The Northeast Regional and Boston-Area SAS Users Groups Invite You to a Morning of

IBM Product Demonstrations

Tuesday, January 26, 1988, 9:00-11:30 AM

IBM Corporation

Briefing Room "A", One Copley Place, Boston MA

One Copley Place business offices are located two floors above the Copley Place shopping concourse. Take the shopping area or parking garage elevators to their topmost floor. IBM is on that level.

By car, Copley is best approached via the Mass Pike eastbound to the Copley Square exit, which empties in front of Copley Place. Parking is scarce after 8:00 AM. From the north, try Memorial Drive to Mass Ave to Boylston Street.

By public transportation: from the west take the Green Line to Copley; from other points connect to the Orange Line and exit at the new Back Bay Station.

Pre-clearance is not required.

9:00-9:15 Coffee, etc. / General Announcements

9:15-10:15 IBM AS Overview and Demo
Sherry Englehardt
Product Marketing Representative
IBM Corp

IBM's Application System (AS) is a comprehensive information handling system, offering facilities for data creation, management, and display. Sherry's presentation will include statistics, modeling, graphics, updates, queries, reports, and accessing DB2 and SQL/DS.

10:15-10:30 Break

10:30-11:30 An Overview of OS/2
Dick Michaud
P C Specialist
IBM Corp

Microsoft's Operating System/2 (OS/2) is the eagerly-awaited multitasking operating system for IBM's new Personal System/2 line. Topics Dick will address include:

- Different versions and availability
- Multiple sessions of DOS under OS/2
- Compatibility (with Lotus, dBase, etc.)
- Do I need it?
- Hardware: What will or will not work?

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 6131

Boston MA 02209

Set BASUG;

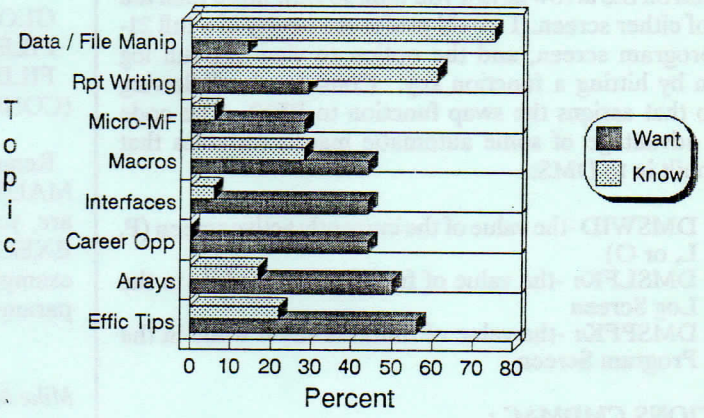
A Publication of the Boston Area SAS Users Group (BASUG) January, 1988

The Group Survey Revealed ...

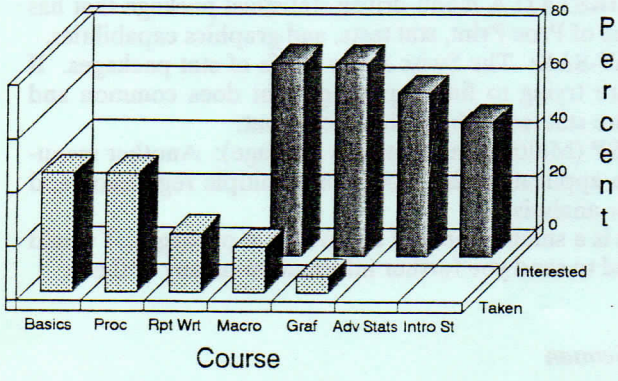
In our continuing analysis of that most over-surveyed group east of the Mississippi, BASUG meeting attendees, we canvassed those at the December meeting. The steering committee needs input concerning what folks do and do not want to see next year. Our thanks go to those who took the time to respond. Some of the results follow:

Contrasting the questions "What do you feel you already know" vs. "What do you want to see at a meeting" provided interesting information.

- High interest / little knowledge: career opportunities, micro-mainframe links, interfacing SAS with other mainframe and micro-based applications.
- Some knowledge, but great interest: our old standbys efficiency tips, everyday coding hints + tricks, arrays, and macros.
- High knowledge - low interest: Data step functions, file manipulation (set/merge/update), and report writing. OK, you won't see them again.
- Neither knowledge nor interest: CMS, VMS, and MS-DOS operating systems.



Preferred Meeting Times and Locations: in research terms, this was a biased question, since it was asked of a group meeting downtown at 9:00 AM. That considered, there was strong interest shown in a late afternoon - early evening BASUG meeting.



Professional Development: 44% of the respondents have already attended both the *SAS Basics* and *SAS Processing* courses.

Half as many have taken *Report Writing*, a few more than those that have had *Macros* (17%).

Interest in arranging for further offerings in Boston was high for *Graphics* and (surprisingly) *Macros* again (72%). *Regression & Anova* and *Intro to Statistics* also scored well, with at least half of the respondents indicating interest in attending a half-day or longer class.

Interest was shown for *Basics for PCs*, but solely for the 3-6 hour option.

Most interest in a half-day class was indicated for *Graphics, Basics for PCs,* and both stats courses.

Longer (2-3 days) courses were favored for *Macros, Graphics*, and *Regression & Anova.*

Macro Corner

User-Defined Functions for DMS

SAS Display Manager System (DMS) is the interactive version of SAS. It is a full-screen utility wherein one can enter and edit source code, submit it, view log messages and procedure output. (Type **SAS** at the TSO or CMS operating system level to view DMS; type **BYE** on the command line to exit.)

Rudimentary commands and function keys are predefined in DMS. Many of the tools you use in other environments will not be available. Why not write your own? As in other PC or mainframe applications, you may create and store series of commands as individual macros, then store these macros in a single library. This macro library becomes your personalized DMS utility to make your work easier.

A Simple Example: If you are accustomed to using PDF or FLIST, you will miss the ability to "swap" between the program and log screens. The SAS solution was to display program and log together, ten lines of each screen, making you lean on the arrow keys if you want to view more than ten lines of either screen. I would prefer the luxury of a full 21-line program screen, and the option to view the full log screen by hitting a function key. Consider the following macro that assigns the swap function to PF12. The code takes advantage of some automatic macro variables that SAS built in to DMS:

- DMSWID -the value of the currently active screen (P, L, or O)
- DMSLFK*n* -the value of function key *n* while in the Log Screen
- DMSPFK*n* -the value of function key *n* while in the Program Screen

```
OPTIONS CMDMAC ;
%MACRO SWAP / CMD ;
 %IF &DMSWID=L
   %THEN %DO ;
     CURSOR 4 ;
     SPLIT ;
     PGM ;
     %END ;
  %ELSE %IF &DMSWID=P
   %THEN %DO ;
     CURSOR 21 ;
     SPLIT ;
     LOG ;
     %END ;
%MEND ;
%LET DMSLFK12 = SWAP ;
%LET DMSPFK12 = SWAP ;
RUN ;
```

If the log screen is active (DMSWID=L) put the cursor on line 2, split the screen, and call the program screen; otherwise put the cursor on line 21, split, and call the log screen.

The Autocall Library: To activate the swap function, you could INCLUDE the macro code on the command line every session. A more permanent solution from SAS is the macro *autocall facility.*

Normally, one must first compile a macro's code before invoking it. An exception involves any macros stored in an autocall library. When invoking a macro in your program or in DMS, SAS searches the members of defined autocall libraries for a member with the same name as the requested macro. If it exists, the autocall facility processes the source statements, compiles the macro, and executes it. (NOTE: the OPTIONS MAUTOSOURCE must be in effect at your installation, or you must turn it on when you initialize your session.)

Create your own macro library called DMSMAC. For TSO users, this is a simple PDS. VM users will create a CMS MACLIB. Add any self-defined function such as SWAP to DMSMAC as a separate library member. Then, when invoking a SAS session, concatenate your autocall library to that of the SAS-supplied library (TSO and CMS respectively):

```
SAS AUTOS ('"MYID.DMSMAC.MACAUTOS"')

GLOBAL MACLIB DMSMAC SASAUTOS
FILEDEF SASAUTOS DISK DMSMAC MACLIB *
FILEDEF SASAUTOS DISK SASAUTOS MACLIB *
(CONCAT
```

Remember to turn on the autocall facility by an OPTIONS MAUTOSOURCE; statement. Of course, genius that you are, you'll include all of these commands in a CLIST or EXEC/SASEXEC (see last month's SAS/AF article for an example) that will fire off SAS/DMS with all the desired parameters from an operating system-level command.

Mike Murphy

PC-Based Statistical Packages

SAS for the poor person? Not quite, but there are several inexpensive statistical packages available for the IBM PC. A recent glance at the Public Brand software (call 1-800-IBM-DISK) revealed that the following applications are available for $5 each:

KWIKSTAT: A menu-driven statistical package that has a clone of Proc Print, stat tests, and graphics capabilities.

STAT-SAK: The Swiss Army Knife of stat packages. If you are trying to find a package that does common and obscure stat tests, check this sucker out.

MVSP (Multivariate Statistics Package): Another menu-driven application that does both multiple regression and cluster analysis.

This is a small sample of the available packages. I would be glad to send you further information on any of these.

Hal German

Minutes of the December Meeting

The latest BASUG meeting was held December 2, 1987 at John Hancock, Boston. There were 33 people in attendance.

Tom Marx opened the meeting at 8:45. Company and individual survey forms were distributed, concerned with meeting times and topics for the coming year. The next meeting was announced (January 26 at IBM). Group officers for 1988 were introduced: co-chairs Alan Dickson and Bob Virgile, secretary Stacy Gill, treasurer Lowell Mercier, and Institute liaison Sandy Hendren. Registration packets for SUGI 13 were made available.

At 8:55, Hal German of GTE presented the latest news from NESUG (the Northeast SAS Users Group). Plans are being finalized for NESUG's regional Fall conference. A questionnaire will soon be distributed asking for members' preferences.

From 9:00 to 11:10, Dr. Robert Keller of Renaissance International Corp., Harvard Mass, delivered a lecture / online presentation titled "*An Introduction to Expert Systems.*"

The formal meeting was adjourned at 11:10. From then until Noon, live demonstrations of SAS/FSP, SAS/OR, and SAS/AF were given concurrently by Bob Virgile, Alan Dickson, and Mike Murphy.

NESUG On The Move

The past two months have been very busy for NESUG (Northeast SAS Users Group).

One major activity is the organization of a one-day regional conference. Several possible sites have been found, but the conference organizing committee is still quite open to site suggestions. To better determine the combination of factors that would result in the most people attending, a brief questionnaire has been mailed to all user groups. An announcement will be made by February 1 about the conference date and selected site.

The second major activity is the draft of the proposal to the SUGI executive committee. This proposal calls for recognition of regional groups by SUGI and the certification of NESUG as a regional group. If passed, NESUG would be incorporated under SUGI and would have SAS Institute staff speak at regional conferences.

NESUG will also be active at SUGI 13 in Orlando. Hal German will give a talk at 8:10 AM on March 28th on NESUG and a NESUG BOF (Birds-of-a-Feather or special-interest group) will also be held. Hope to see you there!

If you are interested in being on the organizing committee for the regional conference, please contact Hal German at (617) 466-2290.

The Puzzle Corner

This Month's Puzzle.

A raw dataset holds the names of 100 artists:

```
LEONARDO DA VINCI
REMBRANDT
VINCENT VAN GOGH
.
.
TOMMY HEINSOHN
```

The objective is to create a SAS dataset with one observation and 100 variables (NAME1 -- NAME100), each representing one artist. You may assume:

- there are exactly 100 lines of raw data, with one artist per line
- the longest name is 30 characters
- none of the names contains two consecutive embedded blanks

As with last month's problem, a number of approaches are feasible. Therefore, conservation of programming effort and computer resources is important. The shortest program will consist of three brief statements.

Answer in next issue.

Solution to Last Month's Puzzle.

Objective: Without using the LAG function, recode this program to use less CPU time:

```
DATA NEW;
SET  OLD;
VAR2 = LAG(VAR1);
```

Because SET statement variables are automatically retained, the previous value of VAR1 is available before the SET statement executes. A simple solution, therefore, is:

```
DATA NEW;
VAR2 = VAR1;
SET OLD;
```

"Beating the supervisor" will further reduce CPU time, and does not rely on retaining VAR1:

```
DATA NEW;
DO UNTIL ( LASTREC );
  VAR2 = VAR1;
  SET OLD END=LASTREC;
  OUTPUT;
END;
```

Many higher-cost solutions exist, one of which is illustrated below:

```
DATA NEW;
SET OLD;
IF _N_ GT 1 THEN
SET OLD (KEEP = VAR1
RENAME = (VAR1 = VAR2 ) );
```

Finally, since the use of two SET statements is very similar to a MERGE with no BY statement, it would be possible to construct an even longer solution that creates a second dataset to be merged with OLD.

Robert Virgile

PROC of the Month

Full-Screen Capabilities Enhanced with PROC FSPRINT

With all of the other changes that Version 5 gave us, it would be easy to overlook a procedure that the Institute stuck in the back of the FSP manual. This previously-undocumented Proc provides some very useful features, especially if you give presentations.

Basically, the function of FSPRINT is to display your SAS dataset as a matrix of rows and columns, with each row being an observation. In other words, the same arrangement that PROC PRINT gives you on paper, you can now have on screen. There are a couple of advantages to this. First, you can view more of the dataset at once, unlike FSBROWSE, in which you can see only one observation. The second advantage is that this spreadsheet-like layout may be more familiar to your audience. As with FSBROWSE, there are no edit capabilities in FSPRINT, only display.

If you have access to a color monitor, you can add more pizazz to your presentation by using the highlight function. This works in two modes. By typing the command **HI** followed by two characters (one for color, one for attribute - e.g. blinking, reverse video, etc.), you can reset the default highlighting. Then you can type **HI** on the command line and move the cursor to the line you want highlighted and press <ENTER>. Alternately, you can combine both of these actions. For example, type **HI R B** on the command line, move the cursor to a row of data and press <ENTER>. This resets the highlighting and displays a blinking, red row on the screen.

But that's not all! You can then reset the highlighting again and make another line a different color and attribute - both will be displayed at the same time. Or you can go totally overboard and render your screen a veritable rainbow. The one restriction is that you can only alter the current screen. Scroll up or down and the colors vanish.

Some of the standard PROC PRINT parameters can be used with PROC FSPRINT. Titles and footnotes will be displayed. The VAR statement can be used to control which variables will show and in what order. The ID statement will hide those embarrassing OBS numbers.

While it is not a spectacular procedure, FSPRINT can be a valuable addition your SAS toolbox, increasing the flexibility with which you can display datasets.

Alan Dickson

CLIST Corner

Clist functions are underutilized and misunderstood by many users. Following are two examples using &STR - the string function.

1. Use &STR to do the following:
   - a. to keep all trailing and leading blanks in an argument
   - b. to keep the leading zeros in a numeric argument
   - c. to pad a string with blanks

Example 1 - add trailing blanks to the &CITY variable to ensure a length of 20.

SET &BLANK = ' '
SET &CITY = TAOS
SET &BLNK1 = &SUBSTR(2:31, &BLANK) - &BLANK without quotes
SET &CITY = &STR(&CITY&BLNK1) - concatenates &CITY with blanks
SET &CITY = &SUBSTR(1:20,&CITY) - city is now always 20 due to trailing blanks

Example 2 - Another way to accomplish the same (given at a SHARE talk by Thomas Kusinerz, current IBM clist support person)

SET &BLANK = &STR( )
SET &CITY = TAOS
SET &STOP = &LENGTH(&STR(&BLANK)) -length of &blank with blanks
SET &CITY = &STR (&CITY &SUBSTR (&LENGTH (&CITY) + 1 : &STOP, &BLANK))

1. Takes the length of &CITY and adds 1 (5)
2. Extracts blanks from &BLANK from positions 5 through 30
3. Concatenates to &CITY the 25 trailing blanks
4. Makes &CITY a string to retain the trailing blanks.

SET &CITY = &SUBSTR(1:20,&CITY) -city is now always 20 due to trailing blanks.

Hal German

Our Next Meeting

BASUG's next scheduled meeting will be at IBM's Copley Place headquarters on Tuesday, January 26, 9:00-11:30 AM, where IBM product demonstrations of OS/2 and A.S.(Application System) will be featured.

This special situation, courtesy of Hal German, has been graciously arranged by IBM's marketing staff, which will be putting on the show. Please be advised that this is not a technical demo of the statistical and analytical powers of A.S. vs. SAS. Sit back and enjoy IBM's demonstrations. Questions of the ilk "How can A.S. calculate the lessor of P and $(g-1)^3$ canonical discriminant functions?" will be considered out of line.

Boston Area SAS Users Group - Meeting Announcement

Tuesday April 12, 1988, 9:00-11:15 AM

Boston Edison Company

Prudential Center, 29th Floor, 800 Boylston Street, Boston MA

8:30-9:00 Coffee, etc. / General Announcements / COLLECTION OF DUES

9:00-10:00 Dateline Disney: SUGI Update - A summary of what we missed during SUGI 13 in Orlando, Florida. Bob Virgile, and any other SUGI attendees discuss such questions as: In what direction is the SAS Institute headed during the next year? What new products and releases can we expect to see? Is there going to be more support for local users' groups? How can I get my company to send me to SUGI 14 next year?

10:00-10:30 Break, PROBLEM SOLVING(!), Interest Groups

10:30-11:15 Best of All Possible Worlds: SAS Solutions from PC's to Mainframes. Fred Pratter, Abt Associates will reprise a talk given at this year's SUGI Conference

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems. If you have a curious code conundrum, or a problematic programming precedent, unresolved or not, bring it in and share it with some of the best SAS minds ever assembled at one time in the Prudential Center.

The SAS Institute will have Marketing Reps in Boston April 14-15, and they have arranged to meet with interested BASUG members (and anyone else) on the evening of April 14. More details at the BASUG meeting.

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Set ßASUG;

A Publication of the Boston Area SAS Users Group (BASUG) April, 1988

NESUG Conference Announced

The *Northeast SAS Users Group* (NESUG) and Pace University are sponsoring the first regional SAS conference, Friday, October 28, 1988 (8:30 - 5:30), at the Manhattan campus of Pace University. Keynote and other speakers and will be provided by the SAS Institute, ORI, and member companies.

Tentative schedule of events includes tutorials on the data step, the SAS supervisor, PROC Tabulate, advanced look-up and merge techniques, as well as special presentations for consulting, training, computer performance, PC-SAS, special-interest group sessions, and many more.

There are still openings for papers in all topic sessions. For further information, please contact Hal German, GTE Labs, 40 Sylvan Road, Waltham MA 02254, tel (617) 466-2290 or Dr. Raymond Pass, Columbia-Presbyterian Medical Center, 161 Ft. Washington Ave, New York NY 10032-3784, tel (212) 305-7748.

What Is NESUG?

- 1. A second-level (regional) user group that directly represents eleven local user groups and coordinates joint group activities.
- 2. A liaison between local groups and SUGI/SAS Institute.
- 3. A centralized information resource for all area local user groups.
- 4. A lobbying force to the SAS Institute on area local group needs.
- 5. An organizing force for regional SUGI-like conferences.
- 6. An provider of shareware libraries of statistical programs and utilities.
- 7. An operator of an electronic bulletin board containing home-grown SAS applications, tips, and tools.
- 8. A facilitator to help new local user groups get started and established local user groups to grow.

SAS/Graph PostScript Driver

The PS300 (PostScript) driver is now available for experimental release by the SAS Institute. The driver supports seven colors (six greys and one black - a PostScript standard for color is years away) and 35 fonts (my favorite name being Zapf Dingbats). With this driver, you will be able to send your output to a growing number of laser printers for IBM and Apple PCs. However, not all of these printers will run SAS/Graph output the first time, since SAS assumes a continuous rather than block format (and many printers don't use vanilla PostScript). But with a little effort, your SAS/Graph results can appear on your PC laser printer.

Please contact your SAS sales representative for further information about this driver.

Hal German

PC Virus Strikes!

If you have recently obtained public-domain software for your Apple or IBM PC, BEWARE! Recently, some of these programs contain a virus: a slow-growing effort to totally wipe out your hard disk. Once your hard disk is erased, not even the Norton or MACE Utilities will help unerase it. Unlike the previous Trojan Horse programs, these are harder to detect.

Some words of advice:

- always download to a floppy and not a hard disk
- make your COMMAND.COM and other DOS files read-only
- use available programs to check the contents of the downloaded file

It is a shame that a few misguided souls like to cause damage to other people's PCs and give an undeserved bad name to public-domain software.

HG

Generating Maps on a Computer

Overview

Information of a geographic nature is best analyzed and presented via a map. Whether your data is sales by territory, number of customers per zip code, or advertising expenditure by telephone area code, a map can capture complex relationships that a spreadsheet or bar graph would miss.

A map is created on a computer by intersecting:

- 1. *a boundary file:* typically a large file containing the X*Y coordinates that form the border of a geographic entity. The Census Bureau subdivides the nation's 3100 counties into 68,000 census tracts and 253,000 block groups. You may buy or gather information on any or all of them and map it. Other drawable boundaries exist for zip codes, area codes, congressional districts, and advertising and metropolitan areas.
- 2. *a data file:* the information to be displayed as shaded or colored areas, one record per territory. One variable in this file must be the geographic index (zip code, county code) that will link to a similar field in the boundary file. Other variable(s) contain data such as sales dollars.
- 3. *an optional label or annotate file* to overlay descriptive information on top of the above files (e.g. county names, major cities, interstate highways).

Availability of Files

When you buy a PC-based dedicated mapping package, boundary files for the U.S and its 50 states are included. That is all. There are state files even in some rudimentary business graphics software. Investing in special mapping software for the PC ($450) implies that you have the need for some lower-level geography. The same vendor (or cartography firms such as *Geographic Data Technology*) sell national and local boundary files to enhance the capability of your PC or mainframe application. Sample PC prices:

- U.S. counties $300
- U.S. zip codes $7500
- U.S. congressional districts $400
- Cities and major highways $12,500
- Massachusetts zip codes $1500

The same firms will build specialized files for your particular sales territories, etc.

Much of the data you'd want to draw would originate in your company. Supplementary information files are available from the same vendors or from the U.S. Census Bureau. Data such as demographics, forecasts, employment, occupation, and sales (by any geographic entity) is sold on tape and floppy. The Census Bureau is beginning to get into CD-ROM in a big way.

Availability of Applications Software

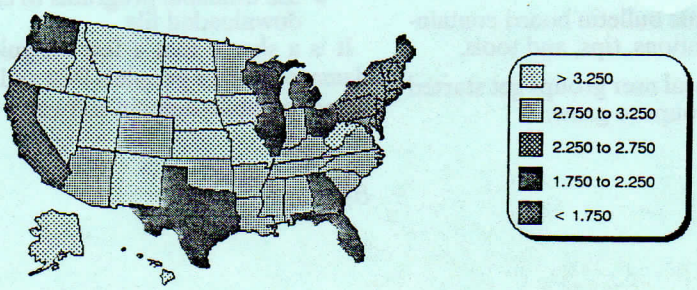
From the simplest to the most complex, you can create computer maps via:

1. PC business graphics software: if you only want to try your hand with a U.S. by state map, check out presentation graphics software. *Lotus Freelance Plus,* a very useful drawing and charting package, has U.S and state maps included among its hundreds of pre-drawn symbols. *Digital Research's GEM Graph,* a basic pie/bar/line graphics package, goes a step further by providing a spreadsheet behind the scenes into which you can enter (or import) data for each state.

2. PC mapping software: although you would have to buy any boundary file below state level, packages such as *STSC's Atlas*Graphics* and *Ashton-Tate's MapMaster* allow superior customization of your analysis and output via labelling, overlaying roads and symbols, editing data and boundary files, and zooming in on areas of interest.

Client Base by State

GEM Graph



3. SAS/Graph: if you have licensed this module from the Institute, you have been provided with a lot of mapping capability (and little instruction on how to use it). Space does not allow us to include the code to generate county maps in this issue. If there is sufficient interest, next issue's "Proc of the Month" will feature GMAP.

SAS/Graph gives you an immediate advantage over the above systems in that it is delivered with the following SAS datasets:

- state boundaries
- state "center" file of centroids for labelling
- U.S. counties boundaries
- county names file for labelling (sorry, no centroids)
- major U.S. cities and their X*Y coordinates for annotating above files

To enhance your analysis, vendors such as GDT sell lower-level geographic files (zip codes, census tracts) bundled with a SAS macro to read the file and run it into PROC GMAP.

The added power of the mainframe and SAS/Graph additionally allow you to produce three-dimensional surface, block, and prism graphics and to employ superior on-line plotters.

4. Geographic Information Systems (GIS): Analysis of consumer geo-demographic behavior, target marketing campaigns, retail site selection, and other in-depth treatments are the domain of mainframe GIS vendors such as *GSI Tactics* of Andover MA and *MPSI Systems* of Tulsa OK, or PC analyst workstation vendors *National Decision Systems* of Vienna VA and *Claritas* of Alexandria VA. The bargaining for such systems begins at close to six-figures. Chances are that if you have the need for such a system, you already own one.

In summary, the occasional two-dimensional U.S. state map can be shown on many PC applications. Dedicated PC-mapping packages allow detailed analysis of local areas and definition of unique territories. They are also easier to learn for most users. Although more obtuse to newcomers, The SAS System offers a wide range of graphic analysis techniques, the ability to employ large data and boundary files, and access to superior output devices. For full-time market analysis, as optical disk and CD-ROM technology improve, the future direction is toward dedicated PC workstations and software.

For further information contact:

Data User Services Division
Bureau of the Census
U.S. Department of Commerce
Washington DC 20233
(301) 763-1400

Bureau of the Census
Boston Federal Office Building
10 Causeway Street
Boston MA 02222
(617) 565-7078

STSC, Inc.
2115 East Jefferson St
Rockville MD 20852
(800) 592-0050

Geographic Data Technology
13 Dartmouth College Highway
Lyme NH 03768
(603) 795-2183

M^2

The Puzzle Corner

This Issue's Puzzle

Two SAS datasets must be combined to produce the input for PROC Tabulate. The first SAS dataset, CUSTOMER, contains CUSTID ($ 14) and TOTCOST (numeric), with one observation per customer ID. The second SAS dataset, PAYMENTS, contains CUSTID ($ 14) and AMTPAID (numeric), with many observations per customer ID.

Can you produce the following table:

LAYAWAY PLAN CHART

	TOTAL	TOTAL PAID:	
CUSTOMER ID	COST	DOLLAR AMOUNT	% OF COST
02847AD1422G12	$800.00	$770.00	96.25%
12847AD1422XC2	$1,625.98	$1,250.00	76.87%
22847AD1422YC2	$499.90	$484.00	96.81%
32847AD1422ZJ2	$990.00	$642.75	64.92%
42847AD1422A72	$775.00	$715.00	92.25%
52847AD1422B82	$1,346.64	$1,100.00	81.68%
62847AD1422C42	$885.00	$300.75	33.98%
72847AD1422DB2	$799.99	$509.99	63.74%
82847AD1422E22	$720.00	$485.00	67.36%
92847AD1422FC2	$599.99	$280.99	46.83%

Key characteristics:

- TOTAL COST is the value of TOTCOST from the CUSTOMER dataset.
- DOLLAR AMOUNT is the sum of AMTPAID values from the PAYMENTS dataset.
- % OF COST is the sum of AMTPAID divided by TOTCOST times 100.
- The heading TOTAL PAID: should be centered over the final two columns.
- All dollar totals must be expressed using a $ sign, while all percentages must be expressed using a % sign.
- The solution uses PROC Tabulate, rather than customized report writing techniques.

Solution to Last Issue's Puzzle

Read a raw dataset of 100 artists names, one per line, into a SAS dataset with one observation and 100 variables (NAME1 - NAME100). All names contain 30 characters or fewer, and none contain two consecutive embedded blanks.

The simplest solution contains three brief statements:

```
DATA ARTISTS;
INFILE RAWDATA;
INPUT ( NAME1 - NAME100 ) ( & $30. ) ;
```

The parentheses indicate that the informat instructions (& $30.) are to be reused until all 100 variables have been read. The & calls for scanning the raw data until a value is found (first nonblank character) then continuing to scan for the variable value until any of these conditions have been encountered:

- the line of raw data ends
- two consecutive blanks are found
- the full width of the informat -30- has been read.

The system option FLOWOVER, usually the default, must be in effect.

Two additional techniques may be applicable in similar situations. First, if the number of artists were unknown, PROC Transpose would automatically count them. For example:

```
DATA MANYOBS;
INFILE RAWDATA;
INPUT NAME $ 1 - 30;
PROC TRANSPOSE
 DATA = MANYOBS
  PREFIX = NAME
  OUT = ARTISTS (DROP = _NAME_);
VAR NAME;
```

Finally, for the sake of efficiency, it is sometimes desirable to use an existing variable as the index of an implicit array:

```
DATA ARTISTS;
ARRAY NAMES ( _N_ ) $ 30 NAME1 - NAME100;
RETAIN NAME1 - NAME100;
INFILE RAWDATA END = EOF;
INPUT NAMES $ 1 - 30;
IF EOF;
```

The ARRAY statement must precede the INPUT statement, otherwise NAMES will be defined as a variable before the ARRAY statement is encountered.

Robert Virgile

BASUG Handouts Being Compiled

A list of handouts from all BASUG meetings since 1983 has been prepared. You will be able to get copies of these handouts for a nominal fee. This is part of a regional effort to have a central list of local papers. If you are looking for paper topics or information on a certain area, try the BASUG Handout List as a resource.

More information on this in a future newsletter.

A Day in the Life of SAS Tech Support

The following are true (but amazing) problems that have been put by my desk:

9:15 - User walks in, claiming that her code is not working. I copy it over to my PDS and it works fine. The culprit: a program file with a LRECL of 255, way too wide to be processed by SAS software.

10:38 - First-time user walks in trying to get a SAS/Graph program to work. The code is a nightmare: 80 columns of continuous code, no indents, returns, or blank lines. The right line is stuck in and the user is sent on their way with their never-ending code.

2:30 - After a short lunch, an anxious user rushes into the room. The code looks OK at first glance. The problem: two extra semicolons in columns 73-80. Just because you can't see it doesn't mean it isn't there.

4:10 - As I am looking forward to catching up on the comics, a new SAS user needs help: doesn't know SAS but needs to plot right away. I refer the user to GTE Labs' homegrown frontend to PROC GPLOT and call it a day. Not a bad one at that.

HG

Boston Area SAS Users Group - Meeting Announcement

Tuesday May 10, 1988, 9:00-12 Noon

Suffolk University

Room 427, Frank Sawyer Building, 8 Ashburton Place, Boston MA

Helpful Map Is Enclosed. (Trust Me)

8:30-9:00	Coffee, etc. / General Announcements / COLLECTION OF DUES		*SOLVING* with your Coffee?
9:10-9:30	BSS Update: Lowell Mercier of Boston University Medical Center and Mike Keohan of Blue Cross of Massachusetts	**10:45-11:30**	PROC QPRINT - an oft-overlooked way get better quality reports Dr. Raymond Pass of Columbia-Presbyterian Medical Center and the New York Area SAS Users Group.
9:30-10:15	Using SAS for Capacity Planning Craig Andree, Commonwealth of Mass.		
10:15-10:45	Break: How about some *PROBLEM*		

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems. Please remember to bring a description of a recent problem you've had, or maybe one you're still experiencing to share with the whole group. Some of us really do know what we're doing, and everyone gets stuck at some point trying to make SAS work for a particular application.

Hal German will be holding an informal NESUG meeting following the BASUG festivities. Everyone is encouraged to stay for a little while and get acquainted with the regional user group of which BASUG is a part.

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Boston Area SAS Users Group - Meeting Announcement

Thursday, June 16, 1988, 9:00-11:15 AM

Boston Edison Company

Prudential Center, 29th Floor, 800 Boylston Street, Boston MA

8:30-9:00	Coffee, etc. / General Announcements / COLLECTION OF DUES
9:00-10:00	SAS Applied Sampling Techniques Wendell Refior, lately of Paul Revere Life Insurance, discusses using SAS for statistical sampling, and sampling applications
10:00-10:30	Break, PROBLEM SOLVING(!), Interest Groups. *NEW USERS* - Get acquainted with the BASUG staff, and learn about the resources our Users Group has.
10:30-11:15	As Time Goes By- Using PROC COMPUTAB for time-series data and trend analysis. Charles Patridge, Hartford Steam Engine Company, talks about a useful Procedure in the wonderful world of SAS/ETS

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems.

OF COURSE: The Northeast SAS Users Group and Northeast Utilities of Wethersfield, CT are running a Two Day SAS COLOR GRAPHICS Class. This is the ORIGINAL , 2 day course offerred by the SAS Institute (i.e., no Annotate features discussed).
Cost: $125 per student per day. CONTACT: Dick Krause at Northeast Utilities (203) 721-4366

Call Stacy Gill at 329-4500 ext 388 with questions, comments, suggestions, or if you need directions., advice, ...

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Boston Area SAS Users Group - Meeting Announcement

Tuesday, July 19, 1988, 9:00-11:30 AM

GTE Laboratories

Sylvan Road Waltham, MA

8:30-9:00	Coffee, etc. / General Announcements / COLLECTION OF DUES
9:00-10:00	THESE ARE A FEW OF MY FAVORITE ... MACROS? Bob Virgile moderates a discussion about user-written MACROs that folks use to make life easier. BASUG members are encouraged to bring examples of MACRO code that does for them what they cannot do for themselves.
10:00-10:30	Break, PROBLEM SOLVING(!), Interest Groups. *NEW USERS* - Get acquainted with the BASUG staff, and learn about the resources our Users Group has.
10:30-11:30	WHAT YOU THOUGHT I MEANT IS NOT WHAT YOU HEARD ME SAY. Charles Hoffman of GTE Labs gives a listening-skills mini-workshop. This is intended for anyone who must pay attention to someone else during the day. That's probably most of us.

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems.

Call Stacy Gill at 329-4500 ext 388 with questions, comments, suggestions, or if you need directions, advice, ...

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Directions to GTE Laboratories: Take 128 to the Winter St. / Totten Pond Road Exit (27B). You'll be on Winter Street. Go west on Winter Street past First Avenue, until you can see the reservoir pumping station on your right. On your left will be Sylvan Road, and a sign for GTE Labs. Go left onto Sylvan Road, then turn into GTE Labs. The meeting will take place in the Auditorium. Just park and follow the signs.

Set ßASUG;

A Publication of the Boston Area SAS Users Group (BASUG) July, 1988

Keeping Pace with NESUG

NESUG (the regional NorthEast SAS User's Group) has been busy working on many activities that will help you learn more about the SAS system:

Alan Dickson (508-799-4441) is heading up an effort to coordinate SAS training in the Northeast. Whether you are a SAS trainer, have a few openings for a SAS course, or want to attend a course, feel free to contact Alan (his accent is adorable). This is a pilot program that will be withdrawn if there is insufficient response.

Mike Keohan and Lowell Mercier are developing the NESUG electronic bulletin board (see related article).

A sister user group speaker program is available for member user groups. To date, there have been four participants who have spoken to the New York, Boston, and Hartford groups. I would be glad to set you up as a speaker.

NESUG 88: the regional conference on October 28 at Pace University in Manhattan is being planned. Also providing support are Pace (conference co-sponsor) and the SAS Institute. Featured speakers are Barrett Joyner and Dave Brummit of the Institute and Neil Howard and Don Henderson of ORI. Ray Pass and I (conference co-chairpersons) hope that the proceedings will be given out on the day of the conference. Registration forms are now being mailed. Attendance is limited to the first 600 registrants. Hope to see you there.

Hal German

PC SAS 6.03 and the 80287 Chip

Apparently, you may get inconsistent results if you use PC SAS 6.03 with a math coprocessor chip (80287 only). This is documented in usage note SYS.PROC-V60823 which tells you to place the $NONDP option in your CONFIG.SYS file. This problem only happens with 6.03 because that version relies more heavily on the math coprocessor. There are three conditions when this problem may occur:

- 80287 chips with processing speeds greater than 4 Mhz
- 80287 chips running faster than their reported speed
- a slow 80287 chip coupled with a fast 80286 (CPU) chip

What does this mean to you? Like the PC virus, this is affecting a small number of users to date but has received much publicity. So beware that this possible problem exists and happy computing!

H G

The International SAS Bulletin Board

One of the personal highlights of SUGI 13 was attending a talk on SAS-L. SAS-L is an international discussion group with nearly 700 users that talk about all aspects of SAS. Since the SAS Institute is not on SAS-L, mail often turns into gripe sessions. Recent topics of debate include SPSS vs. SAS, how to comment SAS code, and the problems of using PC SAS with an 80287 chip. SAS-L also keeps a running log or notebook of past mail so you can look up prior comments.

To access SAS-L, your site must have access to BITNET (the international academic institution network) either directly or indirectly (such as CSNET or UUCP). The specifics of accessing SAS-L for your operating system are described in the SUGI paper. I look forward to reading your SAS chatter very soon.

H G

The NESUG Bulletin Board

A local electronic bulletin board for SAS users is currently under development and will be fully operational August 1. SYSOPS are Mike Keohan (617-956-3665) and Lowell Mercier (617-638-5185). Hours of operation during this test phase are 8:00 AM to 8:00 PM, Tuesdays and Wednesdays. All you need to access it are a PC, a 1200 baud modem, and a telephone line. Call Mike Keohan for further details.

Among the board's many features and benefits are:

- SAS code and macros, REXX code, and CLISTS (contributions welcome)
- Employer - employee information
- Training calendar
- NESUG newsletter
- Send/receive messages with other local users
- Member surveys

NESUG will syndicate the board's features for the benefit of other local groups.

SAS Institute Assumes 'Top' Spot

"The numbers have finally been tallied, and SAS Institute can now lay claim to the not-so-terribly-important title of Largest Privately Held Independent Software Vendor in the U.S." and second largest in the world.

"Although SAS wrapped up its fiscal year last December 31, it did not release the results until last week. The company reports that revenue was up 32%, to $135 million, fueled to a large degree by the success of foreign subsidiaries."

"SAS president James H. Goodnight says European revenue was up by 80%, 85% in Japan, and 42% in the rest of the Asia/Pacific region. Despite the strong showing, a spokesman said SAS has no immediate plans to go public. Cincom Systems, which reported 1987 revenue of $132 million and often calls itself the largest privately held software vendor, had no comment on SAS's revenue one-upmanship..."

InformationWEEK, June 6, 1988

BASUG

The Boston Area SAS Users Group was formed in 1983 to provide a forum for the exchange of information and the promotion of new ideas concerning SAS and related products, and to assist members in career advancement.

Inquiries and correspondence should be directed to:
B A S U G
PO Box 253
Boston MA 02117

BASUG Steering Committee:

Alan Dickson	Co-chairperson	(508) 799-4441
Hal German	NESUG	(617) 466-2290
Stacy Gill	Secretary	(617) 329-4500
Sandy Hendren	SAS Liaison	(617) 863-2000
Mike Keohan	Bulletin Board	(617) 956-3665
Tom Marx	Past Chairperson	(617) 876-0962
Lowell Mercier	Treasurer	(617) 638-5185
Mike Murphy	Newsletter	(617) 572-6533
Wendell Refior		(508) 799-4441
Bob Virgile	Co-chairperson	(617) 648-1347

Set BASUG;, published quarterly, is available only to BASUG members. Contribution of articles, comments, litigation, etc. should be sent to:

Mike Murphy, c/o John Hancock Mutual Life, PO Box 111, T-20, Boston MA 02117

Calendar

August 1-5, Siggraph '88 annual conference, Atlanta GA (312) 644-6610

August 7-11, Urban and Regional Information Systems Association conference, Los Angeles CA (202) 543-7141

August 22-25, American Statistical Association conference, New Orleans (703) 684-1221

October 19-21, Association of Public Data Users conference, Washington DC (609) 452-6025

October 28, NorthEast SAS Users Group conference, New York City (212) 305-7748

November 15, BASUG General Meeting on SAS/Graph, Boston MA, (617) 572-6533

April 9-12, 1989, SAS Users Group International conference, San Francisco CA

Author of SAS Proc to Speak

On September 22, at 7:00 PM, Prof. Cyrus Mehta of the Harvard School of Public Health will speak at the Harvard Faculty Club, 20 Quincy Street, Cambridge.

Prof. Mehta will discuss the SAS procedure that he and his colleagues developed to perform exact tests of statistical significance in contingency tables. Cheese and beverages will be served at 6:30 PM. Cost is $5.

Call Tom Marx for details at 876-0962.

SAS/Graph Users

The SAS/Graph prototype application announced by the Institute in the last issue of *SAS Communications* is unavailable until late in the year. We'll try to get hold of one before the next BASUG meeting at John Hancock this Fall.

Mike Zdeb of the NY State Health Dept. is tentatively scheduled to appear at our November 15 meeting. Mike's forte is using mainframe SAS/Graph, interfacing with various output devices, and downloading graphs to a PC for use with PC graphics applications such as Lotus *Freelance Plus*. Many of us fumblers who have trouble getting a graph out on *any* device eagerly await this presentation.

Using SAS and DB2

IBM's DB2 (and its VM counterpart SQL/DS) are relational database management systems. They are comprised of:

- a relational database
- a structured query language (SQL)
- an interactive facility (QMF) for reports and graphs
- an interface to other languages (COBOL, PL/1)

Advantages: DB2 and SQL have been hot items for some very good reasons. Their information is maintained in tables of rows and columns, logically the same as a SAS dataset with observations and variables. This setup is easy for users and DPers to understand. Unlike other databases, the data organization of DB2 is flexible. Columns and rows can be added and deleted with ease. Additionally, SQL is closer to English than other applications. Consider the basic form of the SQL SELECT statement, which is all one need know to read and output tabled data:

SELECT [column1, ... column*n*] [*]
FROM table1, ... table*n*
WHERE *search condition* ;

Users work with DB2 through IBM's Query Management Facility (QMF). QMF is a Dialog Manager-type collection of screens that relate DB2 tables and SQL code with rudimentary reporting and graphics. Report capability is similar to that generated by a simple PROC tabulate.

Drawbacks: DB2 suffers from the lack of application development tools. If you are an applications programmer, you will soon miss the advanced functions of a procedural language for more sophisticated development and reporting requirements. IF..THEN..ELSE, encoding data values, creating variables on the fly,... these and other common functions that you are used to in SAS are unavailable in DB2. One can embed SQL code in 3GLs such as COBOL, but this detracts from the speed and power of DB2. The developer might also wonder how the user area, accustomed to accessing corporate data via 4GLs, can function with SQL. SELECTs soon get much more involved than the basic format above. To answer all but the most fundamental requests involves the nesting of complex SELECTs and creation of temporary tables. That level of sophistication is beyond most user and programmer areas.

Fortunately, products such as SAS, Focus, Ramis, and Easytrieve Plus started building their bridges to the SQL world a few years ago. Right now, these products are serving to fill the gap between what IBM provided in QMF and what the user can work with. "Fourth-generation languages, lately viewed as growing long in the tooth, are getting a midlife kicker through their ability to work with IBM's DB2... Everything that works with DB2 is going to be carried along with it." *(ComputerWorld,* May 30, 1988)

SAS hopes to be included in the ride via its separately licensed SAS/DB2 and SAS/SQL-DS software. Each product has procedures to:

- 1. extract data from DB2 tables into a SAS dataset
- 2. create and load a DB2 table with data from a SAS dataset
- 3. update rows in a DB2 table via PROC FSEDIT.

If a DB2 or SQL/DS application is developed at your firm, there is a database administrator (DBA) controlling space allocation and access privileges for DB2 areas. If you've been taking your DBA to lunch regularly, you should have sufficient authority to read live tables and create your own small summary tables therefrom. If you've taken her to Hawaii or something, maybe you're allowed to do numbers 2 and 3 above. This example will concentrate on #1.

Problem: A user needs a series of periodic reports, the requirements of which (formatted data values, custom sort order) are not possible in QMF. The source table is stored under CMS in SQL/DS.

Solution:

- Create two SQL queries. The first clears out a temporary SQL/DS table for our use; the second creates a subset of the production table with the required rows and columns, and writes the answer set to the temporary table.
- Write an SQL proc to run the above two queries in batch mode.
- Write a SAS program to read the temporary SQL/DS table into a SAS dataset, then manipulate the data via procs format, summary, and tabulate into acceptable reports.
- Create a CMS exec that runs the SQL proc and the SAS job in batch.

Code:

```
-- The SQL query TTBL-DELETE to clear a temporary table
   DELETE FROM TTBL

-- The SQL query TTBL-FILL to refresh the data in my
temp table from the production table
   INSERT INTO TTBL
   SELECT COL1, COL2, COL3, COL4
   FROM PROD.TABLE
   WHERE COL1 IN ( 5, 10, 15)
   GROUP BY COL2, COL3

-- The SQL procedure RPT1 to run 2 SQL queries
   RUN TTBL-DELETE
   RUN TTBL-FILL
```

(continued on next page)

("SAS and DB2" continued from prior page)

-- The SAS program RPT1 to read in the SQL temp table

```
PROC SQLEXT  OUT=tempds ;
SELECT * FROM MYID.TTBL ;

PROC FORMAT;
VALUE C_
(format code )

PROC SUMMARY DATA=tempds NWAY;
CLASS COL1;
ID COL2;
FORMAT COL3 C_.;
VAR COL4;
OUTPUT OUT=summds  SUM=;

PROC TABULATE DATA=summds;
( other report code )
```

-- An EXEC to run the QMF and SAS jobs.

```
/* */
Q TIME
QMFBATCH MYID.RPT1
SAS RPT1
Q TIME
```

If you want to be more efficient, SAS advises creation of a "mapping dataset" that relates the column names and characteristics of the DB2 table to variable names, formats, etc. of a SAS dataset. The mapping DS is often recommended to reassign variable names, allow date logic, etc. This admirable feature has not worked properly in our brief experience with the product at our installation, so I am not including it in the example.

If you want to be super-efficient, schedule the CMS EXEC to run overnight via scheduling software. This may be a requirement at some installations.

If you want to be unemployed, SAS will allow you to directly hit an existing DB2 table (assuming you have been granted authority) without creating an intermediate table of summarized data in QMF. This is not to be advised for other than small tables. Just run a SAS job that contains:

```
PROC SQLEXT  OUT=tempds;
SELECT * FROM MYID.TTBL
;
```

Early results of benchmarking Focus, Easytrieve, and SAS software links to SQL/DS at our installation show approximate parity between SAS and Focus. Focus has the advantage of being a relational DB product, and its report writing capability is better than that of SAS. Easytrieve has cost less to run, but its reporting has been as ugly as QMF. As always, use the product with which you are most familiar, and test and prepare your data thoroughly within QMF before accessing any large table with SAS.

Mike Murphy

Cheap Tricks Department

A research analyst using SAS is seldom satisfied with running and printing a table of numbers. Analysts typically munch on the data from many tables for a while, calculating percentages and differences, comparing them to one another. This type of work is best done on a PC, often using Lotus 1-2-3.

What is needed is to have this mainframe SAS report output appear on a PC. If you have PC SAS or some interface product, more power to you. Here is a real low-rent method I use to dump Tabulate output into Lotus.

Most PC-based products will read a delimited file: one in which each variable is separated by a comma, and character values are enclosed in double-quotes. Since I'm usually classifying values via PROC Format, the quotes can be embedded in the formats. The delimiting commas are provided by the FORMCHAR option of Tabulate. FORMCHAR allows one to specify an alternative to the dashed-box appearance of Tabulate. Substitute a comma and eleven spaces and SAS puts a comma between columns and spaces everywhere else.

Consider the following code:

```
PROC FORMAT;
VALUE AG_
1-34=' "UNDER 35" '
35-64=' "35-64" '
65-99=' "65 AND UP" ';
VALUE AT_
1=' "LIKES" '
2=' "HATES" ';

OPTIONS NOCENTER MISSING=0;
PROC PRINTTO NEW UNIT=20;

PROC TABULATE MISSING
NOSEPS FORMCHAR=',           ';
CLASS AGE ATTITUD: ;
VAR WT;
FORMAT AGE AG_. ATTITUD: AT_.;
KEYLABEL PCTSUM=' ';
TABLE ATTITUD1 ATTITUD2 ATTITUD3 ATTITUD4,
AGE*WT*PCTSUM
(ATTITUD1 ATTITUD2 ATTITUD3 ATTITUD4) *F=12.;
```

Note the use of the Ray Pass trick of implying a varlist by ':'.

The PRINTTO procedure changes the default print file from the line printer to a Fortran-type output file, #20 in this case. Depending on your operating system and how you implement SAS, you may have to allocate ddname FT20F001 via JCL or a CLIST. If you are using IOF or CMS, skip PRINTTO since your output is written to disk regardless.

Download the output file to your PC with any 3270 emulation board, import it into Lotus or dBase, and analyze away.

M^2

Boston Area SAS Users Group - Meeting Announcement

Tuesday, September 13 , 1988, 8:30-11:30 AM

Abt Associates

55 Wheeler Street Cambridge, MA

8:30-8:45	Coffee, etc. / General Announcements / COLLECTION OF DUES
8:45-10:00	WHAT YOU THOUGHT I MEANT IS NOT WHAT YOU HEARD ME SAY. Charles Hoffman of GTE Labs gives a listening-skills mini-workshop. We mean it this time. Really. If you're there, he'll be there. *You have my word on it.*
10:00-10:30	Break, PROBLEM SOLVING(!), Interest Groups. *NEW USERS* - Meet the BASUG staff, and learn about the resources our Users Group has.
10:30-11:30	FULL DISCLOSURE OF LATEST RELEASE. No, not the most recent furlough plan for inmates, but Release 6.03 of PC SAS. Ron Cody, of the Robert Wood Johnson Medical School, and Author of ***Applied Statistics and the SAS Programming Language*** acquaints us with the ins and outs of running SAS in the PC environment, with particular emphasis on the newest release.

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems.

Call Stacy Gill at 329-4500 ext 388 with questions, comments, suggestions, or if you need directions, advice, ...

Admission is free to first-time attendees. Dues for 1988 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Directions to Abt Associates: Go right off Concord Avenue at the Fresh Pond Rotary, onto Wheeler Street. The meeting will be held in the Ramp Conference Room.

Boston Area SAS Users Group - Meeting Announcement

Tuesday, November 15 , 1988, 8:30-11:45 AM

John Hancock Financial Services

Room 402 of the John Hancock Conference Center, Trinity Place, Boston, MA

8:30-9:00	Coffee, etc. / General Announcements / COLLECTION OF DUES
9:00-9:15	NESUG REGIONAL CONFERENCE HIGHLIGHTS. Recap of the First Annual Northeast Regional SAS Users Group held at Pace University in New York City.
9:15-9:35	SAS INSTITUTE NEWS FOR USERS GROUPS. We've received the latest propaganda from Cary, North Carolina. It's NEW stuff a NEW way ... Videotape! For those who've never seen Jim Goodnight (the father of SAS), this is a real treat.
9:35-10:00	Break, PROBLEM SOLVING(!), Interest Groups. *NEW USERS* - **Meet the BASUG staff, and learn about the resources our Users Group has.**
10:00-10:02	Business Meeting.
10:03-11:30	EDITTING SAS GRAPHICS WITH PC SOFTWARE. Mike Zdeb had a very successful BOF at the NESUG Conference on this topic. This is a chance to learn how graphics applications can be brought into the PC environment to enhance that which SAS gives you on a mainframe. It is also an opportunity to learn exactly what BOF means.

The Problem Solving time during break is designed to help anyone with a SAS or SAS-related problem (JCL, Hardware, etc.), as well as keep everyone informed about unique solutions to common problems.

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Call Stacy Gill at 322-4500 ext 388 with questions, comments, suggestions, or if you need directions, advice, ...

Boston Area SAS Users Group

P O Box 253

Boston MA 02117

Set ßASUG;

A Publication of the Boston Area SAS® Users Group (BASUG) November, 1988

NESUG '88 a Success!

After a full year of planning, the first regional SAS® conference in the U.S. was held on October 28 at Pace University's Manhattan campus. This was also the first general meeting of NESUG (the NorthEast SAS® Users Group) and attracted 600 users from Maine to Minnesota. Regrettably, a few hundred more applications had to be declined due to space limitations.

In his lively keynote address, Barrett Joyner, Marketing Manager at The SAS Institute, noted that the 600 attendees equalled the number of users at SUGI-6 in 1980.

Barrett mentioned some new products on the way: SAS/OR® and SAS/QC® modules for The SAS® System for Personal Computers, and Proc Report, a point-and-shoot report generator (with mouse capability). Their goal is to have Version 6 on all operating systems by the end of 1989. There will be no further releases between 5.18 and 6.

The Institute's representatives at NESUG '88 (five in all), delivered two other talks, answered questions on SAS under UNIX and OS, published the conference proceedings for us, and provided documentation displays and videos. ORI of Washington DC contributed an entire session of talks. Mini and micro vendors Hewlett Packard, Prime, Sun, and Tektronix provided people and equipment displays.

In spite of this vendor presence, the conference was clearly user-driven. The proceedings were handed out at the start of the conference (along with t-shirts). The best speakers from Washington, New York, Hartford and Boston gave SUGI-level presentations on beginning, advanced, and special-interest topics. Every talk was recorded and transcribed. At the end of the day, fourteen BOF sessions were conducted on a wide variety of subjects.

We anticipate that next year's gathering will be a one or two-day event held at a local hotel conference facility. Most vendors and speakers have assured us of their willingness to return. NESUG '89 will be even bigger and better, after the good experience of this year's event. There will be room for everyone at the next NESUG. We hope you can make it.

Hal German

SAS® Programming Style

A few months ago, a long discussion took place on the SAS-L electronic bulletin board concerning the elements of style that should be used by SAS programmers. Some of these points are unique to SAS; others are conventions that should be employed with any third or fourth-generation language. Thanks to Frank DiIorio of NIEHS, Landy Manderson of UAB, and Lowell Mercier of BU for their contributions.

Ten Elements of SAS® Style:

1. Type DATA, PROC, OPTIONS, and operating system commands in column one after leaving a blank line; indent all other code at least three columns. Further indent continuation lines and DO loops.

2. Comment each DATA step, but not to the extent that it obscures the code.

3. Invent meaningful variable and dataset names. Do not use default SAS dataset names.

4. End DATA and PROC steps with a RUN; statement.

5. Specify variable lengths with LENGTH or ATTRIB statements; do not use default formats.

6. Use explicit retains rather than implicit; i.e. COUNTER = COUNTER + 1; rather than COUNTER+1;

7. Never rely on implicit character-numeric and numeric-character conversions. Use INPUT and PUT, respectively.

8. Use formats and the PUT function to group/recode variables rather than long IF/THEN/ELSEs.

9. Ensure the closure of IF/THEN/ELSE results, e.g. IF A=B then X=1; ELSE IF AB then X=2; ELSE X=.;

10. They are not yet awarding prizes for doing all of your SAS processing in one, long DATA step. It is often desirable to separate tasks into a logical series of DATA and PROC steps, letting the PROCs (e.g. SUMMARY) do some of the work. We know that all great programmers who code right down to the metal want to perform a hundred tasks in one pass of an input file. Consider that, in less time than you spent debugging that step, you would have gotten the same result with several smaller DATA steps. It can also make it easier for your heirs to maintain.

Mike Murphy

The NESUG Bulletin Board

Why wait for a monthly meeting or an annual conference to communicate with SAS users at other companies? We are all just a phone call away (on your ASCII terminal and modem). Our local electronic bulletin board for SAS users is free to use. Join in. Contribute problems, solutions, code you're proud of, bugs you're ashamed of, or just read what's going on among other users.

NUMBER: (508) 263-1499
HOURS: Every Monday and Tuesday, 8AM to 8PM.
MODEM: 300, 1200, or 2400 BAUD
PARMS: 8, N, 1
PROBLEMS: Call the SYSOP, Mike Keohan (617-956-3665)
FEATURES:

- SAS code and macros, REXX code, and CLISTS (contributions welcome)
- Current SAS-L messages to display or download
- SAS, DOS, etc. programs and utilities
- On-line tips on using SAS
- Send/receive messages with other local users

Contact Mike Keohan when you first dial in to increase your time and privileges. Then you can download over 70 virus-free files and programs.

BASUG

The Boston Area SAS® Users Group was formed in 1983 to provide a forum for the exchange of information and the promotion of new ideas concerning SAS and related products, and to assist members in career advancement.

Inquiries and correspondence should be directed to:
B A S U G
PO Box 253
Boston MA 02117

BASUG Steering Committee:

Alan Dickson	Co-chairperson	(508) 799-4441
Hal German	NESUG	(617) 466-2290
Stacy Gill	Secretary	(617) 329-4500
Sandy Hendren	SAS Liaison	(617) 863-2000
Mike Keohan	Bulletin Board	(617) 956-3665
Tom Marx	Past Chairperson	(617) 876-0962
Lowell Mercier	Treasurer	(617) 638-5185
Mike Murphy	Newsletter	(617) 572-6533
Wendell Refior		(508) 799-4441
Bob Virgile	Co-chairperson	(617) 648-1347

Set BASUG;, published quarterly, is available only to BASUG members. Contribution of articles, comments, litigation, etc. should be sent to:

Mike Murphy, c/o John Hancock Mutual Life, PO Box 111, T-20, Boston MA 02117

The SAS/Graph® - Mac Connection

Buried within the SAS 5.17A documentation for VMS is a gem: the ability to take your SAS/Graph output and send it to the VAX as a .PIC file. This can be done in either black & white or in glorious color.

The connection has two parts:

- A SAS/Graph metagraphics device driver that produces a metafile, which is really a file with columns of numbers
- A program named META.HQX that converts your metafile to a .PIC format. META.HQX resides on the Mac.

Place the following line in your SAS code to generate a metafile:

```
GOPTIONS DEVICE = MAC or COLORMAC;
FILENAME METAFILE 'GTESTIT.META';
*/ SAS code follows */
```

When your program runs, SAS/Graph looks for a file named MAC.ATT or COLORMAC.ATT. Simply copy MAC.ATT to create it. This is the attribute file that determines the characteristics of the metafile. The name and location of the metafile is determined by the FILENAME statement.

The metagraphics driver is in Tech Report #155. The SAS/Graph - Mac connection is in Tech Report P-186 (not available yet) and in pages 25-28 of the VMS Site Installation Notes.

Hal German

Calendar

November 30, 1988, Boston Computer Society General Meeting (with Steve Jobs), Symphony Hall, Boston MA, (617) 367-8080

November 29-30, 1988, Implementation Strategies for Expert Systems, Chicago IL (CONTACT: Decision Support Tech, 51 Church St, Boston MA 02116)

December 1, 1988, Boston IBM PC Users' Group, Mass Bay Community College, Wellesley Hills MA, (617) 367-8080

December 4-7, 1988, Computer Graphics for Design/Fall 88, New York (CONTACT: Pratt Center, 45 Stephenson Ter, Briarcliff Manor NY 10510)

April 9-12, 1989, SAS Users Group International conference, San Francisco CA

The Macro Corner: Recoding Variables

There are two generally-accepted methods to recode SAS variables. If there are not many values involved, a simple IF/THEN/ELSE suffices:

```
IF BIRD = 'HURT'
    THEN CELTICS = 'LOSE';
    ELSE CELTICS = 'WIN';
```

Most of us use the PUT function with Proc Format to recode more values:

```
PROC FORMAT;
    VALUE TBL_
    OCT='31'
    NOV='30'
    DEC='31';
DATA RECODED;
    SET ORIGINAL;
    DAYS = INPUT ( PUT ( MON, TBL_. ), 2.);
```

Each method has awkward features and, in my opinion, requires more effort than a third approach I have developed in the following SAS macro RECODE.

```
%MACRO RECODE (DLM, RCODEVAR, STRING,
    OLDVAR, NEWVAR );
RETAIN &RCODEVAR "&STRING" ;

/* locate first char of flip */
I = INDEX ( &RCODEVAR, SUBSTR ( &OLDVAR, 1,
LENGTH (&OLDVAR )));

/* flip value not found */
IF I = 0 THEN &NEWVAR = &OLDVAR;
ELSE

/* flip value found */
DO;

/* locate first char of flop */
    I = I + INDEX(SUBSTR(&RCODEVAR,I),&DLM);

/* locate last char of flop */
    J = I + INDEX ( SUBSTR ( &RCODEVAR, I ) , &DLM ) -2 ;
    &NEWVAR = SUBSTR( &RCODEVAR, I, J-I+1 ) ;
END;
%MEND RECODE;

DATA RECODED ( KEEP = FLIP FLOP ) ;
    INFILE IN1;
    LENGTH FLIP FLOP $ 10 DELIMIT $ 1;
    RETAIN DELIMIT '/' ;
    INPUT FLIP $ ;
    %RECODE (DELIMIT, FLIPFLOP,
            UP/DOWN/OVER/UNDER/BEFORE/AFTER/,
            FLIP, FLOP )
    RUN;
```

While my macro converts from character to character, both char-to-num and num-to-char conversions can be handled by initially converting the numeric variable to a character variable with the PUT function. I can also envision how ranges, value lists, and other embellishments could be processed by enlarging RECODE.

Macro RECODE may be called as many times as needed within a data step. It can also be stored in a macro library and made available to all programmers within an organization.

If you are interested in developing a variable recoding capability in SAS or in a third generation language as a commercial product, I would like to discuss it with you

Tom Marx, (617) 876-0962

The Puzzle Corner

This Issue's Puzzle

One section of a customized reporting program reads:

```
FILE PRINT ;
PUT @ 50 STUDENT 'Attended the '
SUBJECT 'Class Taught by ' TEACHER ;
```

where STUDENT, SUBJECT, and TEACHER are three character variables ($20). Since each line in the report can print up to 132 characters, a problem may arise. If TEACHER won't fit at the end of the line, the SAS software will print it beginning at column 1 of the next line. Rewrite this program so that (1) if the information fits on one line, it prints on one line, and (2) if TEACHER will not fit, it will be printed beginning at column 50 of the next line.

Solution to Last Issue's Puzzle

Use Proc Tabulate to produce the following:

LAYAWAY PLAN CHART

	TOTAL	TOTAL PAID:	
	COST	DOLLAR AMOUNT	% OF TOTAL
CUSTOMER ID			
02847AD1422G12	$800.00	$770.00	96.25%
12847AD1422XC2	$1,625.98	$1,250.00	76.87%
22847AD1422YC2	$499.90	$484.00	96.81%
32847AD1422ZJ2	$990.00	$642.75	64.92%
42847AD1422A72	$775.00	$715.00	92.25%
52847AD1422B82	$1,346.64	$1,100.00	81.68%
62847AD1422C42	$885.00	$300.75	33.98%
72847AD1422DB2	$799.99	$509.99	63.74%
82847AD1422E22	$720.00	$485.00	67.36%
92847AD1422FC2	$599.99	$280.99	46.83%

The Puzzle Corner (cont. from prev pg)

The two input datasets include CUSTOMER (contains CUSTID, $14, and TOTCOST, 8, with one observation per CUSTID) and PAYMENTS (contains CUSTID, $14, and AMTPAID, 8, with many observations per CUSTID). The full program requires broad knowledge, using much more than Tabulate alone:

```
PROC SORT DATA = CUSTOMER;
     BY CUSTID;
PROC SORT DATA = PAYMENTS;
     BY CUSTID;
DATA COMBINED;
     MERGE CUSTOMER PAYMENTS;
     BY CUSTID;
     IF FIRST.CUSTID = 0 THEN TOTCOST = 0;
PROC FORMAT;
     PICTURE PCT
     LOW - <100 = '99.99%'
     100 - HIGH = '999.99%';
PROC TABULATE DATA=COMBINED;
     CLASS CUSTID;
     VAR TOTCOST AMTPAID;
     TABLE CUSTID,
     TOTCOST * (SUM = 'COST' * F=DOLLAR11.2)
     AMTPAID*(SUM='DOLLAR AMOUNT'*F=DOLLAR13.2
     PCTSUM<TOTCOST> = '% OF TOTAL' * F=PCT.)
     / RTS = 17;
     LABEL TOTCOST = 'TOTAL'
     AMTPAID = 'TOTAL PAID:'
     CUSTID = 'CUSTOMER ID';
     TITLE 'LAYAWAY PLAN CHART';
```

The user-defined picture format allows the percent sign to appear in the table. The pre-packaged dollar formats print dollar signs and commas. The RTS option condenses the CUSTOMER ID column down to 17 characters. Column headings are controlled by both the TABLE and LABEL statements.

The denominator for the PCTSUM statistic specifies only an analysis variable (TOTCOST). Therefore, PCTSUM is computed using one analysis variable for the numerator (SUM of AMTPAID) and another for the denominator (SUM of TOTCOST), using identical categories of the classification variable(s).

The many-to-one merge resets TOTCOST to zero for all but one observation for each CUSTID. In that way, the SUM statistic computes an accurate result. An alternative which doesn't reset TOTCOST is to replace the SUM statistic with the MEAN statistic. In this case, the alternative approach fails because TOTCOST must be summed to compute the PCTSUM statistic.

Robert Virgile

Q&A on SAS® PC with Dave Brumitt

Dave Brumitt is Technical Support Manager for PC/UNIX Systems at The SAS Institute. The following is an excerpt from Dave's excellent NESUG '88 presentation, "*An Up-to-the-Minute Report on The SAS System for Personal Computers*", during which he demonstrated the latest enhancements to Version 6. These included SAS/ASSIST (a menu-driven facility allowing new users to work with SAS immediately), and an AF facility to search for and download usage notes, the sample library, and zap numbers.

QUESTION: What is the minimum configuration for a PC to run PC SAS?

DAVE: You are going to need EMS to run this. To run any of these system applications will require EMS; 500K will probably do it; (A one-MB minimum?) No, you can do it with 16K pages of EMS. Now 1MG is generally the minimum that you get a board populated to. In this machine (Compaq 386) where I have a software driver I can use 16K pages.

QUESTION: Can you tell me why whenever I run PC SAS I get memory recovery?

DAVE: Because you don't have EMS. I don't know what to tell you. The PC is a tough environment for us. We're a big program; we're limited to 640K memory. What's happening to you is you're simply bumping up against memory.

SAME PERSON: I've had it happen when I've started the system for the first time.

DAVE: If you start the system the first time and it's asking for memory recovery, probably you're running something else that's memory-resident: Sidekick, something like that. Do you have EMS on your PC?

SP: No.

DAVE: It's a good idea if you're going to run SAS, to run EMS. I hate to tell you this. If you guys are contemplating going OS/2, buy memory stock, start stockpiling chips now. It's going to require a lot of memory.

QUESTION: What are your plans for OS/2?

DAVE: I'd be happy to answer any OS/2 questions to the extent that we know anything. We do have OS/2 with Presentation Manager at The Institute. We are committed to running on it. Our host group is working on it now. We have, as I've said, a few things running. It's a pretty frustrating job because OS/2 with Presentation Manager is not itself completely debugged yet. In terms of capacity, I can tell you where the problem with OS/2 looks like it's going to be: right now it does not run on a CGA tube. My understanding of that is that it's going to be up to the manufacturer of the PC to define the device driver for OS/2 to hook into the

SAS PC (continued)

hardware. So it probably should be running CGA. It's going to take close to 10MB on your disk -- just for the operating system. We're recommending if you're going to run OS/2 with Presentation Manager with SAS -- pretty big hard disk and about 6MB of memory. Those of you with OS/2 are saying "wait a minute - those are UNIX numbers", and they kind of are. Six MB if you're going to run big procs and everything, but certainly from what we're hearing from the OS/2 folks, you're going to need 2MB just to get OS/2 up to a prompt. (laughter) Multitasking operating systems are a lot bigger. It's a pretty dramatic thing to go from PC DOS that takes 60K up to 2MB, but OS/2 is just a complicated system - all of a sudden in the UNIX category of operating systems. It will do a lot. It is a nice system. P/M is very nice, with the icon-based interface and the standard graphics files.

Understand what standard graphics files offer. When we write a graphics file, it is a standard that any other application understands. You would be able to take the output and put it into somebody else's word processor and there should be no problem. Everybody says "Wow! That's neat!" and all the Mac people are going "Ahhh, we've always done that."

QUESTION: Has anybody run PC SAS on a MAC II, with the software emulation boards? There's a new product out, SOFT-PC, which allows you to run DOS programs.

DAVE: I'm not familiar with that one. Frankly I'd be really skeptical of any software emulation that's going to allow an Intel 8086-based product to run on chip. That looks kind of tough.

QUESTION: Rainbow has "code blue" that apparently works.

DAVE: I'll reserve comments until I see it work on my desk. We have run it on a Mac II with a co-processor card, the AST. I was not terribly happy with that implementation. It was slow and had quite a few bugs. At this point I understand AST has a new version of the software out that's greatly improved. I have not seen that one so I can't comment on it. I will tell you, however, the one that works is the Sun 386-I. It will do exactly what everyone wants to do: it will run multiple SAS sessions with each session having EMS and each session running a different device driver. And you can cut and paste between sessions.

QUESTION: Have you implemented under Windows-286, Windows-386, or are you jumping directly into Presentation Manager?

DAVE: We are running under Windows-386. For those of you who will be at SUGI this year, Jill Maddox, who is on my staff, is going to present a paper on Windows, Desqview, P/M, all these 386 control programs. She's currently in there with two Compaq-386s and all these programs tearing her hair out trying to get everything to run right. It's not an easy task with all this new stuff.

Windows-386 had an initial problem -- again, lots of memory. To get it to run right under Windows-386 you're looking at 4MB in addition to the MB on the motherboard, so you're looking at 5.

I'm not sure I understand why you'd want to run under Windows-286 because you're not really buying multi-tasking that you get with 386, and you're giving away lots of memory. We're certainly concentrating on the 386 bunch.

I'm not getting any UNIX questions. Are you people not UNIX users?

QUESTION: Could you compare the UNIX to the OS/2 in terms of multi-user, multi-tasking, running above 640K?

DAVE: Yeah, UNIX is debugged. (laughter) OS/2 will not have a 640K limitation. You will not use EMS with OS/2. OS/2 runs the 286 or 386 processor in protected mode, so that they can address 16MB memory. Neither one will have a 640K limitation. I can tell you that the implications of running SAS therefore is it's a lot faster. We are able to unoverlay the product. PC users know: the first time you say "SAS" and you watch the hard disk start shaking, that's because it's so heavily overlaid to fill the thing to 640K. Unoverlaid, it just loads into memory and runs. It's much faster.

It's also much more usable. If you try to run big datasets under PC DOS, if you have very clean PC, you can probably get 600 numeric variables in a data vector, without EMS. With EMS you can probably squeeze maybe 1500 in. With UNIX, you can do 4000.

I've done a lot on both PC DOS and UNIX and I'll tell you I'm a UNIX chauvinist. It just does all these things, and it's debugged, it does what it's supposed to do, and it's not very hard to use.

QUESTION: What's the selling point for SAS on a PC. Why would I use it? Why would I go to the additional expense for hardware?

DAVE: Well, I'm not sure that you would, if it meant additional hardware. The obvious selling point is, if you have a PC, you can buy cheap software to put on it, and if you have one, probably, the interconnectivity with the mainframe. What kind of system do you use now?

Q: We have 3084s and PS/2-60s.

D: So you're a mainframe user, basically. Typically, mainframe users take about a week to absolutely fall in love with doing programming on a PC. You've got this processor that does nothing but service your needs with that editor. There is no response time whatever. It's a great way to use the workstation for a PC. You can write programs, you can syntax-check on the PC, with no fear, particularly for beginning users, of angry phone calls from the SYS-OP. It's just between you and the PC, and you can always turn if off! (laughter) For new users, there's a lot to be said for that. Do your syntax-checking on the PC, then when it's straight

SAS PC (continued)

you can send it up to the mainframe and run it. The code's 99% compatible.

QUESTION: When you talk about EMS, you're talking expanded memory? As opposed to IBM getting a PS/2 with 4MBs on it or something?

DAVE: Let me talk about that. This is one of our most popular phone calls. I get a lot of calls with, "Hi, I've got a PS/2 with 4MB of memory on it, and SAS is running out of memory. How come?"

Everybody understands the difference between extended and expanded memory? Understands that there is a difference? Extended simply means that there is more memory on the machine; expanded means that there is also some 16k paging hardware somewhere on that machine and there's a software driver that conforms to the Lotus - Intel - Microsoft 3.2 or 4.0 specification.

There are two ways to do this. If you have an AT-compatible or a PS/2 50,60 with a 286 processor, you must put hardware on the machine to obtain EMS. You have to use an Intel Above-Board or an IBM memory board, and the software driver.

Q: What is the IBM board?

D: It is the Extended Memory Option.

Q: The IBM version of that will function?

D: It will function if you buy a third-party software driver. You can buy one from Quarterdeck QEMM5560 that will make that thing function as EMS.

Q: The 4.0 driver isn't enough?

D: It's got to be a special driver. The thing only costs about $30. DOS 4.0 has that driver in it as well. With DOS 4.0 you're OK. The important thing to realize is a lot of people will sell you software drivers to run on a 286 machine, to convert extended memory to expanded memory. Don't buy them. SAS is going to be so slow as to be unbelievable. I'm talking on the order of 15-20 minutes to bring SAS up. To zoom the screen will take 7 or 8 seconds. I'm not necessarily saying the products are bad. It's a problem with the way they're written vs. the way we're written. We wrote our code into EMS. The way these products work is you have to run a program to simulate hardware to address the high memory. After you run that program, now you're high memory, now you can realign the code. Now you run the program again to get down to low memory and execute that line. Next time you want to go up....

When you think of how many times we hit a Display Manager module, to put that kind of overhead over every call to it, it just dies. You need the hardware -- for a 286.

For a 386, there's a different matter. If you've got a PS/2-80, the 386 has memory-management hardware on the chip itself. You can take any 386 machine with 3MB on the motherboard, and run a software driver that will convert that extra memory to EMS. We highly recommend those. Only 70s and 80s, not 50s and 60s. The key is, if it's a 386 chip you can do that. It will actually be faster because you're using 32-bit memory.

Hal's Swan Song

The ubiquitous Hal German, past-president of BASUG, founding father of NESUG, major contributor to this newsletter, and general pebble-in-the-shoe of The SAS Institute, is retiring from most of our user group activities. Hal is moving deeper into the murky technical world and we wish him well. You may bump into him at SUGI this year, in this space, and (God knows) on the bulletin board. Luckily, your roving newsletter correspondent happened to be nearby as Hal sang this haunting tune while walking away from his last BASUG meeting:

(chorus)
I don't do that SAS thing anymore
No Version 6 is coming 'round my door
Forgot the number of tech support
Quit waiting around for Proc Report
I don't do that SAS thing anymore

You've got to grow up sometime
And leave that SUGI scene
I quit getting SAS-L notes
And building AF screens
I feel I'm moving forward
'Cause there's no turning back
But one last song before I go
'Bout the days when I used to hack

(refrain) I Don't Do That SAS Thing Anymore...

So good-bye Proc Qprint
And my old friend Tabulate
The cowboy hats I used to draw
The tech reports I hate
It's no more shoe pounding
For features in the next release
Or running out of memory
Or that yearly payment on the lease

(refrain) I Don't Do That SAS Thing Anymore...

"I Don't Do That SAS Thing Anymore", Copyright 1988, Hal German

Boston Area SAS Users Group - Meeting Announcement

Wednesday, December 14 , 1988, 8:30-11:15 AM

Bentley College

8:30-9:00 Coffee, etc. / General Announcements / COLLECTION OF DUES

9:00-9:30 THE MERGEless MERGE
Tom Marx of MSSR gives a short description of a technique that merges datasets more efficiently than using the dreaded MERGE statement.

9:30-10:00 INTRODUCTORY TUTORIAL FOR ARRAYS.
Yes they're tricky, but they are also useful things that can make some applications alot easier to figure out. Bob Virgile runs through the basics of using arrays in DATA-step coding.

10:00- 10:01 Business Meeting. Election of nominated officers for BASUG Next Year.

10:02-11:15 WINTER MIX 'N' MEET.
A little holiday cheer for the BASUG membership. After the business portion of the program, let's take a little while to "chill" out and have some merry fun. Plenty eats and stuff, and a chance for members to informally discuss the weighty issue of resource optimization within the DATA step, and where to find a parking spot at the mall before Christmas.

Call Stacy Gill at 329-4500 ext 388 with questions, comments, suggestions, or if you need directions, advice, ...

Admission is free to first-time attendees. Dues for 1989 are payable now. Individual annual membership is $16 (or $2/meeting). Corporate annual membership dues $60.

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P O Box 253

Boston MA 02117