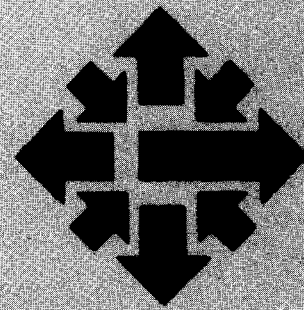


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University Computer Center Newsletter

University of Minnesota
Twin Cities

December 1982
Volume 16, Number 12



WORDS INTO PRINT

The University Computer Center now offers two printing services for finished quality output of your articles, theses, and other documents. You can send files to the Xerox 9700 laser printer from both the CYBERs and the VAX/VMS. And the NEC Spinwriter, a Diablo-type letter quality printer, now operates on-line with the VAX. A number of typewheels on the Spinwriter allow you to select different character sets.

Xerox 9700 Laser Printer

The Xerox 9700 service available to CYBER users is described in WRITEUP(SERVICE=X9700). The 9700 prints your text as it receives it, each line of input matched by a line of output. You can select printing options such as portrait or landscape orientation and 66 or 88 lines per page; different combinations results in different character densities per inch and different top and left margins. You can also select duplex (printing on both sides of the page) and multiple copies of a document.

Help enqueue X9700 and morehelp X9700

describe the Xerox 9700 service available to VAX users. The VAX ENQUEUE statement and qualifiers for sending text files to the 9700 are similar to the CYBER ROUTE statement and qualifiers, with some additional printing options available for your text. You can insert bolding, underlining, italics, and underlined italics in the text file, and also call for bond or three-hole punched paper.

Scribe, a sophisticated text formatting program that runs on the VAX, allows you to take advantage of many more features of the Xerox 9700. With Scribe, you can select from a number of font families for a basic type face; then, within these families, a range of type sizes and styles is available. Most fonts in Scribe's font families contain proportional rather than fixed-width characters, so your final output has a more "printed" quality.

Four font families on the 9700 are now accessible through Scribe. Helvetica 10, the default for most Scribe document types, and Sans Serif 10 are sans serif font families; Times Roman 10 and Craw 10 contain serif fonts. Typewriter and Greek characters and bolding are available in all families. Italics are available in all except Craw 10; a set of special symbols (e.g., copyright and paragraph symbols) is available in all families except Times Roman 10. Sans Serif 10 and Craw 10 heading fonts contain the full ASCII character set; heading fonts in the other two families are limited to upper case letters, numerals, and the following punctuation: , . - /. You can specify any font family for a document with the Scribe command:

@Fontfamily(fontfamilyname).

Other font families are available through our Xerox 9700 service bureau. Contact Text Processing Services (376-2943) if you are interested in other printing options. We are currently working on in-

tegrating a technical math character set into the Scribe data base. It is also possible to provide your own paper for printing on both the Xerox 9700 and the NEC Spinwriter. Contact Jerry Larson, 373-7538, for assistance.

NEC Spinwriter

The NEC Spinwriter, our new letter quality printer with several typewheels, is connected directly to our VAX. The Spinwriter ENQUEUE statement has many of the same qualifiers as the X9700 ENQUEUE statement, including bond paper and multiple copy selection; duplex is not available, however. The Spinwriter also has a typewheel selection qualifier.

The Emperor P.S., Bold P.S., Italic P.S., and Courier 72 typewheels print the standard ASCII character set with some additional characters. ("P.S." indicates proportional width characters; characters on other wheels are fixed-width.)

The Greek/Times Roman typewheel contains the full Greek alphabet, Greek diacritical marks, superscripted numerals, and the upper case English alphabet. Technical Math/Times Roman prints the full English alphabet, regular and superscripted numerals, some Greek characters, and other symbols used in mathematical text such as the infinity and integral signs; you can also build large braces, a large sigma, and a large infinity.

APL-10/Light Italic provides the standard ASCII character set with

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Director: Peter C. Patton
Editor: Christine Mack Gordon

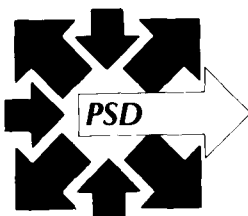
Comments about the content of this newsletter, or suggestions for changes may be directed to the editor, 235a Experimental Engineering, or call 612/376-9490.

The University of Minnesota adheres to the principle that all persons shall have equal opportunity and access to facilities in any phase of University activity without regard to race, creed, color, sex, national origin or handicap.

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P ROFESSIONAL S ERVICES D IVISION

graphics development:	computer graphics for data presentation
statistical analysis:	full range of services available
system analysis and design:	analysis of existing systems; design of new systems
financial analysis:	forecasting, accounting
data base development:	design and implementation using state-of-the-art technology
tape conversion:	conversion of off-site tapes to UCC internal format
customized programming:	COBOL, FORTRAN, Pascal for virtually any application
research applications:	scientific or social research environments



If you qualify for a University Computer Center account, and are interested in our services, please contact us.

376-1764 • 227 Experimental Engineering • 208 Union St. S.E.

Words from 133

some exceptions. You can also emulate an APL keyboard, with lower case letters mapping to upper case and upper case letters mapping to APL graphics.

We have on order a multilingual typewheel with diacritical marks used in printing various European languages. NEC provides a number of wheels with other character sets; again, contact Text Processing Services if you would like to investigate other printing options for the Spinwriter.

You can access the character sets on all typewheels both in Scribe and non-Scribe text files, although Scribe makes better use of the proportional character wheels. Emperor P.S. is the default for Scribe files; Courier 72 is the default wheel for all other text files. Use the ENQUEUE qualifier `/typewheel=typewheelname` when specifying any non-default typewheel. You can also use the following command in Scribe files:

```
@Fontfamily(typewheelname) OR  
@Typewheel(typewheelname)
```

for all non-default wheels. (Both Scribe and the Spinwriter identify the typewheel names as BoldPS, EmperorPS, ItalicPS, Courier72, TechMath, Greek, and APLItalic.)

To insert special characters in non-Scribe files, you must enter shift-out (SO) mode, type the equivalent ASCII character or characters, then go back into shift-in (SI) mode. If you're editing directly on the VAX with EDT in screen-edit mode, use the special-insert key to enter a CTRL-N (decimal 14) for SO, CTRL-O (decimal 15) for SI. For other editing of non-Scribe text files, insert ↑N for SO, ↑O for SI, and use the ENQUEUE qualifier `/uparrow`.

To insert special characters in Scribe files, use the equivalent `@E(x)`, `@G(x)`, `@Y(x)`, or `@Z(x)` facecode command, typing in the equivalent ASCII character or characters within the delimiters. In some cases, you may also use a direct Scribe command, such as `@not` for the "not" symbol or `@inf` for the "infinity" symbol.

Refer to **help enqueue spinwriter** on the VAX/VMS for information on sending files to the Spinwriter, and **morehelp spinwriter** for character descriptions and ASCII equivalents for the various typewheels. Forthcoming Scribe documentation will reproduce this information for the various typewheels as used within Scribe.

SCRIBE DOCUMENTATION

A new release of *Scribe at UCC* will be available shortly. It has more detailed information on the new Xerox 9700 fonts and special character sets and the Spinwriter typewheels, some corrections to the current document, and a discussion of Scribe forms and the production of form letters with Scribe.

A new version of *Theses in Scribe* (September 1982) is now available at the Computer Store (211 Experimental Engineering). It includes some changes in content and in Scribe's "MNThesis" document type itself.

(Elaine Collins)

SYSTEM NEWS/NOTES

Grants for Research

We are currently at work on a *Grant Proposal Primer* that will contain the technical information necessary for a complete proposal for external grants and other useful information on proposal writing. This Primer will be available in winter quarter 1983.

We have an internal grant program for University researchers, both faculty and graduate students. When you apply for a user number, you can also apply for financial assistance. While our resources are more limited than in the past, the funds still available should be sufficient for most projects. Other funding agencies consider computing a valid expense, so you should request funds for computing when you apply for research grants.

If you still run short of funds for computing, or need some last minute financing, you may request additional funds from the Computer Grants Subcommittee of the University Computing Services (UCS) Advisory Committee. John Skelton, of the University of Minnesota-Duluth, is the chair of that committee.

If you need assistance in writing grant proposals for external grants and in estimating computer costs, both our consultants and our grant writing primer can assist you.

Here are some suggested sources of outside funding for various types of projects.

Innovation Processes Research: NSF's division of Industrial Sci-

ence and Technological Innovation considers proposals in these areas:

- organizational and structural effects
- technology generation and diffusion processes
- implementation of innovation
- university industry interaction and innovation

Department of Education: International Research and Studies Program includes research on the use of computers in teaching foreign languages.

Bilingual Education Demonstration Program: Includes integrating the use of classroom computers into bilingual education programs.

(Vicky Walsh)

Microcosm

WHAT KIND OF DISK SHOULD I BUY?

To determine what disk to buy for your microcomputer you must know the size disk you need and whether price or reliability is more important to you.

Floppy disks are available in either 8" or 5.25" size and can be either single- or double-sided. You use single-sided disks in disk drives that write only on one side of the disk, the Apple II for example. You use double-sided disks in disk drives that write on both sides of the disk, such as the IBM Personal Computer with double-sided drive.

Disks are rated at the highest density at which they work reliably. The only difference between single-density and double-density is that the latter work reliably when used in double-density format and the former do not. If you have a microcomputer that writes double-density format disks, you should use double-density. Single-density disks cannot be expected to work reliably when used in double-density format because you would be trying to squeeze information more tightly on the disk than the manufacturer intended. You can, however, use double-density disks in single-density format because single-density does not squeeze the information on the disk as tightly as double-density.

What kind of disk should you buy? Well, be sure the disks are the right size for your drives, that they are double-sided if you have double-sided drives, and that the density is the same as or higher than the format you use. Remember, double-density disks work more reliably than single-density disks and, not surprisingly, cost more.

If you still have questions about purchasing disks, call or visit the Microcomputer Help-line, 376-4276 (DR MICRO), 139 Shepherd Labs, open Monday through Friday, 10 a.m.-noon and 2-4 p.m.

Math Packages

SYMBOLIC ALGEBRA SYSTEM: REDUCE2

We have recently installed the REDUCE2 system for symbolic algebraic manipulation on the CDC CYBER systems. It is a complete language for symbolic calculations and the program itself is written in that language, one based on LISP.

REDUCE2 can:

- expand and order polynomials and rational functions
- differentiate symbolically
- perform substitutions and pattern matches
- calculate the greatest common divisor of two polynomials
- simplify expressions automatically and under user control
- calculate with symbolic matrices and
- write long symbolic expressions into a file directly in FORTRAN format for solving problems both symbolically and numerically.

REDUCE2 requires a minimum field length of 177C00 octal, so it has been installed as a batch program. It is accessed with the control statement:

REDUCE2(infile,outfile)

where infile is the name of the input file (default is INPUT) and outfile is the name of the output file (default is OUTPUT). The 62-page REDUCE2 manual is available as WRITEUP(REDUCE2).

The following simple example computes the symbolic inverse and determinant of a 4 by 4 matrix.

JOB. SIMPLE REDUCE2 EXAMPLE

USER statement

REDUCE2.

(7-8-9 end of record)

MATRIX B(4,4);

```
A# = MAT((9*X,X,0,0),(Y,9*Y,0,0),
          (0,0,20*T-T**2,(T+Z)/5),
          (0,0,(T-2)/4,T));
```

D# = DET(A);

B# = A(-1);**

END;

FIN

The output from REDUCE2 looks like this:

```
1 ***** LISP 4.1
REDUCE 2 (MAR-15-81) ...
MATRIX B(4,4);
A# = MAT((9*X,X,0,0),(Y,9*Y,0,0),
          (0,0,20*T-T**2,(T+Z)/5),
          (0,0,(T-2)/4,T));
A(1,1) # = 9*X
A(1,2) # = X
A(1,3) # = 0
A(2,1) # = Y
A(2,2) # = 9*Y
A(2,3) # = 0
A(2,4) # = 0
A(3,1) # = 0
A(3,2) # = 0
A(3,3) # = T*(- T + 20)
A(3,4) # = (Z + T)/5
A(4,1) # = 0
A(4,2) # = 0
A(4,3) # = (T - 2)/4
A(4,4) # = T
D# = DET(A);
D # = 4*Y*X*(- Z*T + 2*Z - 20*T**3 +
          399*T**2 + 2*T)
B# = A**(-1);
B(1,1) # = (9*(Z*T - 2*Z + 20*T**3 -
          399*T**2 - 2*T))/(80*X*(Z*T - 2*Z +
          20*T**3 - 399*T**2 - 2*T))
B(1,2) # = (- 1)/(80*Y)
B(1,3) # = 0
B(1,4) # = 0
B(2,1) # = (- 1)/(80*X)
B(2,2) # = (9*(Z*T - 2*Z + 20*T**3 -
          399*T**2 - 2*T))/(80*Y*(Z*T - 2*Z +
          20*T**3 - 399*T**2 - 2*T))
B(2,3) # = 0
B(2,4) # = 0
B(3,1) # = 0
B(3,2) # = 0
B(3,3) # = (- 20*T**3)/(Z*T - 2*Z +
          20*T**3 - 399*T**2 - 2*T)
B(3,4) # = (4*(Z + T))/(Z*T - 2*Z +
          20*T**3 - 399*T**2 - 2*T)
B(4,1) # = 0
B(4,2) # = 0
B(4,3) # = (5*(T - 2))/(Z*T - 2*Z +
          20*T**3 - 399*T**2 - 2*T)
B(4,4) # = (20*T**3*(T - 20))/(Z*T - 2*Z
          + 20*T**3 - 399*T**2 - 2*T)
END;
ENTERING LISP ...
*VALUE:
NIL
*EVAL:
GARBAGE COLLECTIONS: 1 2
```

(Mike Frisch, 376-1636)

Tapes

MULTI-FILE TAPE PROBLEM

Many users of our CYBER systems use multi-file (also called multi-section) tapes for backup purposes. Unfortunately, Control Data's hardware or software (we don't know the cause) occasionally destroys a tape file mark on such tapes, resulting in the destruction of some of the data stored on the tape and difficulty in recovering the rest.

We strongly urge you to be sure that your tape backup procedures do not employ this method of creating tape files. (Some state agencies typically use this method for creating all their backup tapes.)

How do you check for this problem?

Examine the source to all procedure files that you use to back-up files to tape. If the LABEL control statement uses the parameter "QN=9999", your backup procedures create multi-file tapes and should be changed.

We suggest that you convert backup procedures to make use of the ARCHIVE program—see WRITEUP(ARCHIVE). And see "Hints

for Safe Tape Backup" in this issue of the *Newsletter*.

Do not assume that this problem is not serious or will be fixed shortly. Neither we nor Control Data have been able to fix it thus far.

(Chris Boylan, 376-5603)

HINTS FOR SAFE TAPE BACKUP

A number of our users have lost data they thought was safely backed up on tape. We would like to help prevent this from happening to you by providing some hints on properly backing up files to tape.

- Always make two copies of everything you want backed up and do it on separate tapes in separate jobs; never consider your tape files safe unless you have two copies on separate tapes.
- Verify that the first copy is good before creating the second copy. This may seem odd, but it is easy to destroy the contents of both backup tapes before realizing that something is amiss.
- Do not use multi-file (also called multi-section) tapes (i.e., never use the QN=9999 parameter

on the LABEL control statement) for the purposes of tape backup.

- Never mount both backup tapes with the write enable ring in (PO=W on the LABEL control statement) during the same job.
- If you should accidentally destroy the data on one of your backup tapes, make a copy of the remaining tape before you do anything else with either tape.
- Keep your tapes stored in our tape library or in another controlled environment area.
- For greater safety, keep a third copy of your backup tape in our offsite tape storage area (this storage service is currently free of charge).

Remember too, that we regularly backup all files stored in our CYBER systems and as long as your files remain in the disk file system, we back them up for you. We recommend that you use ARCHIVE—see WRITEUP(ARCHIVE)—to create all your backup tapes.

For more advice on setting up a backup system, call Chris Boylan, 376-5603.

(Chris Boylan)

Non-Traditional Computing

LECTURE SERIES CONTINUES

The Non-Traditional Computing Lecture Series sponsored by UCC continues winter quarter with the following lectures:

January 19—"Computer Models of Race, Class, and Marriage in Old Mexico," Robert McCaa, Department of History.

February 15—"Collection and Analysis of Set Phrases in Old Norse," Lewis Janus, Department of Scandinavian Languages.

March 9—"Decipherment of the Mayan Hieroglyphs," Mary Ellen Kelly, Department of Anthropology. (no date set)—"An Archaeological Data Base from Akhmim, Egypt," Sheila McNally, Department of Art History.

All lectures begin at 3:15 p.m. in 203 Folwell Hall on the Minneapolis east bank campus.

The January 19 lecture will be followed by a meeting of HUG, the University of Minnesota Humanities Users Group. All those interested are welcome to attend this meeting.

VAX Service

DOCUMENTATION

The Computer Store sells Digital Equipment Corporation (DEC) documentation for users of our VAX/VMS system. At the present time, some of this material documents VMS release level 3.0. Our

VAX, however, runs at level 2.5. Thus you may be unable to execute new commands or new implementation of commands referred to in the documentation. Should this happen please double check to be sure you followed the instructions correctly. For DCL commands, refer to the VMS HELP utility. For specific languages (FORTRAN, MACRO, PASCAL), refer to the 2.5 version manuals available in our Reference Room. Few differences exist between the two versions, and since we plan to upgrade the system to the 3.0 version in the coming year, the 3.0 documentation is the most appropriate material to own.

Statistical Packages

BMDP-81

BMDP-81 is now available on the CYBER 730 and CYBER 74 as a FUTURE version. To access this version, use the BATCH commands:

FUTURE(BMDPxx)
BMDPxx(parameters)

where xx is the number of the program you wish to use. The parameters are explained in WRITEUP(BMDP81).

Documentation for this version of BMDP consists of the following:

- (1) *BMDP Statistical Software*, UCLA Press, 1981.
- (2) WRITEUP(BMDP81)

Both documents are necessary to run BMDP-81 on our systems. It is especially important to note the new interpretation of blank data fields as explained in WRITEUP(BMDP81).

This version contains the following new programs (added since the 1979 version of BMDP):

- 4F Two-way and multiway frequency tables—measures of association and the log-linear

- model (replaces 1F, 2F, 3F)
- 2L Survival analysis with covariates
- 8M Boolean factor analysis
- 9M Linear scores for preference pairs
- 2T Box-Jenkins time series analysis
- 4V General univariate and multivariate analysis of variance and covariance, including repeated measures

BMDP-79 is still available as the CURRENT version on our system.

All Systems Bulletins

ATTENTION ALL INSTRUCTORS

Would you consider teaching a course for which you were not prepared? Does your preparation typically include ordering required or suggested texts or other materials? Then please help us to help you when you want your students to purchase materials at UCC's Computer Store.

The Computer Store is the distribution arm of our publications group. Our first priority is to supply documentation for instruc-

tional computing. All of you who use our materials in your courses are a crucial part of our supply and demand process. Only you know what your needs are for any given course or quarter. To fill your requests, we need the following information at least one month, and preferably two, before your class begins:

- the documentation required
- the department and class number
- the quarter the class is offered

- how many students are expected

Please submit your requests on departmental stationery to the Computer Store, 211 Experimental Engineering. If you have not yet submitted your requests for winter quarter, please do so *immediately*. We appreciate your cooperation and believe you will appreciate the results. If you have further questions, please call Marv Mohr, 373-9613.

HOLIDAY HOURS

Our operating hours for the upcoming holiday season will be as follows:

	Down	Up
Christmas		
Lauderdale	3 p.m. Fri 12/24	4 p.m. Sun 12/26
Experimental	Midnight Thu 12/23	8 a.m. Mon 12/27
Shepherd Labs	5 p.m. Thu 12/23	8 a.m. Mon 12/27
(operator coverage)		
New Year's		
Lauderdale	5:30 p.m. Fri 12/31	4 p.m. Sun 1/2
Experimental	4 p.m. Fri 12/31	8 a.m. Mon 1/3
Shepherd Labs	5 p.m. Fri 12/31	8 a.m. Mon 1/3
(operator coverage)		

SLIDES ONLY \$5

As a result of your interest in and use of our advanced graphics capabilities on the VAX/VMS system, we will continue our reduced rate policy on D47 color slide processing for an indefinite time. The cost is only five dollars per image. Take advantage of this price reduction on high-quality graphic output. You'll be pleased with the results.

PHONE NUMBERS

Budgets	373-2521	HOURS-line (recorded message)	373-4927
Computer-Aided Instruction	376-2975	Image Processing	376-2895
Computer Hours (recorded message)	373-4927	Information, Experimental Engineering	373-4360
Computer Store	373-4877	Information, Lauderdale	373-4912
Consulting		Information Systems	376-1764
HELP-line	376-5592	Instructional Labs	376-2703
9 a.m.-5 p.m., Monday-Friday		Job Status, ExpEng (recorded message)	373-4994
Business Data Products	376-1761	Lauderdale Computer Room	373-4940
1-3 p.m., Monday-Friday		Lauderdale Services	373-4995
Statistics Packages	376-5062	Lauderdale Services Manager	373-7538
1-2 p.m., Monday-Friday		Lauderdale Users' Room	373-4921
Data Bases	376-1761	MECC Liaison	373-7745
1-3 p.m., Monday-Friday		Newsletter Subscription	373-4912
Microcomputers	376-4276	Permanent File Restoration	376-5605
10-12 a.m. and 2-4 p.m., Monday-Friday		Professional Services Division (PSD)	376-1764
Non-Traditional Computing	373-5780	Project Assistance	376-1764
10:30-11:30 a.m., Monday, Wednesday, Friday		Program Librarian	376-1636
TELL-A-GRAF/DISSPLA	376-2663	Programming Languages	376-7290
1-3 p.m. Tuesday, Thursday		Reference Room	373-7744
Text Processing	376-2943	Remote Batch (RJE) Services	376-2703
9 a.m.-noon Tuesday-Thursday		Short Courses	376-8806
Contract Programming	376-1764	Shuttle Bus Service	376-3068
Data Base Applications	376-1764	System Status (recorded message)	373-4927
Educational Services	376-3963	Tape Librarian: see Lauderdale Services	
EDUNET Liaison	373-7745	Text Processing Services	376-2943
Engineering Services	376-1023, 376-8153	User Accounts	373-4548
Equipment Purchase/Information	376-8153	User Services	376-3963
Experimental Engineering I/O	373-4596		
Field Engineering	376-7584		
Graphics Software	376-5592		
HELP-line	376-5592		
9 a.m.-5 p.m., Monday-Friday			

OPERATING HOURS

	Cyber 74/730	Cray	MERITSS (Cyber 172)	VAX
M-F	8 a.m. - 4 a.m.	8 a.m. - midnight	7:45 a.m. - 1:30 a.m.	8 a.m. - 6 a.m.
Sat	4 a.m. - 5:15 p.m.	8 a.m. - 5 p.m.	7:45 a.m. - 1:30 a.m.	24 hours
Sun	4 p.m. - 1 a.m.	4 p.m. - midnight	4 p.m. - midnight	24 hours

PUBLIC LABS—TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro	Location	Batch	Interactive	Micro
<i>East Bank</i>				<i>West Bank</i>			
Arch 160		X	X	BlegH 90	X		
CentH		X		BlegH 91T			X
ComH		X		BlegH 140		X	
DiehIH 270, 207		X		MdbH		X	
EltH 121, 125		X		OMWL 2		X	
EltH N640	X			SocSci 167		X*	
ExpE 130	?			<i>St. Paul</i>			
FolH 14, 14a	X	X*	X	BaH		X	
LindH 25, 26	?	X		ClaOff 125	X	X	
MasCan 39	X			NorH 24	X		
MechE 308		X					
Physics 69		*?					
SanfH		X					
TerrH		X					
VincH 4		X					
WaLib 204		X					

* Research cluster; access to Cyber 730 and VAX/VMS

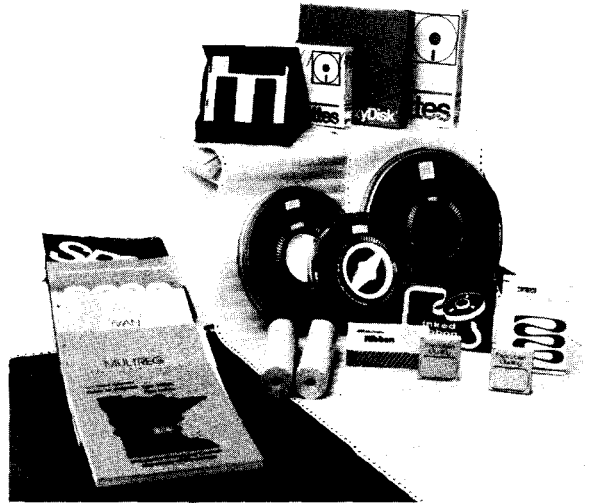
X in interactive column indicates access to MERITSS

? Unknown at the present time

COMPUTER STORE

for all your computing needs

- floppy disks, cards, paper
- short course registration
- microcomputer access cards
- software
- documentation



211 Experimental Engineering
East Bank, University of Minnesota
373-4877 9-3 M-F, 5-7 M-Th

New 20# 9½ × 11 paper
Disaperf edges break to 8½ × 11
2550 sheets \$23.85

University Computer Center Newsletter

User Services
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University of Minnesota
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Minneapolis, Minnesota 55455

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