University Computer Center Newsletter

University of Minnesota
Twin Cities

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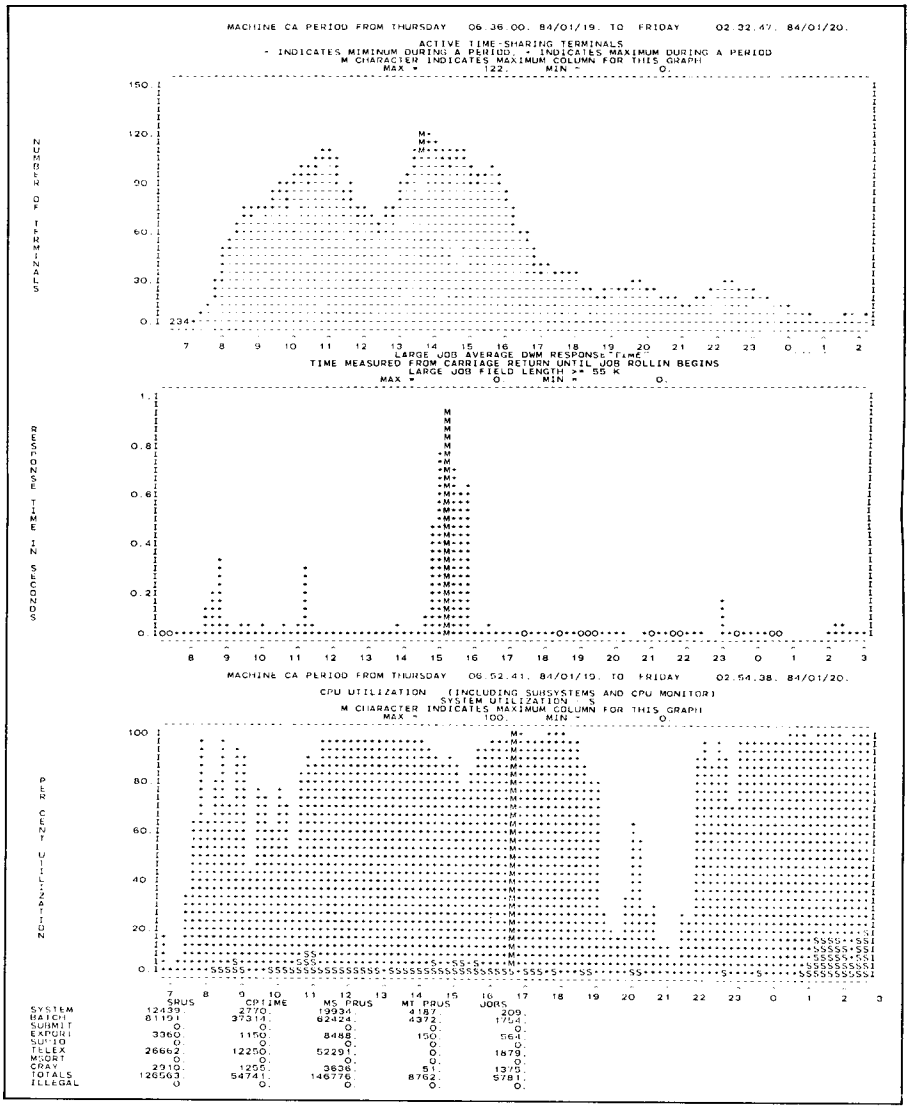
# The CYBER 845: First Month's Use

Because UCC has a stable environment, it has been a number of months since we last reported use and response time graphs on our research CYBERs. With the installation of the CYBER 170-845 as a single system to replace the batch CYBER 825 (CB) and interactive CYBER 730 (CA), it seems appropriate to review the first month. System reliability and hardware stability have been very good. The only loss was of a single module in the cache memory (that fast, but invisible to the user, memory between central memory and the operating registers).

In the last several years, total user SRUs on the research CYBERs have steadily decreased. The peak use was 1,573,777 SRUs delivered to users in June 1980 using the CYBER 74 and CYBER 172. The maximum use for the combined CYBER 74 and CYBER 170-730 systems was in March 1982 when 1,394,084 SRUs were delivered. Since the installation of the CRAY-1 in late 1981, we have expected research CYBER use to decrease as users with large resource needs switched to the cost effective CRAY.

But the CYBER 170-845 achieved a new maximum of 1,587,319 SRUs delivered to users in its first month of operation. During the first four days of February, CYBER use has dropped back to previous daily totals. We expect the CYBER 845 to easily handle the current load, and to be able to handle a 25 percent increase with no degradation in response time.

Tables of active interactive terminals, large job (>55,000 octal) response time in seconds, and CPU use are given for Thursday, January 19, and Friday, January 27. On each day about 125,000 SRU units



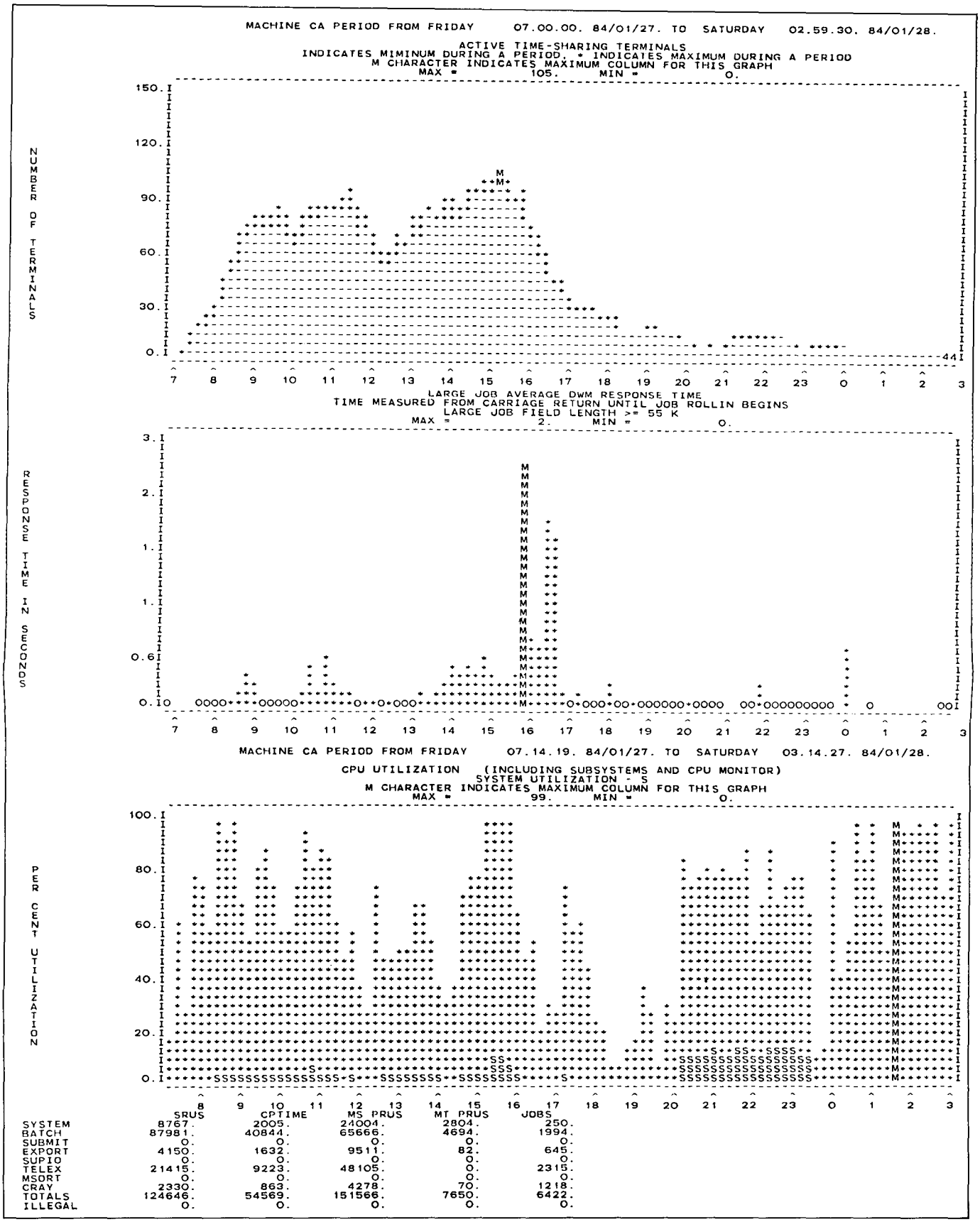

| | SRUS | CPTIME | MS PRUS | MT PRUS | JOBS |
|---|---|---|---|---|---|
| SYSTEM | 12439. | 2770. | 19934. | 4187. | 209. |
| BATCH | 811101. | 373114. | 624241. | 43721. | 1764. |
| SUBMIT | 0. | 0. | 0. | 0. | 0. |
| EXPORT | 3360. | 1150. | 8488. | 150. | 564. |
| SUPIO | 0. | 0. | 0. | 0. | 0. |
| TELEX | 26662. | 12250. | 52291. | 0. | 1879. |
| MSORT | 0. | 0. | 0. | 0. | 0. |
| CRAY | 2910. | 1255. | 3636. | 51. | 1375. |
| TOTALS | 126563. | 54741. | 146776. | 8762. | 5781. |
| ILLEGAL | 0 | 0. | 0 | 0. | 0. |

Table 1. CA Use—January 19, 1984

of use were generated and over 100 simultaneous interactive users were active at 3 p.m. The 845 provides response times under half a second during 95 percent of the day, but at certain times (10-11:30 a.m. and 1:30-4:30 p.m.), it may slow to two second response during a 12 minute period. Our systems group hopes to alleviate this congestion by fine-tuning the system and by returning a PPU and control point to users when the SUPIO package is deleted at the end of winter quarter.

The SRU totals are broken down into CPTIME (in seconds), MS PRUS

**Liddiard to 25**




| | SRUS | CPTIME | MS PRUS | MT PRUS | JOBS |
|---|---|---|---|---|---|
| SYSTEM | 8767. | 2005. | 24004. | 2804. | 250. |
| BATCH | 87981. | 40844. | 65666. | 4694. | 1994. |
| SUBMIT | 0. | 0. | 0. | 0. | 0. |
| EXPORT | 4150. | 1632. | 9511. | 82. | 645. |
| SUPIO | 0. | 0. | 0. | 0. | 0. |
| TELEX | 21415. | 9223. | 48105. | 0. | 2315. |
| MSORT | 0. | 0. | 0. | 0. | 0. |
| CRAY | 2330. | 863. | 4278. | 70. | 1218. |
| TOTALS | 124646. | 54569. | 151566. | 7650. | 6422. |
| ILLEGAL | 0. | 0. | 0. | 0. | 0. |

Table 2. CA Use—January 27, 1984

# Computer Crime Will Be Prosecuted

**609.88 COMPUTER DAMAGE**

Subdivision 1. Whoever does any of the following is guilty of computer damage and may be sentenced as provided in subdivision 2:

(a) Intentionally and without authorization damages or destroys any computer, computer system, computer network, computer software, or any other property specifically defined in section 609.87, subdivision 6.

(b) Intentionally and without authorization and with intent to injure or defraud alters any computer, computer system, computer network, computer software, or any other property specifically defined in section 609.87, subdivision 6.

Subdivision 2. Whoever commits computer damage may be sentenced as follows:

(a) To imprisonment for not more than ten years or to payment of a fine of not more than $50,000, or both, if the damage, destruction or alteration results in a loss in excess of $2500, to the owner, his agent, or lessee;

(b) To imprisonment for not more than five years or to payment of a fine of not more than $5000, or both, if the damage, destruction or alteration results in a loss of more than $500, but not more than $2500 to the owner, his agent, or lessee; or

(c) In all other cases to imprisonment for not more than 90 days or to payment of a fine of not more than $500, or both.

**609.89 COMPUTER THEFT**

Subdivision 1. Whoever does any of the following is guilty of computer theft and may be sentenced as provided in subdivision 2:

(a) Intentionally and without authorization or claim of right accesses or causes to be accessed any computer, computer system, computer network or any part thereof for the purpose of obtaining services or property; or

(b) Intentionally and without claim of right, and with intent to permanently deprive the owner of possession, takes, transfers, conceals or retains possession of any computer, computer system, or any computer software or data contained in a computer, computer system or computer network.

Subdivision 2. Anyone who commits computer theft may be sentenced as follows:

(a) To imprisonment for not more than ten years or to payment of a fine of not more than $50,000, or both, if the loss to the owner, his agent, or lessee is in excess of $2500; or

(b) To imprisonment for not more than five years or to payment of a fine of not more than $5000, or both, if the loss to the owner, his agent, or lessee is more than $500 but not more than $2500; or

(c) In all other cases to imprisonment for not more than 90 days or to payment of a fine of not more than $500, or both.

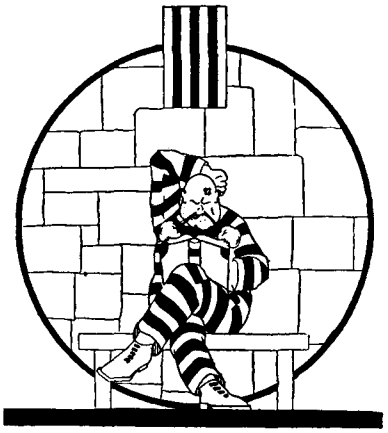
Exhibit 1. Current Minnesota Computer Laws

Everyone is aware of the adventures of comic strip mini-hackers, the Hollywood version of hacking in films like *War Games*, and the newspaper reports of young entrepreneurs breaking into various computer systems around the country.

At the same time, we must remember that hacking can be a crime. The State of Minnesota has laws on the books concerning computer damage and computer theft. For your information, we include them here in Exhibit 1.

Just as it is illegal to steal someone's wallet or checkbook, it is illegal to steal a user number. Just as it is illegal to break into a home or a store, it is illegal to break into a computer system.

Computers provide us with useful tools and pleasant diversions. But as in any job or game, rules exist by which everyone must abide. If you break the law, you will be prosecuted.



# CYBER Notes

### SUPIO DISAPPEARS MARCH 17

SUPIO, a UCC-written program from the early 1970s, has provided the University with user-operated remote job entry (RJE) terminals. But the two terminals that SUPIO supports—UNIVAC 1004s and Control Data UT200s—have been or are being removed. We are replacing them with HASP workstations. Thus, after many years of faithful service, SUPIO will retire.

Its replacement is RBF (Remote Batch Faciity), a Control Data product. RBF supports HASP multileaving workstations and emulators, and UT200 terminals and emulators. (We are currently looking into supporting 2780/3780 terminals and emulators.) RBF is described in the *Remote Batch Facility Version 1 Reference Manual* (CDC publication 60499600, revision K), and in WRITEUP(RBF).

RBF is currently operational and we encourage you to use it. SUPIO will be removed from operation on March 17, the end of winter quarter. Current SUPIO users will be given new RBF user numbers to replace their SUPIO site codes. New users who want to use their own remote batch terminals should contact our accounting department (373-2521) for an RBF account number.

One very important note: over the years, we have extended the UT200 protocol that SUPIO and the locally written UT200 terminal emulator used for communication. This included features such as upper-and lower-case printing. RBF does not support any of these extended features; it strictly adheres to the original UT200 protocol. If you depend on these features, you must convert your emulators to ignore them, or convert to a protocol that supports upper-and lower-case printing, such as HASP.

If you need assistance, call our HELP-line, 376-5592. The RBF phone numbers are listed in Exhibit 1.

| | |
|---|---|
| 2400 baud UT200 | (612) 376-5864 |
| 4800 baud UT200 | (612) 376-5959 |
| 2400 baud HASP | (612) 376-5880 |
| 4800 baud HASP | (612) 376-5842 |

Exhibit 1. RBF phone numbers.

### WATCH YOUR ASTERISKS

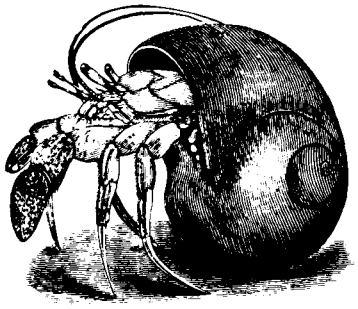
Due to a CYBER system change effective March 18, you can no longer use asterisks as non-separators on procedure calls. In any procedure calls that include asterisks in parameters, you must enclose the parameter in dollar signs. For example, you must change

**BEGIN,STAT,,XYZ***

to

**BEGIN,STAT,,$XYZ***$**

See WRITEUP (CHANGE) for more information.



# CRAY News

### COS/CFT UPGRADE MARCH 18

UCC will upgrade our CRAY-1 to COS 1.12 bugfix 1 and CFT 1.11 bugfix 1 on Sunday, March 18. An extensive article on this upgrade appeared in the February *Newsletter*. For additional information and any changes that may have occurred since that time, see WRITEUP(CRAYCHG).

# Terminal Notes

### NEW RESEARCH CLUSTER

We have installed our fourth public research cluster in 130 Experimental Engineering. The room is open during regular consulting hours, 10 a.m. to 4 p.m., and 7 to 9 p.m., Monday through Friday. Although the door is locked at all other times, you may use the terminal cluster by asking the input/output room staff in 131 Experimental to unlock it. The I/O station is open from 8 a.m. to midnight Monday through Friday, from 8 a.m. to 4 p.m. Saturday, and from 4 p.m. to midnight Sunday. The terminal cluster is available during all these hours.

This cluster contains three VT-100 terminals. One is equipped with graphics that allow it to emulate a series 401X Tektronix terminal. All three are part of a network that allows you to access either the CA or the VAX system at 9600 baud.

Our other clusters are located in 69 Physics, 25 Blegen, and 14 Folwell. WRITEUP(LABS) includes lab hours and related information. We charge an additional $1.55/connect hour for use of these terminals to offset the cost of establishing and maintaining the clusters.

# Programming Languages

## M77, VERSION 2.5

In our previous report (UCC *Newsletter*, September 1983) on M77 version 2.4 FORTRAN compiler validation, we stated that M77 had five uncorrected validation errors. Only one remains in M77 version 2.5, which you can access with the control statement

**FUTURE(M77)**

This future version will replace version 2.4 on March 18.

M77 still requires that files other than or in addition to the standard INPUT, TAPE5=INPUT, OUTPUT, TAPE6=OUTPUT must be on the PROGRAM statment, since M77 does not open files dynamically. In addition, the maximum record length for any FORMATTED OPEN statement in a program must be specified at least once in the PROGRAM statement in the form: file =/maximum record length.

The following validation errors in version 2.4 have been corrected in version 2.5.

- Lower bound expressions (i.e., more than a simple name or constant) in adjustable dimensions are now correctly computed.
- Character expressions (concatenations) are allowed in the I/O format position or FMT= specifier.
- Substringed concatenation elements are allowed in I/O lists and/or as actual arguments.
- Adjustable dimension array names may be in the ENTRY statement dummy argument lists that occur after the adjustable dimension declaration.

Briefly, M77 2.5 still has the following deliberate input/output violations mentioned in the September article. For more detailed explanations of these, please refer to that article.

- Conversion errors for floating point fields with width, W=8 or greater produces *[E(w−1),(w−7)] output rather than all stars.
- Special CYBER floating and integer point values: infinite (R), indefinite (I), not normalized (N), zero (0), and integer greater than 2**48(X) are put out with that single character rather than following the field specifications.
- Use of the single (0) for zero values, allows negative-signed zero-valued fields to differentiate between zero-values and those with no significant digits for the given field.
- M77 does not allow repeated list directed string or complex input data to extend over more than one record.
- M77 always produces a digit rounded in the d+1 place when E fields are produced under Gw.d fields specifiers and 1P or greater scaling is in effect.
- Non-zero P scaling is reduced or raised if this would allow a floating point number to be output, rather than giving an error field of all stars.

Finally, the FORCE STORES (FS) parameter is required on the M77 control statement if any FORTRAN entities are known by two or more names (usually due to EQUIVALENCE statements).

In addition to the correction of the final errors found in the validation suite, the 415 error messages produced during compilation were completely tested in version 2.5. This testing consisted of a 415 subprogram validation suite in which each subprogram isolated a specific error message for the different source language conditions that produce that error. This validation suite then allowed us to produce an accurate error message writeup and handout that explains and provides examples for each M77 error message. This writeup is called M77ERRM. The messages are listed in alphabetical order and all variable names have been moved from the beginning to the end of the message. That is, messages have been changed from:

**CAUTION-(name)-NOT SET**

to

**CAUTION-NOT SET ABOVE-(name)**

Many messages have been reworded, especially if more concise terminology existed in the ANS FORTRAN standard. Thus, M77 uses ASSIGNMENT for REPLACEMENT, STATEMENT LABEL for STATEMENT NUMBER, ADJUSTABLE DIMENSION for VARIABLE DIMENSION, and OPTION for PARAMETER. A review of the ANS FORTRAN standard produced additional M77 non-standard error messages for source usage that did not conform to the standard. In a number of cases where M77 produced two or more different messages for the same error condition, error messages were deleted or subsumed into the best message. We have added new messages that we think should help you, but they may surprise you when you first try the new version.

Although we expected difficulty in exhibiting some error messages in version 2.4, we were surprised several times as we made the validation suite. For example, after diagnosing several source statements that began with digits (i.e., thinking that M77 was compiling data), M77 was supposed to put out the error message NO MORE ERROR MESSAGES, but did not do so since the mechanism to turn off all error messages was evoked before this last message was issued. In a number of cases, trying to get a specific error message from M77 made the compiler give up on a mode error. We have corrected all these mode error cases, have rewritten the IMPLICIT statement to allow CHARACTER lengths to be constant expressions, have made the END statement executable (i.e., it may have a useful label on itself), and are producing better execution code for certain constant subscript references to adjustable dimensions.

We want to thank those who reported M77 bugs to us, since your information and source decks were put to good use in producing the latest version. We hope this is another step forward in the production of a robust, standard conforming, error-diagnosing FORTRAN compiler that helps you produce results for your problems quickly and accurately.

*(Janet Eberhart and Lawrence Liddiard)*

# Math & Statistics Packages

## TSP CHANGES

On January 25, we modified the CYBER TSP program on the CA and ME systems to correct a LOAD statement problem. WRITEUP(TSP) now has full lines and revised printing of subscripts and superscripts.

## MATLAB: MATRIX INSTRUCTIONAL PACKAGE

We recently installed the MATLAB package on the CYBER ME and CA systems. This interactive program serves as a convenient "laboratory" for computations that involve matrices. It was developed by Professor Cleve Moler of the University of New Mexico with support from the National Science Foundation and the Department of Energy.

MATLAB provides easy access to the well-known matrix software developed for the LINPACK and EISPACK projects. The workspace is only 5000 words because of the instructional nature of the package.

For MATLAB documentation, see WRITEUP(MATLAB), a 60-page uppercase user's manual. A HELP command is available and summarizes the other commands. With a minimum field length of 70000B, the command

**MATLAB**

begins execution of the program.

Exhibit 1 shows a sample MATLAB session. It defines a matrix A and a right-hand-side vector B and solves the problem AX = B for the unknown vector X. User inputs are in lower case after the question mark prompt character.

If you have further questions about MATLAB, call our HELP-line, 376-5592. *(Mike Frisch)*

```
[User log-in to the system]
matlab

                                    < M A T L A B >
                                  VERSION OF 03/19/82

HELP IS AVAILABLE

<>
? a = <1  2  3;  4  5  6;  7  8  0>
 A      =

    1.     2.     3.
    4.     5.     6.
    7.     8.     0.

<>
? b = <1.3,  4/5,  4*atan(1).
 B      =

   -1.3000     .8000     3.1416

<>
? b = b'
 B      =

   -1.3000
     .8000
    3.1416

<>
? x = a\b
 X      =

    2.6732
   -1.9463
    -.0268

<>
? exit
TOTAL FLOPS              93
ADIOS
```

Exhibit 1. A sample MATLAB program.

## LINDO: LINEAR PROGRAMMING PACKAGE

We recently installed the LINDO (Linear, Interactive, aNd Discrete Optimizer) package on the CYBER CA and ME systems. This interactive linear, quadratic, and integer programming system is designed to be useful to a wide range of users. It was developed by Professor Linus Schrage of the University of Chicago.

LINDO can solve small to medium size problems within a fixed workspace. Documentation is the *User's Manual for LINDO*, published by the Scientific Press, 670 Gilman Street, Palo Alto, California 94301 (415/322-5221). You can examine a non-circulating copy in the UCC Reference Room, 140 Experimental Engineering. A HELP command is available and summarizes the other commands. The command

**LINDO**

begins execution of the program.

Exhibit 2 shows a sample LINDO session. It solves a two-variable, two-constraint linear programming problem. User inputs are in lower case after the question mark prompt character.

We have also created a special version of LINDO that has an optional FORTRAN interface. Chapter 11 of the LINDO User's Manual provides some further information about this FORTRAN interface. The command to execute this special version is

**LINDOUS,filename**

where filename is the name of a file that must contain the relocatable code for the USER and NEWIP

subroutines previously compiled by the FTN compiler. When you enter the LINDO USER command, LINDO calls the routine USER. NEWIP is used only for integer programming problems. If you don't provide a NEWIP routine, a non-fatal UNSATISFIED EXTERNAL loader message appears, but you can ignore this if you don't use integer programming.

Direct further questions about LINDO to our HELP-line, 376-5592. *(Mike Frisch)*

```
[User log-in to the system]
lindo
  LINDO (UC 26 JAN 82)
? max 2x + 3y
? st
? 4x + 3y < 10
? 3x + 5y < 12
? end

? look
 ROW:
? all
 MAX          2 X + 3 Y
 SUBJECT TO
    2)        4 X + 3 Y <= 10
    3)        3 X + 5 Y <= 12
 END

? go
    LP  OPTIMUM FOUND    AT STEP       2
        OBJECTIVE FUNCTION VALUE
  1)        7.45454545
VARIABLE                VALUE                REDUCED COST
          X             1.272727             0.000000
          Y             1.636364             0.000000
ROW                SLACK OR SURPLUS          DUAL PRICES
    2)                 0.000000                .090909
    3)                 0.000000                .545455
 NO. ITERATIONS=          2
 DO RANGE(SENSITIVITY) ANALYSIS?
? no
? quit
```

Exhibit 2. A sample LINDO session.

### NEW EDITION OF IMSL

We will replace the International Mathematical and Statistical Library (IMSL) version 9.0 with version 9.1 on all CYBER systems, March 20, 1984. You can access IMSL as a user library with the control statement:

**FETCH(IMSL/V=compiler name)**

where compiler name is MNF, FTN, FTN5, M77, or Pascal.

A machine retrievable writeup is available on the CYBERs. To obtain an index of this writeup, execute the control statement:

**WRITEUP(IMSL)**

The following is a list of changes to individual routines in IMSL edition 9.1:

Old routine is adequate, but computations are affected in some cases. Errors in source code corrected:

GTDDU LSVG1 LSVG2 MDBIN MDCHN MMLIND USHHST USWCV USWFV

Old routine is not adequate in some cases. Errors in source code corrected:

BESTA2 DVCPS GGAMR IQHSE MDBETA MDTNF MMBSIR NAFRE RLFOR RSMITZ SSRBLK ZX3LP

If you encounter any problems when you use IMSL, call our HELP-line, 376-5592.

## Utility Programs

### CRAY CATALOG

On January 22, we modified the Cray Applications Library CATALOG program to correctly put out record names.

### CYBER DRESS

In December, we modified the CYBER DRESS program, which makes up MODIFY OPLs and UPDATE OLDPLs from source programs, to increase field length to the proper size if it is too small.

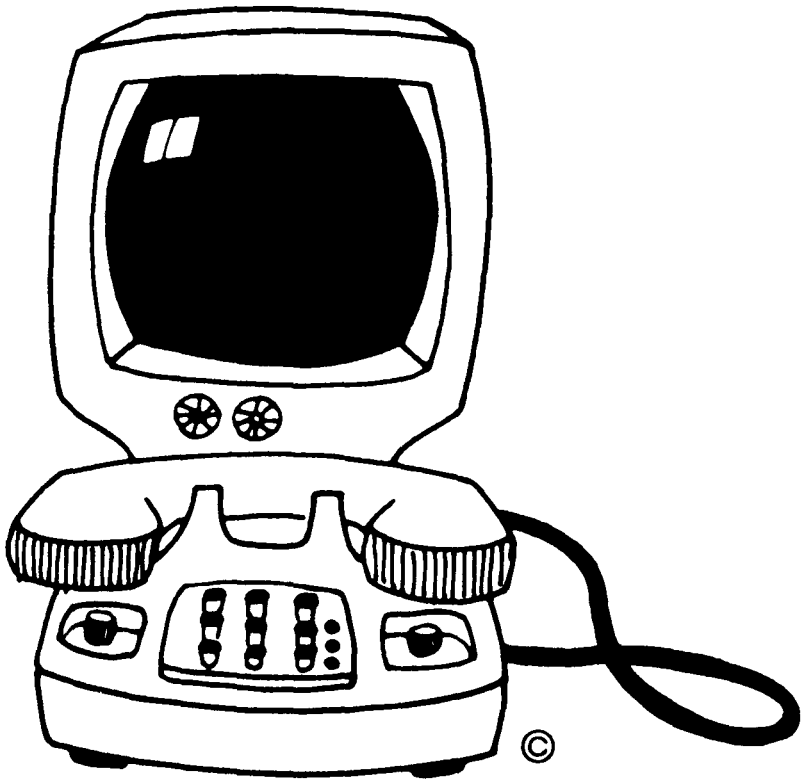
## Telenet News

Because of upcoming changes at UCC, all Telenet users should use the address 61224.20 starting immediately. This replaces the need for different addresses, such as 61224.10 when you access MERITSS, or 61224.1, 61224.2, 61224.a, or 61224.b. The *only* address you should use starting immediately is 61224.20. The system will then prompt you to type in the name of the machine you wish to access. If you have any questions, please call our HELP-line, 376-5592.

# Microcosm

## HOW TO GET YOUR MICRO TO COMMUNICATE WITH OUR COMPUTERS

Lately, the UCC Microcomputer HELP-line has received an inordinately large number of calls on the same subject: how can I get my micro to communicate with the CYBERs? The answer is that you need some hardware and some software. Here are the details.



### The hardware

Communicating with UCC's CYBER or VAX computers usually means communicating over phone lines. To connect your computer to the phone system you will need a **MODEM.** Modems are devices that translate the signals used by your microcomputer into audio tones which can be sent over phone lines. Modems used over voice-grade phone lines operate at either 1200 baud or 300 baud. If you plan on buying a 1200-baud modem, be certain the modem uses the Bell 212 protocol. The protocol the modem uses for translating your microcomputer's signals into audio tones is important because there are two incompatible protocols for use at 1200 baud. We use the Bell 212 protocol. If you buy a 1200-baud modem that uses the Bell 202 protocol it won't work with our computers.

Not surprisingly, you have to connect the modem to your microcomputer. This means you need a cable to make the connection. Not all cables are created equal. The cable you use to connect your printer to your micro may not work with your modem. It is a very good idea to get the cable for the modem from the same place you buy the modem and to specify with which microcomputer the modem will be used.

You need a place to plug the cable into the microcomputer. Modems are RS-232 serial devices, and so you need an RS-232 port on your microcomputer. Not all microcomputers are created equal: some don't come with serial ports as standard equipment. If your micro does not already have an RS-232 port you will have to buy one.

Your shopping list for hardware consists of:

- a 1200- or 300-baud modem
- a cable to connect the modem to the microcomputer
- an RS-232 serial port on the microcomputer.

Once you have acquired the necessary hardware, you still need a communications program to take advantage of it.

### The software

Communications software makes your microcomputer emulate a terminal. This means that the communications program takes characters you type at the keyboard and sends them out the serial port to the modem. Characters which arrive at the serial port from the modem are displayed on the screen.

Some programs are designed to communicate with almost any other computer. General purpose programs such as Crosstalk, Intercom, PC-Talk, Visi-Term, ASCOM, and a host of others require you to specify how the characters it will be handling are "packaged." You specify the "package" for characters by specifying the communication parameters: data bits, stop bits, and parity. To communicate with our CYBER or VAX computers, specify seven data bits, one stop bit, and EVEN parity. There are other settings for communications parameters that work, but seven data bits, one stop bit, and even parity seems to be the choice available on nearly all communications packages. You must also specify your modem's baud rate: 1200 or 300 baud.

The UCC Micro group maintains a communications package called COM that is optimized to talk to our mainframes (CYBER and VAX). Because COM is designed to communicate with the CYBER and the VAX, you need not specify any communications parameters except baud rate. You can also use COM to transfer disk files from your microcomputer to and from our mainframes.

Many of the general purpose communications programs can also be used to transfer disk files to and from our mainframe computers. But since a general purpose program does not know what kind of com-

puter it is talking to, you must give the program some hints about how to send (or receive) a file. When you send a file to the CYBERs, the first step is to put the CYBER into record-everything-I-send-you mode. You do this by typing the TEXT command. On the VAX the equivalent command is CREATE. Once the host computer is recording, you tell the micro to list (out the serial port) the file you are sending. After the file has been sent, you tell the host computer to stop recording by typing a control-c (for the CYBER), or a control-z (for the VAX).

Capturing information from the mainframe works in an analogous fashion. You put the microcomputer into record mode, tell the mainframe to list the file, and, when the file transfer is complete, turn off record mode. The advantage of using COM over a package such as PC-Talk or CrossTalk is that COM automatically issues commands to enter record mode and list files.

### Fitting the pieces together

To make sure you end up with a system that works, it is crucial that you actually *try* the hardware and software you plan to use. Some communications programs will only work with specific modems or serial interface cards. For information about hardware and software that the micro group has tested, call the Micro HELP-line (376-4276), 10 a.m. to noon and 2 to 4 p.m., Monday through Friday, or stop in at the Micro Research Lab (125 Shepherd Labs) during HELP-line hours. *(Mark McCahill)*

### U OF M MICRO USERS GROUP

Our March meeting will be at 3:15 p.m., Thursday, March 8, in 133 Physics. Cathy Interdonato of Sensor-Based Systems Metafile will discuss this data base manager.

On Thursday, April 12, Gary Johnson will discuss and demonstrate LOTUS 1-2-3. This meeting will take place at 3:15 p.m. in 125 Science Classroom Building.

In May, Dale Archibald, editor of the monthly *Computer User*, will speak on how to choose telecommunications software. Hear him on Thursday, May 10, 3:15 p.m., in 555 Diehl Hall.

For more information about any of these programs, call the Micro HELP-line, 376-4276.

## IMS Journal

### SIR USERS GROUP

This month's meeting of the SIR Users Group will be held at 3:30 p.m., Wednesday, March 21, in 128 Management/Economics on the west bank of the Minneapolis campus.

## The EDUNET Connection

The University of Minnesota is a member of and a supplier for EDUNET, an international computing network for colleges, universities, research organizations, and not-for-profit companies.

Through EDUNET, you can access a vast selection of computer-assisted instructional materials, extensive data bases, and advanced research hardware and software. These resources can be accessed with almost any portable or non-portable, printing or non-printing computer terminal, microcomputers, and word processors with communications capabilities.

A guide to EDUNET, called the *Resource Directory*, lists programs and services available through EDUNET in these subject areas:

- agriculture and agricultural economics
- business and economics
- chemistry
- computer-assisted instruction
- data base management and information retrieval systems
- electronic mail and conferencing
- engineering
- English
- graphics
- home economics and food science
- life sciences
- mathematics and mathematical programming
- modeling and simulation
- psychology and education
- sociology, political science, and history
- statistics
- text processing and editing

For a copy of the *Resource Directory* or more information about EDUNET, contact Vicky Walsh, the University of Minnesota's EDUNET liaison, at the University Computer Center, 227 Experimental Engineering (call 373-4360 to leave a message), or call 373-5780.

## Grants for Research

### BILINGUAL EDUCATION

The Bilingual Education Demonstration Projects Program awards grants to local education agencies (LEAs), higher education institutions in conjunction with LEAs, and reservation-based Indian schools for demonstration projects illustrating approaches to bilingual education. Projects that use instructional technology will receive 35 percent of the program's funds in fiscal 1984. For more information, contact:

Luis Catarineau
Office of Bilingual Education and Minority Language Affairs
Department of Education
400 Maryland Avenue SW
Washington, DC 20202
(202) 447-9227

**Liddiard from 17**

(640 character blocks), MT PSRUs (up to 5120 character records), and JOBS (number entering from each system). Note that since these are chargeable resource units, this does not include the total MS PRUs transferred during interactive and batch job rolling. In addition, CDC CYBER systems have been very effective in delivering CPU power to the user rather than using it on system tasks. This is clear from the four to five percent total CPTIME used for SYSTEM compared to the TOTALS for all users. The SRU ratio for SYSTEM to TOTALS is seven to ten percent due to the large MT PRUs required for incremental dumping of user files for backup.

*(Lawrence A. Liddiard)*

## Computer Store

### COMPUTER PAPER FOR PRINTERS

Are you tired of carrying around heavy boxes of computer paper? Do you like to use microcomputers, but every time you arrive at your favorite micro lab, the printers are out of paper? We have an easy solution for you: your own paper supply in a convenient, portable amount.

The UCC Computer Store now has 9-1/2 by 11 inch tractor-feed paper with disaperf (laser) edges available in shrink-wrapped packages of 250 sheets. This superb paper was previously sold only by the box (2650 sheets). Both are available at the Store.

You can purchase items from the Computer Store with your user account number, a departmental journal voucher, cash, or check. The Store, located in 20 Experimental Engineering (373-4877), is open from 9 a.m. to 4:30 p.m., Monday through Thursday, and from 9 a.m. to 3 p.m., Friday.

## All Systems Bulletins

### HOLIDAY HOURS

UCC will maintain its normal operating schedule on Monday, March 19, an official University holiday at the Twin Cities campuses.

## The Classifieds

### FOR SALE

Noise isolation and protective cover for any dot matrix printer, with accesory text stand. New. $125, journal voucher or cash. 373-3137.

## PHONE NUMBERS

Access:
- CYBER(CA)—10, 30 cps ..... 376-5730
- —120 cps ..... 376-5706
- MERITSS(ME)—10, 30 cps ..... 376-7730
- —120 cps ..... 376-7120
- VAX/VMS(VA)—(autobaud) ..... 376-9770

Budgets ..... 373-2521
Computer-Aided Instruction ..... 376-2975
Computer Hours (recorded message) ..... 373-4927
Computer Store ..... 373-4877
Consulting
- HELP-line ..... 376-5592
  9 a.m.-5 p.m., Monday-Friday
- Business Data Products ..... 376-1761
  1-3 p.m., Monday-Friday
- Statistics Packages ..... 376-5062
  1-2 p.m., Monday-Friday
- Data Bases ..... 376-1761
  10-11 a.m., Monday-Friday
- Microcomputers ..... 376-4276
  10-12 a.m. and 2-4 p.m., Monday-Friday
- Non-Numeric Computing ..... 376-2944
  1-3 p.m., Monday-Friday
- TELL-A-GRAF/DISSPLA ..... 376-2663
  1-3 p.m. Tuesday, Thursday

Contract Programming ..... 376-1764
Data Base Applications ..... 376-1764
EDUNET Liaison ..... 373-5780
Engineering Services ..... 376-1023, 376-8153
Equipment Purchase/Information ..... 376-8153
Experimental Engineering I/O ..... 373-4596
Graphics Software ..... 376-5592
HELP-line ..... 376-5592
9 a.m.-5 p.m., Monday-Friday
HOURS-line (recorded message) ..... 373-4927
Information, Experimental Engineering ..... 373-4360
Information, Lauderdale ..... 373-4912
Instructional Labs ..... 376-2703
Instructional Services ..... 373-7745
Lauderdale Computer Room ..... 373-4940
Lauderdale Services ..... 373-4995
Lauderdale Services Manager ..... 373-7538
Lauderdale Users' Room ..... 373-4921
MECC Liaison ..... 373-7745
Newsletter Subscription ..... 373-4912
Permanent File Restoration ..... 376-5605
Professional Services Division (PSD) ..... 376-1764
Project Assistance ..... 376-1764
Reference Room ..... 373-7744
Remote Batch (RJE) Services ..... 376-2703
Short Courses ..... 376-8806
Shuttle Bus Service ..... 376-3068
System Status (recorded message) ..... 373-4927
Tape Librarian: see Lauderdale Services
Text Processing Services ..... 376-2943
User Accounts ..... 373-4548

## OPERATING HOURS

| | CYBER (CA) | Low rate | CRAY (CR) | MERITSS (ME) | VAX (VA) |
|---|---|---|---|---|---|
| M-F | 7 a.m. - 4 a.m. | 8 p.m. - 4 a.m. | 7 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. | 4 a.m. - 5:15 p.m. | 7 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. - 1 a.m. | 4 p.m. - midnight | 4 p.m. - midnight | 24 hours |

## PUBLIC LABS—TWIN CITIES CAMPUS

| Location | Batch | Interactive | Micro |
|---|---|---|---|
| *East Bank* | | | |
| Arch 160 | | X | X |
| CentH | | X | |
| ComH | | X | |
| DiehlH 270, 207 | | X | |
| EltH 121, 125 | | X | |
| EltH N640 | X | | |
| FolH 14, 14a | X | X* | X |
| LindH 26 | X | X | |
| MechE 308 | | X | |
| Physics 69 | | * | |
| SanfH | | X | |
| TerrH | | X | |
| VincH 4 | | X | |
| WaLib 204 | | X | |
| *West Bank* | | | |
| BlegH 25 | | * | |
| BlegH 90 | X | | |
| BlegH 140 | | X | |
| MdbH | | X | |
| OMWL 2 | | X | |
| SocSci 167 | | | X |
| *St. Paul* | | | |
| BaH | | X | |
| ClaOff 125 | X | X | |

* Research cluster; access to CYBER CA and VAX/VMS

X in interactive column indicates access to MERITSS

## Contents




Michael M. Skow, Acting Director

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