
Newsletter Distribution

This issue of the newsletter is being distributed more widely than usual to reach individuals who may be interested in continuing to receive it but who are not presently on our mailing list. We also ask people who receive this newsletter to pass it on to colleagues who may be interested in being added to our mailing list. Should you wish to be added to our mailing list or make any changes, please contact

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We invite anyone with computer related material for the newsletter or suggestions for future issues to contact Mel Sauve, 33 North Hall, 373-0987.

MUSIC 5.0 Availability to the General Public

MUSIC stands for the McGill University System for Interactive Computing and was developed at McGill University in Montreal, Canada. This operating system is a proven, high performance interactive system that comes with a comprehensive package of programs and facilities designed to meet the varied needs of interactive computing.

The MUSIC control language was designed to be simple for the novice computer user to learn yet provide the experienced user with enough sophisticated facilities to satisfy a variety of needs.

INTERACTIVE USE

MUSIC was designed to handle many concurrent interactive users and still maintain very good response time to terminal requests. The control language is simple in syntax and forgiving to the novice user.

BATCH USE

MUSIC allows users to submit jobs to the batch processor, which runs concurrently with interactive users. The same control language that is used in interactive mode is used in batch mode. This helps keep mistakes to a minimum and the user has less to remember. Batch jobs can be submitted from a terminal by the interactive user or can be entered via punched cards on the system card reader.

LANGUAGES AND SUBSYSTEMS

A wide variety of programming languages and software packages are available to the MUSIC user. The following is a brief description of some of the major ones.

EDITOR

MUSIC comes with a powerful line oriented context editor to be used to create and modify files. The user may input, insert, change, and delete lines or strings using concise and powerful commands. The editor allows for advanced string handling based on column or logical constraints. Because the editor works with a copy of your file, the user is offered the maximum protection from accidental file destruction. There is also a HELP command to provide assistance to interactive users when they have questions about command syntax or operation.

FORTG1

This is the IBM OS FORTRAN IV (G1) compiler. Many features for simplified and versatile data entry have been added to the standard product. This compiler also supports direct-access files, DEBUG, and list-directed I/O. The MUSIC sort facility can also be called from a fortran program.

WATFIV

This FORTRAN compiler was developed at the University of Waterloo in Waterloo, Ontario Canada. This compiler offers many more logic control statements than standard FORTRAN which allows you to write much more structured programs. The language also supports a comprehensive debugging facility and execution time error trapping.

WATBOL

This is the COBOL compiler developed at the University of Waterloo, Ontario, Canada.

SCRIPT

SCRIPT is a word processing system that is useful for preparing form letters, manuals, computer documentation, and other documents that are under a lot of constant revision. This package can run in both the interactive and batch environments and output can be directed to the main system printer, the users terminal, or a specified file.

STATPAK

STATPAK is a conversational statistical package that can be used by the non-programmer. A set of data can be entered interactively and then processed to give analysis of variance, factor analysis, regressions and other statistical functions. This system also includes HELP facilities for the beginning user.

COGO

COGO is an implementation of the IBM 1130 version of the Civil Engineering Coordinate Geometry program. COGO is a problem oriented system that enable engineers without computer experience to solve coordinate geometry problems, control surveys, highway design, bridge geometry, land surveying, and construction layout.

VMSUBMIT

VMSUBMIT will allow MUSIC users to submit batch jobs to other operating systems currently being run under VM/370 at SPCC. This will enable a MUSIC user to prepare a SAS job file on MUSIC and send that file to CMS to run under SAS. The user will also be able to direct his output to either the main system printer or have the output saved in a MUSIC file under the users account. Submitting jobs to DOS/VSE is also supported.

Installation of New Communication Hardware

SPCC has installed new communication hardware that will support up to 15 dial-up terminals. Any terminal that uses one of these phone lines can be running at either 110, 300 or 1200 baud. The particular baud rate used is determined by the baud rate settings of the user's terminal and modem.

When a terminal is first attached to one of these communication lines, the hardware is looking for a certain character to be typed in by the user in order to determine the baud rate of the user's terminal. This special character is a capital "X". After the hardware receives the character, the baud rate of the communication line is set to match the baud rate of the user's terminal and modem.

SPCC can currently support 15 auto-speed communication lines. These lines will become available to the public on Monday, November 23 by dialing 376-5820.

When using the new phone number please do the following four steps :

- 1) dial 376-5820
- 2) place the phone into the modem after hearing the carrier tone
- 3) type in a capital "X" after which the computer should respond with

VM/370 ONLINE

- 4) proceed with your normal logon steps the same as before

Installation of SAS 79.5

On November 23 SPCC will install SAS 79.5 as the current version of SAS. This updated version of SAS contains numerous changes and enhancements such as character string manipulation, probability functions, zip code functions, plus date and time functions. Major improvements have been made in the FORMAT and PRINT procedures. The memory requirement for PROC GLM has been greatly reduced, which will allow you to run larger regressions without using SASBIG. Minor changes have been made in 22 procedures.

Several new procedures are also introduced in version 79.5. These include FASTCLUS (fast clustering), PRINCOMP (principal components), REG (similar to REGR in SAS72), RSREG (response surface regression), STEPDISC (stepwise discriminant analysis), and VARCLUS (variables clustering).

SAS Technical Report P-115 covers all the changes in detail. This report will be available from SPCC and will cost about \$8.50. A new edition of the SAS Users Guide is scheduled for release in March or April of 1982.

SPCC SAS Seminar

SPCC will give an introduction to the Statistical Analysis System (SAS). This series is especially useful for those who are interested in using SAS or for those who have just begun to use SAS.

SAS is an integrated system for data management, statistical analysis, and report writing. SAS is comprehensive and powerful, yet easy to use. SAS manuals are available in the University bookstores. The handout "How to Access and Use SAS" can be obtained from 90 Coffey Hall.

The seminar schedule is shown below:

Intro to SAS	: Monday, Nov. 30	3:15-4:45 pm
The Data Step	: Wednesday, Dec. 2	3:15-4:45 pm
The Proc Step	: Friday, Dec. 4	3:15-4:45 pm

All classes will be held in room B35 Classroom Office Building on the St. Paul campus.

SPCC User Orientation Seminar

This seminar is intended primarily for new faculty, staff, and students who would like to become more familiar with the St. Paul Computer Center. The seminar will touch on the subjects of the location and layout of the computer center, current software available, current computer equipment being used, data entry services offered, etc. A short tour of the computer center is also given.

This seminar will be given on

Tuesday, November 24 3:15 pm
room B45 Classroom Office Building
St. Paul campus

SPCC MUSIC Seminar

This seminar is intended as an introduction to the MUSIC operating system. Some of the topics covered will be how to access and use MUSIC at SPCC, what software is available under MUSIC, how to submit a job from MUSIC to another operating system, etc. See the description of MUSIC in the above article. The seminar will be offered at the following places and time:

MUSIC Intro 1 : Monday , December 7 : B45 COB
MUSIC Intro 2 : Tuesday, December 8 : B45 COB

Time : 3:15 - 4:45 pm
COB : Classroom Office Building

Statistical Clinic

The Statistical Center provides statistical consulting to researchers at the University of Minnesota. The services of the center are available to the University community, generally without charge. Assistance on appropriate experimental designs and methods, data analysis, and the interpretation of results are part of the mission of the Center.

The Statistical Clinic, located in room 125g, Classroom Office Building, on the St. Paul campus, is staffed by graduate students of the School of Statistics, and supervised by faculty members of the Applied Statistics Department. It is intended to provide an initial contact between the Center and students with research problems. Many statistical problems can be handled in their entirety by the personnel in the Clinic; however, more difficult problems will be referred to an Applied Statistics faculty member.

Hours: 8:00 am to 3:00 pm
Days: Monday - Friday
Room: 125g COB
Phone: 376-3845

New Office Construction

Construction of the new SPCC offices is continuing in Coffey Hall. SPCC is expecting to move into the new office space some time in December.

 W E E K E N D H O U R S

Beginning January 1, the IBM 4341 has been available for use on Saturday. Our current hours are :

Monday-Friday	7:30 a.m. - 10:00 p.m.
Saturday	8:30 a.m. - 2:30 p.m.
Sunday	closed

 S H O R T C O U R S E S C H E D U L E

Short courses featuring an INTRODUCTION TO SAS and INTERACTIVE COMPUTING USING MUSIC will be offered on the St. Paul campus during February.

SAS		
February 16 (T)	3:15-5:00 p.m.	125 An. Sci.-Vet. Med.
February 17-19 (WF)	3:15-5:00 p.m.	35 COB
MUSIC		
February 22-26 (MWF)	3:15-5:00 p.m.	35 COB

Users who wish to access SAS remotely should attend the MUSIC seminar. MUSIC is an interactive system which, among other things can be used to prepare and submit SAS jobs and retrieve output from SAS jobs. The net result is faster turnaround.

The same courses will be offered on the Minneapolis campus early in spring quarter, the date and location will be announced later.

 M U S I C N O T E S

Beginning with this issue of our newsletter, we will be including a regular article containing information of general interest to MUSIC users. These will include: announcements of upcoming changes (read IMPROVEMENTS), new software products available on MUSIC, descriptions of known problems and methods for avoiding the problems.

NEW TERMINAL CLASSES

A large number of new terminal classes have been defined to MUSIC. These new classes should allow MUSIC to support most if not all of the kinds of terminals found on campus. The most noticeable difference between the terminal classes is the maximum number of characters printed on a line. Other differences involve special function keys and the amount of time required to perform a carriage return operation and other non-printing terminal functions. We suggest that users who have TTY model 33 terminals use the default (TTY) terminal class. For Texas Instruments Silent 700 terminals try TI725 or TI733. For Decwriters, TTY model 43, TI-820 and other wide carriage terminals use DECII as the terminal class. If you use a glass teletype (CRT terminal), try terminal classes Hazel or 3101. If your terminal does not function properly using these terminal classes, contact the consultant in room 90 Coffey hall, 376-4602 for help. Use the /PROFIL command to establish your terminal class. When you need to use MUSIC from a different terminal than the one you normally use, you may identify the terminal class in the /ID command when you sign on. Both /PROFIL and /ID are described in the MUSIC USER'S GUIDE.

LISTING FILES WITH LONG RECORD LENGTHS

Has your output ever been truncated? The /LIST command will not correctly print a file which has records longer than 100 characters. This problem will be corrected in the near future. Meanwhile, if you need to print files with longer record lengths, use the PRINT command of the context editor. For example:

```
/EDIT filename  
PRINT*
```

We will announce when the /LIST command has been changed.

SEMI-COLONS AND THE MUSIC EDITOR

Users have experienced problems when using the EDITOR for entering and modifying lines containing semi-colons. This is a major handicap if the file contains SAS commands. The cause of the problem is a feature of EDITOR which allows you to enter more than one edit command at a time. The semi-colon is used as the character which delimits multiple commands entered on one line. Fortunately, users may change or eliminate this feature. The DELIM command allows you to specify which character to use as the command delimiter. DELIM # will cause the EDITOR to use # as the command delimiter. DELIM without any character following it will eliminate the command delimiter feature. The DELIM command will only affect the current editing session and must be executed everytime you use the EDITOR. It is possible to make this change automatically everytime you edit any file by creating a save library file named EDITOR. This file must contain the following commands:

```
/INCLUDE *COM:EDITOR
```

DELIM

This file would cause the # character to be used as the command delimiter for all of your edit sessions. You may use this technique to cause other EDITOR commands to be executed everytime you edit a file, just include them in your EDITOR file. The DELIM command is described in more detail in the MUSIC USER'S GUIDE.

SIGN-ON MESSAGES AND THE NEWS FACILITY

When SPCC has information which needs to be distributed to users quickly, we will place it in the SIGN-ON message, which will print on your terminal everytime you sign-on. When the information cannot be presented in one sentence, we will use the NEWS facility. The NEWS can be displayed by typing NEWS. The sign-on message will warn users of new items on the NEWS.

MUSIC MANUALS

The MUSIC USER'S GUIDE is the primary reference for using MUSIC. This manual may be purchased from SPCC for \$15.00. There will also be a MUSIC primer available soon, watch for the announcement. Manuals may be purchased at our main office, currently at 33 North Hall, our office will move to Coffey Hall sometime in February.

S A S N O T E S

Beginning with this issue of our newsletter, we will be including a regular article containing information of general interest to SAS users. These will include announcements of upcoming changes, new features available on SAS, descriptions of known problems and methods for avoiding the problems.

SAS 79.5

SAS version 79.5 has been the current version of SAS at SPCC since late November. Included in this version are new PROCs, new features for old PROCs, fixes for old problems and even a few new problems. In this and future issues of the newsletter, we will be introducing you to some of these features. A document detailing all of the additions and changes is available at our main office, room 33 North Hall, it is SAS 79.5 Changes and Enhancements, SAS Technical Report P-115. The cost is \$9.00.

MISCELLANEOUS CHANGES

There are miscellaneous changes and features too numerous to mention in detail. These include: new DATA STEP features, several new FORMATS, several new functions and minor changes to the following PROCs: BMDP, CANCORR, CHART, CONTENTS, COPY, DATASETS, EDITOR, FACTOR, FREQ, FUNCAT, GLM, MATRIX, NLIN, PDSCOPY, RELEASE, RSQUARE, SORT, SOURCE, STEPWISE, SUMMARY, TAPECOPY and TAPELABEL. There are also some major new features for PROC PRINT and PROC FORMATS.

PROC REG

PROC REG is a new procedure which will be very useful to users who do regression analysis. PROC REG is a general purpose regression procedure. It is not designed to replace the special purpose procedures, PROC NLIN, PROC STEPWISE and PROC RSQUARE. It does, however, have several advantages over PROC GLM if you do not have class variables in the model. PROC REG:

- handles multiple MODEL statements
- can use either raw data or correlations or crossproducts for input
- prints predicted values, residuals, studentized residuals, and confidence limits, and can output these items to an output dataset
- prints special influence statistics
- produces partial regression leverage plots
- estimates parameters subject to linear restrictions
- tests linear hypotheses
- tests multivariate hypotheses
- writes estimates to an output dataset
- writes the crossproducts matrix to an output SAS dataset
- computes special collinearity diagnostics

A long, (58 pages) detailed description of PROC REG is included in SAS Technical Report P-115. PROC REG costs much less to run than PROC GLM when you have several models to run on the same dataset.

PROC TRANSPOSE

PROC TRANSPOSE is an easy and efficient way to transpose SAS datasets. It has always been possible to do this with a series of two DATA steps, but PROC TRANSPOSE is more convenient and costs less.

MISCELLANEOUS NEW PROCS

There are other new PROCS which may be of interest to some users. These are:

- PROC FASCLUS - fast clustering
- PROC PRINCOMP - principal components
- PROC RSREG - response surface regression
- PROC STEPDISC - stepwise discriminant analysis
- PROC VARCLUS - clustering variables

SAS/GRAPH

SAS/GRAPH is an additional set of SAS PROCS which produce high resolution color or mono-chrome graphics on a wide variety of graphics terminals. SPCC will be installing SAS/GRAPH sometime late in winter quarter. Users who are interested in this software should contact the consultant, in 90 Coffey hall, 376-4602.

SAS/ETS

SAS/ETS is a set of SAS PROCS which do Econometric and Time Series analysis. The functions provided include: time series analysis, forecasting, systems modeling and financial reporting. SAS/ETS will become available at the same time as SAS/GRAPH.

N E W H A R D W A R E

On January 27, one of our four tape drives was upgraded to read and write at 6250 BPI. This drive will still read or write 1600 BPI tapes but cannot handle 800 BPI tapes. The remaining three drives will read/write at 800 BPI and 1600 BPI. On January 30, three additional I/O channels were added to the 4341. This was done in anticipation of

additional disk drives which will be installed during spring quarter.

P R O G R A M M I N G S E R V I C E S

The most visible changes at SPCC in the last three years have involved a new computer, a new location and new software. In addition to this, we have expanded our applications programming staff from two to five programmers. One of the functions of the applications staff is to support the software offered on the IBM 4341. In addition to walk-in consulting services, we will accept appointments with researchers seeking advice about future computing projects, organization of data for analysis or information about available services. Our major function, of course is to provide programming services for users of the IBM 4341. These services include: system design, development and implementation. All of our staff has extensive experience with FORTRAN and SAS and somewhat less experience with COBOL and Pascal. Users who are in need of these services should contact Jim Colten. Our telephone number is 373-0987.

S O F T W A R E C O R N E R

Users may have heard our staff talking about VM. What is VM? VM/370 is the operating system used at SPCC. Operating systems are the LARGE programs which control computers. Since the operating system is controlling the computer, it makes sense that there is one and only one operating system, which is the way it has always been. VM/370 changes all of that, VM stands for VIRTUAL MACHINE. VM makes one real machine (computer) behave like several (virtual) machines. Each virtual machine can be controlled by a different operating system. At SPCC VM implements about twenty machines and three operating systems. One machine is controlled by DOS/VSE, which is the current version of Disk Operating System. DOS/VSE is a batch operating system and is very similar to DOS 26, which controlled our old IBM 360/30. Another machine is controlled by MUSIC (McGill University System for Interactive Computing). Music is an easy to learn, very friendly system which offers both batch and interactive processing. SPCC is offering MUSIC as the primary interactive system on the IBM 4341. The other operating system available at SPCC is CMS (Conversational Monitor System). CMS is a very powerful and flexible interactive operating system which is somewhat more difficult to learn than MUSIC. Most of SPCC's staff use CMS as a development tool in their work. CMS will be available to users who outgrow MUSIC's capabilities, or require software which is only available on CMS.