Abstract

This is a function which generates SAS data entry screens automatically. These screens may be used singly or in multiples to establish screen based data processing applications.

The only requirement for its use is knowledge of the attributes of the data fields on each observation. It does not require prior existence of a data dataset or screen dataset to generate a completely new screen. Input to this function is facilitated through a series of screens.

The function generates the SAS code required. This code is executed in on-line mode. The output is a SAS screen dataset, which will be saved by SAS if this has been specified in the function.

An interaction of IBM's Dialog Manager (ISPF) and SAS/FSP is used to accomplish this task. No knowledge of either is needed. However, in its current environment at the Federal Reserve Board this function is looked upon as a programmer/analyst productivity tool and has never been used by others.

This method is a quick and effective way to establish a data entry system with SAS, based on CRT's linked to a mainframe. The time required to put such a system into production should be under an hour. If editing requirements are added, which can be handled by Proc FSEDIT edit masks, two or possibly three hours should be sufficient. Thus, this method can be used for projects with extremely short lead times as well as long-range planned production systems. On production systems it can be used to generate parameter entry screens quickly and easily.

Methodology

The generation of a SAS screen dataset is rather simple if there is an existing SAS dataset. The SAS/FSP User's Guide is quite clear in this situation and our user community grasped this concept without any problems. The manual is not as clear for generation of such datasets without a pre-existing SAS dataset.

The methodology has always given some trouble to the SAS developer who uses screens only occasionally. It usually was a matter of going back to the manual and re-discovering the method. Experienced users had no trouble but were forced to think through the same steps over and over again. After answering questions from the former many times, it was decided to write a routine to create screens automatically.

The automatic creation of screens would cut down on the number of questions and at the same time reduce the amount of effort and time required to generate the screens.

A minimum of knowledge about this function is required in order to use it. What is required is a clear idea of the screen which is to be created. Should it be permanent or temporary (i.e. for test only)? If permanent, where should it be stored? What fields should be on the observation?

Once these matters have been thought out, the function can be executed. It has a series of five basic screen types to collect the information needed.

The first screen type establishes whether or not the screen dataset and its accompanying data dataset will be permanently stored in a library.
This function will create a SAS screen dataset and data dataset.
These datasets will ordinarily be permanent but you may specify
them as temporary (i.e. work) datasets. You will be asked to
designate the SAS library and member names as appropriate.

Create permanent or
temporary SAS datasets (P or T)? => PERMANENT

Create one data field per screen line
on the default screen (Y or N)? => NO

Continue on (NO to cancel)? => YES

If the PERMANENT choice has been
made this second screen will appear. A
response is required to designate a library.
The function will allocate either library as
appropriate. If the library is specified as
new but one already exists, a warning message
will be issued and the function will cycle
back to the beginning. If an allocation
fails for any other reason, a failure message
will be issued and the function will stop.

Name of existing SAS Data Library (ODN)?
====
OR

Name for new SAS Data Library to be created (ODN)?
====

Continue on (NO to cancel)? => YES
WARNING

The file, which you have specified as \texttt{NEW} already exists.

The program will automatically go back to the beginning unless you indicate otherwise at the bottom of this screen.

\begin{verbatim}
Continue on (\texttt{NO} to cancel)? => YES
\end{verbatim}

FAILURE

The file, which you have specified cannot be allocated.

The program will automatically go to the end.
After screen two, screen three will appear. Two responses are required; what names to use for the SAS data dataset and the screen dataset.

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Create a SAS Data Input/Edit Screen

Member Name where SAS will store the data dataset?

Member Name where SAS will store the screen dataset?

Continue on (NO to cancel)? Yes

Screen four will appear next. In effect, it is a bulletin board giving hints about screen design and how to avoid the most common problems.

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Create a SAS Data Input/Edit Screen

**Hints:**

1. Default length values: Numeric = 8 bytes binary
   Alphabetic = 60 characters
   which are the maximums.
2. The widths of numeric fields on the SAS screen are controlled through the use of INFORMAT and FORMAT attribute fields.
3. Any date field containing a date should have an INFORMAT and FORMAT.
4. Fields will appear on the SAS screen in the order in which you list them in this function.
5. The default screen procedure places fields from left to right across the line and from top to bottom of the screen.

Continue on (NO to cancel)? Yes
The last screen requires the most input. This is the information needed to describe each field on each observation. The minimum required is the name of each field and whether it is alphabetic or numeric. The Length, Informat, Format and Label attributes are optional.

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Create a SAS Data Input/Edit Screen

Enter the following information for each field (1-10):

<table>
<thead>
<tr>
<th>Alpha.</th>
<th>Name or Num. Len.</th>
<th>Informat</th>
<th>Format</th>
<th>Label (up to 25 char.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(req)</td>
<td>(req) (opt)</td>
<td>(opt)</td>
<td>(opt)</td>
<td>(opt)</td>
</tr>
</tbody>
</table>

Cancel this job without any processing (Y or N) => NO

More fields (Y or N) => YES

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A large number of edits have been coded for each screen. Dialog Manager has nine different types of verification procedures which include such things as proper DSN and dataset member name. Full use has been made of these edits to identify any error conditions prior to processing.

After keying in the attributes for all fields desired, the next screen to appear will be the SAS data entry screen. At this point Proc PSEEDIT has control. All options may be used (e.g. screen modification) prior to screen dataset storage.

All five screen types are being generated and displayed by Dialog Manager (ISPF). The responses filled in on the screens are substituted in Skeleton Code and processed by File Tailoring in Dialog Manager. The SAS Command Processor is then executed. The CP accesses the SAS code generated by the File Tailoring of Dialog Manager.

It has been found beneficial to prototype some applications in Dialog Manager prior to development in Macro Language. This function could be translated into SAS Macro Language. Once written in Macro Language this function would be available in the Federal Reserve Board Macro Library.

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Any requests, comments or suggestions should be directed to:

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