

Designing User Interface by Using the Macro Facility

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ABSTRACT

User interface can be designed by using SAS/AF®, it can also be designed by using the macro facility. This paper is to present a way to design user interface by using the macro facility.

INTRODUCTION

In the real world, many people have no SAS® skills, however they are involved in data entry, editing, even data summary through SAS System. Menu driven system would be a good way for them to use SAS System. To design an user interface or menu driven system, SAS/AF is an ideal tool, when SAS/AF is not available, macro facility is an alternative within SAS System. The syntax is very simple:

```
%window window < window options>
    field-definition 1 < ... field-definition n >;
%window window < window options>
    group-definition 1 < ... group-definition n >;
```

where

window is window name , it is required.
window-options specify characteristics of the window as whole. The following options are available:

COLOR=color name, specifies the color of the window background
 COLUMNS=columns, specifies the number of columns in the window.
 ICOLUMN=column, specifies the initial column at which the window is displayed.
 IROW=row, specifies the initial row at which the window is displayed.
 ROWS=columns, specifies the number of rows in the window.
 KEY=libref.catalog.key-entry.
 MENU=libref.catalog.pmenu-entry.

group-definition GROUP=group, names a group of fields that you want to display on the window at the same time.

Field-definition <row column> 'text' macro-variable
 < field-length> <options>
 The following options are available:

ATTR=attribute | (attribute-1 ... attribute-n) , controls several attributes of the fields, they are BLINK, HIGHLIGHT, REV_VIDEO and UNDERLINE.
 AUTOSKIP=YES|NO, controls whether the cursor moves to the next unprotected field of the current window when you have entered data in a field.
 COLOR=color, specifies a color for the field.
 DISPLAY=YES|NO, determines whether the macro processor displays the characters you are entering into a macro variable value as you enter them, the default is YES.
 PROTECT=YES|NO, controls whether information can be entered into a field containing a macro variable,

the default is NO.

REQUIRED=YES|NO, determines whether the user must enter a value for the macro variable in the field, the default is NO.

EXAMPLE

The following example is part of company information system user interface. The system main menu looks like :

```
WELCOME TO XXXXXXXXXXX SURVEY INFORMATION SYSTEM

ENTER SELECTION: __

1. DATA ENTRY
2. DATA VALIDATION
3. LIST DATA TO REVIEW
4. FREQUENCY ANALYSIS
5. QUIT

< main menu window >
```

This main menu window is created by the following code:

```
%WINDOW MAIN COLOR=BLUE
    #10 @25 'WELCOME TO XXXXXXXXXXX SURVEY
    INFORMATION SYSTEM' AUTOSKIP=YES COLOR=WHITE
    DISPLAY=YES
    #15 @30 'ENTER SELECTION: ' COLOR=WHITE
    SELECT 1 A=UNDERLINE AUTOSKIP=YES COLOR=WHITE
    DISPLAY=YES REQUIRED=YES
    #18 @30 '1. DATA ENTRY' COLOR=WHITE
    AUTOSKIP=YES COLOR=WHITE DISPLAY=YES
    #19 @30 '2. DATA VALIDATION' COLOR=WHITE
    AUTOSKIP=YES COLOR=WHITE DISPLAY=YES
    #20 @30 '3. LIST DATA TO REVIEW' COLOR=WHITE
    AUTOSKIP=YES COLOR=WHITE DISPLAY=YES
    #21 @30 '4. FREQUENCY ANALYSIS' COLOR=WHITE
    AUTOSKIP=YES COLOR=WHITE DISPLAY=YES
    #22 @30 '5. QUIT' COLOR=WHITE AUTOSKIP=YES
    COLOR=WHITE DISPLAY=YES ;
RUN;

%DISPLAY MAIN BLANK ;
```

%display statement is used to display window MAIN, option blank tells SAS System to clear the window before main window displayed.

Furthermore, by passing the value of macro variable SELECT from main menu window, another window can be opened , and other SAS System features can be accessed and activated. This can be implemented through the following code.

```
%WINDOW ENTRY COLOR=BLUE
    #9 @5 'PLEASE SPECIFY THE DATA SET YOU WANT
    TO ENTER VALUE FOR' AUTOSKIP=YES COLOR=WHITE
    DISPLAY=YES
    #13 @10 'ENTER THE DIRECTORY : ' COLOR=WHITE
```

```

PATH 100 A=UNDERLINE AUTOSKIP=YES COLOR=WHITE
DISPLAY=YES REQUIRED=NO
#15 @10 'ENTER THE DATA SET NAME: '
COLOR=WHITE DATANAME 10 A=UNDERLINE
AUTOSKIP=YES COLOR=WHITE DISPLAY=YES
REQUIRED=NO
#18 @5 'ENTER SELECTION: ' COLOR=WHITE
HOME 1 A=UNDERLINE AUTOSKIP=YES COLOR=WHITE
DISPLAY=YES REQUIRED=YES
#21 @10 '1. OK' COLOR=WHITE AUTOSKIP=YES
COLOR=WHITE DISPLAY=YES
#22 @10 '2. QUIT' COLOR=WHITE AUTOSKIP=YES
COLOR=WHITE DISPLAY=YES ;
RUN;

%IF &SELECT=1 %THEN
%DO;
%DISPLAY ENTRY BLANK;
LIBNAME DIR "&PATH" ;
%IF &HOME=1 %THEN
%DO;
PROC FSVIEW DATA=DIR.&DATANAME EDIT
AUTOADD ;
RUN;
%END;
%END;

```

By adding the above code to the main menu code, when 1 is entered into the ENTER SELECTION field in the main menu window, it will bring you to the next window:

PLEASE SPECIFY THE DATA SET YOU WANT TO ENTER VALUE FOR

ENTER THE DIRECTORY : _____

ENTER THE DATA SET NAME: _____

ENTER SELECTION: __

1. OK
2. QUIT

< sub-window >

Enter directory and the data set name, then enter selection 1 in the sub-window, the values of macro variables PATH and DATANAME from the sub-window will be passed and a SAS/FSP full screen edit window will be opened for you to edit the data set. This way, there is no need to reprogram whenever you want to edit a data set, even somebody who doesn't know SAS System at all can use this menu driven system to get into SAS System to do data entry or edit existing data set.

CONCLUSIONS

When SAS/AF is not available, the macro facility can be used to design user interface, by passing macro variable values other SAS System features can be accessed and activated, this way menu driven system can be done, reprogramming time can be saved.

TRADEMARKS

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REFERENCES

SAS Institute Inc. (1990), *SAS Guide to Macro Processing, Version 6, Second Edition*, Cary, NC: SAS Institute Inc.

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