The ACSS Newsletter

VMS News

Printed Output on the VX

Marisa Riviere
BITNET: MARISA@UMNACVX

The Xerox 8700 printer (located at our Lauderdale computer facility) is now the default printer for the VX system. You can send text and Scribe files to the Xerox printer with the `print` command. You can continue to use the `enqueue` command to send these two types of files until June 13 (after which you will be able to use it only for graphics files), but we encourage you to start using `print` now.

On June 13 we will also end our Spinwriter line printer service. We are ending this service because our laser printer now provides all the font and character options available on the Spinwriter, and many more.

Using the Xerox printer with the `print` command, you have access to a large number of print types (called characteristics) and paper types (forms). A description of how to use the characteristics and form options as well as all the other `print` command parameters is available in the online documentation entry HELP PRINT. More information on the Xerox printer and its features is in MOREHELP XEROX.

Some frequently used qualifiers for the `enqueue` command have these equivalents in the `print` command:

Enqueue	Print
`/portrait`	`/char=pstd` or `/char=portrait`
`/3_hole/shift`	`/form=3_hole`
`/duplex`	`/form=duplex`
`/landscape`	`/char=lstd` or `/char=landscape`

In This Issue . . .

We've given a good deal of attention this month to our VAX/VMS system, the **VX**. This issue includes an article on printing VX files on the Xerox 8700 **laser printer**.

Other articles describe **new software** on our VMS system. The **C programming language** is now on the VX. So is the **TEX typesetting program** and the Quintus **Prolog Predicate Library**.

There are articles on our other systems, too. In the Consulting Corner, Tom Kovarik explains how to **define your terminal for our UNIX system**. And, for users of math and engineering packages, there are **new ACM algorithms on the CYBER CA**.

Discounts on AI Software.
See page 131.

You can send Scribe files to the Xerox by adding the `/char=Scribe` qualifier to the `print` command.

These new options are available with the `print` command:

`/char=portrait` prints 60 90-character lines a page in portrait mode.
`/char=landscape` prints 62 132-character lines a page in landscape mode.

Please note that the number of lines printed on a page with the `print` command (60 or 62) is different from the number printed (66) when you use the `enqueue` command.

When specifying characteristics like portrait or landscape mode with `/char=portrait` or `/char=landscape`, you must spell out the full word; you cannot abbreviate `portrait` or `landscape`.

`/char=passthru` interprets and sends printer commands

Also note that you can use only one `/char` option and one `/form` option on the `print` command. You *cannot* append additional options joined by commas, as you can with the `enqueue` command.

Here's is an example of a `print` command that sends a text file to the Xerox 8700:

`$ print filename.typ/form=duplex/char=portrait`

This command prints the file `filename.typ` in portrait orientation on both sides of plain unpunched paper, with 60 lines per page and 90 characters per line.

You can still use the Printronix line printer (which has been the VX default printer) by selecting the LCA0 queue on the `print` command.

We are also preparing a connection between the VX and the UNIX UX that will enable you to print VX files on the UX printers in Lind Hall and Diehl Hall. Watch system notes and future issues of this *Newsletter* for more information.

Holiday Hours

Memorial Day Hours

In observance of Memorial Day, ACSS systems will not have operations staff at our Lauderdale facility from 4 a.m. to 6 p.m. Monday, May 25. The CYBER 855 (the CA) will not be in operation during that time. The VAX 8600 (VX), ENCORE (UX), and CYBER 830 (MD), however, will run unattended during this period. Therefore, while you can use these systems during that time, you will not be able to perform certain tasks (like tape jobs or printing on special forms) that require an operator's attention. Normal operations on all systems will resume at 6 p.m. Monday, May 25.

T_EX Technical Typesetting Program on VX

Mike Frisch
BITNET: MJFRISCH@UMNACVX

We have installed the T_EX technical typesetting program on our VX (the VAX 8600) computer. The program was developed by Professor Donald Knuth of Stanford University and he has documented it in *The T_EXbook* (Addison-Wesley, 1986) which is on reserve in the ACSS Computing Information Center, 128A Lind Hall, 625-7397.

The output device for this program is the Xerox 8700 laser printer, a 300 dot/inch device. We have installed a T_EX device driver program for this printer called DVIXER. It translates the device independent (DVI) file created by T_EX to a Xerox file which is then printed using the **PRINT** command. Documentation for DVIXER is available for $3.00 from the Computing Information Center.

Although the Xerox 8700 is a fast, high-quality output device, it has a somewhat limited font memory. For this reason, the DVIXER program has grouped T_EX fonts into packages and each sheet of paper (both sides) can contain fonts from only one package. T_EX has no such restriction, so it can generate documents that DVIXER can't print and causes it to generate error messages. The DVIXER documentation gives the lists of fonts that are in each package.

To use T_EX and DVIXER, first type the command

```
$ TEXLOGIN
```

This sets up the programs so that the simple names **TEX** and **DVIXER** can be used rather than the long full pathnames.

T_EX expects an input file with file type .TEX which is usually created separately by a text editor such as EDIT. The first line of such a file should be

```
\input dvixer$:fontmac
```

if it is to be printed on the Xerox 8700. This line requests T_EX to read in the font information tailored to DVIXER and the Xerox printer. The second line of such a file will usually declare a font package if the default package XPFfiftyfour is to be replaced by a different one. For example, the following selects the XFPfifty package

```
\activatefontenv\XFPfifty
```

and the DVIXER documentation lists the fonts in each package in Appendix A.

T_EX produces a device independent output file of type .DVI and a listable output file of type .LIS.

To print on the Xerox, use the command **DVIXER** to read a file of type .DVI and produce a file of type .XER, which is ready to print on the Xerox 8700 via the **PRINT** command.

Here is a sample T_EX input file SAMPLE.TEX created using the EDIT text editor:

```
\input dvixer$:fontmac
\activatefontenv\XFPfifty
By default for this font package, this first paragraph
will be in {\bf ten point} type, with a default baseline
leading of {\it twelve points}.  Superscripts$^1$ will
be in seven point type and super-superscripts would be
in five point type.

\sevenpoint
This paragraph will be in {\bf seven point} type and
will have a spacing of {\it eight points} baseline-to-
baseline.  Superscripts$^2$ are in five point type.

All subsequent text until another font environment
change would continue to be set according to the current
font environment.

\tenpoint
Note how the definitions of such things as the boldface
and italic macros, as well as the sizes of scripts and
the baseline skip are all adjusted appropriately for
different font environments.

See appendices A and B for a list of font packages and
constituent fonts for the set included in the DVIXER
software package.

\bye
```

The T$_E$X and DVIXER session using SAMPLE.TEX is:

```
$ TEXLOGIN
$ TEX SAMPLE
$ DVIXER SAMPLE
$ PRINT /CHAR=PASSTHRU/NAME=EA*425 SAMPLE.XER
```

This produces files SAMPLE.LIS, SAMPLE.DVI and SAMPLE.XER and sends the Xerox output to bin 425 in Lind Hall 128B. Note that the file type .XER must be part of the filename in the **PRINT** command. The file type is not used in the **TEX** and **DVIXER** commands because they know what file type to expect whereas **PRINT** does not.

Here is the output from this run.

By default for this font package, this first paragraph will be in **ten point** type, with a default baseline leading of *twelve points*. Superscripts[1] will be in seven point type and super-superscripts would be in five point type.

This paragraph will be in **seven point** type and will have a spacing of *eight points* baseline-to-baseline. Superscripts[2] are in five point type.

All subsequent text until another font environment change would continue to be set according to the current font environment.

Note how the definitions of such things as the boldface and italic macros, as well as the sizes of scripts and the baseline skip are all adjusted appropriately for different font environments.

See appendices A and B for a list of font packages and constituent fonts for the set included in the DVIXER software package.

Questions about T$_E$X and DVIXER should be directed to Elaine Collins, M137 Fraser Hall, 625-1391.

Script Characters for Scribe

Elaine Collins
Mail on VX: ENC

We have added the following script characters to Scribe's font data base for the Xerox 8700 laser printer:

$$\mathcal{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$$

You can print them within or outside of Scribe's math environments with the command `@x(char)`. For example, use `@x(F)` to print the script F shown above.

If you encounter any font error messages in using the `@x` command, please contact Elaine Collins at 625-1391. Scribe and the 8700 do not have information on all possible font combinations that you might request, and new font groups can be created.

Programming Languages

C Language Now on VX

Janet Eberhart
BITNET: JME@UMNACVX

C is a small, general-purpose, and comparatively "low-level" programming language. It was originally designed on the UNIX system and eventually used to to rewrite most of the UNIX operating system. The absence of restrictions within C and its generality have made it an increasingly popular language for a variety of applications.

VAX C Version 2.2 is now available on our VAX 8600 (VX) via the `CC` command. The VAX C programming language has the features of the C language as Kernighan and Ritchie describe it in *The C Programming Language*. VAX C also provides features to work efficiently with the VAX/VMS operating system.

There is currently no ANSI (American National Standards Institute) or industry-wide standard for the C language. Since the C language was originally developed for a UNIX system environment, many "standard" methods of operation in C are related to UNIX. For instance, since UNIX accesses files by a numeric file descriptor, C also assumes a numeric file descriptor.

A Sample Program

To run a VAX C program on VMS, you must define the C run-time library to the linker. If you plan to use the Curses Screen Management package or the `/G_FLOATING` qualifier on the CC command you will need to define additional libraries. Once you have defined the libraries you do not have to redefine them again for the remainder of your terminal session.

```
/* Say hello to the world */
main()
{
      printf("Hello, world.\n");
}
```

Assume that you have created the file above and named it **WORLD.C**. With the following commands you can define the C run-time library to the linker, compile the source code, and link and execute the program.

```
$ LIBSVAXCRTL
$ CC WORLD.C
$ LINK WORLD.OBJ
$ RUN WORLD.EXE
```

Include Files

You can obtain a list of the include files available on VAX C by typing:

```
$ DIRECTORY SYS$LIBRARY:*.H
```

To examine a specific include file—for example **stdio.h**—type:

```
$ TYPE SYS$LIBRARY:STDIO.H
```

For More Information

You can get more information on the CC command, error messages, and run-time libraries by typing **HELP CC**. You can also refer to the manual *Programming in VAX C*, available at the ACSS Computing Information Center, 128A Lind Hall.

Quintus Prolog Predicate Library

Ron Zacharski
BITNET: RAZ@UMNACVX

In addition to the built-in predicates within Quintus Prolog (a VX programming language for artificial intelligence), there is a collection of over 200 general purpose predicates available in the Predicate Library, which resides on the VX at USERB:[LANGUAGES.PROLOG.QUINTUS5.QUINTUS$1_5.LIBRARY]. You can easily incorporate these predicates into your programs instead of writing your own and save a great deal of time.

The predicates include:

list processing utilities

utilities for heaps, queues and binary trees

random number generator

set manipulation predicates

A complete list of predicate names, arity, and file location is available as a MOREHELP entry on the VX. To read this entry, type

```
$ MOREHELP PROLOG PREDICATE_LIBRARY CONTENTS
```

Additional information about each predicate can be found in its respective file.

Site Licenses, Discounts for Macintosh LISP and Prolog

Ron Zacharski

If there is enough interest, the University may acquire a site license or a multiple copy discount for these Macintosh LISP and Prologs:

MacScheme, available from Semantic Microsystems, follows all essential and many optional features of the *The Revised Revised Revised Report on Scheme or UnCommon LISP* (environments are not supported). The system includes an editor which understands Scheme syntax and supports multiple windows. The site license costs $5000.

LPA MacProlog supports both the Edinburgh and Standard syntax. It makes good use of the Macintosh environment and includes window, dialog box, and menu primitives. If the University purchases more than ten copies, the cost of each will be around $200.

AAIS Prolog implements the Edinburgh syntax and is highly compatible with Quintus Prolog on the ACSS VAX. This is a very solid implementation that includes good debugging facilities. If the University purchases ten or more copies, the cost of each would be $100.

If you would take advantage of this proposed discount program or the site license, please send a memo to

Microcomputer Helpline
125 Shepherd Laboratories
100 Union Street SE
Minneapolis, MN 55455

If you have any technical questions or would like to examine any of the above products contact

Special Projects
M141 Fraser (office)
128A Lind Hall (mail)
Minneapolis, Minn. 55455
(612) 625-8332
BITNET: RAZ@UMNACVX

Math and Engineering Packages

New ACM Algorithms

Tingli Pan

We now have on 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 algorithms 641 to 643, published in June 1986. They are

ALG641	Exact Solution of General Integer Systems of Linear Equations
ALG642	A Fast Procedure for Calculating Minimum Cross-Validation Cubic Smoothing Splines
ALG643	FEXACT: A FORTRAN Subroutine for Fisher's Exact Test on Unordered r x c Contingency Tables

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 Tingli Pan at 625-3591.

UNIX Terminal Definitions

Thomas E. Kovarik
BITNET: TEK@UMNACVX
Mail on UX: tek

Question: How do I set up my terminal for the UNIX system?

Answer: One of the first problems you encounter as a new user of our UNIX system, which we call "UX," is getting your terminal and UX to understand one another.

As with the other three ACSS mainframes (CA, MD, and VX), you have to set your hardware and communications software correctly. The dial-in protocol on all our machines is seven data bits and one stop bit per character, even parity, and "handshaking" of XON/XOFF. (Handshaking refers to how your terminal halts and re-starts the flow of output from UX to your screen.) When you dial into UX, dial (612) 626-1681. Once you have connected to UX, your terminal is in "dumb" mode, which means UNIX does not know what your terminal characteristics are.

We have a program called "qterm" that communicates with your terminal and figures out what the characteristics of your terminal are. (It doesn't work on a few terminals, such as the Zenith Z-19 and Z-29.) The command:

```
setenv TERM `qterm`
```

will execute the qterm program and place the output from this program within the back quotes (called grave accents), after which the system executes the **setenv** (set environment) command, using the characteristics in the qterm output to associate TERM (your terminal) with those characteristics. (Note that the grave accent is a single back quote, not a single forward quote, which has a different meaning in UNIX.) In my opinion, what this command accomplishes is as close to magic as computers get — any closer and we would all be pounding the pavement looking for work.

When UNIX executes a command enclosed in grave quotes and substitutes the program's output for this field, the process is one of the pillars upon which all UNIX shells rest. It is called *command substitution* and is an elegant and powerful facility.

It is advisable to place the above command in a file called **.login** in your home directory. This file is automatically executed whenever you log in, before the UX displays the prompt. Notice the portability of this technique — if you log in on your colleague's terminal with your user name, UNIX still dynamically figures out what that terminal's characteristics are, without effort on your part. Of course, that kind of portability and simplicity is why many of us are migrating to UNIX!

Now that you are logged on and UNIX has learned your terminal's characteristics, you may choose to refine your communication characteristics using the full power of the UNIX **stty** (set terminal type) command. The command:

stty everything

alone gives you your current terminal settings. The command:

man stty

gives you the UNIX on-line manual options for terminal settings, which are many and varied. For example, you can make **control-H**, or any other character, a backspace character. Or you can echo all input or no input to your screen. Or you can give your terminal those characteristics of a "tek" (Tektronics Inc.) terminal, or a "dec" (Digital Equipment Corp.) terminal. Or you can select a character (such as **control-U**) to erase a line. There are many more options available with this command.

If you have a Z-19 or Z-29 terminal, you can still use **setenv**. For a Z-19, for example, type

setenv TERM z19

Statistics Packages

On-line Help for SAS Users
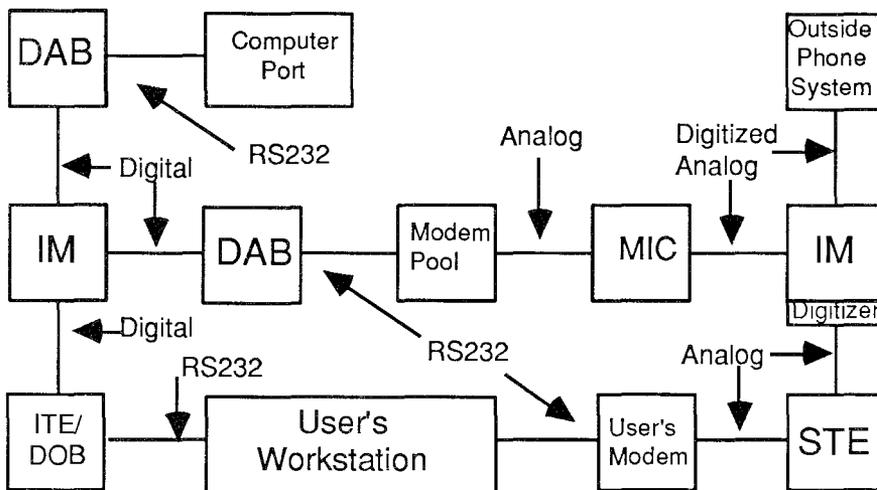
Sharon Krmpotich
VX Mail: SAK

Are you an experienced SPSS user who is thinking about trying SAS? Perhaps you have tried SAS and were frustrated by the convoluted *SAS Basics* manual. The next time you log into the VAX, take a few minutes to read the ACSS writeup on SAS. You can do this by typing the following command at the system prompt:

$ TYPE ACSS$WRITEUP:SAS

This will send the SAS writeup to your terminal screen. The document is approximately six pages long. It describes some of the basic features of SAS, as well as the layout of the *SAS User's Guide: Basics.* There is also a section for SPSS users that describes the correspondence between SPSS commands and SAS data steps.

The Missing Figure

Figure 1: Data signal types in University telecommunications <64,000 bits/second

DAB	Computer Port		Outside Phone System

Digital ← RS232 ↖

Analog ↓   Digitized Analog →

IM	DAB	Modem Pool	MIC	IM

Digitizer

Digital ←   RS232 ↗   Analog →

RS232

ITE/ DOB	User's Workstation	User's Modem	STE

DAB   The Data Auxilary Board converts between digital and RS232.
IM   Interface Multiplexers switch data in combination with Switching Networks.
ITE/DOB   The Integrated Terminal Equipment/Data Option Board converts between digital and RS232.
MIC   The Modem Interface Card converts between Analog and Digitized Analog.
Modem Pool Racal-Vadic modems convert between Analog and 2400-baud asynchronous RS232.
STE   Standard Terminal Equipment uses analog signals.

This figure was inadvertently omitted from our March issue, where it should have appeared in the article " Networking and its Funding," pages 90-92. We apologize for any inconvenience the omission may have caused our readers.

Passwords and Archived Files

As the academic year draws to a close, you should invest some time in password security and file maintenance, if you have not done so recently.

Change Your Password

To keep your account secure, it is a good idea to change your password frequently— once a month is not too often. (On the CYBERs, use the **PASSWOR** command; on the VX, use **SET PASSWORD**; on the UX, **PASSWD**.)

File Archiving

Every month ACSS removes from disk storage all CYBER CA files and VX USERA files that have expired—those that have not been accessed for at least 30 days on the CYBER, 90 days on the VAX. (In some cases the file expiration term is longer if you have set a longer expiration term on your account.)

These files are stored in the ACSS archive. For a small fee, you can reload archived CA and VX files from our archives. On the CYBER, use the **RELOAD** command. To learn more about **RELOAD**, log on to the CA and type

        EXPLAIN,M=COMMAND.RELOAD

See also WRITEUP,RESTORE or WRITEUP,RELOAD for more information.

To reload VX files, call our Permanent File Restoration number, 626-0595.

The One-Year Purge

ACSS does not keep archived files indefinitely, but purges them after they have been archived for one year. At that point the files *cannot be retrieved.*

You are responsible for the preservation of files archived for a year. ACSS does not assume responsibility for the loss of a file after it has been purged from our archive.

Your surest method for preserving your files is to store back-up copies on magnetic tapes. (You should used at least two tapes, and preferably three.) There is a small charge for tape storage.

ACSS provides inexpensive short courses and documentation on using tapes to maintain your files. If you have questions about tapes or file maintenance, call the HELP-Line at 626-5592.

Spring Quarter Short Courses
1987

INTRODUCTORY COURSES

(Introductory Courses are FREE. To register call 625-7397.)
(Classrooms listed *may* be for the first day of class only.)

Electronic Mail (VAX Mail, BITNET)	(JHS)	May 19-21	(TTh)	3:15-5 pm	SciCB 125
Using Magnetic Tapes in NOS 2	(PJO)	May 27-June 5	(WF)	3:15-5 pm	SciCB 125

ELECTIVE COURSES

FEES: 1) U Students, 2) U Staff/Faculty, 3) Non-University persons

Using SPSS^X (Statistics)	(DLF)	May 18-22	(MWF)	3:15-5 pm	$10,$10,$20
Programming in 'C' Language	(BMS)	May 18-June 1	(MWF)	2:15-4 pm	$15,$15,$40
Programming in LISP Language	(RAZ)	May 12-28	(TTh)	2:15-4 pm	$15,$15,$40

MICROCOMPUTER APPLICATIONS COURSES

FEES: 1) U Students, 2) U Staff/Faculty, 3) Non-University persons.
(IBM and Compatible courses are absolutely limited to 10 per class.)

Introduction to Micros: MS-DOS	section 4	May 27-29	(WThF)	9:30-11:30 am	$40,$50,$80

(*Introduction to Micros* or equivalent knowledge is required for IBM courses below.)

Introduction to Word Perfect	section 3	May 14	(Th)	1:30-4 pm	$25,$35,$60
	section 4	May 26	(T)	9:30-noon	$25,$35,$60
Intermediate Lotus 1-2-3		May 29	(F)	1:30-4 pm	$25,$35,$60
Programming with dBase III		June 2-3	(TW)	1:30-4 pm	$40,$50,$80
Managing Your Hard Disk	section 2	May 27-28	(WTh)	1:30-3:30 pm	$40,$50,$80

(These courses are OVERVIEWS ONLY for the Apple Macintosh. Limited to 12 people.)

Microsoft Word for the Macintosh	June 1	(M)	1:30-4 pm	$15,$25,$40
Omnis 3	June 3	(W)	1:30-4 pm	$15,$25,$40
Networking Macintoshes with AppleShare	June 4	(Th)	1:30-4 pm	$15,$25,$40
Desktop Publishing with PageMaker	June 5	(F)	9:30-noon	$15,$25,$40

(The following class is a hands-on workshop. Limited to 10 people.)

Intermediate EXCEL	May 27	(W)	9:30-noon	$40,$50,$80

ACSS SHORT COURSE INFORMATION

REGISTRATION: Registration is located at the ACSS Computing Information Center, 128A Lind Hall. (Registration hours: 8:00 am to 4:00 pm, Monday through Friday). We accept mail registrations. Deadline for registering is 4 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, so we know how many to expect. For registration information call 625-7397.

FEES: Fees are listed in order for the following groups: 1) University students, 2) University staff and faculty, and 3) non-University persons. Course fees may be paid by cash or check or with a signed University journal voucher, brought or sent to 128A Lind. No refunds will be made after the class has begun.

Note: Monday, May 25, is a University holiday. No classes will be held.

The Help Page

General Consulting

Walk-in: 128C Lind Hall, East Bank; 10 am to 4 pm weekdays except 10 am to 11 am Wednesday

140 Blegen Hall, West Bank; 2:15 to 4:45 Monday, 12:15 to 2:45 Tuesday, 11:15 to 2:45 Wednesday, 1:15 to 4:15 Thursday, 2:30 to 4:30 Friday

HELP-Line: 626-5592, 8 am to 5 pm weekdays

Specialized HELP-Lines

HELP-Line	Phone Number	Hours
Artificial Intelligence	625-8332	3 to 4 pm weekdays.
Data Bases	626-1887	10 to 11 am weekdays.
Microcomputers	626-4276	9 am to noon & 1:30 to 4 pm, Monday, Tuesday, Friday; 9 am to 4 pm, Wednesday and Thursday.
Statistics	626-1893	11 am to 2 pm weekdays.
Text Analysis	625-8332	3 to 4 pm weekdays.
Text Processing	625-1391	9:30 to 11:30 am, Monday through Thursday.

Consulting by Mail

Consulting is now available via the mail facility on all ACSS systems (the CA, MD, VX, and UX). Send mail to username 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 626-1085 for assistance in choosing ACSS systems (CYBER/NOS, VAX/VMS, ENCORE/UNIX), software, and for answers to any other inquiries on using computers for instructional computing.

Computing Information Center
128A Lind Hall, 625-7397

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 available.

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

ACSS PHONE NUMBERS

Administrative Office: 626-1600   **HELP-Line: 626-5592**

Access:
- CYBER (CA) 626-1620
- CYBER (MD) 626-1622
- ENCORE (UX) 626-1681
- VAX (VX) 626-1641
- RJE (2400 baud) 626-1656
- RJE (4800 baud) 626-1663

Accounts:
- CYBER, 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 627-4177
Equipment Maintenance/Repair 627-4357
Graphics Software 626-5592
Information, Lauderdale 626-1600
Lauderdale Computer Room 626-0550

Lauderdale Services 626-1838
Magnetic Tape Librarian 626-1838
Math and Statistics Packages 626-5830
Micro Information 626-4276
Newsletter Subscription 625-7397
Permanent File Restoration 626-0595
Project Assist 626-1090

Public Labs (Managed by ACSS)
- 14 Folwell Hall 625-4896
- 306B Lind Hall 625-9032
- 130 Physics 625-7850
- 9 Walter Library 626-1899

Publications Information 626-1093
Remote Batch (RJE) Services 625-7850
Short Course Registration 625-7397
Shuttle Bus Service 625-9525
System Status (recorded message) 626-1819

SYSTEM OPERATING HOURS

	CYBER (CA), ENCORE (UX), and VAX (VX)	CA and VX Low Rate	CYBER (MD)
M-F	7 am - 4 am	8 pm - 4 am, 7 am- 8 am	7 am - 1 am
Sat	4 am - 9 pm	all operating hours	7 am - 10 pm
Sun	6 pm - 4 am	all operating hours	6 pm - 1 am

PUBLIC LABS-TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro	Location	Batch	Interactive	Micro
East Bank				TerrH		X	
ApH 204			X	VinH 4		X	
Arch 148			X	VinH 203			X
CenH		X		WaLib 9		X	X
ComH		X					
DiehlH 207, 270		X		*West Bank*			
EddyH Annex 54			X	AndH 170	P		X
EltH 121, 124	P	X		BlegH 140	P	X	
FolH 14, 14a	P	X	X	MdbH		X	
FronH		X		OMWL 2	P	X	
LindH 26		X					
LindH 128B	X	X		*St. Paul*			
LindH 306B			X	BaH		X	
MechE 308		X		CentLib B50			X
MoosT 8-425			X	ClaOff 125 E	X	X	
Phys 130		X	X	ClaOff B22			X
PioH		X					
SanH		X					

P means Printer only.
For more information see WRITEUP,LABS.

Contents

Direct comments, suggestions, articles, and announcements to
the editors at the address below, or call (612) 626-1828 or 626-
1093. For a free subscription call (612) 625-7397, or send your
name and address to the Computing Information Center, 128A
Lind Hall. On-campus address changes *must* include your
department's name and your *departmental* address.

The University of Minnesota is committed to the policy that all
persons shall have equal access to its programs, facilities, and
employment without regard to race, religion, color, sex, national
origin, handicap, age, veteran status, or sexual orientation.

The **ACSS**
Newsletter

**Academic
Computing
Services and
Systems**

Technical Publications
100 Lauderdale CF
University of Minnesota
2520 Broadway Drive
Lauderdale, Minnesota 55113

UNIVERSITY ARCHIVES
10 WaLib

Deliver to current occupant.