

ACSS NEWSLETTER

Academic Computing Services and Systems

Volume 23, Number 3

University of Minnesota, Twin Cities

March, 1989

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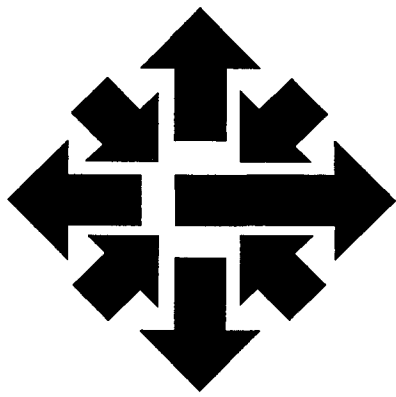
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Academic Computing Services and Systems

Volume 23, Number 3

University of Minnesota, Twin Cities

March, 1989

Free Advanced UNIX Seminars

Tom Kovarik
TEK@UMNACUX

The ACSS UNIX central system UX is enjoying heavy usage, with over 6500 login names currently in use. And, over the past four years, more than 600 people have taken the free "Introduction to UNIX" short course offered by ACSS.

With this growing number of users who have some familiarity with UNIX, ranging from the beginner who has already logged on a few times to the seasoned programmer, many users have requested a free seminar to examine the options and facilities of the two principal shells in use at the University. These are the C-shell and the Bourne shell.

The following free UNIX seminars have been scheduled for spring quarter in response to our users' requests.

Advanced UNIX Seminar: The C-Shell

This course will cover the following topics:

- Description and purpose of the C-shell.
- Metacharacters.
- Pipes and filters.
- History substitutions and editing.
- Processors and processes, background and foreground jobs, and job control.
- Using all 6 of UX's processors simultaneously.
- Command, alias, filename, and variable substitutions.
- Redirection of standard input, output, and error files.
- Programming in the C-shell and flow control.
- Predefined and environment variables.
- Special files such as ".login", ".logout," and ".cshrc."
- Parameters on the C-shell call.

In This Issue . . .

Marisa Riviere describes the VX package **Notes** and its usefulness to students and faculty.

Don Clark warns micro users about the hazards of **static electricity** and tells you how to avoid them.

There's a whole lot of upgrading going on, most notably the move to **VMS Version 5** on VX, to **NOS Version 2.7** on CA, and to **NOS/VE Version 1.4** on NV.

SPSS* Version 3.1 is now the default version on VX; Bruce Center describes the improvements in this version and also reports on **Version 5 of Minitab**, now on CA.

Michael Frisch describes the **new version of IMSL** on VX and reports on new documentation and corrections for **MACSYMA** on VX.

And we publish our **new short course schedule** for spring quarter. Take a class!

**CA Will Freeze
at NOS 2.7
See page 40.**

continued on page 40

HELP PAGE

HELP-LINES

Central Systems (CA,NV,UX,VX):

626-5592 8 am to 5 pm weekdays

Artificial Intelligence:

625-8332 3 to 4 pm weekdays

Data Base:

626-1887 10 to 11 am weekdays

Graphics:

626-5592 8 am to 5 pm weekdays

Liberal Arts, Text Analysis:

625-8332 3 to 4 pm weekdays

LUMINA (communications questions)

626-2272 8 am to 5 pm weekdays
7 pm to 10 pm Thursdays

Microcomputer and Workstations:

626-4276 9 am to 4 pm, weekdays
(Closed 12:00 to 1:30 pm,
Monday, Tuesday, and Friday.)

Statistics:

626-1887 1 to 3 pm weekdays

Text Processing:

625-1391 10 am to noon, Tuesday,
Wednesday, Friday

CONSULTING

Walk-In

East Bank:

128C Lind Hall; 10 am to 4 pm, weekdays
7 pm to 10 pm Thursdays

West Bank:

140 Blegen Hall; 12 to 2 pm, Tuesday;
2 to 4 pm, Wednesday; and 10 am to 12 noon
Thursday

Microcomputer and Workstations:

125 Shepherd Lab; 9 am to 4 pm, weekdays
(Closed from 12:00 to 1:30, Monday, Tuesday,
and Friday.)

Electronic Mail Consulting

Consulting is now available via the mail facility on all ACSS systems (the CA, NV, UX, and VX). Send mail to user name CONSULT for questions after hours and for low-priority questions that are not critical to your immediate computing work. Replies will be sent to your account through the mail facility on your system.

Instructional Computing Consultant

Department instructors may call 626-0200 for assistance in choosing ACSS systems (CYBER/NOS, CYBER/VE, ENCORE/UNIX, VAX/VMS), software, and for answers to any other inquiries on using computers for instructional computing.

COMPUTING INFORMATION CENTER

128A Lind Hall, 625-7397, MAD@UMNACGA, MAD@UMNACUX, MAD@UMNACVX
8 am to 4:30 pm, Monday through Friday

Computing account and grant applications available for CYBER, ENCORE, and VAX computers.

Short course enrollment. Short course schedules and class descriptions available.

Assistance in ordering vendor documentation. Vendor documentation is not always available in the University bookstores and may be ordered directly from the company.

Complete documentation collection. Reference copies of vendor and all other documentation for ACSS software.

Free ACSS documentation. General information, and mainframe and microcomputer information available.

Computing Newsletters. Subscribe to the *ACSS Newsletter* and the *ACSS Microcomputer Newsletter*. Newsletters from other computing centers are also available for reference.

ACSS NEWSLETTER

Volume 23, Number 3 March, 1989

ACSS NEWSLETTER

Acting Director, ACSS: Michael Skow
Editors: Steven Brehe, Paula Goblirsch

The *ACSS Newsletter* is published monthly by Academic Computing Services and Systems of the University of Minnesota, Twin Cities. Deadline for articles is the 5th of the month preceding publication; deadline for short announcements is the 10th. The *ACSS Newsletter* is produced with an Apple Macintosh Plus running Microsoft Word, FullPaint, CricketDraw, Adobe Illustrator, and Aldus PageMaker software, with camera-ready copy produced on an Apple LaserWriter Plus.

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For a free subscription call (612) 625-7397, or send your name and address to the Computing Information Center, 128A Lind Hall. BITNET: MAD@UMNACCA, MAD@UMNACUX, or MAD@UMNACVX. On-campus address changes *must* include your department name and address.

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The old dial-up number for the UX will be discontinued on March 27. See page 51.

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Advanced UNIX Seminar: The Bourne Shell

This course will cover the following topics:

- Description and purpose of the Bourne shell.
- Metacharacters.
- Pipes and filters.
- Processors and processes, background and foreground jobs.
- How to use all six UX processors simultaneously.
- Command, filename, and variable substitutions.
- Redirection of standard input, output, and error files.
- Programming in the Bourne shell and flow control.
- Predefined and exported variables and the environment.
- Special files such as “.profile,” and “.file.”
- Utilities built into the Bourne shell.
- Parameters on the Bourne shell call.
- The restricted Bourne shell.

Login Names, Prerequisites, and Enrollment

Those enrolled in these courses will be given a login name on the University's UX ENCORE Multimax central system.

Anyone enrolling in these advanced courses should have some previous experience with the UNIX operating system in any shell or should have completed the ACSS short course “Introduction to UNIX.”

For times and dates of these classes, consult the spring short course schedule elsewhere in this issue. To enroll in either course, contact our Computing Information Center, 128A Lind, at 625-7397.

These class descriptions are also available on-line on UX in the files

`/usr1/tek/cshell.class`

and

`/usr1/tek/bshell.class`

CA Will Freeze at NOS 2.7 March 25

L. A. Liddiard

As we announced in our January issue, after ACSS upgrades its CYBER CA machine to NOS 2.7, we will freeze the standard CDC compilers and editors at this latest level and fix all ACSS-developed and third-party NOS applications at their current level. That is, after we upgrade the CA to 2.7, we will *not* install any new versions of software packages on the CA.

ACSS will offer NOS service as long as there is significant demand. But we **strongly recommend** that you do not begin new long-term projects on the CA system. Our other three systems have 8-bit character sets, large virtual memories, and operating systems that will be standard and stable for many years and would be more suitable for long-term projects.

If you have a long-term project running on the CA that will take several more years to complete, **you should consider moving the project to one of our other systems.**

Other planned changes include the following:

ACSS plans to phase out the three tape units that can read 800 NRZI, 9-track magnetic tapes by June 30, 1989. Please contact our tape librarian at 626-1838 if you need help converting tapes from this format.

ACSS will continue to operate a single tape unit to read 7-track tapes, but users who own such tapes should begin converting them now. Please contact our tape librarian at 626-1838 if you need help converting tapes from this format.

ACSS plans to institute a card reading charge to defray the costs associated with this lightly used service after July 1, 1989.

VAXNotes, a Tool for the Classroom and Other Applications

Marisa Riviere
MARISA@UMNACVX

After class, Bill sits at a terminal in Lind Hall's computer lab and types: "Erik Fromm utilizes Freudian tools to identify traumatic situations that, instead of being produced by strong childhood experiences, originate from simple interactions with society during different stages of an individual's life...."

Next to Bill, Maureen sits at another terminal and types: "There were too many people just as I had expected. Christmas shopping was again a burden. Anyway, I managed to find leather gloves for my aunt, an Indian silk scarf for my cousin...."

A few minutes later, Linda, accessing the system from her home terminal, types: "Although Fromm utilizes Freudian tools, as Bill says, he manages to combine these tools with western and eastern philosophies to create a poetic and humanistic work aimed at the liberation of man..."

Early the next morning, somewhere on the West Bank, Anthony, at yet another terminal, responds to Maureen: "I learned to enjoy Christmas shopping by shopping early. I now do my Christmas shopping at summer art fairs, while strolling in the parks, listening to music, and tasting good food. I bought my parents ceramic coffee mugs, and my sister a leather hair barrette.... Perhaps, Maureen, you would like to try shopping early next year."

Bill and Linda are taking a class in modern philosophy. Maureen and Anthony are students in an advanced Spanish class; they wrote their shopping trivia in Spanish, not English. Bill, Linda, Maureen, and Anthony are all using VAX Notes for their class work. At regular intervals, the professors for both courses use the same computer software to evaluate their students' participation and to suggest new assignments.

Professor Rueda from the St. Paul campus has forgotten the time and location of today's meeting with his colleagues from the College of Veterinary Medicine. So he logs in to the system and invokes VAX Notes to check the bulletin-board conference facility for that department, which gives him the time and

location of the meeting besides any last-minute additions to the meeting's agenda.

These scenarios are imaginary, but I hope they become a reality in the very near future. The tools to make it happen, the hardware and software, are available and affordable, and so is the technical support from ACSS. The necessary software component can be VAX Notes, an electronic conference package from Digital Equipment Corporation for use on VMS systems. (There are other news and conferencing packages available in other ACSS central systems and at the University in general. Although VAX Notes is the focus for this article, the introduction of electronic conferencing into the classroom can be achieved with other software and on other systems.)

In the first example, VAX Notes electronic conference (E-con) provides a non-traditional learning experience. The student exercises a combination of oral and written skills, which are communicated instantaneously for immediate feedback. This method allows teachers and other students to conveniently revise the participants' contributions. It may also prompt the participation of individuals who usually don't speak or participate in group settings. Both are examples of timely communication across the widespread Twin Cities Campus.

At ACSS we have been using VAX Notes for more than two years. In my own experience, Notes has proven to be a very powerful and useful tool. At ACSS we used Notes during the initial stages of developing a complex software package to design the package's specifications. By using Notes, we were able to obtain valuable feedback from numerous staff members in an organized manner. A group of University VMS system administrators also maintains an on-going conference on Notes to address various technical issues, questions, problems, and solutions. The conference is an extremely helpful forum for centralizing and distributing information.

VAX Notes is fairly easy to learn. To participate you need only become familiar with a few commands and begin by practicing with the Sample_Conference provided by DEC as a training tool, or practice with some of the available ACSS conferences. At our offices, for example, our receptionist Mary Simon decided to use Notes after looking at ACSS's Movies conference. Now she maintains a bulletin-board type conference where she announces events of general interest to ACSS staff members.

VAX Notes is available on the ACSS VX system to all departments with an instructional account. VAX Notes software is also available to small departmental systems individu-

ally acquired by the department through the University of Minnesota and DEC Educational Consortium agreement. ACSS will be glad to provide assistance for the purchase, installation, and maintenance of those systems.

The network capability of VAX Notes makes it suitable for interdepartmental or intercampus communication. Having VAX Notes in your departmental system does not exclude you from belonging to a University-wide VAX Notes network. If your VMS system—whether it be a Micro VAX, VAX station, or the ACSS VX system—is networked through DECNet protocol on the University networks, you can join any public conference available on any system. Notes, for example, can be used to maintain a bulletin-board with announcements for University-wide events.

ACSS maintains a few conferences of general interest, such as Movies, Restaurants, Music, or Sports, which stimulate user participation. You are welcome to join these conferences to practice using Notes. Please bear in mind, however, that, while we encourage you to participate, we also request that you keep your own messages from becoming abusive or offensive. When in E-con, please respect the other users and the system resources.

To demonstrate to the University community the many uses of VAX Notes as a learning and communication tool, ACSS and DEC will conduct a presentation, "Creative use of VAX Notes for Classroom and Other Applications," on April 5 at Architecture 15 at 2:15 p.m. Join us to learn more about how VAX Notes on the VMS DEC systems can help you. Please let us know if you plan to attend by calling the Computing Information Center at 625-7397.

For more information on VAX Notes, refer to DEC's publication *Guide to VAX Notes*, Publication QA-960-AA-G2 or the ACSS on-line document VAXNOTES, which is available on the ACSS\$Writeup directory on the VX system. VAXNOTES has been recently revised and expanded to include information on creating and maintaining conferences and on how to announce and participate in user-maintained conferences. You can consult DEC's manual or obtain a free printed copy of ACSS's on-line documentation at the Computing Information Center, 128A Lind Hall. Or you can order your own copy of DEC's manual, which currently costs about \$85. Staff at our Computing Information Center, 128A Lind Hall, will help you prepare your order.

If you have any questions regarding VAX Notes, or if you need help testing or setting up a conference, call the ACSS HELP-Line at 626-5592, the ACSS Notes Coordinator Jerry Stearns at 625-1543, or call me at 626-0268. ■

VMS 5 Upgrade on March 25

Marisa Riviere
MARISA@UMNACVX

Last month we announced that the VX system upgrade to VMS 5 would take place on Saturday, March 25. Test time for users will be available for two Sundays prior to the conversion, March 12 and 19 from noon to 5:30 p.m.

How Will the Change Affect You?

Most parts of VMS are now different *internally* in Version 5, but the user interface has remained fairly constant. Internally DEC has redesigned system structures and utilities to include support for new features and provide mechanisms for future functions. Thus, from the user's perspective, the new VMS is very similar to the version you're accustomed to.

Major changes were made in linking other products supported by vendors and ACSS. These programs utilize system service calls and run-time libraries that were changed in the new release. A list of the changed calls and routines is in the VMS 5 Writeup described below. If your programs utilize any of those system calls or routines, you should compile them again.

We have updated and carefully tested all of the ACSS-supported programs and applications to be compatible with VMS 5. Some hidden side-effects may still affect a particular job. As mentioned above, ACSS is providing free testing sessions for you to check out your essential jobs. We believe such testing will assure you (and ACSS) of the new system's compatibility.

Please let us know if you encounter any problems while testing or converting your jobs to VMS 5. HELP-Line assistance will be available during the testing periods. You can report your problems then or at any other time.

Portability and Other Advantages

With this new release, DEC (the Digital Equipment Corporation, manufacturer of VAX computers) achieved full VMS portability: The VMS system became identical for all VMS hardware systems, from the workstation to the large central system. This makes user programs easily portable. You can, for example, compile and link your programs on VX and then

run the binaries on your work station, or move your binaries to VX to process large amounts of data once you have tested your sample data on your own system.

DEC is also implementing a new license management scheme on VMS 5 that establishes costs based upon the projected utilization of software. VX users as well as users of other VMS systems on campus will immediately benefit from these two new features. In addition, VMS 5 consolidates clusters of mixed configurations, including support for parallel multi-processing and an initial implementation of DECNet Phase V. The benefits of this will become clearer down the road when DEC releases its proposed University-wide agreement.

For more information on the upgrade, please consult the article in our February issue and see the VMS 5 on-line document on ACSS\$Writeup: on VX. To display the article at your terminal, use the command

```
$ TYPE/PAGE ACSS$WRITEUP:VMS5.LIS
```

The writeup also includes a list of the packages (and version numbers when applicable) that will be available for production as of March 25. ■

NV Upgrade to NOS/VE 1.4.1

Dave Bianchi
DJB@UMNACCA

As announced last month, on Saturday, March 25, we will upgrade our CYBER NV operating system to NOS/VE 1.4.1 L716. NV will not be available for users on March 25. There are major changes to NOS/VE in this version that affect users, especially in the System Command Language (SCL).

Control Data has provided an on-line version of the User Impact Bulletin (UIB) for NOS/VE 1.4.1 L716 that describes the user-visible changes. This help manual has been installed on the current NV system. To use the help manual, type the command:

```
HELP,M=UIB141
```

An edited version of the UIB is available as the indexed WRITEUP,NOSVE141. To print WRITEUP,NOSVE141 on the XEROX laser printer use the commands in **Example 1**. This writeup describes the changes that will affect users at ACSS.

Some of the major changes in NOS/VE 1.4.1 are described in our February issue. ■

Example 1: Printing a Writeup on the XEROX Laser Printer.

To send WRITEUP,NOSVE to Lind Hall bin 425, use the following commands:

```
WRITEUP NOSVE141.ALL O=$LOCAL.LIST
PRINT_FILE $LOCAL.LIST P=XEROX ODE='EA*425' PO=(P)
```

New ACM Algorithms

Pedro O. Cubillos
YZE6073@UMNACVX

We have on CYBER CA disk the collected ACM algorithms as published in the journal *ACM Transactions on Mathematical Software*, starting with algorithm 493 from March, 1975. We recently added algorithm 664, published in September 1988. This is

ALG664 A Gauss Algorithm to Solve Systems
with Large, Banded Matrices Using
Random-Access Disk Storage

All these algorithms are available to users on the FETCH file CALGOPL, which is a MODIFY program library on the CYBER CA computer. The list of the available algorithms and commands to access them are given in the writeup obtained by the command

WRITEUP, CALGOPL

The journal *ACM Transactions on Mathematical Software* is available in the Computing Information Center, 128A Lind Hall. If you have questions, contact Pedro Cubillos at 625-3591. ■

IMSL 10.0 Now Available on VX

Michael J. Frisch
MJFRISCH@UMNACVX

The International Mathematical and Statistical Library (IMSL) is the most comprehensive of our math and statistics libraries. The newest version of IMSL, Edition 10.0, is now available on our VAX VMS system, VX. Edition 10.0 has undergone major revisions from previous editions and has been reorganized into three separate areas:

- general applied mathematics,

- statistics
- special functions

Edition 10.0 contains all of the capabilities of the previous Edition 9.2 plus many more. According to IMSL, Inc., this edition represents major advances in content (expanded from 500 to more than 780 user-callable routines), organization, ease of use, and algorithms. As a result, we recommend that, if you are writing a new application, you use the new IMSL library rather than the old one. You should also consider eventually rewriting existing programs to use the new library even though the old version will still be available for a while.

Significant Changes

The significant changes for Edition 10.0 of IMSL are:

- There are major enhancements in optimization, quadrature, and interpolation.
- The number of routines for basic matrix/vector operations and for solutions of linear systems has been greatly increased.
- Symmetric matrices are now stored in full storage mode instead of packed form.
- The statistical routines have become more flexible in terms of missing values, weight indicators, and the handling of data matrices. The routines have been revised to allow printing of results and to implement advances in algorithms.
- Many more special functions are provided.
- Subroutine names have been made more mnemonic. Routines in a common area of application have similar parameter lists and use similar data structures; variable names are mnemonic and are used consistently within sets of routines.
- There is no error parameter in the parameter list of the routines. If an error is severe enough, the program is terminated, and a message corresponding to the error is automatically printed. You can change this to access the error code from within your program by calling other IMSL routines. See the "Reference Material" section of the new IMSL manuals for details.

Workspace allocation is now done automatically by the IMSL library; you no longer need to calculate workspace requirements or allocate workspace variables and pass them as parameters. The new IMSL libraries allocate workspace from arrays in a named COMMON block.

These arrays are predefined and dimensioned inside the IMSL libraries. If the internal workspace arrays are too small for your application, you get a message with instructions on how to expand them. All you need to do is dimension one or two arrays in your top-level program, place them in the appropriate named COMMON block, and make a function call to pass the new dimensions to the IMSL library. See the "Reference Material" sections of the IMSL manuals for details. The manuals are available for reference in our Computing Information Center, 128A Lind.

Accessing Edition 10.0

IMSL Edition 10.0 on the VAX VX is an all-double-precision /G_FLOATING FORTRAN 77 version, combining Edition 10.0's mathematics, statistics, and special function sections into a single library. You can access Edition 10.0 as a user library on the VAX VX with the command:

```
$ LIBS IMSL10
```

You normally only need to use the LIBS command once for each login. Note that you must declare all floating point variables to be used with IMSL10 routines as DOUBLE PRECISION (or REAL*8 and declare all complex variables as DOUBLE PRECISION COMPLEX (or COMPLEX*16). Also, you must use the /G_FLOATING parameter on the VMS FORTRAN command. (It can be abbreviated to /G.)

See the sidebars on the following pages for a **sample IMSL problem** and for instructions for accessing the **IMSL Library Interface** and **on-line documentation**.

Documentation

In addition to the on-line document referred to in the sidebar, Edition 10 is fully documented in printed manuals for the three major sections:

MATH/LIBRARY, Edition 1.0 (three loose-leaf volumes or one low-cost soft-cover volume)

STAT/LIBRARY, Edition 1.0 (three loose-leaf volumes or one low-cost soft-cover volume)

SFUN/LIBRARY, Edition 2.0 (one loose-leaf volume or one low-cost soft-cover volume)

A reserve copy of each of the manuals is kept in the ACSS Computing Information Center, 128A Lind Hall, (612) 625-7397. Staff there can help you order copies from IMSL, Inc. For the cost of reproduction, they can photocopy pages from the manuals for individual routines. The CIC also has a limited number of copies of the *Quick Reference* booklets that show the calling parameters for each routine. We will give these away until the supply is exhausted.

Incompatibilities with Edition 9.2

In moving from Edition 9.2 to Edition 10.0, IMSL has changed nearly all the subroutine names and the calling parameter lists. For example, some Edition 10.0 routines return results in a different format from the corresponding Edition 9.2 routine, or may require different parameters. In some cases, more than one new routine may be required to duplicate the function of one old routine.

Library Interface Routines

To aid the transition from Edition 9.2 to Edition 10.0, IMSL, Inc. has provided a set of Library Interface routines. Library Interface routines have the same names and parameter lists as the Edition 9.2 routines, but call the corresponding new routines to perform the calculations. However, some Library Interface routines are unable to correctly call a new routine that corresponds to an Edition 9.2 routine. When this occurs the Library Interface gives a warning message and returns a replacement result.

Programs that rely on the Library Interface subroutines will run less efficiently than those that directly call the routines in the new library. In some cases, this loss of efficiency may be substantial, and we encourage you to make a complete conversion to the new library routines as soon as practical.

Documentation for the Library Interface and Conversion

IMSL has written two documents, one called *Library Interface* (17 pages) and one called *IMSL Libraries Edition 10.0 Update*

Guide (71 pages). Reserve copies are kept in the Computing Information Center, 128A Lind Hall. The documents contain a list of corresponding routines from both editions that have similar abilities.

VAX VX in June. This gives you sufficient time to check out your programs using IMSL routines with the Library Interface or else to completely convert programs to IMSL 10.0.

Dropping IMSL Edition 9.2

Because IMSL, Inc. has provided a Library Interface so that many IMSL Edition 9.2 users can access Edition 10.0 without changing their programs, we plan to drop IMSL 9.2 from the

Plans for NOS/VE and UNIX

We plan to revise our NOS/VE version of IMSL Edition 10.0 to an all-single-precision version and prepare a NOS/VE writeup for it. There is currently no IMSL for our UNIX system. ■

Sample IMSL Problem

Here is a sample problem taken from the IMSL documentation, solving a system of three linear equations. The coefficient matrix has real general form and the right-hand-side vector *b* has three elements.

```

C This is file SAM.FOR
C
C                               Declare variables
C   PARAMETER      (IPATH=1, LDA=3, N=3)
C   DOUBLE PRECISION A(LDA,LDA), B(N), X(N)

C                               Set values for A and B
C   DATA A/      33.0, -24.0, 18.0,
C   *             -24.0, -10.0, -11.0,
C   *             18.0, -11.0, 7.0/

C   DATA B/129.0, -96.0, 8.5/

C                               Solve the equations
C   CALL DLSLRG (N, A, LDA, B, IPATH, X)

C                               Print results
C   CALL DWRRRN ('X', 1, N, X, 1, 0)
C   END

```

The VMS commands to run this problem are:

```

$ LIBS IMSL10
$ FORTRAN /G_FLOATING SAM
$ LINK SAM
$ RUN SAM

```

The output from this run is:

```

           X
      1      2      3
1.0      1.5      1.0

```

Accessing On-line IMSL Documentation

On-line writeups are available for the routines in Edition 10.0. To find out how to use the writeups, use the command:

```
$ EDIT/READ ACSS$WRITEUP_ : [LIBINDEX] IMSL10 .LIS
```

The writeups only give the list of parameters and how to use them. Further information is given in printed IMSL manuals referred to in the accompanying article.

Accessing the IMSL Library Interface

To access the Library Interface along with the IMSL Edition 10.0 library, use the command:

```
$ LIBS IMSL910, IMSL10
```

The source code for the Library Interface is also available to show how IMSL has implemented the transition. To access the code for a given IMSL 9.2 routine, use the command:

```
$ EDIT/READ ACSS$WRITEUP_ : [IMSL910] routineName .FOR
```

MACSYMA News for VX

Michael J. Frisch
MJFRISCH@UMNACVX

Our MACSYMA vendor, Symbolics, Inc., has announced the availability of the *MACSYMA Reference Manual*, Version 13 for users of MACSYMA Version 412. This manual corresponds to our current 412.61 Common Lisp version of MACSYMA. The manual costs \$60 prepaid and the order number is SMI0500030.013. The company has moved and their new address and phone are:

Computer Aided Mathematics Group
Symbolics, Inc.
8 New England Executive Park, East
Burlington, MA 01803
617/221-1250

We have recently updated our local *MACSYMA User's Guide for the ACSS DEC VAX 8650 Running VMS 5.0* relating to ordering the new manual. We have also added information on how to recover if you accidentally type the CONTROL-C character (type (EXIT) to recover), and information on complex plotting using Tektronix 4014 compatible terminals plus a section on known problems. Paper copies of the *User's Guide* can be obtained for the cost of reproduction (\$1) from the Computing Information Center, 128A Lind Hall, 625-7397. You can access a copy online using the VMS command:

```
$ EDIT/READ ACSS$WRITEUP : MACSYMA .LIS
```

On January 26, we corrected a problem whereby the MACSYMA **SAVE** command followed by a **LOAD** (or **LOAD-FILE**) command didn't work on CRE and Taylor series and expansions, which may have lead to incorrect answers in some rare cases. ■

Minitab 5 Available on CA

Bruce A. Center, Ph.D.

BAC@UMNACVX

Minitab is an interactive, general-purpose statistical package designed for instructional use, especially for those who have little previous experience with computers. At long last we have converted Minitab 5 to run on CA. Minitab 5 is already available on VX, and a similar version is available for IBM-compatible microcomputers. To use Minitab 5 under NOS, type:

```
FUTURE, MINITAB
MINITAB {optional parameters}
```

The optional parameters include:

I=ifn	Input file of Minitab commands. Default is your terminal.
L=ifn	Output file. Default is your terminal.
W=work space	Default is 5000 (decimal). For large applications, W may go as high as 100,000.

On March 26, Minitab 5 will become the default version, and the **FUTURE** command will be superfluous. After that date, you will still be able to access the old Minitab 82 by typing **PAST,MINITAB**.

Using Minitab

After you type

```
FUTURE, MINITAB
MINITAB
```

Minitab will respond with the prompt:

```
MTB>
```

In Version 5, many of the Minitab commands have additional subcommands. To use a subcommand, type a semicolon at the end of the line. Minitab will then prompt:

```
SUBC>
```

You can end subcommands with another semicolon if you need to use more subcommands. End your last subcommand with a period. See **Example 1** for more information.

To leave Minitab, type **STOP** or **QUIT**.

Improvements In Version 5

- **Tally** prints frequency distributions for each column.
- **Delete** removes rows of data from individual columns in the worksheet.
- Nonparametric Sign tests (**STEST**) and their confidence interval (**SINTERVAL**) are now available.
- You can compute:
 - discrete probability density functions (**PDF**),
 - cumulative distribution functions (**CDF**), and
 - inverse cumulative distribution functions (**INVCDF**)
 for a wide selection of distributions including Weibull, exponential, binomial, Poisson, logistic, t, F normal, etc.
- **Code** (similar to the SPSS^x command **Recode**) changes the specified values or range of values for a column or columns. This replaces the old **Recode**, which did far less.
- **Dotplot** will create a dotplot for each column in your worksheet.
- **Regression** has a number of new subcommands, including **PREDICT**, which allows you to obtain \hat{y} , the predicted dependent variable for specified values of the independent variables.
- **Read, Set, Insert, Print, and Write** have a new subcommand, **FORMAT**, which handles reading and writing Fortran formatted data. **FORMAT** replaces the old **Fread, Fset, and Fprint**. Formatted versions of **Insert** and **Write** are new.
- **LET** contains a number of new functions that allow you to lag, sort, numerically rank, and calculate normal scores, and calculate partial sums or partial products. These are **LAG, SORT, RANKS, NSCORES, PARSUMS, and PARPRODUCTS** respectively.
- **Table** has two new subcommands; **N** gives the number of observations in a cell that have a value for the related variable, and **NMISS** gives the number of missing observations.

- Copy contains two new subcommands, **USE** and **OMIT**, that allow you to copy just a subset of the data in any set of columns.
- **Tsplot** (time series plotting) and **Histogram** have two new subcommands, **INCREMENT** and **START**, that control the scale of the plot. Similarly, the subcommand **INCREMENT** has been added to **Stem-and-leaf** plots.
- **Plot**, **Lplot**, and **Mplot** (multiple plots) all have new subcommands: **XINCREMENT**, **XSTART**, **YINCREMENT**, and **YSTART** to control scaling.
- **BY** and **SAME** subcommands have been added to **Stem-and-leaf**, **Histogram**, and **Dotplot**.

This list of new commands and subcommands is not exhaustive. For a complete review of all new commands, consult the *MINITAB Reference Manual 5.1*, 1985, and the *MINITAB HANDBOOK*, second edition, 1985, by Ryan, Joiner, and Ryan. This latter book is not only an excellent guide to Minitab, but a fine introduction to basic statistics and the exploration of data as well. The manuals are available for reference in our Computing Information Center, 128A Lind.

Differences from Minitab 82

- **Format** subcommands of **Read**, **Set**, **Print**, and **Write** replace the formatted input and output commands.
- **Use** and **Omit** subcommands on **Copy** replace the old **Omit**, **Choose**, and **Pick** commands.
- **Let** replaces most uses of arithmetic commands such as **ADD**, **SQRT**, and **Median**, as well as **Substitute**.
- **Code** replaces **Recode**.
- **Stack** replaces **Join**.
- **PDF** and **CDF** replace **Binomial** and **Poisson**.
- **OW** and **OH** replace **Output Width**.
- **IW** replaces **SCAN**.
- Many commands now have subcommands; For example, the **TwoWay** subcommand to fit an additive model. In addition, some options have been moved from the main command line to subcommands, such as the scales for **Plot** that are now specified by subcommands.

If you have any questions about Minitab, or problems using it, call the Statistics HELP-Line (626-1893) between 1:00 and 3:00 p.m., Monday through Friday. ■

Example 1: A Minitab 5 Example

To run a two-way analysis of variance with an additive model (no interaction term) on some data you have previously stored in a file on the CA, keeping the residuals for further exploration, we could type:

```

/GET, WORKX           {WORKX is a MINITAB work file.}
/FUTURE, MINITAB     {Not needed as of March 26.}
/MINITAB
MTB> RETRIEVE 'WORKX' {Read the work file into Minitab.}
MTB> TWOWAY ANOVA, DATA IN C3, SUBSCRIPTS IN C6, C7;
SUBC> RESIDUALS IN C9; {Two-way Anova on column 3, with columns 6 and 7 containing
                        the subscripts.}
SUBC> ADDITIVE.      {ADDITIVE specifies no interaction term.}

```

SPSS^x 3.1 Becomes Default on VX

Bruce A. Center, Ph.D.
BAC@UMNACVX

On March 25, Version 3.1 of SPSS^x will become the default on VX. There are several notable improvements, along with one minor incompatibility.

The file `ACSS$WRITEUP:SPSSX31.LIS` contains information about SPSS^x changes, features, and how to use SPSS^x at the University of Minnesota. It contains approximately 125 pages.

Improvements in SPSS^x 3.1

- A new procedure, **RANK**, produces ranks, normal scores, Savage scores, and percentiles for numeric variables. The new variables (i.e., ranks, normal scores, etc.) can be added to the active file. Type **INFO RANK** from within SPSS^x to read about this new procedure.
- **Tables** output can now be printed on Postscript devices (i.e., the Apple LaserWriters located throughout campus), by using **Tableps**. **Tableps** was described in the January *Newsletter*.
- **Control-C** interrupts during a terminal session will return you to the `SPSS-X>` prompt, and interrupts the output. (**Control-Y** still bumps you out of SPSS^x entirely.)
- **SET** has been enhanced. There are four new **SET** keywords, permitting you to direct your **RE-**

SULTS (your output), **ERRORS**, **MESSAGES**, and **PRINTBACK** (your SPSS^x commands), to either the **TERMINAL**, the **LISTING** file, or **BOTH**.

- SPSS^x will search for a file defined by the logical name **SPSSX_PROFILE**. Use the command:

```
$ DEFINE SPSSX_PROFILE myprofile.sps
```

If such a file is found, SPSS^x processes it at the beginning of every SPSS^x run as though it were an **INCLUDE** file. This is a useful place to store such commands as **SET WIDTH** or **SET RESULTS** that you want to use almost all the time.

- Several enhancements have been made to Regression. These include tests for multiple collinearity, aids to selecting a subset of regressors, and seven new types of temporary variables for diagnosing influence and fit. Type **INFO REGRESSION** from within SPSS^x to learn more about these enhancements.
- Crosstabs has two new statistics. **KAPPA** and **RISK** will provide Kraemer's κ for square tables, and relative risk for 2 by 2 tables respectively.

Incompatibility

Because of the enhancements to the **SET** command, the command line qualifier **/NOINTERACTIVE** is no longer available. The SPSS^x command

```
SET RESULTS=LISTING
```

used from within SPSS^x, will do the same thing. ■

You can still access SPSS^x 3.0 by typing:

```
$ SPSSX30/OUTPUT=outfile.ext inputfile.ext
```

CICNet Completed

Jerry Stearns

JSTEARN@VX.ACSS.UMN.EDU

February marked the completion of CICNet, a high-speed computer network linking the Big Ten universities, the University of Illinois at Chicago, and the University of Chicago. What this means for our users is much faster data communications on the Internet. Our previous link to the Internet ran at 56,000 bits per second. The new T1 lines will allow speeds of about 1.5 million bits per second between nodes. CICNet is also connected to the NSFnet backbone network at the University of Illinois at Urbana and at the University of Michigan at Ann Arbor and uses the TCP/IP protocols that we are familiar with on the Internet.

Each site on CICNet is connected to at least two other nodes. Thus, in case of a failure of the lines or another node, there is an alternate route for datagrams (the unit of information passed on the Internet) to take. Minnesota's connections are to the University of Wisconsin at Madison and to the University of Iowa at Iowa City. This will not affect messages or files sent on the BITNET network.

Our users will not need to do anything differently to take advantage of the CICNet connections. That part is taken care of by ACSS. You may notice some differences: You may

notice, for example, that your interactive Telnet session has a faster response time. You may see FTP file transfers happen more quickly than before. It will look more like you are working on the local campus network, rather than a large nationwide network.

The primary gain for the University is that CICNet can carry greatly increased traffic loads with far less delay. You can be sure that your data will arrive more quickly and more reliably than before, and you don't have to change anything to make it so. ■

Old Dial-up Number for UX to be Discontinued

Marshall Midden

The dial-up line 626-1681 to the ENCORE UX will be removed on March 27. UX users will have to use the 626-1630 dial-up number exclusively. Information on using this dial-up line is found in the *Terminal Access Brief*, available in the Computing Information Center, 128A Lind. ■

Remember to renew your subscription.

The Care and Feeding of Computers: Static Electricity and Electrostatic Discharge

Don Clark, ACSS Engineering Services

This is the first of a series of articles on things that can cause problems with your microcomputer, and what you can do to control them. These articles are based on the collective training and experience of Engineering Services employees. We'll keep technical content to a minimum and emphasize practical applications and advice.

The Little Spark that Does Big Damage

Everyone knows about static electricity. Many learned about it in an eighth-grade science experiment: When a piece of fur was rubbed with an amber rod, the rod would make dry hair stand straight out, and tiny sparks would occur if the rod touched the hair. And everyone has received a small electrical shock after walking across a carpet and touching a metal object—fun stuff for some, a nuisance for others, but not very dangerous.

Ben Franklin was lucky, however, that he didn't get killed when he performed his famous experiment in 1752 using a kite, silk thread, metal key, and a glass jar. He was trying to prove that the atmosphere was full of electrical charges during a thunderstorm, and that lightning was an industrial-sized version of the little sparks he noticed around his home. He was right! Those harmless looking sparks, called electrostatic discharge or ESD, can destroy or damage computer circuits.

Static electricity results from a transfer of electrons within an object, or from one object to another. Most static generating materials are "insulators" in which a charge does not readily distribute itself over the surface. When these materials are pulled away from each other, electrons move to one object (the carpet) and away from the other (the soles of your shoes). When a conductor (the metal object) comes in close contact with a charged object (your body), a spark or ESD will occur if the electromagnetic force (EMF) is great enough to jump through the insulating material that separates the two (the air). The smallest spark a person can feel requires an EMF of about 3000 volts, and to see it, the spark requires an EMF of about 5000 volts.

Why Is ESD Such a Big Deal?

Static electricity did not affect early computers much. Computers were made of discreet components such as transistors, resistors, capacitors, etc., with relatively large dimensions. Even on early printed circuit boards, the internal geometry of the chips was rather coarse by today's standards. This made them relatively immune to ESD damage. (Remember, the greater the distance between circuits, the greater the voltage required to jump the gap.)

New technology has brought increased circuit density and smaller geometry, allowing ESD to occur at a much lower voltage. Higher circuit density is a result of the demand for faster computers, and, with the speed of light being a limiting factor, speed is increased by shortening the distance the signal travels. On the most sensitive new circuits, the internal geometry is so small that fewer than 50 volts can result in a discharge that can destroy or damage the circuit. It's hard to appreciate the internal layout of a 1 million bit memory chip that's half the size of a postage stamp, or the complexity of a \$17,000 CPU board for a Sun file server.

For a spark you can feel, the voltage is at least 3000 volts, sixty times greater than the voltage required to damage a circuit. A charged object brought in to close contact with a chip can cause a discharge within the chip through induction, without it touching the chip and without you seeing or feeling a spark!

How Does ESD Damage A Computer?

ESD is a tiny bolt of lightning. But this microscopic zap within a microcircuit causes things to explode, melt, and burn. The best way to see the effects of this microscopic zap is with a scanning electron microscope. It is estimated that from 10 to 15 percent of all computer circuit failures are caused by ESD. It is further estimated that only about 10 percent of ESDs destroy the circuit. The other 90 percent merely degrades or weakens components. This usually results in either a latent or

intermittent failure that will occur only in special circumstances that diagnostics can detect only rarely—the weakened circuit will fail eventually. The dreaded NTF (no trouble found) comment written on your computer-repair ticket is often the result of damage caused by static discharge. You're fortunate if ESD destroys the circuit rather than wounding it.

What Can be Done to Prevent ESD Damage?

There are steps that can be taken to control ESD even though we can't see or feel static electricity. These involve protecting the circuits and controlling the static environment:

- The most important practice by far is to never handle circuit boards or chips unless you have been trained on ESD and follow the procedures. Most vendor warranties are void if uncertified personnel handle their products.
- The majority of all ESD damage occurs between the time the circuit board is manufactured and the time it is installed in the computer device. Circuits are *relatively* safe once they are installed in the computer *if* the chassis is properly grounded and shielded.

Those who purchase, store, install, remove, swap, or handle circuits or chips must follow all ESD rules including:

- Buy only from vendors who ship in shielded, puncture free, anti-static bags. Several years ago the space-age answer was the familiar pink and blue polyethylene anti-static bag. But it was learned later that conductive *shielding* is also needed to protect against static fields.
- Keep circuits and chips sealed in the bags until you are ready to install them.
- Always use wrist straps that are properly attached to a grounded antistatic mat when handling circuits and chips.
- Don't let anyone touch the circuits or chips, even with their clothing!

Controlling the Environment

Some ESD damage can occur just by operating computer equipment. A healthy spark between the operator and a

keyboard, monitor, or printer sometimes will knock the system down. We know of cases where a spark to a floppy diskette has destroyed data on the disk. If you feel, see, or hear sparks, steps should be taken to control the static environment. We're talking about the air in the room, the material in the room, building power wiring, and even the clothing you wear. There are hundreds of products on the market, from antistatic coatings, cleaners, mats, workstations, and wrist straps to ionizers and staticides.

The Air

The drier the air, the higher the static problem. You know from experience that static is at its worst during cold, dry Minnesota winters. Warm air can hold more water molecules than cold air. When outside air at 10 below zero and 50 percent relative humidity is heated to room temperature without adding water, the resulting relative humidity is less than 10 percent. The heating systems in many university buildings have no provision for humidifying. Room humidifiers are expensive to install and messy to maintain, but they may be necessary in rooms with both computer equipment and a high static environment. Air conditioning systems in large data centers are designed to closely control both temperature and humidity. They are also very expensive.

The Material in the Room

Some common sources of static electricity are plastics, styrofoam, celluloid, almost any product that begins with "poly," and vinyl, painted, waxed, or varnished surfaces. Carpet is a notorious source of static unless it is treated with special chemicals. The list is long, but for starters you should keep styrofoam cups, plastic food wrappers—and anything else that is plastic—away from the computer.

If static problems continue, you should consider installing static control devices such as "Touch-me-first" keyboard strips, desktop pads, keyboard pads, floor pads, and chair mats.

Dry printer paper is also a major problem. On printers that slide sheets of paper from a stack, such as laser printers, copiers, and sheet feeders, the second sheet tends to stick to the sheet being fed, and the result is a paper jam. Paper should be stored in a humid, warm area.

Building Power Wiring

The main purpose of the ground wire on the power outlet is personal safety. If properly installed in the building (connected to earth ground), it also serves as a good conductor to minimize static buildup inside the computer. (A warning: If you ever receive a real power jolt, as opposed to ESD, from a piece of equipment, call your plant or shop people immediately. The ground circuit may be defective.) It is good practice to leave the computer plugged in all the time, even when it is not in use.

Clothing

If you thought that we would not go so far as to suggest what to wear, you were wrong. People in a normal work environment generate very high static levels. Some of the highest sources of static are synthetic fibers such as orlon, nylon, rayon, and polyester. Cotton is static neutral, and we know of manufacturers who require employees in static-sensitive areas to wear only cotton clothing. A person wearing synthetic clothing in a dry room can generate a static charge as high as 30,000 volts with normal body movements!

I'll close with the following quotes from a warning notice received with a shipment of DRAMs and EPROMs just as this article was being written:

"The worst situation is to wear leather shoes on almost any carpet, especially wool, on a dry winter day."

"Finally, don't wear any nylon clothing, especially underwear!!" ■

For Sale

Margaret Marini, Sociology

Large printer sound cover. Unused. Price negotiable. Call the Sociology department between 8:00 and 11:00 a.m. at 624-0228. ■

Conventions

Throughout this and other ACSS publications, we have adopted these conventions:

- Messages and prompts from the ACSS computers appear in plain type, like this.
- Words that the computer systems replace with a specific name, value, or other information appear in *italic type, like this*.
- Commands you type at your terminal keyboard appear in **bold face type, like this**.
- Words that must be replaced by a specific name, value, or command that you type in appear in ***bold italic type, like this***.
- Comments to interactive sessions and program files are enclosed in { curly braces, like this }.

Here's an example:

save, filename

is a command you type in. You type **save** and replace *filename* with the name of your file. The system may respond with the message

filename ALREADY PERMANENT
{ An example of a system message. }

where *filename* will be replaced by the name of the file you attempted to save.

- The symbol <CR> refers to the carriage return (or RETURN) key on the terminal. The <CR> serves as a terminator for commands you type at your terminal. In most cases we do not show <CR>; we assume you know to type it after every command.

SHORT COURSES

Spring Quarter 1989

CENTRAL SYSTEMS COURSES

Central Systems courses are *free*. To register call 625-7397.
Some classes have size limitations: Register early.

Introductory Courses

Introduction to Computing	Apr 4-13	TTh	2:15-4:00 pm
Introduction to VAX/VMS Operating System	Apr 17-26	MW	2:15-4:00 pm
Overview of the NOS 2 Operating System	Apr 18	T	2:15-4:00 pm
Overview of the NOS/VE Operating System	Apr 20	Th	2:15-5:00 pm
Introduction to UNIX Operating System	May 9-11	TTh	2:15-5:00 pm

Elective Courses

INGRES Data Base Management on VAX	Apr 25-May 4	TTh	2:15-4:00 pm
Using SPSSX (Statistics Package)	May 1-5	MWF	2:15-4:00 pm
Electronic Mail (VAX and BITNET)	May 8-10	MW	2:15-4:00 pm
Using SAS (Statistica Analysis System)	May 15-19	MWF	2:15-4:00 pm
Advanced UNIX Seminar-The C-Shell	May 25	Th	2:15-5:00 pm
Advanced UNIX Seminar-The Bourne-Shell	June 1	Th	2:15-5:00 pm

MICROCOMPUTER COURSES

General Courses

Strategies for Networking Microcomputers and Workstations	Apr 12	W	1:30-4:00 pm	Free
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IBM and Compatible Courses

Limited to 10 people.
FEES: 1) U of MN students, 2) U staff/faculty, 3) Non-University persons.

Introduction to Micros-DOS				(1) (2) (3)
Section 1	Mar 28-30	TWTh	10:00-noon	\$40,\$50,\$80
Section 2	Apr 24-28	MWF	1:30-3:30 pm	\$40,\$50,\$80
Section 3	May 17-19	WThF	10:00-noon	\$40,\$50,\$80

SHORT COURSES

Orientation for IBM Campus Network Users

Section 1	April 3	M	9:00-10:00 am	Free
Section 2	April 18	T	11:00-noon	Free
Section 3	May 11	Th	3:00-4:00 pm	Free
Section 4	May 22	M	9:00-10:00 am	Free

Mastery of *Introduction to Microcomputers-DOS*, or equivalent knowledge,
is required for the IBM courses listed below.

Managing Your Hard Disk	May 30-Jun 1	TTh	1:30-4:00 pm	(1) (2) (3) \$40,\$50,\$80
Introduction to dBase III	Apr 10-14	MWF	10:00-noon	\$40,\$50,\$80
Programming in dBase III	May 8-9	MT	1:30-4:00 pm	\$40,\$50,\$80
Beginning Lotus 1-2-3				
Section 1	Apr 4-6	TTh	9:30-noon	\$40,\$50,\$80
Section 2	May 15-17	MW	1:30-4:00 pm	\$40,\$50,\$80
Intermediate Lotus 1-2-3	May 31-Jun 2	WF	2:00-4:00 pm	\$40,\$50,\$80
Introduction to Excel for PC/MS-DOS Computers	May 23-25	TTh	1:30-4:00 pm	\$40,\$50,\$80
Introduction to WordPerfect 5.0				
Section 1	April 11-13	TTh	1:30-4:00 pm	\$35,\$45,\$80*
Section 2	May 3-4	WTh	9:30-noon	\$35,\$45,\$80*
Section 3	May 31-Jun 2	WF	9:30-noon	\$35,\$45,\$80*

**Introduction to WordPerfect*, A ComputerPREP, Inc. WordPerfect 5.0 Training Guide, is required for this class. You must buy this \$15.98 workbook at the Minnesota Book Center Electronics Desk before you come to class.

Macintosh Courses

Hands-on. Limited to 10

Macintosh Fundamentals				(1) (2) (3)
Section 1	Mar 29	W	2:30-4:00 pm	\$10,\$10,\$10
Section 2	Apr 11	T	10:30-noon	\$10,\$10,\$10
Section 3	Apr 19	W	9:00-10:30 am	\$10,\$10,\$10
Section 4	May 12	F	9:00-10:30 am	\$10,\$10,\$10
Section 5	May 19	F	1:30-3:00 pm	\$10,\$10,\$10

SHORT COURSES

Orientation for Macintosh Campus Network Users

Section 1	Apr 13	Th	9:00-10:00 am	Free
Section 2	May 1	M	11:00-noon	Free
Section 3	May 15	M	9:00-10:00 am	Free

Mastery of *Macintosh Fundamentals*, or equivalent knowledge,
is required for the courses listed below.

				(1) (2) (3)
Introduction to MS Word for the Macintosh				
Section 1	Mar 28-30	TTh	1:30-4:00 pm	\$35,\$45,\$85
Section 2	Apr 20-21	ThF	9:30-noon	\$35,\$45,\$85
Section 3	May 2-4	TTh	1:30-4:00 pm	\$35,\$45,\$85
Section 4	May 16-18	TTh	1:30-4:00 pm	\$35,\$45,\$85
Intermediate MS Word for the Macintosh				
Section 1	Apr 25-26	TW	9:30-noon	\$35,\$45,\$85
Section 2	May 25-26	ThF	9:30-noon	\$35,\$45,\$85
Introduction to Excel for the Macintosh				
Section 1	Apr 18-20	TTh	1:30-4:00 pm	\$35,\$45,\$85
Section 2	May 3-5	WF	1:30-4:00 pm	\$35,\$45,\$85
Intermediate Excel for the Macintosh				
	May 9-10	TW	9:30-noon	\$35,\$45,\$85
Using Hyper Card				
Section 1	April 3-5	MW	1:30-4:00 pm	\$35,\$45,\$85
Section 2	April 27-28	ThF	9:30-noon	\$35,\$45,\$85
Section 3	May 23-24	TW	9:30-noon	\$35,\$45,\$85
Introduction to HyperTalk	Apr 7	F	1:30-4:00 pm	\$25,\$35,\$60
Intermediate HyperTalk	May 10-12	WF	1:30-3:30 pm	\$35,\$45,\$85
Introduction to Desktop Publishing—PageMaker				
Section 1	Apr 4-6	TTh	1:30-4:00 pm	\$35,\$45,\$85
Section 2	Apr 27-28	ThF	1:30-4:00 pm	\$35,\$45,\$85
Mathematica	May 30-Jun 1	TTh	10:00-noon	\$35,\$45,\$85
Introduction to Programming the Macintosh Using Pascal	April 17-21	MWF	2:00-4:00 pm	\$35,\$45,\$85
Developing Applications for the Macintosh Using MacApp	May 22-26	MWF	2:00-4:00 pm	\$35,\$45,\$85
Preparing a Dissertation on the Macintosh	May 5	F	9:30-noon	\$15,\$25,\$NA

SHORT COURSES

SHORT COURSE INFORMATION

Prerequisites: Please note any prerequisites for the class you are interested in. Instructors will not be able to review any prerequisite information. If you have not used a Macintosh before, you must attend a session of *Macintosh Fundamentals* before taking any other Macintosh classes. For more information on prerequisites, call the Computing Information Center at 625-7397.

Limits: All microcomputer classes and some central systems classes have limits to class size. Please try to register early to be sure of getting a place. If you decide to cancel from a class, please do so as soon as possible, so that we can make the space available to others.

Registration: Registration is located at ACSS's Computing Information Center, 128A Lind Hall. (Hours: 8:00 am to 4:30

pm, Monday through Friday.) Fees must accompany registration. Mail registrations will be accepted. Deadline for registering is 4:00 pm on the last working day before the class begins. Please call and give us your name if you plan to attend a free class; also call to cancel if you later decide not to attend, so we know how many to expect. For registration information, call 625-7397.

Fees: Fees following microcomputer courses are for 1) University students, 2) U faculty and staff, and 3) non-University persons. Course fees may be paid by check, or include a signed University journal voucher with registration information. (No cash, please.) Fees must accompany registration. *No refund* will be made if you cancel within 48 hours of the beginning of the class.

SHORT COURSE POLICY

Each quarter ACSS offers a large number of free computer short courses for the University community. Although these are usually introductory courses, the instructors spend a good deal of time preparing for them. We ask people to register for these classes by phone, mail, or in person, so instructors know how many people to expect.

ACSS avoids overbooking classes so that instructors and class participants are not inconvenienced. When registration for a class reaches classroom capacity, we keep a waiting list of those wanting to attend. We always have waiting lists. If you

do not show up for a class, or fail to cancel, you are depriving those who wish to attend.

Please be considerate. Think of those staff who organize and teach ACSS short courses. And, in particular, think of those users who are on our waiting list. If you aren't able to attend a class, a simple phone call (625-7397) will enable us to contact someone who can.

Note: Monday, May 29 is a University holiday. No classes will be held.

PHONES/HOURS/LABS

ACSS PHONE NUMBERS

Administrative Office: 626-1600

HELP-Line: 626-5592

Access:	
New number (All systems)	626-1630
Accounts:	
CYBERs, ENCORE, VAX	625-1511
Computer Hours (recorded message)	626-1819
Computing Information Center	625-7397
Contract Services	625-2303
East Bank I/O, 128B Lind Hall	625-5082
Engineering Services	625-1595
Equipment Maintenance/Repair	625-1595
Graphics Software	626-5592
Information, Lauderdale	626-1600
Lauderdale Computer Room	626-0550
Lauderdale Services	626-1838
LUMINA	626-2206
LUMINA Consultant	626-2272
Magnetic Tape Librarian	626-1838
Math and Engineering Packages	625-5830
Microcomputer HelpLine	626-4276
Newsletter Subscription	625-7397
Permanent File Restoration	626-0595
Project Assist	626-1090
Public Labs (Managed by ACSS)	
170 Anderson Hall	624-6526
140 Blegen Hall	624-5278
135 Classroom Office Bldg.	624-9226
121 Elliott Hall	624-0866
14 Folwell Hall	625-4896
306B Lind Hall	625-9032
B2 OMWL	626-2205
130 Physics	625-6820
9 Walter Library	626-1899
Lab Manager (14 Folwell Hall)	625-7850
Publications Information	626-1093
Short Course Registration	625-7397
Shuttle Bus Service	625-9525
System Status (recorded message)	626-1819
West Bank Computing Services	624-0877

For the phone numbers of consulting services, see the Help Page.

PUBLIC LABS TWIN CITIES CAMPUS

	Central System Printing	Interactive	Micro
<i>East Bank</i>			
ApH 204	Closed for remodeling		
Arch 148			X
CenH		X	
ComH		X	
DiehlH 207, 270	2	X	X
EddyH Annex 54			X
EltH 121	1	X	X
FolH 14, 14a	2	X	X
FronH		X	
LindH1	1	X	
LindH 26	Closed for remodeling		
LindH 128B	2	X	
LindH 306B			X
MasCanCtr M39		X	
MechE 308	1	X	
MoosT 8-425			X
Nich 109			X
Phys 130	2	X	X
PioH		X	
SanH		X	
TerrH		X	
VinH 203			X
WaLib 9	2	X	X
<i>West Bank</i>			
AndH 170	2		X
BlegH 140	1	X	
MdbH		X	
OMWL B2			X
<i>St. Paul</i>			
BaH		X	
CentLib B40	1	X	
CentLib B50			X
ClaOff 135			X
McNH 69	2		X
Vet 436			X

1 - Impact line printers.
2 - Laser printers.

SYSTEM OPERATING HOURS

The CYBER CA, the CYBER NV, the ENCORE UX, and the VAX VX systems run continuously from 6 pm Sunday until 6 am the following Sunday.

The systems are in unattended production mode each night from 2:45 am until 6 am. It is unlikely that any tape requests or printing will be

processed during these hours. Normal operations resume at 6 am each day except Sunday.

On the first and third Fridays of each month from 5 am to 7 am the CYBER CA and NV systems are unavailable. Low rates hours are from 8 pm to 8 am Monday through Friday, and all operating hours on Saturday and Sunday.

ACSS Documentation

Need help in learning

*ACSS systems,
software,
or services?*

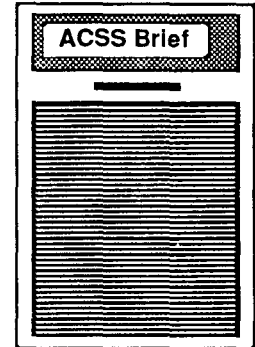
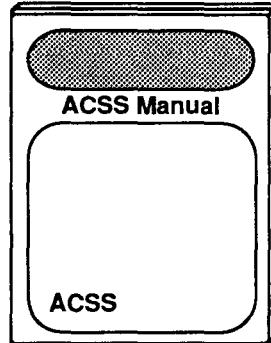
ACSS documentation has the answers.

Manuals available at

**Minnesota Book Center
H.D. Smith Book Store
Student Bookstore**

Briefs available at

**ACSS Computing Information Center
128A Lind Hall-625-7397**



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