YEAR 2000 AND SAS®
or WHERE'S FRED?
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ABSTRACT

Many computer applications will fail in the year 2000, or earlier without some corrective action. The typical date standard format, since the early stages of automation, has been MM/DD/YY. Therefore, 1995 was stored as the two digits, '95'. Comparisons between the year 2000 and 1995 (00 and 95) will show 1995 as greater than 2000. Arithmetic calculations will also be inaccurate. The problem may manifest itself in many areas including, databases, reports, files, screens, sorts, backups, imbedded coding and historical data. Additionally, many software products for PC platforms may have been created with valid dates only through 1999. Operating system software (including DOS 6.0) and other vendor packages may not be immune from this disorder.

While SAS does not have this problem by virtue of its unique date handling, what about external data, report titles, and dates stored as character type data?

BACKGROUND

The situation has occurred because the price/performance of storage media did not economically support the carrying of the extra digits; applications were expected to be replaced long before the turn of the century; and, programming standards perpetuated the condition. Industry publications estimate the potential cost impact of this problem, worldwide, to be more than $100 billion. The deadline for correction cannot be extended. Many applications have already been impacted where future date calculations are required.

The fact that this situation exists cannot be avoided. The damage, however, can be minimized or avoided if procedures are implemented to ensure all current and future applications recognize and address the issue. The purpose of addressing this issue now is to avoid disruption of services and operations as a result of computer software malfunctions caused by the year 2000 century roll-over.

Company policy/guidelines should be issued to establish a comprehensive program to review date usage in all existing desktop, departmental, corporate-wide computer applications and make modifications where necessary in preparation for the year 2000. Computer applications, under development or planned for the future, should include specifications for date routines which will provide for century roll-over. Computer applications for this purpose include software that supports business, office automation, and process control needs.

SAS IMPACTS

Is SAS really impacted by the millennium change? The 'speak-before-I-think' response is no. SAS maintains dates internally in a way that precludes any problems of the nature described above. However, SAS dates are often derived from external data which is in the historical MM/DD/YY format. Therefore, SAS programs will often include informats to convert these to the SAS dates. A system option (YEARCUTOFF) specifies the first year of a 100 year span used by informats and functions. The default is 1900. Therefore, a two-digit year of 00 would be interpreted as 1900 and not as 2000. The system option can be modified to cross century boundaries by using a date such as 1975. In this case, values from 75 through 99 would have a century prefix of 19 and years between 00 and 74 would have a century of 2000.

Are all variable names sufficiently descriptive in nature to represent the data that is contained in the data file? While we all try to ensure that our variable names are descriptive, that 'other programmer' never seems to use descriptive names. That 'other programmer' used FRED for Far_REaching_Date. Therefore, when looking for date variables, FRED will not be as obvious as FARDATE. Additionally, if the date to be stored in a SAS data file is stored as a character type variable, the difficulty of finding it becomes more complex.

CORRECTIVE ACTIONS

There are several ways to correctly establish the use of dates in an application, but in all cases the use of century within the date is required. Solutions include: 1) convert years to four digits; 2) bridge routines; 3) a single digit century value; and, 4) replace applications. SAS programs which use informats will have to change in all cases. In the first instance, the informat width is all that needs to be changed; in the second and third methods, programming logic will be required. And, in the fourth method, the entire SAS program may become obsolete and require a complete redesign and rewrite. Therefore, regardless of which method is chosen by the installation, SAS programs which receive dates from external raw files, will require some level of programming maintenance. And, don't forget about FRED.

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A CORRECTIVE PROCESS

How soon must the process of identifying and correcting the problem begin? Immediately! The process for correcting the problem must encompass three distinct elements. The extent of the efforts needed to correct each application will not be known until those projects are quantified. Therefore, SIZING is the first requirement. Once the size of the effort is available, a PLAN can be put in place to map the conversion/replacement projects. And finally, the IMPLEMENTATION of the plan can begin. The sizing phase will allow the plan to determine the appropriate start dates in order to complete the projects prior to experiencing date related problems.

A. SIZING

1. Inventory - The initial step in this process is to identify all the possible areas which may be affected by the century roll-over. An inventory of all programs, files, databases, screens, etc. must be compiled. This inventory includes existing and proposed applications.

2. Review - All items in the inventory must be reviewed to determine which are affected by the century roll-over and when the impact will occur. This is the point at which a search of source code for Informats and formats should take place.

3. Categorize - All applications, with their complete inventory, can then be categorized by those which need attention and those which do not.

B. PLAN

1. Inventory - Utilize the categorized inventory from the Sizing phase as the basis to develop an approach to correcting the century roll-over problems.

2. Corrective action - Each application must be looked at individually to determine the appropriate method to use to correct the century roll-over problem. Each application could require a different solution.

3. Resources - Allocation of resources is predicated upon several factors: 1) the number of programs affected, 2) the future date when the application would be impacted by the century roll-over, 3) the amount of time required to take corrective action, 4) internal/external personnel available, and 5) software tools available to aid the effort.

4. Schedule - A schedule of each application's corrective processing must be established. This schedule, at its simplest form, must have expected start and completion dates for each application in the categorized inventory.

5. SAS programs must be corrected in concert with corrections to external files/databases from which the SAS programs receive their data.

C. IMPLEMENT

1. Acquire Resources - Resources may come from several sources, including information systems department personnel, personnel from other departments, and outside contractors. Support and/or replacement software may come from these same sources.

2. Review and Update Plan - Continually review and modify the plan as necessary to manage the impact of new applications or modifications to existing applications.

3. Progress/Information Exchange - Periodic meetings on project activity should be held with key project staff. These meetings with key staff should be utilized to share experiences and information regarding successful approaches and solutions and report on progress.

CONCLUSION

Don't wait to get stung. Begin the process NOW. The year 2000 is only 4 years away. Don't forget FRED.

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FRED

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