

MTW  
3-17-89

# University Computer Center Newsletter

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## bulletins

PRESIDENTS' DAY HOLIDAY FEBRUARY 18 HOURS

|          |                 |                 |
|----------|-----------------|-----------------|
|          | DOWN            | UP              |
| Exp.Eng. | Sat(Feb,16)1600 | Mon(Feb,18)1800 |
| Laud.    | Mon(Feb,18)0115 | Mon(Feb,18)1800 |

### MORE EQUIPMENT AVAILABLE:

- CDC 607-R tape drives
- CDC 3423 tape drive controller
- CDC 3228 tape drive controller
- CDC 501/3256 line printer/controller

Interested, call Jim Kelly, Property Accounting, 373-2118.

NEW PHONE NUMBER COMPUTER CENTER MORRIS  
1-(612)-589-2234

## UCC newsletter

Volume 14                      Number 2                      February, 1980

Director: Peter C. Patton  
Editor : Naomi Miner

Comments about the content of this newsletter, or suggestions for changes may be directed to the editor, 235a Experimental Engineering, or call 612/373-7744.

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, or national origin.

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## FORTRAN libraries

Beginning March 23, 1980, you must change FORTRAN jobs on the Cyber 74, 172, or 170-720 if they use any of the routines in the Minnesota Subprogram Library (see the list below).

If you use the FTN4 compiler, add this statement in your deck after the USER statement:

```
FETCH(MINNLIB/V=FTN)
```

If you use the MNF compiler, add this statement in your deck after the USER statement:

```
FETCH(MINNLIB/V=MNF)
```

At the beginning of an MNFTS or FORTRAN timesharing session, enter this statement:

```
X,FETCH,MINNLIB/V=MNF
```

For example, if you run a FORTRAN program with the FTN4 compiler which calls the routine MXLNEQ (one of the routines on the Minnesota Subprogram Library), the change would be:

| Before March 23<br>----- | March 23 and After<br>----- |
|--------------------------|-----------------------------|
| Job statement            | Job statement               |
| USER statement           | USER statement              |
| FTN.                     | FETCH(MINNLIB/V=FTN)        |
| LGO.                     | FTN.                        |
| 7/8/9                    | LGO.                        |
| CALL MXLNEQ(...)         | 7/8/9                       |
| etc.                     | CALL MXLNEQ(...)            |
|                          | etc.                        |

The FETCH statement remains in effect for the entire job or timesharing session so it only need be entered once at the beginning. It must also be entered if you run later jobs or sessions in which only the relocatable code is executed.

If you do not include the

```
FETCH(MINNL2IB/V=compiler)
```

statement starting March 23, you will get the loader error message "UNSATISFIED EXTERNALS" and your job will not execute correctly.

If you use any of the libraries IMSL, EISPACK, TEKLIB, HTEKLIB, UTEKLIB, FUNPACK, CALCOM, BESPAC, MEXPLOR, GPM, ALMAP, BSPLINE, YSMPLIB, or SIMPLX, you must also change your jobs.

If you use the FTN4 compiler, change your FETCH(library) statement to

```
FETCH(library/V=FTN).
```

For example, FETCH(IMSL) becomes

```
FETCH(IMSL/V=FTN).
```

If you use the MNF compiler, change your FETCH(library) statement to

```
FETCH(library/V=MNF).
```

For example, FETCH(EISPACK) becomes

```
FETCH(EISPACK/V=MNF).
```

During an MNFTS or FORTRAN timesharing session, change your

```
X,FETCH,library
```

statement to an

```
X,FETCH,library/V=MNF
```

statement. For example,

```
X,FETCH,TEKL2IB
```

becomes

```
X,FETCH,TEKL2IB/V=MNF.
```

If you do not change your FETCH(library) statement starting March 23, you will get the error message

```
"NEED /V=COMPILER. /V=FTN USED."
```

Thus, starting March 23,

```
FETCH(FUNPACK)
```

will assume the user meant

```
FETCH(FUNPACK/V=FTN).
```

If you use both MNF and FTN4 for separate programs in the same job, you must add a

```
LIBRARY.
```

statement before any

```
FETCH(library/V=compiler)
```

statement when switching compilers. However, you should not mix binary routines from MNF and FTN4 in a single program.

The following is a list of the routines in the Minnesota Subprogram Library (MINNLIB):

|         |         |         |         |         |
|---------|---------|---------|---------|---------|
| AITKENF | ALOGAM  | AMEAN   | AMEAND  | APPEND  |
| ASSIGN  | ATTACH  | AXIS    | AXISP   | BANSOL  |
| BESJ    | BETAI   | BINCOF  | CDFN    | CDFNI   |
| CEINT1  | CEINT2  | CHEBY   | CHECK   | CHSQ    |
| CHSQI   | CINTEG  | CMXCMBN | CMXLNEF | CMXLNEQ |
| CMXMOV  | CMXMPLY | CMXPLY1 | CMXTRP  | CNTOUR  |
| COMINT  | CONST   | CONVERT | CPRFIL  | CVAL    |
| CVECT   | DEFINE  | DMXLNEF | DMXLNEQ | DOTPRD  |
| DOTPROD | DPLOT   | DVAL    | DXINT   | EI      |
| EIG3    | ERFN    | ERFNC   | EXPD    | FACTOR  |
| FINV    | FREQDSN | FRESNEL | FTEST   | GAMMA   |
| GAMMAF  | GENSORT | GENSRT2 | GETPF   | GETRAN  |
| GNREAD  | GRIDIT  | ICOUNT  | ICPA    | IRAN    |

|         |         |         |         |         |
|---------|---------|---------|---------|---------|
| ISERCH  | IVLFREQ | LEGAL   | LINE    | LINT    |
| LOCFET  | LRSHT   | LSQORPY | LYNE    | LYNE1   |
| MAKEFET | MEANVAR | MERGE2  | MERGE4  | MXCMBN  |
| MXEXTRM | MXLNEF  | MXLNEQ  | MXMOV   | MXMPLY  |
| MXMPLY1 | MXTRIDI | MXTRP   | MXTRP1  | NEWPEN  |
| NONLIN  | NORMAL  | NUMARG  | NUMBER  | ORTHON2 |
| ORTHON3 | PERMUTE | PLOT    | PLOTS   | PLOT3D  |
| PLOT3S  | PLROOT1 | PLROOT2 | PLROOT3 | PLTSCL  |
| POLPLOT | POLYGN  | PRCON   | PRNPLOT | PROCCIO |
| PROCCPM | PROCER  | PROCERC | PROCFET | PROCLFM |
| PROCPFM | PROCFQM | PROCRTN | PROCSFM | PROCSYS |
| PROCTLX | PURGE   | QLENTH  | QRCMPX  | QRSYM   |
| QSORT   | QSORT1  | Q92X8J  | RANBIN  | RANBIT  |
| RANDOM  | RANT    | RAN2F   | RAN3F   | RCVECT  |
| REPLACE | RESTFL  | RETURN  | RK      | RKGILL  |
| ROM1F   | ROM2F   | ROOT1   | RPAUSE  | RVAL    |
| RVECT   | SAVE    | SCALE   | SCLPLT  | SETRAN  |
| SICI    | SIMPSON | SKALE   | SKALE1  | SNCNDN  |
| SORT1   | SORT2   | SPACZRO | SQALE   | SYMBOL  |
| SYMINV  | SYMPACK | SYMPLOT | SYMSOLU | SYMSOLV |
| SYMUPK  | TINV    | TINV1   | TINV2   | TTEST   |
| TTEST1  | TTEST2  | WHERE   | WHEREAS | XCEINT1 |
| XCEINT2 | XCEINT3 | XINT    | ZROSPAC |         |

Furthermore, there is now a proliferation of FORTRAN compilers: MNF, M77, FTN4 and (soon) FTN5, plus a Pascal compiler that has a capability for allowing calls to FORTRAN library subprograms. When a FORTRAN subprogram that contains no I/O statements is compiled with FTN4, it can be used by programs compiled with any of the above compilers. However, since each compiler translates I/O statements in a different manner, the compiled code of subprograms containing I/O statements is different for each compiler.

This led us to build all our FORTRAN libraries by compiling all routines that contained no I/O statements with FTN 4 and putting the routines that contained I/O into the standard library for each compiler, thereby increasing the size and loading time for all FORTRAN users.

An additional problem was that CDC's loader design puts a limit on the number of global libraries that can be used simultaneously in a given job step. (Global libraries are defined by the LIBRARY and FETCH statements; local libraries are defined by the LDSET statement but there are practically no limits on local libraries.) The global library limits are either two user libraries plus two system libraries, one user library plus thirteen system libraries, or no user library plus twenty-four system libraries. Each FETCH statement was taking up one user library and this caused some users with their own user libraries to have to add LDSET statements. Because LDSET only defines local libraries, each load requires its own LDSET statement and it must occur just before the load. This can be annoying when there are several loads in a single job or timesharing session.

When we started using large-scale computers in 1961, 90% of our usage was FORTRAN compilation and execution. Since many FORTRAN programmers needed the same kinds of subprograms (for sorting, special functions, and matrix operations, for example), we developed a large library of efficient subprograms at UCC that the FORTRAN programmer could invoke easily. It was made part of the standard FORTRAN library; therefore, no extra control statements were needed to access the routines. The subprogram library was essentially "invisible" to the user, though each routine was well documented.

In the 1970s we obtained a number of special subprogram libraries. The routines in these libraries (IMSL, EISPACK, TEKLIB, etc.) are high quality routines. They are accurate, well documented and portable (that is, they can be moved from site to site without a major reprogramming effort), and they execute rapidly.

Considering the Schofield results, the changes caused by additional compilers, and the global library limit problem, we looked at three alternatives. The first was to do nothing further. That was rejected because it meant that most users were paying for unneeded load time. The second alternative involved a change to all compilers to generate nonstandard LDSET entries for the relevant libraries in the relocatable binary code. This was rejected because it would have required that all users' relocatable binary code be recompiled when UCC made this change.

We added these externally developed subprogram libraries to our operating system and required the FETCH control statement to access them. However, the "invisible" subprogram library developed at UCC was retained within the standard FORTRAN library. In this, UCC was unusual. Most major computer centers require that the user specify any locally developed or externally acquired subprogram library with a specific request for that library.

The third alternative was to separate the "invisible" library from the standard FORTRAN library. It would be split into two parts: a part called MINNLIB that had routines which contained no I/O statements, compiled with FTN 4, and a part that had routines which contained I/O statements, compiled into separate versions for each compiler: MNFIOL, FN4IOL, etc.

Recent developments made us re-evaluate the "invisible" library of UCC subprograms. Tests made by former staff member C. F. Schofield on small instructional and research FORTRAN jobs showed that of about 1.1 seconds total CP time, 0.2 seconds was spent in compilation, 0.2 seconds in execution, and 0.7 seconds in loading the relocatable binary. The 0.7 seconds loading time could be cut in half if the "invisible" library were made a separate library, a net 35% improvement for these jobs.

The FETCH statement would also be changed to associate each library with its corresponding compiler. Thus, FETCH(MINNLIB/V=MNF) would access the MINNLIB library compiled with FTN 4 and the MNFIOL library compiled with MNF. Libraries such as EISPACK which contain no I/O statements would only access a single library.

To solve the global library limit problem, the most important UCC libraries would be made system libraries. In that case, virtually all library users would have no more than two global system libraries and could have up to two of their own user libraries without needing LDSET statements. If the user referenced more than one FORTRAN compiler in a single job,

#### LIBRARY.

statements would have to be added to clear out the old global library list before the FETCH statements were used. Note that the ENQUIRE(L) control statement prints out the global library list.

The advantages of the third alternative were:

Loading time would be reduced for most users, those who access only the standard FORTRAN library.

We could ensure that jobs are more portable by requiring users to explicitly FETCH all necessary libraries. UCC can supply FORTRAN versions of virtually all the routines in MINNLIB (and UCC-written routines in the IOL libraries) if the programs calling them are taken elsewhere by users.

We could now collect accurate usage statistics for each library. This was difficult with a single FORTRAN library.

A single copy of the routines in MINNLIB would be easier for us to manage than separate "invisible" copies inside each standard FORTRAN library.

The FORTRAN compilers and their standard libraries could be installed on our systems without any changes or additions and all UCC Cyber computers would have the same library structure.

The sole disadvantage was:

Users of our libraries (other than the standard FORTRAN ones) would have to add or change some control statements for each job and our documentation would have to be changed accordingly.

We accepted the third alternative because it produced the best results and affected the fewest users. Its advantages outweighed the disadvantages. This was our "environmental impact statement" for this UCC decision.

Note: This article is reprinted in WRITEUP(LIBSET). In addition, some exceptional situations are further documented in that writeup.

L. Liddiard  
373-5239  
M. Frisch  
376-1636

## cost changes

Over the years we have kept computing costs stable for each full fiscal year, except for those happy occasions when reductions were possible. However, many of our suppliers are no longer willing to give us the fixed yearly contracts that kept our costs stable. Our suppliers now pass on price increases as they occur. For example, the price of punch cards has risen 35% since last July. In addition a number of labor intensive operations had been kept at their original charge notwithstanding the increased labor costs.

This continuing increase in supply costs plus standard salary increases means we have some bad news for you. Some of our rates are going up on July 1. We have some good news for you also. SRU rates will remain the same (including the low-cost large job rate), mass storage charges will be reduced (another 11%), and we will charge less for magnetic tape transfers (the magnetic tape multiplier will drop 10%).

We will continue our past practice of following a fixed rate schedule for the full fiscal year, even if cost increases do occur through the year.

We will propose to the UCS Advisory Committee at their March meeting the following DECREASES for the new year:

MT weighting factor: reduced from 1.8375 to 1.65

Mass storage:  
reduced from \$0.027/KSH to \$0.024/KSH

The following INCREASES will be proposed for the new year for supply costs incurred while running a job or for a terminal session:

|                 |                                  |
|-----------------|----------------------------------|
| Printer paper   | : from \$0.02 to \$0.025/page    |
| Punched output  | : from \$0.003 to \$0.004/card   |
| Varian setup    | : from \$0.25 to \$0.50/setup    |
| Varian paper    | : from \$0.20 to \$0.25/foot     |
| Microfilm setup | : from \$0.25 to \$0.50/setup    |
| Microfilm frame | : from \$0.0067 to \$0.008/frame |
| Tape Mounting   |                                  |
| Labeled         | : from \$0.10 to \$0.20          |
| Unlabeled       | : from \$0.20 to \$0.40          |
| Transient       | : from \$0.50 to \$1.00          |

Other off-line supply charges will increase corresponding to the new costs incurred in the bidding that is currently underway.

Over the past two years, we have seen the costs for computers and mass storage go down: the Cyber 172 and Cyber 170-720 were much less costly than earlier machines, the FMD is approximately half the price of 844 mass storage. In contrast, note these cost increases to UCC over two years:

|                              |                      |
|------------------------------|----------------------|
| Hardware maintenance:        | up 8% per year       |
| Supplies:                    | up 10 to 50%         |
| Salaries:                    | up 8 to 10% per year |
| Software:                    | up 10 to 25%         |
| Transportation of materials: | up 20%               |

A specific example of the increase in supply costs: our original charge for microfilm setup was fixed when the box cost 5 cents and the plastic reel cost 7 cents. Each now cost 15 cents.

We see these trends continuing in the future. The price for CPU cycles and for mass storage will continue to decrease. Salary-related costs (software leases, software and hardware maintenance, consulting, education, operating personnel) and supply costs (paper, cards, magnetic tapes, microfilm and transportation) will continue to increase.

In view of these rapidly rising costs, we anticipate user requests for rates that more accurately reflect the unit costs of the work being done. This means that each individual user pays only for the tasks he performs. We are considering the following proposals:

**A job handling charge:** this charge would recover remote job entry costs, central site handling costs, and high speed terminal site costs.

**Separating the SRU charge into hardware and software components:** with this breakdown, software costs (rental, maintenance, consulting, education, document development) would be charged only to those using the software. A number of major universities already use this algorithm.

These proposed changes are for your information only and may need to be revised before July 1st. If you have questions or suggestions, please write or call me. I will have an article in the April issue of this newsletter, discussing any proposed rate structure correspondence.

L.A. Liddiard  
373-5239

## **writeupdate**

This is the first in a series of regular articles designed to keep you abreast of new developments in machine-retrievable WRITEUPS. We will review new WRITEUPS, inform you of changes in the utility, and note currently available texts of special interest.

A complete housekeeping check of all WRITEUPS now on the system has just been completed. We checked all texts for accuracy. We made sure that WRITEUP INDEX entries were correct. We began bringing them into agreement with a standardized text format. Your suggestions will be appreciated throughout the gradual standardization process. If you notice errors within the texts, or inconsistencies in their INDEX entries, or if you have any suggestions on ways to improve our WRITEUP services, please feel free to call

376-5262

## **computer cupboard**

The Computer Cupboard, located in 210 Experimental Engineering, sells computer supplies and manuals to University departments. Carol Nau and Lee Habeger staff the cupboard from 9-11 and from 1-3 Monday through Friday. You may purchase with a journal voucher or by charging to your computer research account. If necessary, the cupboard will special order reference manuals. The Computer Cupboard serves only University departments and State and Federal public agencies. Private users may still call the Reference Room (373-7744) for assistance in obtaining reference manuals.

## **eyeballing yeats**

This is a report on one project, just completed, which demonstrates the wide range of applications to which UCC's computing resources can be applied. In this case, the poetry of William Butler Yeats has been systematically examined in hopes of detecting previously-asserted, but so far unsubstantiated, claims about the development of his syntax over his career.

Students of Yeats are nearly unanimous in their agreement: Yeats's unique poetic style changes as his career progresses. Yet just exactly what changes within that style is subject to contention. This study attempted to analyze certain specific syntactic traits in a search for statistically significant trends.

Yeats's career was divided into three periods: early (1899-1901), middle (1901-1918), and late (1919-1939). A total of twenty-five poems of similar meter and line length (chosen approximately one every two years) comprised the sample. All computing was done on the Cyber 74 at UCC using the Ross-Rasche style analyzer program, EYEBALL.

EYEBALL parses each word of text according to two criteria: word class (noun, verb, adjective, etc.) and word function (subject, predicate, complement, etc.). It then does several different statistical comparisons of frequencies and ratios among the groups. Parametric and nonparametric analyses were used to search for trends over time.

EYEBALL results also allow the construction of a "stylistic profile" based on the syntactic traits of the poet. Once the profile has been created, poetic style may be compared. The Yeats data was statistically compared with the profiles of poets with whose work he was familiar (particularly that of William Blake) as a possible indication of influence.

Based on the statistical results of the study, Yeats's syntax proved to be surprisingly stable over his fifty-year career. But even though no patterns of any significance appeared in the syntactic data, some trends did seem to crop up in Yeats's diction. This may explain the seemingly overwhelming critical opinion that changes do occur across the period. Indeed they do; but the changes are in the choice of Yeats's words, and not in the way he uses them.

As the use of computers for literary and linguistic research gains wider critical acceptance, more studies of this nature will begin to appear. By providing hard statistical data, current assumptions about an author's style based on purely subjective tests can be more accurately assessed. Criticism as a whole will benefit.

J. Jaynes  
376-5262

## contract programming

Did you know that UCC has a contract programming service? In the past year the Professional Services Department has designed and implemented systems using SYSTEM 2000, SPSS, DMS-170, and SIR and has designed a variety of programs to aid researchers. Contracts can be written either on a fixed-cost or on a time-and-materials basis. If you have questions call

P. L. Jarvis  
376-1763

## MERITSS

We are installing a PDP 11/34 front-end to MERITSS which will allow 1200 baud service. Please call me as soon as possible if you have or anticipate a need for 1200 baud on MERITSS, either from the instructional labs or for departments.

M. Skow  
3-7745

## DBMS users meeting

The first meeting of the DBMS users group was held January 16 at 2:30 in Room 105, Blegen Hall. Twenty-two people were present. John Cosgrove opened the meeting with a brief history of user groups at UCC. He mentioned the benefits gained by users who participate in such groups, including knowledge and experiences shared between users who work with System 2000, SIR, DMS 170 and Query Update.

Dale Trippler (DNR Water Planning Board) then introduced himself and talked about why he became interested in starting a DBMS users group. He listed a few goals he had in mind, such as sharing problems and learning from each other. Through an informal selection process, Dale Trippler was chosen as chairperson, and Elaine Tourville (DNR) as vice-chairperson.

General discussion followed, consisting of specific programming or system problems encountered by some of the users. These topics included how to get around a Report Writer feature problem, and solving an unusual network relationship problem in System 2000. Also discussed was a reload procedure of a very large data base. Solutions and ideas were presented informally between the users.

The next meeting is scheduled for February 28, at 2:30 in the Law School building, room 35.

C. Vollhaber  
376-2867

## DBMS documentation

Williamson bookstore will carry the following items for use in short courses:

Query Update Version 3 Reference Manual  
Pub. No. 60498300  
Query Update Version 3 User's Guide  
Pub. No. 60387700  
Query Update Version 3 Programmer User's Guide  
Pub. No. 6049900  
S2000 Version 2.76 Newsletter  
S2000 Natural Language Syntax Guide

These manuals will be stocked and carried on a regular basis in addition to other documentation items in the area of data base management systems.

J. C. Cosgrove  
376-1761

## BMDP77

We have converted the BMDP77 programs to run on our Cybers. This version was released in December 1978 and is available by the following control card statements. To access the executable version:

BMDPxx.

To access the relocatable version:  
FETCH(BMDPxx)

where xx is 1D, 2D, ..., 2V.

The BMDP77 Manual (Dixon and Brown, 1977) published by the University of California may be purchased at the Minnesota Book Center, Williamson Hall. Local documents will be available soon. For further information, call

S.P. Yen  
373-4886

## M77

A reminder that the M77 FORTRAN compiler is available as an experimental product. M77 (M for Minnesota, 77 for 1977 FORTRAN standard) includes the 1977 Standard Fortran features; you will find many interesting capabilities, including the CHARACTER declaration. Eventually, M77 will rank with, or replace, MNF as the debugging compiler at UCC. We urge you to try it, keeping in mind, of course, that this new compiler is under development and not yet a guaranteed product.

If you wish to try M77, use these commands:

```
Interactive  Batch
M77TS.      Job,Tnn.
              User,,,,,
RUN.        M77.
```

For partial documentation, see WRITEUP(M77).

If you find a problem that you believe to be an error in the compiler and that is not listed in WRITEUP(PTRFORT), please let us know. Send a copy of your program and the output to Lillian Hu, 227 Experimental Engineering.

T. D. Hodge  
373-4599

## micro-cosm

### micro rental

The University Computer Center has developed a short term rental schedule for Apple II and Terak microcomputers. Both Apples and Teraks may be rented for a one month period so that users can familiarize themselves with the equipment. The number of rental units available is limited and they will be supplied on a first come first served basis. Rentals may be extended beyond one month if there are no other requests pending for the unit.

Apple II rental will be \$150.00 per month. Teraks will rent for \$300.00 per month. People requesting rental units should have a valid University budget number when the request is made. For further information, or to arrange a rental, call

D. Whealdon  
376-8153

### microcomputer services

UCC's microcomputer group is actively supporting two microcomputers at this time, the Apple and the Terak. Our office, 210 Experimental Engineering, is open Monday through Friday, from 10:00-12:00, and 2:00-4:00. We provide many services, including, walk-in consultation, demonstration and evaluation of equipment (by appointment), software distribution, on site consultation, pre-purchase evaluation, installation, and user seminars. We can help you if you are interested in intra-micro communication and communication between the Cybers and your micro.

In fact if you are having problems with your microcomputer, if BASIC on your Apple II isn't all that basic, if UCSD Pascal on your Terak thinks you are an illegal data type, then call the micro help line for consultation, general information and even consolation. The number to dial off campus is 376-4276. Campus users dial MICRO (or 6-4276).

We will consult or give seminars on all phases of micro implementation. Topics include which micro to buy, how to integrate it into a curriculum, and fundamental concepts of applications programs. This service will neither replace nor will it duplicate the short courses, but will attempt to deal with the unique problems of a particular department.

We can give you information on a preliminary version of a set of Cyber Pascal procedures to drive the Apple as a graphics terminal and on a similar package, forthcoming, for the Terak. We are developing a set of Pascal and BASIC programs that will help evaluate the supported microcomputers. If you have any specific areas you would like to see compared, please let us know.

We also have a reference library of hardware and software reviews. We would like the support of all micro users in developing a catalog of hardware and software. We are interested in your experiences with your micros, specifically where

you made your purchase, whether you find your micro easy to operate, or if you have information useful to other micro users. We will keep this information on file for other users looking at the same type of hardware or software.

For more information, please write or call  
Michael Timmerman or  
Michael Collins  
210 Experimental Engineering  
208 Union Street, S.E.  
Minneapolis, MN 55455

or call the Micro Help Line  
(612) 376-4276

### micro writeups

For complete information on Apple software, hardware, and documentation, see the indexed, machine-retrievable writeup called APPLE. The complete writeup can be accessed with the control statement

```
WRITEUP(Apple=*)
```

The document, as a full ASCII-writeup, is available on all three Cyber systems at UCC.

M. Timmerman  
376-4276

Thanks to the efforts of Mark Luker, Ph.D. from the Department of Mathematical Sciences, University of Minnesota, Duluth and to Dale Gear from the C.A.I. Systems Group, University Computer Center, University of Minnesota, Twin Cities there is now a writeup for the Terak.

The writeup consists of three manuals for the Terak-Pascal system. WRITEUP(TERAK=CPL) describes the Course Programming Language package. WRITEUP(TERAK=MANUAL) is the reference manual for the Terak-Pascal system as distributed by the C.A.I. Systems Group. WRITEUP(TERAK=PLOT) documents the Terak graphics package.

This writeup is over 140 pages long, upper-lower case and formatted for listing on a high-speed line-printer. To obtain a copy use the commands:

```
WRITEUP(TERAK=*/L=LIST,PT=AS)  
ROUTE(LIST,TID=sc,DC=PR,EC=A9)
```

where 'sc' is the site code of your high-speed station (for example, TID=EA for Experimental Engineering).

M. Timmerman  
376-4276

### appletizers

Intro to Micros 3:15-5PM March 3-4 (mt) Arch 15  
Using a Terak 3:15-5PM March 5-6 (wth) Arch 15  
Using an Apple 3:15-5PM March 10-11 (mt) Arch 15

## TEKSIM

UCC has available TEKSIM chips for the Apple II microcomputer. TEKSIM allows the Apple II to emulate a Tektronix 4010 terminal. These chips cost \$400.00 each.

For further information on TEKSIM's characteristics and applications, call the MICRO help line at 376-4276. To purchase a TEKSIM, call Dan Whealdon 376-8153

## audio-visual apple

I have built a simple interface for the Apple, using a peripheral I/O slot, for programmed control of slide projector advance, and for turning on and off an audio cassette player. If you are interested in this interface, call me for schematics.

A. Moore  
Box 511 Mayo  
373-0335

## apples and nurses

Saturday, 9 February 1980, the Bethesda-Lutheran Medical Center and the departments of nursing of Inver Hills and Lakewood Community Colleges held a workshop on computers and their use in nursing.

The faculty included Drs. Lynda Ellis and Lael Gatewood, Division of Health Computer Sciences, University of Minnesota, Minneapolis. A significant segment of the workshop was devoted to hands-on microcomputer use and a set of demonstrations organized by Dr. Ellis. The hands-on activity and the demonstrations were conducted on Apple II microcomputers. Demonstrations included locally and commercially developed software covering such topics as: patient education, continuing medical education, bibliographic retrieval, statistics, drug information retrieval, Pascal, and personal uses of a microcomputer.

If you're interested in more details about the workshop, call Dr. Lynda Ellis, 373-0331.

M. Boyd  
373-2522

## meccro

The Minnesota Educational Computing Consortium was created in 1973 over concern for lack of computing coordination in the state of Minnesota. MECC's purpose is to avoid hardware proliferation without consideration of shared resources. With the advent of microcomputers, a MECC task force was created to study what kind of features a microcomputer should have for educational applications. The task force developed a list of useful features a micro should have for classroom use. They tested brand name micros, and established specifications for vendor bidding. The result was the MECC Microcomputer Report, and the choice of the Apple for the public education community in Minnesota.

The MECC users services staff has developed workshop materials and documentation relating to the Apple. Their newsletter contains regular features on the Apple, including "Hard Core," a hardware section, articles on out-of-state software reviews and on programming use of the Apple. The September 1979 Hard Core column reviewed SUPERCHIP, a ROM chip designed to be plugged into the Apple. The October 1979 column focused on speech input and output hardware, namely SPEECHLAB and SUPERTALKER. The January 1980 column discussed the features and limitations of D.C. Hayes's Micromodem II.

To get on the mailing list for the MECC newsletter, call Shirley Keran 376-1132. To find out more about MECC publications, or to get a copy of their list of publications, write to:

MECC Support Services  
2520 Broadway Drive  
Lauderdale, MN 55113

## accounting

UCC is planning some consolidations and minor internal changes in its accounting system. These changes should be, for the most part, transparent to users and will go into effect on July 1, 1980. Any comments or suggestions in relation to our accounting system, and any changes you would like to see, should be sent to

G. Jensen  
376-1762

# statistics

\*\*\*PRODUCTION USAGE SUMMARIES: Cyber 74/172

|                                    | December, 1979      | December, 1978        |
|------------------------------------|---------------------|-----------------------|
| System resource units (SRU)        | 887,727 (1,145,499) | 1,023,548 (1,339,853) |
| Batch jobs and MIRJE sessions      | 89,009 ( 98,607)    | 79,934 ( 89,506)      |
| Central processor hours inc. DELAY | 129/127 ( 142/215)  | 187/59 ( 212/134)     |
| DELAY queue processor hours        | 42/17 ( 47/27 )     | 70/6 ( 72/12 )        |
| MIRJE terminal hours               | 13,019 ( 15,241)    | 9,524 ( 11,070)       |
| Mass storage transfers (KPR)       | 304,278 ( 394,484)  | 274,405 ( 349,569)    |
| Magnetic tape transfers (KPR)      | 9,934 ( 13,671)     | 4,409 ( 10,985)       |
| Pages printed, charged from UCC    | 750,807 ( 868,531)  | 715,676 ( 819,303)    |
| Cards punched                      | 447,709 ( 458,519)  | 332,513 ( 487,574)    |
| Microfilm frames produced          | 14,663 ( 401,476)   | 25,568 ( 340,059)     |
| Number of terminal sessions        | 28,980              | 21,046                |
| Status plotting production (feet)  | 5,541               | 6,959                 |
| Tapes mounted                      | 11,252              | 9,701                 |
| Average file storage (char)        | 2,573.0 million     | 1,903.1 million       |
| Mean time between failures         | 48.2/43.8 hours     | 91.0/none             |
| Available during scheduled hours   | 99.2/99.2 percent   | 96.6/100.0 percent    |

(totals in parentheses include staff development, accounting, and maintenance runs)

\*\*\*DOWNTIME SUMMARY: January, 1980 (Column 1, Cyber 74 : Column 2, Cyber 172)

|                                       | 0800-1800 M-F |       | other |       | total |       |
|---------------------------------------|---------------|-------|-------|-------|-------|-------|
| Total possible scheduled uptime hours | 220.0         | 220.0 | 269.0 | 269.0 | 489.0 | 489.0 |
| Total downtime hours (see Schedule A) | 1.6           | 2.2   | 5.4   | .7    | 7.0   | 2.9   |
| Total uptime hours                    | 218.4         | 217.8 | 263.6 | 268.3 | 482.0 | 486.1 |
| Uptime (percent)                      | 99.3          | 99.0  | 98.0  | 99.7  | 98.6  | 99.4  |
| Average downtime per occurrence (min) | 19.6          | 13.3  | 160.5 | 13.0  | 59.9  | 13.2  |
| Mean time between failures (hours)    | 44.0          | 22.0  | 134.5 | 89.7  | 69.9  | 37.6  |
| Frequency of subsystem downtime       |               |       |       |       |       |       |
| SUPIO                                 | 19            | -     | 5     | -     | 24    | -     |
| TELEX                                 | 1             | 1     | 4     | 4     | 5     | 5     |
| EXPORT                                | 3             | -     | 5     | -     | 8     | -     |

Schedule A: downtime hours

|                                      | Number |   | Total hours |     | Average minutes |      |
|--------------------------------------|--------|---|-------------|-----|-----------------|------|
| (1) Preventive maintenance over-runs | 0      | 0 | 0.0         | 0.0 | 0.0             | 0.0  |
| (2) Software related problems        | 2      | 8 | 0.5         | 1.2 | 14.0            | 9.3  |
| (3) Hardware related problems        | 3      | 3 | 6.3         | 1.4 | 125.7           | 28.0 |
| (4) Indeterminate problems           | 0      | 0 | 0.0         | 0.0 | 0.0             | 0.0  |
| (5) External Problems                | 2      | 2 | 0.2         | 0.2 | 7.0             | 7.0  |

\*\*\*PRODUCTION USAGE SUMMARIES: Cyber 170-720 (MERITSS)

|                                      | December, 1979 | December, 1978 |
|--------------------------------------|----------------|----------------|
| Number of jobs run                   | 133,391        | 131,491        |
| Central processor hours              | 129            | 112            |
| MERITSS terminal hours               | 15,864         | 15,676         |
| Number of terminal sessions          | 28,449         | 28,910         |
| Maximum number of simultaneous users | 140            | 130            |
| Average file storage (char)          | 489.0 million  | 346.2 million  |
| Mean time between failures           | 70.9 hours     | 209.3 hours    |
| Available during scheduled hours     | 99.9 percent   | 99.9 percent   |

## short courses

UCC Short Course Schedule for Winter 1980.

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|                             |            |                      |               |
|-----------------------------|------------|----------------------|---------------|
| System 2000/RW.....         | 3:15-5pm,  | Feb 11-15 (mwf),     | MurH 308, JCC |
| \$ Graphing Techniques..... | 7:30-9:30, | Feb 11-13 (mtw),     | Laud*, KMM    |
| \$ SPSS (procedures).....   | 2:15-3:30, | Feb 11-13 (mw),      | Aero 21, BH   |
| \$ SPSS (On-Line).....      | 2:15-3:30, | Feb 15 (f),          | Aero 21, BH   |
| Text Formatting.....        | 3:15-5pm,  | Feb 19-21 (tth),     | Arch 15, SKG  |
| COMPASS I/O.....            | 3:15-5pm,  | Feb 19-Mar 6 (tth),  | Arch 55, KCM  |
| Advanced System 2000.....   | 3:15-5pm,  | Feb 25-29 (mwf),     | Arch 15, SPN  |
| Programming Style.....      | 3:15-5pm,  | Feb 25-29 (mwf),     | Arch 60, RTF  |
| DMS - 170.....              | 3:15-5pm,  | Feb 25-26 (mt),      | Aero 211, JCC |
| QUERY/UPDATE.....           | 3:15-5pm,  | Feb 27-28 (wth),     | Aero 211, JCC |
| Image Processing.....       | 7:30-9:30, | Feb 25-27 (mtw),     | Laud*, KMM    |
| \$ Pascal.....              | 3:15-5pm,  | Feb 25-Mar 14 (mwf), | MurH 308, LF  |
| System 2000/PLI.....        | 3:15-5pm,  | Mar 3-7 (mwf),       | Arch 55, SPN  |
| Introduction to Micros..... | 3:15-5pm,  | Mar 3-4 (mt),        | Arch 15, GG   |
| Using Micros (TERAK).....   | 3:15-5pm,  | Mar 5-6 (wth),       | Arch 15, GG   |
| Using Micros (AppleII)..... | 3:15-5pm,  | Mar 10-11 (mt),      | Arch 15, MT   |
| SIR.....                    | 3:15-5pm,  | Mar 4-13 (tth),      | Arch 60, JCC  |

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Tentative UCC Short Course Schedule for Spring 1979

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|                                |            |                       |            |
|--------------------------------|------------|-----------------------|------------|
| Computing: What is it?.....    | 3:15-5pm,  | Apr 7-10 (mtwth),     | LF/SG      |
| Beginning COMPASS.....         | 3:15-5pm,  | Apr 7-18 (mwf),       | JJD        |
| Advanced COBOL.....            | 3:15-5pm,  | Apr 7-18 (mwf),       | DR         |
| Intro to Record Manager.....   | 3:15-5pm,  | Apr 7 (m),            | SAR        |
| APEX/MPOS.....                 | 3:15-5pm,  | Apr 8-10 (tth),       | JCC        |
| Record Manager/BAM.....        | 3:15-5pm,  | Apr 9-11 (wf),        | SAR        |
| Introduction to UCC.....       | 3:15-5pm,  | Apr 11 (f),           | RTF        |
| NOS (system configuration)...  | 3:15-5pm,  | Apr 14 (m),           | RTF        |
| NOS (files/jobs).....          | 3:15-5pm,  | Apr 15-16 (tw),       | RTF        |
| NOS (permanent files).....     | 3:15-5pm,  | Apr 17 (th),          | RTF        |
| NOS (program execution).....   | 3:15-5pm,  | Apr 18 (f),           | RTF        |
| NOS (tapes).....               | 3:15-5pm,  | Apr 21 (m),           | RTF        |
| NOS (misc statements).....     | 3:15-5pm,  | Apr 23 (w),           | RTF        |
| NOS (control language).....    | 3:15-5pm,  | Apr 25 (f),           | RTF        |
| Record Manager/AAM.....        | 3:15-5pm,  | Apr 14-18 (mwf),      | SAR        |
| PLOT/PAC.....                  | 7:30-9:30, | Apr 14-16 (mtw),      | Laud*, KMM |
| XEDIT.....                     | 3:15-5pm,  | Apr 21-25 (mwf),      | PG         |
| Introduction to System 2000... | 3:15-5pm,  | Apr 21-May 2 (mwf),   | JCC        |
| Sort/Merge.....                | 3:15-5pm,  | Apr 21-25 (mwf),      | SAR        |
| Introduction to Timesharing... | 6:15-8pm,  | Apr 22-24 (tth),      | RTF        |
| Introduction to Batch.....     | 2:15-4pm,  | Apr 22 (t),           | MB         |
| Introduction to Programming... | 3:15-5pm,  | Apr 28-May 16 (mwf),  | RM         |
| BASIC Self Instruction.....    | 3:15-5pm,  | Apr 29 (t),           | MT         |
| SNOBOL.....                    | 3:15-5pm,  | Apr 28-May 9 (mwf),   | ABM        |
| Advanced FORTRAN.....          | 3:15-5pm,  | Apr 28 - May 9 (mwf), | RTF        |
| SPSS (SPSS basics).....        | 3:15-4:30, | May 5 (m),            | BH         |
| SPSS (data manipulation)....   | 3:15-4:30, | May 6 (t),            | BH         |
| SPSS (SPSS files).....         | 3:15-4:30, | May 7 (w),            | BH         |
| SPSS (workshop).....           | 3:15-4:30, | May 9 (f),            | BH         |
| System 2000/RW.....            | 3:15-5pm,  | May 5-9 (mwf),        | JCC        |
| FORM.....                      | 3:15-5pm,  | Apr 5-9 (mwf),        | SAR        |
| COBOL.....                     | 6:15-8pm,  | May 5-2 Jun (mw),     | DR         |
| System 2000 User Aids.....     | 3:15-5pm,  | May 6-8 (tth),        | JCC        |
| System 2000/PLI.....           | 3:15-5pm,  | May 12-16 (mwf),      | SPN        |
| SPSS (procedures).....         | 3:15-4:30, | May 13-15 (tth),      | BH         |
| Intermediate FORTRAN.....      | 6:15-8pm,  | May 13-Jun 5 (tth),   | RTF        |
| Pascal.....                    | 3:15-5pm,  | May 19 - Jun 6 (mwf), | LF         |
| MINITAB.....                   | 3:15-4:30, | May 19-21 (mw),       | BH         |
| SPSS (On-Line).....            | 3:15-4:30, | May 23 (f),           | BH         |
| SIR.....                       | 3:15-5pm,  | May 20-29 (tth),      | JCC        |
| Introduction to Micros.....    | 3:15-5pm,  | May 27-28 (tw),       | GG         |
| Using Micros (TERAK).....      | 3:15-5pm,  | May 29-30 (thf),      | GG         |
| Using Micros (AppleII).....    | 3:15-5pm,  | Jun 2-3 (mt),         | BW         |
| DMS - 170.....                 | 3:15-5pm,  | Jun 2-3 (mt),         | JCC        |
| Query/Update.....              | 3:15-5pm,  | Jun 4-5 (wth),        | JCC        |

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## phone numbers

|   |                    |  |          |
|---|--------------------|--|----------|
| Accounting .....                            | 373-4548, 373-2521 | Information, SICL .....                    | 373-9751 |
| Computer-Aided Instruction .....            | 376-2975           | Information Systems .....                  | 373-7878 |
| Computer Hours (recorded message) .....     | 373-1798           | Instructional Labs .....                   | 373-5754 |
| Computer Store .....                        | 373-4877           | Job Status, ExpEng (recorded message) ...  | 373-4994 |
| Consulting                                  |                    | Lauderdale Operations .....                | 373-4920 |
| HELP-line .....                             | 376-5592           | Lauderdale Services .....                  | 373-7538 |
| 9 AM - 5 PM, Monday - Friday                |                    | Lauderdale Users' Room .....               | 373-4921 |
| Business Data Products .....                | 376-1761           | MECC, University .....                     | 373-4573 |
| 10-11 AM and 1-2 PM, Monday - Friday        |                    | Microcomputers .....                       | 376-4276 |
| Statistics Packages .....                   | 376-5062           | Microfilm Operator .....                   | 373-4995 |
| 1-2 PM, Monday - Friday                     |                    | Newsletter Subscription .....              | 373-7744 |
| System 2000 .....                           | 376-1761           | Permanent File Restoration .....           | 376-5605 |
| 10-11 AM and 1-2 PM, Monday - Friday        |                    | Professional Services Division (PSD) ..... | 376-1764 |
| Microcomputers .....                        | 376-4276           | Project Assistance .....                   | 376-1764 |
| 10-12 AM and 2-4 PM, Monday - Friday        |                    | Program Librarian .....                    | 376-1636 |
| Contract Programming .....                  | 376-1764           | Programming Languages .....                | 376-7290 |
| Data Base Applications .....                | 373-7878           | Reference Room .....                       | 373-7744 |
| Educational Services .....                  | 376-3963           | Remote Batch (RJE) Services .....          | 373-5754 |
| EDUNET Interface .....                      | 373-7745           | Short Courses .....                        | 376-1637 |
| Equipment Purchase or Lease .....           | 376-8153           | Shuttle Bus Service .....                  | 376-3068 |
| Experimental Engineering I/O .....          | 373-4596           | Tape Librarian and EBR Operator .....      | 373-4995 |
| Field Engineering .....                     | 376-7584           | Technical Writing .....                    | 373-2522 |
| Graphics Software .....                     | 376-1636           | User Numbers                               |          |
| HELP-line .....                             | 376-5592           | Instructional Batch .....                  | 373-2521 |
| 9 AM - 5 PM, Monday - Friday                |                    | Instructional Timesharing .....            | 373-7745 |
| HOURS-line (recorded message) .....         | 373-1798           | Research Batch .....                       | 373-2521 |
| Information, Experimental Engineering ..... | 373-4360           | Research Timesharing .....                 | 373-2521 |
| Information, Lauderdale .....               | 373-4912           | User Services .....                        | 373-4599 |

### RETURN TO:

User Services  
University Computer Center  
227 Experimental Engineering  
University of Minnesota  
208 Union Street SE  
Minneapolis, Minnesota 55455

UNIVERSITY ARCHIVES  
11 WALTER LIBRARY  
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EAST BANK  
117 PLEASANT STREET SE  
MINNEAPOLIS MN 55455