SAS TUTORIAL: PROC PRINT REPORTING
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Introduction

The purpose of PROC PRINT is to produce a printed report using all or part of a SAS dataset. Options and information statements help control what variables are printed, how values are displayed, the sequence of observations, paging, column and line headings and many others. Information statements also provide the user the option to accumulate totals of all or some numeric variables.

This tutorial presents examples using a sample of these options.

The simplest use of PROC PRINT is to write:

PROC PRINT;

When invoked this way, PRINT will display all observations and variables for the last dataset created in a columnar form as follows:

```
OBS  variable names for headings
    1
    2
    3
    4

Columns of data
  Values
```

PRINT will format each page according to the values of the variables to be placed on the page. The pages printed in this way will not necessarily look the same. In fact, PRINT may display the variable names in a vertical form. OBS is not a variable in the SAS dataset but is a column inserted in the output listing by PROC PRINT.

Adding More Detail to a PROC PRINT Report

Many reports have the following general form:

```
(1) Titles
(2) Column Headings
(3) Row Labels or Line Headings
(4) Body of Data
(5) Column Totals
(6) Row Totals
```

The numbers in the following statements relate to the skeletal outline above. The statement or option can be used to effect some change in the correspondingly numbered section above.

PROC PRINT DATA = SAS Dataset (4)
LABEL (2) SPLIT = splitchar (2);
VAR variables (4);
ID variables (3);
SUM variables (6);
TITLE 'text' (1);
FORMAT variable format (4) / (3);
LABEL variable = labeling text (2);

Section (1)

TITLE statements, numbered TITLE1-TITLE10, can be specified with the PROC PRINT locally or outside PROC PRINT. If specified outside the TITLE text remains in effect until a similarly numbered or lower numbered TITLE statement is included in the job.

Section (2)

Column headings are variable names or labels. SPLIT = implies LABEL. If LABEL is used without SPLIT = then the labeling text in a LABEL statement is used as a heading. SPLIT = allows the user to split the label of the variable up to 3 times to form a heading.

Section (3)

By using the ID statement, the OBS column is suppressed and the values of the variables listed in the ID statement are used to label observations.

Section (4)

The DATA = specification tells the SAS dataset where all the data is located. VAR gives the order and the names of the variables to be printed. A FORMAT statement tells PRINT in what form values are to be displayed in the body of the report.

Section (5)

The totals of variables can be requested using the SUM statement.

Section (6)

Although this section may be of interest to report writers, PROC PRINT does not automatically compute row totals. The user must create row totals in a DATA step prior to invoking PROC PRINT.

Example One

Suppose a dataset named VEHICLES contains the following quarterly sales data and variable names:
### Example One

Print a report which shows all the fourth quarter data and computes total national sales and suppresses the ABS column. (See Figure 1).

```sas
PROC PRINT DATA=VEHICLES;
  VAR QTR4;
  SUM QTR4;
  TITLE1 SAS TUTORIAL SUGI 1983:
  TITLE3 ABC AUTOMOBILE COMPANY:
  TITLE4 FOURTH QUARTER SALES SUMMARY;
```

### Example Two

Modify Example One so that the PRODUCT variable is formatted (TR for trucks, C for cars and RV for recreational vehicles) and the column headings for all four quarters are more meaningful (See Figure 2).

```sas
PROC FORMAT;
  VALUE $PROD TR' TRUCKS C • PASSENGER CARS RV • RECREATIONAL VEHICLES;
PROC TPRINT DATA=VEHICLES SPLIT='*';
  VAR QTR1 - QTR4 YEAR82;
  FORMAT PRODUCT $PROD.;
  LABEL QTR1 • 1982 * QUARTER ONE
    QTR2 • 1982 * QUARTER TWO
    QTR3 • 1982 * QUARTER THREE
    QTR4 • 1982 * QUARTER FOUR
    YEAR82 • ANNUAL SALES • 1982;
  TITLE1 SAS TUTORIAL SUGI 1983;
  TITLE3 ABC AUTOMOBILE COMPANY;
  TITLES SALES SUMMARY 1982;
```

### Example Three

Include an annual total sales column. Also print a different section of the report for each PRODUCT. Assume the data are sorted by PRODUCT. Finally, improve the body of the report by displaying the sales in a standard dollar format (See Figure 3).

```sas
*----------- CREATE ANNUAL TOTAL -----. DATA VEHICLES;
  SUM (OF QTR1 - QTR4);
PROC TPRINT DATA=VEHICLES SPLIT='*';
  VAR QTR1 - QTR4 YEAR82;
  ID REGION;
  BY PRODUCT;
  FORMAT PRODUCT $PROD.;
  QTR1 - QTR4 YEAR82 DOLLAR12.;
  LABEL QTR1 • 1982 * QUARTER ONE
    QTR2 • 1982 * QUARTER TWO
    QTR3 • 1982 * QUARTER THREE
    QTR4 • 1982 * QUARTER FOUR
    YEAR82 • ANNUAL SALES • 1982;
  TITLE1 SAS TUTORIAL SUGI 1983;
  TITLE3 ABC AUTOMOBILE COMPANY;
  TITLES SALES SUMMARY 1982;
  SUM QTR1 - QTR4 YEAR82;
```

### Miscellaneous Notes

By inserting a PAGEBY PRODUCT; statement in Example Three a new page is written for each product.

If the word DOUBLE were placed as an option on the PROC PRINT statement the report would be double spaced.

Using OPTIONS NOCENTER; causes SAS to left justify all procedure output including print. This is useful if you wish to view output at a terminal before getting hard copy.

The LINESIZE, PAGESIZE options can be used to change the rectangular space available to the procedure PRINT.
FIGURE 1 -
OUTPUT FOR EXAMPLE ONE

SAS TUTORIAL SUGI 1983
ABC AUTOMOBILE COMPANY
FOURTH QUARTER SALES SUMMARY
PRODUCT REGION Q4'84

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>REGION</th>
<th>1984 Q4</th>
<th>1984 Q3</th>
<th>1984 Q2</th>
<th>1984 Q1</th>
<th>1984 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCKS</td>
<td>NORTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>SOUTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>EAST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>WEST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td>PASSENGER CARS</td>
<td>NORTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>SOUTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>EAST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>WEST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td>RECREATIONAL VEHICLES</td>
<td>NORTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>SOUTH</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>EAST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
<tr>
<td></td>
<td>WEST</td>
<td>12472</td>
<td>2017</td>
<td>2435</td>
<td>1015</td>
<td>28765</td>
</tr>
</tbody>
</table>

FIGURE 2 -
OUTPUT FOR EXAMPLE TWO

SAS TUTORIAL SUGI 1983
ABC AUTOMOBILE COMPANY
QUARTERLY SALES SUMMARY FOR 1982
PRODUCT REGION 1982 Q1 1982 Q2 1982 Q3 1982 Q4 1982 TOTAL

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>NORTH</th>
<th>1982 Q1</th>
<th>1982 Q2</th>
<th>1982 Q3</th>
<th>1982 Q4</th>
<th>1982 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCKS</td>
<td></td>
<td>57000</td>
<td>68900</td>
<td>44200</td>
<td>53000</td>
<td>222300</td>
</tr>
<tr>
<td>PASSENGER CARS</td>
<td></td>
<td>57000</td>
<td>68900</td>
<td>44200</td>
<td>53000</td>
<td>222300</td>
</tr>
<tr>
<td>RECREATIONAL VEHICLES</td>
<td></td>
<td>57000</td>
<td>68900</td>
<td>44200</td>
<td>53000</td>
<td>222300</td>
</tr>
</tbody>
</table>

FIGURE 3 -
OUTPUT FOR EXAMPLE THREE

SAS TUTORIAL SUGI 1983
ABC AUTOMOBILE COMPANY
ANNUAL SALES SUMMARY FOR 1982
PRODUCT PASSENGER CARS
REGION 1982 Q1 1982 Q2 1982 Q3 1982 Q4 1982 TOTAL

<table>
<thead>
<tr>
<th>REGION</th>
<th>1982 Q1</th>
<th>1982 Q2</th>
<th>1982 Q3</th>
<th>1982 Q4</th>
<th>1982 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
<tr>
<td>EAST</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
<tr>
<td>WEST</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
</tbody>
</table>

PRODUCT RECREATIONAL VEHICLES
REGION 1982 Q1 1982 Q2 1982 Q3 1982 Q4 1982 TOTAL

<table>
<thead>
<tr>
<th>REGION</th>
<th>1982 Q1</th>
<th>1982 Q2</th>
<th>1982 Q3</th>
<th>1982 Q4</th>
<th>1982 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
<tr>
<td>EAST</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
<tr>
<td>WEST</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
</tbody>
</table>

PRODUCT TRUCKS
REGION 1982 Q1 1982 Q2 1982 Q3 1982 Q4 1982 TOTAL

<table>
<thead>
<tr>
<th>REGION</th>
<th>1982 Q1</th>
<th>1982 Q2</th>
<th>1982 Q3</th>
<th>1982 Q4</th>
<th>1982 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
<td>123456</td>
</tr>
<tr>
<td>EAST</td>
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<td>123456</td>
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<tr>
<td>WEST</td>
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</tbody>
</table>

945