

ABBOTT WRITTEN ADDITIONS TO SAS

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The SAS language provides a vehicle for custom developing specialized computer sub-languages to fit a given application. At Abbott, SAS development first began with the modification of existing PROCs. Later our own PROCs were designed and written. The PROCs were developed by the four authors and by a summer worker, Carolyn Smelter.

The first PROC, MEANSX, was a modification of the SAS72 PROC MEANS. It allowed the S.E.M. to be printed in addition to the standard statistics. It also allowed any of the statistics to be put into the output data set

Another modification involved improving the scaling of PROC PLOT. PLOTX forced the axes to a mod-5 range and was a bit better than PLOT in selecting the labeling of the axes (e.g., less decimal places when applicable). PLOTY was a modification of PLOTX. It allows the user to specify their own scaling. It also provides the ability to overprint vertical and horizontal lines through the plot. These are useful to specify "normal" limits and to divide time periods. Footnotes are also allowed by using the PARMCARDS feature.

PROC STATX and STATY, new PROCs, allowed the user to create a new data set with additional observations every time a BY variable changes. The new observations provide the insertion of the following statistics: N, SUM, MEAN, Corrected Sum of Squares, Standard Deviation, Standard Error of the Mean, Variance, Minimum, Maximum, CV, Median, Mode, Skewness, Kurtosis, Percentiles. While the initial intent of these PROCs was for statistics, STATX and Y are used for business reports. Blank lines are provided between the original data and the statistics observations.

While STATX and STATY perform statistics on "columns", CSTATX performs univariate statistics on "rows" across an observation. A new variable is inserted with the name of the statistic(s) that was specified as an option.

PROC FORMATX allows data to be passed from SAS72 to other packages such as BMD. It also gave us a reread facility allowing SAS variables to be put out to card images and then read back in again in a different format.

PROC LINK allowed SAS to execute Cambridge Crosstabs, UC360 and other languages within one SAS execution.

PROC PRINTX is a modification of PROC PRINT that removes the "N=" printout when using the ID statement and allows the printout to be placed in a different data set than the rest of the SAS output.

The TRNSPOS procedure turns a data set 90 degrees, that is from observation-wise to variable-wise.

PROC AREA allows the calculation of area under a curve, the maximum observation and its corresponding X for a given X vector and a set of observations (Y vectors) by the trapezoid method.

PROC ROUNDOFF roundoffs numeric variables either to a given number of decimal places when the positive N is given or to a power of 10 when a negative N is given.

PROC RAND will randomize subjects to various treatments.

Additionally SAS functions were added to SAS72 to do the following:
Gregorian Date to Julian Date, Julian Date to Gregorian Date, Gregorian Date to Day Relative to Jan.1, 1900, Number of Days Between Two Dates, Calculate Date From Beginning Date Plus Increment.

Many of the features of these PROCs have been since implemented in SAS76, so, only some of the above PROCs are currently being converted to SAS76. New PROCs are also being designed, however, including one that will transfer SAS datasets from the IBM370 to the DECsystem 10. In summary, SAS provides an excellent framework for writing generalized statistical programs.