1' = CX9580D5;
```

Specify attributes for the table. This STYLE statement is applied to tables. This statement specifies a cell padding of **5** and a cell spacing of **2**, that the BORDERCOLORDARK, **TABLEBORDERCOLORDARK**, which is cx909090, and that the BORDERCOLORLIGHT, **TABLEBORDERLIGHT**, which is cxFFFFFF, should blend to create the table border color, and sets a BORDERWIDTH of **2**. Although these specific attributes are set with this STYLE statement, all other table attributes are inherited from the style elements that are defined in the parent style definitions.

```
    style Table from Output /
        cellpadding = 5
        cellspacing = 2
        bordercolordark = colors('tableborderdark')
        bordercolorlight = colors('tableborderlight')
        borderwidth = 2;
```

Specify attributes for the GraphLabelText element. This STYLE statement is applied to the graph's label text. A DROPSHADOW attribute is applied.

```
style GraphLabelText from GraphLabelText
    "Label attributes" /
    dropshadow = on;
```

Replace the background for the Graph. This STYLE statement is applied to the graph's background. **DOCBG** is specified as the background colors, with SCIENCE.GIF justified to the left and bottom as the background image.

```
 replace GraphBackground
    "Graph background attributes" /
    background = colors('docbg')
    image = "//dntsrc/sas/m900/ods/misc/Science.gif"
    just = L
    vjust = B;
```

Specify attributes for the GraphAxisLines element. This STYLE statement is applied to the graph's axis line. The OUTPUTWIDTH is **2**.

```
style GraphAxisLines from GraphAxisLines
    "Axis line attributes" /
    outputwidth = 2;
```

Specify attributes for the GraphBorderLines element. This STYLE statement is applied to the borderlines in the graph. The OUTPUTWIDTH is **2** and the FOREGROUND color defined in **gaxis**, which is CX31035E, is used.

```
style GraphBorderLines from GraphBorderLines
    "Border attributes" /
    outputwidth = 2
    foreground = colors('gaxis');
```

Specify attributes for the GraphCharts element. This STYLE statement is applied to the graph's chart. The data elements of the graph have a TRANSPARENCY of 25 percent.

```
style GraphCharts from GraphCharts
    "Chart Attributes" /
    transparency = 0.25;
```

Specify attributes for the GraphWalls element. This STYLE statement is applied to the walls inside of the graph's axes. The GRADIENT_DIRECTION is set to **Xaxis**, meaning the gradient is going left to right. The ENDCOLOR, defined in **gwalls**, which is CXFFFFFF, is the final color used with the gradient. The data elements of the graph have a TRANSPARENCY of 100 percent. Since a STARTCOLOR is not specified, the beginning of the gradient is completely transparent.

```
style GraphWalls from GraphWalls
    "Wall Attributes" /
    gradient_direction = "Xaxis"
    endcolor = colors('gwalls')
    transparency = 1.0
```

Add the style to the specified catalog. The END statement ends the style definition. The RUN statement executes the PROC TEMPLATE step.

```
   end;
run;
```

CHAPTER

10

TEMPLATE Procedure: Creating Tabular Output

Overview: ODS Tabular Output

Why Use the TEMPLATE Procedure to Create or Customize Tabular Output?

The TEMPLATE procedure enables you to customize the tabular appearance of your SAS output. With the TEMPLATE procedure, you can create and modify table definitions, column definitions, header definitions, and footer definitions. The Output Delivery System then uses these definitions to produce customized tabular output for better data presentations and reports than what you get with the default SAS output.

By default, ODS output is formatted according to the various definitions that the procedure or DATA step specify. However, you can customize your tabular output definitions, or create your own new tabular output definitions, by using the TEMPLATE procedure with the following statements.

Customization	Modify	Statement
Column presentation	column definition	DEFINE COLUMN
Table footer	footer definition	DEFINE FOOTER
Table header	header definition	DEFINE HEADER
Single output object	table definition	DEFINE TABLE
An existing definition for a table, column, header, or footer	table, column, header, footer	EDIT

Terminology

For definitions of terms used in this section, see "Terminology: TEMPLATE Procedure" on page 266.

What Can You Do with a Table Definition?

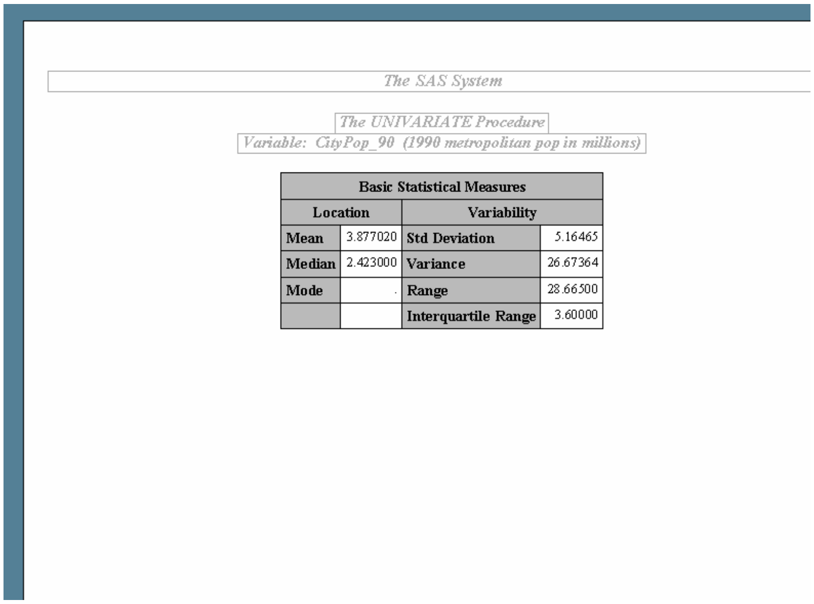
Default Listing and RTF Display of an Output Object

By default, ODS uses the table definitions specified by the procedure or DATA step to create ODS output. For example, the following display shows the default listing output of the **Basic Statistical Measures** output object created by PROC UNIVARIATE. The second display shows the default RTF output of the same output object. You can use PROC TEMPLATE to customize the **Basic Statistical Measures** table definition.

Output 10.1 Listing Output from PROC UNIVARIATE (Default Basic Statistical Measures Tables)

```
                         The SAS System

                          The UNIVARIATE Procedure
            Variable:  CityPop_90  (1990 metropolitan pop in millions)

                         Basic Statistical Measures

              Location                    Variability

          Mean     3.877020     Std Deviation           5.16465
          Median   2.423000     Variance               26.67364
          Mode      .           Range                  28.66500
                                Interquartile Range      3.60000

                               The SAS System

                          The UNIVARIATE Procedure
         Variable:  NonCityPop_90  (1990 nonmetropolitan pop in million)

                         Basic Statistical Measures

              Location                    Variability

          Mean     1.040429     Std Deviation           0.66036
          Median   0.961000     Variance                0.43608
          Mode     0.608000     Range                   2.75600
                                Interquartile Range      1.12700
```

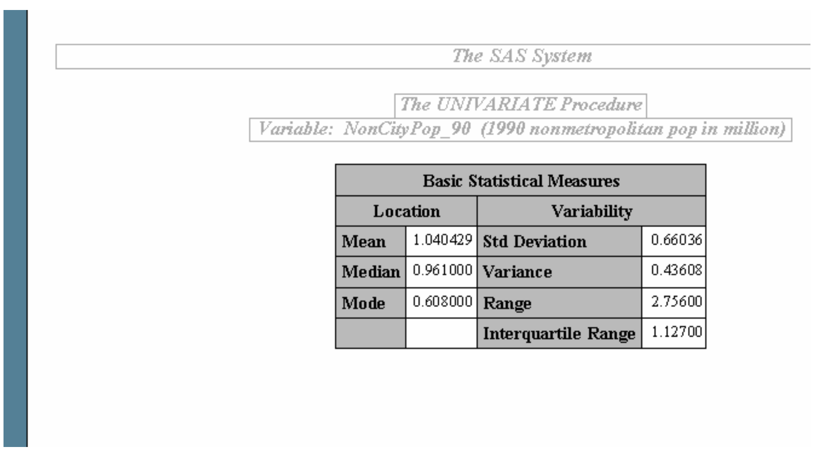
Display 10.1 RTF Output of City Population Statistics from PROC UNIVARIATE (Default Basic Statistical Measures Tables)


The SAS System

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Basic Statistical Measures			
Location		**Variability**	
Mean	3.877020	**Std Deviation**	5.16465
Median	2.423000	**Variance**	26.67364
Mode	.	**Range**	28.66500
		Interquartile Range	3.60000

Display 10.2 RTF Output of Non City Population Statistics from PROC UNIVARIATE (Default Basic Statistical Measures Tables)


The SAS System

The UNIVARIATE Procedure
Variable: NonCityPop_90 (1990 nonmetropolitan pop in million)

Basic Statistical Measures			
Location		**Variability**	
Mean	1.040429	**Std Deviation**	0.66036
Median	0.961000	**Variance**	0.43608
Mode	0.608000	**Range**	2.75600
		Interquartile Range	1.12700

Customized Version of the Listing and RTF Display of an Output Object

With the TEMPLATE procedure, you can change many of the table elements and obtain a customized format for the output objects. Here are some of customizations that you can do.

- Change the color and the font of the text of the first table header.
- Change the justification of the first table header.
- Change the setting of the table attributes UNDERLINE and OVERLINE.
- Change the line spacing between the rows.

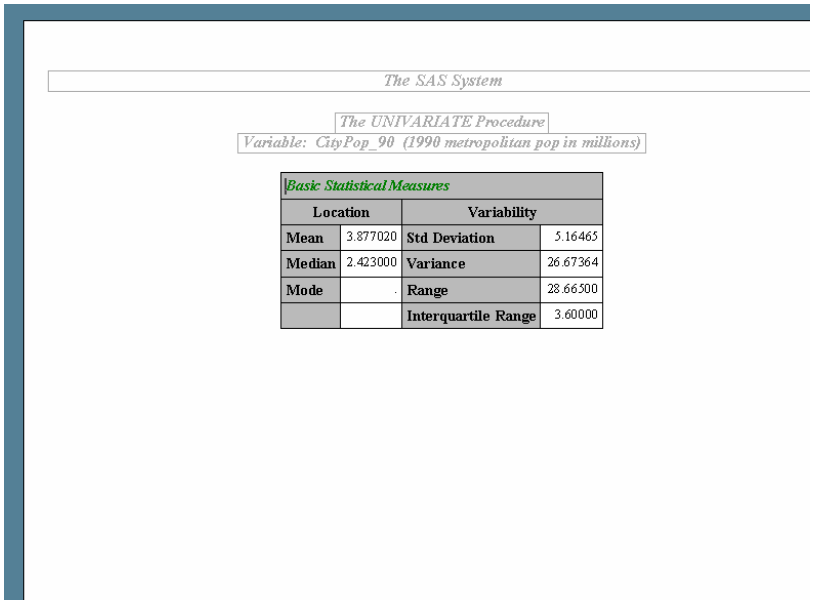
Note: Not all table definition changes affect all destinations. For example, font changes are ignored in the LISTING destination. △

The following displays show the results using a customized table definition that changes the first table header attributes, sets underlining and overlining in the table, and changes the amount of spacing between rows.

Output 10.2 Listing Output from PROC UNIVARIATE (Customized Basic Statistical Measures Tables)

```
                    The SAS System

                      The UNIVARIATE Procedure
     Variable:  CityPop_90  (1990 metropolitan pop in millions)

       Basic Statistical Measures

           Location                    Variability

       ______________________________________________________
       Mean     3.877020     Std Deviation            5.16465

       Median   2.423000     Variance                26.67364

       Mode      .           Range                   28.66500

                             Interquartile Range      3.60000
       ______________________________________________________
                           The SAS System

                      The UNIVARIATE Procedure
  Variable:  NonCityPop_90  (1990 nonmetropolitan pop in million)

       Basic Statistical Measures

           Location                    Variability

       ______________________________________________________
       Mean     1.040429     Std Deviation            0.66036

       Median   0.961000     Variance                 0.43608

       Mode     0.608000     Range                    2.75600

                             Interquartile Range      1.12700
       ______________________________________________________
```

Display 10.3 RTF Output from of City Population Statistics PROC UNIVARIATE (Customized Basic Statistical Measures Tables)

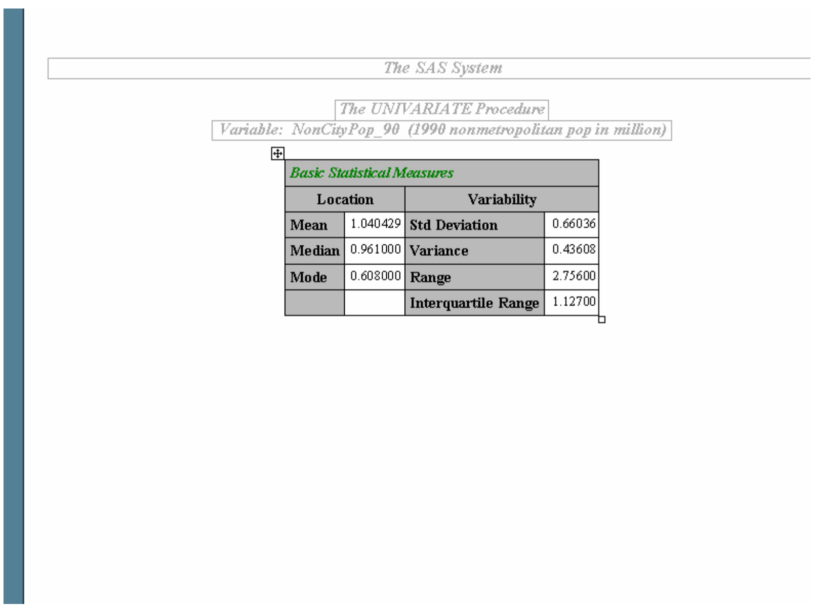


The SAS System

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Basic Statistical Measures			
Location		Variability	
Mean	3.877020	Std Deviation	5.16465
Median	2.423000	Variance	26.67364
Mode	.	Range	28.66500
		Interquartile Range	3.60000

Display 10.4 RTF Output from of Non City Population Statistics PROC UNIVARIATE (Customized Basic Statistical Measures Tables)



The SAS System

The UNIVARIATE Procedure
Variable: NonCityPop_90 (1990 nonmetropolitan pop in million)

Basic Statistical Measures			
Location		Variability	
Mean	1.040429	Std Deviation	0.66036
Median	0.961000	Variance	0.43608
Mode	0.608000	Range	2.75600
		Interquartile Range	1.12700

Comparing the Edit of an Existing Table Definition with Creating a New Table Definition

If you want to change a table definition without completely redefining it, then you use an EDIT statement. When you use the EDIT statement, you keep all the definitions and attributes that already exist in the table definition, and only change the definitions or attributes specified in the EDIT statement. By default, the modified table definition is stored in SASUSER.TEMPLAT with the same name as the table definition that you specified in the EDIT statement.

If you want to create a new table definition, then you use the DEFINE TABLE statement. A table definition cannot be a parent to itself because creating a table through inheritance causes a corrupt template store, and then the definition must be deleted. When you create a new table definition, only the columns, headers, footers, and table attributes that you define exist in the new table definition.

Note: If you edit an existing table, or define a new table with the same name as an existing table, then the table definition will be stored in the SASUSER.TEMPLAT item store and this table definition will be used, by default, unless you specify that the SASHELP.TMPLMST path is searched first. △

Tabular Syntax: TEMPLATE Procedure

PROC TEMPLATE;

EDIT *definition-path-1* <AS *definition-path-2*> < / STORE=*libref.template-store* > ;
statements-and-attributes
END;

DEFINE COLUMN *column-path*< / STORE=*libref.template-store*>;
statements-and-attributes
END;

DEFINE FOOTER *footer-path*< / STORE=*libref.template-store*>
statements-and-attributes
END;

DEFINE HEADER *definition-name*;
statements-and-attributes
END;

DEFINE TABLE *table-path* </ STORE=*libref.template-store*>;
statements-and-attributes
END;

The following table lists the statements that you use to add different features to your SAS tabular output.

Table 10.1 PROC TEMPLATE Statements

Task	Statement
Edit an existing definition for a table, column, header, or footer.	EDIT
Create a column definition.	DEFINE COLUMN
Create a footer definition.	DEFINE FOOTER
Create a header definition.	DEFINE HEADER
Create a table definition.	DEFINE TABLE

EDIT Statement

Edits an existing definition for a table, column, header, or footer

Requirement: An END statement must follow the EDIT statement, after all of the editing instructions.

Interaction: In some cases, you can use an EDIT statement inside a set of editing instructions.

When you edit a table definition, you can also edit one or more column, header, or footer definitions that are defined in the table.

When you edit a column definition, you can also edit one or more header definitions that are defined for that column.

Restriction: If you edit a definition that is a link, you break the link and create a separate definition.

Featured in: Example 1 on page 515

EDIT *definition-path-1* <**AS** *definition-path-2* > </ STORE=*libref.template-store*>;

attribute-statements;

END;

Required Arguments

definition-path-1

specifies a definition to edit. *definition-path-1* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.)

Interaction: The STORE= option specifies a particular template store to read from and to write to.

Tip: You can determine what definitions a procedure or DATA step uses by submitting the ODS TRACE ON statement before you run the SAS program (see "ODS TRACE Statement" on page 197).

Options

AS *definition-path-2*

specifies the location in which to store the edited definition, where *definition-path-2* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) By default, PROC TEMPLATE writes the edited definition to the first template store that you can write to in the current path.

Default: If you do not specify **AS** *definition-path-2*, PROC TEMPLATE writes the edited definition to *definition-path-1* in the first template store that you can write to.

Restriction: If the current EDIT statement is inside a set of editing instructions, then you cannot use the **AS** *definition-path-2* option.

STORE=*libref.template-store*
specifies the template store from which to read *definition-path-1* and in which to store *definition-path-2*.

Statements and Attributes

The EDIT statement supports the same statements and attributes as the DEFINE TABLE statements. For more information, see “DEFINE TABLE Statement” on page 410.

Editing an Existing Definition

There are two steps to follow when you edit an existing definition.

1 Open a copy of the specified file.

   By default, PROC TEMPLATE looks for *definition-path-1* in the list of template stores that is defined by the PATH statement (see “PATH Statement” on page 276). It opens a copy of the first definition path that it finds in a template store that has read access.

2 Save the modified file.

   PROC TEMPLATE writes the modified definition to the first template store in the current path with update access. If you do not specify a second definition path to write to, then it uses *definition-path-1*. Therefore, if you have update access to the template store from which you read *definition-path-1*, then you actually modify the original definition. Otherwise, the modified file is written to a template store to which you do have update access.

   If you do specify a second definition path, then PROC TEMPLATE writes the edited definition to the specified path in the first template store to which you have write access.

DEFINE COLUMN Statement

Creates a definition for a column

Requirement: An END statement must be the last statement in the definition.

Interaction: A column definition can include one or more header definitions.

See also: “DEFINE HEADER Statement” on page 395

Featured in: Example 3 on page 528 and Example 5 on page 539

DEFINE COLUMN *column-path*< / STORE=*libref.template-store*>;

<*column-attribute-1*; <… *column-attribute-n*; >>

CELLSTYLE *expression-1* **AS** <*style-element-name*><[*style-attribute-specification(s)*]><…, *expression-n* **AS** <*style-element-name*><[*style-attribute-specification(s)*]>>;

COMPUTE AS *expression*;

DEFINE HEADER *definition-path*;
statements-and-attributes
END;

DYNAMIC *variable-1*<’*text-1*’> <… *variable-n*<’*text-n*’>>;

MVAR *variable-1*<*'text-1'*> <... *variable-n*<*'text-n'*>>;
NMVAR *variable-1*<*'text-1'*> <... *variable-n*<*'text-n'*>>;
NOTES *'text'*;
TRANSLATE *expression-1* **INTO** *expression-2* <..., *expression-n* **INTO** *expression-m*>;
END;

Table 10.2 DEFINE COLUMN Statements

Task	Statement
Set one or more column attributes.	*column-attributes*
Set the style element of the cells in the column according to the values of the variables.	CELLSTYLE-AS
Compute values for a column that is not in the data component, or modify the values of a column that is in the data component.	COMPUTE AS
Create a definition for a column header.	DEFINE HEADER
Define a symbol that references a value that the data component supplies from the procedure or DATA step.	DYNAMIC
Define a symbol that references a macro variable. ODS will use the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	MVAR
Define a symbol that references a macro variable. ODS will convert the variable's value to a number (stored as a double) before using it. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	NMVAR
Provide information about the column.	NOTES
Translate the specified values to other values.	TRANSLATE-INTO
End the definition.	END

Required Arguments

column-path

specifies where to store the column definition. A *column-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) PROC TEMPLATE writes the definition to the first template store that you can write to in the current path.

Restriction: If the definition is nested inside another definition, *definition-path* must be a single-level name because the nested definition is stored where the original definition is stored.

Restriction: If you want to reference the definition that you are creating from another definition, do not nest the definition inside another one. For example, if you want to reference a column definition from multiple tables, do not define the column inside a table definition.

Options

STORE=*libref.template-store*
specifies the template store in which to store the definition. If the template store does not exist, it is created.

Restriction: If the definition is nested inside another definition, you cannot use the STORE= option for the nested definition because it is stored where the original definition is stored.

Restriction: The STORE= option does not become part of the definition.

Column Attributes

This section lists all the attributes that you can use in a column definition. For all attributes that support a value of ON, the following forms are equivalent:

ATTRIBUTE-NAME
ATTRIBUTE-NAME=ON

For all of the attributes that support a value of *variable*, *variable* can be any variable that you declare in the column definition with the DYNAMIC, MVAR, or NMVAR statement. If the attribute is a boolean, then the value of *variable* should resolve to either true or false as shown in the following table:

Table 10.3 Boolean Values

True	False
ON	OFF
_ON_	_OFF_
1	0
TRUE	FALSE
YES	NO
YES	_NO_

Table 10.4 Column Attributes

Task	Attribute	Valid Destinations
Influence the appearance of the cells contents		
Specify whether or not to suppress the value of a variable from one row to the next, if the value does not change based on the formatted value of the variable.	BLANK_DUPS	All except OUTPUT

Task	Attribute	Valid Destinations
Specify whether or not to suppress the value of a variable from one row to the next, if the value does not change based on the raw value of the variable.	BLANK_INTERNAL_DUPS	All except OUTPUT
Select the best format for a column of a table.	CHOOSE_FORMAT=	All
Specify whether or not to wrap the text in the current column.	FLOW	LISTING
Specify the format for the column.	FORMAT=	All
Specify the number of decimals for the column if it isn't specified with FORMAT= column attribute.	FORMAT_NDEC=	All
Specify the format width for the column if it isn't specified with FORMAT= column attribute.	FORMAT_WIDTH=	All
Supply a numeric value against which values in the column are compared to eliminate trivial values from printing.	FUZZ=	All except OUTPUT
Specify the horizontal justification of the format field within the column (and for the column header if the definition for the header does not include JUST=).	JUST=	All except OUTPUT
Specify whether to justify the format field within the column, or to justify the value within the column, without regard to the format field.	JUSTIFY	All destinations except LISTING behave as if JUSTIFY=ON.
When the text in the column uses more than one line, specify whether to try to divide the text equally among all lines or to maximize the amount of text in each line.	MAXIMIZE	LISTING
Specify whether or not to draw a continuous line in the current column above the first table footer (or, if there is no table footer, below the last row of the column).	OVERLINE	LISTING
Specify whether or not to treat the text as preformatted text.	PREFORMATTED	HTML, MARKUP family, PRINTER family, and RTF

Task	Attribute	Valid Destinations
Specify whether or not to print the column.	PRINT	All except OUTPUT
Specify a separator character to append to each value in the column.	SEPARATOR=	LISTING
Specify the style element and style attributes to use for the column.	STYLE=	HTML, MARKUP family, PRINTER family, and RTF
Specify the split character for the data in the column.	TEXT_SPLIT=	All except OUTPUT
Specify whether or not to draw a continuous line in the current column below the column header (or, if there is no column header, above the first row of the column).	UNDERLINE=	LISTING
Specify the vertical justification for the column.	VJUST=	HTML, MARKUP family, PRINTER family, and RTF
Specify the width of the column in characters.	WIDTH=	LISTING
Specify the maximum width for this column.	WIDTH_MAX=	LISTING
Customize column headers		
Specify the text for the column header.	HEADER=	All
Specify whether or not to print the column header.	PRINT_HEADERS	All except OUTPUT
Influence the relationship to other columns		
Specify whether or not the column definition is generic; that is, whether or not it can be used by more than one variable.	GENERIC=	All except OUTPUT
Specify whether or not the column is an ID column.	ID	LISTING and PRINTER family
Specify whether or not to merge the current column with the column immediately to its right.	MERGE	All except OUTPUT
Specify whether or not to merge the current column with the column immediately to its left.	PRE_MERGE	All except OUTPUT
Specify the number of blank characters to leave between the current column and the column immediately to its left.	PRE_SPACE=	LISTING

Task	Attribute	Valid Destinations
Specify the number of blank characters to leave between the current column and the column immediately to its right.	SPACE=	LISTING
Influence the presentation of data panels		
Influence the place at which ODS splits a table when it creates multiple data panels.	GLUE=	LISTING, PRINTER family, and RTF
Specify whether or not to delete the current column from the output object if doing so enables all the remaining columns to fit in the space that is provided without splitting the table into multiple data panels.	OPTIONAL	LISTING
Other column attributes		
Specify which format to use if both a column definition and a data component specify a format.	DATA_FORMAT_OVERRIDE	All
Specify the name of the column in the data component to associate with the current column.	DATANAME=	All
Specify which special characters in headers for generic columns are to be used as split characters.	DEF_SPLIT	All
Specify whether or not to include the column in an output data set.	DROP	OUTPUT
Specify a label for the column.	LABEL=	OUTPUT
Specify the column definition that the current definition inherits from.	PARENT=	All
Specify the name to use for the corresponding variable in an output data set.	VARNAME=	OUTPUT

BLANK_DUPS<=ON | OFF | *variable*>

specifies whether or not to suppress the value of a variable from one row to the next, if the value does not change based on the formatted value of the variable.

Default: OFF

Interaction: If the CLASSLEVELS= table attribute is in effect, ODS ignores BLANK_DUPS=ON when any value changes in a preceding column that is also marked with BLANK_DUPS=ON.

ODS Destinations: All except OUTPUT. Note that when the PRINTER destination suppresses the value of a variable, it also suppresses the horizontal rule above the blank cell.

Featured in: Example 5 on page 539

BLANK_INTERNAL_DUPS<=ON | OFF | *variable*>
specifies whether or not to suppress the value of a variable from one row to the next, if the value does not change based on the raw value of the variable.

Default: OFF

Interaction: If the CLASSLEVELS= table attribute is in effect, ODS ignores BLANK_INTERNAL_DUPS=ON when any value changes in a preceding column that is also marked with BLANK_INTERNAL_DUPS=ON.

ODS Destinations: All except OUTPUT. Note that when the PRINTER destination suppresses the value of a variable, it also suppresses the horizontal rule above the blank cell.

CHOOSE_FORMAT= COMPROMISE | MAX | MAX_ABS | MIN_MAX
selects a format based on the actual values in the column of the table.

Default: If you omit the CHOOSE_FORMAT column attribute, then the default format is either determined by the data component or by other attributes.

Restriction: CHOOSE_FORMAT is not supported for computed columns because those columns' values are computed outside of the data object .

Tip: If you specify a small value for the FORMAT_WIDTH= option, then CHOOSE_FORMAT may create a dw.3 format.

ODS Destinations: All

See: For more information about column formats, see "How Are Values in Table Columns Formatted?" on page 514.

COMPROMISE
looks at all of the values in the column and selects a good compromise format to work well for most values, but extreme values may shift to BEST format.

Tip: FORMAT_NDEC=d specifies the precision in digits.

Tip: The FORMAT_WIDTH= option suggests a maximum width. The actual format width may be smaller or it may be larger.

MAX
selects a format based on the maximum value in the column. Values are all expected to be positive so no space is reserved for a minus sign.

Default: By default, FORMAT_WIDTH=10 and FORMAT_NDEC= is ignored.

MAX_ABS
selects a format based on the maximum absolute value in the column. The format reserves space for a minus sign whether it is needed or not.

MIN_MAX
selects a format based on the minimum and maximum value in the column. The format reserves space for a minus sign only where it is actually needed.

Interaction: If FORMAT_NDEC=*d* is specified, a maximum of *d* decimal places is used.

DATA_FORMAT_OVERRIDE<=ON | OFF | *variable*>
specifies which format to use if both a column definition and a data component specify a format.

Default: OFF

ODS Destinations: All

ON
Uses the format in the data component.

OFF
Uses the format in the column definition.

variable
Uses the format of the specified variable.

DATANAME=*column-name*
specifies the name of the column in the data component to associate with the current column.

Default: By default, ODS associates the current column with a column of the same name in the data component.

ODS Destinations: All

DEF_SPLIT
specifies which special characters in headers for generic columns are to be used as split characters.

ODS Destinations: All

DROP<=ON | OFF | *variable*>
specifies whether or not to include the column in an output data set.

Default: OFF

ODS Destinations: OUTPUT

FLOW<=ON | OFF | *variable*>
specifies whether or not to wrap the text in the current column if it is too long to fit in the space that is provided.

Default: ON if the format width of the column is greater than the column width. OFF if the format width of the column is not greater than the column width.

See also: MAXIMIZE= on page 384

ODS Destinations: LISTING

Note: The HTML and PRINTER destinations always wrap the text if it is too long to fit in the space that is provided. △

FORMAT=*format-name <format-width <decimal-width>> | variable*
specifies the format for the column.

Default: If you do not specify the FORMAT= , PROC TEMPLATE uses the format that the data component provides. If the data component does not provide a format, PROC TEMPLATE uses

- BEST8. for integers
- 12.3 for doubles
- the length of the variable for character variables.

Restriction: If you specify a format width for a numeric column, then its value cannot exceed 32.

ODS Destinations: All

FORMAT_NDEC= *number* | *variable*
specifies the number of decimals for the column.

Default: the decimal width that is specified with the FORMAT= column attribute.

Range: Number is a whole number from 0 to 32

Interaction: If you specify a decimal width using both the FORMAT= and the FORMAT_NDEC= attributes, then PROC TEMPLATE uses the width that you specify with the FORMAT= attribute.

ODS Destinations: All

FORMAT_WIDTH=*positive-integer* | *variable*

specifies the format width for the column.

Default: If you omit the column attribute FORMAT_WIDTH=, then the format specified in the FORMAT= attribute is used.

Range: 1 to 32 for numeric variables; operating system limit for character variables

Interaction: If you specify a format width using both the FORMAT= and the FORMAT_WIDTH= attributes, then PROC TEMPLATE uses the width that you specify with the FORMAT= attribute.

ODS Destinations: All

FUZZ=*number* | *variable*

supplies a numeric value against which values in the column are compared to eliminate trivial values from printing. A number whose absolute value is less than or equal to the FUZZ= value is printed as 0. However, the real value of the number is used in any computations based on that number.

Default: the smallest representable floating-point number on the computer that you are using

ODS Destinations: All except OUTPUT

GENERIC<=ON | OFF | *variable*>

specifies whether or not the column definition can be used by more than one column. Generic columns are useful in tables with many similar columns. For example, the table definitions for both PROC SQL and the DATA step define only two columns: one for character variables and one for numeric variables. When a program runs, it determines which column definition the data component should use for each column.

Default: OFF

ODS Destinations: All except OUTPUT

Featured in: Example 3 on page 528 and Example 5 on page 539

GLUE=*integer* | *variable*

Influences the places at which ODS splits a table when it creates multiple data panels. ODS creates multiple data panels from a table that is too wide to fit in the allotted space. The higher the value of GLUE= is, the less likely it is that ODS will split the table between the current column and the column to its right.

Default: 1

Range: -1 to 327

Tip: A value of -1 forces the table to split between the current column and the column to its right.

ODS Destinations: LISTING, PRINTER family, and RTF

HEADER=*header-specification*

specifies the text for the column header. *header-specification* can be one of the following:

’*text*’

specifies the actual text of the header.

Requirement: *text* must be enclosed by quotation marks.

header-name

specifies the name of a header definition to use. You create a header definition with the DEFINE HEADER statement (see “DEFINE HEADER Statement” on page 395). If *header-name* is a single-level name, the header definition must occur within the current column definition.

variable
specifies the name of a variable that you declare with the DYNAMIC, MVAR, or NMVAR statement. The value of the variable becomes the column header.

LABEL
Uses the label that is specified in the data component for the column header.

Default: _LABEL_

Interaction: If you are using the OUTPUT destination, then the HEADER= attribute does not change the label of the variable in the data set. To change the label in the data set, you must use the LABEL= attribute.

Tip: The HEADER= option provides a simple way for you to specify the text of a column header. If you want to customize the header further, use the DEFINE HEADER statement with the appropriate header attributes. (See "DEFINE HEADER Statement" on page 395.)

Tip: You can use the split character in the text of the header to force the text to a new line.

See also: LABEL= on page 384 and TEXT_SPLIT= on page 387.

ODS Destinations: All

Featured in: Example 3 on page 528 and Example 1 on page 342

ID<=ON | OFF | *variable*>
specifies whether or not the column is an ID column. An ID column is repeated on each data panel. (ODS creates multiple data panels when a table is too wide to fit in the allotted space.)

Default: OFF

Tip: ODS treats all columns up to and including a column that is marked with ID=ON as ID columns.

ODS Destinations: LISTING and PRINTER family

Featured in: Example 3 on page 528

JUST=*justification* | *variable*
specifies the horizontal justification of the format field within the column (and of the header if the definition for the header does not include JUST=).
justification can be one of the following:

LEFT
specifies left justification.

Alias: L

RIGHT
specifies right justification.

Alias: R

CENTER
specifies center justification.

Alias: C

Default: LEFT for columns that contain character values; RIGHT for columns that contain numeric values.

Interaction: For the Listing destination, ODS justifies the format field within the column width. At times, you may need to specify the JUSTIFY= attribute to get the results that you want. See the discussion of JUSTIFY= on page 384.

See also: FORMAT= on page 381 and WIDTH= on page 388.

Main discussion: "How Are Values in Table Columns Justified?" on page 512

ODS Destinations: All except OUTPUT

Featured in: Example 1 on page 515

JUSTIFY<=ON | OFF | *variable*>
specifies whether to justify the format field within the column or to justify the value within the column without regard to the format field.

Default: OFF

Interaction: JUSTIFY=ON can interfere with decimal alignment.

Tip: If you translate numeric data to character data, you may need to use JUSTIFY= to align the data.

Main discussion: "How Are Values in Table Columns Justified?" on page 512

Featured in: Example 5 on page 539

ODS Destinations: All destinations except LISTING behave as if JUSTIFY=ON

LABEL='*text*' | *variable*
specifies a label for the column in the output data set.

Default: If you do not specify a label, ODS uses the label that is specified in the data component. If no label is specified in the data component, ODS uses the header for the column as the label.

ODS Destinations: OUTPUT

Tip: If the Output destination is open, LABEL= provides a label for the corresponding variable in the output data set. This label overrides any label that is specified in the data component.

MAXIMIZE<=ON | OFF | *variable*>
specifies whether to try to divide the text equally among all lines or to maximize the amount of text in each line when the text in the column uses more than one line. For example, if the text spans three lines, MAXIMIZE=ON might result in 45% of the text on the first line, 45% of the text on the second line, and 10% of the text on the third line. MAXIMIZE=OFF would result in 33% of the text on each line. MAXIMIZE=ON may write lines of text that vary greatly in length. MAXIMIZE=OFF may result in using less than the full column width.

Default: OFF

Interaction: This attribute is effective only if the column is defined with FLOW=ON (see the discussion of FLOW= on page 381).

ODS Destinations: LISTING

MERGE<=ON | OFF | *variable*>
specifies whether or not to merge the current column with the column immediately to its right. When you set MERGE=ON for the current column, the data in each row of the column is merged with the data in the same row of the next column. ODS applies the format, justification, spacing, and prespacing attributes to each column independently. Then, it concatenates the columns. Finally, it applies to the concatenated data all the remaining attributes that are specified on the column that does not have MERGE= set.

Default: OFF

Restriction: You cannot use both MERGE=ON and PRE_MERGE=ON in the same column definition. You cannot merge or premerge a column with another column that has either MERGE=ON or PRE_MERGE=ON. Note that you can merge three columns by setting MERGE=ON for the first column, no merge or premerge attributes for the second column, and PRE_MERGE=ON for the third column.

See also: PRE_MERGE= on page 385

ODS Destinations: All except OUTPUT

OPTIONAL<=ON | OFF | *variable*>
specifies whether or not to delete the current column from the output object if doing so enables all the remaining columns to fit in the space that is provided without splitting the table into multiple data panels.

Default: OFF

Interaction: If multiple column definitions contain OPTIONAL=ON, PROC TEMPLATE includes either all or none of these columns in the output object.

ODS Destinations: LISTING

OVERLINE<=ON | OFF | *variable*>
specifies whether or not to draw a continuous line in the current column above the first table footer (or, if there is no table footer, below the last row of the column). PROC TEMPLATE uses the second formatting character to draw the line. (See the discussion of FORMCHAR= on page 417.)

Default: OFF

ODS Destinations: LISTING

PARENT=*column-path*
specifies the column definition that the current definition inherits from. A *column-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) The current definition inherits from the specified column in the first template store that you can read from in the current path.

When you specify a parent, all the attributes and statements that are specified in the parent's definition are used in the current definition unless the current definition specifically overrides them.

ODS Destinations: All

PREFORMATTED<=ON | OFF | *variable*>
specifies whether or not to treat the text as preformatted text. When text is preformatted, ODS honors line breaks as well as leading, trailing, and internal spaces. It also displays the text in a monospace font.

Default: OFF

Interaction: When PREFORMATTED=ON, ODS uses the **`datafixed`** style element unless you specify another style element with the STYLE= column attribute.

ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF

PRE_MERGE<=ON | OFF | *variable*>
specifies whether or not to merge the current column with the column immediately to its left. When you set PRE_MERGE=ON for the current column, the data in each row of the column is merged with the data in the same row of the previous column. ODS applies the format, justification, spacing, and prespacing attributes to each column independently. Then, it concatenates the columns. Finally, it applies to the concatenated data all the remaining attributes that are specified on the column that does not have PRE_MERGE= set.

Default: OFF

Restriction: You cannot use both MERGE=ON and PRE_MERGE=ON in the same column definition. You cannot merge or premerge a column with another column that has either MERGE=ON or PRE_MERGE=ON. Note that you can merge three columns by setting MERGE=ON for the first column, no merge or premerge attributes for the second column, and PRE_MERGE=ON for the third column.

See also: MERGE= on page 384

ODS Destinations: All except OUTPUT

PRE_SPACE=*non-negative-integer*
specifies the number of blank characters to leave between the current column and the column immediately to its left.

Default: A value in the range that is bounded by the COL_SPACE_MIN and COL_SPACE_MAX table attributes.

Interaction: If PRE_SPACE= and SPACE= are specified for the same intercolumn space, ODS honors PRE_SPACE=.

See also: SPACE= on page 386, COL_SPACE_MIN= on page 416, and COL_SPACE_MAX= on page 416

ODS Destinations: LISTING

PRINT<=ON | OFF | *variable*>
specifies whether or not to print the column.

Default: ON

See also: OPTIONAL= on page 385 and DROP= on page 381

ODS Destinations: All except OUTPUT

PRINT_HEADERS<=ON | OFF | *variable*>
specifies whether or not to print the column header and any underlining and overlining.

Default: ON

See also: UNDERLINE= on page 387 and OVERLINE= on page 385

ODS Destinations: All except OUTPUT

SEPARATOR='*character*' | *variable*
specifies a separator character to append to each value in the column.

Default: None

Restriction: The SEPARATOR= column attribute is valid only for character variables.

Tip: To specify a hexadecimal character as the separator character, put an x after the closing quote. For example, the following option assigns the hexadecimal character 2D as the separator character:

separator='2D'x

ODS Destinations: LISTING

SPACE=*positive-integer* | *variable*
specifies the number of blank characters to leave between the current column and the column immediately to its right.

Default: A value in the range that is bounded by the COL_SPACE_MIN and COL_SPACE_MAX table attributes.

Interaction: If PRE_SPACE= and SPACE= are specified for the same intercolumn space, ODS honors PRE_SPACE=.

See also: PRE_SPACE= on page 386, COL_SPACE_MIN= on page 416, and COL_SPACE_MAX= on page 416

ODS Destinations: LISTING

STYLE=<*style-element-name*><[*style-attribute-specification(s)*]>
specifies the style element and any changes to its attributes to use for the current column. Neither *style-attribute-specification* nor *style-element-name* is required. However, you must use at least one of them.

Note: You can use braces ({ and }) instead of square brackets ([and]). △

style-element-name

is the name of the style element to use to display the data in the column. The style element must be part of a style definition that is registered with the Output Delivery System. SAS provides some style definitions. You can create your own style definitions with PROC TEMPLATE (see "DEFINE STYLE Statement" on page 288). By default, ODS displays different parts of ODS output with different style elements. For example, by default, the data in a column is displayed with the style element **`data`**. The style elements that you would be most likely to use with the STYLE= column attribute are

- data
- datafixed
- dataempty
- dataemphasis
- dataemphasisfixed
- datastrong
- datastrongfixed.

The style element provides the basis for displaying the column. Additional style attributes that you provide can modify the display.

For information on viewing a style definition so that you can see the style elements that are available, see "Viewing the Contents of a Style Definition" on page 319. For information about the default style definition that ODS uses, see "The Default Style Definition for HTML and Markup Languages" on page 320.

style-element-name can be either the name of a style element or a variable whose value is a style element.

Default: data

style-attribute-specification

describes the style attribute to change. Each *style-attribute-specification* has this general form:

style-attribute-name=style-attribute-value

For information on the style attributes that you can specify, see "Style Attributes and Their Values" on page 292.

ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF

Featured in: Example 3 on page 528

Tip: If you use the STYLE= attribute inside a quoted string, then you must add a space before or after the carriage return to prevent errors. SAS does not interpret a carriage return as a space. You must explicitly specify spaces in your quoted strings.

TEXT_SPLIT='*character*' | *variable*

specifies the split character for the data in the column. PROC TEMPLATE breaks a value in the column when it reaches that character and continues the value on the next line. The split character itself is not part of the data and does not appear in the column.

Default: None

ODS Destinations: All except OUTPUT

UNDERLINE<=ON | OFF | *variable*>

specifies whether or not to draw a continuous line in the current column below the column header (or, if there is no column header, above the first row of the column). PROC TEMPLATE uses the second formatting character to draw the line.

Default: OFF

Main discussion: See the discussion of FORMCHAR= on page 417.
ODS Destinations: LISTING

VARNAME=*variable-name* | *variable*
specifies the name to use for the corresponding variable in an output data set.
Default: If you do not specify VARNAME=, PROC TEMPLATE uses the value of the DATANAME= attribute. If you do not specify DATANAME=, PROC TEMPLATE uses the name of the column.
Tip: If you use VARNAME= to specify the same name for different columns, a number is appended to the name each time that the name is used.
ODS Destinations: OUTPUT

VJUST=*justification* | *variable*
Specifies the vertical justification for the column. *justification* can be one of the following:

TOP
places the first line of text as high as possible.
Alias: T

CENTER
centers the text vertically.
Alias: C

BOTTOM
places the last line of text as low as possible.
Alias: B

Default: TOP for the Printer destination; CENTER for the HTML destination
ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF
Featured in: Example 3 on page 528

WIDTH=*positive-integer* | *variable*
specifies the width of the column in characters.
Default: If you do not specify a width, PROC TEMPLATE uses the format width. If the column has no format associated with it, PROC TEMPLATE uses a width of

- 8 for integers
- 12 for doubles
- data length for character variables.

Interaction: The length of the column header can influence the width of the column.
See also: WIDTH_MAX on page 388 and WIDTH= on page 406.
ODS Destinations: LISTING

WIDTH_MAX=*positive-integer* | *variable*
specifies the maximum width allowed for this column. By default, PROC TEMPLATE extends the width of the column if the header is wider than the data. The width of the column can be anywhere between the values of WIDTH= and WIDTH_MAX=.
Default: the width of the format for the column
ODS Destinations: LISTING

CELLSTYLE-AS Statement

Sets the style element of the cells in the column according to the values of the variables. Use this statement to set the presentation characteristics (such as foreground color, font face, flyover) of individual cells

Featured in: Example 5 on page 539

CELLSTYLE *expression-1* **AS** <*style-element-name*><[*style-attribute-specification(s)*]
><*…*, *expression-n* **AS** <*style-element-name*><[*style-attribute-specification(s)*]>>;

Required Arguments

expression
is an expression that is evaluated for each cell in the column. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NMVAR statement in the definition.

If *expression* resolves to TRUE (a non-zero value), the style element that is specified is used for the current cell. If *expression* is FALSE (zero), the next expression in the statement is evaluated. Thus, you can string multiple expressions together to format cells conditionally.

Restriction: You can not reference the values of other columns in *expression*.

Tip: Using an expression of 1 as the last expression in the CELLSTYLE-AS statement sets the style element for any cells that did not meet an earlier condition.

Options

Note: Neither *style-attribute-specification* nor *style-element-name* is required. However, you must use at least one of them. △

style-attribute-specification
describes a style attribute to set. Each *style-attribute-specification* has this general form:

style-attribute-name=style-attribute-value

For information on the style attributes that you can set in a column definition, see "Style Attributes and Their Values" on page 292.

Default: If you don't specify any style attributes to modify, ODS uses the unmodified *style-element-name*.

style-element-name
is the name of the style element that is used to display the data in the column. The style element must be part of a style definition that is registered with the Output Delivery System. SAS provides some style definitions. You can create your own style definitions by using PROC TEMPLATE (see "DEFINE STYLE Statement" on page 288). By default, ODS displays different parts of ODS output with different style elements. For example, by default, the data in a column is displayed with the style element **`data`**. The style elements that you would be most likely to use with the CELLSTYLE-AS statement in a column definition are the following.

- data
- datafixed
- dataempty
- dataemphasis
- dataemphasisfixed
- datastrong

- datastrongfixed.

The style element provides the basis for displaying the column. Additional style attributes that you provide can modify the display.

Default: data

See also: "Viewing the Contents of a Style Definition" on page 319.

See also: "The Default Style Definition for HTML and Markup Languages" on page 320.

COMPUTE AS Statement

Computes values for a column that is not in the data component, or modifies the values of a column that is in the data component

COMPUTE AS *expression*;

Required Arguments

expression

is an expression that assigns a value to each table cell in the column. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*.

To reference another column in a COMPUTE-AS statement, use the name of the column. You can also reference symbols that you declared in a DYNAMIC, MVAR, or NMVAR statement in the current definition. In addition, if the column has values in the data component, you can reference the column itself in the expression. However, if you are creating a column that does not exist in the data component, you cannot reference the column in the expression because there is no underlying value to use.

For example, the following DEFINE COLUMN block defines a column that contains the square root of the value in the column called **source**:

```
define column sqroot;
   compute as sqrt(source);
   header='Square Root';
   format=6.4;
end;
```

Tip: The COMPUTE AS statement can alter values in an output object. None of the definitions that SAS provides modifies any values. If you want to determine if a definition was provided by SAS, use the "ODS VERIFY Statement" on page 205. If the definition is not from SAS, the ODS VERIFY statement returns a warning when it runs the SAS program that uses the definition. If you receive such a warning, you can use the SOURCE statement to look at the definition and determine if the COMPUTE AS statement is used to alter values. (See "SOURCE Statement" on page 277.)

Tip: Because you can use column names in *expression*, _VAL_ is not recognized as an alias for the current column.

DEFINE HEADER Statement

Creates a definition for a header inside a column definition

Main discussion: "DEFINE HEADER Statement" on page 395

DEFINE HEADER *definition-name*;
  statements-and-attributes
  END;

Required Arguments

definition-name
specifies the name of the new header.

Restriction: *definition-name* must be a single-level name.

Note: If you want to reference the header definition that you are creating from another definition, you must create it outside the column definition. △

statements-and-attributes
specify the statements and header attributes that you can use to define a header inside a column.

See: "DEFINE HEADER Statement" on page 395

DYNAMIC Statement

Defines a symbol that references a value that the data component supplies from the procedure or DATA step

Scope: You can use the DYNAMIC statement in the definition of a table, column, header, or footer. A dynamic variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 1 on page 342 and Example 2 on page 348

DYNAMIC *variable-1* <*'text-1'*> <*... variable-n* <*'text-n'*>>;

Required Arguments

variable
Names a variable that the data component supplies. ODS resolves the value of the variable when it binds the definition and the data component.

Tip: Dynamic variables are most useful to the authors of SAS procedures and to DATA step programmers.

Options

text

is text that you can place in the definition to explain the dynamic variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

MVAR Statement

Defines a symbol that references a macro variable. ODS will use the value of the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the MVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 3 on page 528 and Example 1 on page 342

MVAR *variable-1* <'*text-1*'> <… *variable-n* <'*text-n*'>>;

Required Arguments

variable

Names a macro variable to reference in the definition. ODS will use the value of the macro variable as a string. ODS does not resolve the value of the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use the automatic macro variable SYSDATE9 in a definition, declare it in an MVAR statement and reference it as SYSDATE9, without an ampersand, in your PROC TEMPLATE step. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text

is text that you can place in the definition to explain the macro variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NMVAR Statement

Defines a symbol that references a macro variable. ODS will convert the variable’s value to a number (stored as a double) before using it. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the NMVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 5 on page 539

NMVAR *variable-1* <’*text-1*’> <… *variable-n* <’*text-n*’>>;

Required Arguments

variable

Names a macro variable to reference in the definition. ODS will convert the variable’s value to a number (stored as a double) before using it. ODS does not resolve the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use a macro variable as a number, declare it in an NMVAR statement and reference it without an ampersand. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text

is text that you can place in the definition to explain the macro variable’s use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES Statement

Provides information about the column

Tip: The NOTES statement becomes part of the compiled column definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES ’*text*’;

Required Arguments

text
provides information about the column.

TRANSLATE-INTO Statement

Translates the specified values to other values

TRANSLATE *expression-1* **INTO** *expression-2* <*...,expression-n* **INTO** *expression-m*>;

Required Arguments

expression-1
is an expression that is evaluated for each table cell in the column. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NVAR statement in the table definition.

If *expression-1* resolves to TRUE (a non-zero value), the translation that is specified is used for the current cell. If *expression-1* is FALSE (zero), the next expression in the statement is evaluated. Thus, you can string multiple expressions together to format cells conditionally.

Restriction: You may not reference the values of other columns in *expression-1*.

Tip: Using an expression of 1 as the last expression in the TRANSLATE–INTO statement specifies a translation for any cells that did not meet an earlier condition.

expression-2
is an expression that specifies the value to use in the cell in place of the variable's actual value. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NVAR statement in the table definition.

Restriction: *expression-2* must resolve to a character value, not a numeric value.

Restriction: You may not reference the values of other columns in *expression-2*.

Tip: When you translate a numeric value to a character value, the column definition does not try to apply the numeric format that is associated with the column. Instead, it simply writes the character value into the format field, starting at the left. If you want the value to be right-justified, use the JUSTIFY=ON attribute.

See also: JUSTIFY= on page 384.

END Statement

Ends the definition

END;

DEFINE FOOTER Statement

Creates a definition for a table footer

Requirement: An END statement must be the last statement in the definition.

Featured in: Example 3 on page 528 and Example 1 on page 342

See: “DEFINE HEADER Statement” on page 395

DEFINE FOOTER *footer-path*< / STORE=*libref.template-store*>;
<*footer-attribute-1*; <*... footer-attribute-n*; >>
DYNAMIC *variable-1* <’*text-1*’> <*... variable-n* <’*text-n*’>>;
MVAR *variable-1* <’*text-1*’> <*... variable-n* <’*text-n*’>>;
NMVAR *variable-1* <’*text-1*’> <*... variable-n* <’*text-n*’>>;
NOTES ’*text*’;
TEXT *footer-specification*;
TEXT2 *footer-specification*;
TEXT3 *footer-specification*;
END;

The substatements in DEFINE FOOTER and the footer attributes are the same as the substatements in DEFINE HEADER and the header attributes. For details about substatements and footer attributes, see “DEFINE HEADER Statement” on page 395.

DEFINE HEADER Statement

Creates a definition for a table header

Requirement: An END statement must be the last statement in the definition.

Featured in: Example 3 on page 528

DEFINE HEADER *header-path* </ STORE=*libref.template-store*>;
<*header-attribute-1*; <... *header-attribute-n*; >>
DYNAMIC *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;
MVAR *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;
NMVAR *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;
NOTES '*text*';
TEXT *header-specification*;
TEXT2 *header-specification*;
TEXT3 *header-specification*;
END;

Table 10.5 DEFINE HEADER Statements

Task	Statement
Set one or more header attributes.	*header-attribute(s)*
Define a symbol that references a value that the data component supplies from the procedure or DATA step.	DYNAMIC
Define a symbol that references a macro variable. ODS will use the value of the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	MVAR
Define a symbol that references a macro variable. ODS will convert the variable's value to a number (stored as a double) before using it. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	NMVAR
Provide information about the table.	NOTES
Specify the text of the header.	TEXT
Specify an alternative header to use in the listing output if the header that is provided by the TEXT statement is too long.	TEXT2
Specify an alternative header to use in the Listing output if the header that is provided by the TEXT2 statement is too long.	TEXT3
End the header definition.	END

Required Arguments

header-path

specifies where to store the header definition. A *header-path* consists of one or more names, separated by periods. Each name represents a directory in a template store.

(A template store is a type of SAS file.) PROC TEMPLATE writes the definition to the first template store that you can write to in the current path.

Restriction: If the definition is nested inside of another definition, *definition-path* must be a single-level name.

Restriction: If you want to reference the definition that you are creating from another definition, then do not nest the definition inside another definition. For example, if you want to reference a header definition from multiple columns, do not define the header inside a column definition.

Options

STORE=*libref.template-store*

specifies the template store in which to store the definition. If the template store does not exist, it is created.

Restriction: If the definition is nested inside another definition, you cannot use the STORE= option for the nested definition because it is stored where the original definition is stored.

Restriction: The STORE= option does not become part of the definition.

Header Attributes

This section lists all the attributes that you can use in a header definition. A column header spans a single column. A spanning header spans multiple columns. These two kinds of headers are defined in the same way except that a spanning header uses the START= or the END= attribute, or both.

For all attributes that support a value of ON, the following forms are equivalent:

```
ATTRIBUTE-NAME
ATTRIBUTE-NAME=ON
```

For all of the attributes that support a value of *variable*, *variable* can be any variable that you declare in the table definition with the DYNAMIC, MVAR, or NMVAR statement. If the attribute is a boolean, then the value of *variable* should resolve to either true or false as shown in the following table:

Table 10.6 Boolean Values

True	False
ON	OFF
_ON_	_OFF_
TRUE	FALSE
YES	NO
YES	_NO_

Table 10.7 Header Attributes

Task	Attribute	Valid Destinations
Influence the appearance of the contents of the header		
Specify that special characters in headers for generic columns are to be used as split characters.	DEF_SPLIT	All
Specify whether or not to try to expand the column width to accommodate the longest word in the column header.	FORCE	LISTING
Specify the horizontal justification for the column header.	JUST=	All except OUTPUT
Specify whether to try to divide the text equally among all lines or to maximize the amount of text in each line when the text in the header uses more than one line.	MAXIMIZE	LISTING
Specify whether or not to draw a continuous line above the header.	OVERLINE	LISTING
Specify whether or not to treat the text as preformatted text.	PREFORMATTED	HTML, MARKUP family, PRINTER family, and RTF
Specify whether or not to print the header.	PRINT	All
Specify the number of blank lines to place between the current header and the next header or between the current footer and the previous footer.	SPACE=	LISTING
Specify the split character for the header.	SPLIT=	All except OUTPUT
Specify the style element and any changes to its attributes to use for the header.	STYLE=	HTML, PRINTER family, and RTF
Specify whether or not to start a new header line in the middle of a word.	TRUNCATE	LISTING
Specify whether or not to draw a continuous line underneath the header.	UNDERLINE	LISTING
Specify vertical justification for the header.	VJUST=	HTML, MARKUP family, PRINTER, family, and RTF
Specify the width of the header in characters.	WIDTH=	LISTING

Task	Attribute	Valid Destinations
Influence the content of the header		
Specify a character to use to expand the header to fill the space over the column or columns that the header spans.	EXPAND=	LISTING
Specify whether or not to repeat the text of the header until the space that is allotted for the header is filled.	REPEAT	LISTING
Influence the placement of the header		
Specify the last column that a spanning header covers.	END=	All except OUTPUT
Specify the first column that a spanning header covers.	START=	All except OUTPUT
Specify whether or not to expand the header to reach the sides of the page.	EXPAND_PAGE	LISTING
Specify whether or not a spanning header appears only on the first data panel if the table is too wide to fit in the space that is provided.	FIRST_PANEL	LISTING, PRINTER family, and RTF
Specify whether or not a table footer appears only on the last data panel if the table is too wide to fit in the space that is provided.	LAST_PANEL	LISTING, PRINTER family, and RTF
Specify whether or not to extend the text of the header into the header space of adjacent columns.	SPILL_ADJ	LISTING
Specify whether or not to extend the text of the header into the adjacent margin.	SPILL_MARGIN	LISTING
Other header attributes		
Specify an abbreviation for the header.*	ABBR=	MARKUP
Specify an acronym for the header.*	ACRONYM=	MARKUP
Specify an alternate description for the header.*	ALT=	MARKUP
Specify whether or not multiple columns can use the header.	GENERIC	All except OUTPUT

Task	Attribute	Valid Destinations
Specify a long description for the header.*	LONGDESC=	MARKUP
Specify the header definition that the current definition inherits from.	PARENT=	All

* SAS includes these accessibility and compatibility features that improve the usability of SAS for users with disabilities. These features are related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended.

ABBR= '*text*'

specifies an abbreviation for the header.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

ACRONYM= '*text*'

specifies an acronym for the header.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

ALT= '*text*'

specifies an alternate description of the header.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

DEF_SPLIT

specifies which special characters in headers for generic columns are to be used as split characters.

ODS Destinations: All

END=*column-name* | *variable*

specifies the last column that a spanning header covers.

Default: the last column

See also: START= on page 404

ODS Destinations: All except OUTPUT

EXPAND='*string*' | *variable*

specifies a character to use to expand the header to fill the space over the column or columns that the header spans.

Default: none

Interaction: If you specify both the REPEAT=ON and EXPAND=ON attributes, then PROC TEMPLATE uses the EXPAND= attribute.

See also: REPEAT= on page 403

Tip: If the string or the variable that you specify contains more than one character, then PROC TEMPLATE uses only the first character.

See also: EXPAND_PAGE= on page 401

ODS Destinations: LISTING

EXPAND_PAGE<= ON | OFF | *variable*>
specifies whether or not to expand the header to reach the sides of the page.

Default: OFF

See also: EXPAND= on page 400

ODS Destinations: LISTING

FIRST_PANEL<= ON | OFF | *variable*>
specifies whether or not a spanning header appears only on the first data panel if the table is too wide to fit in the space that is provided.

Default: OFF

Restriction: Applies only to headers, not to footers

See also: LAST_PANEL= on page 402

ODS Destinations: LISTING, PRINTER family, and RTF

FORCE<= ON | OFF | *variable*>
specifies whether or not to try to expand the column width to accommodate the longest word in the column header. The column width can be anything between the values for the WIDTH= and WIDTH_MAX= column attributes.

Default: ON

See also: WIDTH= on page 406 and WIDTH_MAX= on page 388

ODS Destinations: LISTING

GENERIC<= ON | OFF | *variable*>
specifies whether or not multiple columns can use the header.

Default: OFF

Restriction: This attribute is primarily for writers of SAS procedures and for DATA step programmers.

ODS Destinations: All except OUTPUT

JUST=*justification* | *variable*
specifies the horizontal justification for the column header, where *justification* can be one of the following:

LEFT
specifies left justification.

Alias: L

RIGHT
specifies right justification.

Alias: R

CENTER
specifies center justification.

Alias: C

Default: The justification for the column

ODS Destinations: All except OUTPUT

Featured in: Example 1 on page 515

LAST_PANEL<= ON | OFF | *variable*>
specifies whether or not a table footer appears only on the last data panel if the table is too wide to fit in the space that is provided.

Default: OFF

Restriction: Applies only to footers, not to headers

See also: FIRST_PANEL on page 401

ODS Destinations: LISTING, PRINTER family, and RTF

LONGDESC= '*string*'
specifies the long description of the header.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

MAXIMIZE<=ON | OFF | *variable*>
specifies whether to try to divide the text equally among all lines or to maximize the amount of text in each line when the text in the header uses more than one line. For example, if the text spans three lines, MAXIMIZE=ON might result in 45% of the text on the first line, 45% of the text on the second line, and 10% of the text on the third line. MAXIMIZE=OFF would may result in 33% of the text on each line. MAXIMIZE=ON may write lines of text that vary greatly in length. MAXIMIZE=OFF may result in using less than the full column width.

Default: OFF

ODS Destinations: LISTING

OVERLINE<=ON | OFF | *variable*>
specifies whether or not to draw a continuous line above the header. PROC TEMPLATE uses the second formatting character to draw the line. (See the discussion of FORMCHAR= on page 417.)

Default: OFF

ODS Destinations: LISTING

PARENT=*header-path*
specifies the header definition that the current definition inherits from. A *header-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) The current definition inherits from the specified header definition in the first template store that you can read from in the current path.

When you specify a parent, all of the attributes and statements that are specified in the parent's definition are used in the current definition unless the current definition specifically overrides them.

ODS Destinations: All

PREFORMATTED<=ON | OFF | *variable*>
specifies whether or not to treat the text as preformatted text. When text is preformatted, ODS honors line breaks as well as leading, trailing, and internal spaces. It also displays the text in a monospace font.

Default: OFF

Interaction: When PREFORMATTED=ON, and you are defining a table header or a footer, ODS uses the **`headerfixed`** or the **`footerfixed`** style element unless you specify another style element with the STYLE= column attribute.

When PREFORMATTED=ON, and you are defining a column header, ODS uses the **`rowheaderfixed`** style element unless you specify another style element with the STYLE= column attribute.

ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF

PRINT<=ON | OFF | *variable*>

specifies whether or not to print the header.

Default: ON

Tip: When PRINT=ON, the column header becomes the label of the corresponding variable in any output data sets that the Output Destination creates if neither the column definition nor the data component provides a label.

ODS Destinations: All

REPEAT<=ON | OFF | *variable*>

specifies whether or not to repeat the text of the header until the space that is allotted for the header is filled.

Default: OFF

Interaction: If you specify both the REPEAT=ON and EXPAND=ON attributes, then PROC TEMPLATE uses the EXPAND= attribute.

See also: EXPAND= on page 400

ODS Destinations: LISTING

SPACE=*positive-integer* | *variable*

specifies the number of blank lines to place between the current header and the next header or between the current footer and the previous footer.

Default: 0

Tip: A row of underlining or overlining is considered a header or a footer.

ODS Destinations: LISTING

Featured in: Example 3 on page 528

SPILL_ADJ<=ON | OFF | *variable*>

specifies whether or not to extend the text of the header into the header space of adjacent columns.

Default: OFF

Interaction: FORCE=, SPILL_MARGIN=, SPILL_ADJ=, and TRUNCATE= are mutually exclusive. If you specify more than one of these attributes, then PROC TEMPLATE uses only one of these attributes. FORCE= takes precedence over the other three attributes, followed by SPILL_MARGIN=, SPILL_ADJ=, and TRUNCATE=.

See also: FORCE= on page 401, SPILL_MARGIN= on page 403, and TRUNCATE= on page 405

ODS Destinations: LISTING

SPILL_MARGIN<=ON | OFF | *variable*>

specifies whether or not to extend the text of the header into the adjacent margin.

Default: ON

Restriction: SPILL_MARGIN= applies only to a spanning header that spans all the columns in a data panel.

Interaction: FORCE=, SPILL_MARGIN=, SPILL_ADJ=, and TRUNCATE= attributes are mutually exclusive. If you specify more than one of these attributes, then PROC TEMPLATE uses only one of these attributes. FORCE= takes precedence over the other three attributes, followed by SPILL_MARGIN=, SPILL_ADJ=, and TRUNCATE=.

See also: FORCE= on page 401, SPILL_ADJ on page 403, and TRUNCATE= on page 405

ODS Destinations: LISTING

SPLIT= *'character'* | *variable*

specifies the split character for the header. PROC TEMPLATE starts a new line when it reaches that character and continues the header on the next line. The split character itself is not part of the header although each occurrence of the split character counts toward the maximum length for a label.

Tip: The first character in a header is automatically treated as a split character if it is not one of the following:

- an alphanumeric character
- a blank
- an underscore (_)
- a hyphen (-).

ODS Destinations: All except OUTPUT

START=*column-name* | *variable*

specifies the first column that a spanning header covers.

Default: the first column

See also: END= on page 400

ODS Destinations: All except OUTPUT

STYLE=<*style-element-name*><[*style-attribute-specification(s)*]>

specifies the style element and any changes to its attributes to use for the header.

Requirement: The STYLE= option requires either a *style-attribute-specification* or a *style-element-name*.

Tip: You can use braces ({ and }) instead of square brackets ([and]).

Tip: If you use the STYLE= attribute inside a quoted string, then you must add a space before or after the carriage return to prevent errors. SAS does not interpret a carriage return as a space. You must explicitly specify spaces in your quoted strings.

style-element-name

is the name of the style element to use to produce the header. The style element must be part of a style definition that is registered with the Output Delivery System. SAS provides some style definitions. You can create your own style definitions by using PROC TEMPLATE (see "DEFINE STYLE Statement" on page 288). By default, ODS produces different parts of ODS output with different elements. For example, by default, a table header is displayed with the style element `header`. The style elements that you would be most likely to use with the STYLE= attribute for a table header are as follows:

- header
- headerfixed
- headerempty
- headeremphasis

- headeremphasisfixed
- headerstrong
- headerstrongfixed

The style elements that you would be most likely to use with the STYLE= attribute for a table footer are as follows:

- footer
- footerfixed
- footerempty
- footeremphasis
- footeremphasisfixed
- footerstrong
- footerstrongfixed

The style elements that you would be most likely to use with the STYLE= attribute for a column header are as follows:

- rowheader
- rowheaderfixed
- rowheaderempty
- rowheaderemphasis
- rowheaderemphasisfixed
- rowheaderstrong
- rowheaderstrongfixed

The style element provides the basis for displaying the header. Additional style attributes that you provide can modify the display.

style-element-name can be either the name of a style element or a variable whose value is a style element.

Default: header

See also: “Viewing the Contents of a Style Definition” on page 319.

See also: “The Default Style Definition for HTML and Markup Languages” on page 320.

style-attribute-specification
describes the style attribute to change. Each *style-attribute-specification* has this general form:

style-attribute-name=style-attribute-value

ODS destinations: HTML, PRINTER family, and RTF

Featured in: Example 1 on page 515 and Example 3 on page 528

See also: “Style Attributes and Their Values” on page 292

TRUNCATE<=ON | OFF | *variable*>
specifies whether or not to start a new header line in the middle of a word.

ON
starts a new line of the header when the text fills the specified column width.

OFF
extends the width of the column to accommodate the longest word in the column header, if possible.

Note: TRUNCATE=OFF is the same as FORCE=ON. △

Default: OFF

Interaction: If you specify FORCE=, SPILL_MARGIN=, or SPILL_ADJ=, then the TRUNCATE= attribute is ignored.

See also: FORCE= on page 401, SPILL_MARGIN= on page 403, and SPILL_ADJ= on page 403

ODS Destinations: LISTING

UNDERLINE<=ON | OFF | *variable*>
specifies whether or not to draw a continuous line below the header. PROC TEMPLATE uses the second formatting character to draw the line.

Default: OFF

Main discussion: See the discussion of FORMCHAR= on page 417.

ODS Destinations: LISTING

VJUST=*justification* | *variable*
Specifies vertical justification for the header. *justification* can be one of the following:

TOP
places the header as high as possible.

Alias: T

CENTER
centers the header vertically.

Alias: C

BOTTOM
places the header as low as possible.

Alias: B

Default: BOTTOM

ODS Destinations: HTML and PRINTER family

WIDTH=*positive-integer* | *variable*
specifies the width of the header in characters.

Default: If you do not specify a width, PROC TEMPLATE uses the column width.

Tip: If you want a vertical header, specify a width of 1.

ODS Destinations: LISTING

DYNAMIC Statement

Defines a symbol that references a value that the data component supplies from the procedure or DATA step

Scope: You can use the DYNAMIC statement in the definition of a table, column, header, or footer. A dynamic variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 1 on page 342 and Example 2 on page 348

DYNAMIC *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;

Required Arguments

variable

Names a variable that the data component supplies. ODS resolves the value of the variable when it binds the definition and the data component.

Tip: Dynamic variables are most useful to the authors of SAS procedures and to DATA step programmers.

Options

text

is text that you can place in the definition to explain the dynamic variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

MVAR Statement

Defines a symbol that references a macro variable. ODS will use the value of the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the MVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 3 on page 528 and Example 1 on page 342

MVAR *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;

Required Arguments

variable

Names a macro variable to reference in the definition. ODS will use the value of the macro variable as a string. ODS does not resolve the value of the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use the automatic macro variable SYSDATE9 in a definition, declare it in an MVAR statement and reference it as SYSDATE9, without an ampersand, in your PROC TEMPLATE step. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text

is text that you can place in the definition to explain the macro variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NMVAR Statement

Defines a symbol that references a macro variable. ODS will convert the variable's value to a number (stored as a double) before using it. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the NMVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 5 on page 539

NMVAR *variable-1* <'*text-1*'> <*... variable-n* <'*text-n*'>>;

Required Arguments

variable

Names a macro variable to reference in the definition. ODS will convert the variable's value to a number (stored as a double) before using it. ODS does not resolve the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use a macro variable as a number, declare it in an NMVAR statement and reference it without an ampersand. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text

is text that you can place in the definition to explain the macro variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES Statement

Provides information about the header

Tip: The NOTES statement becomes part of the compiled header definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES '*text*';

Required Arguments

text
provides information about the header.

TEXT Statement

Specifies the text of the header or the label of a variable in an output data set

Featured in: Example 3 on page 528

TEXT *header-specification(s)*;

Required Arguments

header-specification(s)
specifies the text of the header. Each *header-specification* can be one of the following:

LABEL
uses the label of the object that the header applies to as the text of the header. For example, if the header is for a column, _LABEL_ specifies the label for the variable that is associated with the column. If the header is for a table, _LABEL_ specifies the label for the data set that is associated with the table.

text-specification(s)
specifies the text to use in the header. Each *text-specification* can be one of the following:

- a quoted string
- a variable, followed by an optional format. The variable can be any variable that is declared in a DYNAMIC, MVAR, or NMVAR statement.

Note: If the first character in a quoted string is neither a blank character nor an alphanumeric character, and SPLIT is not in effect, the TEXT statement treats that character as the split character. (See the discussion of SPLIT= on page 404.) △

Default: If you do not use a TEXT statement, the text of the header is the label of the object that the header applies to.

Tip: If the quoted string is a blank and it is the only item in the header specification, the header is a blank line.

Featured in: Example 3 on page 528

TEXT2 Statement

Provides an alternative header to use in the Listing output if the header that is provided by the TEXT statement is too long

See: "TEXT Statement" on page 409

TEXT3 Statement

Provides an alternative header to use in the Listing output if the header that is provided by the TEXT2 statement is too long

See: "TEXT Statement" on page 409

DEFINE TABLE Statement

Creates a table definition

Requirement: An END statement must be the last statement in the definition.

Interaction: A table definition can contain one or more column, header, or footer definitions.

Featured in: Example 3 on page 528 and Example 5 on page 539

DEFINE TABLE *table-path* </ STORE=*libref.template-store*>;

<*table-attribute-1*; <*... table-attribute-n*; >>

CELLSTYLE *expression-1* **AS** <*style-element-name*><[*style-attribute-specification(s)*] ><*...*, *expression-n* **AS** <*style-element-name*><[*style-attribute-specification(s)*]>>;

COLUMN *column(s)*;

DEFINE *definition-type definition-name* </ *option(s)*>;

statements-and-attributes

END;

DYNAMIC *variable-1* <'*text-1*'> <*... variable-n* <'*text-n*'>>;

FOOTER *footer-name(s)*;

HEADER *header-name(s)*;

MVAR *variable-1* <'*text-1*'> <*... variable-n* <'*text-n*'>>;

NMVAR *variable-1* <'*text-1*'> <*... variable-n* <'*text-n*'>>;

NOTES '*text*';

TRANSLATE *expression-1* **INTO** *expression-2* <*...* , *expression-n* **INTO** *expression-m*;>

END;

Table 10.8 DEFINE TABLE Statements

Task	Statement
Set one or more table attributes.	*table-attribute(s)*
Set the style element of the cells in the table that contain numeric variables according to the values of the variables.	CELLSTYLE-AS

Task	Statement
Declare a symbol as a column in the table and specify the order of the columns.	COLUMN
Create a definition for a column, header, or footer.	DEFINE
Define a symbol that references a value that the data component supplies from the procedure or DATA step.	DYNAMIC
Declare a symbol as a footer in the table and specify the order of the footers.	FOOTER
Declare a symbol as a header in the table and specify the order of the headers.	HEADER
Define a symbol that references a macro variable. ODS will use the value of the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	MVAR
Define a symbol that references a macro variable. ODS will convert the value of the variable to a number (stored as a double) before use. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object.	NMVAR
Provide information about the table.	NOTES
Translate the specified numeric values to other values.	TRANSLATE-INTO
End a definition, or end the editing of a definition.	END

Required Arguments

table-path

specifies where to store the table definition. A *table-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) PROC TEMPLATE writes the definition to the first template store in the current path that you can write to.

Options

STORE=*libref.template-store*

specifies the template store in which to store the definition. If the template store does not exist, it is created.

Restriction: The STORE= option does not become part of the definition.

Table Attributes

This section lists all the attributes that you can use in a table definition. For all attributes that support a value of ON, the following forms are equivalent:

ATTRIBUTE-NAME
ATTRIBUTE-NAME=ON

For all of the attributes that support a value of *variable*, *variable* can be any variable that you declare in the table definition with the DYNAMIC, MVAR, or NMVAR statement. If the attribute is a boolean, then the value of *variable* should resolve to either true or false as shown in the following table:

Table 10.9 Boolean Values

True	False
ON	OFF
_ON_	_OFF_
1	0
TRUE	FALSE
YES	NO
YES	_NO_

Table 10.10 Table Attributes

Task	Attribute	Valid Destinations
Influence the layout of the table.		
Specify whether or not to try to place the same number of columns in each data panel if the entire table does not fit in one data panel.	BALANCE	LISTING, PRINTER family, and RTF
Specify whether or not to center each data panel independently if the entire table does not fit in one data panel.	CENTER	LISTING, PRINTER family, RTF
Specify whether or not to force a new page before printing the table.	NEWPAGE	All except OUTPUT
Specify the number of sets of columns to place on a page.	PANELS=	LISTING and PRINTER family
Specify the number of blank characters to place between sets of columns when PANELS= is in effect.	PANEL_SPACE=	LISTING

Task	Attribute	Valid Destinations
Specify the number of lines that must be available on the page in order to print the body of the table.	REQUIRED_SPACE=	LISTING and PRINTER family
Specify the number of lines to place between the previous output object and the current one.	TOP_SPACE=	LISTING and PRINTER family
Specify whether or not to split a table that is too wide to fit in the space that is provided or to wrap each row of the table.	WRAP	LISTING and PRINTER family
Specify whether or not to add a double space after the last line of a single row when the row is wrapped.	WRAP_SPACE	LISTING and PRINTER family
Influence the layout of rows and columns.		
Specify the maximum number of blank characters to place between columns.	COL_SPACE_MAX=	LISTING
Specify the minimum number of blank characters to place between columns.	COL_SPACE_MIN=	LISTING
Specify the name of the column whose value provides formatting information about the space before each row of the definition.	CONTROL=	All except OUTPUT
Specify whether or not to double space between the rows of the table.	DOUBLE_SPACE	LISTING
Specify whether or not extra space is evenly divided among all columns of the table.	EVEN	LISTING
Specify whether or not to split a long stacked column across page boundaries.	SPLIT_STACK	LISTING
Influence the display of the values in header cells and data cells.		
Specify whether or not to suppress blanking the value in a column that is marked with the BLANK_DUPS column attribute if the value changes in a previous column that is also marked with the BLANK_DUPS attribute.	CLASSLEVELS=	LISTING and PRINTER family

Task	Attribute	Valid Destinations
Specify which format to use if both a column definition and a data component specify a format.	DATA_FORMAT_OVERRIDE	All
Specify whether to justify the format fields within the columns or to justify the values within the columns without regard to the format fields.	JUSTIFY	LISTING
Specify whether or not to order the columns by their order in the data component.	ORDER_DATA	All except OUTPUT
Specify the source of the values for the format width and the decimal width if they are not specified.	USE_FORMAT_DEFAULTS	All
Use the column name as the column header if neither the column definition nor the data component specifies a header.	USE_NAME	All
Influence the layout of headers and footers.		
Specify the number of blank lines to place between the last row of data and the first row of output.	FOOTER_SPACE=	LISTING
Specify the number of blank lines to place between the last row of headers and the first row of data.	HEADER_SPACE=	LISTING
Specify whether or not to draw a continuous line above the first table footer or, if there is no table footer, below the last row of data on a page.	OVERLINE	LISTING
Specify whether or not to print table footers and any overlining of the table footers.	PRINT_FOOTERS	All except OUTPUT
Specify whether or not to print table headers and any underlining of the table headers.	PRINT_HEADERS	All except OUTPUT
Specify whether or not to draw a continuous line under the last table header or, if there is no table header, then above the last row of data on a page.	UNDERLINE	LISTING
Influence the HTML output.		

Task	Attribute	Valid Destinations
Specify whether or not to place the output object in a table of contents, if you create a table of contents.	CONTENTS	HTML, PDF, and PRINTER/PS PDFMARK
Specify the label to use for the output object in the contents file, the Results window, and the trace record.	CONTENTS_LABEL=	HTML, PDF, PRINTER, PS PDFMARK
Other table attributes.		
Specify an alternate description for the table.*	ALT=	MARKUP
Specify whether or not to print the current byline before the table.	BYLINE=	All except OUTPUT
Define the characters to use as the line-drawing characters in the table.	FORMCHAR=	LISTING
Specify a label for the table.	LABEL=	All
Specify a long description for the table.*	LONGDESC=	MARKUP
Specify the table that the current definition inherits from.	PARENT=	All
Specify the style element to use for the table and any changes to the attributes.	STYLE=	HTML, MARKUP family, PRINTER family, and RTF
Specify the special data set type of a SAS data set.	TYPE=	OUTPUT

* SAS includes these accessibility and compatibility features that improve the usability of SAS for users with disabilities. These features are related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended.

ALT= '*text*'

specifies an alternate description of the table.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

BALANCE <=ON | OFF | *variable*>

specifies whether or not to try to place the same number of columns in each data panel if the entire table does not fit in one data panel.

Default: OFF

ODS Destinations: LISTING, PRINTER family, and RTF

BYLINE <=ON | OFF | *variable*>
specifies whether or not to print the current byline before the table.

Default: OFF

Restriction: This attributes applies only if the table is not the first one on the page. If BY-group processing is in effect, a byline automatically precedes the first table on the page.

ODS Destinations: All except OUTPUT

CENTER <=ON | OFF | *variable*>
specifies whether or not to center each data panel independently if the entire table does not fit in the space that is provided.

Default: ON

ODS Destinations: LISTING, PRINTER family, and RTF

CLASSLEVELS <=ON | OFF | *variable*>
specifies whether or not to suppress blanking the value in a column that is marked with the BLANK_DUPS column attribute if the value changes in a previous column that is also marked with the BLANK_DUPS attribute.

Default: OFF

ODS Destinations: All except OUTPUT

Featured in: Example 1 on page 342

COL_SPACE_MAX= *positive-integer* | *variable*
specifies the maximum number of blank characters to place between the columns.

Default: 4

ODS Destinations: LISTING

COL_SPACE_MIN= *positive-integer* | *variable*
specifies the minimum number of blank characters to place between the columns.

Default: 2

ODS Destinations: LISTING

CONTENTS <=ON | OFF | *variable*>
specifies whether or not to place the output object in a table of contents, if you create a table of contents.

Default: ON

ODS Destinations: HTML, PDF, and PRINTER/PS PDFMARK

CONTENTS_LABEL= '*string*' | *variable*
specifies the label to use for the output object in the contents file, the Results window, and the trace record.

Default: If the SAS system option LABEL is in effect, the default label is the object's label. If LABEL is not in effect, the default label is the object's name.

ODS Destinations: HTML, PDF, and PRINTER/PS PDFMARK

CONTROL=*column-name* | *variable*
specifies the name of the column whose values provide formatting information about the space before each row of the definition. The value of CONTROL= should be the name of a column of type character with a length equal to 1.

Column Control Value	Result
a digit from 1-9	the specified number of blank lines precedes the current row
a hyphen (-)	a row of underlining precedes the current row
'b' or 'B'	ODS tries to insert a panel break if the entire table does not fit in the space that is provided

Default: none

ODS Destinations: All except OUTPUT

DATA_FORMAT_OVERRIDE<=ON | OFF | *variable*>
specifies which format to use if both a column definition and a data component specify a format.

ON
uses the format that the data component specifies.

OFF
use the format that the column definition specifies.

Default: OFF

ODS Destinations: All

DOUBLE_SPACE<=ON | OFF | *variable*>
specifies whether or not to double space between the rows of the table.

Default: OFF

ODS Destinations: LISTING

Featured in: Example 1 on page 515 and Example 3 on page 528

EVEN<=ON | OFF | *variable*>
specifies whether or not extra space is evenly divided among all columns of the table.

Default: OFF

ODS Destinations: LISTING

FOOTER_SPACE=0 | 1 | 2 | *variable*
specifies the number of blank lines to place between the last row of data and the first row of the table footer.

Default: 1

ODS Destinations: LISTING

FORMCHAR= '*string*' | *variable*
defines the characters to use as the line-drawing characters in the table. Currently, PROC TEMPLATE uses only the second of the 20 possible formatting characters. This formatting character is used for underlining and overlining. To change the second formatting character, you must specify both the first and second formatting characters. For example, the following option assigns the asterisk (*) to the first formatting character, the plus sign (+) to the second character, and does not alter the remaining characters:

```
formchar='*+'
```

Default: The SAS system option FORMCHAR= specifies the default formatting characters.

Tip: You can use any character in formatting-characters, including hexadecimal characters. If you use hexadecimal characters, then you must put an x after the closing quote. For example, the following option assigns the hexadecimal character 2D to the first formatting character, the hexadecimal character 7C to the second character, and does not alter the remaining characters:

formchar='2D7C'x

ODS Destinations: LISTING

HEADER_SPACE=0 | 1 | 2 | *variable*

specifies the number of blank lines to place between the last row of headers and the first row of data. A row of underscores is a header.

Default: 1

ODS Destinations: LISTING

JUSTIFY<=ON | OFF | *variable*>

specifies whether to justify the format fields within the columns or to justify the values within the columns without regard to the format fields.

Default: OFF

Interaction: JUSTIFY=ON can interfere with decimal alignment.

Interaction: If the column is numeric, then values are aligned to the right if you specify JUSTIFY=OFF and JUST=C.

Interaction: All destinations except LISTING justify the values in columns as if JUSTIFY=ON for JUST=R and JUST=L.

Tip: If you translate numeric data to character data, you might need to use JUSTIFY= to align the data.

Main discussion: "How Are Values in Table Columns Justified?" on page 512

ODS Destinations: LISTING

LABEL= *'text'* | *variable*

specifies a label for the table.

Default: PROC TEMPLATE uses the first of the following that it finds:

- a label that the table definition provides
- a label that the data component provides
- the first spanning header in the table.

ODS Destinations: All

LONGDESC= *'string'*

specifies the long description of the table.

Requirement: The text must be enclosed with quotation marks.

ODS Destinations: MARKUP

Note: SAS includes this accessibility and compatibility feature that improves the usability of SAS for users with disabilities. This feature is related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. △

NEWPAGE<=ON | OFF | *variable*>

specifies whether or not to force a new page before printing the table.

Default: OFF

Restriction: If the table is the first item on the page, ODS ignores this attribute.

ODS Destinations: All except OUTPUT

ORDER_DATA<=ON | OFF | *variable*>
specifies whether or not to order the columns by their order in the data component.

Default: OFF

When ORDER_DATA=OFF, the default order for columns is the order that they are specified in the COLUMN statement. If you do not use a COLUMN statement, the default order for columns is the order in which you define them in the definition.

Tip: The Output destination always uses the order of the columns in the data component when it creates an output data set.

Interaction: ORDER_DATA is most useful for ordering generic columns.

ODS Destinations: All except OUTPUT

OVERLINE<=ON | OFF | *variable*>
specifies whether or not to draw a continuous line above the first table footer or, if there is no table footer, below the last row of data on a page. PROC TEMPLATE uses the second formatting character to draw the line.

Default: OFF

Main discussion: See the discussion of FORMCHAR= on page 417.

See also: UNDERLINE= on page 421 (for tables), UNDERLINE= on page 387 (for columns), and OVERLINE= on page 385 (for columns)

ODS Destinations: LISTING

Featured in: Example 1 on page 515

PANELS=*positive-integer* | *variable*
specifies the number of sets of columns to place on a page. If the width of all the columns is less than half of the linesize, you can display the data in multiple sets of columns so that rows that would otherwise appear on multiple pages appear on the same page.

Tip: If the number of panels that is specified is larger than the number of panels that can fit on the page, the definition creates as many panels as it can. Let the table definition put your data in the maximum number of panels that can fit on the page by specifying a large number of panels (for example, 99).

ODS Destinations: LISTING and PRINTER family

PANEL_SPACE=*positive-integer* | *variable*
specifies the number of blank characters to place between sets of columns when PANELS= is in effect.

Default: 2

ODS Destinations: LISTING

PARENT=*table-path*
specifies the table that the current definition inherits from. A *table-path* consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.) The current definition inherits from the specified table in the first template store in the current path that you can read from.

When you specify a parent, all of the attributes and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

ODS Destinations: All

PRINT_FOOTERS<=ON | OFF | *variable*>
specifies whether or not to print table footers and any overlining of the table footers.

Default: ON

See also: OVERLINE= on page 419

ODS Destinations: All except OUTPUT

PRINT_HEADERS<=ON | OFF | *variable*>
specifies whether or not to print the table headers and any underlining of the table headers.

Default: ON

Interaction: When used in a table definition, PRINT_HEADERS affects only headers for the table, not the headers for individual columns. (See the discussion of the PRINT_HEADERS column attribute on page 386.)

See also: UNDERLINE= on page 421

ODS Destinations: All except OUTPUT

REQUIRED_SPACE=*positive-integer* | *variable*
specifies the number of lines that must be available on the page in order to print the body of the table (The body of the table is the part of the table that contains the data. It does not include headers and footers.)

Default: 3

ODS Destinations: LISTING and PRINTER family

SPLIT_STACK<=ON | OFF | *variable*>
specifies whether or not to split a long stacked column across page boundaries.

Default: OFF

ODS Destinations: LISTING

STYLE=<*style-element-name*><[*style-attribute-specification(s)*]>
specifies the style element and any changes to its attributes to use for the table.

style-element-name
is the name of the style element to use to display the table. The style element must be part of a style definition that is registered with the Output Delivery System. SAS provides some style definitions. You can create your own style definitions with PROC TEMPLATE (see "DEFINE STYLE Statement" on page 288). By default, ODS produces different parts of ODS output with different elements. For example, by default, a table is produced with the style element `table`. The style definitions that SAS provides do not provide another style element that you would be likely to want to use instead of `table`. However, you may have a user-defined style element at your site that would be appropriate to specify.

The style element provides the basis for displaying the table. Additional style attributes that you provide can modify the display.

style-element-name can be either the name of a style element or a variable whose value is a style element.

See also: "Viewing the Contents of a Style Definition" on page 319

See also: "The Default Style Definition for HTML and Markup Languages" on page 320.

style-attribute-specification
describes the style attribute to change. Each *style-attribute-specification* has this general form:

style-attribute-name=*style-attribute-value*

See also: "Style Attributes and Their Values" on page 292.

Default: table

Requirement: With the STYLE= option, you must specify either a *style-attribute-specification* or a *style-element-name*.

Tip: You can use braces ({ and }) instead of square brackets ([and]).

Tip: If you use the STYLE= attribute inside a quoted string, then you must add a space before or after the carriage return to prevent errors. SAS does not interpret a carriage return as a space. You must explicitly specify spaces in your quoted strings.

ODS Destinations: HTML, MARKUP family, PRINTER family, and RTF

TOP_SPACE=*positive-integer* | *variable*
specifies the number of lines to place between the previous output object and the current one.

Default: 1

ODS Destinations: LISTING and PRINTER family

TYPE=*string* | *variable*
specifies special type of SAS data set.

Restriction: PROC TEMPLATE does *not* verify the following:

- a SAS data set type that you specify is a valid data set type
- the structure of the data set that you create is appropriate for the type that you have assigned.

Tip: Most SAS data sets have no special type. However, certain SAS procedures, like the CORR procedure, can create a number of special SAS data sets. In addition, SAS/STAT software and SAS/EIS software support special data set types.

ODS Destination: OUTPUT

UNDERLINE<=ON | OFF | *variable*>
specifies whether or not to draw a continuous line under the last table header (or, if there is no table header, then above the first row of data on a page). PROC TEMPLATE uses the second formatting character to draw the line.

Default: OFF

Main discussion: See the discussion of FORMCHAR= on page 417.

See also: OVERLINE= on page 419 (for tables), UNDERLINE= on page 387 (for columns), and OVERLINE= on page 385 (for columns)

ODS Destinations: LISTING

Featured in: Example 1 on page 515 and Example 3 on page 528

USE_FORMAT_DEFAULTS<=ON | OFF | *variable*>
specifies the source of the values for the format width and the decimal width if they are not specified.

ON
uses the default values, if any, that are associated with the format name.

OFF
uses the PROC TEMPLATE defaults.

Default: OFF

ODS Destinations: All except OUTPUT

USE_NAME<=ON | OFF | *variable*>
uses the column name as the column header if neither the column definition nor the data component specifies a header.

Default: OFF

Tip: Use this attribute when column names are derived from a data set and the columns are generic.

ODS Destinations: All except OUTPUT

WRAP<=ON | OFF | *variable*>
specifies whether to split a wide table into multiple data panels, or to wrap each row of the table so that an entire row is printed before the next row starts.

Default: OFF

Interaction: When ODS wraps the rows of a table, it does not place multiple values in any column that contains an ID column.

See also: WRAP_SPACE= on page 422 and ID= on page 383

ODS Destinations: LISTING and PRINTER family

WRAP_SPACE<=ON | OFF | *variable*>
specifies whether or not to double space after the last line of a single row of the table when the row is wrapped onto more than one line.

Default: OFF

See also: WRAP= on page 422

ODS Destinations: LISTING, PRINTER family, and RTF

CELLSTYLE–AS Statement

Sets the style element of the cells in the table according to the values of the variables. Use this statement to set the presentation characteristics (such as foreground color, font face, flyover) of individual cells

Featured in: Example 5 on page 539

CELLSTYLE *expression-1* **AS** <*style-element-name*><[*style-attribute-specification(s)*]>
<…, *expression-n* **AS** <*style-element-name*><[*style-attribute-specification(s)*]>>;

Required Arguments

expression
is an expression that is evaluated for each table cell that contains a variable. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see “Statements” in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NVAR statement in the table definition.

If *expression* resolves to TRUE (a non-zero value), the style element that is specified is used for the current cell. If *expression* is FALSE (zero), the next expression in the statement is evaluated. Thus, you can string multiple expressions together to format cells conditionally.

Restriction: You can not reference the values of other columns in *expression*.

Tip: Using an expression of 1 as the last expression in the CELLSTYLE-AS statement sets the style element for any cells that did not meet an earlier condition.

style-attribute-specification
describes a style attribute to set. Each *style-attribute-specification* has this general form:

style-attribute-name=style-attribute-value

For information on the style attributes that you can set in a table definition, see "Style Attributes and Their Values" on page 292.

Options

style-element-name
is the name of a style element that is part of a style definition that is registered with the Output Delivery System. SAS provides some style definitions. You can create your own style definitions and style elements with PROC TEMPLATE. (See "DEFINE STYLE Statement" on page 288.)

The style elements that you would be most likely to use with the CELLSTYLE-AS statement are

- data
- datafixed
- dataempty
- dataemphasis
- dataemphasisfixed
- datastrong
- datastrongfixed.

The style element provides the basis for displaying the cell. Additional style attributes that you provide can modify the display.

COLUMN Statement

Declares a symbol as a column in the table and specifies the order of the columns

Featured in: Example 3 on page 528

COLUMN *column(s)*;

Required Arguments

column
is one or more columns. If the column is defined outside the current table definition, you must reference it by its path in the template store. Columns in the definition are laid out from left to right in the same order that you specify them in the COLUMN statement.

Default: If you do not use a COLUMN statement, ODS makes a column for each column definition (DEFINE COLUMN statement), and places the columns in the same order that the column definitions have in the table definition.

If you use a COLUMN statement but do not use a DEFINE COLUMN statement for any of the columns, ODS uses a default column definition that is based on the type of data in the column.

Interaction: If you specify the column attribute PRINT=OFF, then you turn off the value of a column if it is part of a stacked column. If all columns in a stacked column have PRINT=OFF set, then the entire column is removed from the table.

Tip: You can use a list of variable names, such as DAY1–DAY10, to specify multiple variables.

Main discussion: *Stacking Values for Two or More Variables*

To stack values for two or more variables in the same column, put parentheses around the variables that you want to stack. In such a case, the column header for the first column inside the parentheses becomes the header for the column that contains all the variables inside parentheses. For example, the following COLUMN statement produces a definition in which

- the value of NAME is in the first column by itself.
- the values of CITY and STATE appear in the second column with CITY above STATE. The header for this column is the header that is associated with CITY.
- the values HOMEPHONE and WORKPHONE appear in the third column with HOMEPHONE above WORKPHONE. The header for this column is the header that is associated with HOMEPHONE.

```
column name (city state) (homephone workphone);
```

You can use the asterisk (*) in the COLUMN statement to change the layout of stacking variables. An asterisk between groups of variables in parentheses stacks the first item in the first set of parentheses above the first item in the next set of parentheses, and so on until the last group of parentheses is reached. Then, the second item in the first group is stacked above the second item in the second group, and so on. For example, the following COLUMN statement produces a report in which

- the value of NAME is in the first column by itself.
- the values of CITY and HOMEPHONE appear in the second column with CITY above HOMEPHONE. The header for this column is the header that is associated with CITY.
- the values STATE and WORKPHONE appear in the third column with STATE above WORKPHONE. The header for this column is the header that is associated with STATE.

```
column name (city state) * (homephone workphone);
```

DEFINE Statement

Creates a definition inside a table definition

Main discussion: “DEFINE COLUMN Statement” on page 374, “DEFINE FOOTER Statement” on page 395, and “DEFINE HEADER Statement” on page 395

DEFINE *definition-type definition-name</ option(s)>*;

statements-and-attributes

END;

Required Arguments

definition-type

specifies the type of definition to create, where *definition-type* is one of the following:

COLUMN

FOOTER

HEADER

The *definition-type* determines what other statements and what attributes can go in the definition. For details, see the documentation for the corresponding DEFINE statement.

definition-name

specifies the name of the new object.

Restriction: *definition-name* must be a single-level name.

Note: If you want to reference the definition that you are creating from another definition, you must create it outside the table definition. △

Options

NOLIST

preserves the *definition-type* when inheriting it from another table definition.

Tip: If you specify an existing *definition-name* without using the NOLIST option, then the definition is overwritten.

DYNAMIC Statement

Defines a symbol that references a value that the data component supplies from the procedure or DATA step

Scope: You can use the DYNAMIC statement in the definition of a table, column, header, or footer. A dynamic variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 1 on page 342 and Example 2 on page 348

DYNAMIC *variable-1* <*'text-1'*> <*... variable-n* <*'text-n'*>>;

Required Arguments

variable

Names a variable that the data component supplies. ODS resolves the value of the variable when it binds the definition and the data component.

Tip: Dynamic variables are most useful to the authors of SAS procedures and to DATA step programmers.

Options

text
is text that you can place in the definition to explain the dynamic variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

FOOTER Statement

Declares a symbol as a footer in the table and specifies the order of the footers

FOOTER *footer-specification(s)*;

Required Arguments

footer-specification
is one or more footers. If the footer is defined outside the current table definition, you must reference it by its path in the template store. Footers in the definition are laid out from top to bottom in the same order that you specify them in the FOOTER statement. Each *footer-specification* can be

"*string*"
specifies the text to use for the footer. If you use a string, you do not need to use a DEFINE FOOTER statement. However, you cannot specify any footer attributes except for a split character. If the SPLIT= attribute is not in effect and if the first character of the footer that you specify is neither a blank character nor an alphanumeric character, PROC TEMPLATE treats it as the split character.

See also: SPLIT=.

footer-path
is the path of the footer definition to use. A footer-path consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.)

LABEL
uses the label of the output object as the footer. Each SAS procedure specifies a label for each output object that it creates. The DATA step uses the value of the OBJECTLABEL= option as the label of the output object. If OBJECTLABEL= is not specified, it uses the text of the first TITLE statement as the label.

Default: If you do not use a FOOTER statement, ODS makes a footer for each footer definition (DEFINE FOOTER statement), and places the footers in the same order that the footer definitions have in the table definition.

HEADER Statement

Declares a symbol as a header in the table and specifies the order of the headers

HEADER *header-specification(s)*;

Required Arguments

header-specification

is one or more headers. If the header is defined outside the current table definition, you must reference it by its path in the template store. Headers in the definition are laid out from top to bottom in the same order that you specify them in the HEADER statement. Each *header-specification* can be

"*string*"

specifies the text to use for the header. If you use a string, you do not need to use a DEFINE HEADER statement. However, you cannot specify any header attributes except for a split character. If the SPLIT= header attribute is not in effect and if the first character of the header that you specify is neither a blank character nor an alphanumeric character, PROC TEMPLATE treats it as the split character.

See also: SPLIT=.

header-path

is the path of the header definition to use. A header-path consists of one or more names, separated by periods. Each name represents a directory in a template store. (A template store is a type of SAS file.)

LABEL

uses the label of the output object as the header. Each SAS procedure specifies a label for each output object that it creates. The DATA step uses the value of the OBJECTLABEL= option as the label of the output object. If OBJECTLABEL= is not specified, it uses the text of the first TITLE statement as the label.

Default: If you do not use a HEADER statement, then ODS makes a header for each header definition (DEFINE HEADER statement), and places the headers in the same order that the header definitions have in the table definition.

Featured in: Example 3 on page 528

MVAR Statement

Defines a symbol that references a macro variable. ODS will use the value of the variable as a string. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the MVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 3 on page 528 and Example 1 on page 342

MVAR *variable-1 <'text-1'> <... variable-n <'text-n'>>*;

Required Arguments

variable
Names a macro variable to reference in the definition. ODS will use the value of the macro variable as a string. ODS does not resolve the value of the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use the automatic macro variable SYSDATE9 in a definition, declare it in an MVAR statement and reference it as SYSDATE9, without an ampersand, in your PROC TEMPLATE step. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text
is text that you can place in the definition to explain the macro variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NMVAR Statement

Defines a symbol that references a macro variable. ODS will convert the variable's value to a number (stored as a double) before using it. References to the macro variable are resolved when ODS binds the definition and the data component to produce an output object

Scope: You can use the NMVAR statement in the definition of a table, column, header, or footer. A macro variable that is defined in a definition is available to that definition and to all the definitions that it contains.

Featured in: Example 5 on page 539

NMVAR *variable-1* <'*text-1*'> <... *variable-n* <'*text-n*'>>;

Required Arguments

variable
Names a macro variable to reference in the definition. ODS will convert the variable's value to a number (stored as a double) before using it. ODS does not resolve the macro variable until it binds the definition and the data component.

Tip: You must declare macro variables this way in a definition. For example, to use a macro variable as a number, declare it in an NMVAR statement and reference it without an ampersand. If you use the ampersand, the macro variable resolves when the definition is compiled instead of when ODS binds the definition to the data component.

Options

text
is text that you can place in the definition to explain the macro variable's use. Text of this type becomes part of the compiled definition, which you can view with the SOURCE statement, whereas SAS comments do not.

NOTES Statement

Provides information about the table

Tip: The NOTES statement becomes part of the compiled column definition, which you can view with the SOURCE statement, whereas SAS comments do not.

Featured in: Example 5 on page 539

NOTES '*text*';

Required Arguments

text
provides information about the table.

TRANSLATE-INTO Statement

Translates the specified numeric values to other values

Restriction: The TRANSLATE-INTO statement in a table definition applies only to numeric variables. To translate the values of a character variable, use TRANSLATE-INTO in the definition of that column. (See "DEFINE COLUMN Statement" on page 374).

Featured in: Example 5 on page 539

TRANSLATE *expression-1* **INTO** *expression-2* <..., *expression-n* **INTO** *expression-m*>;

Required Arguments

expression-1
is an expression that is evaluated for each table cell that contains a numeric variable. It can be any numeric expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NVAR statement in the table definition.

If *expression-1* resolves to TRUE (a non-zero value), the translation that is specified is used for the current cell. If *expression-1* is FALSE (zero), the next expression in the statement is evaluated. Thus, you can string multiple expressions together to format cells conditionally.

Restriction: You may not reference the values of other columns in *expression-1*.

Tip: Using an expression of 1 as the last expression in the TRANSLATE–INTO statement specifies a translation for any cells that did not meet an earlier condition.

expression-2

is an expression that specifies the value to use in the cell in place of the variable's actual value. It can be any expression that is valid in the WHERE statement (or the WHERE= data set option). For information on expressions that you can use in the WHERE statement, see "Statements" in *SAS Language Reference: Dictionary*. Use _VAL_ to represent the value of the current column. You may also reference symbols that you declared in a DYNAMIC, MVAR, or NVAR statement in the table definition.

Restriction: *expression-2* must resolve to a character value, not a numeric value.

Restriction: You may not reference the values of other columns in *expression-2*.

Tip: When you translate a numeric value to a character value, the table definition does not try to apply the numeric format that is associated with the column. Instead, it simply writes the character value into the formatted field, starting at the left. If you want the value to be right-justified, use the JUSTIFY=ON attribute.

See also: JUSTIFY= on page 418.

END Statement

Ends the table definition

END;

ODS Output Object Table Names

ODS Table Names and the Base SAS Procedures that Produce Them

The following table lists the output object table names which Base SAS procedures produce. The table provides the name of each table, a description of what the table contains, and the option, if any, that creates the output object table. For more information about Base SAS procedures, see *Base SAS Procedures Guide*.

Table 10.11 ODS Table Names Produced by the CALENDAR Procedure

Table Name	Description
Calendar	Calendar

Table 10.12 ODS Table Names Produced by the CATALOG Procedure

Table Name	Description
Catalog_Random	Table generated when the catalog is in a random-access data library
Catalog_Sequential	Table generated when the catalog is in a sequential-access data library

Table 10.13 ODS Table Names Produced by the CHART Procedure

Table Name	Description
Block	Block chart
Hbar	Horizontal bar chart
Pie	Pie chart
Star	Star chart
Vbar	Vertical bar chart

Table 10.14 ODS Table Names Produced by the COMPARE Procedure

Table Name	Description	Option
CompareDatasets	Information about the data set or data sets	Omit NOSUMMARY or NOVALUE options
CompareDetails (Comparison results for observations)	List of observations that the base data set and the compare data set do not have in common	PRINTALL
CompareDifferences	Report of variable value differences	Omit NOVALUES option

Table Name	Description	Option
CompareSummary	Summary report of observations, values, and variables of unequal values	
CompareVariables	List of differences in variable types or attributes between the base data set and the compare data set	Omit NOSUMMARY option or unless the variables are identical
	ODS Tables Created by the ID Statement	
CompareDetails	List of notes and warnings concerning duplicate ID variable values, if duplicate ID variable values exist in either the data set	

Table 10.15 ODS Table Names Produced by the CORR Procedure

Table Name	Description	Option
Cov	Covariance table row/column variance DF (missing values)	COV
CronbachAlpha	Coefficient alpha	ALPHA
CronbachAlphaDel	Coefficient alpha with deleted variables	ALPHA
Csscp	Corrected sums of squares and crossproducts Row/column variable corrected sums of squares (missing values)	CSSCP
HoeffdingCorr	Hoeffding’s D statistics p-value (NOPROB is not specified) Number of observations (missing values)	HOEFFDING
KendallCorr	Kendall tau-b coefficients p-value (NOPROB is not specified) Number of observations (missing values)	Pearson or omit NOCORR option
SimpleStats	Simple descriptive statistics	Omit NOSIMPLE option
SpearmanCorr	Spearman descriptive statistics	SPEARMAN

Table Name	Description	Option
Sscp	Sums of squares and crossproducts	SSCP
	Row/column variable sums of squares (missing values)	
VarInformation	Variable information	
	ODS Tables Created by the PARTIAL Statement	
PartialCsscp	Partial corrected sums of squares and crossproducts	CSSCP
PartialCov	Partial covariances	COV
PartialKendallCorr	Partial Kendall tau-b coefficients	KENDALL
PartialPearsonCorr	Partial Kendall tau-b coefficients	
	p-values (NOPROB option is not specified)	
PartialSpearmanCorr	Partial Spearman correlations	SPEARMAN
	p-values (NOPROB option is not specified)	

Table 10.16 ODS Table Names Produced by the DATASETS and CONTENTS Procedures

Table Name	Description	Option
Directory	General library information	Omit NOLIST option
Members	Library member information	Omit NOLIST option

Table 10.17 ODS Table Names Produced by the CONTENTS Procedure or the DATASETS Procedure with the CONTENTS Statement

Table Name	Description	Option
Attributes	Data set attributes	Omit SHORT option
Directory	General library information	DATA=<*libref*.>_ALL_ or the DIRECTORY option*
EngineHost	Engine and operating environment information	Omit SHORT option

Table Name	Description	Option
IntegrityConstraints	List of integrity constraints	Omit SHORT option and data has integrity constraints
IntegrityConstraintsShort	Concise listing of integrity constraints	SHORT option specified and data has integrity constraints
Indexes	List of indexes	Omit SHORT option and data set is indexed
IndexesShort	Concise list of indexes	SHORT option specified and data set is indexed
Members	Library member information	DATA=<*libref.*>_ALL_ or the DIRECTORY option*
Position	List of variables by logical position in the data set	Omit SHORT option and specify the VARNUM option
PositionShort	Concise list of variables by logical position in the data set	SHORT and VARNUM options
Sortedby	Sort information	Omit SHORT option and data set is sorted
SortedbyShort	Concise sort information	SHORT option and data set is sorted
Variables	List of variables in alphabetical order	Omit SHORT option
VariablesShort	Concise listing of variables in alphabetical order	SHORT

* For PROC DATASETS, if both the NOLIST option and either the DIRECTORY option or DATA=<*libref.*>_ALL_ are specified, then the NOLIST option is ignored.

Table 10.18 ODS Table Names Produced by the FREQ Procedure

Table Name	Description	Option
BinomialProp	Binomial proportion	BINOMIAL (one-way tables)
BinomialPropTest	Binomial proportion test	BINOMIAL (one-way tables)
BreslowDayTest	Breslow-day test	CMH (hx2x2 tables)
CMH	Cochran-Mantel-Haenszel statistics	CMH
ChiSq	Chi-Square tests and measures	CHISQ
CochransQ	Cochran's Q	AGREE (hx2x2 tables)
ColScores	Column scores	SCOROUT
CommonRelRisks	Common relative risks	CMH (hx2x2 tables)
Crosslist	Cross lists	
CrossTabFreqs	Crosstabulation table	(n-way table request, n>1)

Table Name	Description	Option
EqualKappaTest	Test for equal simple kappas	AGREE (hx2x2 tables)
EqualKappaTests	Test for equal kappas	AGREE (hxrxr tables, r>2)
FishersExact	Fisher's exact test	FISHER or EXACT CHISQ (2x2 tables)
JTTest	Jonckheere-Terpstra test	JT
KappaStatistics	Kappa statistics	AGREE (rxr tables, r>2, and no TEST or EXACT requests for kappas)
KappaWeight	Kappa weights	AGREE and PRINTKWT
List	List frequencies	LIST
McNemarsTest	McNemar's test	AGREE (2x2 tables)
Measures	Measures of association	MEASURES
OneWayChiSq	One-way Chi-Square goodness-of-fitness test	CHISQ (one-way tables)
OneWayFreqs	One-way frequencies	(one-way table request)
OverallKappa	Overall simple kappa coefficient	AGREE (hx2x2 tables)
Overallkappas	Overall kappa coefficients	AGREE (hxrxr tables, r>2)
RelativeRisks	Relative risk estimates	RELRISK or MEASURES (2x2 tables)
RiskDiffCol1	Column 1 risk estimates	RISKDIFF (2x2 tables)
RiskDiffCol2	Column 2 risk estimates	RISKDIFF (2x2 tables)
RowScores	Row scores	SCOROUT
SimpleKappaTest	Simple kappa tests	AGREE (2x2 tables), AGREE (rxr tables, r>2)
SymmetryTest	Test of symmetry	AGREE
TrendTest	Cochran-Armitage test for trend	TREND
WeightKappa	Weighted kappa coefficient	AGREE (rxr tables, r>2)

Table 10.19 ODS Table Names Produced by the MEANS and SUMMARY Procedures

Table Name	Description
Summary	Summary of descriptive statistics for variables across all observations and within groups of observations

Table 10.20 ODS Table Names Produced by the PLOT Procedure

Table Name	Description	Option
Plot	Single plot graph	
Overlaid	two or more plots on a single set of axes	OVERLAY

Table 10.21 ODS Table Names Produced by the REPORT Procedure

Table Name	Description
Report	Detail report, summary report, or combination of both detail and summary information report

Table 10.22 ODS Table Names Produced by the SQL Procedure

Table Name	Description
SQL_Results	SAS data file or a SAS data view

Table 10.23 ODS Table Names Produced by the TABULATE Procedure

Table Name	Description
Table	Descriptive statistics in tabular format that use some or all of the variables in a data set

Table 10.24 ODS Table Names Produced by the TIMEPLOT Procedure

Table Name	Description	Option
Plot	Single plot graph	Omit the OVERLAY option
OverlaidPlot	Two or more plots on a single set of axes	OVERLAY

Table 10.25 ODS Table Names Produced by the UNIVARIATE Procedure

Table Name	Description	Option
BasicIntervals	Confidence intervals for mean, standard deviation, variance	CIBASIC
BasicMeasures	Measures of location and variability	
ExtremeObs	Extreme observations	
ExtremeValues	Extreme values	NEXTRAVAL=
Frequencies	Frequencies	FREQ
LocationCounts	Counts used for sign test and signed rank test	LOCCOUNT
Missing Values	Missing values	
Modes	Modes	MODES
Moments	Sample moments	
Plots	Line printer plots	PLOTS
Quantiles	Quantiles	
RobustScale	Robust measures of scale	ROBUSTSCALE
SSPlots	Line printer side-by-side box plot	PLOTS with BY statement
TestsForLocation	Tests for location	
TestsForNormality	Tests for normality	NORMALTEST
TrimmedMeans	Trimmed means	TRIMMED=
WinsorizedMeans	Winsorized means	WINSORIZED=

ODS Table Names and the SAS/STAT Procedures that Produce Them

The following table lists the output object table names which SAS/STAT procedures produce. You must license SAS/STAT software in order to produce these output objects. The table provides the name of each table, a description of what the table contains, and the option, if any, that creates the output object table. For information about SAS/STAT procedures, see

Table 10.26 ODS Table Names Produced by the ACECLUS Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
ConvergenceStatus	Convergence status	
DataOptionInfo	Data and option information	
Eigenvalues	Eigenvalues of Inv(ACE)*(COV-ACE)	
Eigenvectors	Eigenvectors (raw canonical coefficients)	
InitWithin	Initial within-cluster covariances estimate	INITIAL=INPUT
IterHistory	Iteration history	
SimpleStatistics	Simple statistics	
StdCanCoef	Standardized canonical coefficients	
Threshold	Threshold value	PROPORTION=
TotSampleCov	Total sample covariances	
Within	Approximate covariance estimate within clusters	

Table 10.27 ODS Table Names Produced by the ANOVA Procedure

Table Name	Description	Option
DependentInfo	Simultaneously analyzed dependent variables	default when there are multiple dependent variables with different patterns of missing values
FitStatistics	R-Square, C.V., root MSE, and dependent mean	
ModelANOVA	ANOVA for model terms	
NObs	Number of observations	
OverallANOVA	Overall ANOVA	
	ODS Tables Created by the CLASS Statement	

Table Name	Description	Option
ClassLevels	Classification variable levels	
	ODS Tables Created by the MANOVA Statement	
MANOVATransform	Multivariate transformation matrix	M=
MultStat	Multivariate tests	
Tests	Summary ANOVA for specified MANOVA H= effects	H=SUMMARY
	ODS Tables Created by the MANOVA or REPEATED Statements	
CanAnalysis	Canonical analysis	CANONICAL
CanCoef	Canonical coefficients	CANONICAL
CanStructure	Canonical structure	CANONICAL
CharStruct	Characteristic roots and vectors	MANOVA (not CANONICAL); REPEATED PRINTRV
ErrorSSCP	Error SSCP matrix	PRINTE
HypothesisSSCP	Hypothesis SSCP matrix	PRINTE; MANOVA M=
PartialCorr	Partial correlation matrix	PRINTE; REPEATED (CONTRAST, HELMERT, MEAN, POLYNOMIAL, or PROFILE)
	ODS Tables Created by the MEANS Statement	
Bartlett	Bartlett's homogeneity of variance test	HOVTEST=BARTLETT
CLDiffs	Multiple comparisons of pairwise differences	CLDIFF or DUNNETT or (Unequal cells and not LINES)
CLDiffsInfo	Information for multiple comparisons of pairwise differences	CLDIFF or DUNNETT or (Unequal cells and not LINES)
CLMeans	Multiple comparisons of means with confidence/comparison	CLM with (BON, GABRIEL, SCHEFFE, SIDAL. SMM, T, or LSD)
CLMeansInfo	Information for multiple comparisons of means with confidence/comparison interval	CLM
HOVFTest	Homogeneity of variance ANOVA	HOVTEST
MCLines	Multiple comparisons LINES output	LINES, ((DUNCAN or WALLER or SNK or REGWQ) and not (CLDIFF or CLM)), or (equal cells and not CLDIFF)

Table Name	Description	Option
MCLinesInfo	Information for multiple comparison LINES output	LINES, ((DUNCAN, WALLER, SNK, or REGWQ) and not (CLDIFF or CLM)), or (equal cells and not CLDIFF
MCLinesRange	Ranges for multiple range MC tests	LINES, ((DUNCAN, WALLER, SNK, or REGWQ) and not (CLDIFF or CLM)), or (equal cells and not CLDIFF)
Means	Group means	
Welch	Welch's ANOVA	WELCH
	ODS Tables Created by the REPEATED Statement	
Epsilons	Greenhouse-Geisser and Huynh-Feldt epsilons	
RepTransform	Repeated transformation matrix	CONTRAST, HELMERT, MEAN, POLYNOMIAL, or PROFILE
RepeatedLevelInfo	Correspondence between dependents and repeated measures levels	
Sphericity	Sphericity tests	PRINTE
	ODS Tables Created by the TEST Statement	
AltErrTests	ANOVA tests with error other than MSE	E=

Table 10.28 ODS Table Names Produced by the CALIS Procedure

Table Name	Description	Option
	ODS Tables Created by the COSAN, FACTOR, LINEQS, and RAM Models	
AddParms	Additional parameters in the PARAMETERS statement	PINITIAL or default
AsymStdRes	Asymptotically standardized residual matrix	RESIDUAL= or PRINT
AveAsymStdRes	Average absolute asymptotically standardized residuals	RESIDUAL= or PRINT
AveNormRes	Average absolute normalized residuals	RESIDUAL= or PRINT

Table Name	Description	Option
AveRawRes	Average absolute raw residuals	RESIDUAL= or PRINT
AveVarStdRes	Average absolute variance standardized residuals	RESIDUAL= or PRINT
ContKurtosis	Contributions to kurtosis	KURTOSIS or PRINT
ConvergenceStatus	Convergence status	PSHORT
CorrParm	Correlations among parameter estimates	PCOVES and default
CovMat	Assorted cov matrices	PCOVES and default
DependParms	Dependent parameters (if specified by program statements)	PRIVEC and default
DistAsymStdRes	Distribution of asymptotically standardized residuals	RESIDUAL= or PRINT
DistNormRes	Distribution of normalized residuals	RESIDUAL= or PRINT
DistVarStdRes	Distribution of variance standardized residuals	RESIDUAL= or PRINT
Estimates	Vector of estimates	PRIVEC
Fit	Fit statistics	PSUMMARY
GenModInfo	General modeling information	PSIMPLE or default
Gradient	First partial derivatives (Gradient)	PRIVEC and default
InCorr	Input correlation matrix	PCORR or PALL
InCorrDet	Determinant of the input correlation matrix	PCORR or PALL
InCov	Input covariance matrix	PCORR or PALL
InCovDet	Determinant of the input covariance matrix	PCORR or PALL
Information	Information matrix	PCOVES and default
InitEstimates	Initial vector of parameter estimates	PINITIAL or default
InSymmetric	Input symmetric matrix (SYMATRIX data type)	PCORR or PALL
IterHist	Iteration history	PSHORT
IterStart	Iteration start	PSHORT
IterStop	Iteration stop	PSHORT
Jacobian	Jacobi column pattern	PJACPAT
Kurtosis	Kurtosis, with raw data input	KURTOSIS or PRINT
LagrangeBoundary	Lagrange, releasing active boundary constraints	MODIFICATION or PALL

Table Name	Description	Option
LagrangeEquality	Lagrange, releasing equality constraints	MODIFICATION or PALL
ModelStatement	Model summary	PSHORT
ModIndices	Lagrange multiplier and Wald test statistics	MODIFICATION or PALL
NormRes	Normalized residual matrix	RESIDUAL= or PRINT
PredetElements	Predetermined elements	PREDET or PALL
PredModel	Predicted model matrix	PCORR or PALL
PredModelDet	Predicted model determinant	PCORR or PALL
ProblemDescription	Problem Description	PSHORT
RankAsymStdRes	Ranking of the largest asymptotically standardized residuals	RESIDUAL= or PRINT
RankLagrange	Ranking of the largest Lagrange indices	RESIDUAL= or PRINT
RankNormRes	Ranking of the largest normalized residuals	RESIDUAL= or PRINT
RankRawRes	Ranking of the largest raw residuals	RESIDUAL= or PRINT
RankVarStdRes	Ranking of the largest variance standardized residuals	RESIDUAL= or PRINT
RawRes	Raw residual matrix	RESIDUAL= or PRINT
SimpleStatistics	Simple statistics, with raw data input	SIMPLE or default
StdErrs	Vector of standard errors	PRIVEC and default
SumSqDif	Sum of squared differences of predetermined elements	PREDET or PALL
tValues	Vector of t values	PRIVEC and default
VarStdRes	Variance of standardized residual matrix	RESIDUAL= or PRINT
WaldTest	Wald test	MODIFICATION or PALL
Weights	Weight matrix	PWEIGHT or PALL
WeightsDet	Determinant of the weight matrix	PWEIGHT or PALL
ODS Tables Created by the FACTOR, LINEQS, and RAM Models		
Determination	Coefficients of determination	PDETERM and default
SqMultCorr	Squared multiple correlations	PESTIM or PSHORT
ODS Tables Created by the COSAN and FACTOR Models		

Table Name	Description	Option
EstParms	Estimated parameter matrix	PESTIM or PSHORT
InitParms	Initial matrix of parameter estimates	PINITIAL or default
	ODS Tables Created by the LINEQS and RAM Models	
Indirect Effects	Indirect effects	TOTEFF or PRINT
InitParms	Initial matrix of parameter estimates	PRIMAT and default
LatentScoreCoef	Latent variable regression score coefficients	PLATCOV or PRINT
PredMomentLatent	Predicted latent variable moments	PLATCOV or PRINT
PredMomentManLat	Predicted manifest and latent variable moments	PLATCOV or PRINT
SetCovExog	Set covariance parameters for manifest exogenous variables	PINITIAL or default
Stability	Stability of reciprocal causation	PDETERM and default
StructEq	Variables in the structural equations	PDETERM and default
TotalEffects	Total effects	TOTEFF or PRINT
VarSelection	Manifest variables, if not all are used, selected for modeling	
	ODS Tables Created by the FACTOR Model	
FactCorrExog	Correlations among factors	PESTIM or PSHORT
FactScoreCoef	Factor score regression coefficients	PESTIM or PSHORT
RotatedLoadings	Rotated loadings, with ROTATE= option in FACTOR statement	PESTIM or PSHORT
Rotation	Rotation matrix, with ROTATE= option in FACTOR statement	PESTIM or PSHORT
StdLoadings	Standardized factor loadings	PESTIM or PSHORT
	ODS Tables Created by the LINEQS Model	
CorrExog	Correlations among exogenous variables	PESTIM or PSHORT
EndogenousVar	Endogenous variables	PESTIM or PSHORT
EstCovExog	Estimated covariances among exogenous variables	PESTIM or PSHORT

Table Name	Description	Option
EstLatentEq	Estimated latent variable equations	PESTIM or PSHORT
EstManifestEq	Estimated manifest variable equations	PESTIM or PSHORT
EstVarExog	Estimated variances of exogenous variables	PESTIM or PSHORT
ExogenousVar	List of exogenous variables	PESTIM or PSHORT
InCovExog	Input covariances among exogenous variables	PESTIM or PSHORT
InLatentEq	Input latent variable equations	PESTIM or PSHORT
InManifestEq	Input manifest variable equations	PESTIM or PSHORT
InVarExog	Input variances of exogenous variables	PESTIM or PSHORT
StdLatentEq	Standardized latent variable equations	PESTIM or PSHORT
StdManifestEq	Standardized manifest variable equations	PESTIM or PSHORT
	ODS Tables Created by the RAM Model	
InitRAMEstimates	Initial RAM estimates	PESTIM or PSHORT
RAMCorrExog	Correlations among exogenous variables	PESTIM or PSHORT
RAMEstimates	RAM final estimates	PESTIM or PSHORT
RAMStdEstimates	Standardized estimates	PESTIM or PSHORT

Table 10.29 ODS Table Names Produced by the CANCORR Procedure

Table Name	Description	Option
MultStat	Multivariate statistics	
	ODS Tables Created by PROC CANCORR	
AvgRSquare	Average R-Squares (weighted and unweighted)	VDEP (or WDEP) or SMC (or ALL)
CanCorr	Canonical correlations	
CanStructureVCan	Correlations between the VAR canonical variables and the VAR and WITH variables	default (unless SHORT)

Table Name	Description	Option
CanStructureWCan	Correlations between the WITH canonical variables and the WITH and VAR variables	default (unless SHORT)
ConfidenceLimits	95% confidence limits for the regression coefficients	VDEP (or WDEP) or CLB (or ALL)
Corr	Correlations among the original variables	CORR (or ALL)
CorrRegCoefEst	Correlations among the regression coefficient estimates	VDEP (or WDEP) or CORRB (or ALL)
NObsNVar	Number of observations and variables	SIMPLE (or ALL)
ParCorr	Partial correlations	VDEP (or WDEP) or PCORR (or ALL)
ProbtRegCoef	Prob > |t| for the regression coefficients	VDEP (or WDEP) or PROBT (or ALL)
RawCanCoefV	Raw canonical coefficients for the VAR variables	default (unless SHORT)
RawCanCoefW	Raw canonical coefficients for the WITH variables	default (unless SHORT)
RawRegCoef	Raw regression coefficients	VDEP (or WDEP) or B (or ALL)
Redundancy	Canonical redundancy analysis	REDUNDANCY (or ALL)
Regression	Squared multiple correlations and F tests	VDEP (or WDEP) or SMC (or ALL)
SemiParCorr	Semi-partial correlations	VDEP (or WDEP) or SPCORR (or ALL)
SimpleStatistics	Simple statistics	SIMPLE (or ALL)
SqMultCorr	Canonical redundancy analysis: squared multiple correlations	REDUNDANCY (or ALL)
SqParCorr	Squared partial correlations	VDEP (or WDEP) or SQPCORR (or ALL)
SqSemiParCorr	Squared semi-partial correlations	VDEP (or WDEP) or SQSPCORR (or ALL)
StdCanCoefV	Standardized canonical coefficients for the VAR variables	default (unless SHORT)
StdCanCoefW	Standardized canonical coefficients for the WITH variables	default (unless SHORT)
StdErrRawRegCoef	Standard errors of the raw regression coefficients	VDEP (or WDEP) or SEB (or ALL)
StdRegCoef	Standardized regression coefficients	VDEP (or WDEP) or STB (or ALL)

Table Name	Description	Option
tValueRegCoef	t values for the regression coefficients	VDEP (or WDEP) or T (or ALL)
	ODS Tables Created by the PARTIAL Statement	
CorrOnPartial	Partial correlations	CORR (or ALL)
RSquareRMSEOnPartial	R-Squares and RMSEs on PARTIAL	CORR (or ALL)
StdRegCoefOnPartial	Standardized regression coefficients on PARTIAL	CORR (or ALL)

Table 10.30 ODS Table Names Produced by the CANDISC Procedure

Table Name	Description	Option
ANOVA	Univariate statistics	ANOVA
AveRSquare	Average R-Square	ANOVA
BCorr	Between-class correlations	BCORR
BCov	Between-class covariances	BCOV
BSSCP	Between-class SSCP matrix	BSSCP
BStruc	Between canonical structure	
CanCorr	Canonical correlations	
CanonicalMeans	Class means on canonical variables	
Counts	Number of observations, variables, classes, DF	
CovDF	DF for covariance matrices, not printed	any *COV option
Dist	Squared distances	MAHALANOBIS
DistFValues	F statistics based on squared distances	MAHALANOBIS
DistProb	Probabilities for F statistics from squared distances	MAHALANOBIS
Levels	Class level information	
MultStat	MANOVA	
PCoef	Pooled standard canonical coefficients	
PCorr	Pooled within-class correlations	PCORR
PCov	Pooled within-class covariances	PCOV

Table Name	Description	Option
PSSCP	Pooled within-class SSCP matrix	PSSCP
PStdMeans	Pooled standardized class means	STDMEAN
PStruc	Pooled within canonical structure	
RCoef	Raw canonical coefficients	
SimpleStatistics	Simple statistics	SIMPLE
TCoef	Total-sample standard canonical coefficients	
TCorr	Total-sample correlations	TCORR
TCov	Total-sample covariances	TCOV
TSSCP	Total-sample SSCP matrix	TSSCP
TSTDMeans	Total standardized class means	STDMEAN
TStruc	Total canonical structure	
WCorr	Within-class correlations	WCORR
WCov	Within-class covariances	WCOV
WSSCP	Within-class SSCP matrices	WSSCP

Table 10.31 ODS Table Names Produced by the CATMOD Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
ANOVA	Analysis of variance	
ConvergenceStatus	Convergence status	ML
CorrB	Correlation matrix of the estimates	CORRB
CovB	Covariance matrix of the estimates	COVB
Estimates	Analysis of estimates	default, unless NOPARM
MaxLikelihood	Maximum likelihood analysis	ML
OneWayFreqs	One-way frequencies	ONEWAY
PopProfiles	Population profiles	default, unless NOPROFILE
PredictedFreqs	Predicted frequencies	PRED=FREQ
PredictedProbs	Predicted probabilities	PREDICT or PRED=PROB
PredictedValues	Predicted values	PREDICT or PRED=

Table Name	Description	Option
ResponseCov	Response functions, covariance matrix	COV
ResponseDesign	Response functions, design matrix	WLS, unless NODESIGN
ResponseFreqs	Response frequencies	FREQ
ResponseProbs	Response probabilities	PROB
ResponseProfiles	Response profiles	default, unless NOPROFILE
XPX	X'*Inv(S)*X matrix	XPX, for WLS
ODS Tables Created by the CONTRAST Statement		
Contrasts	Contrasts	
ContrastEstimates	Analysis of contrasts	ESTIMATE=
ODS Tables Created by the PROC Statement		
DataSummary	Data summary	
ODS Tables Created by the MODEL and LOGLIN Statements		
ResponseMatrix	_RESPONSE_ matrix	unless NORESPONSE

Table 10.32 ODS Table Names Produced by the CLUSTER Procedure

Table Name	Description	Option
ODS Tables Created by the PROC Statement		
ClusterHistory	Observations or clusters joined, frequencies and other cluster statistics	
SimpleStatistics	Simple statistics, before or after trimming	SIMPLE
EigenvalueTable	Eigenvalues of the CORR or COV matrix	

Table 10.33 ODS Table Names Produced by the CORRESP Procedure

Table Name	Description	Option
AdjInGreenacre	Greenacre inertia adjustment	GREENACRE
AdjInBenzecri	Benzecri inertia adjustment	BENZECRI
Binary	Binary table	OBSERVED or BINARY
BinaryPct	Binary table percents	OBSERVED or BINARY
Burt	Burt table	OBSERVED or MCA
BurtPct	Burt table percents	OBSERVED or MCA
CellChiSq	Contributions to Chi Square	CELLCHI2
CellChiSqPct	Contributions, percents	CELLCHI2
ColBest	Col best indicators	
ColContr	Col contributions to inertia	
ColCoors	Col coordinates	
ColProfiles	Col profiles	CP
ColProfilesPct	Col profiles, percents	CP
ColQualMassIn	Col quality, mass, inertia	
ColSqCos	Col squared cosines	
DF	DF, Chi Square (not displayed)	
Deviations	Observed — expected frequencies	DEVIATIONS
DeviationsPct	Observed — expected percentages	DEVIATIONS
Expected	Expected frequencies	EXPECTED
ExpectedPct	Expected percents	EXPECTED
Intertias	Inertia decomposition table	
Observed	Observed frequencies	OBSERVED
ObservedPct	Observed percents	OBSERVED
RowBest	Row best indicators	
RowContr	Row contributions to inertia	
RowCoors	Row coordinates	
RowProfiles	Row profiles	RP
RowProfilesPct	Row profiles, percents	RP
RowQualMassIn	Row quality, mass, inertia	
RowSqCos	Row squared cosines	
SupColCoors	Supp col coordinates	
SupColProfiles	Sup col profiles	CP
SupColProfilesPct	Sup col profiles, percents	CP

Table Name	Description	Option
SupColQuality	Supp col quality	
SupCols	Supplementary col frequency	OBSERVED
SupColsPct	Supplementary col percents	OBSERVED
SupColSqCos	Supplementary col squared cosines	
SupRows	Supplementary row frequencies	OBSERVED
SupRowCoors	Supplementary row coordinates	
SupRowProfiles	Supplementary row profiles	RP
SupRowProfilesPct	Supplementary row profiles, percents	RP
SupRowQuality	Supplementary row quality	
SupRowsPct	Supplementary row percents	OBSERVED
SupRowSqCos	Supplementary row square cosines	

Table 10.34 ODS Table Names Produced by the DISCRIM Procedure

Table Name	Description	Option
ANOVA	Univariate statistics	ANOVA
AvePostCrossVal	Average posterior probabilities, cross validation	POSTERR and CROSSVALIDATE
AvePostResub	Average posterior probabilities, resubstitution	POSTERR
AvePostTestClass	Average posterior probabilities, test classification	POSTERR and TEST=
AveRSquare	Average R-Square	ANOVA
BCorr	Between-class correlations	BCORR
BCov	Between-class covariances	BCOV
BSSCP	Between-class SSCP matrix	BSSCP
BStruc	Between canonical structure	CANONICAL
CanCorr	Canonical correlations	CANONICAL
CanonicalMeans	Class means on canonical variables	CANONICAL
ChiSq	Chi-Square information	POOL=TEST
ClassifiedCrossVal	Number of observations and percent classified, cross validation	CROSSVALIDATE

Table Name	Description	Option
ClassifiedResub	Number of observations and percent classified, resubstitution	
ClassifiedTestClass	Number of observations and percent classified, test classification	TEST=
Counts	Number of observations, variables, classes, DF	
CovDF	DF for covariance matrices, not displayed	any *COV option
Dist	Squared distances	MAHALONOBIS
DistFValues	F values based on squared distances	MAHALONOBIS
DistGeneralized	Generalized squared distances	
DistProb	Probabilities for F values from squared distances	MAHALONOBIS
ErrorCrossVal	Error count estimates, cross validation	CROSSVALIDATE
ErrorResub	Error count estimates, resubstitution	
ErrorTestClass	Error count estimates, test classification	TEST=
Levels	Class level information	
LinearDiscFunc	Linear discriminant function	POOL=YES
LogDet	Log determinant of the covariance matrix	
MultStat	MANOVA	MANOVA
PCoef	Pooled standard canonical coefficients	CANONICAL
PCorr	Pooled within-class correlations	PCORR
PCov	Pooled within-class covariances	PCOV
PSSCP	Pooled within-class SSCP matrix	PSSCP
PStdMeans	Pooled standardized class means	STDMEAN
PStruc	Pooled within canonical structure	CANONICAL
PostCrossVal	Posterior probabilities, cross validation	CROSSLIST or CROSSLISTERR
PostErrCrossVal	Posterior error estimates, cross validation	POSTERR and CROSSVALIDATE

Table Name	Description	Option
PostErrResub	Posterior error estimates, resubstitution	POSTERR
PostErrTestClass	Posterior error estimates, test classification	POSTERR and TEST=
PostResub	Posterior probabilities, resubstitution	LIST or LISTERR
PostTestClass	Posterior probabilities, test classification	TESTLIST or TESTLISTERR
RCoef	Raw canonical coefficients	CANONICAL
SimpleStatistics	Simple statistics	SIMPLE
TCoef	Total-sample standard canonical coefficients	CANONICAL
TCorr	Total-sample correlations	TCORR
TCov	Total-sample covariances	TCOV
TSSCP	Total-sample SSCP matrix	TSSCP
TStdMeans	Total standardized class means	STDMEAN
TStruc	Total canonical structure	CANONICAL
WCorr	Within-class correlations	WCORR
WCov	Within-class covariances	WCOV
WSSCP	Within-class SSCP matrices	WSSCP

Table 10.35 ODS Table Names Produced by the FACTOR Procedure

Table Name	Description	Option
AlphaCoef	Coefficient alpha for each factor	METHOD=ALPHA
CanCorr	Squared canonical correlations	METHOD=ML
CondStdDev	Conditional standard deviations	SIMPLE w/PARTIAL
ConvergenceStatus	Convergence status	METHOD=PRINIT, =ALPHA, =ML, or =ULS
Corr	Correlations	CORR
Eigenvalues	Eigenvalues	default or SCREE
Eigenvectors	Eigenvectors	EIGENVECTORS
FactorWeightRotate	Factor weights for rotation	HKPOWER=
FactorPattern	Factor pattern	
FactorStructure	Factor structure	ROTATE= any oblique rotation

Table Name	Description	Option
FinalCommun	Final communalities	default
FinalCommunWgt	Final communalities with weights	METHOD=ML or METHOD=ALPHA
FitMeasures	Measures of fit	METHOD=ML
ImageCoef	Image coefficients	METHOD=IMAGE
ImageCov	Image covariance matrix	METHOD=IMAGE
ImageFactors	Image factor matrix	METHOD=IMAGE
InputFactorPattern	Input factor pattern	METHOD=PATTERN with PRINT or ALL
InputScoreCoef	Standardized input scoring coefficients	METHOD=SCORE with PRINT or ALL
InterFactorCorr	Inter-factor correlations	ROTATE=any oblique rotation
InvCorr	Inverse correlation matrix	ALL
IterHistory	Iteration history	METHOD=PRINIT, =ALPHA, =ML, or =ULS
MultipleCorr	Squared multiple correlations	METHOD=IMAGE or METHOD=HARRIS
NormObliqueTrans	Normalized oblique transformation matrix	ROTATE=any oblique rotation
ObliqueRotFactPat	Rotated factor pattern	ROTATE=any oblique rotation
ObliqueTrans	Oblique transformation matrix	HKPOWER=
OrthRotFactPat	Rotated factor pattern	ROTATE=any orthogonal rotation
OrthTrans	Orthogonal transformational matrix	ROTATE=any orthogonal rotation
ParCorrControlFactor	Partial correlations controlling factors	RESIDUAL
ParCorrControlVar	Partial correlations controlling other variables	MSA
PartialCorr	Partial correlations	MSA or CORR w/PARTIAL
PriorCommunalEst	Prior communality estimates	PRIORS=, METHOD=ML, or METHOD=ALPHA
ProcrustesTarget	Target matrix for Procrustean transformation	ROTATE=PROCRUSTES or ROTATE=PROMAX
ProcrustesTrans	Procrustean transformation matrix	ROTATE=PROCRUSTES or ROTATE=PROMAX
RMSOffDiagPartials	Root mean square off-diagonal partials	RESIDUAL
RMSOffDiagResids	Root mean square off-diagonal residuals	RESIDUAL
ReferenceAxisCorr	Reference axis correlations	ROTATE=any oblique rotation

Table Name	Description	Option
ReferenceStructure	Reference structure	ROTATE=any oblique rotation
ResCorrUniqueDiag	Residual correlations with uniqueness on the diagonal	RESIDUAL
SamplingAdequacy	Kaiser's measure of sampling adequacy	MSA
SignifTests	Significance tests	METHOD=ML
SimpleStatistics	Simple statistics	SIMPLE
StdScoreCoef	Standardized scoring coefficients	SCORE
VarExplain	Variance explained	
VarExplainWgt	Variance explained with weights	METHOD=ML or METHOD=ALPHA
VarFactorCorr	Squared multiple correlations of the variables with each factor	SCORE
VarWeightRotate	Variable weights for rotation	NORM=WEIGHT or ROTATE=

Table 10.36 ODS Table Names Produced by the FASTCLUS Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
ApproxExpOverAllRSq	Approximate expected overall R-Squared, single number	
CCC	Cubic clustering criterion, single number	
ClusterList	Cluster listing, obs, ID, and distances	LIST
ClusterSum	Cluster summary, cluster number, distances	PRINTALL
ClusterCenters	Cluster centers	
ClusterDispersion	Cluster dispersion	
ConvergenceStatus	Convergence status	PRINTALL
Criterion	Criterion based on final seeds, single number	
DistBetweenClust	Distance between clusters	
InitialSeeds	Initial seeds	

Table Name	Description	Option
IterHistory	Iteration history, various statistics for each iteration	PRINTALL
MinDist	Minimum distance between initial seeds, single number	PRINTALL
NumberOfBins	Number of bins	
ObsOverAllRSquare	Observed overall R-Squared. single number	SUMMARY
PrelScaleEst	Preliminary L(1) scale estimate, single number	PRINTALL
PseudoFStat	Pseudo F statistic, single number	
SimpleStatistics	Simple statistics for input variables	
VariableStat	Statistics for variables within clusters	

Table 10.37 ODS Table Names Produced by the GAM Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
ANODEV	Analysis of deviance table for smoothing variables	
ClassSummary	Summary of class variables	
InputSummary	Data summary	
IterSummary	Iteration summary	
FitSummary	Fit parameters and fit summary	
ParameterEstimates	Parameter estimation for regression variables	
	ODS Tables Created by the MODEL Statement	
Iteration	Iteration history table	ITPRINT

Table 10.38 ODS Table Names Produced by the GENMOD Procedure

Table Name	Description	Option
	ODS Tables Created by the CLASS Statement	
ClassLevels	Class variable levels	
	ODS Tables Created by the CONTRAST Statement	
Contrasts	Tests of contrasts	
ContrastCoef	Contrast coefficients	E
LinDep	Linearly dependent rows of contrasts	
NonEst	Nonestimable rows of contrasts	
	ODS Tables Created by the MODEL Statement	
ConvergenceStatus	Convergence status	
CorrB	Parameter estimate correlation matrix	CORRB
CovB	Parameter estimate covariance matrix	COVB
IterLRCI	Iteration history for likelihood ratio confidence intervals	LRCI ITPRINT
IterParms	Iteration history for parameter estimates	ITPRINT
IterType3	Iteration history for Type 3 statistics	TYPE3 ITPRINT
LRCI	Likelihood ratio confidence intervals	LRCI ITPRINT
LagrangeStatistics	Lagrange statistics	NOINT or NOSCALE
LastGradHess	Last evaluation of the gradient and Hessian	ITPRINT
ModelInfo	Model information	
Modelfit	Goodness-of-fit statistics	
ObStats	Observation-wise statistics	OBSTATS, CL, PREDICTED, RESIDUALS, or XVARS
ParameterEstimates	Parameter estimates	
ParmInfo	Parameter indices	
ResponseProfiles	Frequency counts for multinomial models	DIST=MULTINOMIAL
Type1	Type 1 tests	TYPE1
Type3	Type 3 tests	TYPE3

Table Name	Description	Option
ODS Tables Created by the ESTIMATE Statement		
Estimates	Estimates of contrasts	
EstimateCoef	Contrast coefficients	E
ODS Tables Created by the REPEATED Statement		
GEEEmpPEst	GEE parameter estimates with empirical standard errors	
GEELogORInfo	GEE log odds ratio model information	LOGOR=
GEEModInfo	GEE model information	
GEEModPEst	GEE parameter estimates with model-based standard errors	MODELSE
GEENCorr	GEE model-based correlation matrix	MCORRB
GEENCov	GEE model-based covariance matrix	MCOVB
GEERCorr	GEE empirical correlation matrix	ECORRB
GEERCov	Gee empirical covariance matrix	ECOVB
GEEWCorr	GEE working correlation matrix	CORRW
ODS Tables Created by the MODEL CONTRAST Statement		
IterContrasts	Iteration history for contrasts	ITPRINT
ODS Tables Created by the MODEL REPEATED Statement		
IterParmsGEE	Iteration history for GEE parameter estimates	ITPRINT
LastGEEGrad	Last evaluation of the generalized gradient and Hessian	ITPRINT
ODS Tables Created by the LSMEANS Statement		
LSMeanCoef	Coefficients for least squares means	E
LSMeanDiffs	Least squares means differences	DIFF
LSMeans	Least squares means	

Table 10.39 ODS Table Names Produced by the GLM Procedure

Table Name	Description	Option
DependentInfo	Simultaneously analyzed dependent variables	default when there are multiple dependent variables with different patterns of missing values
FitStatistics	R-Square, C.V., root MSE, and dependent mean	
MatrixRepresentation	X matrix element representation	as needed for other options
ModelANOVA	ANOVA for model terms	
NObs	Number of observations	
OverallANOVA	Overall ANOVA	
	ODS Tables Created by the CLASS Statement	
ClassLevels	Classification variable levels	
	ODS Tables Created by the CONTRAST Statement	
AltErrContrasts	ANOVA table for contrasts with alternative error	E=
ContrastCoef	L matrix for contrast	EST
Contrasts	ANOVA table for contrasts	
	ODS Tables Created by the ESTIMATE Statement	
Estimates	Estimate statement result	
	ODS Tables Created by the LSMEANS Statement	
Diff	PDiff matrix of least-squares means	PDIFF
LSMeanCL	Confidence interval for LS-means	CL
LSMeanCoef	Coefficients of least-squares means	E
LSMeanDiffCL	Confidence interval for LS-mean differences	PDIFF and CL
LSMeans	Least-squares means	
SimDetails	Details of difference quantile simulation	ADJUST=SIMULATE(REPORT)
SimResults	Evaluation of difference quantile simulation	ADJUST=SIMULATE(REPORT)
SlicedANOVA	Sliced effect ANOVA table	SLICE

Table Name	Description	Option
	ODS Tables Created by the MEANS Statement	
Bartlett	Bartlett's homogeneity of variance test	HOVTEST=BARTLETT
CLDiffs	Multiple comparisons of pairwise differences	CLDIFF, DUNNETT, or (Unequal cells and not LINES)
CLDiffsInfo	Information for multiple comparisons of pairwise differences	CLDIFF, DUNNETT, or (Unequal cells and not LINES)
CLMeans	Multiple comparisons of means with confidence/comparison interval	CLM
CLMeansInfo	Information for multiple comparison of means with confidence/comparison interval	CLM
HOVFTest	Homogeneity of variance ANOVA	HOVTEST
MCLines	Multiple comparisons LINES output	LINES, ((DUNCAN, WALLER, SNK, or REGWQ) and not (CLDIFF or CLM)), or (Equal cells and not CLDIFF)
MCLinesInfo	Information for multiple comparison LINES output	LINES, ((DUNCAN, WALLER, SNK, or REGWQ) and not (CLDIFF or CLM)), or (Equal cells and not CLDIFF)
MCLinesRange	Ranges for multiple range MC tests	LINES, ((DUNCAN, WALLER, SNK, or REGWQ) and not (CLDIFF or CLM)), or (Equal cells and not CLDIFF)
Means	Group means	
Welch	Welch's ANOVA	WELCH
	ODS Tables Created by the MODEL Statement	
Aliasing	Type 1, 2, 3, 4 aliasing structure	(E1, E2, E3, or E4) and ALIASING
EstFunc	Type 1, 2, 3, 4 estimable functions	E1, E2, E3, or E4
GAliasing	General form of aliasing structure	E and ALIASING
GEstFunc	General form of estimable functions	E
InvXPX	Inv(X'X) matrix	INVERSE

Table Name	Description	Option
ParameterEstimates	Estimated linear model coefficients	SOLUTION
PredictedInfo	Predicted values info	PREDICTED, CLM, or CLI
PredictedValues	Predicted values	PREDICTED, CLM, or CLI
Tolerances	X'X tolerances	TOLERANCE
XPX	X'X matrix	XPX
ODS Tables Created by the MANOVA or REPEATED Statements		
CanAnalysis	Canonical analysis	CANONICAL
CanCoef	Canonical coefficients	CANONICAL
CanStructure	Canonical structure	CANONICAL
ErrorSSCP	Error SSCP matrix	PRINTE
HypothesisSSCP	Hypothesis SSCP matrix	PRINTH
PartialCorr	Partial correlation matrix	PRINTE
ODS Tables Created by the MANOVA Statement		
CharStruct	Characteristic roots and vectors	not CANONICAL
MANOVATransform	Multivariate transformation matrix	M=
MultStat	Multivariate tests	
Tests	Summary ANOVA for specified MANOVA H= effects	H=SUMMARY
ODS Tables Created by the RANDOM Statement		
ExpectedMeanSquares	Expected mean squares	
QForm	Quadratic form for expected mean squares	Q
RandomModelANOVA	Random effect tests	TEST
ODS Tables Created by the REPEATED Statement		
CharStruct	Characteristic roots and vectors	PRINTRV
Epsilons	Greenhouse-Geisser and Huynh-Feldt epsilons	
RepeatedLevelInfo	Correspondence between dependents and repeated measures levels	
RepeatedTransform	Repeated measures transformation matrix	PRINTM

Table Name	Description	Option
Sphericity	Sphericity tests	PRINTE
	ODS Tables Created by the TEST Statement	
AltErrTests	ANOVA table for tests with alternative error	E=

Table 10.40 ODS Table Names Produced by the GLMMOD Procedure

Table Name	Description	Option
DependentInfo	Simultaneously analyzed dependent variables	default when there are multiple dependent variables
DesignPoints	Design matrix	
NObs	Number of observations	
Parameters	Parameters and associated column numbers	
	ODS Tables Created by the CLASS Statement	
ClassLevels	Table of class levels	

Table 10.41 ODS Table Names Produced by the INBREED Procedure

Table Name	Description	Option
	ODS Tables Created by the GENDER Statement	
AvgCovCoef	Averages of covariance coefficient matrix	COVAR and AVERAGE
AvgInbreedingCoef	Averages of inbreeding coefficient matrix	AVERAGE
	ODS Tables Created by the MATINGS Statement	
MatingCovCoef	Covariance coefficients of matings	COVAR
MatingInbreedingCoef	Inbreeding coefficients of matings	

Table Name	Description	Option
ODS Tables Created by the PROC Statement		
CovarianceCoefficient	Covariance coefficient table	COVAR
InbreedingCoefficient	Inbreeding coefficient table	
IndividualCovCoef	Inbreeding coefficients of individuals	IND and COVAR
IndividualInbreedingCoef	Inbreeding coefficients of individuals	IND
NumberOfObservations	Number of observations	

Table 10.42 ODS Table Names Produced by the KDE Procedure

Table Name	Description
BivariateStatistics	Bivariate statistics
Controls	Control variables
Inputs	Input information
Levels	Levels of density estimate
Percentiles	Percentiles of data
Statistics	Basic statistics

Table 10.43 ODS Table Names Produced by the LATTICE Procedure

Table Name	Description
ANOVA	Analysis of variance
AdjTreatmentMeans	Adjusted treatment means
Statistics	Additional statistics

Table 10.44 ODS Table Names Produced by the LIFEREG Procedure

Table Name	Description	Option
ODS Tables Created by the CLASS Statement		

Table Name	Description	Option
ClassLevels	Class variable levels	
	ODS Tables Created by the MODEL Statement	
ConvergenceStatus	Convergence status	
CorrB	Parameter estimate correlation matrix	CORRB
CovB	Parameter estimate covariance matrix	COVB
IterHistory	Iteration history	ITPRINT
LagrangeStatistics	Lagrange statistics	NOINT or NOSCALE
LastGrad	Last evaluation of the gradient	ITPRINT
LastHess	Last evaluation of the Hessian	ITPRINT
ModelInfo	Model information	
ParameterEstimates	Parameter estimates	
ParmInfo	Parameter indices	
Type3Analysis	Type 3 tests	
	ODS Tables Created by the PROBPLOT Statement	
EMIterHistory	Iteration history for Turnbull algorithm	ITPRINTEM
ProbEstimates	Nonparametric CDF estimates	PPOUT
Turnbull	Probability estimates from Turnbull algorithm	ITPRINTEM

Table 10.45 ODS Table Names Produced by the LIFETEST Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
CensorPlot	Line-printer plot of censored observations	PLOT=(C, S, LS or LLS), METHOD=PL, and LINEPRINTER
CensoredSummary	Number of event and censored observations	METHOD=PL
DensityPlot	Plot of the density	PLOT=(D) and METHOD=LT
HazardPlot	Plot of the hazards function	PLOT=(H) and METHOD=LT
LifetableEstimates	Lifetable survival estimates	METHOD=LT

Table Name	Description	Option
LogLogSurvivalPlot	Plot of the log of the negative log survivor function	PLOT=(LLS)
LogSurvivalPlot	Plot of the log survivor function	PLOT=(LS)
Means	Mean and standard error of survival times	METHOD=PL
ProductLimitEstimates	Product-limit survival estimates	METHOD=PL
Quartiles	Quartiles of the survival distribution	METHOD=PL
SurvivalPlot	Plot of the survivor function	PLOT=(S)
	ODS Tables Created by the STRATA Statement	
HomStats	Rank statistics for testing strata homogeneity	
HomTests	Tests for strata homogeneity	
LogHomCov	Covariance matrix for the log-rank statistics for strata homogeneity	
WilHomCov	Covariance matrix for the Wilcoxon statistics for strata homogeneity	
	ODS Tables Created by the TEST Statement	
LogForStepSeq	Forward stepwise sequence for the log-rank statistics for association	
LogTestCov	Covariance matrix for log-rank statistics for association	
LogUniChisq	Univariate Chi-Squares for log-rank statistic for association	
WilForStepSeq	Forward stepwise sequence for the log-rank statistics for association	
WilTestCov	Covariance matrix for log-rank statistics for association	
WilUniChiSq	Univariate Chi-Squares for Wilcoxon statistic for association	

Table 10.46 ODS Table Names Produced by the LOESS Procedure

Table Name	Description	Option
FitSummary	Specified fit parameters and fit summary	
ScaleDetails	Extent and scaling of the independent variables	
	ODS Tables Created by the MODEL Statement	
kdTree	Structure of kd tree used	DETAILS(kdTree)
ModelSummary	Summary of all models evaluated	DETAILS(ModelSummary)
OutputStatistics	Coordinates and fit results at input data points	DETAILS(OutputStatistics)
PredAtVertices	Coordinates and fitted values at kd tree vertices	DETAILS(PredAtVertices)
SmoothingCriterion	Criterion value and selected smoothing parameter	SELECT
	ODS Tables Created by the SCORE Statement	
ScoreResults	Coordinates and fit results at scoring points	PRINT

Table 10.47 ODS Table Names Produced by the LOGISTIC Procedure

Table Name	Description	Option
	ODS Tables Created by the CONTRAST Statement	
ContrastCoeff	L matrix from CONTRAST	E
ContrastEstimate	Estimates from CONTRAST	ESTIMATE=
ContrastTest	Wald test for CONTRAST	
	ODS Tables Created by the EXACT Statement	
ExactOddsRatio	Exact odds ratio	ESTIMATE=ODDS or ESTIMATE=BOTH
ExactParmEst	Parameter estimates	ESTIMATE, ESTIMATE=PARM, or ESTIMATE=BOTH
ExactTests	Conditional exact tests	

Table Name	Description	Option
SuffStats	Sufficient statistics	OUTDIST=
	ODS Tables Created by the MODEL Statement	
Association	Association of predicted probabilities and observed responses	
BestSubsets	Best subset selection	SELECTION=SCORE
ClassLevelInfo	CLASS variable levels and design variables	default (with CLASS variables)
Classification	Classification table	CTABLE
CLOddsPL	Profile likelihood confidence limits for odds ratios	CLODDS=PL
CLOddsWald	Wald's confidence limits for odds ratios	CLODDS=WALD
CLParmPL	Profile likelihood confidence limits for parameters	CLPARM=PL
CLParmWald	Wald's confidence limits for parameters	CLPARM=WALD
ConvergenceStatus	Convergence status	
CorrB	Estimated correlation matrix of parameter estimators	CORRB
CovB	Estimated covariance matrix of parameter estimators	COVB
CumulativeModelTest	Test of the cumulative model assumption	(ordinal response)
EffectNotInModel	Test for effects not in model	SELECTION=S or F
FastElimination	Fast backward elimination	SELECTION=B, FAST
FitStatistics	Model fit statistics	
GlobalScore	Global score test	NOFIT
GlobalTests	Test for global null hypothesis	
GoodnessOfFit	Pearson and deviance goodness-of-fit tests	SCALE
IndexPlots	Batch capture of the index plots	IPLOTS
Influence	Regression diagnostics	INFLUENCE
IterHistory	Iteration history	ITPRINT
LackFitChiSq	Hosmer-Lemeshow Chi-Square test results	LACKFIT
LackFItPartition	Partition for the Hosmer-Lemeshow test	LACKFIT
LastGradient	Last evaluation of gradient	ITPRINT

Table Name	Description	Option
LogLikeChange	Final change in the log likelihood	ITPRINT
ModelBuildingSummary	Summary of model building	SELECTION=B, F, or S
OddsRatios	Odds ratios	
ParameterEstimates	Maximum likelihood estimates of model parameters	
RSquare	R-Square	RSQUARE
ResidualChiSq	Residual Chi-Square	SELECTION=F or B
Type3	Type 3 tests of effects	default (with CLASS variables)
ODS Tables Created by the PROC Statement		
ClassFreq	Frequency breakdown of CLASS variables	SIMPLE
ClassWgt	Weight breakdown of CLASS variables	SIMPLE
ModelInfo	Model information	
ResponseProfile	Response profile	
SimpleStatistics	Summary statistics for explanatory variables	SIMPLE
ODS Tables Created by the STRATA Statement		
StrataSummary	Number of strata with specific response frequencies	
StrataInfo	Event and non-event frequencies for each stratum	INFO
ODS Tables Created by the TEST Statement		
TestPrint1	L[cov(b)]L’ and Lb-c	PRINT
TestPrint2	Ginv(L[cov(b)]L’) and Ginv(L[cov(b)]L’)(Lb-c)	PRINT
TestStmts	Linear hypothesis testing results	
ODS Tables Created by the WEIGHT Statement		
ClassWgt	Weight breakdown of CLASS variables	SIMPLE

Table 10.48 ODS Table Names Produced by the MDS Procedure

Table Name	Description	Option
ConvergenceStatus	Convergence status	
DimensionCoef	Dimension coefficients	PCOEF w/COEF= not IDENTITY
FitMeasures	Measures of fit	PFIT
IterHistory	Iteration history	
PConfig	Estimated coordinates of the objects in the configuration	PCONFIG
PData	Data matrices	PDATA
PInAvData	Initial sum of weights and weighted average of data matrices with INAV=DATA	PINAVDATA
PInEigval	Initial eigenvalues	PINEIGVAL
PInEigvec	Initial eigenvectors	PINEIGVEC
PInWeight	Initialization weights	PINWEIGHT
Transformations	Transformation parameters	PTRANS w/LEVEL=RATIO, INTERVAL, or LOGINTERVAL

Table 10.49 ODS Table Names Produced by the MI Procedure

Table Name	Description	Option
Corr	Pairwise correlations	SIMPLE
MissPattern	Missing data patterns	
ModelInfo	Model information	
ParameterEstimates	Parameter estimates	
Univariate	Univariate statistics	SIMPLE
VarianceInfo	Between, within, and total variances	
	ODS Tables Created by the EM Statement	
EMEstimates	EM (MLE) estimates	
EMInitEstimates	EM initial estimates	
EMIterHistory	EM (MLE) iteration history	ITPRINT
	ODS Tables Created by the MCMC Statement	

Table Name	Description	Option
EMPostEstimates	EM (posterior mode) estimates	INITIAL=EM
EMPostIterHistory	EM (posterior mode) iteration history	INITIAL=EM (ITPRINT)
EMWLF	Worst linear function	WLF
MCMCInitEstimates	MCMC initial estimates	DISPLAYINIT
	ODS Tables Created by the MONOTONE Statement	
MonoDiscrim	Discriminant model group means	DISCRIM (/DETAILS)
MonoLogistic	Logistic model	LOGISTIC (/DETAILS)
MonoModel	Multiple monotone models	
MonoPropensity	Propensity score model logistic function	PROPENSITY (/DETAILS)
MonoReg	Regression model	REG (/DETAILS)
MonoRegPPM	Predicted mean matching model	REGPMM (/DETAILS)
	ODS Tables Created by the TRANSFORM Statement	
Transform	Variable transformations	

Table 10.50 ODS Table Names Produced by the MIANALYZE Procedure

Table Name	Description	Option
BCov	Between-imputation covariance matrix	BCOV
ModelInfo	Model information	
MultStat	Multivariate inference	MULT
ParameterEstimates	Parameter estimates	
TCov	Total covariance matrix	TCOV
VarianceInfo	Variance information	
WCov	Within-imputation covariance matrix	WCOV
	ODS Tables Created by the TEST Statement	
TestBCov	Between-imputation covariance matrix for Lβ	BCOV

Table Name	Description	Option
TestMultStat	Multivariate inference for Lβ	MULT
TestParameterEstimates	Parameter estimates for Lβ	
TestSpec	Test specification, L and c	
TestTCov	Total covariance matrix for Lβ	TCOV
TestVarianceInfo	Variance information for Lβ	
TestWCov	Within—imputation covariance matrix for Lβ	WCOV

Table 10.51 ODS Table Names Produced by the MODECLUS Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
BoundaryFreq	Boundary objects information	BOUNDARY (or ALL)
ClusterList	Cluster listing, cluster ID, frequency, density, etc.	LIST (or ALL)
ClusterStats	Cluster statistics	
ClusterStats	Cluster statistics, significance test statistics	TEST or JOIN (or ALL)
ClusterSummary	Cluster summary	
ClusterSummary	Cluster summary, crossvalidation criterion	CROSS or CROSSLIST (or ALL)
ClusterSummary	Cluster summary, clusters joined information	JOIN (or ALL)
CrossList	Cross-validated log density	CROSSLIST
ListLocal	Local dimensionality estimates	LOCAL
Neighbor	Nearest neighbor list	NEIGHBOR (or ALL)
SimpleStatistics	Simple statistics	SIMPLE (or ALL)
Trace	Trace of clustering algorithm (METHOD=6 only)	TRACE (or ALL) with METHOD=6
UnassignObjects	Information on unassigned objects	LIST (or ALL)

Table 10.52 ODS Table Names Produced by the MULTTEST Procedure

Table Name	Description	Option
Continuous	Continuous variable tabulations	TEST with MEAN
Contrasts	Contrast coefficients	
Discrete	Discrete variable tabulations	TEST with CA, FT, PETO, or FISHER
ModelInfo	Model information	
pValues	p-values from the tests	

Table 10.53 ODS Table Names Produced by the NESTED Procedure

Table Name	Description
ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
EMSCoef	Coefficients of expected mean squares
Statistics	Overall statistics for fit

Table 10.54 ODS Table Names Produced by the NLIN Procedure

Table Name	Description
ANOVA	Analysis of variance
ConvergenceStatus	Convergence status
CorrB	Correlation of the parameters
EstSummary	Summary of the estimation
IterHistory	Iteration output
MissingValues	Missing values generated by the program
ParameterEstimates	Parameter estimates
ODS Tables Created by the LIST Statement	
ProgList	List of the compiled program

Table Name	Description
ODS Tables Created by the LISTCODE Statement	
CodeList	List of program statements
ODS Tables Created by the LISTDEP Statement	
CodeDependency	Variable cross reference
ODS Tables Created by the LISTDER Statement	
FirstDerivatives	First derivative table

Table 10.55 ODS Table Names Produced by the NLMIXED Procedure

Table Name	Description	Option
AdditionalEstimates	Results from ESTIMATE statements	ESTIMATE
ConvergenceStatus	Convergence status	
CorrMatAddEst	Correlation matrix of additional estimates	ECORR
CorrMatParmEst	Correlation matrix of parameter estimates	CORR
CovMatAddEst	Covariance matrix of additional estimates	ECOV
CovMatParmEst	Covariance matrix of parameter estimates	COV
DerAddEst	Derivatives of additional estimates	EDER
Dimensions	Dimensions of the problem	
FitStatistics	Fit statistics	
Hessian	Second derivative matrix	HESS
IterHistory	Iteration history	
Parameters	Parameters	
ParameterEstimates	Parameter estimates	
Specifications	Model specifications	
StartingHessian	Starting hessian matrix	START HESS
StartingValues	Starting values and gradient	START

Table 10.56 ODS Table Names Produced by the NPAR1WAY Procedure

Table Name	Description	Option
	ODS Tables Created by the EXACT Statement	
ABMC	Monte Carlo estimates for the Ansari-Bradley exact test	AB or MC
DataScoresMC	Monte Carlo estimates for the exact test based on data scores	SCORES=DATA or MC
KlotzMC	Monte Carlo estimates for the Klotz exact test	KLOTZ or MC
KolSmirExactTest	Kolmogorov-Smirnov exact test	KS
KruskalWallisMC	Monte Carlo estimates for the Kruskal-Wallis exact test	WILCOXON or MC
KSMC	Monte Carlo estimates for the Kolmogorov-Smirnov exact test	KS or MC
MedianMC	Monte Carlo estimates for the median exact test	MEDIAN or MC
MoodMC	Monte Carlo estimates for the Mood exact test	MOOD or MC
SavageMC	Monte Carlo estimates for the Savage exact test	SAVAGE or MC
STMC	Monte Carlo estimates for the Siegel-Tukey one-way analysis	ST or MC
VWMC	Monte Carlo estimates for the Van der Waerden exact test	VW or MC
WilcoxonMC	Monte Carlo estimates for the Wilcoxon two-sample exact test	WILCOXON or MC
	ODS Tables Created by the PROC Statement	
ANOVA	Analysis of variance	ANOVA
ABAnalysis	Ansari-Bradley one-way analysis	AB
ABScores	Ansari-Bradley scores	AB
ABTest	Ansari-Bradley two-sample test	AB
ClassMeans	Class means	ANOVA
CVMStats	Cramer-von Mises statistics	EDF
CVMTest	Cramer-von Mises test	EDF
DataScores	Data scores	SCORES=DATA
DataScoresAnalysis	Data scores one-way analysis	SCORES=DATA
DataScoresTest	Data scores two-sample test	SCORES=DATA
KlotzAnalysis	Klotz one-way analysis	KLOTZ

Table Name	Description	Option
KlotzScores	Klotz scores	KLOTZ
KlotzTest	Klotz two-sample test	KLOTZ
KolSmir2Stats	Kolmogorov-Smirnov two-sample statistics	EDF
KolSmirStats	Kolmogorov-Smirnov statistics	EDF
KolSmirTest	Kolmogorov-Smirnov test	EDF
KruskalWallisTest	Kruskal-Wallis test	WILCOXON
KuiperStats	Kuiper two-sample statistics	EDF
KuiperTest	Kuiper test	EDF
MedianAnalysis	Median one-way analysis	MEDIAN
MedianScores	Median scores	MEDIAN
MedianTest	Median two-sample test	MEDIAN
MoodAnalysis	Mood one-way analysis	MOOD
MoodScores	Mood scores	MOOD
MoodTest	Mood two-sample test	MOOD
SavageAnalysis	Savage one-way analysis	SAVAGE
SavageScores	Savage scores	SAVAGE
SavageTest	Savage two-sample test	SAVAGE
STAnalysis	Siegel-Tukey one-way analysis	ST
STScores	Siegel-Tukey scores	ST
STTest	Siegel-Tukey two-sample test	ST
VWAnalysis	Van der Waerden one-way analysis	VW
VWScores	Van der Waerden scores	VW
VWTest	Van der Waerden two-sample test	VW
WilcoxonScores	Wilcoxon scores	WILCOXON
WilcoxonTest	Wilcoxon two-sample test	WILCOXON

Table 10.57 ODS Table Names Produced by the ORTHOREG Procedure

Table Name	Description
ANOVA	Analysis of variance
FitStatistics	Overall statistics for fit
ParameterEstimates	Parameter estimates

Table Name	Description
ODS Tables Created by the CLASS Statement	
Levels	Table of class levels

Table 10.58 ODS Table Names Produced by the PPHREG Procedure

Table Name	Description	Option
ODS Tables Created by the MODEL Statement		
BestSubsets	Best subset selection	SELECTION=SCORE
CensoredSummary	Summary of event and censored observations	
ConvergenceStatus	Convergence status	
CorrB	Estimated correlation matrix of parameter estimators	CORRB
CovB	Estimated covariance matrix of parameter estimators	COVB
FitStatistics	Model fit statistics	
GlobalScore	Global Chi-Square test	NOFIT
GlobalTests	Tests of the global null hypothesis	
IterHistory	Iteration history	ITPRINT
LastGradient	Last evaluation of gradient	ITPRINT
ModelBuildingSummary	Summary of model building	SELECTION=B, F, or S
ParameterEstimates	Maximum likelihood estimates of model parameters	
ResidualChiSq	Residual Chi-Square	SELECTION=F or B
VariablesNotInModel	Analysis of variables not in the model	SELECTION=F or S
ODS Tables Created by the PROC Statement		
ModelInfo	Model information	
SimpleStatistics	Summary statistics for explanatory variables	SIMPLE
ODS Tables Created by the TEST Statement		
TestAverage	Average effect for test	AVERAGE

Table Name	Description	Option
TestCoeff	Coefficients for linear hypothesis	E
TestPrint1	L[cov(b)]L' and Lb-c	PRINT
TestPrint2	Ginv(L[cov(b)]L') and Ginv(L[cov(b)]L')(Lb-c)	PRINT
TestStmts	Linear hypotheses testing results	

Table 10.59 ODS Table Names Produced by the PLAN Procedure

Table Name	Description
Plan	Computed plan
ODS Tables Created by the FACTOR and TREATMENT Statements	
PFInfo	Plot factor information
TFInfo	Treatment factor information
ODS Tables Created by the FACTOR and no TREATMENT Statements	
FInfo	General factor information

Table 10.60 ODS Table Names Produced by the PLS Procedure

Table Name	Description	Option
ODS Tables Created by the MODEL Statement		
CenScaleParms	Parameter estimates for centered and scaled data	SOLUTION
ParameterEstimates	Parameter estimates for raw data	SOLUTION
ODS Tables Created by the PROC Statement		
CVResults	Results of cross validation	CV
CodedCoef	Coded coefficients	DETAILS
PercentVariation	Variation accounted for by each factor	

Table Name	Description	Option
ResidualSummary	Residual summary from cross validation	CV
XEffectCenScale	Centering and scaling information for predictor effects	CENSCALE
XLoadings	Loadings for independents	DETAILS
XVariableCenScale	Centering and scaling information for predictor effects	CENSCALE and VARSCALE
XWeights	Weights for independents	DETAILS
YVariableCenScale	Centering and scaling information for responses	CENSCALE
YWeights	Weights for dependents	DETAILS

Table 10.61 ODS Table Names Produced by the PRINCOMP Procedure

Table Name	Description	Option
Corr	Correlation matrix	default unless COV is specified
Cov	Covariance matrix	default if COV is specified
Eigenvalues	Eigenvalues	
Eigenvectors	Eigenvectors	
NObsNVar	Number of observations, variables, and (partial) variables	
SimpleStatistics	Simple statistics	
TotalVariance	Total variance	COV
	ODS Tables Created by the PARTIAL Statement	
ParCorr	Partial correlation matrix	
ParCov	Uncorrected partial covariance matrix	COV
RegCoef	Regression coefficients	COV
RSquareRMSE	Regression statistics: R-Squares and RMSEs	
StdRegCoef	Standardized regression coefficients	

Table 10.62 ODS Table Names Produced by the PRINQUAL Procedure

Table Name	Description	Option
ConvergenceStatus	Convergence status	
Footnotes	Iteration history footnotes	
	ODS Tables Created by the PROC Statement	
MAC	MAC iteration history	METHOD=MAC
MGV	MGV iteration history	METHOD=MGV
MTV	MTV iteration history	METHOD=MTV

Table 10.63 ODS Table Names Produced by the PROBIT Procedure

Table Name	Description	Option
	ODS Tables Created by the CLASS Statement	
ClassLevels	Class variable levels	
	ODS Tables Created by the MODEL Statement	
ConvergenceStatus	Convergence status	
CorrB	Parameter estimate correlation matrix	CORRB
CovB	Parameter estimate covariance matrix	COVB
CovTolerance	Covariance matrix for location and scale	
GoodnessOfFit	Goodness of fit tests	LACKFIT
IterHistory	Iteration history	ITPRINT
LagrangeStatistics	Lagrange statistics	NOINT
LastGrad	Last evaluation of the gradient	ITPRINT
LastHess	Last evaluation of the Hessian	ITPRINT
LogProbitAnalysis	Probit analysis for log dose	INVERSECL
ModelInfo	Model information	
MuSigma	Location and scale	
ParameterEstimates	Parameter estimates	
ParmInfo	Parameter indices	
ProbitAnalysis	Probit analysis for linear dose	INVERSECL

Table Name	Description	Option
ResponseLevels	Response-covariate profile	LACKFIT
ResponseProfiles	Counts for ordinal data	
Type3Analysis	Type 3 tests	

Table 10.64 ODS Table Names Produced by the REG Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
ACovEst	Consistent covariance of estimates matrix	ALL or ACOV
ANOVA	Model ANOVA table	
CollinDiag	Collinearity diagnostics table	COLLIN
CollinDiagNoInt	Collinearity diagnostics for no intercept model	COLLINOINT
ConditionBounds	Bounds on condition number	(SELECTION=BACKWARD, FORWARD, STEPWISE, MAXR, or MINR) and DETAILS
CorrB	Correlation of estimates	CORRB
CovB	Covariance of estimates	COVB
CrossProducts	Bordered model X'X matrix	ALL or XPX
DWStatistic	Durbin-Watson statistic	ALL or DW
DependenceEquations	Linear dependence equations	
EntryStatistics	Entry statistics for selection methods	(SELECTION=BACKWARD, FORWARD, STEPWISE, MAXR, or MINR) and DETAILS
FitStatistics	Model fit statistics	
InvXPX	Bordered X'X inverse matrix	I
OutputStatistics	Output statistics table	ALL, CLI, CLM, INFLUENCE, P, or R
ParameterEstimates	Model parameter estimates	
RemovalStatistics	Removal statistics for selection methods	(SELECTION=BACKWARD, STEPWISE, MAXR, or MINR) and DETAILS
ResidualStatistics	Residual statistics and PRESS statistic	ALL, CLI, CLM, INFLUENCE, P, or R

Table Name	Description	Option
SelParmEst	Parameter estimates for selection methods	SELECTION=BACKWARD, FORWARD, STEPWISE, MAXR, or MINR
SelectionSummary	Selection summary for forward, backward, and stepwise methods	SELECTION=BACKWARD, FORWARD, or STEPWISE
SeqParmEst	Sequential parameter estimates	SEQB
SpecTest	White's heteroscedasticity test	ALL or SPEC
SubsetSelSummary	Selection summary for R-Square, adj-RSq, and Cp methods	SELECTION=RSQUARE, ADJRSQ, or CP
	ODS Tables Created by the MTEST Statement	
CanCorr	Canonical correlations for hypothesis combinations	CANPRINT
Eigenvalues	MTest eigenvalues	CANPRINT
Eigenvectors	MTest eigenvectors	CANPRINT
ErrorPlusHypothesis	MTest error plus hypothesis matrix H+E	PRINT
ErrorSSCP	MTest error matrix E	PRINT
HypothesisSSCP	MTest hypothesis matrix	PRINT
InvMTestCov	Inv(L Ginv(X'X)L') and Inv(Lb-c)	DETAILS
MTestCov	L Ginv(X'X) L' and Lb-c	DETAILS
MTransform	MTest matrix M, across dependents	DETAILS
MultStat	Multivariate test statistics	
	ODS Tables Created by the PROC Statement	
Corr	Correlation matrix for analysis variables	ALL or CORR
SimpleStatistics	Simple statistics for analysis variables	ALL or SIMPLE
USSCP	Uncorrected SSCP matrix for analysis variables	ALL or USSCP
	ODS Tables Created by the TEST Statement	
ACovTestANOVA	Test ANOVA using ACOV estimates	ACOV (MODEL statement)

Table Name	Description	Option
InvTestCov	Inv(L Ginv(X'X)L') and Inv(Lb-c)	PRINT
TestANOVA	Test ANOVA table	
TestCov	L Ginv(X'X) L' and Lb-c	PRINT

Table 10.65 ODS Table Names Produced by the ROBUSTREG Procedure

Table Name	Description	Option
	ODS Tables Created by the CLASS Statement	
ClassLevels	Class variable levels	
	ODS Tables Created by the MODEL Statement	
CorrB	Parameter estimate correlation matrix	CORRB
CovB	Parameter estimate covariance matrix	COVB
Diagnostics	Outlier diagnostics	DIAGNOSTICS
DiagSummary	Summary of the outlier diagnostics	
GoodFit	R2, deviance, AIC, and BIC	
ModelInfo	Model information	
ParameterEstimates	Parameter estimates	
ParmInfo	Parameter indices	
SummaryStatistics	Summary statistics for model variables	
	ODS Tables Created by the PROC Statement	
BestEstimates	Best final estimates for LTS	SUBANALYSIS
BestSubEstimates	Best estimates for each subgroup	SUBANALYSIS
BiasTest	Bias test for MM estimation	BIASTEST
CStep	C-Step for LTS fitting	SUBANALYSIS
Groups	Groups for LTS fitting	SUBANALYSIS
InitLTSProfile	Profile for initial LTS estimate	METHOD
InitSProfile	Profile for initial S estimate	METHOD
LTSEstimates	LTS parameter estimates	METHOD
LTSLocationScale	Location and scale for LTS	METHOD

Table Name	Description	Option
LTSProfile	Profile for LTS estimate	METHOD
LTSRsquare	R2 for LTS estimate	METHOD
MMProfile	Profile for MM estimate	METHOD
ParameterEstimatesF	Final weighted LS estimates	FWLS
SProfile	Profile for S estimate	METHOD
	ODS Tables Created by the TEST Statement	
ParameterEstimatesR	Reduced parameter estimates	
TestsProfile	Results for tests	

Table 10.66 ODS Table Names Produced by the RSREG Procedure

Table Name	Description
Coding	Coding coefficients for the independent variables
ErrorANOVA	Error analysis of variance
FactorANOVA	Factor analysis of variance
FitStatistics	Overall statistics for fit
ModelANOVA	Model analysis of variance
ParameterEstimates	Estimated linear parameters
Spectral	Spectral analysis
StationaryPoint	Stationary point of response surface
ODS Tables Created by the RIDGE Statement	
Ridge	Ridge analysis for optimum response

Table 10.67 ODS Table Names Produced by the STDIZE Procedure

Table Name	Description	Option
Statistics	Location and scale measures	PSTAT

Table 10.68 ODS Table Names Produced by the STEPDISC Procedure

Table Name	Description	Option
BCorr	Between-class correlations	BCORR
BCov	Between-class covariances	BCOV
BSSCP	Between-class SSCP matrix	BSSCP
Counts	Number of observations, variables, classes, and DF	
CovDF	DF for covariance matrices, not printed	any *COV option
Levels	Class level information	
Messages	Entry/removal messages	
Multivariate	Multivariate statistics	
PCorr	Pooled within-class correlations	PCORR
PCov	Pooled within-class covariances	PCOV
PSSCP	Pooled within-class SSCP matrix	PSSCP
PStdMeans	Pooled standardized class means	STDMEAN
SimpleStatistics	Simple statistics	SIMPLE
Steps	Stepwise selection entry/removal	
Summary	Stepwise selection summary	
TCorr	Total-sample correlations	TCORR
TCov	Total-sample covariances	TCOV
TSSCP	Total-sample SSCP matrix	TSSCP
TStdMeans	Total standardized class means	STDMEAN
Variables	Variable lists	
WCorr	Within-class correlations	WCORR
WCov	Within-class covariances	WCOV
WSSCP	Within-class SSCP matrices	WSSCP

Table 10.69 ODS Table Names Produced by the SURVEYMEANS Procedure

Table Name	Description	Option
	ODS Tables Created by the CLASS Statement	
ClassVarInfo	Class level information	
	ODS Tables Created by the DOMAIN Statement	
Domain	Statistics in domains	
	ODS Tables Created by the PROC Statement	
Statistics	Statistics	
Summary	Data summary	
	ODS Tables Created by the RATIO Statement	
Ratio	Statistics for ratios	
	ODS Tables Created by the STRATA Statement	
StrataInfo	Stratum information	LIST

Table 10.70 ODS Table Names Produced by the SURVEYREG Procedure

Table Name	Description	Option
	ODS Tables Created by the CLASS Statement	
ClassVarInfo	Class level information	
	ODS Tables Created by the CLUSTER Statement	
DesignSummary	Design summary	
	ODS Tables Created by the CONTRAST Statement	
ContrastCoef	Coefficients of contrast	E
Contrasts	Analysis of contrasts	
	ODS Tables Created by the ESTIMATE Statement	
EstimateCoef	Coefficients of estimate	E
Estimates	Analysis of estimable functions	

Table Name	Description	Option
ODS Tables Created by the MODEL Statement		
ANOVA	ANOVA for dependent variable	ANOVA
CovB	Covariance of estimated regression coefficients	COVB
DataSummary	Data summary	
Effects	Tests of model effects	
FitStatistics	Fit statistics	
InvXPX	Inverse matrix of X'X	INV
ParameterEstimates	Estimated regression coefficients	
XPX	X'X matrix	XPX
ODS Tables Created by the STRATA Statement		
DesignSummary	Data summary	
StrataInfo	Stratum information	LIST

Table 10.71 ODS Table Names Produced by the SURVEYSELECT Procedure

Table Name	Description
ODS Tables Created by the PROC Statement	
Method	Sample selection method
Summary	Sample selection summary

Table 10.72 ODS Table Names Produced by the TPHREG Procedure

Table Name	Description	Option
ODS Tables Created by the CONTRAST Statement		
ContrastCoeff	L matrix for contrasts	E
ContrastEstimate	Individual contrast estimates	ESTIMATE=
ContrastTest	Wald test for contrasts	
ODS Tables Created by the MODEL Statement		
BestSubsets	Best subset selection	SELECTION=SCORE

Table Name	Description	Option
CensoredSummary	Summary of event and censored observations	
ClassLevelInfo	CLASS variable levels and design variables	default (with CLASS variables)
ConvergenceStatus	Convergence status	
CorrB	Estimated correlation matrix of parameter estimates	CORRB
CovB	Estimated covariance matrix of parameter estimators	COVB
EffectsToEnter	Eligible effects for entry to model	SELECTION=F or S
EffectsToRemove	Eligible effects for removal from model	SELECTION=B or S
FitStatistics	Model fit statistics	
GlobalScore	Global Chi-Square test	NOFIT
GlobalTests	Tests of the global null hypothesis	
IterHistory	Iteration history	ITPRINT
LastGradient	Last evaluation of gradient	ITPRINT
ModelBuildingSummary	Summary of model building	SELECTION=B, F, or S
ParameterEstimates	Maximum likelihood estimates of model parameters	
ResidualChiSq	Residual Chi-Square	SELECTION=F or B
Type3	Type 3 tests of effects	default (with CLASS variables)
	ODS Tables Created by the PROC Statement	
ClassLevelFreq	Frequency breakdown of CLASS variables	SIMPLE (with CLASS variables)
ModelInfo	Model information	
SimpleStatistics	Summary statistics for interval explanatory variables	SIMPLE
	ODS Tables Created by the TEST Statement	
TestAverage	Average effect for test	AVERAGE
TestCoeff	Coefficients for linear hypothesis	E
TestPrint1	L[cov(b)]L’ and Lb-c	PRINT
TestPrint2	Ginv(L[cov(b)]L’) and Ginv(L[cov(b)]L’)(Lb-c)	PRINT
TestStmts	Linear hypothesis test results	

Table Name	Description	Option
	ODS Tables Created by the WEIGHT Statement	
ClassWgt	Weight breakdown of CLASS variables	SIMPLE (with CLASS variables)

Table 10.73 ODS Table Names Produced by the TPSPLINE Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
GCVFunction	GCV table	LOGNLAMBDA or LAMBDA
	ODS Tables Created by the PROC Statement	
DataSummary	Data summary	
FitStatistics	Model fit statistics	
FitSummary	Fit parameters and fit summary	

Table 10.74 ODS Table Names Produced by the TRANSREG Procedure

Table Name	Description	Option
ConvergenceStatus	Convergence status	
Equation	Linear dependency equation	less-than-full-rank model
Footnotes	Iteration history footnotes	
	ODS Tables Created by the MODEL Statement	
BoxCox	Box-Cox transformation results	BOXCOX
SplineCoef	Spline coefficients	SPLINE or MSPLINE
	ODS Tables Created by the MODEL and PROC Statements	
NObs	ANOVA	TEST or SS2
ClassLevels	ANOVA	TEST or SS2
ANOVA	ANOVA	TEST or SS2
LiberalANOVA	ANOVA	TEST or SS2

Table Name	Description	Option
ConservANOVA	ANOVA	TEST or SS2
FitStatistics	Fit statistics like R-Square	TEST or SS2
LiberalFitStatistics	Fit statistics	TEST or SS2
ConservFitStatistics	Fit statistics	TEST or SS2
MVANOVA	Multivariate ANOVA	TEST or SS2
LiberalMVANOVA	Multivariate ANOVA	TEST or SS2
ConservANOVA	Multivariate ANOVA	TEST or SS2
Coef	Regression results	SS2
LiberalCoef	Regression results	SS2
ConservCoef	Regression results	SS2
MVCoef	Multivariate regression results	SS2
LiberalMVCoef	Multivariate regression results	SS2
ConservMVCoef	Multivariate regression results	SS2
Utilities	Conjoint analysis utilities	UTILITY
LiberalUtilities	Conjoint analysis utilities	UTILITY
ConservUtilities	Conjoint analysis utilities	UTILITY
Details	Model details	DETAIL
Univariate	Univariate iteration history	METHOD=UNIVARIATE
MORALS	MORALS iteration history	METHOD=MORALS
CANALS	CANALS iteration history	METHOD=CANALS
Redundancy	Redundancy iteration history	METHOD=REDUNDANCY
TestIterations	Hypothesis test iterations iteration history	SS2

Table 10.75 ODS Table Names Produced by the TREE Procedure

Table Name	Description	Option
	ODS Tables Created by the PROC Statement	
Tree	Line-printer plot of the tree	LINEPRINTER
TreeListing	Line-printer listing of all nodes in the tree	LIST

Table 10.76 ODS Table Names Produced by the TTEST Procedure

Table Name	Description
Statistics	Univariate summary statistics
TTests	*t*-tests
ODS Tables Created by the CLASS Statement	
Equality	Tests for equality of variance

Table 10.77 ODS Table Names Produced by the VARCLUS Procedure

Table Name	Description	Option
ClusterQuality	Cluster quality	
ClusterStructure	Cluster structure	
ClusterSummary	Cluster summary	
ConvergenceStatus	Convergence status	
Corr	Correlations	CORR
DataOptSummary	Data and options summary table	
InterClusterCorr	Inter-cluster correlations	
IterHistory	Iteration history	TRACE
RSquare	Cluster R-Square	
SimpleStatistics	Simple statistics	SIMPLE
StdScoreCoef	Standardized scoring coefficients	

Table 10.78 ODS Table Names Produced by the VARCOMP Procedure

Table Name	Description	Option
ClassLevels	Class level information	
ConvergenceStatus	Convergence status	
Estimates	Variance component estimates (one variable)	

Table Name	Description	Option
Estimates*n*	Variance component estimates (multiple variables)	
NObs	Number of observations	
	ODS Tables Created by the METHOD Statement	
ANOVA	Type 1 analysis of variance	TYPE1
AsyCov	Asymptotic covariance matrix of estimates	ML or REML
DepVar	Dependent variable (one variable)	TYPE1, REML, or ML
DepVar*n*	Dependent variable *n* (multiple variables)	TYPE1, REML, or ML
DependentInfo	Dependent variable information (multiple variables)	MIVQUE0
IterHistory	Iteration history	ML or REML
SCCP	Sum of squares matrix (one variable)	MIVQUE0
SCCP*n*	Sum of squares matrix (multiple variable)	MIVQUE0

ODS Table Names and the SAS/ETS Procedures that Produce Them

The following table lists the output object table names which SAS/ETS procedures produce. You must license SAS/ETS software in order to produce these output objects. The table provides the name of each table, a description of what the table contains, and the option, if any, that creates the output object table. For more information about SAS/ETS procedures, see

Table 10.79 ODS Table Names Produced by the ARIMA Procedure

Table Name	Description	Option
	ODS Tables Created by the IDENTIFY Statement	
DescStats	Descriptive statistics	
InputDescStats	Input descriptive statistics	
CorrGraph	Correlations graph	
StationarityTest	Stationarity tests	STATIONARITY
TentativeOrders	Tentative order selections	MINIC, ESACF, or SCAN
PACFGraph	Partial autocorrelations graph	

Table Name	Description	Option
IACFGraph	Inverse autocorrelations graph	
ChiSqAuto	Chi-Square statistics table for autocorrelation	
ChiSqCross	Chi-Square statistics table for cross-correlations	CROSSCORR=
MINIC	Minimum information criterion	MINIC
ESACF	Extended sample autocorrelation function	ESACF
ESACFPValues	ESACF probability values	ESACF
SCAN	Squared canonical correlation estimates	SCAN
SCANValues	SCAN Chi-Square[1] probability values	
	ODS Tables Created by the ESTIMATE Statement	
FitStatistics	Fit statistics	
ARPolynomial	Filter equations	
MAPolynomial	Filter equations	
NumPolynomial	Filter equations	
DenPolynomial	Filter equations	
ParameterEstimates	Parameter estimates	
ChiSqAuto	Chi-Square statistics table for autocorrelation	
ChiSqCross	Chi-Square statistics table for cross-correlations	
InitialAREstimates	Initial autoregressive parameter estimates	
InitialMAEstimates	Initial moving average parameter estimates	
PrelimEstimates	Preliminary estimation	
IterHistory	Conditional least squares estimation	METHOD=CLS
OptSummary	ARIMA estimation optimization	PRINTALL
ModelDescription	Model description	
InputDescription	Input description	
ObjectiveGrid	Objective function grid matrix	GRID
CorrB	Correlations of the estimates	
	ODS Tables Created by the OUTLIER Statement	

Table Name	Description	Option
OutlierDetails	Detected outliers	
	ODS Tables Created by the FORECAST Statement	
Forecasts	Fit statistics	

Table 10.80 ODS Table Names Produced by the AUTOREG Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
FitSummary	Summary of regression	
SummaryDepVarCen	Summary of regression (centered dependent variable)	CENTER
SummaryNoIntercept	Summary of regression (no intercept)	NOINT
YWIterSSE	Yule-Walker iteration sum of squared error	METHOD=ITYW
PreMSE	Preliminary MSEs	NLAG=
Dependent	Dependent variable	
DependenceEquations	Linear dependence equation	
ARCHTest	Q and LM tests for ARCH disturbances	ARCHTEST
ChowTest	Chow test and predictive chow test	CHOW= or PCHOW=
Godfrey	Godfrey's serial correlation test	GODFREY or GODFREY=
PhilPerron	Phillips-Perron unit root test	STATIONARITY=, (PHILLIPS<=()>), (no regressor)
PhilOul	Phillips-Ouliaris cointegration test	STATIONARITY=, (PHILLIPS<=()>), (has regressor)
ResetTest	Ramsey's RESET test	RESET
ARParameterEstimates	Estimates of autoregressive parameters	NLAG=
CorrGraph	Estimates of autocorrelations	NLAG=
BackStep	Backward elimination of autoregressive terms	BACKSTEP
ExpAutocorr	Expected autocorrelations	NLAG=

Table Name	Description	Option
IterHistory	Iteration history	ITPRINT
ParameterEstimates	Parameter estimates	
ParameterEstimatesGivenAR	Parameter estimates assuming AR parameters are given	NLAG=
PartialAutoCorr	Partial autocorrelation	PARTIAL
CovB	Covariance of parameter estimates	COVB
CorrB	Correlation of parameter estimates	CORRB
CholeskyFactor	Cholesky root of gamma	ALL
Coefficients	Coefficients for first NLAG observations	COEF
GammaInverse	Gamma inverse	GINV
ConvergenceStatus	Convergence status table	
DWTestProb	Durbin-Watson statistics	DW=
ODS Tables Created by the RESTRICT Statement		
Restrict	Restriction table	
ODS Tables Created by the TEST Statement		
FTest	F test	
WaldTest	Wald test	TYPE=WALD

Table 10.81 ODS Table Names Produced by the ENTROPY Procedure

Table Name	Description
ConvCrit	Convergence criteria for estimation
ConvergenceStatus	Convergence status
DatasetOptions	Data sets used
MinSummary	Number of parameters, estimation kind
ObsUsed	Observations read, used, and missing
ParameterEstimates	Parameter estimates
ResidSummary	Summary of the SSE, MSE for the equations
TestResults	Test statement table

Table 10.82 ODS Table Names Produced by the LOAN Procedure

Table Name	Description	Option
ODS Tables Created by the PROC LOAN, FIXED, ARM, BALLOON, and BUYDOWN Statements		
Repayment	Loan repayment schedule	SCHEDULE
ODS Tables Created by the FIXED, ARM, BALLOON, and BUYDOWN Statements		
LoanSummary	Loan summary	
RateList	Rates and payments	
PrepayList	Prepayments and periods	PREPAYMENTS=
ODS Tables Created by the BALLOON Statement		
BalloonList	Balloon payments and periods	
ODS Tables Created by the COMPARE Statement		
Comparison	Loan comparison report	

Table 10.83 ODS Table Names Produced by the MDC Procedure

Table Name	Description	Option
ODS Tables Created by the MODEL Statement		
FitSummary	Summary of nonlinear estimation	
ResponseProfile	Response profile	
GoodnessOfFit	Pseudo-R^2 measures	
ParameterEstimates	Parameter estimates	
LinConSol	Linearly independent active linear constraints	
CovB	Covariance of parameter estimates	COVB
CorrB	Correlation of parameter estimates	CORRB

Table 10.84 ODS Table Names Produced by the MODEL Procedure

Table Name	Description	Option
	ODS Tables Created by the FIT Statement	
AugGMMCovariance	Cross products matrix	GMM
ChowTest	Structural change test	CHOW=
CollinDiagnostics	Collinearity diagnostics	
ConfInterval	Profile likelihood confidence intervals	PRL=
ConvCrit	Convergence criteria for estimation	
ConvergenceStatus	Convergence status	
CorrB	Correlations of parameters	COVB or CORRB
CorrResiduals	Correlations of residuals	CORRS or COVS
CovB	Covariance of parameters	COVB or CORRB
CovResiduals	Covariance of residuals	CORRS or COVS
Crossproducts	Cross products matrix	ITALL or ITPRINT
DatasetOptions	Data sets used	
DetResidCov	Determinant of the residuals	DETAILS
DWTest	Durbin-Watson test	DW=
Equations	List of equations to estimate	
EstSummaryMiss	Model summary statistics for PAIRWISE	MISSING=
EstSummaryStats	Objective, objective * N	
GMMCovariance	Cross products matrix	GMM
Godfrey	Godfrey's serial correlation test	GF=
HausmanTest	Hausman's test table	HAUSMAN
HeteroTest	Heteroscedasticity test tables	BREUSCH or PAGEN
InvXPXMat	X'X inverse for system	I
IterInfo	Iteration printing	ITALL or ITPRINT
LagLength	Model lag length	
MinSummary	Number of parameters, estimation kind	
MissingValues	Missing values generated by the program	
ModSummary	List of all categorized values	
ModVars	List of model variables and parameters	
NormalityTest	Normality test table	NORMAL

Table Name	Description	Option
ObsSummary	Identifies observations with errors	
ObsUsed	Observations read, used, and missing	default
ParameterEstimates	Parameter estimates	
ParmChange	Parameter change vector	
ResidSummary	Summary of the SSE, MSE for the equations	
SizeInfo	Storage requirement for estimation	DETAILS
TermEstimates	Nonlinear OLS and ITOLS estimates	OLS or ITOLS
TestResults	Test statement table	
WgtVar	The name of the weight variable	
XPXMat	X'X for system	XPX
	ODS Tables Created by the SOLVE Statement	
DatasetOptions	Data sets used	
DescriptiveStatistics	Descriptive statistics	STATS
FitStatistics	Fit statistics for simulation	STATS
LagLength	Model lag length	
ModSummary	List of all categorized variables	
ObsSummary	Simulation trace output	SOLVEPRINT
ObsUsed	Observations resa, used, and missing	
SimulationSummary	Number of variables solved for	
SolutionVarList	Solution variable lists	
TheilRelStats	Theil relative change error statistics	THEIL
TheilStats	Theil forecast error statistics	THEIL
	ODS Tables Created by the FIT and SOLVE Statements	
AdjacencyMatrix	Adjacency graph	GRAPH
BlockAnalysis	Block analysis	BLOCK
CodeDependency	Variable cross reference	LISTDEP
CodeList	List of programs statements	LISTCODE
CrossReference	Cross reference listing for program	

Table Name	Description	Option
DepStructure	Dependency structure for the system	BLOCK
DerList	Derivative variables	LISTDER
InterIntg	Integration iteration output	INTGPRINT
MemUsage	Memory usage statistics	MEMORYUSE
ParmReadIn	Parameter estimates read in	ESTDATA=
ProgList	List of compiled program data	
RangeInfo	RANGE statement specification	
SortAdjacencyMatrix	Sorted adjacency graph	GRAPH
TransitiveClosure	Transitive closure graph	GRAPH

Table 10.85 ODS Table Names Produced by the PDLREG Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
ARParameterEstimates	Estimates of autoregressive parameters	NLAG=
CholeskyFactor	Cholesky root of gamma	
Coefficients	Coefficients for first NLAG observations	NLAG=
ConvergenceStatus	Convergence status table	
CorrB	Correlation of parameter estimates	CORRB
CorrGraph	Estimates of autocorrelations	NLAG=
CovB	Covariance of parameter estimates	COVB
DependenceEquations	Linear dependence equation	
Dependent	Dependent variable	
DWTest	Durbin-Watson statistics	DW=
ExpAutocorr	Expected autocorrelations	NLAG=
FitSummary	Summary of regression	
GammaInverse	Gamma inverse	
IterHistory	Iteration history	ITPRINT
LagDist	Lag distribution	ALL
ParameterEstimates	Parameter estimates	

Table Name	Description	Option
ParameterEstimatesGivenAR	Parameter estimates assuming AR parameters are given	NLAG=
PartialAutoCorr	Partial autocorrelation	PARTIAL
PreMSE	Preliminary MSE	NLAG=
XPXIMatrix	Inverse X'X matrix	XPX
XPXMatrix	X'X matrix	XPX
YWIterSSE	Yule-Walker iteration sum of squared error	METHOD=ITYW
	ODS Tables Created by the RESTRICT Statement	
Restrict	Restriction table	

Table 10.86 ODS Table Names Produced by the SIMLIN Procedure

Table Name	Description	Option
Endogenous	Structural coefficients for endogenous variables	
LaggedEndogenous	Structural coefficients for lagged endogenous variables	
Exogenous Structural	Coefficients for exogenous variables	
InverseCoeff	Inverse coefficient matrix for endogenous variables	
RedFormLagEndo	Reduced form for lagged endogenous variables	
RedFormExog	Reduced form for exogenous variables	
InterimMult	Interim multipliers	INTERIM=option
TotalMult	Total multipliers	TOTAL=option
FitStatistics	Fit statistics	

Table 10.87 ODS Table Names Produced by the SPECTRA Procedure

Table Name	Description	Option
WhiteNoiseTest	White noise test	WHITETEST

Table Name	Description	Option
Kappa	Fishers kappa	WHITETEST
Bartlett	Bartletts Kolmogorov-Smirnov statistic	WHITETEST

Table 10.88 ODS Table Names Produced by the STATESPACE Procedure

Table Name	Description	Option
NObs	Number of observations	
Summary	Simple summary statistics table	
InfoCriterion	Information criterion table	
CovLags	Covariance matrices of input series	PRINTOUT=LONG
CorrLags	Correlation matrices of input series	PRINTOUT=LONG
PartialAR	Partial autoregressive matrices	PRINTOUT=LONG
YWEstimates	Yule-Walker estimates for minimum AIC	
CovResiduals	Covariance of residuals	PRINTOUT=LONG
CorrResiduals	Residual correlations from AR models	PRINTOUT=LONG
StateVector	State vector table	
CorrGraph	Schematic representation of correlations	
TransitionMatrix	Transition matrix	
InputMatrix	Input matrix	
VarInnov	Variance matrix for the innovation	
CovB	Covariance of parameter estimates	COVB
CorrB	Correlation of parameter estimates	COVB
CanCorr	Canonical correlation analysis	CANCORR
IterHistory	Iterative fitting table	ITPRINT
ParameterEstimates	Parameter estimates table	
Forecasts	Forecasts table	PRINT
ConvergenceStatus	Convergence status table	

Table 10.89 ODS Table Names Produced by the SYSLIN Procedure

Table Name	Description	Option
ANOVA	Summary of the SSE, MSE for the equations	
AugXPXMat	Model crossproducts	XPX
AutoCorrStat	Autocorrelation statistics	
ConvCrit	Convergence criteria for estimation	
ConvergenceStatus	Convergence status	
CorrB	Correlations of parameters	CORRB
CorrResiduals	Correlations of residuals	CORRS
CovB	Covariance of parameters	COVB
CovResiduals	Covariance of residuals	COVS
Endomat	Endogenous variables	
Equations	List of equations to estimates	
ExogMat	Exogenous variables	
FitStatistics	Statistics of fit	
InvCorrResiduals	Inverse correlations of residuals	CORRS
InvCovResiduals	Inverse covariance of residuals	COVS
InvEndoMat	Inverse endogenous variables	
InvXPX	X'X inverse for system	I
IterHistory	Iteration printing	ITALL or ITPRINT
MissingValues	Missing values generated by the program	
ModelVars	Name and label for the model	
ParameterEstimates	Parameter estimates	
RedMat	Reduced form	REDUCED
SimpleStatistics	Descriptive statistics	SIMPLE
SSCP	Model crossproducts	
TestResults	Test for overidentifying restrictions	
Weight	Weighted model statistics	
YPY	Y'Y matrices	USSCP2

Table 10.90 ODS Table Names Produced by the TSCSREG Procedure

Table Name	Description	Option
	ODS Tables Created by the MODEL Statement	
ModelDescription	Model description	
FitStatistics	Fit statistics	
FixedEffectsTest	F test for no fixed tests	
ParameterEstimates	Parameter estimates	
CovB	Covariance of parameter estimates	
CorrB	Correlations of parameter estimates	
VarianceComponents	Variance component estimates	
RandomEffectsTest	Hausman test for random effects	
AR1Estimates	First order autoregressive parameter estimates	
EstimatedPhiMatrix	Estimated phi matrix	PARKS
EstimatedAutocovariances	Estimates of autocovariances	PARKS
	ODS Tables Created by the TEST Statement	
TestResults	Test results	

Table 10.91 ODS Table Names Produced by the TIMESERIES Procedure

Table Name	Description
ODS Tables Created by the PRINT=DECOMP Option	
SeasonalDecomposition	Seasonal decomposition
ODS Tables Created by the PRINT=DESCSTATS Option	
DescStats	Descriptive statistics
ODS Tables Created by the PRINT=SEASONS Option	
SeasonStatistics	Season statistics

Table Name	Description
ODS Tables Created by the PRINT=TRENDS Option	
TrendStatistics	Trend statistics

Table 10.92 ODS Table Names Produced by the VARMAX Procedure

Table Name	Description	Option
ODS Tables Created by the MODEL Statement		
AccumImpulse	Accumulated impulse response matrices	IMPULSE=(ACCUM) or IMPULSE=(ALL)
AccumImpulsX	Accumulated transfer function matrices	IMPULSX=(ACCUM) or IMPULSX=(ALL)
Alpha	α coefficients	JOHANSEN=
AlphaInECM	α coefficients	ECM=
AlphaOnDrift	α coefficients on restriction of a deterministic term	JOHANSEN=
AlphaBetaInECM	π=$\alpha\beta$' coefficients	ECM=
ArchCoef	ARCH coefficients	GARCH=
ARCoef	AR coefficients	P= or DYNAMIC with P=
ARRoots	Roots of AR characteristic polynomial	ROOTS
Beta	β coefficients	JOHANSEN=
BetaInECM	β coefficients	ECM=
BetaOnDrift	β coefficients on restriction of a deterministic term	JOHANSEN=
Constant	Constant estimates	w/o NOINT
CorrB	Correlations of parameter estimates	CORRB
CorrResiduals	Cross-correlations of residuals	
CorrResidualsGraph	Schematic representation of residual cross-correlations	
CorrGraph	Schematic representation of sample cross-correlations	CORRX or CORRY
CorrXLags	Cross-correlation matrices of independent series	CORRX
CorrYLags	Cross-correlation matrices of dependent series	CORRY

Table Name	Description	Option
CovB	Covariance of parameter estimates	COVB
CovInnov	Covariance matrix for the innovation	
CovPredError	Covariance matrices of the prediction error	COVPE
CovResiduals	Cross-covariance matrices of residuals	
CovXLags	Cross-covariance matrices of independent series	COVX
CovYLags	Cross-correlations matrices of dependent series	COVY
DecompCovPredError	Decomposition of the prediction error covariance	DECOMPOSE
DFTest	Dickey-Fuller tests	DFTEST
DriftHypo	Hypothesis of different deterministic terms in cointegration rank test	JOHANSEN=
DrifyHypoTest	Test hypothesis of different deterministic terms in cointegration rank test	JOHANSEN=
EigenvalueI2	Eigenvalues in integrated order 2	JOHANSEN= (IORDER=2)
Eta	η coefficients	JOHANSEN= (IORDER=2)
GARCHParameterEstimates	GARCH parameter estimates table	GARCH=
GARCHParameterGraph	Schematic representation of the garch parameters	
GARCHRoots	Roots of GARCH characteristic polynomial	GARCH=
GARCHCoef	GARCH coefficients	GARCH=
GARCHConstant	GARCH constant estimates	GARCH=
InfiniteARRepresent	Infinite order AR representation	IARR
InfoCriterion	Information criterion	
LinearTrend	Linear trend estimates	TREND=
MACoef	MA coefficients	Q=
MARoots	Roots of MA characteristic polynomial	Q=
MaxTest	Cointegration rank test using the maximum eigenvalue	JOHANSEN= (TYPE=MAX)

Table Name	Description	Option
MaxTestOnDrift	Cointegration rank test using the maximum eigenvalue on restriction of a deterministic term	JOHANSEN= (TYPE=MAX)
ModelType	Type of model	
NObs	Number of observations	
OrthoImpulse	Orthogonalized impulse response matrices	IMPULSE=(ORTH) or IMPULSE=(ALL)
ParameterEstimates	Parameter estimates table	
ParameterGraph	Schematic representation of the parameters	
PartialAR	Partial autoregression matrices	PARCOEF
PartialARGraph	Schematic representation of partial autoregression	PARCOEF
PartialCanCorr	Partial canonical correlation analysis	PCANCORR
PartialCorr	Partial cross-correlation matrices	PCORR
PartialCorrGraph	Schematic representation of partial cross correlations	PCORR
PortmanteauTest	Chi-Square test table for residual cross-correlations	
ProportionDecomp	Proportions of prediction error covariance decomposition	DECOMPOSE
RankTestI2	Cointegration rank test in integrated order 2	JOHANSEN= (IORDER=2)
QuadTrend	Quadratic trend estimates	TREND=QUAD
SConstant	Seasonal constant estimates	NSEASON=
SimpleImpulse	Impulse response matrices	IMPULSE, IMPULSE=SIMPLE, or IMPULSE=(ALL)
SimpleImpulsX	Impulse response matrices in transfer function	IMPULSX, IMPULSX=(SIMPLE), or IMPULSX=(ALL)
Summary	Simple summary statistics	
SWTest	Common trends test	SW or SW=
TentativeOrders	Tentative order selection	MINIC or MINIC=
TraceTest	Cointegration rank test using the trace	JOHANSEN= (TYPE=TRACE)
TraceTestOnDrift	Cointegration rank test using the trace on restriction of a deterministic term	JOHANSEN= (TYPE=TRACE)

Table Name	Description	Option
UnivarDiagnostAR	Check the AR disturbance for the residuals	
UnivarDiagnostCheck	Univariate model diagnostic checks	
UnivarDiagnostTest	Check the ARCH disturbance and normality for the residuals	
Xi	ξ coefficient matrix	JOHANSEN= (IORDER=2)
XLagCoef	Dependent coefficients	XLAG=
YWEstimates	Yule-Walker estimates	YW
ByVariable	Prints by variable	PRINTFORM=
	ODS Tables Created by the COINTEG Statement	
AlphaInECM	α coefficients	
AlphaBetaInECM	$\pi = \alpha\beta'$ coefficients	
BetaInECM	β coefficients	
AlphaOnTest	α coefficients under restriction	H= or J=
BetaOnTest	β coefficients under restriction	H= or J=
RestrictMatrix	Restriction matrix for α or β	H= or J=
RestrictTest	Hypothesis testing of α or β	H= or J=
WeakExogeneity	Testing weak exogeneity of each dependent variable with respect to beta	EXOGENEITY
	ODS Tables Created by the CASUAL Statement	
Causality	Granger-Causality test	
	ODS Tables Created by the RESTRICT Statement	
Restrict	Restriction table	
	ODS Tables Created by the TEST Statement	
Test	Wald test	
	ODS Tables Created by the OUTPUT Statement	
Forecasts	Forecasts table	w/o NOPRINT

Table 10.93 ODS Table Names Produced by the X11 Procedure

Table Name	Description	Option
	ODS Tables Created by the MONTHLY and QUARTERLY Statements	
Preface	X11 seasonal adjustment program information giving credits, dates, etc.	Always printed unless NOPRINT
A1	Table A1: OriginalSeries	
A2	Table A2: Prior monthly	
A3	Table A3: Original series adjusted for prior monthly factors	
A4	Table A4: Prior trading day adjustment factors with and without length of month adjustments	
A5	Table A5: Original series adjusted for priors	
B1	Table B16: Original series or original series adjusted for priors	
B2	Table B2: Trend cycle — centered nn-term moving average	
B3	Table B3: Unmodified SI ratios	
B4	Table B4: Replacement values for extreme SI ratios	
B5	Table B5: Seasonal factors	
B6	Table B6: Seasonally adjusted series	
B7	Table B7: Trend cycle — Henderson curve	
B8	Table B8: Unmodified SI ratios	
B9	Table B9: Replacement values for extreme SI ratios	
B10	Table B10: Seasonal factors	
B11	Table B11: Seasonally adjusted series	
B13	Table B13: Irregular series	
B15	Table B15: Preliminary trading day regression	

Table Name	Description	Option
B16	Table B16: Trading day adjustment factors derived from regression	
B17	Table B17: Preliminary weights for irregular components	
B18	Table B18: Trading day adjustment factors from combined weights	
B19	Table B19: Original series adjusted for preliminary combined TD weights	
C1	Table C1: Original series adjusted for preliminary weights	
C2	Table C2: Trend cycle — centered nn-term moving average	
C4	Table C4: Modified SI ratios	
C5	Table C5: Seasonal factors	
C6	Table C6: Seasonally adjusted factors	
C7	Table C7: Trend cycle — Henderson curve	
C9	Table C9: Modified CI ratios	
C10	Table C10: Seasonal factors	
C11	Table C11: Seasonally adjusted series	
C13	Table C13: Irregular series	
C15	Table C15: Final trading day regression	
C16	Table C16: Trading day adjustment factors derived from regression	
C17	Table C17: Final weights for irregular component	
C18	Table C18: Trading day adjustment factors from combined weights	
C19	Table C19: Original series adjusted for final combined TD weights	

Table Name	Description	Option
D1	Table D1: Original series adjusted for final weights on nn-term moving average	
D4	Table D4: Modified SI ratios	
D5	Table D5: Seasonal factors	
D6	Table D6: Seasonally adjusted series	
D7	Table D7: Trend cycle — Henderson curve	
D8	Table D8: Final unmodified SI ratios	
D10	Table D10: Final season factors	
D11	Table D11: Final seasonally adjusted series	
D12	Table D12: Final trend cycle — Henderson curve	
D13	Table D13: Final irregular series	
E1	Table E1: Original series modified for extremes	
E2	Table E2: Modified seasonally adjusted series	
E3	Table E3: Modified irregular series	
E5	Table E5: Month-to-month changes in original series	
E6	Table E6: Month-to-month changes in final seasonally adjusted series	
F1	Table F1: MCD moving average	
A13	Table A13: ARIMA forecasts	ARIMA statement
A14	Table A14: ARIMA backcasts	ARIMA statement
A15	Table A15: ARIMA extrapolation	ARIMA statement
B14	Table B14: Irregular values excluded from trading day regression	
C14	Table C14: Irregular values excluded from trading day regression	
D9	Table D9: Final replacement values	
PriorDailyWgts	Adjusted prior daily weights	

Table Name	Description	Option
TDR_0	Final/preliminary trading day regression, part 1	MONTHLY only, TDREGR=ADJUST, TEST
TDR_1	Final/preliminary trading day regression, part 2	MONTHLY only, TDREGR=ADJUST, TEST
StandErrors	Standard errors of trading day adjustment factors	MONTHLY only, TDREGR=ADJUST, TEST
D9A	Year-to-year change in irregular and seasonal components and moving seasonality ratio	
StableSeasTest	Stable seasonality test	MONTHLY only
StableSeasFTest	Stable seasonality test	MONTHLY only
f2a	F2 summary measures, part 1	
f2b	F2 summary measures, part 2	
f2c	F2 summary measures, part 3	
f2d	I/C ratio for monthly/quarterly span	
f2f	Average percent change with regard to sign and standard over span	
E4	Differences or ratios of annual totals, original and adjusted series	
ChartG1	Chart G1	
ChartG2	Chart G2	
ODS Tables Created by the ARIMA Statement		
CriteriaSummary	Criteria summary	ARIMA statement
ConvergeSummary	Convergence summary	
ArimaEst	ARIMA estimation results, part 1	
ArimaEst2	ARIMA estimation results, part 2	
Model_Summary	Model summary	
Ljung_BoxQ	Table of Ljung-Box Q statistics	
A13	Table A13: ARIMA forecasts	
A14	Table A14: ARIMA backcasts	
A15	Table A15: ARIMA extrapolation	
ODS Tables Created by the SSPAN Statement		

Table Name	Description	Option
SPR0A_1	S 0.A sliding spans analysis, number, and length of spans	
SpanDates	S 0.A sliding spans analysis: dates of spans	
SPR0B	S 0.B summary of F-tests for stable and moving seasonality	
SPR1_1	S 1.A range analysis of seasonal factors	
SPR1_b	S 1.B summary of range measures	
SPRXA	2XA.1 breakdown of differences by month or quarter	
SPRXB_2	S X.B histogram of flagged observation	
SPRXA_2	S X.A.2 breakdowns of differences by year	
MpdStats	S X.C: Statistics for maximum percentage differences	
S_X_A_3	S 2.X.3 breakdown summary of flagged observation	
SPR7_X	S 7.X sliding spans analysis	PRINTALL

Table 10.94 ODS Table Names Produced by the X12 Procedure

Table Name	Description
A1	Original series
A2	Prior-adjustment factors
RegParameterEstimates	Regression model parameter estimates
ACF	Autocorrelation factors
PACF	Partial autorrelation factors
ARMAIterationTolerances	Exact ARMA likelihood estimation iteration tolerances
IterHistory	ARMA iteration history
ARMAIterationSummary	Exact ARMA likelihood estimation iteration summary
RegressorGroupChiSq	Chi-Squared tests for groups of regressors
ARMAParameterEstimates	Exact ARMA maximum likelihood estimation
AvgFcstErr	Average absolute percentage error in within(out) sample fore(back)casts

Table Name	Description
Roots	(Non)seasonal (AR)MA roots
MLESummary	Estimation summary
ForecastCL	Forecasts, standard errors, and confidence limits
MV1	Original series adjusted for missing value regressors
A6	RegARIMA trading day component
A8	RegARIMA combined outlier component
A8AO	RegARIMA AO outlier component
A8LS	RegARIMA level change outlier component
A8TC	RegARIMA temporary change outlier component
B1	Prior adjusted or original series
C17	Final weight for irregular components
C20	Final extreme value adjusted factors
D1	Modified original data, D iteration
D7	Preliminary trend cycle, D iteration
D8	Final unmodified S-I ratios
D8A	Seasonality tests
D9	Final replacement values for extreme S-I ratios
D9A	Moving seasonality ratio
D10	Final seasonal factors
D10D	Final seasonal difference
D11	Final seasonally adjusted series
D12	Final trend cycle
D13	Final irregular series
D16	Combined adjustment factors
D16B	Final adjustment differences
D18	Combined calendar adjustment factors
E4	Ratios of annual totals
E5	Percent changes in original series
E6	Percent changes in final seasonally adjusted series
E7	Differences in final trend cycle
F2A-I	Summary measures
F3	Quality assessment statistics
F4	Day of the week trading day component factors
G	Spectral analysis

Concepts: Tabular Output and the TEMPLATE Procedure

Viewing the Contents of a Table Definition

To view the contents of a table definition, you can use the SAS windowing environment, the command line, or the TEMPLATE procedure.

- Using the SAS Windowing Environment
  1. From the menu, select

     View ▶ Results.
  2. In the Results window, select the Results folder. Right-click and select Templates to open the Templates window.
  3. Double-click on SASHELP.TMPLMST to view the contents of that item store or directory.
  4. Double-click on a directory to view the list of subdirectories and table templates that you wish to view. For example, the Base SAS table definition **`Summary`** is the default template store for the summary tables created in the MEANS and SUMMARY procedures. Double-click on the Base directory, and then double-click on the **`Summary`** table.
- Using the Command Line
  1. To view the Templates window, submit the following command:

     ```
     odstemplates
     ```

     The Templates window contains the item stores **`Sasuser.Templat`** and **`Sashelp.Tmplmst`**.
  2. When you double-click an item store, such as **`Sashelp.Tmplmst`**, that item store expands to list the directories where ODS templates are stored. The templates that SAS provides are in the item store SASHELP.TMPLMST.
  3. To view the table definitions that SAS provides, double-click the item store that contains a table definition, such as **`Base`**.
  4. Right-click the table definition, such as **`Summary`**, and select **`Open`**. The table definition is displayed in the Template Browser window.
- Using the TEMPLATE Procedure
  1. The SOURCE statement writes the source code for the specified definition to the SAS log. For example, if you want to view the source code for all the objects in Base SAS, submit the following code.

     ```
     proc template;
     source base;
     run;
     ```

How Are Values in Table Columns Justified?

The process of justifying the values in columns in a listing output is determined by the format of the variable and the values of two attributes: JUST= and JUSTIFY=. It is a three-step process:

1 ODS puts the value into the format for the column. Character variables are left-justified within their format fields; numeric variables are right-justified.

2 ODS justifies the entire format field within the column width according to the value of the JUST= attribute for the column, or, if that attribute is not set, JUST= for the table. For example, if you right-justify the column, the format field is placed as far to the right as possible. However, the placement of the individual numbers and characters within the field does not change. Thus, decimal points remain aligned. If the column and the format field have the same width, then JUST= has no apparent effect because the format field occupies the entire column.

3 If you specify JUSTIFY=ON for the column or the table, ODS justifies the values within the column without regard to the format field. By default, JUSTIFY=OFF.

For example, consider this set of values:

```
123.45
234.5
.
987.654
```

If the values are formatted with a 6.2 format and displayed in a column with a width of 6, they appear this way, regardless of the value of JUST= (asterisks indicate the width of the column):

```
******
123.45
234.50
   .
987.65
```

If the width of the column increases to 8, then the value of JUST= does affect the placement of the values because the format field has room to move within the column. Notice that the decimal points remain aligned but that the numbers shift in relation to the column width.

```
just=left                 just=center                 just=right

********                  ********                    ********
123.45                     123.45                       123.45
234.50                     234.50                       234.50
   .                          .                            .
987.65                     987.65                       987.65
```

Now, if you add JUSTIFY=ON, then the values are formatted within the column without regard to the format width. The results are as follows:

```
justify=on                justify=on                  justify=on
just=left                 just=center                 just=right

********                  ********                    ********
123.45                     123.45                       123.45
234.50                     234.50                       234.50
.                            .                               .
987.65                     987.65                       987.65
```

If the value of JUST= D, then values are aligned by the decimal point.

```
just=left                 just=center                just=right

********                  ********                   ********
123.45                     123.45                      123.45
234.50                     234.50                      234.50
   .                          .                           .
987.65                     987.65                      987.65
```

All destinations except LISTING justify the values in columns as if JUSTIFY=ON for JUST=R and JUST=L.

How Are Values in Table Columns Formatted?

The process of formatting the values in columns in a Listing output is determined by the format of the variable and the values of three options: FORMAT=, FORMAT_WIDTH=, and FORMAT_NDEC=. It is a four-step process:

1 If you do not specify a FORMAT= option, then PROC TEMPLATE uses the format that the data component provides. If the data component does not provide a format, then PROC TEMPLATE uses
   - best8. for integers
   - 12.3 for doubles
   - the length of the variable for character variables
2 If a format width is specified in the FORMAT= option, then it will take precedence over the FORMAT_WIDTH= and FORMAT_NDEC= options.
3 If you specify a decimal width with the FORMAT= and FORMAT_NDEC= options, then PROC TEMPLATE uses the format that you specified with the FORMAT= option.
4 If you specify a format width with the FORMAT= and FORMAT_WIDTH= options, then PROC TEMPLATE uses the format that you specified with FORMAT= option.

The formatting attributes of a column can be determined by the data component or the column definition. The following table summarizes the behavior of the column formatting attributes based on which attributes the column definition provides.

Column definition provides	Result
nothing	format name, width, and number of decimal places are determined by the data component.
format name	format name and width are determined by the column definition; number of decimal places is determined by the data component.
format name and width	format name and width are determined by the column definition.
format name, width, and number of decimal places	all three are determined by the column definition.

Column definition provides	Result
width	no name is specified; width is determined by the column definition; number of decimal places is determined by the data component.
number of decimal places	no name is specified; width is determined by the data component; number of decimal places is determined by the column definition.

Examples: Modifying Tabular Output by Using the TEMPLATE Procedure

Example 1: Editing a Table Definition that a SAS Procedure Uses

PROC TEMPLATE features:

EDIT statement

Header attributes

JUST=
STYLE=

Table attributes

DOUBLE_SPACE=
OVERLINE=
UNDERLINE=

Other ODS features:

ODS HTML statement

ODS SELECT statement

Data set: STATEPOP

Program Description

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

This example customizes the table definition for the Moments output object from PROC UNIVARIATE. The first program uses the table definition that SAS supplies to generate both Listing output and HTML output of the Moments object.

The second program

- □ creates and edits a copy of the default table definition.
- □ edits a header within the table definition.

□ sets column attributes to enhance the appearance of both the HTML and the Listing output.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program 1: Using the Default Table Definition that SAS Provides

Set the SAS system options. The OPTIONS statement controls several aspects of the Listing output. None of these options affects the HTML output.

```
options nodate pageno=1 pagesize=60 linesize=72;
```

Create the HTML output and specify the name of the HTML file. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **defaultmoments-body.htm** in the current directory. Some browsers require an extension of .htm or .html on the filename.

```
ods html body='defaultmoments-body.htm';
```

Select the output objects for the report. The ODS SELECT statement sends one output object, **Moments** , to the open ODS destinations. Both the Listing and the HTML destinations are open. (To learn the names of the output objects, run the procedure with the ODS TRACE ON statement in effect. See
"Example" on page 200.)

```
ods select moments;
```

Compute the descriptive statistics for one variable. PROC UNIVARIATE computes the univariate statistics for one variable, CityPop_90. It uses the default table definition, **base.univariate.moments** from the template store **sashelp.tmplmst**.

```
proc univariate data=statepop mu0=3.5;
   var citypop_90;
title 'Default Moments Table';
run;
```

Stop the creation of the HTML output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser.

```
ods html close;
```

Default Listing Output

Output 10.3 Listing Output from PROC UNIVARIATE (Default Moments Table)

```
                         Default Moments Table                        1

                        The UNIVARIATE Procedure
         Variable:  CityPop_90  (1990 metropolitan pop in millions)

                                Moments

     N                          51    Sum Weights                 51
     Mean               3.87701961    Sum Observations       197.728
     Std Deviation      5.16465302    Variance            26.6736408
     Skewness           2.87109259    Kurtosis             10.537867
     Uncorrected SS     2100.27737    Corrected SS        1333.68204
     Coeff Variation     133.21194    Std Error Mean      0.72319608
```

HTML Output from PROC UNIVARIATE (Default Moments Table)

Display 10.5 Default HTML Output (Viewed with Microsoft Internet Explorer)

Default Moments Table

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Moments			
N	51	Sum Weights	51
Mean	3.87701961	Sum Observations	197.728
Std Deviation	5.16465302	Variance	26.6736408
Skewness	2.87109259	Kurtosis	10.537867
Uncorrected SS	2100.27737	Corrected SS	1333.68204
Coeff Variation	133.21194	Std Error Mean	0.72319608

Program 2: Using a Customized Table Definition

Specify the search path in order to locate the table definition. The ODS PATH statement specifies which locations to search for definitions that were created by PROC TEMPLATE, as well as the order in which to search for them. The statement is included to ensure that the example works correctly. However, if you have not changed the path, you do not need to include this statement because it specifies the default path.

```
ods path sasuser.templat(update) sashelp.tmplmst(read);
```

Create a modified table definition *base.univariate.moments*. The EDIT statement looks in the available template stores for a table definition called **`base.univariate.moments`**. By default, it first looks in SASUSER.TEMPLAT, but it finds nothing. Next, it looks in SASHELP.TMPLMST, which contains the table definitions that SAS provides. Because the EDIT statement can read this definition, this is the one that it uses. The program does not specify a destination for the edited definition, so PROC TEMPLATE writes to the first template store in the path that it can write to, which is SASUSER.TEMPLAT. Therefore, it creates a table definition of the same name as the original one in SASUSER.TEMPLAT. (See "ODS PATH Statement" on page 149).

(To learn the name of the table definition that a procedure uses, run the procedure with the ODS TRACE ON statement in effect. See "Example" on page 200).

```
proc template;
   edit base.univariate.moments;
```

Specify changes to the Moments output object. These three table attributes affect the presentation of the **`Moments`** output object in the Listing output. They have no effect on its presentation in the HTML output. DOUBLE_SPACE= double spaces between the rows of the output object. OVERLINE= and UNDERLINE= draw a continuous line before the first row of the table and after the last row of the table.

```
   double_space=on;
   underline=on;
   overline=on;
```

Modify a table element. This EDIT statement edits the table element **`head`** within the table definition.

```
      edit head;
```

Modify the appearance of the header. The STYLE= attribute alters the style element that produces the **`head`** table element. The style element **`header`** is defined in the default style definition, **`styles.default`**. Many procedures, including PROC UNIVARIATE, use this style element to produce headers for tables and columns. (For information on viewing a style definition, see "What Style Definitions Are Shipped with SAS Software?" on page 30.) In this case, the STYLE= attribute specifies green for the foreground color and italic for the font style. All other attributes that are included in **`header`** remain in effect. The STYLE= attribute affects only the HTML output.

```
         style=header{foreground=green font_style=italic};
```

Left justify the header text. The JUST= attribute left-justifies the text of the header in both the Listing and the HTML output.

```
         just=left;
```

Stop the editing of the table element and the table definition. The first END statement ends the editing of the table element **head**. The second END statement ends the editing of the table **base.univariate.moments**.

```
      end;
   end;
run;
```

Create the HTML output and specify the name of the HTML file. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **custommoments-body.htm** in the current directory. Some browsers require an extension of .htm or .html on the filename.

```
ods html body='custommoments-body.htm';
```

Select the output objects for the report. The ODS SELECT statement sends one output object, **Moments** , to the open ODS destinations. Both the Listing and the HTML destinations are open. (To learn the names of the output objects, run the procedure with the ODS TRACE ON statement in effect. See "Example" on page 200.)

```
ods select moments;
```

Compute the descriptive statistics for one variable. PROC UNIVARIATE computes the univariate statistics for one variable, CityPop_90. This is the same PROC UNIVARIATE step that was used in "Program 1: Using the Default Table Definition that SAS Provides" on page 516. The actual results of the procedure step are the same in this case, but they are presented differently because the procedure uses the edited table definition. It does so because when it looks for **base.univariate.moments**, it looks in the first template store in the path, SASUSER.TEMPLAT. If you wanted to use the table definition that is supplied by SAS, you would have to change the path with the ODS PATH statement (see "ODS PATH Statement" on page 149).

```
proc univariate data=statepop mu0=3.5;
   var citypop_90;
title 'Custom Moments Table';
run;
```

Stop the creation of the HTML output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser.

```
ods html close;
```

Customized Listing Output

Output 10.4 Listing Output (Customized Moments Table) from PROC UNIVARIATE

```
                     Custom Moments Table                         1

                    The UNIVARIATE Procedure
   Variable:  CityPop_90  (1990 metropolitan pop in millions)

Moments
---------------------------------------------------------------
N                         51    Sum Weights                 51

Mean              3.87701961    Sum Observations       197.728

Std Deviation     5.16465302    Variance            26.6736408

Skewness          2.87109259    Kurtosis             10.537867

Uncorrected SS    2100.27737    Corrected SS        1333.68204

Coeff Variation    133.21194    Std Error Mean      0.72319608
---------------------------------------------------------------
```

Customized HTML Output

Display 10.6 Customized HTML Output (Customized Moments Table) from PROC UNIVARIATE (Viewed with Microsoft Internet Explorer)

Custom Moments Table

The UNIVARIATE Procedure
Variable: CityPop_90 (1990 metropolitan pop in millions)

Moments			
N	51	**Sum Weights**	51
Mean	3.87701961	**Sum Observations**	197.728
Std Deviation	5.16465302	**Variance**	26.6736408
Skewness	2.87109259	**Kurtosis**	10.537867
Uncorrected SS	2100.27737	**Corrected SS**	1333.68204
Coeff Variation	133.21194	**Std Error Mean**	0.72319608

Example 2: Comparing the EDIT Statement with the DEFINE TABLE Statement

PROC TEMPLATE features:

EDIT statement

COLUMN statement

DEFINE statement

STYLE= attribute

NOTES statement

DYNAMIC statement

Other ODS features:

ODS PATH statement

ODS HTML statement

ODS HTML CLOSE statement

Program Description

This example compares the use of an EDIT statement with a DEFINE TABLE statement for the same table definition. The first program uses the EDIT statement to change the **Base.Summary** table definition. The foreground color of the NOBS column is changed to green. The other definitions and attributes of the **Base.Summary** table definition remain the same. The second program uses the DEFINE TABLE statement to define a new table using the same name, **Base.Summary**. The NOBS column is the only column defined in the new table definition. When the PROC SUMMARY step executes, only the NOBS column is printed. The only style attribute that is used to format the column is the foreground=green attribute.

Program 1

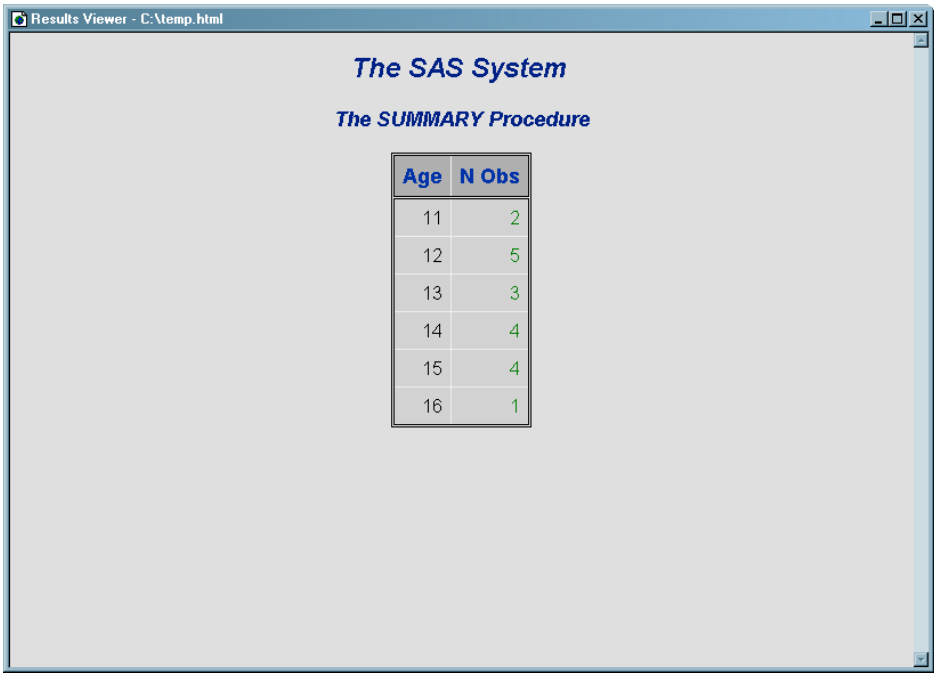
Edit the existing table definition *Base.Summary*. The ODS PATH statement specifies which item store to search first for the table definition. The EDIT statement edits the table definition **Base.Summary**. The modified table definition **Base.Summary** is written to the WORK.TEMPLAT item store.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, “ODS HTML Statements for Running Examples in Different Operating Environments,” on page 649. △

```
ods path work.templat (update) sashelp.tmplmst (read);
proc template;
    edit Base.Summary;
        edit nobs;
        style={foreground=green};
    end;

   end;
run;

ods html file="temp.html";

proc summary data=sashelp.class print;
class age;
run;

ods html close;
```

Display 10.7 HTML Output Using an Edited Table Definition for Base.Summary

The column labeled **AGE** remains in the output because **AGE** is defined as a dynamic variable which is passed to the original **Base.Summary** table definition and **AGE** is specified as the CLASS variable. The attributes of the NOBS column are modified in the EDIT statement where the NOBS column is defined.



Age	N Obs
11	2
12	5
13	3
14	4
15	4
16	1

Output 10.5 Base.Summary Table Definition Modified by the EDIT Statement

The modified **Base.Summary** table definition changes the foreground color of the NOBS column to green. The vertical alignment and heading of the NOBS column, and the other table attributes, are retained from the default table definition and stay the same. To view the **Base.Summary** table definition created by Program 1, follow these steps.

1 Submit the following command in the command bar:

```
odstemplates
```

2 Double-click the item store **WORK.TEMPLAT**.

3 Double-click the item store **Base**.

4 Right-click the table definition **Summary** and select **Open**. The table definition **Base.Summary** is displayed in the Template Browser window.

```
proc template;
   define table Base.Summary / store = SASUSER.TEMPLAT;
      notes "Summary table for MEANS and SUMMARY";
      dynamic one_var one_var_label one_var_name clmpct;
      column class nobs id type ways (varname) (label) (min) (max) (range) (n)
         (nmiss) (sumwgt) (sum) (mean) (uss) (css) (var) (stddev) (cv) (stderr
         ) (t) (probt) (lclm) (uclm) (skew) (kurt) (median) (mode) (q1) (q3) (
         qrange) (p1) (p5) (p10) (p25) (p50) (p75) (p90) (p95) (p99);
      header h;
      define p99;
         header = "99th Pctl";
         generic;
      end;
      define p95;
         header = "95th Pctl";
         generic;
      end;
      define p90;
         header = "90th Pctl";
         generic;
      end;
      define p75;
         header = "75th Pctl";
         generic;
      end;
      define p50;
         header = "50th Pctl";
         generic;
      end;
      define p25;
         header = "25th Pctl";
         generic;
      end;
      define p10;
         header = "10th Pctl";
         generic;
      end;
      define p5;
         header = "5th Ptcl";
         generic;
      end;
      define p1;
         header = "1st Pctl";
         generic;
      end;
      define qrange;
         header = "Quartile Range";
         generic;
      end;
      define q3;
         header = "Upper Quartile";
         generic;
      end;
      define q1;
         header = "Lower Quartile";
         generic;
      end;
```

```
define mode;
        header = "Mode";
        generic;
     end;
      define median;
        header = "Median";
        generic;
     end;
      define kurt;
        header = "Kurtosis";
        generic;
     end;
     define skew;
        header = "Skewness";
        generic;
     end;
     define uclm;
        define header huclm;
           text "Upper " clmpct BEST8. %nrstr("%%/CL for Mean");
           split = "/";
        end;
        header = huclm;
        generic;
     end;
     define lclm;
        define header hlclm;
           text "Lower " clmpct BEST8. %nrstr("%%/CL for Mean");
           split = "/";
        end;
        header = hlclm;
        generic;
     end;
     define probt;
        parent = Common.ParameterEstimates.Probt;
        generic;
     end;
     define t;
        parent = Common.ParameterEstimates.tValue;
        generic;
     end;
     define stderr;
        header = "Std Error";
        parent = Common.ParameterEstimates.StdErr;
        generic;
     end;
     define cv;
        header = "Coeff of Variation";
        generic;
     end;
     define stddev;
        header = "Std Dev";
        generic;
     end;
     define var;
        header = "Variance";
        generic;
     end;
     define css;
        define header hcss;
           text2 "CSS";
           text "Corrected SS";
        end;
        header = hcss;
        generic;
     end;
     define uss;
        define header huss;
           text2 "USS";
           text "Uncorrected SS";
        end;
        header = huss;
        generic;
     end;
```

```
define mean;
      header = "Mean";
      generic;
   end;
   define sum;
      header = "Sum";
      generic;
   end;
   define sumwgt;
      header = "Sum Wgts";
      generic;
   end;
   define nmiss;
      header = "N Miss";
      generic;
   end;
   define n;
      header = "N";
      generic;
   end;
   define range;
      header = "Range";
      generic;
   end;
   define max;
      define header hmax;
         text2 "Max";
         text "Maximum";
      end;
      header = hmax;
      generic;
   end;
   define min;
      define header hmin;
         text2 "Min";
         text "Minimum";
      end;
      header = hmin;
      generic;
   end;
   define label;
      header = "Label";
      id;
      generic;
   end;
   define varname;
      header = "Variable";
      id;
      generic;
   end;
   define ways;
      header = "Ways";
      vjust = T;
      id;
   end;
   define type;
      header = "Type";
      vjust = T;
      id;
   end;
   define id;
      vjust = T;
      id;
      generic;
   end;
```

```
   define nobs;
         header = "N Obs";
         vjust = T;
         style = {
            foreground = green
            };
            id;
         end;
      define class;
         vjust = T;
         id;
         generic;
         blank_internal_dups;
      end;
      define h;
         text "Analysis Variable : " one_var_name " " one_var_label;
         space = 1;
         just = C;
         print = one_var;
         spill_margin;
      end;
      required_space = 5;
      underline;
      overline;
      byline;
      use_format_defaults;
      double_space;
      split_stack;
      use_name;
      order_data;
      classlevels;
   end;
run;
```

Program 2

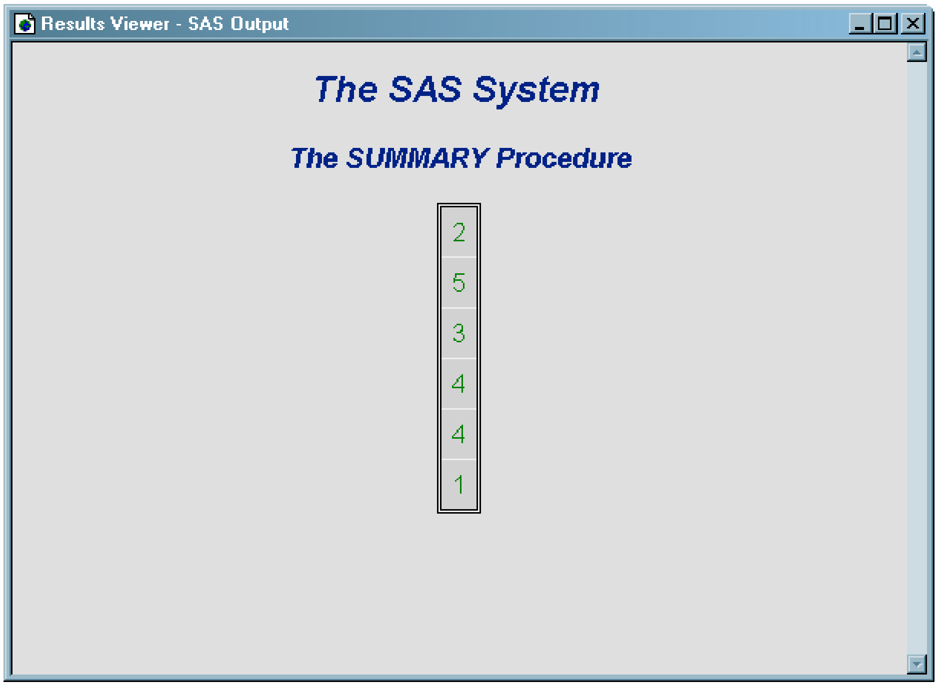
Define the table *Base.Summary*. The ODS PATH statement specifies which item store to search first for the table definition. The DEFINE TABLE statement creates a new table definition **`Base.Summary`**. The new table definition **`Base.Summary`** is written to the WORK.TEMPLAT item store.

```
ods path work.templat (update) sashelp.tmplmst (read);
proc template;
   define table Base.Summary;
      notes "Summary table for MEANS and SUMMARY";
      dynamic clmpct one_var_name one_var_label one_var;
      column class nobs id type ways (varname) (label) (min) (max) (range) (n
         ) (nmiss) (sumwgt) (sum) (mean) (uss) (css) (var) (stddev) (cv) (
         stderr) (t) (probt) (lclm) (uclm) (skew) (kurt) (median) (mode) (q1)
         (q3) (qrange) (p1) (p5) (p10) (p25) (p50) (p75) (p90) (p95) (p99);


      define nobs;
        style={foreground=green};

      end;

   end;
run;

ods html file="temp.html";
```

```
proc summary data=sashelp.class print;
class age;
run;

ods html close;
```

Display 10.8 HTML Output that Uses the Table Definition *Base.Summary*.

The column labeled **AGE** is missing because it was not defined in the new table definition **Base.Summary**. The new table definition only defined the **NOBS** column with a green foreground and no column headings.



Output 10.6 Base.Summary Table Definition Created by the DEFINE TABLE Statement

The **`Base.Summary`** table definition defines the foreground color of the NOBS column to green. Because the vertical alignment and heading of the NOBS column, and the other table attributes, are not defined, they are no longer part of the **`Base.Summary`**table definition. To view the table definition **`Base.Summary`** created by Program 2, follow these steps.

1 Submit the following command:

```
odstemplates
```

2 Double-click the item store **`WORK.TEMPLAT`**.

3 Double-click the item store **`Base`**.

4 Right-click the table definition **`Summary`** and select **`Open`**. The table definition **`Base.Summary`** is displayed in the Template Browser window.

```
proc template;
   define table Base.Summary / store = WORK.TEMPLAT;
      notes "Summary table for MEANS and SUMMARY";
      dynamic clmpct one_var_name one_var_label one_var;
      column class nobs id type ways (varname) (label) (min)
      (max) (range) (n)(nmiss) (sumwgt) (sum) (mean) (uss) (css)
      (var) (stddev) (cv) (stderr) (t) (probt) (lclm) (uclm) (skew)
      (kurt) (median) (mode) (q1) (q3) (qrange) (p1) (p5) (p10)
      (p25) (p50) (p75) (p90) (p95) (p99);
      define nobs;
         style = {
            foreground = green
            };
      end;
   end;
run;
```

Example 3: Creating a New Table Definition

PROC TEMPLATE features:

- Table attributes:
  - DOUBLE_SPACE=
  - OVERLINE=
  - UNDERLINE=
- DEFINE TABLE statement:
  - COLUMN statement
  - DEFINE statement (for columns)
    - GENERIC= attribute
    - HEADER= attribute
    - ID= attribute
    - STYLE= attribute
    - VJUST= attribute
  - DEFINE statement (for headers)
    - TEXT statement
    - STYLE= attribute
    - SPACE= attribute
  - DEFINE FOOTER statement

HEADER statement
MVAR statement

Other ODS features:

ODS HTML statement
FILE statement with ODS= option
PUT statement with _ODS_ argument

Program Description

This example creates a custom table definition for an output data set that PROC MEANS produces.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, "ODS HTML Statements for Running Examples in Different Operating Environments," on page 649. △

Program 1: Producing an Output Data Set with PROC MEANS

Set the SAS system options. The OPTIONS statement controls several aspects of the Listing output. None of these options affects the HTML output.

```
options nodate pageno=1 pagesize=60 linesize=72;
```

Create formats for the variables *Year* and *School*. PROC FORMAT creates formats for Year and School.

```
proc format;
   value yrFmt . = " All";
   value $schFmt ' ' = "All    ";
   run;
```

The data set Charity contains information about students' volunteer work for charity. The variables give the name of the school, the year of the fundraiser, the first name of each student, the amount of money that each student raised, and the number of hours that each student volunteered. The RETAIN statement and two sum statements compute the minimum and maximum values of **Year**. The CALL SYMPUT statements store these values in the macro variables FIRST_YEAR and LAST_YEAR. A DATA step creates this data set.

```
data Charity;
input School $ 1-7 Year 9-12 Name $ 14-20 moneyRaised 22-26
   hoursVolunteered 28-29;
   format moneyRaised dollar8.2;
   format hoursVolunteered f3.0;
   format Year yrFmt.;
   format School schFmt.;
   label School = "Schools";
   label Year = "Years";
   retain yearmin yearmax;
   yearmin=min(yearmin,year);
   yearmax=max(yearmax,year);
```

```
   call symput('first_year',put(yearmin,4.));
   call symput('last_year', put(yearmax,4.));
datalines;
Monroe  1992 Allison 31.65 19
Monroe  1992 Barry   23.76 16
Monroe  1992 Candace 21.11  5
Monroe  1992 Danny    6.89 23
Monroe  1992 Edward  53.76 31
Monroe  1992 Fiona   48.55 13
Monroe  1992 Gert    24.00 16
Monroe  1992 Harold  27.55 17
Monroe  1992 Ima     15.98  9
Monroe  1992 Jack    20.00 23
Monroe  1992 Katie   22.11  2
Monroe  1992 Lisa    18.34 17
Monroe  1992 Tonya   55.16 40
Monroe  1992 Max     26.77 34
Monroe  1992 Ned     28.43 22
Monroe  1992 Opal    32.66 14
Monroe  1993 Patsy   18.33 18
Monroe  1993 Quentin 16.89 15
Monroe  1993 Randall 12.98 17
Monroe  1993 Sam     15.88  5
Monroe  1993 Tyra    21.88 23
Monroe  1993 Myrtle  47.33 26
Monroe  1993 Frank   41.11 22
Monroe  1993 Cameron 65.44 14
Monroe  1993 Vern    17.89 11
Monroe  1993 Wendell 23.00 10
Monroe  1993 Bob     26.88  6
Monroe  1993 Leah    28.99 23
Monroe  1994 Becky   30.33 26
Monroe  1994 Sally   35.75 27
Monroe  1994 Edgar   27.11 12
Monroe  1994 Dawson  17.24 16
Monroe  1994 Lou      5.12 16
Monroe  1994 Damien  18.74 17
Monroe  1994 Mona    27.43  7
Monroe  1994 Della   56.78 15
Monroe  1994 Monique 29.88 19
Monroe  1994 Carl    31.12 25
Monroe  1994 Reba    35.16 22
Monroe  1994 Dax     27.65 23
Monroe  1994 Gary    23.11 15
Monroe  1994 Suzie   26.65 11
Monroe  1994 Benito  47.44 18
Monroe  1994 Thomas  21.99 23
Monroe  1994 Annie   24.99 27
Monroe  1994 Paul    27.98 22
Monroe  1994 Alex    24.00 16
Monroe  1994 Lauren  15.00 17
Monroe  1994 Julia   12.98 15
Monroe  1994 Keith   11.89 19
Monroe  1994 Jackie  26.88 22
```

```
Monroe  1994 Pablo   13.98 28
Monroe  1994 L.T.    56.87 33
Monroe  1994 Willard 78.65 24
Monroe  1994 Kathy   32.88 11
Monroe  1994 Abby    35.88 10
Kennedy 1992 Arturo  34.98 14
Kennedy 1992 Grace   27.55 25
Kennedy 1992 Winston 23.88 22
Kennedy 1992 Vince   12.88 21
Kennedy 1992 Claude  15.62  5
Kennedy 1992 Mary    28.99 34
Kennedy 1992 Abner   25.89 22
Kennedy 1992 Jay     35.89 35
Kennedy 1992 Alicia  28.77 26
Kennedy 1992 Freddy  29.00 27
Kennedy 1992 Eloise  31.67 25
Kennedy 1992 Jenny   43.89 22
Kennedy 1992 Thelma  52.63 21
Kennedy 1992 Tina    19.67 21
Kennedy 1992 Eric    24.89 12
Kennedy 1993 Bubba   37.88 12
Kennedy 1993 G.L.    25.89 21
Kennedy 1993 Bert    28.89 21
Kennedy 1993 Clay    26.44 21
Kennedy 1993 Leeann  27.17 17
Kennedy 1993 Georgia 38.90 11
Kennedy 1993 Bill    42.23 25
Kennedy 1993 Holly   18.67 27
Kennedy 1993 Benny   19.09 25
Kennedy 1993 Cammie  28.77 28
Kennedy 1993 Amy     27.08 31
Kennedy 1993 Doris   22.22 24
Kennedy 1993 Robbie  19.80 24
Kennedy 1993 Ted     27.07 25
Kennedy 1993 Sarah   24.44 12
Kennedy 1993 Megan   28.89 11
Kennedy 1993 Jeff    31.11 12
Kennedy 1993 Taz     30.55 11
Kennedy 1993 George  27.56 11
Kennedy 1993 Heather 38.67 15
Kennedy 1994 Nancy   29.90 26
Kennedy 1994 Rusty   30.55 28
Kennedy 1994 Mimi    37.67 22
Kennedy 1994 J.C.    23.33 27
Kennedy 1994 Clark   27.90 25
Kennedy 1994 Rudy    27.78 23
Kennedy 1994 Samuel  34.44 18
Kennedy 1994 Forrest 28.89 26
Kennedy 1994 Luther  72.22 24
Kennedy 1994 Trey     6.78 18
Kennedy 1994 Albert  23.33 19
Kennedy 1994 Che-Min 26.66 33
Kennedy 1994 Preston 32.22 23
Kennedy 1994 Larry   40.00 26
```

```
Kennedy 1994 Anton   35.99 28
Kennedy 1994 Sid     27.45 25
Kennedy 1994 Will    28.88 21
Kennedy 1994 Morty   34.44 25
;
```

Compute the descriptive statistics, and specify the options and subgroups for analysis. This PROC MEANS step analyzes the data for the one-way combination of the class variables and across all observations. It creates an output data set that includes variables for the total and average amount of money raised. The data set also includes new variables for the top three amounts of money raised, the names of the three students who raised the money, the years when the students raised the money, and the schools that the students attended.

```
proc means data=Charity descendTypes charType noprint;
   class School Year;
   var moneyRaised;
   types () School year;
   output out=top3list sum= mean=
      idgroup ( max(moneyRaised) out[3](moneyRaised name school year)= )
      / autoname;
   run;
```

Print the report. This PROC PRINT step generates traditional Listing output of the output data set that PROC MEANS created.

```
proc print data=top3list nobs;
   title 'Simple PROC PRINT of the Output Data Set';
run;
```

Listing Output from PROC PRINT

Output 10.7 PROC PRINT Listing Output from PROC MEANS

```
                Simple PROC PRINT of the Output Data Set              1

                              money    money
                            Raised_  Raised_  money    money    money
School  Year _TYPE_ _FREQ_      Sum     Mean Raised_1 Raised_2 Raised_3

Kennedy  All   10      53  $1575.95   $29.73   $72.22   $52.63   $43.89
Monroe   All   10      56  $1616.80   $28.87   $78.65   $65.44   $56.87
All     1992   01      31   $892.92   $28.80   $55.16   $53.76   $52.63
All     1993   01      32   $907.92   $28.37   $65.44   $47.33   $42.23
All     1994   01      46  $1391.91   $30.26   $78.65   $72.22   $56.87
All      All   00     109  $3192.75   $29.29   $78.65   $72.22   $65.44



Name_1  Name_2  Name_3  School_1 School_2 School_3 Year_1 Year_2 Year_3

Luther  Thelma  Jenny   Kennedy  Kennedy  Kennedy   1994   1992   1992
Willard Cameron L.T.    Monroe   Monroe   Monroe    1994   1993   1994
Tonya   Edward  Thelma  Monroe   Monroe   Kennedy   1992   1992   1992
Cameron Myrtle  Bill    Monroe   Monroe   Kennedy   1993   1993   1993
Willard Luther  L.T.    Monroe   Kennedy  Monroe    1994   1994   1994
Willard Luther  Cameron Monroe   Kennedy  Monroe    1994   1994   1993
```

Program 2: Building a Custom Table Definition for the TopN Report

Set the SAS system options. The OPTIONS statement controls several aspects of the Listing output. None of these options affects the HTML output.

```
options nodate pageno=1 pagesize=60 linesize=72;
```

Create the HTML output and specify the name of the HTML file. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **topn-body.htm** in the current directory. Some browsers require an extension of .htm or .html on the filename.

```
ods html body='topn-body.htm';
```

Create the table definition *means.topn* The DEFINE statement creates the table definition **means.topn** in the first template store in the path for which you have write access. By default, this template store is SASUSER.TEMPLAT.

```
proc template;
   define table means.topn;
```

Specify the symbols that reference three macro variables. The MVAR statement defines three symbols that reference macro variables. ODS will use the values of these variables as strings. References to the macro variables are resolved when ODS binds the definition and the data component to produce an output object. FIRST_YEAR and LAST_YEAR will contain the values of the first and last years for which there are data. Their values are assigned by the SYMPUT statements in the DATA step. SYSDATE9 is an automatic macro variable whose value is always available.

```
   mvar first_year last_year sysdate9;
```

Specify the column names and the order in which they appear in the report. The COLUMN statement declares these variables as columns in the table and specifies their order in the table. If a column name appears in parentheses, then PROC TEMPLATE stacks the values of all variables that use that column definition one below the other in the output object. Variables are assigned a column definition in the DATA step that appears later in the program.

```
   column class sum mean (raised) (name) (school) (year);
```

Specify three customized changes to the table definition. These three table attributes affect the presentation of the output object in the Listing output. They have no effect on its presentation in the HTML output. DOUBLE_SPACE= double spaces the rows of the output object. OVERLINE= and UNDERLINE= draw a continuous line before the first row of the table and after the last row of the table.

```
    double_space=on;
    overline=on;
    underline=on;
```

Specify the two table headers and the order in which they appear in the report. The HEADER statement declares **table_header_1** and **table_header_2** as headers in the table and specifies the order in which the headers appear in the output object.

```
   header table_header_1 table_header_2;
```

Create the table element *table_header_1*. The DEFINE statement and its substatement and attribute define **`table_header_1`**. The TEXT statement specifies the text of the header. The STYLE= attribute alters the style element that displays the table header. The style element **`header`** is defined in the default style definition, **`styles.default`**. (For information on viewing a style definition, see "What Style Definitions Are Shipped with SAS Software?" on page 30.) In this case, the STYLE= attribute specifies a large font size. All other attributes that are included in **`header`** remain in effect. This attribute affects only the HTML output.

The END statement ends the header definition.

```
define table_header_1;
   text "Top Three Fund Raisers";
   style=header{font_size=6};
end;
```

Create the table element *table_header_2*. The DEFINE statement and its substatement and attribute define **`table_header_2`**. The TEXT statement uses text and the macro variables FIRST_YEAR and LAST_YEAR to specify the contents of the header. When ODS binds the data component to the table definition (in the DATA step that follows), it will resolve the values of the macro variables FIRST_YEAR and LAST_YEAR. The table definition itself contains references to the macro variables.

The SPACE= attribute inserts a blank line after the header (in the Listing output only).

The END statement ends the header definition.

```
define table_header_2;
    text "from " first_year " to " last_year;
    space=1;
end;
```

Create the table element *table_footer*. The DEFINE statement and its substatement and attribute define **`table_footer`**. The FOOTER argument declares **`table_footer`** as a footer. (Compare this approach with the creation of the headers. You could use a FOOTER statement instead of the FOOTER argument in the DEFINE statement.)

The TEXT statement specifies the text of the footer. When ODS binds the data component to the table definition (in the DATA step that follows), it will resolve the value of the macro variable SYSDATE9. The table definition itself contains a reference to the macro variable. The SPLIT= attribute specifies the asterisk as the split character. This prevents the header from splitting at the open parenthesis. If no split character is specified, then ODS interprets the nonalphabetic, leading character as the split character (see the discussion of *text-specification(s)* in "TEXT Statement" on page 409.) Alternatively, you can place a space character before the open parenthesis.

The STYLE= attribute alters the style element that displays the table footer. The style element **`header`** is defined in the default style definition, **`styles.default`**. (For information on viewing a style definition, see "Viewing the Contents of a Style Definition" on page 319.) In this case, the STYLE= attribute specifies a small font size. All other attributes that are included in **`footer`** remain in effect. This attribute affects only the HTML output.

The END statement ends the footer definition.

```
define footer table_footer;
   text "(report generated on " sysdate9 ")";
   split="*";
   style=header{font_size=2};
end;
```

Create the column *class*. The DEFINE statement and its attributes create the column definition **`class`**. (The COLUMN statement earlier in the program declared **`class`** as a column.)

GENERIC= specifies that multiple variables can use the same column definition. GENERIC= is not specific to a destination.

ID= specifies that this column should be repeated on every data panel if the report uses multiple data panels. ID= affects only the Listing output.

VJUST= specifies that the text appear at the top of the HTML table cell that it is in. VJUST= affects only the HTML output.

STYLE= specifies that the column uses the DATA table element. This table element is defined in the default style definition, which is the style definition that is being used. STYLE= affects only the HTML output.

The END statement ends the definition.

Notice that, unlike subsequent column definitions, this column definition does not include a header. This is because the same header is not appropriate for all the variables that use this column definition. Because there is no header specified here or in the FILE statement, the header comes from the label that was assigned to the variable in the DATA step.

```
define class;
   generic=on;
   id=on;
   vjust=top;
   style=data;
end;
```

Create six additional columns. Each of these DEFINE statements and its attributes creates a column definition. GENERIC= specifies that multiple variables can use a column definition (although in the case of **`sum`** and **`mean`**, only one variable uses the definition). HEADER= specifies the text for the column header. VJUST= specifies that the text appear at the top of the HTML table cell that it is in. The END statement ends the definition.

```
define sum;
   generic=on;
   header="Total Dollars Raised";
   vjust=top;
end;

define mean;
   generic=on;
   header="Average Dollars per Student";
   vjust=top;
end;

define raised;
   generic=on;
   header="Individual Dollars";
end;

define name;
   generic=on;
   header="Student";
end;

define school;
   generic=on;
```

```
         header="School";
      end;

      define year;
         generic=on;
         header="Year";
      end;
```

End the table definition. This END statement ends the table definition. The RUN statement ends the PROC TEMPLATE step.

```
      end;
   run;
```

Create the data component. This DATA step does not create a data set. Instead, it creates a data component and, eventually, an output object. The SET statement reads the data set TOP3LIST that was created with PROC MEANS.

```
   data _null_;
      set top3list;
```

Route the DATA step results to ODS and use the *means.topn* table definition. The combination of the fileref PRINT and the ODS option in the FILE statement routes the results of the DATA step to ODS. (For more information on using the DATA step with ODS, see Chapter 3, "Output Delivery System and the DATA Step," on page 39.) The TEMPLATE= suboption tells ODS to use the table definition named **`means.topn`**, which was previously created with PROC TEMPLATE.

```
      file print ods = (
         template='means.topn'
```

Specify the column definition to use for each variable. The COLUMNS= suboption places DATA step variables into columns that are defined in the table definition. For example, the first *column-specification* specifies that the first column of the output object contains the values of the variable SCHOOL and that it uses the column definition named **`class`**. GENERIC= must be set to ON in both the table definition and each column assignment in order for multiple variables to use the same column definition.

```
         columns=(
            class=school(generic=on)
            class=year(generic=on)
            sum=moneyRaised_sum(generic=on)
            mean=moneyRaised_mean(generic=on)
            raised=moneyRaised_1(generic=on)
            raised=moneyRaised_2(generic=on)
            raised=moneyRaised_3(generic=on)
            name=name_1(generic=on)
            name=name_2(generic=on)
            name=name_3(generic=on)
            school=school_1(generic=on)
            school=school_2(generic=on)
            school=school_3(generic=on)
            year=year_1(generic=on)
            year=year_2(generic=on)
            year=year_3(generic=on)
            )
```

```
      );
```

Write the data values to the data component. The _ODS_ option and the PUT statement write the data values for all columns to the data component.

```
put _ods_;
run;
```

Stop the creation of HTML output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser.

```
ods html close;
```

Listing Output for the TopN Report

Compare this customized output to the PROC PRINT listing output in Output 10.7.

Output 10.8 Using a Customized Table to Produce Listing Output

```
  Simple PROC PRINT of the Output Data Set             1
                      Top Three Fund Raisers
                             from  to

                           Average
                  Total    Dollars
                Dollars        per  Individual
Schools  Years   Raised    Student     Dollars  Student  School   Year
_____________________________________________________________________
Kennedy    All  $1575.95    $29.73      $72.22  Luther   Kennedy  1994
                                        $52.63  Thelma   Kennedy  1992
                                        $43.89  Jenny    Kennedy  1992

Monroe     All  $1606.80    $28.69      $78.65  Willard  Monroe   1994
                                        $65.44  Cameron  Monroe   1993
                                        $56.87  L.T.     Monroe   1994

All       1992   $882.92    $28.48      $55.16  Tonya    Monroe   1992
                                        $53.76  Edward   Monroe   1992
                                        $52.63  Thelma   Kennedy  1992

All       1993   $907.92    $28.37      $65.44  Cameron  Monroe   1993
                                        $47.33  Myrtle   Monroe   1993
                                        $42.23  Bill     Kennedy  1993

All       1994  $1391.91    $30.26      $78.65  Willard  Monroe   1994
                                        $72.22  Luther   Kennedy  1994
                                        $56.87  L.T.     Monroe   1994

All        All  $3182.75    $29.20      $78.65  Willard  Monroe   1994
                                        $72.22  Luther   Kennedy  1994
                                        $65.44  Cameron  Monroe   1993
_______________________________________________________________________
                    (report generated on 30JUN2003)
```

HTML Output: Using a Customized Table for the TopN Report

Display 10.9 HTML Output for the TopN Report (Viewed with Microsoft Internet Explorer)

Simple PROC PRINT of the Output Data Set

Top Three Fund Raisers

from 1992 to 1994

Schools	Years	Total Dollars Raised	Average Dollars per Student	Individual Dollars	Student	School	Year
Kennedy	All	$90.77	$30.26	$34.44 $28.88 $27.45	Morty Will Sid	Kennedy Kennedy Kennedy	1994 1994 1994
Monroe	All	$76.52	$25.51	$31.65 $23.76 $21.11	Allison Barry Candace	Monroe Monroe Monroe	1992 1992 1992
All	1992	$76.52	$25.51	$31.65 $23.76 $21.11	Allison Barry Candace	Monroe Monroe Monroe	1992 1992 1992
All	1994	$90.77	$30.26	$34.44 $28.88 $27.45	Morty Will Sid	Kennedy Kennedy Kennedy	1994 1994 1994
All	All	$167.29	$27.88	$34.44 $31.65 $28.88	Morty Allison Will	Kennedy Monroe Kennedy	1994 1992 1994

(report generated on 24JUN2003)

Example 4: Changing a Column without Redefining the Table Definition

PROC TEMPLATE features:

DEFINE TABLE statement

Table attributes:

Other ODS features:

ODS HTML statement

Program Description

Program

```
proc template;
   define table Base.Summary;
      notes "Summary table for MEANS and SUMMARY";
      dynamic clmpct one_var_name one_var_label one_var;
      column class nobs id type ways (varname) (label) (min) (max) (range) (n
         ) (nmiss) (sumwgt) (sum) (mean) (uss) (css) (var) (stddev) (cv) (
         stderr) (t) (probt) (lclm) (uclm) (skew) (kurt) (median) (mode) (q1)
         (q3) (qrange) (p1) (p5) (p10) (p25) (p50) (p75) (p90) (p95) (p99);
```

```
      define nobs;
        style={foreground=green};

         id;
      end;

   end;
run;

ods html file="tmep.html";

proc summary data=sashelp.class print;
class age;
run;

ods html close;
```

Example 5: Setting the Style Element for Cells Based on Their Values

PROC TEMPLATE features:

DEFINE TABLE statement

- NMVAR statement
- NOTES statement
- TRANSLATE-INTO statement

DEFINE COLUMN statement

- BLANK_DUPS= attribute
- CELLSTYLE-AS statement
- GENERIC= attribute

Other ODS features:

ODS HTML statement

FILE statement with ODS= option

PUT statement with _ODS_ argument

Data set: GRAIN_PRODUCTION“Program” on page 97

Format: $CNTRY.“Program” on page 97

Program Description

This example creates a template that uses different colors and font attributes for the text inside cells, depending on their values.

Note: This example uses filenames that might not be valid in all operating environments. To successfully run the example in your operating environment, you might need to change the file specifications. See Appendix 3, “ODS HTML Statements for Running Examples in Different Operating Environments,” on page 649. △

Program

Set the SAS system options. The OPTIONS statement controls several aspects of the Listing output. None of these options affects the HTML output. The TITLE statement specifies a title.

```
options nodate pageno=1 pagesize=60 linesize=72;
title 'Leading Grain Producers';
```

Create the table definition *shared.cellstyle*. The DEFINE statement creates the table definition **shared.cellstyle** in the first template store in the path that is available to write to. By default, this template store is SASUSER.TEMPLAT.

```
proc template;
   define table shared.cellstyle;
```

Specify that missing values show the text 'No data' in the report. The TRANSLATE-INTO statement translates missing values (.) into the string **No data**.

```
   translate _val_=. into 'No data';
```

Store the information about the table in the table definition. The NOTES statement provides information about the table. NOTES statements remain a part of the compiled table definition whereas SAS comments do not.

```
   notes "NMVAR defines symbols that will be used to determine the colors
 of the cells.";
```

Specify the symbols that reference three macro variables. The NMVAR statement defines three symbols that reference macro variables. ODS will convert the variable's values to numbers (stored as doubles) before using them. References to the macro variables are resolved when ODS binds the definition and the data component to produce an output object. The text inside quotation marks provides information about the symbols. This information becomes a part of the compiled table definition whereas SAS comments do not.

LOW, MEDIUM, and HIGH will contain the values to use as the determinants of the style element that is used to display the cell. The values are provided just before the DATA step that produces the report.

```
  nmvar low 'Use default style.'
        medium 'Use yellow foreground and bold font weight'
        high 'Use red foreground and a bold, italic font.';
```

Control the repetition of values that do not change from one row to the next row. The CLASSLEVELS= attribute suppresses the display of the value in a column that is marked with BLANK_DUPS=ON if the value changes in a previous column that is also marked with BLANK_DUPS=ON. Because BLANK_DUPS= is set in a generic column, you should set this attribute as well.

```
   classlevels=on;
```

Create the column *char_var*. The DEFINE statement and its attributes create the column definition **char_var**. GENERIC= specifies that multiple variables can use the same column definition. BLANK_DUPS= suppresses the display of the value in the column if it does not change from one row to the next (and, because CLASSLEVELS=ON for the table, if no value changes in a preceding column that is marked with BLANK_DUPS=ON changes).

The END statement ends the definition.

```
   define column char_var;
      generic=on;
      blank_dups=on;
   end;
```

Create the column *num_var*. The DEFINE statement and its attributes create the column definition **num_var**. GENERIC= specifies that multiple variables can use the same column definition.

```
   define column num_var;
      generic=on;
```

Align the values in the column without regard to the format field. JUSTIFY= justifies the values in the column without regard to the format field. For numeric variables, the default justification is RIGHT, so even the translated character value **No data** that is used for missing values is right-justified. Without JUSTIFY=ON in this column definition, the value **No data** is formatted as a character variable (left-justified) within a format field that has the same width as the column.

```
      justify=on;
```

Specify which style element and style attributes to use for different values in the column. The CELLSTYLE-AS statement specifies the style element and style attributes to use for different values in this column. If a value is less than or equal to the value of the variable LOW, the cell uses the unaltered Data style element. If a value is greater than LOW but less than or equal to the value of MEDIUM, the cell uses the style element Data with a foreground color of green and an italic font. Similarly, other values use a foreground color of yellow or red and combinations of a bold font weight and an italic font style. The CELLSTYLE-AS statement affects only the HTML destination.

The END statement ends the column definition.

```
      cellstyle _val_ <= low as data,
                _val_ <= medium as data
                         {foreground=green font_style=italic},
                _val_ <= high as data
                         {foreground=yellow font_weight=bold},
                    1 as data
                         {foreground=red font_style=italic
                          font_weight=bold};
   end;
```

End the table definition. This END statement ends the table definition. The RUN statement ends the PROC TEMPLATE step.

```
   end;
run;
```

Create the HTML output and specify name of the HTML file. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the external file **cellstyle-body.htm** in the current directory. Some browsers require an extension of .htm or .html on the filename.

```
ods html body='cellstyle-body.htm';
```

Assign values to three macro variables. The %LET statements assign values to the macro variables LOW, MEDIUM, and HIGH.

```
%let low=10000;
%let medium=50000;
%let high=100000;
```

Create the data component. This DATA step does not create a data set. Instead, it creates a data component, and, eventually, an output object. The SET statement reads the data set GRAIN_PRODUCTION.

```
data _null_;
   set grain_production;
```

Route the DATA step results to ODS and use the *shared.cellstyle* table definition. The combination of the fileref PRINT and the ODS option in the FILE statement routes the results of the DATA step to ODS. (For more information on using the DATA step with ODS, see Chapter 3, "Output Delivery System and the DATA Step," on page 39.) The TEMPLATE= suboption tells ODS to use the table definition named **shared.cellstyle**, which was previously created with PROC TEMPLATE.

```
   file print ods=(
        template='shared.cellstyle'
```

Specify the column definition to use for each variable. The COLUMNS= suboption places DATA step variables into columns that are defined in the table definition. For example, the first *column-specification* specifies that the first column of the output object contains the values of the variable YEAR and that it uses the column definition named **char_var**. GENERIC= must be set to ON, both in the table definition and in each column assignment, in order for multiple variables to use the same column definition.

```
        columns=(
           char_var=year(generic=on)
           char_var=country(generic=on format=$cntry.)
           char_var=type(generic=on)
           num_var=kilotons(generic=on format=comma12.)
           )
        );
```

Write the data values to the data component. The _ODS_ option and the PUT statement write the data values for all columns to the data component.

```
   put _ods_;
run;
```

Stop the creation of HTML output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. You must close the destination before you can view the output with a browser.

```
ods html close;
```

Listing Output of a Customized Table

Output 10.9 Listing Output

Only the table customizations appear in the Listing output. Table customizations include the suppression of values that do not change from one row to the next and the translation of missing values to **`No data`**. The style customizations that are specified in the CELLSTYLE-AS statement do not appear in the Listing output.

```
              Leading Grain Producers                          1
       Year    Country          Type         Kilotons

       1995    Brazil           Corn           36,276
                                Rice           11,236
                                Wheat           1,516
               China            Corn          112,331
                                Rice          185,226
                                Wheat         102,207
               India            Corn            9,800
                                Rice          122,372
                                Wheat          63,007
               Indonesia        Corn            8,223
                                Rice           49,860
                                Wheat         No data
               United States    Corn          187,300
                                Rice            7,888
                                Wheat          59,494
       1996    Brazil           Corn           31,975
                                Rice           10,035
                                Wheat           3,302
               China            Corn          119,350
                                Rice          190,100
                                Wheat         109,000
               India            Corn            8,660
                                Rice          120,012
                                Wheat          62,620
               Indonesia        Corn            8,925
                                Rice           51,165
                                Wheat         No data
               United States    Corn          236,064
                                Rice            7,771
                                Wheat          62,099
```

HTML Output of a Customized Table

Display 10.10 HTML Output (Viewed with Microsoft Internet Explorer)

Both the table customizations and the style customizations appear in the HTML output. Table customizations include the suppression of values that do not change from one row to the next, and the translation of missing values to **No data**. The style customizations include the colors and font styles that are specified in the CELLSTYLE-AS statement.

Leading Grain Producers

Year	Country	Type	Kilotons
1995	Brazil	Corn	*36,276*
		Rice	*11,236*
		Wheat	1,516
	China	Corn	***112,331***
		Rice	***185,226***
		Wheat	***102,207***
	India	Corn	9,800
		Rice	***122,372***
		Wheat	**63,007**
	Indonesia	Corn	8,223
		Rice	*49,860*
		Wheat	No data
	United States	Corn	***187,300***
		Rice	7,888
		Wheat	**59,494**
1996	Brazil	Corn	*31,975*

Example 6: Setting the Style Element for a Specific Column, Row, and Cell

PROC TEMPLATE features:

DEFINE STYLE statement

REPLACE statement

DEFINE TABLE statement

CELLSYTLE–AS statement
DEFINE COLUMN statement
DEFINE HEADER statement
TEXT statement
DEFINE HEADER statement
TEXT statement

Other ODS features:
FILE statement with ODS= option
ODS HTML statement
STYLE= option
ODS PDF statement
STYLE= option
PUT statement with _ODS_ argument
ODS TRACE statement

Program Description

This example combines a customized style definition with a customized table definition to produce output with a checkerboard pattern of table cells.

Program

Create a new style definition *Greenbar*. The PROC TEMPLATE statement starts the TEMPLATE procedure. The DEFINE STYLE statement creates a new style definition **greenbar**.

```
proc template;
   define style greenbar;
```

Specify the parent style definition from which the *greenbar* style definition inherits its attributes. The PARENT= attribute specifies the style definition from which the **greenbar** definition inherits its style elements and attributes. All the style elements and their attributes that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

```
   parent=styles.printer;
```

Change the colors used in the headers and footers. The REPLACE statement adds a style element to the **greenbar** style definition from the parent style definition, but the background is light green and the foreground is black.

```
   replace headersandfooters from cell /
         background=light green
         foreground=black
      ;
```

End the style definition. The END statement ends the style definition. The RUN statement executes the PROC TEMPLATE step.

```
   end;
run;
```

Create the HTML and PDF output and specify the style definition that you want to use for the output. The ODS HTML statement opens the HTML destination and creates HTML output. It sends all output objects to the file **`greenbar.html`** in the current directory. The STYLE= option tells ODS to use **`greenbar`** as the style definition when it formats the output.

The ODS PDF statement opens the PDF destination and creates PDF output. It sends all output objects to the file **`greenbar.pdf`** in the current directory. The STYLE= option tells ODS to use **`greenbar`** as the style definition when it formats the output.

```
ods html body="greenbar.html" style=greenbar;
ods pdf file="greenbar.pdf" style=greenbar;
```

Create the table definition *Checkerboard*. The DEFINE statement creates the table definition **`Checkerboard`** in the first template store in the path that is available to write to. By default, this template store is SASUSER.TEMPLAT.

```
proc template;
   define table Checkerboard;
```

Specify which style element and style attributes to use for different cells.

The CELLSTYLE-AS statement specifies the style element and style attributes to use for cells in each of the rows and columns. The CELLSTYLE-AS statement creates the checkerboard effect in the output. If both the row and column are odd numbered, then the cell is magenta in color. Similarly, if both the row and column are even numbered, then the cell is magenta in color. The CELLSTYLE-AS statement has no effect on the LISTING destination because it is changing style elements and style attributes which have no effect in listing output.

```
cellstyle mod(_row_,2) && mod(_col_,2) as data{background=magenta},
                not(mod(_row_,2)) && not(mod(_col_,2)) as data{background=magenta},
                1 as data;
```

Create the header definition *top*. The DEFINE HEADER statement defines the table header **`top`**.

The TEXT statement specifies the text of the header *Checkerboard Table Definition*.

The END statement ends the header definition.

```
define header top;
   text 'Checkerboard Table Definition';
end;
```

Create the column definition *name*. The DEFINE COLUMN statement creates the column definition **name**.

The DEFINE HEADER statement creates the header definition **bar**.

The TEXT statement specifies the text to use in the header. _LABEL_ is a dynamic variable that references a value that the data component supplies from the procedure or DATA step, in this example the variable's label.

The first END statement ends the header definition.

The HEADER statement declares **bar** as the header in the table.

The second END statement ends the column definition.

```
define column name;
   define header bar;
      text "begin " _label_ " end";
   end;
   header=bar;
end;
```

Create the column definition *gender*. The DEFINE COLUMN statement creates the column definition **gender**.

The DATANAME= column attribute specifies the name of the column **sex** in the data component to associate with the column definition **gender**.

The DEFINE HEADER statement creates the header **bar**.

The TEXT statement specifies the text *Gender* to use in the header.

The first END statement ends the header definition.

The HEADER statement declares **bar** as the header in the table.

The second END statement ends the column definition.

```
define column gender;
   dataname=sex;
   define header bar;
      text "Gender";
   end;
   header=bar;
end;
```

Create three column definitions: *age*, *height*, and *weight*. The three DEFINE COLUMN statements create the column definitions **age**, **weight**, and **height**.

The END statement ends the column definition.

```
define column age;
end;
define column height;
end;
define column weight;
end;
```

End the table definition. The END statement ends the table definition. The RUN statement executes the TEMPLATE procedure.

```
end;
run;
```

Create the data component. This DATA step does not create a data set. Instead, it creates a data component that is used to produce an output object.

The SET statement reads the data set **SASHELP.CLASS**.

```
data _null_;
   set sashelp.class;
```

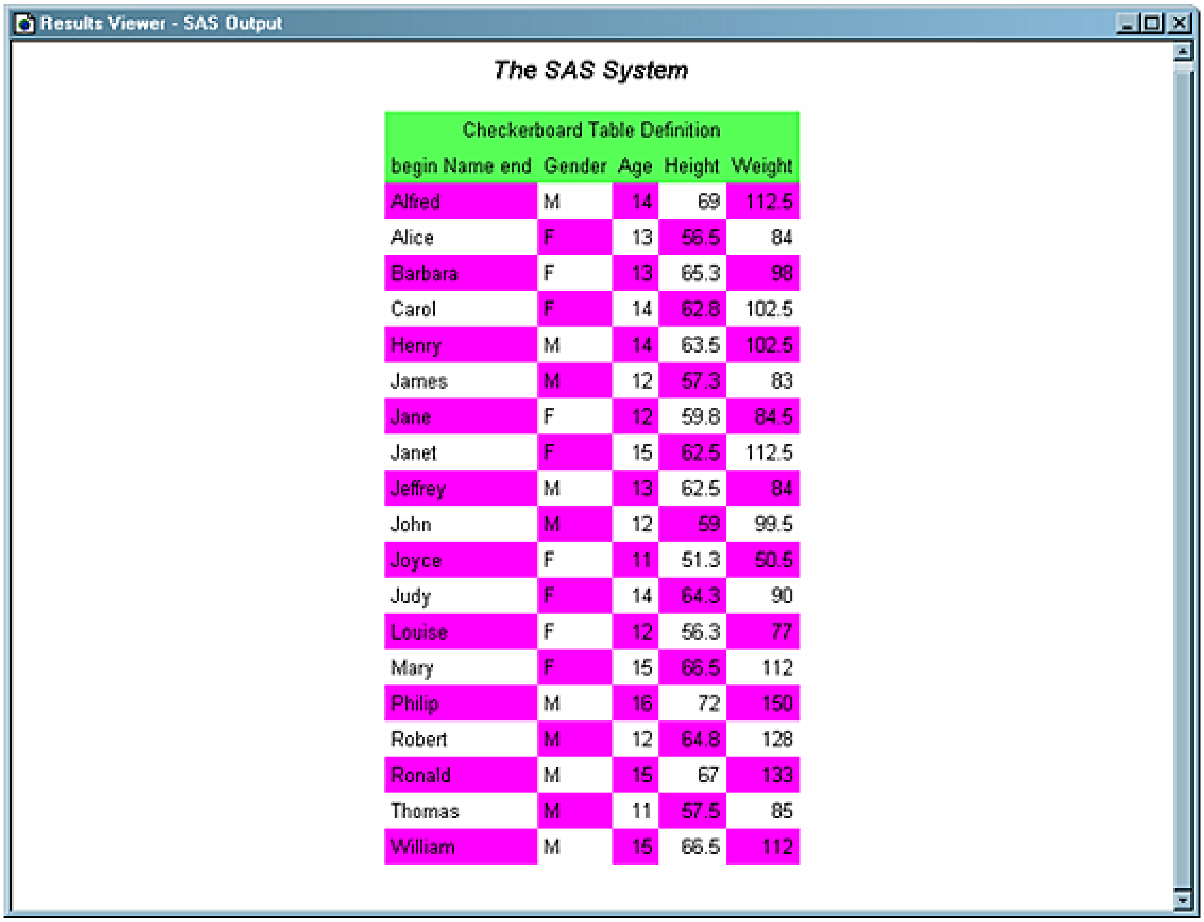
Route the DATA step results to ODS and use the *Checkerboard* table definition. The combination of the fileref PRINT and the ODS option in the FILE statement routes the results of the DATA step to ODS. (For more information about using the DATA step with ODS, see Chapter 3, "Output Delivery System and the DATA Step," on page 39.) The TEMPLATE= suboption tells ODS to use the table definition named **Checkerboard**.

```
file print ods=(template='Checkerboard');
  put _ods_;
run;
```

Stop the creation of HTML and PDF output. The ODS HTML statement closes the HTML destination and all the files that are associated with it. The ODS PDf statement closes the PDF destination and all the files that are associated with it. You must close the destinations before you can view the output.

```
ods html close;
ods pdf close;
```

Display 10.11 HTML Output (Viewed with Internet Explorer 6.0)



Checkerboard Table Definition				
begin Name end	Gender	Age	Height	Weight
Alfred	M	14	69	112.5
Alice	F	13	56.5	84
Barbara	F	13	65.3	98
Carol	F	14	62.8	102.5
Henry	M	14	63.5	102.5
James	M	12	57.3	83
Jane	F	12	59.8	84.5
Janet	F	15	62.5	112.5
Jeffrey	M	13	62.5	84
John	M	12	59	99.5
Joyce	F	11	51.3	50.5
Judy	F	14	64.3	90
Louise	F	12	56.3	77
Mary	F	15	66.5	112
Philip	M	16	72	150
Robert	M	12	64.8	128
Ronald	M	15	67	133
Thomas	M	11	57.5	85
William	M	15	66.5	112

Display 10.12 PDF Output (Viewed with Acrobat Reader 5.0)

The SAS System 1

Checkerboard Table Definition				
begin Name end	Gender	Age	Height	Weight
Alfred	M	14	69	112.5
Alice	F	13	56.5	84
Barbara	F	13	65.3	98
Carol	F	14	62.8	102.5
Henry	M	14	63.5	102.5
James	M	12	57.3	83
Jane	F	12	59.8	84.5
Janet	F	15	62.5	112.5
Jeffrey	M	13	62.5	84
John	M	12	59	99.5
Joyce	F	11	51.3	50.5
Judy	F	14	64.3	90
Louise	F	12	56.3	77
Mary	F	15	66.5	112
Philip	M	16	72	150
Robert	M	12	64.8	128
Ronald	M	15	67	133
Thomas	M	11	57.5	85
William	M	15	66.5	112

CHAPTER 11

TEMPLATE Procedure: Creating Markup Language Tagsets

Overview: ODS Tagsets

What Is a Tagset?

A tagset is a type of template that defines how to generate a markup language output type from SAS format. You can specify a tagset to create markup language output from ODS. SAS provides tagset definitions for a variety of markup language output. For example, SAS provides several tagsets for XML output, HTML output, XSL, and more. You can modify any of the SAS tagsets, or you can create your own. By supplying new tagset definitions, you can generate a wider variety of markup language output from SAS output.

Why Use the TEMPLATE Procedure to Create Tagsets?

The TEMPLATE procedure enables you to customize the look of your SAS output. By using the TEMPLATE procedure, you can modify any of the many markup language tagset definitions that SAS supplies or create a markup language tagset of your own. The Output Delivery System then uses the specified tagset definitions to mark the SAS output which then you can view with an online browser or viewer.

Terminology for PROC TEMPLATE

For information about terms used in the TEMPLATE procedure, see “Terminology: TEMPLATE Procedure” on page 266

Markup Language Syntax: TEMPLATE Procedure

PROC TEMPLATE;

DEFINE TAGSET *tagset-path* </ STORE=*libref.template-store* >;

<*tagset-attribute-1*; <... *tagset-attribute-n*;>>

DEFINE EVENT *event-name*;
<*event-attribute-1*; <...*event-attribute-n*>;>
statements;
END;

NOTES;

END;

DEFINE TAGSET Statement

Creates a tagset definition

Requirement: An END statement must be the last statement in the definition.

Featured in: All examples found in the “Examples: Creating and Modifying Markup Languages Using the TEMPLATE Procedure” on page 588 section.

DEFINE TAGSET *tagset-path* </ STORE=*libref.template-store* <**(READ | WRITE | UPDATE)**>>;

<*tagset-attribute-1*; <...*tagset-attribute-n*;>>

DEFINE EVENT *event-name*;

statements and attributes

NOTES *'text'*;

END;

Table 11.1 DEFINE TAGSET Statements

Task	Statement
Define what is written to the output file.	DEFINE EVENT
Provide information about the tagset definition.	NOTES
End a tagset definition, or end the editing of a tagset definition.	END

Required Arguments

tagset-path
specifies where to store the tagset definition.

Requirement: A *tagset-path* consists of one or more names, separated by periods. Each name represents a directory, or level, in a template store.

Default: PROC TEMPLATE writes the definition to the first template store in the current path where you have write access.

Tip: You can control the item store where the tagset definition is stored by using the ODS PATH statement.

Tip: Names are not case sensitive. However, PROC TEMPLATE uppercases the first letter for easy reading purposes.

Options

STORE=*libref.template-store*
specifies the template store where the definition is stored in the following form:

libref.template-store <*access-options*>

libref.template-store
specifies the current template store.

Default: If you omit an *access-option*, then the *template-store* is accessed with UPDATE permissions unless you have read-only access.

Tip: If the specified template store does not exist, it is created.

Interaction: Using the STORE= option overrides the search list specified in the PATH statement.

Restriction: The STORE= option syntax does not become part of the compiled definition.

access-options
specifies the access mode for the specified template store, where

READ
provides read-only access.

WRITE
provides write access as well as read access. If the tagset does not exist, then WRITE access creates a new tagset. If the tagset does exist, then WRITE access will not replace an existing tagset.

UPDATE
provides update access as well as read access. If the tagset does not exist, then UPDATE will not create a new tagset. If the tagset does exist, then UPDATE will replace it.

Tagset Attributes

Table 11.2 Tagset Attributes

Task	Attribute	Valid destinations
Specify the text to use as a copyright.	COPYRIGHT=	HTML, MARKUP
Specify the name of the event to use by default.	DEFAULT_EVENT=	HTML, MARKUP
Specify whether or not the tagset supports embedded stylesheets.	EMBEDDED_STYLESHEET	HTML, MARKUP
Set a numeric value to use as the indention depth.	INDENT=	MARKUP
Specify a string which will be printed to the SAS log when the tagset is used.	LOG_NOTE	HTML, MARKUP
Specify special characters and their translations.	MAP=	HTML, MARKUP
Specify strings to substitute for special characters.	MAPSUB=	HTML, MARKUP
Define a nonbreaking space for the markup output.	OUTPUT_TYPE=	HTML, MARKUP
Sets a category for the output.	NOBREAKSPACE=	HTML, MARKUP
Specify the tagset definition from which the current definition inherits.	PARENT=	HTML, MARKUP
Specify the text to use as a registered trademark.	REGISTERED_TM=	HTML, MARKUP
Define a string to use for line breaks in the markup output.	SPLIT=	HTML, MARKUP
Specify whether or not the tagset allows procedures to place columns one on top of another, or side by side.	STACKED_COLUMNS	HTML, MARKUP
Specify the text to use as a trademark.	TRADEMARK=	HTML, MARKUP

COPYRIGHT= '(*text*)'
specifies the text to use as the copyright.

Requirement: When specifying *text*, you must enclose the text in parentheses and then quotation marks.

DEFAULT_EVENT= '*event-name*'
specifies the name of an event to execute by default when the requested event cannot be found in the tagset definition.

Requirement: When specifying an *event-name*, you must enclose the name of the event in quotation marks.

Featured in: Example 3 on page 597

EMBEDDED_STYLESHEET= YES | ON | NO | OFF
specifies whether or not the tagset supports embedded stylesheets.

Default: The default value is YES or ON which means that embedded stylesheets are supported.

Tip: If embedded stylesheets are supported and no stylesheet is specified in the ODS statement, then the stylesheet is written to the top of the output file.

YES
supports embedded stylesheets.

Alias: ON

ON
supports embedded stylesheets.

Alias: YES

NO
does not support embedded stylesheets.

Alias: OFF

OFF
does not support embedded stylesheets.

Alias: NO

INDENT=*n*
indents output one or more indention levels, using the number of spaces specified by the INDENT= statement.

Default: The default value for XML is 2. For all other ODS destinations, the default value is 0.

ODS Destinations: MARKUP

Featured in: Example 3 on page 597 and Example 5 on page 601

n
specifies a numeric value for the number of spaces that you want the output to indent.

LOG_NOTE= '*string*'
defines a string that will be printed to the SAS log when the tagset is used.

string
specifies the text that is printed to the SAS log.

Requirement: You can not specify more than one string at a time.

MAP= '*characters*'
specifies the special characters that require translation.

characters
specifies one or more special characters.

Requirement: When listing special characters in the MAP= statement, do not use blank spaces between them.

Requirement: When you specify special characters, you must enclose the list of special characters in quotation marks.

Requirement: If you use the MAP= statement, you must also use the MAPSUB statement.

Featured in: Example 3 on page 597

MAPSUB= *'strings'*
specifies the text to substitute for the characters that are specified in the MAP= statement.

strings
Specifies the text strings to substitute for the characters that are specified in the MAP= statement.

Requirement: When specifying multiple strings, you must use a forward slash (/) to separate the text strings.

Requirement: When specifying strings, you must enclose the entire string list in quotation marks.

Requirement: If you use the MAPSUB= statement, you must also use the MAP= statement.

Featured in: Example 3 on page 597

NOBREAKSPACE= *'string'*
defines a nonbreaking space for the markup output.

string
specifies the character that is used to define a nonbreaking space.

Requirement: When specifying a string, you must enclose the string in quotation marks.

Restriction: You can not specify more than one string at a time.

Featured in: Example 3 on page 597

OUTPUT_TYPE= CSV | HTML | LATEX | WML | XML
sets a category for the output.

CSV
produces output with comma-separated values.

HTML
produces hypertext markup language output.

LATEX
produces output in LaTeX, which is a document preparation system for high-quality typesetting.

WML
uses the Wireless Application Protocol (WAP) to produce a wireless markup language.

XML
produces output in extensible markup language.

Featured in: Example 3 on page 597

PARENT= *tagset-path*
specifies the tagset definition from which the current definition inherits.

tagset-path
specifies the name of a directory in a template store.

Default: The current definition inherits from the specified definition in the first template store where you have read access permissions. The PATH statement specifies which locations to search for definitions that were created by PROC TEMPLATE, as well as the order in which to search for them.

Interaction: When you specify a parent, all the definition options, attributes, and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

Requirement: When you specify a parent, all of the definition options, attributes, and statements that are specified in the parent's definition are used in the current definition unless the current definition overrides them.

Tip: You can specify a tagset that SAS supplies or a tagset that you defined.

Tip: You can control the item store from which the tagset definition is read by using the ODS PATH statement.

Featured in: Example 1 on page 588 and Example 9 on page 610

REGISTERED_TM= '(*text*)'
specifies the text to use as the registered trademark.

Requirement: When specifying *text*, you must enclose the text in parentheses and then quotation marks.

SPLIT= '*string*'
defines a character string to use for line breaks in the markup output.

Requirement: When specifying a string, you must enclose the string in quotation marks.

Restriction: You cannot specify more than one string at a time.

Featured in: Example 3 on page 597

STACKED_COLUMNS= YES | ON | NO | OFF
specifies whether or not the tagset allows procedures to place columns one on top of another, or side by side.

Default: The default value is YES or ON, which means that columns are stacked.

Tip: To place columns side by side, specify the NO or OFF value.

Featured in: Example 3 on page 597 and Example 9 on page 610.

YES
stacks columns one on top of another.

Alias: ON

ON
stacks columns one on top of another.

Alias: YES

NO
stacks columns side by side each other.

Alias: OFF

OFF
stacks columns side by side each other.

Alias: NO

TRADEMARK= '(*text*)'
Specifies the text to use as the trademark.

Requirement: When specifying *text*, you must enclose the text in parentheses and then quotation marks.

DEFINE EVENT Statement

Defines what is written to the output file

Interaction: Event statement conditions can be added to any DEFINE EVENT statement. For more information about event statement conditions, see “Event Statement Conditions” on page 571

Featured in: Example 6 on page 603 and Example 7 on page 605

DEFINE EVENT *event-name*;
<*event-attribute-1*;<*...event-attribute-n*;>>
BLOCK *event-name* < / *event–condition-statements*>;
BREAK </ *event-condition-statements*>;
CLOSE </ *event–condition-statements*>;
DELSTREAM *stream-name* </ *event-statement-conditions*>;
FLUSH <*event-statement-conditions*>;
NDENT </ *event-statement-conditions*>;
OPEN *stream-name* </ *event-statement-conditions*>;
PUT '*text*' </ *event-statement-conditions*>;
PUTL </ *event-statement-conditions*>;
PUTLOG </ *event-statement-conditions*>;
PUTQ "*text*" *event-variable* </ *event-statement-conditions*>;
PUTSTREAM *stream-name* </ *event-statement-conditions*>;
PUTVARS *variable-group* </ *event-statement-conditions*>;
SET $*user-defined-event-variable user-defined-value* </ *event-statement-conditions*>;
TRIGGER *event-name* <**START | FINISH**> </ *event-statement-conditions*>;
UNBLOCK *event-name* </ *event condition-statements*>;
UNSET $*user-defined-event-variable* | **ALL** </ *event-statement-conditions*>;
XDENT </ *event-statement-conditions*>;
END </ *event-statement-conditions*>;

Table 11.3 DEFINE EVENT Statements

Task	Statement
Set one or more event attributes.	*event-attributes*
Disable the specified event.	BLOCK
Prevent an event from executing.	BREAK
Close the current stream to which all PUT statement variables are directed	CLOSE
Delete the specified stream.	DELSTREAM
Write buffered output to the current output file or stream.	FLUSH

Task	Statement
Indent output one more indentation level.	NDENT
Open or create the specified stream.	OPEN
Write text or variable data to an output file.	PUT
Add a new line to the end of the output.	PUTL
Writes the text, or the value of the event variable to the log.	PUTLOG
Place quotes around the value in a variable.	PUTQ
Write the contents of the stream to the current output file.	PUTSTREAM
Writes the name or value of an event, dynamic, memory, or stream variable to an output file.	PUTVARS
Specify a user-defined event variable and its value.	SET
Execute another event.	TRIGGER
Delete user-defined variables.	UNSET
Enable a disabled event.	UNBLOCK
Indent output one less indentation level.	XDENT
End the definition.	END

DEFINE Event Statement

Defines what is written to the output file

DEFINE EVENT *event-name*;
<*event-attribute-1*;<*...event-attribute-n*;>>

Required Arguments

event-name
specifies the name of the event.

Event Attributes

Table 11.4 Event Attributes

Task	Attribute	Valid destinations
Redirect event output to any of the known types of output that are open.	FILE=	HTML, MARKUP
Enable the event to use any style element that has been defined.	PURE_STYLE=	MARKUP
Specify a style element.	STYLE=	HTML, MARKUP

FILE= BODY | CODE | CONTENTS | FRAME | PAGES | STYLESHEET
redirects event output to any of the known types of output files that are open.

Interaction: The names of the output files correspond to the output file names on the ODS MARKUP statement that are specified with the BODY=, CODE=, CONTENTS=, FRAME=, PAGES=, and STYLESHEET= parameters. For more information about the ODS MARKUP statement, see "ODS MARKUP Statement" on page 109

ODS Destinations: HTML, MARKUP

See: For a complete description of the FILE= attribute, see the BODY= option in the ODS MARKUP statement.

PURE_STYLE= YES | NO
specifies whether to enable the event to use any style elements that have been defined.

Default: NO

ODS Destinations: MARKUP

See also: "DEFINE STYLE Statement" on page 288

YES
enables the event to use any style elements that have been defined.

NO
does not enable the event to use any style elements that have been defined.

STYLE= ***style-element*;**
specifies a style attribute that applies to a particular part of the output.

ODS Destinations: HTML, MARKUP

See also: "DEFINE STYLE Statement" on page 288

Tip: If you use a carriage return to separate your style attributes, then you must add a space before or after the carriage return to prevent syntax errors. SAS does not interpret a carriage return as a space.

Featured in: Example 6 on page 603

BLOCK Statement

Disables the specified event

Tip: To enable the blocked event, use the UNBLOCK statement.

Tip: You can block the same event multiple times, but in order to enable the event, you must use the same number of UNBLOCK statements.

BLOCK *event-name* </ *event-statement-conditions*>;

Required Arguments

event-name
specifies the name of the event.

Options

event-statement-conditions
specifies event statement conditions that can be added to the BLOCK statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

BREAK Statement

Stops an event from executing

Tip: The BREAK statement is most useful when combined with event conditions.

BREAK < / *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the BREAK statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

CLOSE Statement

Closes the current stream and directs all future output to the output file

CLOSE < / *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the CLOSE statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

DELSTREAM Statement

Deletes the specified stream

DELSTREAM *stream-name* < / *event-statement-conditions*>;

Required Arguments

stream-name
specifies the name of the stream.

Options

event-statement-conditions
specifies event statement conditions that can be added to the DELSTREAM statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

FLUSH Statement

Writes any buffered output to the current output file or stream

FLUSH</ *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the FLUSH statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

NDENT Statement

Indents output one more indention level than the number of spaces specified by the INDENT= statement

Interaction: The start position of the indention level is set by the INDENT= attribute.

Featured in: Example 3 on page 597 and Example 5 on page 601

NDENT < / *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the NDENT statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

OPEN Statement

Opens the specified stream or creates one if the specified stream does not exist

Interaction: If another stream is open, then it will be closed when you specify a new stream to be opened.

Interaction: All text or variable data specified in the PUT statements that occur after the OPEN statement, will append to the stream instead of the output file.

OPEN *stream-name* </ *event-statement-conditions*>;

Required Arguments

stream-name
specifies the name of the stream.

Options

event-statement-conditions
specifies event statement conditions that can be added to the OPEN statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

PUT Statement

Writes the text, or the value of an event variable to an output file

Requirement: You must enclose the text string in quotation marks.

Featured in: Example 1 on page 588, Example 3 on page 597, Example 4 on page 599, Example 5 on page 601, and Example 6 on page 603

PUT '*text*' | VALUE < / *event-statement-conditions*>;

Required Argument

text
specifies a text string that provides information about your output.

Interaction: The PUT statement pairs strings with variables. If a string is followed by a variable, they become a pair. If the variable has a value, then the pair becomes output. If the variable does not have a value, then neither will be output.

Requirement: The *text* must be enclosed in quotation marks.

VALUE
specifies the value of the event variable.

Interaction: The PUT statement pairs strings with variables. If a string is followed by a variable, they become a pair. If the variable has a value, then the pair becomes output. If the variable does not have a value, then neither will be output.

See: For a list of event variables, see "List of Event Variables" on page 572

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUT statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

PUTL Statement

Adds a new line to the end of the output

Alias: CR, NL, or LF

Tip: Use the PUTL statement when your event output is large.

PUTL </ *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUTL statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

PUTLOG Statement

Writes the text, or the value of the event variable to the log

Requirement: You must enclose the text string in quotation marks.

PUTLOG ’*text*’ </ *event-statement-conditions*>;

Required Argument

text
specifies a text string that provides information about your output.

Interaction: The PUTLOG statement pairs strings with variables. If a string is followed by a variable, they become a pair. If the variable has a value, then the pair becomes output. If the variable does not have value, then neither will be output.

Requirement: The *text* must be enclosed in quotation marks.

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUTLOG statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

PUTQ Statement

Places quotes around the value in an event variable or a style variable

Featured in: Example 7 on page 605

PUTQ *'text' event-variable* </ *event-statement-conditions*>;

Required Argument

text
specifies a text string.

Requirement: The *text* must be enclosed in quotation marks.

Interaction: The PUTQ statement pairs strings with variables. If a string is followed by a variable, they become a pair. If the variable has a value, then the pair becomes output. If the variable does not have a value, then neither will be output.

event-variable
specifies the event variable.

See: "List of Event Variables" on page 572.

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUTQ statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

PUTSTREAM Statement

Writes the contents of the stream to the current output file

PUTSTREAM *stream-name*< / *event-statement-conditions*>;

Required Arguments

stream-name
specifies the name of the stream.

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUTSTREAM statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

PUTVARS Statement

Writes the name or value of an event, dynamic, memory, or stream variable to an output file

Interaction: The PUTVARS statement loops through all the variables in the variable group. Each iteration populates special variables which can be used in the format.

PUTVARS *variable-group* </ *event-statement-conditions*>;

Required Argument

variable-group
specifies the variables to use in each iteration when you specify the name or value in the variable.

Interaction: The PUTVAR statement pairs strings with variables. If a string is followed by a variable, they become a pair. If the variable has a value, then the pair becomes output. If the variable does not have a value, then neither will be output.

EVENT
specifies the name of an event variable.

See: “List of Event Variables” on page 572

STYLE
specifies the style elements available from the current ODS style definition being used.

DYNAMIC
specifies the name of a dynamic variable.

MEMORY
specifies the name of the variable created in the SET statement of the DEFINE EVENT statement.

Requirement: Memory variables must be preceded by the ’$’ symbol.

STREAM
specifies the name of the variable stream.

Requirement: Stream variables must be preceded by the ’$$’ symbol.

Options

event-statement-conditions
specifies event statement conditions that can be added to the PUTVARS statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

SET Statement

Specifies a user-defined variable and its value

Requirement: The user-defined variable must be preceded by a ’$’ character.

Tip: User-defined variables are case insensitive.

SET $*user-defined-event-variable user-defined-value* </ *event-statement-conditions*>;

Required Arguments

user-defined-event-variable
specifies the name of the variable that you want to create.

Requirement: The *user-defined-event-variable* must be preceded by a ’$’ character.

Tip: *User-defined-event-variables* are case insensitive.

user-defined-value
specifies the value of the *user-defined-variable*.

Tip: Any value can be used for the *user-defined-variable*. You can assign an existing user-defined-variable name as a value for the variable.

Options

event-statement-conditions
specifies event statement conditions that can be added to the SET statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

TRIGGER Statement

Executes another event

Tip: The TRIGGER statement explicitly requests a specific action of an event.

Featured in: Example 3 on page 597, Example 4 on page 599, Example 5 on page 601, and Example 6 on page 603

TRIGGER *event-name* <**START | FINISH**> </ *event-statement-conditions*>;

Required Arguments

event-name
specifies the name of the event.

Without Options

If a triggered event does not have start or finish sections, then it will run the statements it does have.

Options

START
specifies the start section of an event.

Interaction: If you are in the start section of an event, then any event triggered will also run its start section.

FINISH
specifies the finish section of an event.

Interaction: If you are in the finish section of an event, then any event triggered will also run its finish section.

event-statement-conditions
specifies event statement conditions that can be added to the TRIGGER statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

UNBLOCK Statement

Enables a disabled event

Interaction: To disable an event, use the BLOCK statement.

Requirement: Because you can block the same event multiple times, in order to enable the event, you must use the same number of UNBLOCK statements as BLOCK statements.

UNBLOCK *event-name* </ *event-statement-conditions*>;

Required Arguments

event-name
specifies the name of the event.

Options

event-statement-conditions
specifies event statement conditions that can be added to the UNBLOCK statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

UNSET Statement

Deletes the user-defined-variables and their values

Requirement: To specify the *user-defined-variable*, you must precede the name with a ’$’ character.

UNSET $*user-defined-event-variable* | **ALL** </ *event-statement-conditions*>;

Required Arguments

$user-defined-event-variable
specifies the name of the variable that you want to delete.

Requirement: The *user-defined-event-variable* must be preceded by a ’$’ character and no space.

Tip: *User-defined-event-variables* are case insensitive.

ALL
deletes all *user-defined-event-variables*.

Options

event-statement-conditions
specifies event statement conditions that can be added to the UNSET statement.

See: For information about these options, see “Event Statement Conditions” on page 571.

XDENT Statement

Indents output one less indention level, using the number of spaces specified by the INDENT= attribute

Interaction: The starting level of indention is set by the INDENT= statement.

Featured in: Example 3 on page 597 and Example 5 on page 601

XDENT </ *event-statement-conditions*>;

Options

event-statement-conditions
specifies event statement conditions that can be added to the XDENT statement.

See: For information about these options, see "Event Statement Conditions" on page 571.

END Statement

Ends the event definition

END;

Event Statement Conditions

Conditions can be added to any DEFINE EVENT statement. A condition must be preceded with a slash (/).

event-statement </ *event-statement-condition*>;

Event Statement Conditions

event-statement
specifies any of the DEFINE EVENT statements.

event-statement-condition
specifies the type of condition.

Values for the *event-condition-statements* are one of the following:

ANY
checks a list of variables for values. If any of the variables has a value, then the condition is true and the statement executes.

For example:

```
put "One of our variables has a value!"
   nl/if any(background, foreground, cellpadding, cellspacing);
```

CMP
compares, for equality, a string to a variable or list of variables.

For example:

```
put "The foreground is blue!" nl/if cmp("blue",foreground);
```

CONTAINS
: searches the first argument for the second argument.

For example:

```
set $junk "some random text";
put "junk contains 'ran'" nl/if contains($junk, "ran");
```

EXIST | EXISTS
: checks a variable, or a list of variables, to determine if a value exists. If all of the variables have a value, then the condition is true and the statement executes. If a variable has an empty string of length 0, then the value does not exist and the statement does not execute.

For example:

```
put "All of our variables have a value!"
   nl/if exists(background, foreground, cellpadding, cellspacing);
```

Tip: Use the MISSING event variable to determine if a value is missing.

IF | WHEN
: tests for existence or equality. IF and WHEN are optional and interchangeable. An IF or WHEN condition compares values and strings or checks variables for values.

For example, all of the following are equivalent:

```
put "Foreground has a value!" nl/if exists(foreground);
put "Foreground has a value!" nl/when exists(foreground);
put "Foreground has a value!" nl/exists(foreground);
```

NOT
: negates a condition. You can use the keyword NOT or the characters '!' or '^'.

For example:

```
put "The foreground is not red!" nl/if !cmp("red", foreground);
```

Event Variables

List of Event Variables

Event variables include text, formatting, and data values. These variables originate from many places, such as the table definition, the procedure, title, byline processing, and more. Event variables also include any style attributes that you are using in your program. The following table lists the event variables that are used in the DEFINE EVENT statement of PROC TEMPLATE.

Table 11.5 Event Variables

Event variable	Description
ABBR	specifies an abbreviation for the event variable.*
ACRONYM	specifies an acronym for the event variable.*
ALT	specifies an alternate description of the event variable.*
AFTER	specifies that the current note is an after note.
ANCHOR	specifies the current anchor, which is the last value of the anchor tag (for example, IDX).
ARCHIVE	used by the SAS/GRAPH to specify the Java archive (.jar) file to be used. CODEBASE must be used to specify the directory containing the .jar file.
ASIS	specifies how to handle leading spaces and line breaks.
ATTR_NAME	used by the DATA step interface.
ATTR_VALUE	used by the DATA step interface.
AUTHOR	specifies the author of the output. Set from the ODS statement, or, by default, is the user that is running SAS.
BACKGROUND	specifies the color of the background.
BACKGROUNDIMAGE	specifies the background image. This image will be stretched.
BEFORE	specifies that the current note is a before note.
BASENAME	specifies the name of the BASE= option as set in the ODS statement.
BODY_NAME	specifies the name of the body file.
BODYSCROLLBAR	specifies whether to put a scroll bar in the frame that references the body file.
BODYSIZE	specifies the width of the frame in the HTML frame file that displays the body file.
BODY_TITLE	specifies the title of the body file.
BODY_URL	specifies the URL of the body file.
BORDERCOLOR	specifies the color of the border if the border is only one color.
BORDERCOLORDARK	specifies the darker color in the border that uses two colors to create a three-dimensional effect.

Event variable	Description
BORDERCOLORLIGHT	specifies the lighter color in the border that uses two colors to create a three-dimensional effect.
BORDERWIDTH	specifies the width of the border of the table.
BOTTOMMARGIN	specifies the bottom margin for the document.
BULLET	specifies the string to use for bullets in the contents file.
CAPTION	*specifies the caption for the table.
CELLHEIGHT	specifies the height of the cell.
CELLPADDING	specifies the amount of white space on each of the four sides of the text in a cell.
CELLSPACING	specifies the width of the spacing between cells.
CELLWIDTH	specifies the width of the cell.
CLABEL	specifies the label for the output object in the contents file, the Results window, and the trace record. Set with the CONTENTS_LABEL= attribute in the table definition.
CLASSID	used by SAS/GRAPH to specify where to place the ActiveX files in the Windows registry.
CODE	used by SAS/GRAPH to specify which Java class to activate when the applet opens.
CODEBASE	used by SAS/GRAPH to specify the directory where the Java archive (.JAR) files are located. ARCHIVE must also be used to specify the .JAR file. For ActiveX, the location of the ActiveX set-up file is specified.
CODE_NAME	specifies the name of the code file.
CODE_TITLE	specifies the title of the code file.
CODE_URL	specifies the URL of the code file.
COLCOUNT	specifies the number of columns in the current table.
COLEND_EA	specifies the ending column number.
COL_ID	specifies the column ID to identify columns. Used for the OIMDBM format type by the XML LIBNAME engine.
COLSPAN	specifies the number of columns that the cell spans.

Event variable	Description
COLSTART	specifies the column number where the cell starts.
CONTENTS_NAME	specifies the name of the contents file.
CONTENTPOSITION	specifies the position, within the frame file, of the frames that display the contents and the page files.
CONTENTSCROLLBAR	specifies whether to put a scroll bar in the frames that display the contents and the page files.
CONTENTSIZE	specifies the width of the frames that display the contents and the page files.
CONTENTS_TITLE	specifies the title of the contents file.
CONTENTS_URL	specifies the URL of the contents file.
CONTRASTCOLOR	specifies alternate colors for maps. The alternate colors are applied to the blocks on region areas in block maps.
COORDINATE	used by SAS/GRAPH to specify the coordinates for a specified shape.
DATA_NAME	specifies the name of the data file.
DATA_TITLE	specifies the title of the data file.
DATA_URL	specifies the URL of the data file.
DATA_ROW	specifies that the current row is a data row.
DATE	specifies the date.
DEFAULT_JUST	specifies the default horizontal justification. Internal use only.
DEFAULT_VJUST	specifies the default vertical justification. Internal use only.
DEST_FILE	specifies the current destination file: body, contents, pages, frame, code, or stylesheet.
DNAME	specifies the name of the column in the data component to associate with the current column. DNAME is set with the DATANAME= attribute in the column definition.
DROPSHADOW	specifies a drop shadow effect for text in a graph.
EMPTY	sets a flag to determine whether an event is called as an empty tag.
ENCODING	specifies the encoding of the output for converting text data into a numbering system that computers recognize.
ENDCOLOR	specifies the end color for a gradient effect in a graph.

Event variable	Description
EVENT_NAME	specifies the requested event name.
FILLRULEWIDTH	specifies the width of the fill rule.
FIRSTPAGE	specifies the first page of the output file.
FLYOVER	specifies the text to show in a tool tip for the cell.
FONT	specifies the font definition.
FONT_FACE	specifies the name of the font face.
FONT_SIZE	specifies the size of the font.
FONT_STYLE	specifies the style of the font.
FONT_UNDERLINE	specifies the underline character. FONT_UNDERLINE is only used by the ODS MARKUP statement.
FONT_WEIGHT	specifies the weight of the font.
FONT_WIDTH	specifies the width of the font.
FOREGROUND	specifies the color of the foreground.
FRAME	specifies the type of frame to use on a table.
FRAMEBORDER	specifies whether to put a border around the frame for an HTML file that uses frames.
FRAMEBORDERWIDTH	specifies the width of the border around the frames for an HTML file that uses frames.
FRAME_NAME	specifies the name of the frame file.
FRAMESPACING	specifies the width of the space between frames for an HTML file that uses frames.
FRAME_TITLE	specifies the title of the frame file.
FRAME_URL	specifies the URL of the frame file.
GRAPH_PATH_NAME	specifies the path of the graph as given in the ODS PATH statement.
GRAPH_PATH_URL	specifies the URL of the graph.
GRADIENT_DIRECTION	specifies the direction of the gradient effect in either the X or Y axis direction to influence the graph background, legend background, charts, walls, floors, etc.
HIDDEN	specifies that the current object is hidden.
HREFTARGET	specifies the window or frame in which to open the target of the link.
HTMLCLASS	specifies the name of the stylesheet class to use for the table or cell.
HTMLCONTENTTTYPE	specifies the value of the content type for pages that you send directly to a web server rather than to a file.

Event variable	Description
HTMLDOCTYPE	specifies the entire doctype declaration for the HTML document.
HTMLID	specifies the ID for the table or cell.
HTMLSTYLE	specifies individual attributes and values for the table or cell.
IMAGE	specifies the image to appear in the background. This image can be positioned or tiled.
IN_ASSOCIATION	specifies the combination of a caption and a table. Associations are used in PROC REPORT, PROC TABULATE, and PROC FREQ cross-tabulations.
IN_CAPTION	specifies a caption.
IS_NOTE	specifies a note.
IS_STACKED	specifies that the columns are stacked.
IS_TITLE	specifies that the current procedure title remains a title.
JUST	specifies the horizontal justification.
LABEL	specifies the label for the variable. Set with the LABEL= attribute in the column definition.
LANGUAGE	specifies the language of the current output. LANGUAGE is set when it is only an Asian language.
LEFTMARGIN	specifies the left margin for the document.
LINESTYLE	specifies the line type to use in a graph. You can use SAS/GRAPH line types 1–46.
LINKCOLOR	specifies the color for links that have not yet been visited.
LISTENTRYANCHOR	specifies whether to make the entry in the table of contents a link to the body file.
LONGDESC	specifies the long description of an event variable.*
MISSING	specifies the value that indicates that no data value is stored. By default, SAS uses a single period (.) for a missing numeric value and a blank space for a missing character value. In addition, for a numeric missing value, a special missing value can be used to represent different categories of missing data by assigning the letters A – Z or an underscore.
NAME	specifies the name of the variable. NAME is set with the VARNAME= attribute in the column definition.

Event variable	Description
NAME	contains the name of the current variable.
NOBASE	sets a flag to determine whether to use the value for BASE= option as part of the URL. 0 uses the BASE= option and 1 does not use BASE= option.
NOBREAKSPACE	specifies how to handle spaces at line breaks.
NO_WRAP	specifies that the current cell should not wrap text or insert hyphens.
OPERATOR	specifies the operator. OPERATOR is set from the ODS statement, or, by default, it is the user that is running SAS.
OUTPUTHEIGHT	specifies the height for a graph or the graphics in the output.
OUTPUT_LABEL	specifies the label of the current output object.
OUTPUT_NAME	specifies the name of the current output object.
OUTPUTWIDTH	specifies the width of a table, graph, or line thickness.
OVERHANGFACTOR	specifies the upper limit for extending the width of the column.
PAGEBREAKHTML	specifies the HTML to place at page breaks.
PAGE_COUNT	specifies the page count since the files were opened.
PAGES_NAME	specifies the name of the pages file.
PAGES_TITLE	specifies the title of the pages file.
PAGES_URL	specifies the URL of the pages file.
PATH	specifies the path as set by the ODS statement.
PATH_NAME	specifies the path name.
PATH_URL	specifies the path location.
POSTHTML	specifies the HTML code to place after the table or cell.
POSTIMAGE	specifies the image to place after the table or cell.
POSTTEXT	specifies the text to place after the table or cell.
PRECISION	specifies the number of places to the right of the decimal. PRECISION is used by the XML LIBNAME engine.
PREHTML	specifies the HTML code to place before the table or cell.

Event variable	Description
PREIMAGE	specifies the image to place before the table or cell.
PRETEXT	specifies the text to place before the table or cell.
PROC_COUNT	specifies how many procedures have run since the files were opened.
PROC_NAME	specifies the name of the current procedure.
PROTECTSPECIALCHARACTERS	specifies how the less-than (<) and greater-than (>) signs and the ampersand (&) are interpreted.
RAWVALUE	specifies the base64 encoding of the stored machine representation of the original value.
REF_ID	specifies the reference ID for references to columns. Used by the XML LIBNAME engine for the OIMDBM format type.
RIGHTMARGIN	specifies the right margin for the document.
ROW	specifies the current table row, which includes headers.
ROWSPAN	specifies the number of rows that the current cell spans.
RULES	specifies the type of line that is used between table cells.
SASLONGVERSION	specifies the long format of the SAS version.
SASVERSION	specifies the short format of the SAS version.
SCALE	specifies the total number of places in the floating point number. SCALE is used by the XML LIBNAME engine.
SECTION	specifies the head, body, or foot of the table.
SHAPE	is used with SAS/GRAPH to specify the type of shape to draw.
SPACE	specifies the string that the tagset uses for a nonbreaking space.
SPLIT	specifies the string that the tagset uses for line breaks.
STARTCOLOR	specifies the start color for a gradient effect in a graph.
STATE	specifies the current state of the event, which is either START or FINISH.
STYLE	specifies the current style that is being used.
STYLESHEET_NAME	specifies the name of the stylesheet file.

Event variable	Description
STYLESHEET_TITLE	specifies the title of the stylesheet file.
STYLESHEET_URL	specifies the URL of the stylesheet file.
SUMMARY	*specifies a summary of the table.
TAGATTR	specifies the text to insert in the HTML.
TAG_NAME	specifies the tag name.
TAGSET	specifies the name of the current tagset.
TAGSET_ALIAS	specifies the alias of the current tagset as given in the ODS MARKUP statement.
TARGET	specifies the target that is associated with the URL.
TEXT	specifies the tag names. TEXT is used by the XML LIBNAME engine.
TIME	specifies the time.
TITLE	specifies the title from the ODS statement.
TOCLEVEL	specifies the table of contents level.
TOPMARGIN	specifies the top margin for the document.
TOTAL_PAGE_COUNT	specifies the total page count since ODS was opened.
TOTAL_PROC_COUNT	specifies how many procedures that have run since the ODS was opened.
TRANSPARENCY	specifies the level of transparency for a graph.
TRANTAB	specifies the translation table name for character conversions.
TRIGGER_NAME	specifies the name of the event that is triggered.
TYPE	specifies the STRING, DOUBLE, CHAR, BOOL, or INT data type.
URL	specifies the URL to link to when the item is clicked.
VALUE	specifies the current value.
VALUE	contains the value of the current variable.
VALUECOUNT	specifies the count of the variable.
VISITEDLINKCOLOR	specifies the color for links that have been visited.
VJUST	specifies the vertical justification.
WATERMARK	specifies whether to make the image that is specified by BACKGROUNDIMAGE into a watermark.
WIDTH	specifies the width. Most commonly used for COLSPECS.

Event variable	Description
XMLDATAFORM	specifies whether the tag for an element to contain SAS variable information (name and data) is to appear in an open element or an enclosed attribute format. XMLDATAFORM is used by the XML LIBNAME engine.
XMLMETADATA	specifies the metadata for the XML tagset.
XMLSCHEMA	specifies whether or not to generate schema-related information. XMLSCHEMA is used by the XML LIBNAME engine.

* SAS includes these accessibility and compatibility features to improve the usability of SAS for users with disabilities. These features are related to accessibility standards for electronic information technology that are adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended.

NOTES Statement

Provides information about the tagset definition

Tip: The NOTES statement becomes part of the compiled tagset definition, which you can view with the SOURCE statement.

Featured in: Example 3 on page 597 and Example 9 on page 610

NOTES '*text*';

Required Arguments

text
provides information about the tagset.

END Statement

Ends the tagset definition

END;

Concepts: Markup Languages and the TEMPLATE Procedure

Getting Familiar with Tagsets

Listing Tagset Names

SAS provides a set of tagset definitions. To get a list of the tagset names that SAS supplies, plus any tagsets that you created and stored in the SASHELP.TMPLMST template store, submit the following SAS statements:

```
proc template;
   list tagsets;
run;
```

By default, PROC TEMPLATE lists the tagsets in SASHELP.TMPLMST and SASUSER.TEMPLAT. Typically, you have read-only access permissions to the SASHELP.TMPLMST item store where the SAS tagset directory is located. The SASUSER.TEMPLAT is the item store where the tagsets that you create or customize are stored by default.

Note: The tagset names that begin with SAS are used by the XML LIBNAME engine and are supported by SAS. For example, TAGSETS.SASXMOG and TAGSETS.SASXMOIM are fully supported by SAS. △

Specifying Tagset Names

To specify a SAS tagset stored in SASHELP.TMPLMST or a tagset that you created and stored in SASUSER.TEMPLAT or any other item store, use a two-level name: TAGSETS.**`tagset-name`**. For example, tagsets.chtml or tagsets.mytagset are valid two-level tagset names. By default, SAS knows that the specified tagset is stored in either SASHELP.TMPLMST or SASUSER.TEMPLAT.

To specify a tagset that you created and stored in an item store other than SASUSER.TEMPLAT, assign the item store to the ODS search path with the ODS PATH statement. For information about the ODS PATH statement, see “ODS PATH Statement” on page 149

Viewing the Contents of a Tagset Definition

To view the contents of a tagset definition, you can use the SAS windowing environment or the TEMPLATE procedure.

- SAS Windowing Environment
  1. From the menu, select

     View ► Results

  2. In the Results window, select the Results folder. Right-click and select Templates to open the Templates window.
  3. Double-click on **`Tagsets`** to view the contents of that item store or directory.
  4. Double-click on the tagset definition that you wish to view. For example, the CHTML tagset definition is the template store for CHTML output.

- *SAS Windowing Command*
  1. To view the Templates window, submit the following command in the command bar:

     ```
     odstemplates
     ```

     The Templates window contains the item stores **Sasuser.Templat** and **Sashelp.Tmplmst**.
  2. When you double-click an item store, such as **Sashelp.Tmplmst**, that item store expands to list the directories where ODS templates are stored. The templates that SAS provides are in the item store Sashelp.Tmplmst.
  3. To view the tagset definitions that SAS provides, double-click the Tagset item store.
  4. Right-click the tagset definition, such as **Rtf**, and select Open. The tagset definition is displayed in the Template Browser window.
- TEMPLATE Procedure
  1. To see the source for a tagset definition, use PROC TEMPLATE and specify the two-level name of the tagset. For example, to see the source of a SAS tagset that generates CHTML output, submit these SAS statements:

     ```
     proc template;
           source tagsets.chtml;
     ```

     If you look at the source for TAGSETS.CHTML, you see that it consists of:
     - a DEFINE TAGSET statement that names the tagset definition
     - event definitions that define what is written to the output file
     - tagset definition attributes, such as output type and the character to use for line breaks.

What Are Events?

A tagset definition controls output generation through a series of events and variables. An event defines what is written to the output file. Here are some key points about events:

- Events have unique names. SAS procedures that generate ODS output use a standard set of events, which you can customize by redefining them in your own tagset definition. In addition, you can define your own events.
- The DEFINE EVENT statement assigns a name to an event definition
- An event definition can include start and/or finish sections that specify different actions. If the event definition does not include either a start or finish section, the event is stateless, which means that no matter how the event is called, all of the actions in the event are executed. If an event has a finish section, a start section is assumed if there are statements above the finish section.
- An event definition can execute another event using the TRIGGER statement. If you are in the start section of an event, then any event triggered will also run its start section. If you are in the finish section, then the triggered event will run its finish section. If a triggered event does not have start or finish sections, then it will run the statements that it does have. A trigger can also explicitly ask for an event's specific section. See Example 4 on page 599
- Events can perform actions based on conditions.
- For the most part, an event consists of PUT statements, text, and event variables

For example, here is a simple event definition for an HTML table output.

```
define event table;❶
start:❷
      put "<table>" nl;
finish:
      put "</table>" nl;
end;
```

In the event definition:

❶ The DEFINE EVENT statement begins the event and assigns it the name TABLE.

❷ The START section defines the beginning portion for the event, and the FINISH section defines the ending portion of the event. An event definition for a table needs START and FINISH sections because ODS needs to know how to define the beginning and how to define the ending. ODS will also expect other events to define how to format the table's rows and columns. The PUT statements specify to write the tags <table> and </table> to the output file, along with a new line after each tag.

The following event definition does not include a start and finish section, and the PUT statements specify to write the tags <TD> and </TD> to the output file. In addition, the event variable VALUE is used so that the data value, from the SAS procedure or data set, is written to the output file, enclosed with the <TD> and </TD> tags.

```
define event data;
      put "<TD>";
      put VALUE;
      put "</TD>";
end;
```

What Are Variables?

A variable is a programming structure used to hold data. A variable holds the data assigned to it until a new value is assigned or the program is finished. Each variable has a unique name and holds information that either is internal information to handle the requested output (metadata used by ODS or the XML LIBNAME engine) or is directly related to the output itself. For example, the variable COLCOUNT holds the value for the number of columns in the output, and the variable DATE holds the date.

Variables used by tagsets can be divided into two groups: internally generated and user created.

There are 3 logical divisions of internally generated variables:

event variables
: include text, formatting, and data values. These variables can originate in many places such as the table definition, the procedure, title, or byline processing.

style variables
: are specified by the ODS style attributes currently in use. The style variables are only differentiated from other event variables in that you know exactly where they originate.

dynamic variables
: are dynamically created within SAS. Because they are dynamically created, their names, or how they are used, is unknown. These variables are dynamic because they are not defined by ODS but rather the variables are defined by applications such as SAS/GRAPH and the XML LIBNAME engine. Dynamic variables are designated by a preceding @ symbol. Dynamic variables can be listed with the "DYNAMIC Statement" on page 425. For more information about SAS/GRAPH, see *SAS/GRAPH Reference, Volumes 1 and 2* .

There are two types of user-created variables:

memory variables
: are created with the SET statement, within the DEFINE EVENT statement. Once created, memory variables are globally available in all events. They persist until they are deleted. Memory variables are designated by a preceding '$' symbol.

stream variables
: are different from memory variables in that they can hold very large amounts of data. They can hold very large amounts of data because as they grow, they are written to disk as needed. Opening a stream variable redirects all output from the put statements to the stream, until it is closed. Stream variables can also be opened, closed, flushed, set and unset.

Displaying Event Variables and Their Values

Because variables represent data, their values may or may not be present, depending on the SAS procedure and the job. For example, some variables have values only if you specified them with procedure options or style options. Other variables have values because the internal information is needed, such as how many columns are in the output. For example, TAGSETS.CHTML contains the event definition COLSPECS, which uses the event variable COLCOUNT so that ODS knows how many columns are in the output:

```
define event colspecs;
      put "<p>" nl "<table";
      putq " columns=" COLCOUNT;
      put " cellpadding=2 border=1>" nl;
end;
```

To determine which variables have values and what the values are, submit your SAS program using the EVENT_MAP statement. For more information, see " Defining a Tagset Using the EVENT_MAP Tagset" on page 586. For a list of event variables and their descriptions, see "List of Event Variables" on page 572.

Creating Your Own Tagsets

Methods for Creating Your Own Tagsets

To create a tagset, you use the TEMPLATE procedure to define the tagset definition. In general, there are three methods that you can use to create your own tagset.

- Define a tagset definition through inheritance.
- Copy an existing tagset definition, then modify it.
- Define your own tagset definition.

Inheriting Events in a Tagset Definition

Tagsets can inherit events from each other. For example, the SAS tagset TAGSETS.WMLOLIST inherits most of its events from TAGSETS.WML, and

TAGSETS.IMODE gets most of its events from TAGSETS.CHTML. Inheriting events from an existing tagset definition is the easiest way to define a new tagset definition.

To inherit events, a tagset definition uses the PARENT= attribute in the DEFINE TAGSET statement to specify the name of a tagset from which to inherit. When a parent is specified for a tagset definition, all of the tagset options, attributes, and statements that are specified in the parent's definition are used in the new definition unless the new definition overrides them. That is, in the new tagset definition, an event can override the operation of the same-named event defined in the parent tagset. For example, if the parent tagset defines an event named TABLE, you can change the operation in the new tagset by redefining the event named TABLE.

For an example of inheriting events in a tagset definition, see Example 1 on page 588

Defining a Tagset Using the EVENT_MAP Tagset

SAS procedures that generate ODS output use a standard set of events and variables. To generate customized output, you can create your own tagset with customized events. However, in order to customize the events, you must know the names of the events that ODS uses.

A good way to start defining your customized tagset is to use the EVENT_MAP tagset that SAS supplies in order to determine which events are triggered and which variables are used by an event to send output from a SAS process to an output file. When you run a SAS process with TAGSETS.EVENT_MAP, ODS writes XML markup to an output file that shows all event names and variable names as tags. In the output, tag names are the event names. Tag attributes are the variables that have values for those events.

For example, the following statements run ODS MARKUP with TYPE=EVENT_MAP to see which events and variables ODS uses for various parts of the PROC PRINT output:

```
ods markup type=event_map file='custom-tagset-filename.xml';

   proc print data=sashelp.class;
      where Height gt 60;
   run;

   ods markup close;
```

Here is the listing output and resulting XML file:

Output 11.1 Listing Output

```
The SAS System        1

                       Obs    Name       Sex    Age    Height    Weight

                         1    Alfred      M      14     69.0      112.5
                         3    Barbara     F      13     65.3       98.0
                         4    Carol       F      14     62.8      102.5
                         5    Henry       M      14     63.5      102.5
                         8    Janet       F      15     62.5      112.5
                         9    Jeffrey     M      13     62.5       84.0
                        12    Judy        F      14     64.3       90.0
                        14    Mary        F      15     66.5      112.0
                        15    Philip      M      16     72.0      150.0
                        16    Robert      M      12     64.8      128.0
                        17    Ronald      M      15     67.0      133.0
                        19    William     M      15     66.5      112.0
```

Output 11.2 XML File

```
<?xml version="1.0" encoding="windows-1252"?>

<doc operator="user" sasversion="9.1" saslongversion="9.01.01B0D06102003"
      date="2003-06-11" time="15:55:02" encoding="windows-1252" event_name="doc"
      trigger_name="attr_out" class="Body" index="IDX" just="c">
  <doc_head event_name="doc_head" trigger_name="attr_out" class="Body"
      index="IDX" just="c">
    <doc_meta event_name="doc_meta" trigger_name="attr_out" class="Body"
      index="IDX" just="c"/>
    <auth_oper event_name="auth_oper" trigger_name="attr_out" class="Body"
      index="IDX" just="c"/>
    <doc_title event_name="doc_title" trigger_name="attr_out" class="Body"
      index="IDX" just="c"/>
    <stylesheet_link event_name="stylesheet_link" trigger_name="attr_out"
      index="IDX" just="c"/>
    <javascript event_name="javascript" trigger_name="attr_out" class="Body"
      index="IDX" just="c">
      <startup_function event_name="startup_function" trigger_name="attr_out"
         class="StartUpFunction" index="IDX" just="c">
      </startup_function>
      <shutdown_function event_name="shutdown_function" trigger_name="attr_out"
         class="ShutDownFunction" index="IDX" just="c">
      </shutdown_function>
    </javascript>
  </doc_head>
  <doc_body event_name="doc_body" trigger_name="attr_out" class="Body"
      index="IDX" just="c">
    <proc event_name="proc" trigger_name="attr_out" name="Print"
      index="IDX" just="c">
      <anchor event_name="anchor" trigger_name="attr_out" class="Body" name="IDX"
         index="IDX" just="c"/>
      <page_setup event_name="page_setup" trigger_name="attr_out" class="Body"
         index="IDX" just="c">
        <system_title_setup_group event_name="system_title_setup_group" trigger_name="attr_out"
          class="Body" colcount="1" index="IDX" just="c">
          <title_setup_container event_name="title_setup_container" trigger_name="attr_out"
            class="SysTitleAndFooterContainer" colcount="1" index="IDX" just="c">
            <title_setup_container_specs event_name="title_setup_container_specs" trigger_name="attr_out"
               class="SysTitleAndFooterContainer" colcount="1" index="IDX" just="c">
              <title_setup_container_spec event_name="title_setup_container_spec" trigger_name="attr_out"
                  colcount="1" type="string" index="IDX" just="c" width="100%"/>
            </title_setup_container_specs>
            <title_setup_container_row event_name="title_setup_container_row" trigger_name="attr_out"
               colcount="1" index="IDX" just="c">
              <system_title_setup event_name="system_title_setup" trigger_name="attr_out"
                  class="SystemTitle" value="The SAS System" colcount="1" index="IDX" just="c">
              </system_title_setup>
            </title_setup_container_row>
          </title_setup_container>
        </system_title_setup_group>
      </page_setup>

...more xml tagged output...

               </table_body>
            </table>
          </output>
        </leaf>
      </proc_branch>
    </proc>
  </doc_body>
</doc>
```

For example, in the XML output that is generated by EVENT_MAP, you can see that PROC PRINT uses events named DOC_HEAD, PROC, TABLE, and so on. The TABLE event uses data from event variables like STATE, CLASS, and TYPE. Once you know the events and variables that are used to generate the output, then you can define your own tagset definition and customize the events. For example, you could redefine the TABLE event to produce your own output.

To define a tagset to customize your own output, you could start by specifying TAGSETS.EVENT_MAP as the parent tagset. Then, as you redefine events to customize output, they will replace the default events defined in the EVENT_MAP tagset. In addition, you can remove the operation of a default event by redefining it as an empty event in your tagset definition. When you're satisfied with the customized output, remove the EVENT_MAP inheritance and the empty events. Then, your output will reflect only the events you defined.

Note: When you first run a SAS process and specify TYPE=EVENT_MAP, you can also generate a stylesheet along with the body file. The stylesheet will tell you which style attributes are being used. △

Alternatives to EVENT_MAP

If you want other types of output, here are a few tagsets that you can use as alternatives:

- TEXT_MAP generates more of a listing output.
- TPL_STYLE_LIST (generates HTML) and TPL_STYLE_MAP (generates XML). However, these tagsets list only a subset of the possible attributes.
- STYLE_POPUP generates HTML like HTMLCSS, but if you're using Internet Explorer, STYLE_POPUP displays a window that shows the resolved ODS style definition for any item that you click.
- STYLE_DISPLAY is like STYLE_POPUP but generates a simple page of output for you to click.
- NAMEDHTML generates HTML output like STYLE_POPUP but with all the objects labeled as with ODS TRACE.

Defining a Tagset Using SAS DATA Step Functions

A SAS DATA step function performs a computation or system manipulation on arguments and returns a value. In Base SAS software, you can use SAS functions in DATA step programming statements, WHERE expressions, macro language statements, the REPORT procedure, Structured Query Language (SQL), and when creating your own tagsets. Functions can be used on any statement within the tagset language. For information on DATA step functions and statements, see *SAS Language Reference: Dictionary* and *SAS Language Reference: Concepts*.

Examples: Creating and Modifying Markup Languages Using the TEMPLATE Procedure

Example 1: Creating a Tagset through Inheritance

PROC TEMPLATE features:

DEFINE TAGSET statement

DEFINE EVENT statement

PUT statement

Tagset attribute:

PARENT= attribute

Other ODS features:

ODS PATH statement

ODS MARKUP statement

Program Description

This example defines a new tagset name TAGSET.MYTAGS that creates customized HTML output. The new tagset is created through inheritance. Most of the required formatting is available in the tagset TAGSETS.CHTML that SAS supplies.

Program

Define a new tagset. The DEFINE TAGSET statement creates a new tagset definition called **tagsets.mytags**. The PARENT= attribute is used in order for the new tagset **tagsets.mytags** to inherit events from TAGSETS.CHTML. Note that the ODS PATH statement is specified at the beginning to establish the search path.

```
ods path sasuser.templat (update)
   sashelp.tmplmst (read);

proc template;
   define tagset tagsets.mytags /store=sasuser.templat;
      parent=tagsets.chtml;
```

Define three events. The DEFINE EVENT statements create three events called **colspecs, table, and system_title**. The **colspecs** event specifies text. The **table** event specifies tags to include in the definition. The **system_title** event deletes titles.

```
define event colspecs;
   put "These are my new colspecs" nl;
end;

define event table;
   put "<p>" nl "<table>";
finish:
   put "</table>";
end;

define event system_title;
end;
```

End the tagset definition. This END statement ends the tagset definition. The RUN statement executes the PROC TEMPLATE step.

```
end;
run;
```

Specify the user-defined tagset. The following code tells ODS to use the user-defined tagset TAGSETS.MYTAGS as the tagset definition for the output.

```
ods tagsets.mytags body='custom-tagset-filename.html';
```

Print the data set. PROC PRINT creates the report. ODS writes the report to the body file.

```
proc print data=sashelp.class;
   run;
```

Stop the creation of the tagset definition. The ODS TAGSET. MYTAGS CLOSE statement closes the MARKUP destination and all the files that are associated with it. You must close the destination before you can view the output with a browser.

```
ods tagsets.mytags close;
```

Display 11.1 Generated Output: MYTAGS.CHTML (Viewed with Microsoft Internet Explorer)

To see the customized CHTML tags, view the source from your web browser:

□ Select from your browser's tool bar:

View ▶ Source

These are my new colspecs

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83.0
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84.0
10	John	M	12	59.0	99.5
11	Joyce	F	11	51.3	50.5
12	Judy	F	14	64.3	90.0
13	Louise	F	12	56.3	77.0
14	Mary	F	15	66.5	112.0
15	Philip	M	16	72.0	150.0
16	Robert	M	12	64.8	128.0
17	Ronald	M	15	67.0	133.0
18	Thomas	M	11	57.5	85.0
19	William	M	15	66.5	112.0

Use the tagset TAGSETS.CHTML that is provided by SAS. To compare the output from TAGSETS.MYTAGS to the TAGSETS.CHTML that is supplied by SAS, the following ODS code specifies the SAS tagset. Note that you can specify any tagset by using TYPE= in an ODS MARKUP statement.

```
ods markup type=tagsets.chtml body='default-tagset-filename.html';

   proc print data=sashelp.class;
   run;

   ods markup close;
```

Display 11.2 A Display That Uses the Default CHTML Tagset (Viewed with Microsoft Internet Explorer)

To see the default CHTML tags, view the source from your web browser:

□ Select from your browser's tool bar:

View ▶ Source

The SAS System

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83.0
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84.0
10	John	M	12	59.0	99.5
11	Joyce	F	11	51.3	50.5
12	Judy	F	14	64.3	90.0
13	Louise	F	12	56.3	77.0
14	Mary	F	15	66.5	112.0
15	Philip	M	16	72.0	150.0
16	Robert	M	12	64.8	128.0
17	Ronald	M	15	67.0	133.0
18	Thomas	M	11	57.5	85.0
19	William	M	15	66.5	112.0

Example 2: Creating a Tagset by Copying a Tagset's Source

PROC TEMPLATE features:

SOURCE statement
DEFINE TAGSET
DEFINE EVENT

Program Description

This example copies the source for a tagset which SAS supplies, modifies the definition, then builds a new tagset definition for custom output. To create a new tagset, you can use the SOURCE statement in PROC TEMPLATE to copy a tagset's source. Then you can customize the definition as needed.

Program

Copy the SAS tagset to an external file. The following statements copy the tagset definition source from the SAS tagset TAGSETS.CSV to the SAS log.

```
proc template;
      source tagsets.csv;
   run;
```

Output 11.3 CSV Tagset Definition Source

This is the default CSV tagset definition that SAS supplies.

```
define tagset Tagsets.Csv;
   notes "This is the CSV definition";
   define event put_value;
      put VALUE;
   end;
   define event put_value_cr;
      put VALUE NL;
   end;
   define event table;
      finish:
         put NL;
   end;
   define event row;
      finish:
         put NL;
   end;
```

```
 define event header;
      start:
         put "," /if ^cmp( COLSTART, "1");
         put """";
         put VALUE;
      finish:
         put """";
   end;
   define event data;
      start:
         put "," /if ^cmp( COLSTART, "1");
         put """";
         put VALUE;
      finish:
         put """";
   end;
   define event colspanfill;
      put ",";
   end;
   define event rowspanfill;
      put "," /if ^exists( VALUE);
   end;
   define event breakline;
      put NL;
   end;
   define event splitline;
      put NL;
   end;
   registered_tm = "(r)";
   trademark = "(tm)";
   copyright = "(c)";
   output_type = "csv";
   stacked_columns = OFF;
end;
```

Create your new customized tagset. Submit the following PROC TEMPLATE code to create your new customized tagset **tagsets.mycsv**. The DEFINE EVENT TABLE statement adds two blank lines to the output file by using the PUT NL statements. One blank line is placed before the table and the other is placed after the table.

```
define tagset Tagsets.mycsv;
   notes "This is the My CSV definition";
   define event table;
      start:
         put nl;
      finish:
         put nl;
   end;
   define event put_value;
```

```
      put VALUE;
   end;
   define event put_value_cr;
      put VALUE NL;
   end;
   define event row;
      finish:
         put NL;
   end;
   define event header;
      start:
         put "," /if ^cmp( COLSTART, "1");
         put """";
         put VALUE;
      finish:
         put """";
   end;
   define event data;
      start:
         put "," /if ^cmp( COLSTART, "1");
         put """";
         put VALUE;
      finish:
         put """";
   end;
   define event colspanfill;
      put ",";
   end;
   define event rowspanfill;
      put "," /if ^exists( VALUE);
   end;
   define event breakline;
      put NL;
   end;
   define event splitline;
      put NL;
   end;
   registered_tm = "(r)";
   trademark = "(tm)";
   copyright = "(c)";
   output_type = "csv";
   stacked_columns = OFF;
end;
```

Output 11.4 Customized CSV Tagsets.mycsv Definition Source

To view the customized CSV Tagsets.mycsv, submit the following code:

```
proc template;
   source tagsets.mycsv;
run;
```

```
proc template;
   define tagset Tagsets.Mycsv / store = SASUSER.TEMPLAT;
      notes "This is the My CSV definition";
      define event table;
         start:
            put NL;
         finish:
            put NL;
      end;
      define event put_value;
         put VALUE;
      end;
      define event put_value_cr;
         put VALUE NL;
      end;
      define event row;
         finish:
            put NL;
      end;
      define event header;
         start:
            put "," /if ^cmp( COLSTART, "1");
            put """";
            put VALUE;
         finish:
            put """";
      end;
      define event data;
         start:
            put "," /if ^cmp( COLSTART, "1");
            put """";
            put VALUE;
         finish:
            put """";
      end;
      define event colspanfill;
         put ",";
      end;
      define event rowspanfill;
         put "," /if ^exists( VALUE);
      end;
      define event breakline;
         put NL;
      end;
      define event splitline;
         put NL;
      end;
      output_type = "csv";
      copyright = "(c)";
      trademark = "(tm)";
      registered_tm = "(r)";
      stacked_columns = OFF;
   end;
run;
```

Example 3: Creating a New Tagset

PROC TEMPLATE features:

DEFINE TAGSET statement
- NOTES statement
- DEFINE EVENT statement
  - NDENT statement
  - PUT statement
  - TRIGGER statement
  - XDENT statement

Tagset Attributes:

DEFAULT_EVENT attribute
INDENT= attribute
OUTPUT_TYPE attribute
MAP= attribute
MAPSUB= attribute
NOBREAKSPACE= attribute
SPLIT= attribute
STACKED_COLUMNS= attribute

Program Description

This example shows a new tagset definition that does not inherit events from another tagset definition. This is a customized tagset definition for specific PROC FREQ output.

Program

Create the new tagset *Tagsets.newloc*. The DEFINE TAGSET statement creates a new tagset **`Tagsets.newloc`** and specifies where you want to store the tagset.

```
proc template;
   define tagset Tagsets.newloc / store = SASUSER.TEMPLAT;
      notes "This is the Location Report Definition";
```

Define seven events. The seven DEFINE statements create the events named **`basic, doc, system_title, header, data, country, and frequency`**.

```
   define event basic;
   end;

   define event doc;
   start:
      put "" nl nl;
      put "" nl;
      put "" nl;
      put "" nl;
      ndent;
   finish:
      xdent;
```

```
      put nl;
      put "";
   end;

   define event system_title;
      put "";
      put VALUE;
      put "";
      put nl nl;
   end;
define event header;
   start:
   trigger country /if cmp(LABEL, "EmpCountry");
   end;

   define event data;
   start:
   trigger frequency /if cmp(name, "Frequency");
   end;

   define event country;
      put "" nl ;
      ndent ;
      put "" ;
      put VALUE ;
      put "" nl  ;
   end;

   define event frequency;
      put "" ;
      put VALUE ;
      put "" nl  ;
      xdent ;
      put "" nl ;
   end;

   output_type = "xml";
   default_event = "basic";
   indent = 2;
   split = "";
   nobreakspace = " ";
   mapsub = "/</>/&/";
   map = "<>&";
   stacked_columns=off;
   end;
run;
```

Output 11.5 New *tagsets.newloc* Definition Source

```
proc template;
   define tagset Tagsets.Newloc / store = SASUSER.TEMPLAT;
      notes "This is the Location Report Definition";
      define event basic;
      end;
      define event doc;
         start:
            put "" NL NL;
            put "" NL;
            put "" NL;
            put "" NL;
            ndent;
         finish:
            xdent;
            put NL;
            put "";
      end;
      define event system_title;
         put "";
         put VALUE;
         put "";
         put NL NL;
      end;
      define event header;
         start:
            trigger country /if cmp( LABEL, "EmpCountry");
      end;
      define event data;
         start:
            trigger frequency /if cmp( name, "Frequency");
      end;
      define event country;
         put "" NL;
         ndent;
         put "";
         put VALUE;
         put "" NL;
      end;
      define event frequency;
         put "";
         put VALUE;
         put "" NL;
         xdent;
         put "" NL;
      end;
      map = %nrstr("<>&");
      mapsub = %nrstr("//&/");
      nobreakspace = " ";
      split = "";
      indent = 2;
      default_event = "basic";
      output_type = "xml";
      stacked_columns = OFF;
   end;
run;
```

Example 4: Executing Events Using the TRIGGER= Statement

PROC TEMPLATE features:

DEFINE TAGSET statement

DEFINE EVENT statement

PUT statement

TRIGGER statement

Other ODS features:

ODS *directory.tagset-name* statement

Program Description

This example illustrates how to execute events.

Program

Execute different events. The TRIGGER statement executes another event. For example, the start section of DOC triggers the start section of MYTEST and OTHEREVENTA. MYTEST has a start section, so output is generated. OTHEREVENTA is stateless (no start or finish sections), but output is generated.

```
proc template;
   define tagset tagsets.mytagset;
      define event doc;
      start:
         put "start of doc" nl;
         trigger mytest;
         trigger otherevent;
      finish:
         trigger mytest;
         put "finish of doc" nl;
         trigger mytest start;
         trigger otherevent;
         trigger mytest finish;
      end;

      define event mytest;
      start:
         put "start of mytest" nl;
      finish:
         put "finish of mytest" nl;
      end;

      define event otherevent;
         put "This is my other event" nl;
      end;
   end;
run;

ods tagsets.mytagset file='custom-tagset-filename.txt';
ods tagsets.mytagset close;
```

Display 11.3 Output Created from Events and *tagsets.mytagset* Definition

To view the output **tagsets.mytagset**, open the file in a text editor.

```
start of doc
start of mytest
This is my other event
finish of mytest
finish of doc
start of mytest
This is my other event
finish of mytest
```

Example 5: Indenting Your Output

PROC TEMPLATE features:

DEFINE TAGSET statement

DEFINE EVENT statement

PUT statement
NDENT statement
TRIGGER statement
XDENT statement

TAGSET attributes:

INDENT= attribute

Other ODS features:

ODS *directory.tagset-name* statement

Program Description

This example illustrates how to indent your output using a tagset.

Note: When you view a file with an extension of .xml in an XML-compliant browser, any indention in the file is ignored by the browser in favor of its own indention algorithm. △

Program

Set your beginning indention level and then proceed to increment your indention levels. The INDENT= tagset definition attribute determines how much the NDENT and XDENT event statements indent output.

```
proc template;
   define tagset tagsets.mytagset2;
   indent = 4;

      define event doc;
      start:
         put "start of doc" nl;
         ndent;
         trigger mytest;
         trigger otherevent;
      finish:
         trigger mytest;
         xdent;
         put "finish of doc" nl;
         trigger mytest start;
         trigger otherevent;
         trigger mytest finish;
      end;

      define event mytest;
      start:
         put "start of mytest" nl;
         ndent;
      finish:
         xdent;
         put "finish of mytest" nl;
      end;

      define event otherevent;
         put "This is my other event" nl;
      end;
   end;
run;
ods tagsets.mytagset2 file='custom-tagset-filename.txt';
ods tagsets.mytagset2 close;
```

Display 11.4 Output Created from Events and Using *tagsets.mytagset2* Definition Source

```
start of doc
    start of mytest
        This is my other event
    finish of mytest
finish of doc
start of mytest
    This is my other event
finish of mytest
```

Example 6: Using Different Styles for Events

PROC TEMPLATE features:
DEFINE EVENT statement
PUT statement
TRIGGER statement
Event attribute:
STYLE= attribute

Program Description

This example shows you how to use different styles for events.

Program

Specify the event definitions. The following event definitions are from the SAS tagset TAGSETS.HTMLCSS, and they show how ODS creates notes. By defining the Gnote event and setting the proper style in the right place, ODS creates a two-cell table that has a banner using the appropriate banner style and a content cell that has the appropriate content style.

```
define event Gnote;
          start:
              put "<div>";
              trigger align;
              put ">";
              put "<table>";
              put "<tr>" nl;
          finish:
              put "</tr>" nl;
              put "</table>" nl;
```

```
        put "</div>";
end;

define event GBanner;
    put "" nl;
    trigger pre_post;
    put "" nl;
end;

define event GNContent;
    put "";
    trigger pre_post start;
    put VALUE;
    trigger pre_post finish;
    put "";
end;

define event noteBanner;
    style="NoteBanner";
    trigger GBanner;
end;

define event NoteContent;
    style="NoteContent";
    trigger GNContent;
end;

define event note;
    trigger Gnote start;
    trigger noteBanner;
    trigger noteContent;
    trigger Gnote finish;
end;

define event WarnBanner;
    style="WarnBanner";
    trigger GBanner;
end;

define event WarnContent;
    style="WarnContent";
    trigger GNContent;
end;

define event Warning;
    trigger Gnote start;
    trigger WarnBanner;
    trigger WarnContent;
    trigger Gnote finish;
end;
```

Example 7: Modifying an Event to Include Other Stylesheets

PROC TEMPLATE features:
DEFINE EVENT statement
PUTQ statement

Program Description

The following program provides some example code that you can use to link previously created stylesheet to an event that you define.

Program

Define an event that links to a stylesheet. This code shows you how to define an event that creates a link to a previously created stylesheet instead of the SAS generated stylesheet.

```
define event stylesheet_link;
putq '<link rel= "STYLESHEET" type="text/css"
href=' URL '>' nl / if exists(url);
putq '<link rel= "STYLESHEET" type="text/css"
href="http://your/stylesheet/url/goes/here">' nl;
putq '<link rel= "STYLESHEET" type="text/css"
href="http://your/stylesheet/url/goes/here">' nl;
end;
```

Example 8: Creating Different Data Delimiters in a Tagset

PROC TEMPLATE features:
DEFINE TAGSET statement
DEFINE EVENT statement
PUT statement
NOTES statement
Tagset attributes:
OUTPUT_TYPE= attribute
PARENT= attribute
STACKED_COLUMNS= attribute

Other ODS features:
ODS *directory.tagset-name* statement
ODS *directory.tagset-name* CLOSE statement

Data set: GRAIN_PRODUCTION“Program” on page 97

Program Description

This example creates a customized tagset *tagset.semisv* which inherits attributes from the CSV tagset that SAS provides. This program deletes all the events that do not have a comma, keeps all the events that do have commas, and then changes all the commas to semicolons.

Program

Use the SAS provided tagset definition *tagsets.csv*. Tagsets.csv is the tagset that SAS provides to produce tabular output that contains columns of data values, which are separated by commas. The following code is the template that is used to create the tagset **`tagsets.csv`**.

```
proc template;
  define tagset Tagsets.Csv;
     notes "This is the CSV definition";
     define event put_value;
        put VALUE;
        put NL /if cmp( htmlclass, "batch");
     end;
     define event table;
        finish:
           put NL;
     end;
     define event row;
        finish:
           put NL;
     end;
     define event header;
        start:
           put "," /if ^cmp( COLSTART, "1");
           put """";
           put VALUE;
        finish:
           put """";
     end;
     define event data;
        start:
           put "," /if ^cmp( COLSTART, "1");
           put """";
           put VALUE;
        finish:
           put """";
     end;
     define event colspanfill;
        put ",";
     end;
     define event rowspanfill;
        put "," /if ^exists( VALUE);
     end;
     define event breakline;
        put NL;
     end;
     define event splitline;
        put NL;
     end;
     registered_tm = "(r)";
     trademark = "(tm)";
     copyright = "(c)";
```

```
      output_type = "csv";
      stacked_columns = OFF;
   end;
run;
```

Create a new tagset *tagsets.semisv* from the parent tagset *tagsets.csv*.The DEFINE TAGSET statement creates a new tagset **`tagsets.semisv`**. The new tagset inherits its attributes from the parent tagset **`tagsets.csv`** which SAS provides. The NOTES statement adds information about the tagset which becomes part of the compiled tagset definition.

```
proc template;
    define tagset tagsets.semisv;
        notes "This is the SEMI-CSV definition";
        parent = tagsets.csv;
```

Define four events that insert semicolon delimiters. The four DEFINE EVENT statements create the events **`header, data, colspafill, rowspanfill`**. The PUT statements insert a semicolon between each column, and enclose each table cell value with quotation marks.

```
define event header;
          start:
            put ';' / if !cmp(COLSTART, "1");
            put '"';
            put VALUE;
          finish:
            put '"';
        end;

        define event data;
          start:
            put ';' / if !cmp(COLSTART, "1");
            put '"';
            put VALUE;
          finish:
            put '"';
        end;

        define event colspanfill;
            put ';';
        end;

        define event rowspanfill;
            put ';' /if ! exists(VALUE);
        end;

    end;
run;
```

Specify the user-defined tagset. The following code tells ODS to use the user-defined tagset TAGSETS.SEMISV as the tagset definition for the output.

```
ods tagsets.semisv file='custom-tagset-filename.html';
```

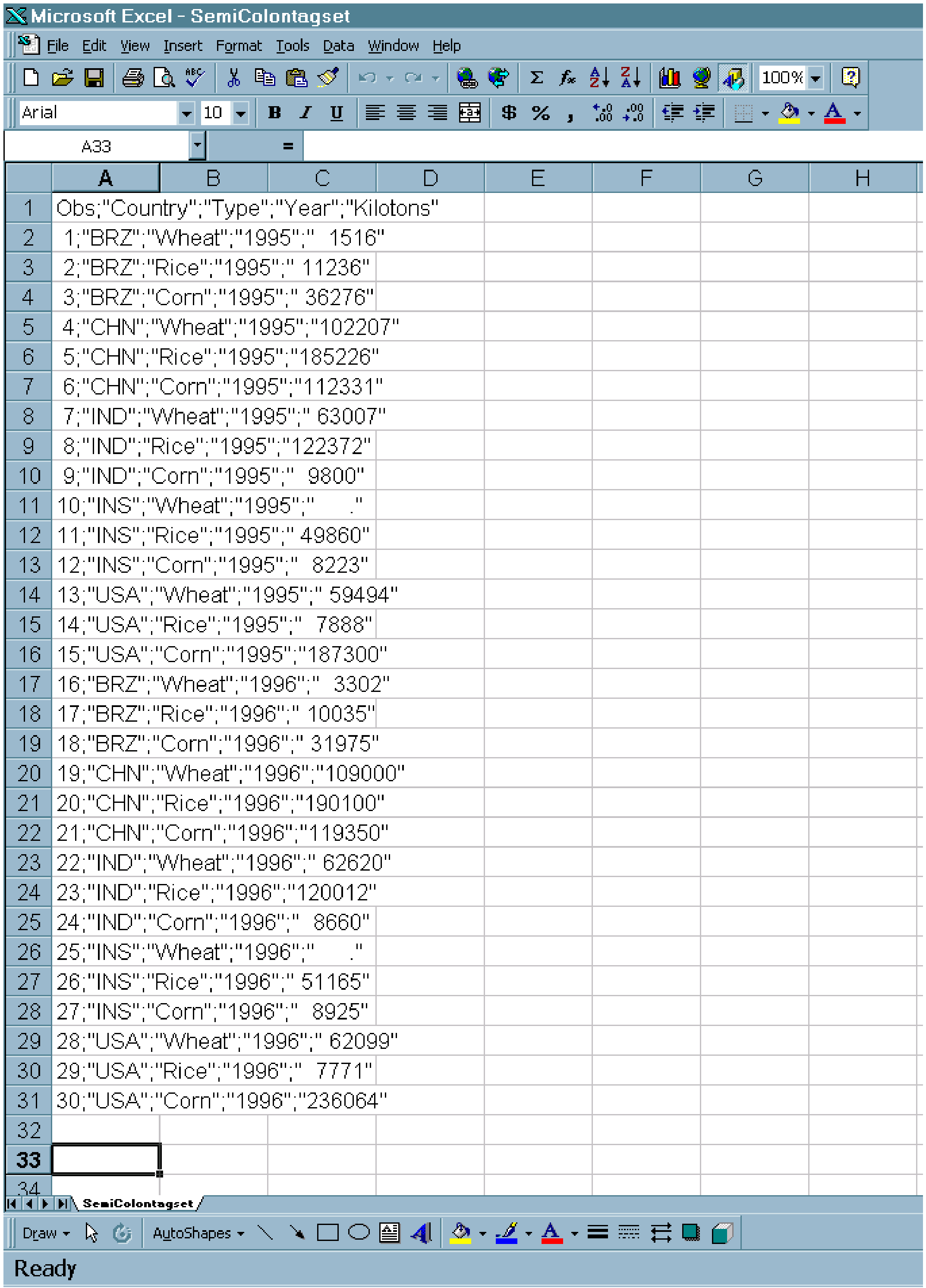
Print the data set. PROC PRINT creates the report. ODS writes the report to the body file.

```
proc print data=grain_production label;
run;
```

Stop the creation of the tagset definition. The ODS TAGSET. SEMISV CLOSE statement closes the MARKUP destination and all the files that are associated with it. You must close the destination before you can view the output with a viewer.

```
ods tagsets.semisv close;
```

Display 11.5 Grain Production Report Displayed Using a Customized Tagset *Tagsets.Semisv* (Viewed with Microsoft Excel)



Example 9: Using the STACKED_COLUMNS Attribute in a Tagset Definition

PROC TEMPLATE features:

DEFINE TABLE statement

- NOTES statement
- COLUMN statement
- DEFINE statement (for columns)

DEFINE TAGSET

- Tagset attribute:
  - PARENT= attribute
  - STACKED_COLUMNS= attribute

Other ODS features:

ODS *directory.tagset-name* statement

ODS PHTML statement

ODS _ALL_ CLOSE statement

Program Description

This example shows the difference between stacking data one column on top of another, or placing data side by side. (For more information on stacked columns, see the “DEFINE TABLE Statement” on page 410.)

Program

Create a table definition. The DEFINE TABLE statement creates the table definition **Base.Standard**.

```
proc template;
   define table Base.Standard;
      notes "Table definition for PROC Standard.";
      column name (mean std) n label;
      define name;  header="Name" varname="Name" style=RowHeader; end;
      define mean;  header="Mean/Std Dev" varname="Mean" format=D12.;
end;
      define std;   header="/Standard/Deviation"
         varname="stdDev" format=D12.; end;
      define n;     header="N" format=best.; end;
      define label; header="Label" varname="Label"; end;
      byline wrap required_space=3;
   end;
run;
 proc template;
   define tagset tagsets.myhtml;
        parent=tagsets.phtml;
        stacked_columns=no;
   end;
run;
```

Customize the tagset by stacking the values side by side. This customized tagset has STACKED_COLUMNS= NO. Note that the SAS tagset, TAGSETS.PHTML, has STACKED_COLUMNS=YES.

```
proc template;
   define tagset tagsets.myhtml;
        parent=tagsets.phtml;
        stacked_columns=no;
   end;
run;
```

Create HTML output and specify the location for storing the HTML output. The ODS TAGSETS.MYHTML statement opens the markup language destination and creates the HTML output. The output objects are sent to the external file **not_stacked.html** in the current directory. The PROC STANDARD statement generates the statistics for the **sashelp.class** data set. The PRINT option prints the report.

```
ods tagsets.myhtml file="not_stacked.html";
proc standard print data=sashelp.class;
run;
```

Stop the creation of the HTML output. The ODS _ALL_ CLOSE statement closes all open destinations and all files associated with them. For HTML output, you must close the HTML destination before you can view the output with a browser.

```
ods _all_ close;
```

Display 11.6 Output with Values Side by Side

The SAS System

The STANDARD Procedure

Name	Mean/Std Dev	Standard Deviation	N
Age	13.315789	1.492672	19
Height	62.336842	5.127075	19
Weight	100.026316	22.773933	19

Create the same file but with values stacked. The STACKED_COLUMNS=YES statement shows the same values stacked in the SAS tagset PHTML.

```
ods phtml file="stacked.html";
proc standard print data=sashelp.class;
run;
ods _all_ close;
```

Display 11.7 Output with Values Stacked One on Top of the Another

The SAS System

The STANDARD Procedure

Name	Mean/Std Dev	N
Age	13.315789 1.492672	19
Height	62.336842 5.127075	19
Weight	100.026316 22.773933	19

PART 6

Appendices

APPENDIX 1

Example Programs

Creating the Employee_data Data Set

```
options source pagesize=60 linesize=80 nodate;

data employee_data;
   input IdNumber $ 1-4 LastName $ 9-19 FirstName $ 20-29
         City $ 30-42 State $ 43-44 /
         Gender $ 1 JobCode $ 9-11 Salary 20-29 @30 Birth date9.
         @43 Hired date9. HomePhone $ 54-65;
   format birth hired date9.;

            datalines;
1919    Adams      Gerald    Stamford     CT
M       TA2        34376     15SEP48      07JUN75    203/781-1255
1653    Alexander  Susan     Bridgeport   CT
F       ME2        35108     18OCT52      12AUG78    203/675-7715
1400    Apple      Troy      New York     NY
M       ME1        29769     08NOV55      19OCT78    212/586-0808
1350    Arthur     Barbara   New York     NY
F       FA3        32886     03SEP53      01AUG78    718/383-1549
```

```
1401    Avery      Jerry      Paterson      NJ
M       TA3        38822      16DEC38       20NOV73     201/732-8787
1499    Barefoot   Joseph     Princeton     NJ
M       ME3        43025      29APR42       10JUN68     201/812-5665
1101    Baucom     Walter     New York      NY
M       SCP        18723      09JUN50       04OCT78     212/586-8060
1333    Blair      Justin     Stamford      CT
M       PT2        88606      02APR49       13FEB69     203/781-1777
1402    Blalock    Ralph      New York      NY
M       TA2        32615      20JAN51       05DEC78     718/384-2849
1479    Bostic     Marie      New York      NY
F       TA3        38785      25DEC56       08OCT77     718/384-8816
1403    Bowden     Earl       Bridgeport    CT
M       ME1        28072      31JAN57       24DEC79     203/675-3434
1739    Boyce      Jonathan   New York      NY
M       PT1        66517      28DEC52       30JAN79     212/587-1247
1658    Bradley    Jeremy     New York      NY
M       SCP        17943      11APR55       03MAR80     212/587-3622
1428    Brady      Christine  Stamford      CT
F       PT1        68767      07APR58       19NOV79     203/781-1212
1782    Brown      Jason      Stamford      CT
M       ME2        35345      07DEC58       25FEB80     203/781-0019
1244    Bryant     Leonard    New York      NY
M       ME2        36925      03SEP51       20JAN76     718/383-3334
1383    Burnette   Thomas     New York      NY
M       BCK        25823      28JAN56       23OCT80     718/384-3569
1574    Cahill     Marshall   New York      NY
M       FA2        28572      30APR48       23DEC80     718/383-2338
1789    Caraway    Davis      New York      NY
M       SCP        18326      28JAN45       14APR66     212/587-9000
1404    Carter     Donald     New York      NY
M       PT2        91376      27FEB41       04JAN68     718/384-2946
1437    Carter     Dorothy    Bridgeport    CT
F       A3         33104      23SEP48       03SEP72     203/675-4117
1639    Carter     Karen      Stamford      CT
F       A3         40260      29JUN45       31JAN72     203/781-8839
1269    Caston     Franklin   Stamford      CT
M       NA1        41690      06MAY60       01DEC80     203/781-3335
1065    Chapman    Neil       New York      NY
M       ME2        35090      29JAN32       10JAN75     718/384-5618
1876    Chin       Jack       New York      NY
M       TA3        39675      23MAY46       30APR73     212/588-5634
1037    Chow       Jane       Stamford      CT
F       TA1        28558      13APR52       16SEP80     203/781-8868
1129    Cook       Brenda     New York      NY
F       ME2        34929      11DEC49       20AUG79     718/383-2313
1988    Cooper     Anthony    New York      NY
M       FA3        32217      03DEC47       21SEP72     212/587-1228
1405    Davidson   Jason      Paterson      NJ
M       SCP        18056      08MAR54       29JAN80     201/732-2323
1430    Dean       Sandra     Bridgeport    CT
F       TA2        32925      03MAR50       30APR75     203/675-1647
1983    Dean       Sharon     New York      NY
F       FA3        33419      03MAR50       30APR75     718/384-1647
```

```
1134    Delgado    Maria    Stamford     CT
F       TA2        33462    08MAR57      24DEC76    203/781-1528
1118    Dennis     Roger    New York     NY
M       PT3        111379   19JAN32      21DEC68    718/383-1122
1438    Donaldson  Karen    Stamford     CT
F       TA3        39223    18MAR53      21NOV75    203/781-2229
1125    Dunlap     Donna    New York     NY
F       FA2        28888    11NOV56      14DEC75    718/383-2094
1475    Eaton      Alicia   New York     NY
F       FA2        27787    18DEC49      16JUL78    718/383-2828
1117    Edgerton   Joshua   New York     NY
M       TA3        39771    08JUN51      16AUG80    212/588-1239
1935    Fernandez  Katrina  Bridgeport   CT
F       NA2        51081    31MAR42      19OCT69    203/675-2962
1124    Fields     Diana    White Plains NY
F       FA1        23177    13JUL46      04OCT78    914/455-2998
1422    Fletcher   Marie    Princeton    NJ
F       FA1        22454    07JUN52      09APR79    201/812-0902
1616    Flowers    Annette  New York     NY
F       TA2        34137    04MAR58      07JUN81    718/384-3329
1406    Foster     Gerald   Bridgeport   CT
M       ME2        35185    11MAR49      20FEB75    203/675-6363
1120    Garcia     Jack     New York     NY
M       ME1        28619    14SEP60      10OCT81    718/384-4930
1094    Gomez      Alan     Bridgeport   CT
M       FA1        22268    05APR58      20APR79    203/675-7181
1389    Gordon     Levi     New York     NY
M       BCK        25028    18JUL47      21AUG78    718/384-9326
1905    Graham     Alvin    New York     NY
M       PT1        65111    19APR60      01JUN80    212/586-8815
1407    Grant      Daniel   Mt. Vernon   NY
M       PT1        68096    26MAR57      21MAR78    914/468-1616
1114    Green      Janice   New York     NY
F       TA2        32928    21SEP57      30JUN75    212/588-1092
;
```

Creating the Charity Data Set

```
proc format;
   value yrFmt . = " All";
   value $schFmt ' ' = "All    ";
data Charity;
input School $ 1-7 Year 9-12 Name $ 14-20 moneyRaised 22-26
   hoursVolunteered 28-29;
   format moneyRaised dollar8.2;
   format hoursVolunteered f3.0;
   format Year yrFmt.;
   format School schFmt.;
   label School = "Schools";
   label Year = "Years";
datalines;
Monroe  1992 Allison 31.65 19
Monroe  1992 Barry   23.76 16
```

```
Monroe  1992 Candace 21.11  5
Monroe  1992 Danny    6.89 23
Monroe  1992 Edward  53.76 31
Monroe  1992 Fiona   48.55 13
Monroe  1992 Gert    24.00 16
Monroe  1992 Harold  27.55 17
Monroe  1992 Ima      5.98  9
Monroe  1992 Jack    20.00 23
Monroe  1992 Katie   22.11  2
Monroe  1992 Lisa    18.34 17
Monroe  1992 Tonya   55.16 40
Monroe  1992 Max     26.77 34
Monroe  1992 Ned     28.43 22
Monroe  1992 Opal    32.66 14
Monroe  1993 Patsy   18.33 18
Monroe  1993 Quentin 16.89 15
Monroe  1993 Randall 12.98 17
Monroe  1993 Sam     15.88  5
Monroe  1993 Tyra    21.88 23
Monroe  1993 Myrtle  47.33 26
Monroe  1993 Frank   41.11 22
Monroe  1993 Cameron 65.44 14
Monroe  1993 Vern    17.89 11
Monroe  1993 Wendell 23.00 10
Monroe  1993 Bob     26.88  6
Monroe  1993 Leah    28.99 23
Monroe  1994 Becky   30.33 26
Monroe  1994 Sally   35.75 27
Monroe  1994 Edgar   27.11 12
Monroe  1994 Dawson  17.24 16
Monroe  1994 Lou      5.12 16
Monroe  1994 Damien  18.74 17
Monroe  1994 Mona    27.43  7
Monroe  1994 Della   56.78 15
Monroe  1994 Monique 29.88 19
Monroe  1994 Carl    31.12 25
Monroe  1994 Reba    35.16 22
Monroe  1994 Dax     27.65 23
Monroe  1994 Gary    23.11 15
Monroe  1994 Suzie   26.65 11
Monroe  1994 Benito  47.44 18
Monroe  1994 Thomas  21.99 23
Monroe  1994 Annie   24.99 27
Monroe  1994 Paul    27.98 22
Monroe  1994 Alex    24.00 16
Monroe  1994 Lauren  15.00 17
Monroe  1994 Julia   12.98 15
Monroe  1994 Keith   11.89 19
Monroe  1994 Jackie  26.88 22
Monroe  1994 Pablo   13.98 28
Monroe  1994 L.T.    56.87 33
Monroe  1994 Willard 78.65 24
Monroe  1994 Kathy   32.88 11
Monroe  1994 Abby    35.88 10
```

```
Kennedy 1992 Arturo  34.98 14
Kennedy 1992 Grace   27.55 25
Kennedy 1992 Winston 23.88 22
Kennedy 1992 Vince   12.88 21
Kennedy 1992 Claude  15.62  5
Kennedy 1992 Mary    28.99 34
Kennedy 1992 Abner   25.89 22
Kennedy 1992 Jay     35.89 35
Kennedy 1992 Alicia  28.77 26
Kennedy 1992 Freddy  29.00 27
Kennedy 1992 Eloise  31.67 25
Kennedy 1992 Jenny   43.89 22
Kennedy 1992 Thelma  52.63 21
Kennedy 1992 Tina    19.67 21
Kennedy 1992 Eric    24.89 12
Kennedy 1993 Bubba   37.88 12
Kennedy 1993 G.L.    25.89 21
Kennedy 1993 Bert    28.89 21
Kennedy 1993 Clay    26.44 21
Kennedy 1993 Leeann  27.17 17
Kennedy 1993 Georgia 38.90 11
Kennedy 1993 Bill    42.23 25
Kennedy 1993 Holly   18.67 27
Kennedy 1993 Benny   19.09 25
Kennedy 1993 Cammie  28.77 28
Kennedy 1993 Amy     27.08 31
Kennedy 1993 Doris   22.22 24
Kennedy 1993 Robbie  19.80 24
Kennedy 1993 Ted     27.07 25
Kennedy 1993 Sarah   24.44 12
Kennedy 1993 Megan   28.89 11
Kennedy 1993 Jeff    31.11 12
Kennedy 1993 Taz     30.55 11
Kennedy 1993 George  27.56 11
Kennedy 1993 Heather 38.67 15
Kennedy 1994 Nancy   29.90 26
Kennedy 1994 Rusty   30.55 28
Kennedy 1994 Mimi    37.67 22
Kennedy 1994 J.C.    23.33 27
Kennedy 1994 Clark   27.90 25
Kennedy 1994 Rudy    27.78 23
Kennedy 1994 Samuel  34.44 18
Kennedy 1994 Forrest 28.89 26
Kennedy 1994 Luther  72.22 24
Kennedy 1994 Trey     6.78 18
Kennedy 1994 Albert  23.33 19
Kennedy 1994 Che-Min 26.66 33
Kennedy 1994 Preston 32.22 23
Kennedy 1994 Larry   40.00 26
Kennedy 1994 Anton   35.99 28
Kennedy 1994 Sid     27.45 25
Kennedy 1994 Will    28.88 21
Kennedy 1994 Morty   34.44 25
;
```

Creating the Statepop Data Set

```
data statepop;
   input State $ CityPop_80 CityPop_90
         NonCityPop_80 NonCityPop_90 Region;
   format region 1.;
   label citypop_80=   '1980 metropolitan pop in millions'
         noncitypop_80='1980 nonmetropolitan pop in millions'
         citypop_90=   '1990 metropolitan pop in millions'
         noncitypop_90='1990 nonmetropolitan pop in million'
         region='Geographic region';
  datalines;
ME    .405    .443   .721   .785  1
NH    .535    .659   .386   .450  1
VT    .133    .152   .378   .411  1
MA   5.530   5.788   .207   .229  1
RI    .886    .938   .061   .065  1
CT   2.982   3.148   .126   .140  1
NY  16.144  16.515  1.414  1.475  1
NJ   7.365   7.730    .A     .A   1
PA  10.067  10.083  1.798  1.799  1
DE    .496    .553   .098   .113  2
MD   3.920   4.439   .297   .343  2
DC    .638    .607     .      .   2
VA   3.966   4.773  1.381  1.414  2
WV    .796    .748  1.155  1.045  2
NC   3.749   4.376  2.131  2.253  2
SC   2.114   2.423  1.006  1.064  2
GA   3.507   4.352  1.956  2.127  2
FL   9.039  12.023   .708   .915  2
KY   1.735   1.780  1.925  1.906  2
TN   3.045   3.298  1.546  1.579  2
AL   2.560   2.710  1.334  1.331  2
MS    .716    .776  1.805  1.798  2
AR    .963   1.040  1.323  1.311  2
LA   3.125   3.160  1.082  1.060  2
OK   1.724   1.870  1.301  1.276  2
TX  11.539  14.166  2.686  2.821  2
OH   8.791   8.826  2.007  2.021  3
IN   3.885   3.962  1.605  1.582  3
IL   9.461   9.574  1.967  1.857  3
MI   7.719   7.698  1.543  1.598  3
WI   3.176   3.331  1.530  1.561  3
MN   2.674   3.011  1.402  1.364  3
IA   1.198   1.200  1.716  1.577  3
MO   3.314   3.491  1.603  1.626  3
ND    .234    .257   .418   .381  3
SD    .194    .221   .497   .475  3
NE    .728    .787   .842   .791  3
KS   1.184   1.333  1.180  1.145  3
MT    .189    .191   .598   .608  4
ID    .257    .296   .687   .711  4
```

```
WY    .141    .134   .329   .319  4
CO   2.326   2.686   .563   .608  4
NM    .675    .842   .628   .673  4
AZ   2.264   3.106   .453   .559  4
UT   1.128   1.336   .333   .387  4
NV    .666   1.014   .135   .183  4
WA   3.366   4.036   .776   .830  4
OR   1.799   1.985   .834   .858  4
CA  22.907  28.799   .760   .961  4
AK    .174    .226   .227   .324  4
HI    .763    .836   .202   .272  4
;
```

Creating the Model Data Set

```
data one;
   input year import doprod stock consum;
   datalines;
49 15.9 149.3 4.2 108.1
50 16.4 161.2 4.1 114.8
51 19.0 171.5 3.1 123.2
52 19.1 175.5 3.1 126.9
53 18.8 180.8 1.1 132.1
54 20.4 190.7 2.2 137.7
55 22.7 202.1 2.1 146.0
56 26.5 212.4 5.6 154.1
57 28.1 226.1 5.0 162.3
58 27.6 231.9 5.1 164.3
59 26.3 239.0 0.7 167.6
60 31.1 258.0 5.6 176.8
61 33.3 269.8 3.9 186.6
62 37.0 288.4 3.1 199.7
63 43.3 304.5 4.6 213.9
64 49.0 323.4 7.0 223.8
65 50.3 336.8 1.2 232.0
66 56.6 353.9 4.5 242.9
;
```

```
data model;
input year 1-2 a 3-9 .3 b 10-17 .3 r4 18-24 .3 r8 25-31 .3
             c 32-38 .3 d 39-45 .3 e 46-51 .3 r23 52-58 .3
             r24 59-64 .3 r29 65-70 .3 r33 71-77 .3 ;
datalines;
60 994534 53552371656049 9362944261250 89214236319711402991060045  8780 335066
611253576 55806431770151106714246509930 99334538746512173601515O7 36871  49192
621318885 621448018932921075688469573610686654502881317293178014 66671 566079
631507969 666125121046261533088511701311673695162821579148179797106485  -4568
641811051 731945021737841454106554095914677245822921945534206255145948 -10940
652532026 816707123363201962785640926221155676314091906268218759195733-145568
```

```
661845213 889039326806342223395649307215331186055041732948288322275400 132143
671745867 982910727559092191906712443321301786392551689676279632372882 206952
6814081131090291230880343031234790954515318236634751664396339031560931-197937
69 80333110648748347703228895587637176 7799776552461672718368625546377 521929
70123456789012345678901234567890123456789012345678901234567890123456789012345
71987654321098765432109876543210987654321098765432109876543210976543210987654
72543210987654321543210987654321098765432109876543210987654321098765432109876
run;


data model;
set model;
  r4=r4/10;
  r8=r8/10;
  d=d/10;
  e=e/10;
  r23=r23/10;
  r33=r33/10;
  a=a/10;
  b=b/10;
  c=c/10;
  r24=r24/10;
  r29=r29/10;
run;
```

Programs that Illustrate Inheritance

The programs in this section show the PROC TEMPLATE steps that were used in “About Style Definition Inheritance and Style Element Inheritance” on page 322 to illustrate inheritance in style definitions. These programs also show the SAS code that uses the style definitions.

SAS Program for a Style with One Style Element

This program generates the HTML output in Display 9.3 on page 324.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
```

```
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldatasimple;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatasimple;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;

proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
   end;
run;

ods html3 body='display1-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for a Style with Two Style Elements (Independently Defined)

This program generates the HTML output in Creating a Second Style Element Independently or from an Existing Style Element on page 324. In this version of the code, the style element **celldataemphasis** is created independently of **celldatasimple**.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
```

```
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatasimple;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
   end;
run;

ods html3 body='display2-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
```

```
ods html3 close;
```

SAS Program for a Style with Two Style Elements (Defined with Inheritance)

This program generates the HTML output in Creating a Second Style Element Independently or from an Existing Style Element on page 324. In this version of the code, the style element **celldataemphasis** is created as a child of **celldatasimple**.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatasimple;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
```

```
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
   end;
run;

ods html3 body='display2-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for Changing the Font Face in Only One Style Element

This program generates the HTML output in Display 9.5 on page 327.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatasimple;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
```

```
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
proc template;
   define style concepts.style1;
      style celldatasimple
        'The change to FONT_FACE does not
         affect celldataemphasis.'
      /  font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis /
         font_face=arial
         background=very light vivid blue
         foreground=blue
         font_style=italic;
   end;
run;

ods html3 body='display3-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for Inheriting a Change to a Style Element

This program generates the HTML output in Display 9.6 on page 327. In this version of the code, the style element **celldataemphasis** is created as a child of**celldatasimple**.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
      define x;
         style=celldatasimple;
         dataname=country;
```

```
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatasimple;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
proc template;
   define style concepts.style1;
      style celldatasimple
        'The change to FONT_FACE is passed to
         celldataemphasis, which inherits all the
         attributes of celldatasimple.'
      /  font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
   end;
run;

ods html3 body='display4-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for Creating the Style Element *celldatalarge*

This program generates the HTML output in Adding the Style Element celldatalarge on page 328.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
```

```
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatalarge;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

ods html3 body='display5-body.htm'
         style=concepts.style1;
data _null_;
   set test;
   file print ods=(template='mytable');
```

```
   put _ods_;
run;
ods html3 close;
```

SAS Program for Creating a New Style Element from a Style Element in the Parent Style Definition

This program generates the HTML output in Creating a New Style Element from a Style Element in the Parent Style Definition on page 333.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z w;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatalarge;
         dataname=kilotons;
         header='Kilotons';
      end;
      define w;
         style=celldatasmall;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
```

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
ods html3 body='display6-body.htm'
         style=concepts.style2;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for Inheriting Changes to the Parent Style Definition

This program generates the HTML output in Display 9.9 on page 335.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z w;
      define x;
         style=celldatasimple;
```

```
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatalarge;
         dataname=kilotons;
         header='Kilotons';
      end;
      define w;
         style=celldatasmall;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;

proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=times
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=black
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
ods html3 body='display7-body.htm'
         style=concepts.style2;
data _null_;
   set test;
   file print ods=(template='mytable');
```

```
   put _ods_;
run;
ods html3 close;
```

SAS Program for Using the STYLE Statement to Alter an Existing Style Element in the Child Definition

This program generates the HTML output in Display 9.10 on page 337.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z w;
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatalarge;
         dataname=kilotons;
         header='Kilotons';
      end;
      define w;
         style=celldatasmall;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;
```

```
proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      style celldataemphasis from celldataemphasis /
         background=white;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
run;
ods html3 body='display8-body.htm'
         style=concepts.style2;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

SAS Program for Using the REPLACE Statement to Alter a Style Element and Its Children

This program generates the HTML output in Display 9.11 on page 341.

```
ods path sashelp.tmplmst(read) sasuser.templat(update);
title;
options nodate pageno=1 linesize=72 pagesize=60;
data test;
   input country $ 1-13 grain $ 15-18 kilotons;
   datalines;
Brazil        Rice   10035
China         Rice   190100
India         Rice   120012
Indonesia     Rice   51165
United States Rice   7771
;

proc template;
   define table mytable;
      column x y z w;
```

```
      define x;
         style=celldatasimple;
         dataname=country;
         header='Country';
      end;
      define y;
           style=celldataemphasis;
           dataname=grain;
           header='Grain';
      end;
      define z;
         style=celldatalarge;
         dataname=kilotons;
         header='Kilotons';
      end;
      define w;
         style=celldatasmall;
         dataname=kilotons;
         header='Kilotons';
      end;
   end;
run;

proc template;
   /* to ensure a fresh start with the styles */
   delete concepts.style1;
   delete concepts.style2;
run;

proc template;
   define style concepts.style1;
      style celldatasimple /
         font_face=arial
         background=very light vivid blue
         foreground=white;
      style celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic;
      style celldatalarge from celldataemphasis /
         font_weight=bold
         font_size=5;
   end;
run;

proc template;
   define style concepts.style2;
      parent=concepts.style1;
      replace celldataemphasis from celldatasimple /
         foreground=blue
         font_style=italic
         background=white;
      style celldatasmall from celldatalarge /
         font_size=2;
   end;
```

```
run;
ods html3 body='display9-body.htm'
         style=concepts.style2;
data _null_;
   set test;
   file print ods=(template='mytable');
   put _ods_;
run;
ods html3 close;
```

APPENDIX

2

ODS and the HTML Destination

HTML Links and References Produced by the HTML Destination

What Are Links and References?

An HTML link is a place in a document that allows you to jump to another specific place in the same document or in another document. A browser typically highlights the text that is between the tags that begin and end the link. When you click on the highlighted text, the browser displays the text at the link target. The browser might then display the contents of the target in the active window, or it might open another browser window that displays the contents of the target.

An HTML reference names a file for the browser to display. When a browser reads a reference, it displays the referenced file as if it were part of the file that it is displaying. You can't tell by looking at the browser's display that some of the material is in the file that you are actually viewing and that some is referenced.

When you use ODS, the software automatically creates the links and references that you need. You can, however, customize these links to some extent. If you wish to do so, then you will need to understand how HTML implements links and references.

Implementing HTML Links and References

Note: This simplified discussion of HTML links and references is designed to provide information that will help you understand what ODS does when it builds links and references for you. For a complete discussion of HTML tagging, consult one of the many reference books that are available on the subject. △

Each link in HTML is implemented with a combination of two sets of <A> (anchor) tags. One anchor tag, which is the starting point of the link, has an HREF attribute that identifies the anchor tag to link to. The other anchor tag, which is the target of the link, has a NAME attribute. This NAME attribute is what the HREF attribute in the first anchor tag points to. The value of each NAME attribute in a file must be unique so that each value of HREF points to a single, unambiguous location. The following figure illustrates linking within a file:

Figure A2.1 Linking within a File

The browser highlights the word **link**. When you click on **link**, the browser positions the target **right here** in the active window.

This <A href="#target1"> link</A> points to the anchor tag in this file with NAME="target1".

more text . . .

The target is elsewhere in the file. In fact, it is located <A name="target1">right here</A> in this paragraph.

more text . . .

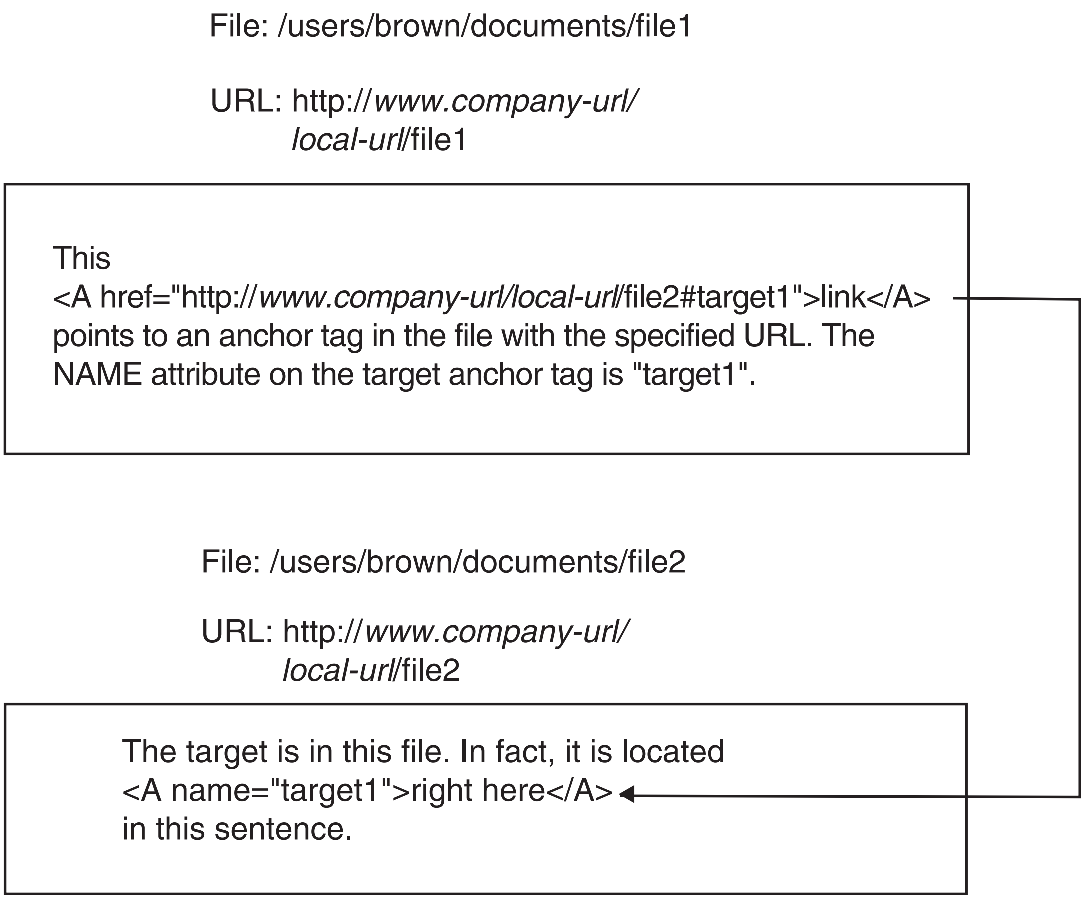
The important features at the starting point of this link are

- The <A> and </A> tags surround the text that the browser will highlight.
- The HREF attribute points to the link's target. The target is an anchor tag whose NAME attribute matches the text that follows the pound sign in the HREF attribute. Because no text precedes the pound sign (#), the browser knows that the target is in the same file as the anchor.

When a link points to a target outside the file that is being displayed, the HREF attribute must include the path to that file. The path can be the path within the file system or the uniform resource locator (URL) of the file. The following figure illustrates a link from one file to another file that is specified with a URL:

Figure A2.2 Linking to Another File

The browser highlights the word **`link`**. When you click on **`link`**, the browser positions the target **`right here`** in the active window or opens another window that displays the target.



The important features at the starting point (the anchor) of the link are

- The <A> and </A> tags surround the text that the brower will highlight.
- The HREF attribute points to the link's target. The text that precedes the pound sign (#) identifies the file that contains the target.

ODS provides features that enable you to customize the text that precedes the pound sign and the text that follows the pound sign. For information on how to do this, see the discussions of *file-specification*, ANCHOR=, BASE=, PATH=, and GPATH= in the "ODS HTML Statement" on page 95 as well as "How ODS Constructs Links and References" on page 640.

HTML implements references in much the same way as it implements links. The main difference is that a link points to a particular location within a file and that a reference points to the file itself. HTML uses the SRC attribute to identify a file to reference. The value of the SRC attribute is constructed the same way that the value of the HREF attribute is constructed except that there is no pound sign and no text following it.

How ODS Constructs Links and References

Several options in the ODS HTML statement affect how ODS constructs the links and references that point from the frame to the table of contents, table of pages, and body file and from the table of contents or table of pages to the body file. Links are made as HREF attributes on <A> (anchor) tags inside the HTML files. Each HREF attribute points to the NAME attribute on another <A> tag. The HREF must identify both the file that contains the target and the name of the anchor within that file. The value of HREF must be a valid target in a valid URL. It uses the following form:

<A href="*URL#anchor-name*">

ODS constructs the value of an HREF attribute based on information that you provide in the ODS HTML statement.

Note: HTML references to files use other tags, but the logic for creating the string that identifies the file is the same as the logic for creating an HREF attribute (see "How ODS Constructs Links and References" on page 640). △

The URL in an HREF attribute is composed of information from three options in the ODS HTML statement: the BASE option; the GPATH= or the PATH= option; and the BODY=, the CONTENTS=, or the PAGE= option.

1 If you specify BASE=, then the value of that option is the first part of the URL for every HREF attribute that ODS writes.
2 If you specify GPATH= or PATH=, then the next part of the URL in an HREF attribute comes from that option.

   If the file that you are linking to is a high-resolution graphic, then ODS uses information from the GPATH= option as the next part of the HREF. For information on these options, see the discussion of GPATH= and the discussion of PATH= in the "ODS HTML Statement" on page 95. The following table shows how ODS uses information from the GPATH= option in the URL in HREF attributes:

Table A2.1 Building an HREF Attribute from the GPATH= Option

If the *file-specification* in GPATH= is …	And the URL= suboption is …	then ODS uses this information in the second part of the URL in the HREF attribute* …
an *external-file* or *libref.catalog*	not specified	the name of the file
an *external-file* or *libref.catalog*	specified, but not NONE	the value of the URL= suboption
an *external-file* or *libref.catalog*	NONE	No information from GPATH=
a *fileref*	specified or not specified	No information from GPATH=

* If you do not specify GPATH=, then ODS uses the value of PATH= to create this part of the HREF.

   If the file that you are linking to is not a high-resolution graphic, then ODS uses information from the PATH= option as the next part of the HREF. The following table shows how ODS uses information from the PATH= option in the URL in HREF attributes:

Table A2.2 Building an HREF Attribute from the PATH= Option

file-specification	URL=suboption	Information used in the second part of the URL in the HREF attribute
external-file or *libref.catalog*	not specified	the name of the file
external-file or *libref.catalog*	specified, but not NONE	the value of the URL= suboption
external-file or *libref.catalog*	NONE	No information from PATH=
fileref	specified or not specified	No information from PATH=

Note: If you use a fileref as the file specification in the BODY=, CONTENTS=, or PAGE= option in the ODS HTML statement, and you do not use the URL= suboption in that option, then ODS does not use information from GPATH= or PATH= when it creates the complete URL for any corresponding HREF attributes. △

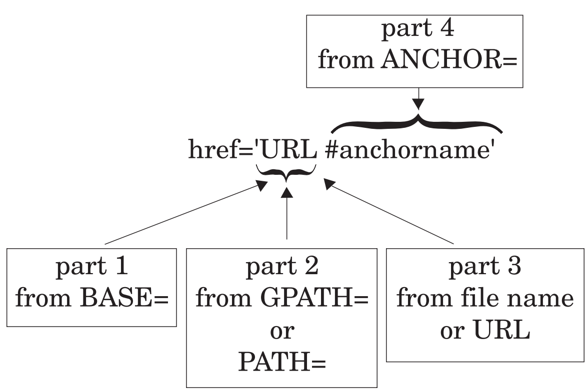
3 The last part of the URL that is used in an HREF attribute is, by default, the name of the file that contains the target. ODS determines the name of the file from the *file-specification* that you use in the BODY=, CONTENTS=, or PAGE= option. (ODS does not create links or references to frame files.) For more information on these options, see the discussion of file-specification on page 113.)

If you specify the URL= suboption in one of these options, then ODS uses the string that you specify instead of the file name.

Note: If you use a fileref as the file specification and do not use the URL= suboption, then ODS does not use information from GPATH= or PATH= when it creates the complete URL for the HREF attribute. △

The *anchor-name* comes from the value of the ANCHOR= option.
The following figure illustrates the creation of the HREF:

Figure A2.3 Creating the Value of an HREF Attribute



Files Produced by the HTML Destination

The HTML destination can produce four kinds of files: body, contents, frame, and page files. You create these files with options in the ODS HTML statement (see "ODS HTML Statement" on page 95 for details).

The Body File

The body file contains HTML output that is generated from the output objects that your SAS job creates. The style definition and the table definition that the job uses determine the appearance and content of the tables and the cells within them.

Typically, when you route an output object that does not contain graphics to the HTML destination, ODS places the results within TABLE tags, generating them as one or more HTML tables.

Graphics output is produced according to the SAS code that generates it. Instead of using <TABLE> tags, the body file contains an <IMG> (image) tag that references the graphic. When you view the body file in a browser, you cannot tell that the graphic is not part of the body file because the <IMG> tag displays it in the browser.

Note: A very few procedures produce output objects that are neither tabular nor graphics. In these cases, the output is not tagged as an HTML table. △

Titles and footnotes in the body file are generated as HTML tables of their own near the top and bottom of each page of HTML output.

Note: For graphics output, titles and footnotes are, by default, part of the graphics file. You can use the NOGTITLE and NOGFOOTNOTE options to place them in the body file instead. See the discussion of GTITLE and GFOOTNOTE in "ODS HTML Statement" on page 95 for more information. △

All <TABLE> tags and all <IMG> tags are potential targets for links or references (see "How ODS Constructs Links and References" on page 640). Therefore, ODS must provide an <A> tag with a NAME attribute close to each <TABLE> and <IMG> tag for links and references to point to. The NAME attribute on the anchor tag becomes the final part of any reference or link to the table. ODS inserts anchor tags in its HTML output as follows:

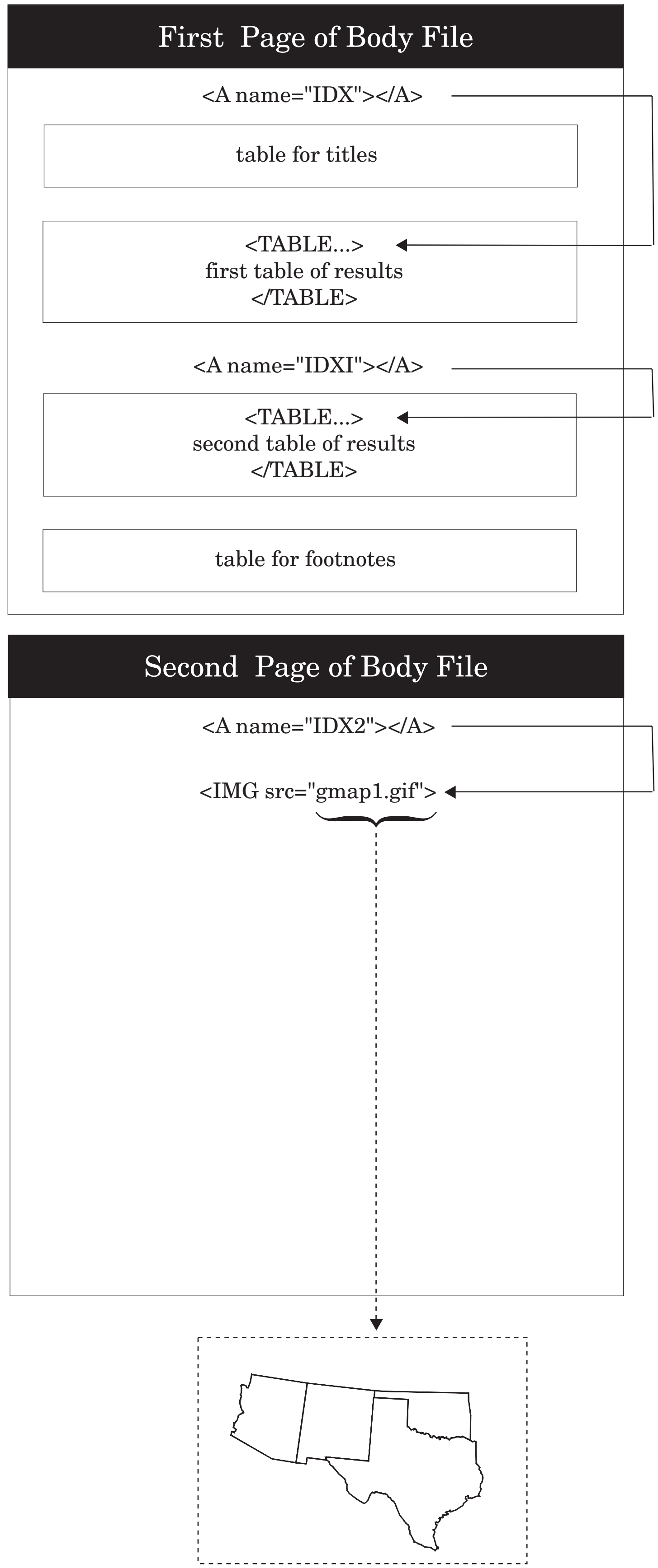
- ODS places an anchor tag near the top of each page, before all tables on the page (including the table that holds the titles) and before all images. This anchor is the target for links to the first table (excluding any titles) or to the first image on the page.

  Note: Each procedure or DATA step starts a new page. In addition, ODS produces a new page of output whenever the SAS program explicitly asks for a new page. For example, if you use the page dimension in PROC TABULATE, then you create a page for each value of the variable that defines the pages. In this context, the word page has nothing to do with the PAGESIZE= setting in your SAS session. △

- ODS places an anchor tag slightly before each <TABLE> tag, provided that the table contains results (not titles or footnotes) and that it is not the first table or image on the page.
- ODS places an anchor tag slightly before each <IMG> tag, provided that it is not the first table or image on a page.

The following figure illustrates the placement of anchor tags from a SAS job that executes two procedures. The first procedure creates two HTML tables of results on a single page. The page also includes an HTML table for the title and one for the footnote. Solid arrows indicate which <A> tag ODS uses as a target for each table. The second procedure creates a GIF file. The titles for this procedure are part of the GIF file (the default behavior). Again, the solid arrow indicates which anchor tag ODS uses as a target when it creates a link to the image. The dashed arrow points to the file that the <IMG> tag references.

Figure A2.4 Placement of <A> (anchor) Tags in HTML Output



For a view of this same file through a browser, see Browser View of HTML Frame FileDisplay A2.1 on page 647.

The Contents File

The contents file contains a link to the body file for each HTML table that ODS creates from procedure or DATA step results. The targets for these links are the values of the NAME attributes on the anchor tags that are in the body file, see "The Body File" on page 642. For example, an anchor tag that links to the second HTML table of results in Placement of <A> (anchor) Tags in HTML Output on page 644 looks like this:

```
<A href="pop-body.htm#IDX1">
```

In this anchor tag

- pop-body.htm identifies the file that contains the target
- #IDX1 provides the name of the target.

You can view the contents file directly in the browser, or, if you make a frame file, you can see the contents file as part of the frame file (see "The Frame File" on page 645).

The Page File

The page file contains a link to the body file for each page of HTML output that ODS creates from procedure or DATA step results. The targets for these links are the values of the NAME attributes on the anchor tags that are in the body file (see "The Body File" on page 642). For example, an anchor tag that links to the second page of results in Placement of <A> (anchor) Tags in HTML Output on page 644 looks like this:

```
<A href="pop-body.htm#IDX2">
```

In this anchor tag

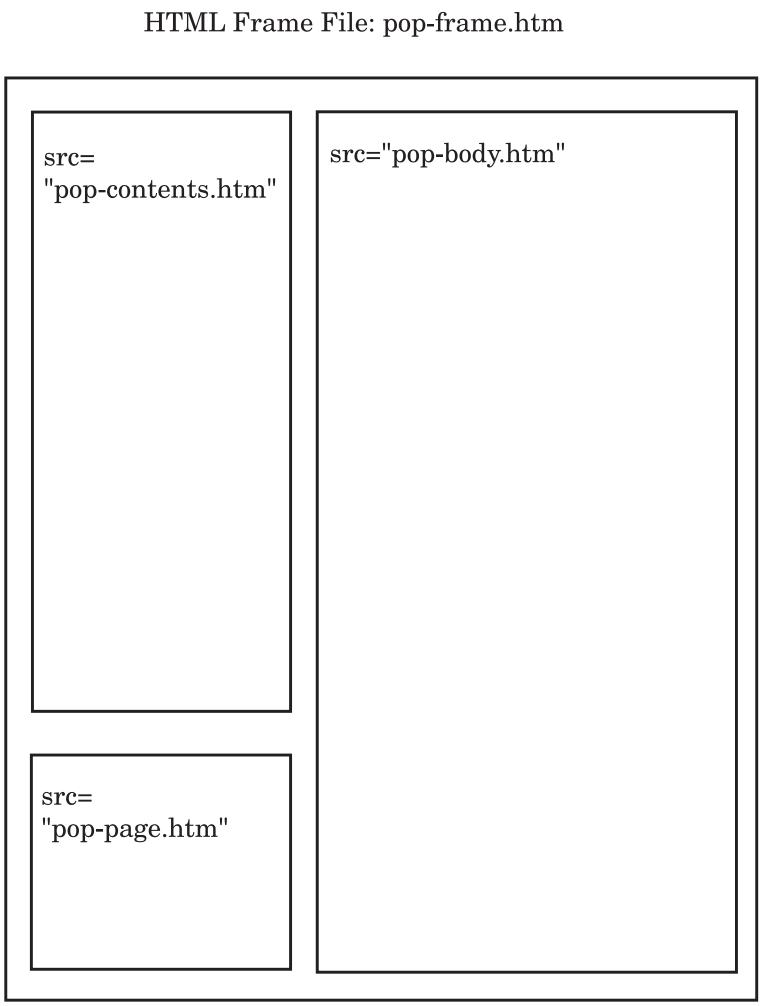
- pop-body.htm identifies the file that contains the target.
- #IDX2 provides the name of the target

You can view the page file directly in the browser, or, if you make a frame file, you can see the page file as part of the frame file (see "The Frame File" on page 645).

The Frame File

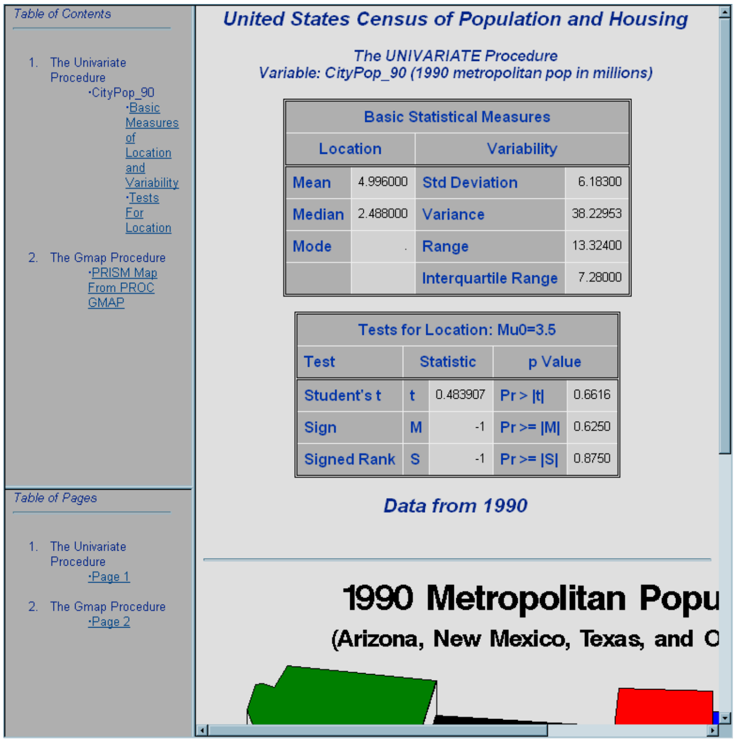
The frame file provides a simultaneous view of the body file and the contents file, the page file, or both. The following figure illustrates how a frame that references both the contents and page files looks (in part) to an ASCII editor. The SRC attribute identifies a file to display in the browser. ODS constructs the value for the SRC attribute the same way that it constructs the value for an HREF attribute in a page or contents file (see Schematic of an HTML Frame File on page 646).

Figure A2.5 Schematic of an HTML Frame File



Browser View of HTML Frame FileDisplay A2.1 on page 647 shows the same frame file viewed from a browser.

Display A2.1 Browser View of HTML Frame File



APPENDIX 3
ODS HTML Statements for Running Examples in Different Operating Environments

Using a z/OS UNIX System Services HFS Directory for HTML Output

```
/* Specify the files to create for the HTML output. */
/* The PATH= option specifies the location for all  */
/* the HTML files. The URL= suboption prevents      */
/* information from PATH= from appearing in the     */
/* links and references that ODS creates. The URLs  */
/* will be the same as the file specifications.     */
ods html body='odsexample-body.htm'
         contents='odsexample-contents.htm'
         page='odsexample-page.htm'
         frame='odsexample-frame.htm'
         path='~'(url=none);
```

Using a z/OS PDSE for EBCDIC HTML Output

```
/* Allocate a PDSE for the HTML Output. */
filename pdsehtml '.example.htm'
                  dsntype=library dsorg=po
                  disp=(new, catlg, delete);

/* Specify the files to create for the HTML output. */
/* These files are PDSE members.                    */
/* The PATH= option specifies the location for all  */
/* the HTML files. The URL= suboption prevents      */
/* information from PATH= from appearing in the     */
/* links and references that ODS creates. The URLs  */
/* will be the same as the file specifications.     */
/* The RS= option creates HTML that you can work    */
/* with in an editor and use on a z/OS web server.  */
```

```
ods html body='odsexb'
         contents='odsexc'
         page='odsexp'
         frame='odsexf'
         path='.example.htm'(url=none)
         rs=none;
```

Using a z/OS PDSE for ASCII HTML Output

```
/* Allocate a PDSE for the HTML Output. */
filename pdsehtml '.example.htm'
                  dsntype=library dsorg=po
                  disp=(new, catlg, delete);

/* Specify the files to create for the HTML output. */
/* These files are PDSE members.                    */
/* The URL= suboption in the HTML-file              */
/* specifications provides a URL that will be valid */
/* after the PDSE members have been moved to an     */
/* ASCII file system. When the files are            */
/* transferred, they must retain their member names */
/* and have the ".htm" extension added in order for */
/* these URLs to be correct.                        */
/* The PATH= option specifies the location for all  */
/* the HTML files. The URL= suboption in the PATH=  */
/* option prevents information from PATH= from      */
/* appearing in the links and references that ODS   */
/* creates because it will not be a valid URL for   */
/* the ASCII file system.                           */
/* The TRANTAB= option creates ASCII HTML that      */
/* you can send to an ASCII-based web server.       */

ods html body='odsexb' (url='odsexb.htm')
         contents='odsexc' (url='odsexc.htm')
         page='odsexp' (url='odsexp.htm')
         frame='odsexf'
         path='.example.htm'(url=none)
         trantab=ascii;
```

Note: Use a binary transfer to move the files to the web server. △

APPENDIX

4

HTML, Printer Family, and Markup Languages Style Elements and Their Inheritances

Style Elements and Their Inheritances

The following table lists all the style elements in the default HTML and markup languages style definition. The table provides a brief description of each style element and indicates the style elements from which it inherits its attributes. An abstract style element is one that is not used to generate any style element but provides a parent for one or more style elements to inherit.

Table A4.1 Style Elements That Are Available in the Default HTML, Printer Family, and Markup Languages Style Definition

Style Element	Description	Inherits from	Valid Destinations
fonts	Establishes a list of fonts		HTML, MARKUP, RTF, PS, PDF, PCL
color_list	Establishes a list of color names and their RGB values		HTML, MARKUP, RTF, PS, PDF, PCL
colors	Associates parts of SAS output with colors from color_list		HTML, MARKUP, RTF, PS, PDF, PCL
html	Provides HTML for specific parts of the output		HTML
text	Provides text for specific parts of the output		HTML, MARKUP, RTF, PS, PDF, PCL
container	Abstract: provides a basis for all containers		HTML, MARKUP, RTF, PS, PDF, PCL
index	Abstract: provides a basis for the contents and page files	container	HTML, MARKUP
indexprocname	Inserts the procedure name in the body file	index container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
contentprocname	Inserts the procedure name in the contents file	indexprocname index container	HTML, MARKUP, PDF
contentproclabel	Inserts the procedure label in the contents file	contentprocname indexprocname index container	HTML, MARKUP
pagesprocname	Inserts the procedure name in the page file	indexprocname index container	HTML, MARKUP
pagesproclabel	Inserts the procedure label in the page file	pagesprocname indexprocname index container	HTML, MARKUP
indexaction	Abstract: determines what happens when the mouse is positioned over a folder or item	index container	HTML, MARKUP
folderaction	Determines what happens when the mouse is positioned over a folder	indexaction index container	HTML, MARKUP
itemaction	Determines what happens when the mouse is positioned over an item	indexaction index container	HTML, MARKUP
procnameaction	Determines what happens when the mouse is positioned over the procedure name in the table of contents	indexaction index container	HTML, MARKUP, PDF
titleaction	Determines what happens when the mouse is positioned over a SAS title	indexaction index container	HTML, MARKUP
indextitle	Abstract: controls the title of the contents and page files	index container	HTML, MARKUP
contenttitle	Inserts the title in the contents file	indextitle index container	HTML, MARKUP, PDF

Style Element	Description	Inherits from	Valid Destinations
pagestitle	Inserts the title in the page file	indextitle index container	HTML, MARKUP
document	Abstract: controls the various output files	container	HTML, MARKUP, RTF, PS, PDF, PCL
body	Generates the body file	document container	HTML, MARKUP, RTF, PS, PDF, PCL
frame	Generates the frame file	document container	HTML, MARKUP
contents	Generates the contents file	document container	HTML, MARKUP, PDF
pages	Generates the page file	document container	HTML, MARKUP
date	Abstract: controls the contents of date fields	container	RTF, PS, PDF, PCL
bodydate	Inserts the date field in the body file	date container	RTF, Printer family
contentsdate	Inserts the date field in the contents file	date container	RTF, PS, PDF, PCL
pagesdate	Inserts the date field in the page file	date container	RTF, PS, PDF, PCL
indexitem	Abstract: controls the items in the contents and page files	container	HTML, MARKUP
contentfolder	Controls the generic folder definition in the contents file	indexitem container	HTML, MARKUP, PDF
bycontentfolder	Controls the byline folder definition in the contents file	contentfolder indexitem container	HTML, MARKUP
contentitem	Inserts the lowest level of the hierarchy in a contents file	indexitem container	HTML, MARKUP, PDF
pagestitem	Inserts the lowest level of the hierarchy in a page file	indexitem container	HTML, MARKUP, PDF
systitleandfootercontainer	Inserts the container for system headers and footers*	container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
titleandnotecontainer	Generates the container for titles and notes that the procedure provides	container	HTML, MARKUP, RTF, PS, PDF, PCL
titlesandfooters	Abstract: controls the text of the system titles and footers	container	HTML, MARKUP, RTF, PS, PDF, PCL
systemtitle	Generates the text of system titles	titlesandfooters container	HTML, MARKUP, RTF, PS, PDF, PCL
systemfooter	Generates the text of system footers	titlesandfooters container	HTML, MARKUP, RTF, PS, PDF, PCL
pageno	Generates the text of the page number	titlesandfooters container	RTF, Printer family
byline	Generates the text of the byline.	titlesandfooters container	HTML, MARKUP, RTF, PS, PDF, PCL
proctitle	Inserts the text of titles that the procedure provides	titlesandfooters container	HTML, MARKUP, RTF, PS, PDF, PCL
proctitlefixed	Inserts the text of titles that the procedure provides with a fixed font	proctitle titleandfooters container	HTML, MARKUP, RTF, PS, PCL, PDF
bylinecontainer	Generates the container for the byline	container	HTML, MARKUP, RTF, PS, PDF, PCL
output	Abstract: controls basic presentation of the output	container	HTML, MARKUP, RTF, PS, PDF, PCL
table	Generates output that is a table	output container	HTML, MARKUP, RTF, PS, PDF, PCL
batch	Generates output (for example, lineprinter plots and calendars) that requires a fixed font	output container	HTML, MARKUP, RTF, PS, PDF, PCL
note	Abstract: controls the container for the text that precedes notes, warning, and errors from SAS	container	HTML, MARKUP, RTF, PS, PDF, PCL
notebanner	Generates the text that precedes the contents of a note	note container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
notecontent	Generates the contents of a note	note container	HTML, MARKUP, RTF, PS, PDF, PCL
notecontentfixed	Generates the contents of a note with a fixed font	notecontent note container	HTML, MARKUP, RTF, PS, PDF, PCL
warnbanner	Generates the text that precedes the contents of a warning	note container	HTML, MARKUP, RTF, PS, PDF, PCL
warncontent	Generates the contents of a warning	note container	HTML, MARKUP, RTF, PS, PDF, PCL
warncontentfixed	Generates the contents of a warning with a fixed font	warncontent note container	HTML, MARKUP, RTF, PS, PDF, PCL
errorbanner	Generates the text that precedes the contents of an error	note container	HTML, MARKUP, RTF, PS, PDF, PCL
errorcontent	Generates the contents of an error	note container	HTML, MARKUP, RTF, PS, PDF, PCL
errorcontentfixed	Generates the contents of an error with a fixed font	errorcontent note container	HTML, MARKUP, RTF, PS, PDF, PCL
fatalbanner	Generates the text that precedes the contents of a fatal error	note container	HTML, MARKUP, RTF, PS, PDF, PCL
fatalcontent	Generates the contents of a fatal error	note container	HTML, MARKUP, RTF, PS, PDF, PCL
fatalcontentfixed	Generates the contents of a fatal error with a fixed font	fatalcontent note container	HTML, MARKUP, RTF, PS, PDF, PCL
cell	Abstract: controls table cells	container	HTML, MARKUP, RTF, PS, PDF, PCL
data	Generates the data in table cells	cell container	HTML, MARKUP, RTF, PS, PDF, PCL
datafixed	Generates the data in table cells with a fixed font	data cell container	HTML, MARKUP, RTF, PS, PDF, PCL
dataempty	Generates empty table cells	data cell container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
dataemphasis	Generates data in table cells with emphasis	data cell container	HTML, MARKUP, RTF, PS, PDF, PCL
dataemphasisfixed	Generates data in table cells with emphasis and a fixed font	dataemphasis data cell container	HTML, MARKUP, RTF, PS, PDF, PCL
datastrong	Generates data in cells with more emphasis than **`dataemphasis`**	data cell container	HTML, MARKUP, RTF, PS, PDF, PCL
datastrongfixed	Generates data in table cells with more emphasis than **`dataemphasis`** and with a fixed font	datastrong data cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headersandfooters	Abstract: controls table headers and footers	cell container	HTML, MARKUP, RTF, PS, PDF, PCL
header	Generates the headers of a table	headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headerfixed	Generates the headers of a table with a fixed font	header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headerempty	Generates empty table headers	header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headeremphasis	Generates the headers of a table with emphasis	header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headeremphasisfixed	Generates the headers of a table with emphasis and with a fixed font	headeremphasis header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
headerstrong	Generates the headers of a table with more emphasis than **headeremphasis**	header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
headerstrongfixed	Generates the headers of a table with more emphasis than **headeremphasis** and with a fixed font	headerstrong header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheader	Generates row headers	header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheaderfixed	Generates row headers with a fixed font	rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheaderempty	Generates empty row headers	rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheaderemphasis	Generates row headers with emphasis	rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheaderemphasisfixed	Generates row headers with emphasis and with a fixed font	rowheaderemphasis rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowheaderstrong	Generates row headers with more emphasis than **rowheaderemphasis**	rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
rowheaderstrongfixed	Generates row headers with more emphasis than **`rowheaderemphasis`** and with a fixed font	rwoheaderstrong rowheader header headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footer	Generates the footers of a table	headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footerfixed	Generates the footers of a table with a fixed font	footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footerempty	Generates empty table footers	footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footeremphasis	Generates the footers of a table with emphasis	footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footeremphasisfixed	Generates the footers of a table with emphasis and with a fixed font	footeremphasis footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footerstrong	Generates the footers of a table with more emphasis than **`footeremphasis`**	footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
footerstrongfixed	Generates the footers of a table with more emphasis than **`footeremphasis`** and with a fixed font	footerstrong footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooter	Generates row footers	footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
rowfooterfixed	Generates row footers with a fixed font	rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooterempty	Generates empty row footers	rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooteremphasis	Generates row footers with emphasis	rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooteremphasisfixed	Generates row footers with emphasis and with a fixed font	rowfooteremphasis rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooterstrong	Generates row footers with more emphasis than **rowfooteremphasis**	rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
rowfooterstrongfixed	Generates row footers with more emphasis than **rowfooteremphasis** and with a fixed font	rowfooterstrong rowfooter footer headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
caption	Abstract: controls the caption field in PROC TABULATE	headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
beforecaption	Generates captions that precede the table	caption headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
aftercaption	Generates captions that follow the table	caption headersandfooters cell container	HTML, MARKUP, RTF, PS, PDF, PCL
GraphWalls	Controls the wall color or image		HTML, MARKUP, RTF, PS, PDF, PCL
GraphCharts	Contains attributes that affect all charts in the graphics area		HTML, MARKUP, RTF, PS, PDF, PCL
GraphBackground	Controls the background color or image of the graph		HTML, MARKUP, RTF, PS, PDF, PCL
GraphData1...GraphData#	Contains attributes that affect graphics primitives that are used to represent data		HTML, MARKUP, RTF, PS, PDF, PCL
GraphLegendBackground	Controls the legend background color or image		HTML, MARKUP, RTF, PS, PDF, PCL
GraphFloor	Controls the floor color or image		HTML, MARKUP, DOCUMENT, RTF, PS, PDF, PCL
DropShadowStyle	Changes the drop shadow attributes for the text in the graphs		HTML, MARKUP, RTF, PS, PDF, PCL
GraphLabelText	Specifies text attributes for axis labels and the title of the legend		HTML, MARKUP, RTF, PS, PDF, PCL
GraphValueText	Controls the axis text attributes on tick marks and entry text on the legend		HTML, MARKUP, RTF, PS, PDF, PCL
GraphGridLines	Determines grid line attributes for a graph		HTML, MARKUP, RTF, PS, PDF, PCL
GraphAxisLines	Specifies axis line and tick mark attributes for the graph		HTML, MARKUP, RTF, PS, PDF, PCL
GraphBorderLines	Determines frame attributes around the axis area and legend		HTML, MARKUP, RTF, PS, PDF, PCL

Style Element	Description	Inherits from	Valid Destinations
GraphOutlines	Controls line attributes around data perimeters including pie charts, bar charts, map regions, etc		HTML, MARKUP, RTF, PS, PDF, PCL
Graph	Controls the width and height of the entire graphics area		HTML, MARKUP, RTF, PS, PDF, PCL
TwoColorRamp	Determines the colors to use for maps with continuous response variable values		HTML, MARKUP, RTF, PS, PDF, PCL

* Provided by TITLE and FOOTNOTE statements or by GTITLE and GFOOTNOTE statements in combination with the NOGTITLE and NOGFOOTNOTE options in the ODS HTML and ODS MARKUP statements.

APPENDIX 5

Recommended Reading

Recommended Reading

Here is the recommended reading list for this title:

- *Base SAS Procedures Guide*
- *SAS Language Reference: Concepts*
- *SAS Language Reference: Dictionary*
- *Step-by-Step Programming with Base SAS Software*

The recommended reading list from *Books By Users* includes:

- *The Little SAS Book: A Primer, Revised Second Edition*
- *Output Delivery System: The Basics*

For a complete list of SAS publications, see the current *SAS Publishing Catalog*. To order the most current publications or to receive a free copy of the catalog, contact a SAS representative at

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Your Turn

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