Stop Counting Those Columns: A Macro Shell for Assigning Column Locations in Data _Null_ Reporting

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Abstract

A code segment which calculates column locations within a data _null_ report is presented. The optional ability to center the output is aslo discussed.

Introduction

Generating a report using data _null_ and PUT statements requires specification of the column location for each variable being output. Specifying these locations using numbers (e.g., @43) or relative numbers (e.g., @ 10+25) is both cumbersome and difficult to modify. This paper presents a method that will let SAS calculate the column locations based on the number of columns and the length of each column.

Note: the SAS code presented was not originally written by the author, but the report shell has surfaced at many different offices in the Bay Area. The author did add the ability to center the output on the page.

The SAS code is indicated by **BOLD UPPERCASE** text, comments in *italics*:

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* As macro variables will be created to hold the values of the
column locations, enclose the data _null_ within a macro;
%MACRO REPORT;

* Enter the number of columns in the report;
%LET FNUM=6;
* Enter the number of spaces between each column;
%LET SPACING=2;
* To center report, enter Y.
* To not center report, enter any other character;
%LET CENTER=Y;
* Enter the length of the first column. Use as the length the
greater of the largest data field or column headert;
%LET FW1=38;
* Enter the length of the second column, etc. up to the total
number of columns in the report;
%LET FW2=9;
%LET FW3=8;
%LET FW4=9;
%LET FW5=9;
%LET FW6=8;
* &lmargin is the column location when the left margin ends
and is defined in a macro external to this report code;
%LET C1=&lmargin;
* Write to the log the location of the 1st column;
%PUT C1=&C1;
* Using a macro DO loop, calculate the column locations;
%DO I=2 %TO &FNUM;
%LET J=%EVAL(&I-1);
%LET C&I = %EVAL(&&C&J+&SPACING+&&FW&J);
* If the centering option not used, write the column locations to
the log;
%IF &CENTER NE Y %THEN %PUT C&I = &&C&I;
%END;
* If the centering option is selected, recalculate the number of
spaces between columns necessary to center the report;
%IF &CENTER EQ Y %THEN %DO;
%LET NEWSPAC= %EVAL( ((&PAGEWID-
&LASTCOL)/(&FNUM-1))+&SPACING);
* Recalculate the column locations using the new spacing
variable;
%DO I=2 %TO &FNUM;
%LET J=%EVAL(&I-1);
%LET C&I =
%EVAL(&&C&J+&NEWSPAC+&&FW&J);
* Write the column locations to the log;
%PUT C&I = &&C&I;
%END;
%END;

* Define the last column that data will be written;
%LET LASTCOL=
%EVAL(&&C&FNUM+&&FW&FNUM);
* Define the total number of columns that data will be written;
%LET TOTCOL = %EVAL(&LASTCOL-&C1+1);
* Write the # of columns to be written and the location of the
last column to the log;
%PUT TOTCOL = &TOTCOL LASTCOL = &LASTCOL;

* Write the report;
DATA _NULL_;
   SET FINAL END=EOF;
      BY SEQ;

* Note: &pagelen is defined external to this report code and is
equal to the page length of the report;
   FILE PRINT LINE=ROW PS=&PAGELEN NOTITLES
LINESIZE=200;
   RETAIN NEXTPAGE NEWPAGE 0;

* Note: &lastrow is defined external to this report code and is
equal to the page length minus the number of footnote rows
minus 1.;

* Define condition to write footnotes and go to the next page;
   IF (ROW GE &LASTROW)
   THEN LINK FOOT;

* Note: MTOP is a macro which writes the initial titles;

   IF _N_ = 1 OR NEXTPAGE THEN DO;
    %MTOP;
   END;

* Define conditions to print secondary titles (HEAD1) and
column headers (HEAD2);
   IF _N_ = 1 OR NEXTPAGE THEN LINK HEAD1;
   IF _N_ = 1 OR NEXTPAGE THEN LINK HEAD2;

* Reset whether it is time to go to a new page;
 IF NEWPAGE THEN DO;
  NEWPAGE=0;
 END;

* Write the data columns/body of the report.
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* Note that the column locations are only referred to by the
column number;
IF FIRST.SEQ THEN PUT @&C1 SEQ SEQF. @;

PUT  @&C2                VISIT VISF.
     @&C3                CNT 2.
     @%EVAL(&C3+4)  NPCT1 $6.
     @&C4                CNT2 2.
     @%EVAL(&C4+4)  NPCT2 $6.
     @&C5                CNT3 2.
     @%EVAL(&C5+4)  NPCT3 $6.
     @&C6                PVAL $7.
;

* Define when to go to a new page;
   IF EOF OR LAST.SEQ THEN LINK FOOT;
   RETURN;

* Define secondary titles;
HEAD1:
TITLE1="SAMPLE REPORT";
TITLE2="WUSS 1999";
* Center the titles;
C1 = &C1 + INT((&TOTCOL-LENGTH(TITLE1)+1)/2);
C2 = &C1 + INT((&TOTCOL-LENGTH(TITLE2)+1)/2);
PUT / @C1 TITLE1
    / @C2 TITLE2
/ ;
 RETURN;

* Define column headers;
 HEAD2:
* Write a line across the page to separate titles from column
headers,
*  then write the column headers;
   PUT  @&C1 %EVAL(&TOTCOL+3)*'_'/
   @&C3 '  7.5 IU'
   @&C4 ' 37.5 IU'
   @&C5 '  75 IU'
   @&C6 'P-VALUE@'
/
   @&C1 'VARIABLE'
   @&C2 ' VISIT'
   @&C3 '  N(%)'
   @&C4 '  N (%)'
   @&C5 '  N (%)'
/  @&C1 %EVAL(&TOTCOL+3)*'_'/
;
* write a blank line;
put;
* reset the new page indicators;
NEXTPAGE=0;
 NEWPAGE=1;
 RETURN;

* write the footnotes while there is still room on the page;
FOOT:
DO WHILE (ROW <= &LASTROW); PUT; END;
PUT @&LMARGIN
 "@ USING THE CMH PROCEDURE"
;
* go to the next page and set the new page indicator;
IF ^EOF THEN PUT _PAGE_ @;
   NEXTPAGE=1;
RETURN;
RUN;

* define the end of the report shell;
%MEND REPORT;

*execute the report macro;
%REPORT;
```

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