ABSTRACT.

The need for a user tool to create and maintain SAS data sets has led to the development of FSCONTENTS, a full screen editor for PROC CONTENTS. This tool has been implemented on VM and TSO using PROC FSEDIT and SAS macros. FSEDIT is the SAS Full Screen Product to edit the contents of a SAS data set. However FSEDIT cannot change the variable attributes associated with the data set or create a new SAS data set.

FSCONTENTS allows all SAS data set attributes listed by PROC CONTENTS to be edited in full screen mode. New SAS data sets may be defined. Data set changes allowed include:

- Create a new SAS data set
- Delete an existing variable
- Add a new variable
- Rename a variable
- Convert a character variable to numeric and vice versa
- Change the length of a variable
- Change, add or delete formats, informats, and labels

FSCONTENTS has been designed for those who may not be familiar with the techniques necessary to create or change SAS data sets. Maintaining SAS data sets becomes an easy task for the experienced SAS programmer and the beginning SAS user alike.

The following sequence of screens illustrates the use of FSCONTENTS.

CREATING AND MAINTAINING SAS DATA SETS USING FSEDIT AND MACROS.

FSCONTENTS described in this paper provides an edit function for SAS variable attributes. Use FSCONTENTS to create or change a SAS data set. This SAS job uses FSEDIT and SAS macros. You may review, alter, add or delete the following characteristics.

- Variable Names
- Length
- Type
- Informat
- Format
- Label

In fact many SAS programmers use two passes on the data to do multiple alterations. Many users rename a variable or change its type in two steps when one step is sufficient.

Maintaining a SAS data set becomes a much easier job for the experienced SAS programmer and the beginning SAS user alike when using FSCONTENTS. It is the only tool needed for those people who are not familiar with the techniques necessary to create or change SAS data sets.

The following screens illustrate the usage of FSCONTENTS.
SCREEN 1

SAS Data Set Definition Panel

Enter the SAS Data Set Name:

Data Set Name

Disk

Press PF3 to continue.
Set any field to blank to exit.

Screen 1 (CMS)

Screen one allows the user to select the name of the SAS data set indicating the disk the data resides on.

- Calling EXEC FS CONTENT from VM FILELIST, or defining the fileid, bypasses screen 1.
- Entering a new name creates a new SAS data set.
- If any field is blank, the routine stops.
- Enter data in all fields.
- PF keys 2 and 3 are continue keys (return).

SCREEN 2

Command ===> SAS Data Set Variable Editing Panel

VARIABLE: ________

TYPE: ________ (CHAR or NUM
(Date and Times should be NUM.
(If a type conversion is requested the FORMAT specification will be used.

LENGTH: ________ (Should be 8 if numeric.

FORMAT: ________

INFORMAT: ________

LABEL: ________

Press PF3 AFTER all additions and changes have been made to continue.

PF6=Duplicate PF7=Back PF8=Forward PF9=Add new variable

Screen 2

Note: Although the above figure shows the character underscore defining data entry fields for clarity, blanks are used on the screen. The underscore interferes with variable names containing an underscore.

- All normal FSEDIT commands apply while in this screen.
- The variables are in alphabetic order.
- Use PF 7 and 8 to scroll backward and forward through the variables.
- To delete a variable, enter DELETE on the command line or blank out the variable name.
- To add a new variable use PF9.
- To add a new variable with similar attributes, duplicate the variable using PF6 and then update the new variable.
- Change variable names by over-typing the name.
- Change Type, Length, Format, Informat and Label by over-typing.
When changing the type from numeric to character or vice versa, you may specify a format in the FORMAT field. FSCONTENTS uses this format for the conversion. An unformatted conversion occurs when the format field is blank.

**Note:** When requesting a character to numeric conversion specifying a numeric format (such as mmddyy6.), the conversion uses the format and retains the FORMAT as an attribute. Requesting a numeric variable to character variable conversion using a numeric format (such as Z7.), conversion of the data uses the format. However, the new character variable will not have the numeric format since this would be invalid.

- The Type must be either character or numeric.
- The length of character variables may be between 1 and 200. The length of numeric variables may be between 2 and 8. Normally, numeric variables should be length 8 unless storage space is critical. Refer to the SAS Users Guide under the Length statement, page 92, for further discussion of the length of integer variables and their storage capacity.
- You may specify any valid FORMAT or INFORMAT, with or without the usual trailing period.
- The Label field can accept any character string of up to 40 characters. You must not use a label containing a slash asterisk (/). The label field contains mixed case, so you must enter capitalization as desired. Use the text string zero zero (00) when you desire a null label.
- PF keys 2 and 3 are continue keys (return).
- The pad character is a blank.
- Required fields are VARIABLE, TYPE and LENGTH.

### SCREEN 3

<table>
<thead>
<tr>
<th>SAS Data Set Name Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter the SAS Data Set name for the altered data set:</td>
</tr>
<tr>
<td><strong>Data Set Name</strong></td>
</tr>
<tr>
<td><strong>Disk</strong></td>
</tr>
<tr>
<td><strong>(fname)</strong></td>
</tr>
</tbody>
</table>
| Please refer to 1) FSCONTENTS LISTING for a "before and after" PROC CONTENTS.  
2) FSCONTENTS SASLOG for the conversion code generated. |
| Press PF3 to save the data set.  
Set any field to blank to exit. |
| Screen 3 (CMS) |

<table>
<thead>
<tr>
<th>SAS Data Set Name Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter the SAS Data Set name for the altered data set:</td>
</tr>
<tr>
<td><strong>Data Set Name</strong></td>
</tr>
</tbody>
</table>
| Please refer to 1) SAS.LIST for a "before and after" PROC CONTENTS.  
2) SAS.LOG for the conversion code generated. |
| Press PF3 to save the data set.  
Set any field to blank to exit. |
| Screen 3 (TSO) |

- PF keys 2 and 3 are continue keys (return).
- Enter data in the name and disk fields.
- Enter the data set name (defaults to the original name entered on Screen 1) under which you want to save this altered SAS data set.
- If you have decided not to save this data set, merely blank any field and then press PF2 or PF3.

FSCONTENTS LISTING in CMS or SAS.LIST in TSO contains the contents of the data set before and after the requested changes. FSCONTENTS SASLOG in CMS or SAS.LOG in TSO contains the code generated to make the necessary transformation for reference purposes.
ERROR SCREEN

Conversion of the SAS data set failed. 
The data set has not been altered. 
Please refer to FSCONTEN SASLOG for details. 
Issue the command FSCONTEN RESTART to continue 
after you have determined the error. 
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Press PF3 to continue

This is the error screen. If the DATA step fails 
for any reason, including an invalid INFORMAT or 
VARIABLE name, transformation of the SAS data set 
stops. Under TSO, a similar screen informs the 
user where to refer for more information on the 
error. Design screen 4 during FSCONTENTS instal­ 
lration.

• The original data set remains unchanged at 
this time.
• FSCONTEN RESTART will restart the edit ses­ 
session.
• FSCONTEN SASLOG contains the description of 
the transformation error.
• OCONTENT.FSCONTEN contains the original de­ 
scription of the data set variable attributes.
• NCONTENT.FSCONTEN contains the edited de­ 
scription of the data set variable attributes.

EDITING AN ALTERED DATA SET USING FSEDIT.

When you define a permanent screen, FSEDIT will 
react to data set changes as follows.

- Executing FSEDIT against the data set using a 
predefined screen, 
FSEDIT will give a warning message stating 
that the variable attributes are different.
  1. FSEDIT prompts for a ENTER to update the 
screen data set or press any PF key to keep 
the data unchanged.
  2. Press ENTER and continue.
- The user may need to enter option 6 of the 
FSEDIT menu to redefine the field length re­ 
served for fields.
  1. Execute the FREE command to bring forth 
any renamed variables including new vari­ 
ables added to the data set.
- Refer to the SAS/TSO User's Guide for more 
information on using FSEDIT.

FSCONTENTS AVAILABILITY

The following are available as a package without 
charge upon written request to the author. It must 
be noted that although this routine has extensive 
usage within IBM, IBM does not support, maintain, 
or warranty this routine. Support is available 
from the author on a time available basis.
1. Program components:
   a. FSCONTEN SAS
      The main program which may be %included 
or called from an EXEC or CLIST.
   b. FSCONTEN EXEC (VM)
      An example EXEC that calls FSCONTEN SAS
   c. FSCONTEN CLIST (TSO)
      An example CLIST that calls FSCONTEN SAS
2. Installation notes
3. Program Logic

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