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### EDITORIAL -- Richard T. Franta, User Services

When dealing with a large organization, an individual has a tendency to feel powerless and unable to make his voice heard by those who control the organization. The University Computer Center, being a rather large organization, is no exception to this general rule. We feel, however, that we have made a major effort to provide methods for each person to make his ideas and complaints heard. The very fact that we have a User Services division is a prime example of this effort. I like to think that User Services people have provided UCC with that extra push needed in many areas of concern to the user community. As a result of that push, we have made great strides over the past few years in the areas of documentation, consulting, system stability, user input, and keeping our users informed in all areas of development. This is not to say that we are perfect, but only that we have made great advances.

One of our most important forums for user input is the open user meeting held each quarter. All of the senior staff members from the computer center attend, not only to present information about what has been happening and what will happen, but also to field questions and listen to complaints (and praise) on any topic whatsoever from any individual attending. In short, these meetings provide a place for the individual to make his voice heard by the people directing UCC. Everyone (students, faculty members, staff members, research people, non-University users of the computer system, etc.) is encouraged to attend these meetings. Your attendance is requested not only because you can make your complaints known but also so that you can become aware of our future plans and the direction in which our service is headed. These meetings provide a useful interface between UCC and computer users and also encourage many useful and interesting discussions between users. We cannot emphasize enough the need for your participation, even though you may feel there are no specific problems to discuss.

Even though we provide service to thousands of individuals and groups from both within and outside the University community, only about twenty of these individuals attended the user's meeting held on Thursday, November 20th. This attendance represents less than .2% of our users. This lack of attendance not only prohibits you from keeping abreast of current UCC procedures and policies, but also excludes you from discussions of the future happenings affecting your computer usage. We are also at a disadvantage when user participation is low because we gain no insight to influence our decision making. In order to remedy this situation, please make plans to attend the next open users meeting scheduled for Winter quarter. The meeting will be held at 2 PM on Thursday, February 19th. Mark it on your calendar. Don't depend on others to present your opinions, needs, complaints. Be there yourself. You have a very powerful voice in providing direction to the computer center. Use it.

Christmas holiday hours:	Lauderdale	down at	6:00 PM Dec. 24	: up at	6:00 PM Dec. 26
	ExpEng	down at	4:00 PM Dec. 24	: up at	8:00 AM Dec. 27
	TELEX, SUP10	down at	4:00 PM Dec. 24	: up at	6:00 PM Dec. 26
	MERITSS	down at	5:30 PM Dec. 24	: up at	7:30 AM Dec. 27
New Year holiday hours :	Lauderdale	down at	6:00 PM Dec. 31	: up at	8:00 AM Jan. 2
	ExpEng	down at	4:00 PM Dec. 31	: up at	8:00 AM Jan. 2
	TELEX, SUP10	down at	4:00 PM Dec. 31	: up at	8:00 AM Jan. 2
	MERITSS	down at	5:30 PM Dec. 31	: up at	7:30 AM Jan. 2

-- WINTER QUARTER OPEN USER'S MEETING -- THURSDAY, FEBRUARY 19TH -- MARK YOUR CALENDAR -- COME --

DEADLINE FOR THE JANUARY NEWSLETTER IS DECEMBER 23RD. WANT TO WRITE AN ARTICLE?

**kronos**

--by K. C. Matthews

The KRONOS operating system is updated by CDC each six or eight weeks. Each such release is called a *level* of the operating system. When we changed the Cyber 74's operating system from MOMS to KRONOS 2.1 in September, 1974, KRONOS was at level 4; we have been at level 9 since November 25, 1975.

All CDC level releases contain PSR (Program System Report) code. This code fixes bugs that have been discovered in the operating system. Some of the CDC level releases contain new feature code also, adding new capabilities to the operating system.

During the summer CDC released level 10 of the KRONOS operating system. This is the largest feature release we have yet received from Control Data and is also the last feature release for KRONOS 2.1. On March 31, 1976, CDC will stop supporting KRONOS. They are now developing a new (and more expensive) operating system called NOS (Network Operating System). However, we should receive PSR releases of level 12 and perhaps level 13 before CDC support for KRONOS is terminated.

The level 10 release has more changes than any previous release, many of which present definite enhancements to the system. However, because of the large number of internal changes made in the level 10 release, we have delayed implementing it. We now plan to implement level 10 during spring quarter break (the week of March 20 - 28, 1976). This time was selected because the quarter break provides a time least disruptive to users. Since there is no break between spring quarter and summer sessions, we would have to wait until August (after summer session 11) for the next break, and we feel that this is unwise for several reasons. The primary reason is that CDC support for level 10 problems is available now but probably will not be available if we delay the upgrade until the end of summer.<sup>1</sup> A secondary reason is that UCC projects which are planned for summer '76 (such as running duplicate operating systems on the Cyber 74 and the 6400) will be much easier to carry out if level 10 is already installed.

Please be assured that we are not moving to level 10 just for the fun of it. The improvements available in level 10 should help all users. We should also note that our magnetic tape software is already upgraded to level 11. The following are the most important level 10 new features:

**ENHANCED USER CONTROLS**

With level 10, KRONOS establishes certain limits on a job. These limits are user number dependent and some have already been implemented locally at UCC. Our local modifications will be replaced by the standard CDC code whenever possible. The new user controls (limits) in level 10 are:

- (1) Maximum direct access permanent file size.
- (2) Maximum number of active files per job (already implemented locally).
- (3) Maximum mass storage PRU's assigned.
- (4) Maximum number of disposed files.
- (5) Maximum lines printed or cards punched per job.
- (6) Maximum number of control cards per job.
- (7) Maximum number of dayfile messages per job (already implemented locally).

These limitations should prevent a user from accidentally (or maliciously) filling up all the disk space or file table space and thus crashing the system. The controls on job usage are not intended to hinder, but to keep users from degrading system performance to a point unacceptable to other users.

**ACCOUNTING SYSTEM CHANGES**

Many mechanisms for accounting and statistical use are added in level 10. Most of the changes affect routines internal to the system and will leave users unaffected. However, everyone should notice that a System Resource Unit (SRU) counter has been added to the counters kept for each job. Calculating SRU's is largely left to the individual installation and is a function of CP time, PRU's transferred, field length, and number of system permanent file requests. The SRU counts will not be used for any accounting purpose but will appear at the end of a job, along with the other end of job dayfile messages. We hope that by comparing SRU's to other measures (like real time in system), we can determine which sort of job runs best in our system. Details on this feature and the SRU calculation will be discussed in future articles.

**SYSTEM GENERALIZATION**

As part of the accounting modifications, several generalizations are made which extend the system versatility:

- (1) TELEX (for MIRJE users) no longer specially interprets the OLD, NEW, and PRIMARY commands nor does it examine any of the permanent file commands. Rather, these are all executed as Batch control cards, regardless of the subsystem one is under. This means that any user in a Batch job may have a primary file, and then the simple control card, REPLACE., will replace the primary file. Also, all these commands can be placed in procedure files used by TELEX jobs.
- (2) Since all permanent file commands are handled in Batch mode, it will no longer be necessary to worry about which account number applies in TELEX permanent file requests if an ACCOUNT (or USER) card has been used. All permanent file commands take place under the last ACCOUNT card is used. MIRJE users who do not use the ACCOUNT card will see no difference.

<sup>1</sup>With the release of level 10, CDC changed the operating system name from KRONOS 2.1.1 to KRONOS 2.1.2. KRONOS 2.1.2 is also called NOS 1.0 by CDC customers who use NOS. We want to iron out as many problems as possible before CDC drops KRONOS. We mention 'level 10' throughout this report -- in reality, the conversion will actually be to level 11 or 12. However, level 10 contains the code with the new features and levels 11 and 12 are PSR releases of corrective code only. Level 11 has already been released and level 12 is expected in January. We will actually implement the latest working release.

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- (3) The TELEX NODROP command no longer exists. Instead, a parameter, ND, is used on the permanent file commands. ND indicates that no files are to be dropped. This parameter is available to both TELEX and Batch users. Thus, the sequence

OLD,XYZ.  
NODROP.

is replaced by

OLD,XYZ/ND.

### I/O QUEUE PROTECTION

The queues of the system input and output files are protected much like permanent files in level 10. This means that if a level 0 deadstart becomes necessary, the input and output queues will remain intact (at present, all jobs in the system are lost).

This does not mean that no job will ever be "lost" if the computer goes down. Jobs that are currently running may or may not be lost. If not lost, they will be re-run from the beginning. A user may request that a job not be re-run (for example, if a permanent file or a tape has been updated) by using the NORERUN control card. Also, jobs will be lost if one or more of the disk devices had vital system data destroyed. Fortunately, this is an infrequent occurrence at UCC. We hope that the level 10 I/O queue protection will provide a good backup in case of hardware or software problems.

### THE CYBER LOADER

The Cyber loader is implemented in level 10. It is a new loader of relocatable code designed to replace the existing loaders on SCOPE 3.4 and KRONOS 2.1. CDC designed it to be a common loader on both types of operating systems. Since a relocatable loader is so important, and since a malfunctioning loader can harm many users, UCC will not use the Cyber loader as the default loader when level 10 is installed. Instead, the old tested LINK loader will be the default loader here, with the Cyber loader available by request. The Cyber loader will probably be made default during the summer of 1976.

Some features of this new loader are: running programs may load relocatable routines from the system or user libraries; multiple system and/or user libraries can be specified for use in the library set; the Cyber loader will request more central memory if needed, to complete the load.

### 844 DISK DRIVE ENHANCEMENTS

These enhancements are made to the internal operating system code which does the 844 disk I/O (almost all of our disk I/O is on 844 drives). The most important improvement is called seek-overlap, in which the operating system finally begins to use some of the features which have long been in the hardware. Seek-overlap means that the system will use a data channel to initiate a disk positioning operation. That data channel may then be used for another disk operation (positioning or data transfer) on a different disk unit. Then the data transfer which required the initial position operation takes place. The 844 seek-overlap feature improves disk channel usage in a busy system, and all users should be helped by the improved disk operation times. The seek-overlap feature has already been installed on the CDC 6400 timesharing system; disk speedups of from 5-10 percent have been measured, depending upon the type of jobs running.

### 64 CHARACTER SET

Our current operating system allows 63 different characters to be represented in a 6-bit field (corresponding to the octal values 01 through 77). The character corresponding to 00 is not used; rather, 00 is used to indicate the end of a line. In level 10, a 64 character set option is provided. The 64 character set option is confusing and contradictory, since the 00 character conflicts with the end of line use of 00. The individual installation has an option of selecting 63 or 64 characters as the default mode of operation; the 63 character set option will be default at UCC. We hope that most users will not notice the affects of the 64 character set code in the system.

Again, we remind you that the conversion to level 10 is scheduled for the period of March 20 - 29, 1976. Most users should not be affected by the changes. The most noticeable change to most users will be in the new job name.

## tapes

--by W.J. Elliott

*Nine-track tapes:* A temporary writeup called NINETK is available which gives detailed information concerning handling, precautions, code conversion, and other useful information relating to the 9-track tape units. This information will ultimately be incorporated into the document available via WRITEUP,TAPEUSE. At that time, NINETK will cease to exist. The revised writeup of TAPEUSE will be available by the first of the year. Other sections scheduled for extensive revision include multi-files and error message descriptions.

*Multi-file tapes:* An on-going effort to get multi-file tapes into usable shape has begun to bear fruit. Greater positioning efficiency has been achieved and several informative messages have been added to clearly define the current section in use. Users should become REWIND conscious; making an effort to avoid a needless rewind reduces real processing time as well as PRUs transferred. After positioning to a section via the LABEL card, the tape is at the beginning of information for that section and no rewind is required. A rewind causes the tape to be rewound and then repositioned to the current section. If you happen to be using a multi-reel/multi-file, the current reel may actually be unloaded and a previous one requested (if necessary).

In short, multi-file tapes are ready to go. With the level 10 release (at which the tape drivers are currently operating), all label processing has been brought into line with the ANSI standard. This did introduce a problem with multi-file tapes created using the old level 8 drivers. The message "LABEL MISSING" is given when

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any but the first section (QN=1) is accessed. Data on these old tapes can be accessed by specifying a processing option (PO=X) along with other parameters on the LABEL card. Here, the PO=X option overrides the "BLOCK SEQUENCE ERROR" introduced by properly writing the HDR1 label on subsequent multi-file sections. Multi-file tapes which give a "LABEL MISSING" error message should be reconstructed using the PO=X option to make the data retrievable. No problem exists for multi-file tapes created using the level 10 drivers, only with tapes created under old level 8 when one attempts to read them under the new level 10.

*Processing options:* A new processing option has been added to those already available on the LABEL card. The new option, PO=X, is designed to turn off some checking but not to the extent that PO=E does. Currently, PO=X will override "LABEL NOT EXPIRED," "BLOCK COUNT ERROR IN TRAILER LABEL," and "BLOCK SEQUENCE ERROR." Other overrides may be added where they do not interfere with parity error processing. PO=X should be used only when the specific need arises.

*New parameters:* A C parameter has been given to TDUMP which will allow it to dump a coded (even parity) S or L format tape. When used with 9-track S or L format tapes, it will select code conversion (i.e., ASCII/EBCDIC to display codes), thus providing readable character information.

#### BUG CORRECTION CREATES PROBLEMS

With the installation of the level 9 release on November 25th, a bug which had manifested itself in several obscure ways was eliminated. The problem had to do with premature assignment of unlabeled tapes and possible erroneous assignment of labeled tapes since the operator was allowed to specify a VSN for a labeled tape, thus overriding the correct VSN as recorded in the VOL1 label of the tape. In the past, this has allowed a job expecting an unlabeled tape to be assigned a labeled one or a tape to be assigned to a job before complete label checking was performed. In either case, it was a gaping hole in labeled tape security.

To our surprise, we found that a few heavy users were making use of this bug in the normal processing of their data files. One user in particular was being supplied data on tapes with ANSI standard labels. Since these labeled tapes were requested as unlabeled (LB=KU), and no special file accessibility (FA) was in effect, they appeared on the surface to be unlabeled tapes requiring a routine entry by the operator to assign them to their jobs. The corrective code added on November 25th made it illegal for the operator to specify a VSN for a tape considered to be labeled. It also required the operator to wait until initial label checking was totally complete before allowing a VSN to be specified for an unlabeled tape.

Since the operator can no longer specify an alternate VSN for a labeled tape, the user must do it himself, using the VSN equivalence feature of the KRONOS system. Suppose the internal label (recorded in the VOL1 label of the tape) specifies a VSN of T12345, while the tape is stored or referenced by the VSN of SN9999. The proper control card sequence to reference this tape would then be:

```
VSN(TAPE1=SN9999=T12345) establishes the VSN equivalence
LABEL(TAPE1,other parameters)
```

Using the VSN card and specifying the external VSN first in the list of VSNs will generate a proper request for the operator. When the tape is mounted, the internal VSN will be recognized by the system and the tape will be properly assigned to the job.

Because we think this is a proper and long overdue fix to a troublesome bug, but at the same time sympathize with the plight of those users caught by the problem, the corrective code will be removed until January 1, 1976. In the meantime, users with labeled tapes who are ignorant of the internal VSN should use EXAMINE to determine the label content. The following control cards will print the label sequence if one exists:

```
LABEL(TTT,VSN=SN9999,LB=KU,ID=$GUESSWHAT$,F=F,FC=5200,NS=1,PO=R)
EXAMINE(TTT,Q,DR,D=density)
```

Users with 9-track tapes who do not know the VSN should contact the tape librarian for assistance. After January 1, 1976, the use of equivalenced VSNs will be enforced where required. The operator will be unable to override a VSN contained in a proper ANSI labeled tape. Further information concerning VSN equivalencing can be found in the WRITEUP,TAPEUSE document.

## library changes/additions

--by M.J. Frisch

September 29, 1975: A new version of LPKODE was installed containing some new linear programming features.  
 October 27, 1975 : SPSS 6.0 became the current version of SPSS.  
 October 27, 1975 : An error in OMNITAB was corrected.

**SUBPROGRAM LIBRARIES** -- On November 5, 1975, most of the University of Minnesota subprogram library was added to the FTN Version 4 (FUTURE,FTN.) library named FORTRAN. The following routines have not yet been converted and thus were not added:

```
BETAI, CPRFIL, FINV, GENREAD, LINT, PLOTPAC, PLTSCL.
```

These routines will be converted as soon as possible. The routine TIMDAT (containing the entry points TIME, DATE, CLOCK, SECOND, CPTIME, ICPTIME, and JDATE) will not be available since identical or equivalent entry points are available from FTN 4.

**product levels/quality control**

--by L.A. Liddiard

An implicit goal of changing to KRONOS in the Fall of 1974 was to keep up with CDC's latest software products (COBOL 4 and FTN 4). In order to ease the user's transition pains, the older compiler products, FTN 3 and COBOL 3, were used in the 1974-75 academic year with the changeover to FTN 4 and COBOL 4 to come in Fall 1975. COBOL 4 became the standard COBOL compiler in October 1975 and has proven to be more reliable and efficient than the previous version and has been well accepted by our users. Since we are still mainly a FORTRAN-oriented system, we moved more slowly in putting in the new FORTRAN Extended compiler (because it uses Record Manager and thus has a very different form of I/O handling). However, we are now ready to put in the new FTN; at the beginning of Winter quarter the standard version of FORTRAN Extended will be FTN 4 level 10 PSR401. By January 1, a conversion guide will be available to explain the differences between FTN 3 and FTN 4. Those who wish to continue to use FTN 3 will then have to use PAST,FTN.

A version of MNF was also made to interface with Record Manager. UCC will delay making this version standard, since the extra field length required by Record Manager causes a severe degradation to the system (40% more overhead to roll the jobs when MNF is run from a timesharing terminal).

The table below shows the products which will be available as of January 5, 1976:

Product	PAST	current	FUTURE
COBOL	COBOL 3	COBOL 4 level 8 PSR393	COBOL 4 level 10 PSR401
FTN	FTN 3 with FT3LIB and MINN version of SYSLIB	FTN 4 level 10 PSR401 (OPT=2 does not always work)	FTN 4 level 11 PSR401 (OPT=2 better, but still does not always work)
MNF	MNF 4.3 ANSI switch not set. DATA statement prob- lems. Hollerith conversion. Namelist fails.	MNF 4.4 Uses FT3LIB and MINN version of SYSLIB. Most error-free so far. Namelist does not work.	MNF 4.4 (Only error corrections of current version)
FETCH,MNF	MNF 4.4; uses Record Manager and FORTRAN common library; Namelist works; V, =, and Z FORMAT fields.		

Current and FUTURE COBOL and FTN will cycle, whereas PAST for both these products will remain at the version 3 level through this academic year. We encourage all users to switch NOW from these version 3 products, since they are scheduled to disappear Fall quarter 1976.

**MNF QUALITY CONTROL -- by B. Stahl**

MNF is now in a maintenance and bug correction cycle. To provide stability, necessary changes are made first to the FUTURE version several times during each quarter. This FUTURE version is tested regularly by UCC staff members, using test decks containing about 18,000 statements which must compile and execute correctly. At least two weeks before the beginning of each quarter, the FUTURE version is frozen to allow users to test their programs before it becomes the current version for the new quarter. If serious bugs are found during this period, the current version will not be replaced. A notice will appear in SYSNOTE when the FUTURE version is available for user testing.

We are always adding to the test decks used for routine testing. The Navy ANSI FORTRAN tests are currently being converted to test all of the FORTRAN compilers. In addition, users are encouraged to submit example statement sequences to be incorporated into additional test decks. If you have any examples you think appropriate, please send them to Betty Stahl, 227 Experimental Engineering.

**MNF bugs:** The following bugs have been found in the current version of MNF and have been corrected in the FUTURE version (which will become current for Winter quarter).

- (1) The E format is now the ANSI standard .x form rather than the scientific notation x. form.
- (2) A parameter having Hollerith semi-colons as a value (e.g., 10H;::::;;) is now transmitted correctly as -0 to a subroutine.
- (3) Data statements containing implied DO-loops are now processed correctly.
- (4) The Y option on the MNF control card can be used when implied DO-loops are present in the program.
- (5) Hollerith constants spanning more than one card are now stored correctly.
- (6) An erroneous CAUTION message no longer prints out when constant subscripts for double or complex variables appear in an actual parameter list.
- (7) Bad statement numbers on a continue statement following a branch statement are now diagnosed.
- (8) An overlay statement containing timesharing line numbers or characters beyond column 72 or immediately followed by comment cards are processed correctly.
- (9) The subscript is calculated correctly for a DO index variable which has been used as a floating point value in the statement immediately preceding it.

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- (10) A 7-character file name in the program statement no longer causes a MODE 1 at compile time.
- (11) When TRACE ARITHMETIC is in effect and there is a conversion to double precision across an "=", the false trace messages no longer appear.
- (12) The correct cards and sequence numbers are listed when there is an error in the source program and source listing is turned off (L=0).
- (13) A fatal compilation error no longer occurs when the size of a common block is different in overlays at the same level.
- (14) The PAGE statement works.
- (15) A compilation message now prints when a constant parameter is changed in a subroutine.
- (16) Garbage trace information is no longer printed when a subroutine has no statement numbers.
- (17) A missing END statement now causes a fatal error and the next program unit is ignored.
- (18) Extra closing parentheses in format statements are diagnosed.
- (19) A masking expression raised to a real power is correctly diagnosed.
- (20) An IDENT which appears before the END statement does not cause a compilation time limit.

## timesharing

MIRJE NEWS - by T.D. Hodge

Most of the instructional interactive use of our computers has been moved to the 6400 MERITSS system. Since the funds for instructional computer usage (computer time, disk storage, communications equipment) have gone with the users, economic considerations have required us to reduce the number of interactive dial-up ports on the Cyber 74 from 44 to 34, with the following distribution:

<i>dial</i>	<i>rotary</i>	<i>speed</i>
376-5730 (or 376-5750)	22 ports	30 cps
376-5710 (or 376-5780)	12 ports	10 cps

Both 6-5750 and 6-5730 access the 30 cps rotary; you may use either number. 6-5780 and 6-5710 now both access the same 10 cps rotary although 6-5710 accesses it at a better point.

The statistics we gathered indicate that 34 ports will adequately serve our research users and UCC staff members for the near future. If you begin to experience busy signals frequently, even during non-prime time, please tell the O.D. on duty (call 376-5592). Remember that a busy signal, indicating that all lines on the rotary are busy, is not the same as the message "TOO MANY USERS FROM SAME PROJECT" which means that one of your colleagues has gotten on ahead of you. In the latter case, please discuss an appropriate schedule with others in your department and with your department's computer representative. If you do not know who your representative is, please call Michael Skow at 373-7745.

MERITSS NEWS - by S.P. Nachtsheim

A new version of System 2000, Version 2.40, has been installed on MERITSS (see the article elsewhere in this newsletter for further information on this version of System 2000). The commands to access this new version are:

```
ATTACH,S2000/UN=LIBRARY
S2000
```

The current version, 2.30, may still be accessed via the commands

```
ATTACH,S2000/UN=UCC6011
S2000
```

until January 5, 1976.

TERMINAL SERVICE - by D. Parkes

UCC Field Engineering people now service various teletypes and other terminals. Our staff includes technicians with extensive industrial experience in these devices and we have a comprehensive training program. We presently stock spare parts for teletypes, other hard-copy terminals, and various CRT terminals. This stock will be expanded as required to eliminate long waiting periods for parts orders.

If your department owns terminals which require service, we are willing to discuss the possibility of our servicing this equipment. For information, call Doug Parkes at 376-7067.

CRT PURCHASE - by S. Cummings

University faculty and staff members may now purchase Research, Inc. Teleray CRT terminals, models 3311, 3511, 3711, and 3931, at a quantity discount through a University contract. Call Scott Cummings (373-4877) or Abe Franck (376-7291) for prices and information about the terminals.

**spss***--by S.P. Yen*

To improve the efficiency of accessing an SPSS data or system file on tape, we recommend that the data or system file be copied to disk before doing the actual SPSS run, rather than using the file from the tape. For example, suppose a tape contains a data file or a system file in binary format; to make a run efficiently, use the following:

```

Jobcard
ACCOUNT card
LABEL,TAPE1,VSN=...
REWIND(TAPE1)
COPYBF(TAPE1,FNAME)
RETURN(TAPE1)
REWIND(FNAME)
SPSS(D=FNAME)    for data
or SPSS(G=FNAME) for SPSS system file

```

For the same reason, when you wish to generate a data or SPSS system file via the WRITE CASE or SAVE FILE of SPSS, you should generate it onto a disk file first and then copy it to tape (rather than generating it directly onto the tape).

**SPSS MULTIPLE...IF CARDS**

MULTIPLE...IF cards of the same kind act as if they are connected by "OR." For instance:

```

SELECT IF (SEX EQ "F")
SELECT IF (AGE LT 18)

```

would select all females and all subjects (male and female) with age less than 18. To select only females with age less than 18; use this:

```

SELECT IF(SEX EQ "F" AND AGE LT 18)

```

or alternatively

```

SELECT IF (AGE LT 18)
REJECT IF (SEX NE "F")

```

**system 2000***--by S.P. Nachtsheim*

A new version of System 2000 has been installed on both the Cyber 74 and the CDC 6400 systems. This version, 2.40, contains significantly new features, timing improvements, and also repairs bugs found in the old version 2.30. Some of the more significant new features are:

- (1) Increase in the number of components from 500 to 940.
- (2) DATE format option.
- (3) DATE and TIME system strings.
- (4) An INDEX command to change NONKEY to KEY.
- (5) Default LIST commands.
- (6) An AUDIT module for monitoring data base skew.
- (7) Inclusion of Report Writer in regular System 2000.
- (8) Capability to overlay Procedural Language programs.
- (9) Owncode exit capability in Report Writer.

The current version, 2.30, will remain the default version until January 5, 1976, at which time it will become the PAST version. Until January 5th, Version 2.40 may be accessed via the

```

FUTURE,S2000.
S2000.

```

control cards. After January 5th, Version 2.40 will become the default version.

*Caution:* Once a data base has been accessed through Version 2.40, it may no longer be used with Version 2.30. Users are advised to SAVE a copy of the data base under 2.30 in case problems are encountered.

*Caution:* All PLI programs must be recompiled, compiled, and loaded under the 2.40 product. Existing binaries will not function with a 2.40 data base.

All known problems existing in Version 2.40 are listed in a writeup available on the WRITEUP record entitled PTRS2K. A complete description and conversion guide is available from the UCC Reference Room. Ask for "UCC System 2000 User Aid #4, "New Features and 2.30 to 2.40 Conversion."

**summaries**

PRODUCTION USAGE SUMMARIES

These are production summaries for October 1975, contrasted with summaries for the previous October. These summaries should reflect the activity at UCC; if you find them useful, give us a call and we will continue printing them each month as a regular feature.

L. Liddiard & M. Skow

	October 1975	October 1974
<u>CDC Cyber 74</u>		
Number of jobs run	68,268	37,903
Central processor hours	101	76
Pages printed	705,531	513,533
Cards punched	462,515	352,676
Microfilm frames produced	91,233	36,049
Tapes mounted	7,887	6,706
Average file storage	587.8 million char	290.2 million char
Mean time between failures	7.5 hours	-
Percentage available during scheduled hours	96. percent	-
<u>CDC 6400</u>		
Number of jobs run	122,797	278,458
Central processor hours	77	118
Terminal hours	21,069	33,248
Number of terminal sessions	50,478	73,931
Maximum number of simultaneous users	111	172
Average file storage	163.3 million char	163.4 million char
Mean time between failures	48.9 hours	14.8 hours
Percentage available during scheduled hours	99.2 percent	98.7 percent

CYBER 74 DOWNTIME SUMMARY -- October 29 through November 24, 1975

	Monday-Friday 0800 - 1600	other	total
Total possible scheduled uptime hours	190	274	464
Total downtime hours (see schedule A)	2.4	4.2	6.6
Total uptime hours	187.6	269.8	457.4
Uptime percentage	98.7 percent	98.5 percent	98.6 percent
Average downtime per occurrence	7.3 minutes	14.6 minutes	10.7 minutes
Mean time between failures	9.9 hours	15.9 hours	12.4 hours
Subsystem failures			
SUPIO	16	4	20
TELEX	1	1	2
EXPORT	8	0	8

Schedule A: downtime hours

	number of occurrences	total hours down	average minutes downtime
1) Preventive maintenance over-runs	1	.17	10.0
2) Software related problems	11	1.97	10.7
3) Hardware related problems	5	1.48	17.8
4) Indeterminate software/hardware problems	19	1.83	5.78
5) External problems	1	.97	58.0

The 58 minutes of downtime (external problems) was due to a power failure on the 9th of November. Other than this, the Cyber 74 enjoyed a very good month.

R. Dykstra

CYBER 74 SUBMISSION SITE USAGE SUMMARY (TELEX excluded)

LOCATION	PERCENTAGE OF TOTAL		
	jobs read	pages printed	cards read
RJE	61	41	50
Lauderdale	5	21	12
ExpEng I/O	17	24	22
West Bank	16	14	16
6400	1	0	0

mnf

MNF REFERENCE MANUAL - ERRATA

The MNF Reference Manual (revision 3, November 1974) should be corrected as follows to correctly document recent changes:

PAGE 2-7

Change the 9th line to read: "be the same as an H constant (left adjusted with space fill)...."

PAGE 5-15

Delete the last paragraph and the example. The rewrite of the DATA statement has eliminated this special (non-standard) case of the DATA statement that allowed the data list to fill after an array element specification. Thus

```
DIMENSION A(10)
DATA A(6)/6.0,7.,8.,9.,10./
```

will only set A(6) = 6. and ignore the rest of the constant list.

\*\*\*\*\*NOTE THAT THIS MAY CAUSE CURRENTLY RUNNING PROGRAMS USING THIS FEATURE TO FAIL!!!\*\*\*\*\*

PAGE 5-17

Delete the top paragraph. MNF, in changing from an in-core compiler to a relocatable code producer cannot detect this error. Hopefully, the loader of the relocatable code will detect it.

PAGE 9-8 and PAGE E-4

.END. and .ERR. may be replaced with END and ERR to match IBM usage.

PAGE 9-8

Delete 9th line: READ(.ERR.=sn<sub>2</sub>,u)iolist or READ(.ERR.=sn<sub>2</sub>,u)

Attention 8th line: READ(.END.sn<sub>1</sub>u)etc. only applies to versions of MNF using Record Manager (i.e., FETCH(MNF)).

PAGE 9-22

Delete paragraph and example of IF(EOF,u)sn<sub>1</sub>,sn<sub>i</sub> statement when using FETCH,MNF.

PAGE 9-27

Delete paragraphs and example of IF(UNIT,u)sn<sub>1</sub>,...sn<sub>4</sub> when using FETCH,MNF.

PAGE 8-21 and E-5

Add the following FORMAT conversion to Chapter 8: V, =, and Zw when using FETCH,MNF. These are described in the FTN 4.4 Reference Manual in Chapter I-10.

PAGE A-2

The A character on the MNF control card is ignored and only ANSI standard formatted I/O is done when using FETCH,MNF.

PAGE A-22

Add the paragraph: "When the K parameter is used, the LGO file is rewound before compilation unless a B parameter follows the K parameter. Note also that the K option should be first on the MNF card, otherwise previous options such as L and E will be put back to their K standard initial values of L=0, E=2.

PAGE F-2 and F-3

In the following examples D is DOUBLE PRECISION.

After 5 add DFLOAT	conversion integer to double	N 1	INTEGER	DOUBLE	I D=DFLOAT(I)
After 9 add DINT	truncation	N 1	DOUBLE	DOUBLE	I D=DINT(D)
	ANINT	N 1	REAL	REAL	I A=ANINT(A)
	NINT	N 1	REAL	INTEGER	I I=NINT(A)
After 27 add DDIM	positive difference	N 2	DOUBLE	DOUBLE	I D=DDIM(D,1.0D)
	DPROD	N 2	REAL	DOUBLE	I D=DPROD(A,B)

## hybrid computer lab

### COMPUTERIZED DATA ACQUISITION SYSTEM DEVELOPMENT

--by S.J. Kahne

Final shakedown and stability tests of the Cedar Creek real-time data acquisition system are now underway. This minicomputer based system, designed and developed at the Hybrid Computer Laboratory over the last two years for the Department of Ecology and Wildlife Biology, will soon be installed at the Cedar Creek field laboratory site in Bethel, Minnesota. Using this system, biologists at Cedar Creek will be able to simultaneously monitor and record the movements and related activities of up to eleven animals.

A miniature transmitter attached to each animal supplies the raw (unprocessed) location and activity information via continuous-wave radio telemetry. Following reception of the radio signals, the raw data are preprocessed (buffered) for input to the real-time system. After input, the data are analyzed, appropriately formatted, and then stored on a magnetic tape for further analysis in a batch processing environment on our Cyber 74 computer. Except for periodic tape changes and routine maintenance, the Cedar Creek real-time data acquisition system is to be operated round-the-clock.

The design and development of the Cedar Creek system made extensive use of the HCL hybrid computer, particularly with respect to feasibility studies associated with several preliminary system designs. Further information about the Cedar Creek System may be obtained by calling HCL. In addition, HCL now provides a special consultation service to University groups interested in developing minicomputer systems for related research activities. The purpose of this service is to provide basic information about the design, development, and cost of small computer systems, as well as indicate how the facilities and services of the Hybrid Computer Laboratory may be utilized to provide a cost-effective program of actual system development. Persons interested in this service should contact Rick Houska at 373-7881.

## fortran

*(re-print of December 1974 article by C.F. Schofield, updated by L.A. Liddiard)*

Several things are involved when one decides upon which FORTRAN compiler to use, such as: reliability of the compiler, language features, ease of debugging, and so on. But one major item influencing the decision should certainly be "which compiler will be the cheapest to use?" It is wrong to assume that all compilers are about the same in this respect. A bad choice of compiler could increase your computing costs by an order of magnitude. For example, we will show that the use of FTN(OPT=0) is a poor choice for all classes of jobs and that it is typically three to four times as expensive as FTN(OPT=2) for long jobs.

We have run a large number of what appear to be typical FORTRAN jobs in an attempt to aid the user in choosing the best compiler for his programs. None of our jobs used tapes nor did very large amounts of input or output, but we have evidence to show that I/O operations (shown as "KPR" in the job dayfile) are equally efficient on all of the UCC FORTRAN compilers. In addition, the storage used both in compilation and execution is very similar on the various compilers (the remaining problems with excessive compilation core under MNF were solved by the introduction of PSR4). Thus, the major item contributing to the cost of a job is the CP time it will take, and the cost is about proportional to total CP time for most jobs.

The compilers used in our tests were RUN version 2.3, FTN version 3.0, and MNF PSR 4. Results similar to FTN 3 were obtained by FTN 4, except that OPT=2, when it works on a particular job, shows significant gains in execution speed. These conclusions were reached:

- 1) *The decision to discontinue support for the RUN compiler was justified.* Apart from other considerations (such as an unnecessary and confusing proliferation of compilers), RUN is worse than FTN(OPT=1) for jobs taking more than 5 seconds, and worse than MNF for jobs taking more than 1/2 a second (about the minimum time for a small job).
- 2) *FTN(OPT=0) should not be used.* Even with no debug statements in the programs, OPT=0 was always much slower than MNF, and was better than FTN(OPT=2) only for very short jobs (taking less than 2 seconds). Use of debug statements in FTN "turns on" (OPT=0) resulting in a dramatically poor performance if (say) TRACE ARRAYS (subscripts) is used. FTN with debug turned on will often result in a job cost more than ten times as much as the same job using MNF(T). The times for MNF(T) were between 10% and 100% more than the times for MNF. MNF(T) times were nearly always less than those of FTN(OPT=0) even though MNF(T) turns on execution time checking whereas (OPT=0) does not.  
Conclusion: USE MNF FOR DEBUGGING, NOT FTN.
- 3) *FTN(OPT= 1 or 2) should not be used for jobs taking less than 100 seconds.* The high compiler costs of FTN are not compensated by the good execution speed of OPT=2 until about 100 seconds are spent in execution. This is accentuated by the good execution code produced by MNF, particularly for "one statement" DO loops (such as used in matrix inversion routines) whereas OPT=2 performs more general optimizations.
- 4) *FTN(OPT=2) should probably be used for jobs taking more than several hundred seconds.* This will be more significant when FTN 4 is installed at UCC since CDC has been improving the optimization done under (OPT=2), and no major execution speed improvements are planned for MNF. There would appear to be no point in using FTN(OPT=1) since (for long jobs) the slight increase in compile time under OPT=2 is always compensated by the better execution speed (and for short jobs, MNF should be used). We may summarize the conclusions: FOR JOBS LONGER THAN ABOUT 400 SECONDS, USE FTN(OPT=2), FOR ALL OTHER JOBS, USE MNF. Note that OPT=2 does not work for all programs; sometimes producing incorrect execution code.

Of course there will be exceptions to these rules. No doubt jobs can be devised which run quicker under FTN(OPT=0) than under MNF, and there will be long jobs that run quicker under MNF than under FTN(OPT=2). However, our results are surprisingly consistent, using a set of jobs which were chosen at random, and it is probable that a large majority of user jobs can benefit from these suggestions.

**from our readers**

USING OVERLAYS -- *contributed by Phil Voxland, Social Sciences Research Facilities Center*

Non-trivial FORTRAN programs often come to be relatively large, either in terms of the allocation of data storage in DIMENSION or COMMON statements, or in the amount of program code generated. Since large programs are processed more slowly by Cyber systems, it is important that users request the smallest necessary amount of resources, not only to improve their own productivity, but also to improve the overall efficiency of the system.

One way to diminish the size of programs is to use overlays, which permit some segments of a program not currently executing to be stored on a disk file while another segment is running. Since not all of the program is in memory at one time, considerable savings are possible. A well written program usually consists of discrete modules which may be tested and executed independently. Such a modular program can be overlaid easily; a poorly written program usually must be extensively revised to be overlaid.

A well written program also uses core memory for data storage efficiently. One of the properties of blank COMMON, FORTRAN, and the Control Data loaders is that the actual amount of blank COMMON available to a job varies with the amount of central memory requested by the job. This is because blank COMMON is the last item to be allocated storage locations. Thus, if all the program code, subroutines, and system requirements amount to 5000g words and the user has requested 70000g, then 20000g words will be available for blank COMMON. Efficient programs take advantage of this ability of blank COMMON to expand and contract and use variably dimensioned arrays. Such programs are said to use dynamic allocation of storage in blank COMMON.

Unhappily, attempts to combine overlaying and dynamic allocation may be unsuccessful because blank COMMON is ordinarily established at the highest address of the first overlay in which it is declared, and subordinate overlays are loaded after the last location of blank COMMON. This, in effect, freezes the size of blank COMMON since it becomes sandwiched between the different levels of overlays; its ability to vary in size is lost.

However, a method does exist for preserving the integrity of data in blank COMMON locations, thereby allowing data to be passed or shared between overlays. The overlay loader is forced to place primary or secondary overlays at specific locations, and enough space is provided to insert each overlay without writing over the data storage areas.

The following example shows one method of accomplishing this. In this example, it is assumed that the subordinate overlays require no more than 5000 (decimal) words for local storage of data and program code. Notice two things:

(1) Blank COMMON is declared in the zero level overlay with an array large enough to contain the largest overlays without writing over data storage.

(2) The primary overlays are declared with the optional "C" parameter, which specifies that the overlay should be loaded at the very beginning of blank COMMON.

```

OVERLAY(MAIN,0,0)
PROGRAM SAMPLE
COMMON SPACE(5000), DATA(1)
CALL OVERLAY(4HMAIN,1,0)
CALL OVERLAY(4HMAIN,2,0)
END

OVERLAY(MAIN,1,0,C000000)
PROGRAM FIRST
COMMON SPACE(50000), DATA(1)
:
:
END

OVERLAY(MAIN,2,0,C000000)
PROGRAM LAST
COMMON SPACE(5000), DATA(1)
:
:
END

```

In this example, 5000 words are set aside to hold the code for overlays (1,0) and (2,0). The array DATA will be unaffected when the two overlays are swapped in and out, thus the integrity of the contents of DATA are preserved, and the number of words actually available in the DATA array is free to vary with the amount of central memory requested by the user. With the use of variable dimensioning, dynamic allocation of storage in blank COMMON may be used with overlays.

Ordinarily, the two overlays in this example would have been loaded at the first location after DATA(1). However, the "C000000" parameter on the overlay declarations instructs the loader to place the program code starting at zero words from the beginning of blank COMMON, namely, at SPACE(1). The array SPACE would never be used to store information since that would destroy program code.

This article has described one method which could be used to overlay a large FORTRAN program and store data in blank COMMON such that the data could be accessed by all the levels of the overlays and blank COMMON increased or decreased at execution time. Although the concepts involved are relatively simple, the current reference manuals have not adequately described these techniques.

**the suggestion box**

- Q/S *Please distribute writeups from the WRITEUP files free-of-charge, as you do some other documentation. (October 27, 1975)*
- A Our plan is to have writeups that are in the process of change on the WRITEUP file. Once a writeup has stabilized, we will print and distribute it without direct cost to the user. In response to your request, we will keep copies of all the WRITEUP records (writeups) in the Reference Room; you may request a xerox copy of a writeup by going to 235a ExpEng or by calling 373-7744. (R. Hotchkiss)
- Q/S *What happened to the "time in" and "time out" messages that were scheduled for implementation last spring? When can these be expected? Thanks for going to the standard KRONOS banner at all stations. At least we now can tell when jobs start to print (according to Appendix H of the KRONOS 2.1 level 7 manual). (August 5, 1975)*
- A The entire banner page is being revised. The banner will contain number of cards, time in, time out, etc. This is scheduled to be implemented by Winter quarter break. (N. Reddy)
- Q/S *Replace or service the 1004 terminal in the ExpEng user input room. It malfunctioned at least 30 times (all types!) within a three hour span. (November 6, 1975)*
- A We are very much aware of the high failure rate of the 1004 in 130 ExpEng. A large percentage of these failures are directly related to the very warm conditions in that room. Long before the 1004 was installed, we began planning to partition and air condition the room to provide stable service. These plans are now near completion and work on the room should be completed before our next warm weather season. Until that work is complete, we can only apologize for the high failure rate. Of the problems not related to the heat, most were traced to the modem in use on the 1004. That modem has since been replaced and the system seems a little more stable. (R. Franta)
- Q/S *I would like to have the name PRNPLOT changed to PRPLOT. This would make the name ANSI and would also be consistent with the designation on the DISPOSE card, i.e., DISPOSE(OUT=PR,...) (October 28, 1975)*
- A This is a good idea; we will consider this whenever any major change is made to PRNPLOT. (R. Hotchkiss)
- Q/S *Why is output from the Statos 31 dot plotter not delivered by the operators on a regular basis as printer output? Often, it lies in the plotter basket for an hour or more before being returned. Does UCC consider the dot plot output to be of low priority? The newsletter contest suggests that UCC considers the plotter to be a toy! M.L.M.I.S. and other state agencies are very dependent on the quality and speed of plotter output. We complain often but UCC is quite unresponsive. Is it necessary to work through other channels? Please do something! (August 19, 1975)*
- A We run plots on the Varian Statos plotter every hour on the half hour. This is done for two reasons: (1) The PDP-11 which drives the plotter is also used for other purposes, and (2) the Varian plotter requires close operator attention. We try to guarantee that plot output will be on its way back to the user within an hour of the time the job completes running.
- We do not consider the plotter to be a toy. If the published contest winners gave that impression, it was because of the dearth of entries. Why didn't you submit some serious work of your own? (J. Larson & R. Hotchkiss)
- Q/S *Things on PRTLST are not being fixed: things in MNF, that is. (November 1, 1975)*
- A Things are fixed on the FUTURE version; the current version is only changed between quarters. See the article on page 5 of this newsletter. (J. Mundstock)
- Q/S *Why do XMIT files have such a low priority on the output queues? I waited all day for an 8 page listing. (November 6, 1975)*
- A XMIT files used to have a low priority of 200B. The system has been modified to assign priorities to XMIT and DISPOSEd files on the same basis. Longer files get lower priorities and shorter ones higher priorities. The priority is computed thus:  $priority = 7000B - (n/10B)$  where "n" is the length of the file in sectors. (N. Reddy)
- Q/S *Is there any correlation between down time on the Cyber 74 and Fridays? If so, could the statistics on this point be shown in the next newsletter? (August 19, 1975)*
- A The Cyber 74 is not particularly interested in whether the day is Friday or any other day of the week. Contrary to popular belief, the Cyber 74 is not human and does not get a day off. We have, however, gathered the statistics you requested and will print them here. (R. Dykstra & L. Liddiard)

(continued on page 13)

(continued from page 12)

DATES	NUMBER OF RECOVERIES							WEEKLY TOTALS
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
Aug 1 - 3						0	0	2
Aug 4 - 10	9	9	1	1	1	0	0	21
Aug 11 - 17	1	7	0	2	1	0	0	11
Aug 18 - 24	1	0	1	2	7	0	0	11
Aug 25 - 31	1	0	0	1	8		0	10
Sep 1 - 7	1	4	1	0	4		1	11
Sep 8 - 14	0	1	0	1	5	1	0	8
Sep 15 - 21	7	2	0	0	2	0	0	11
Sep 22 - 28	2	3	1	3	6	0	1	16
Sep 29 - Oct 5	12	9	4	6	7	1	2	41
Oct 6 - 12	2	1	2	0	1	0	0	6
Oct 13 - 19	0	5	2	3	0	0	5	15
Oct 20 - 26	0	1	0	1	1	0	0	3
Oct 27 - Nov 2	0	1	0	0	4	0	0	5
Nov 3 - 9	10	5	1	2	0	0	1	19
Nov 10 - 16	0	0	2	0	1	0	0	3
DAILY TOTALS	46	48	15	22	50	2	10	

The large number of failures at the end of September was drastically reduced when the Control Data Customer Engineers retimed the channels, cables, and PPU's on the Cyber 74 on October 5, 1975. A power failure on Sunday, November 2, 1975 caused several failures in the PDP-11/20 front end (SUP10) and was also responsible for the unstable conditions during the following two days.

## short courses

The following short courses will be offered Winter quarter. No registration is required for the courses and no credit is given. When a reference text is listed for the course, you may find the text in the Engineering Bookstore in the section labeled "reference."

### INTRODUCTION TO THE COMPUTER CENTER (2 hours)

A general introduction to the computer center; equipment, terminal locations, account numbers, job submissions, keypunch sites, tape purchase, necessary forms; how to use the center.

TUESDAY, January 6: 2:15-4:15 PM in 30 Arch

### <sup>4</sup>SYSTEM 2000 (12 hours)

How to use System 2000, a generalized data base management system; techniques for defining a data base, retrieving, and updating.

MWF, January 12 - 23: 2:15-4:15 PM in 162 ChemE

### <sup>1</sup>RECORD MANAGER (12 hours)

An introduction to Record Manager, the input/output interface for the level 4 versions of FTN, COBOL, SORT/MERGE.

TTh, January 13-29: 3:15-5:15 in 20 VincentH

### <sup>5</sup>ADVANCED COMPASS (12 hours)

Advanced features of the CDC 6000/Cyber series assembly language.

MWF, January 19-30: 2:15-4:15 PM in 158 ChemE

### <sup>2</sup>COBOL (12 hours)

An introduction to the COBOL language; an English-like language used primarily for business data processing.

MWF, January 26-February 6: 2:15-4:15 PM in 2 JonesH

### <sup>6</sup>SORT/MERGE (6 hours)

Introduction to a processor used in the sorting and combining of data records.

MWF, February 9-13: 2:15-4:15 PM in 162 ChemE

### <sup>3</sup>ADVANCED SYSTEM 2000 (8 hours)

The advanced features of the System 2000 data base management system; Programming Language Interface.

TTh, February 10-19: 3:15-5:15 PM in 201 FolwellH

### <sup>7</sup>SPSS

Introduction to the SPSS statistical package of programs.

W & F, February 18 & 20: 2:15-4:15 PM in 2 JonesH

### Suggested references:

<sup>1</sup>Record Manager User's Guide (CDC publication # 60359600)

<sup>2</sup>COBOL Version 4 Reference Manual (CDC publication # 60384100)

<sup>3</sup>System 2000 Reference Manual (MRI) and System 2000 User Aids (U Computer Center)

<sup>4</sup>System 2000 Reference Manual (MRI)

<sup>5</sup>COMPASS Version 3 Reference Manual (CDC publication # 60360900)

<sup>6</sup>SORT/MERGE Version 4 Reference Manual (CDC publication # 60343900)

<sup>7</sup>SPSS: Statistical Package for the Social Sciences (Nie, et al.) & SPSS Version 6.0 (U Computer Center)

Reference Manuals

- CDC ALGOL Version 3 (60322900D)
- CDC APL\*CYBER (19980400C)
- CDC BASIC 2.1 (19980300C)
- BMD Computer Programs Reference Manual (1973)
- CDC COBOL Version 4 (60384100E)
- CDC COMPASS Version 3 (60360900E)
- CDC FTN Version 4 (60305600G)
- CDC FTN DEBUG User's Guide (60329400B)
- IMSL Library Catalog (Library 3, Edition 4)
- CDC KRONOS 2.1, Volume 1 (60407000D)
- MNF Reference Manual (1974)
- CDC MODIFY (60281700F)
- OMNITAB II Programmer's Reference
- CDC PERT/TIME (60133600D)
- CDC Record Manager User's Guide (60359600 )
- CDC SIMSCRIPT (60358500E)
- CDC SIMULA Version 1 (60234800E)
- CDC SORT/MERGE Version 4 (60343900H)
- SPSS Edition 2 (1975)
- SPSS 6000/Version 6.0
- System 2000 Reference Manual
- +System 2000 User's Guide
- CDC Text Editor (EDIT) (60408200C)
- CDC Timesharing User's RM (60407600D)
- ++UMST Reference Manual
- CDC UPDATE (60342500F)
- CDC 8-bit Subroutines RM (60359400C)
- new manual or revision
- +being revised
- ++out of print -- will not be reprinted

Reference copies of these manuals can be found in the user rooms and at the RJE terminal sites. These manuals are either stocked at or may be ordered from the Engineering Bookstore. For prices, see the WRITEUP record, DOCLIST.

UGG Free publications

- Beginner's Guide to Timesharing
- Compleat Guide for the Neophyte
- Index to Cyber 74 User Software
- Instructor's Guide to Batch
- Pocket Guide to UCC Facilities
- System 2000 User Aids (Numbers 1,2,3,4)
- Student Guide to Batch
- MINN Subprogram writeups (see "INDEX" for complete list)
- ISIS User's Manual
- XEDIT 2.0
- Univac 1004 Operating Instructions
- new publications

Copies of these free publications can be obtained from 140 ExpEng, 235a ExpEng, or you may call 373-7744.

Other useful references

- The Little LISPer (Friedman)
- LISP 1.5 Programmer's Manual (McCarthy, et al.)
- PASCAL User Manual and Report (Jensen & Wirth)
- The SNOBOL4 Programming Language (Griswold, et al.)
- A SNOBOL4 Primer (Griswold & Griswold)
- SIMULA: Begin (Bertwistle, et al.)
- MIX (Knuth)
- Introduction to ALGOL Programming
- SPSS Primer

Copies of these may be found in the University libraries and bookstores -- you may find them useful.

WRITEUP records

- ABCLIST Extended CATLIST utility (1 page)
- AMEND Unit record manager (4 pages)
- ARCHIVE Latest listing of archived files.
- BLANK Initial label writing (2 pages).
- CALLPRG Library search extension (6 pages).
- CATALOG Catalog file (2 pages).
- CATLIST Catalog a permanent file (3 pages).
- CATLSYS Extended CATLIST utility (1 page).
- CCINDEX Index to UCC documentation (6 pages).
- CIMSPLI CIMS PL/I user guide (34 pages).
- CHANGER Extended CHANGE utility (1 page).
- CONSULT List of consulting sites & hours (1 page).
- CONTROL Control card processor (9 pages).
- COPYU Copy unit record (3 pages).
- COST Calculate job cost (1 page).
- DISPOSE DISPOSE control card (9 pages).
- DMPCOR Central memory dump routine (1 page).
- DMPECS Dump extended core storage (1 page).
- DOCLIST List of UCC documentation (3 pages).
- DRESS Prepare source file for MODIFY/UPDATE (13 pages).
- DUMPPF Permanent file dump/load utility (7 pages).
- ERRMESS Dayfile error messages (15 pages).
- EXAMINE Magnetic tape content determinator (4 pages).
- FILES Local file manipulator (4 pages).
- GETSAVE Permanent file transfer utility (1 page).
- ISIS Statistics instructional system (45 pages).
- LIBEDIT Library editing program (3 pages).
- MF501 Output file to microfilm (3 pages).
- MODIFY Source library editing program (11 pages)
- NINETK Guide to 9-track tape use (4 pages).
- NOTE Timesharing system notes (cumulative).
- PACKMS Pack random file (1 page).
- PASCAL PASCAL information file (26 pages).
- PFGUIDE Permanent file user guide (60 pages).
- PFILES Permanent file request processor (7 pages).
- PREVIEW Preview display dump (1 page).
- PURGER Extended purge utility (1 page).
- PTRFORT FORTRAN program trouble reports (cumulative).
- PTRKR KRONOS PTR's (cumulative).
- PTRMISC Miscellaneous software PTR's (cumulative).
- PTRS2K System 2000 PTR's (cumulative).
- REBLOCK Converts S and L tapes to internal format (6 pages)
- RJDSTAT SUP10 statistics (daily).
- RJECOM Remote job entry commands (4 pages)
- RJMSTAT SUP10 statistics (cumulative).
- SITEBIN Shelf locations for output distribution (2 pages)
- SNOINFO CAL 6000 SNOBOL (24 pages)
- SNPSHOT Write/restore registers and dump memory (5 pages).
- STRATEN Straighten COMPASS source code (4 pages).
- SYSMODS Latest system changes (cumulative).
- SYSNOTE System notes (cumulative).
- TAPEUSE Tape users guide (70 pages).
- TDUMP File dump (1 page).
- TESTCR Card reader testing routine (1 page).
- TESTLP Printer and line test program (2 pages).
- TIDY Tidies FORTRAN source program (7 pages)
- TSTATS Tape mounting statistics (daily).
- TYPESET Text reform program (12 pages)
- UNPAGE Edit carriage control characters (6 pages).
- XEDIT Extended text editor (14 pages).
- 1004SET Univac 1004 character set conversion (4 pages).
- new writeup or recent revision.

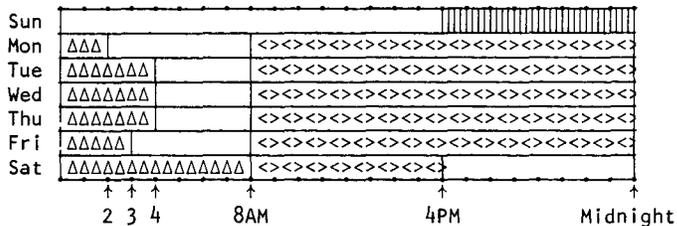
Get copies of these writeups by using a deck similar to this:

```
Jobcard with T1 and CM1000
ACCOUNT card
WRITEUP,name.
(6-7-8-9 card)
```

where "name" is one of the names listed. MIRJE users should enter the command:

```
X,WRITEUP,name
```

**CYBER 74 OPERATING HOURS\***



▲▲▲▲▲ Lauderdale only  
 ||||| Lauderdale, ExpEng  
 <><>< Lauderdale, ExpEng, West Bank

\* These are machine hours. UCC operators stop accepting jobs about 15 minutes before operations end to enable the queues to clear on time.

SUPIO (RJE medium speed terminals) comes up 1/2 hour after operation begins and closes down 1/2 hour before operation ends.

TELEX (MIRJE terminals): the Cyber 74 operator will issue a 10 minute warning before TELEX is dropped.

**UOFM-TWIN CITIES RJE SITES**

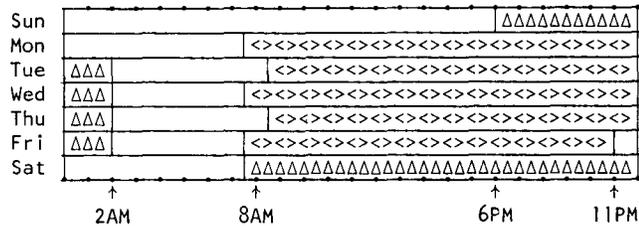
site	ID	supervisor(s)
<i>East Bank</i>		
ElectE 38	4V	J. Guentzel 373-5404 M. Cook 373-3985
Elth N640	4W	J. DeWitt 376-7377 D. Anderson 373-5456
ExpEng 130	4B	Shift supervisor 373-4596
KoltH S191	4Z	D. Hickerson
MasonH M39	4C	L. Croatt 373-0336
MinMet 321	41	C. Swanson 373-5475 V. Bongiorno 373-2309
Physics 69	44	R. Scarlett 373-0243 D. Olson 376-7175 R. Hendrickson 373-3361
SpaSci 134	43	R. Weinberg 373-7881
TerrH W106	41	R. Baker 373-3567
<i>West Bank</i>		
SocSci 167	4X	J. Shea 373-3608
<i>St. Paul</i>		
BioSci 257	47	R. Comstock 373-0979
ClaOff 125G	48	C. Bingham 373-0988 S. Weisberg 373-1068 Consultant 373-0829 Consultant 376-3846
CofH 415	21	D. Nelson 376-7003 T. Ehlen 376-7003
NorH 24	40	J. Colten 373-0990
<i>Lauderdale</i>		
User's Room	49	Shift Coordinator 373-4940

**CONSULTING SITES**

**General consulting:**  
 User's Room (Lauderdale)  
 ExpEng 140 (East Bank)  
 BlegH 25 (West Bank)

**Statistics packages consulting:**  
 ExpEng 140 (East Bank)  
 SocSci 167 (West Bank)  
 ClaOff 125 (St. Paul)

**CDC 6400 (MERITSS) OPERATING HOURS**



<><>< up, attended  
 ▲▲▲▲▲ up, not attended

**UOFM-TWIN CITIES INSTRUCTIONAL TIMESHARING LABS**

site	supervisor
<i>East Bank</i>	
CentH Computer Room	R. Richgarn 373-2289
Elth 121 & 124	D. Anderson 373-5456
ExpEng 140	T. Hodge 373-4599
HealthSciA 1-752	L. Ellis 373-0331
LindH 136C	D. Boyd 373-7581
MechE 308	A. Erdman 373-2977
TerrH Computer Room	R. Baker 373-3567
Vincent H 4	W. Stenberg 373-2586
WaLib 204	R. Estelle 373-5195
<i>West Bank</i>	
MdbhH Computer Room	P. Johnston 376-6561
SocSci 167	J. Shea 373-3608
<i>St. Paul</i>	
ClaOff 125	S. Weisberg 373-1068

**TELEPHONE NUMBERS**

373-4548 Account Clerk  
 373-4360 Administrative Offices  
 376-3963 Educational Services (R. Franta)  
 373-4596 ExpEng I/O Station  
 376-7067 Field Engineering  
 373-2521 Keypunch Supervisor  
 373-4940 Lauderdale Shift Coordinator  
 373-4995 Microfilm Operator  
 373-5907 Program Librarian (M. Frisch)  
 373-4994 Recorded message: ExpEng I/O jobs  
 373-1798 Recorded message: MERITSS status  
 373-7744 Reference Library  
 376-3963 RJE Services (R. Franta)  
 373-9751 Secretary - Hybrid Lab  
 373-4912 Secretary - Lauderdale  
 373-4995 Tape Librarian  
 376-5592 Telephone consulting: Cyber 74  
 373-5753 Telephone consulting: MERITSS  
 373-4599 User Services (T. Hodge)  
 373-4921 User's Room (Lauderdale)  
 373-3608 West Bank Computer Center

**KEYPUNCH SITES**

East Bank	West Bank	St. Paul	Lauderdale
ElectE 38(1)	BlegH 86(11)	ClaOff 125(1)	User's Room
Elth N640(2)	BlegH 90(1)	CofH 415(1)	(5)*†
ExpEng 130(2)	SocSci 167(2)*	NorH 24(2)	
ExpEng 131(1)			
ExpEng 208(14)*†			
KoltH S191(1)			
MinMet 321(2)			
Physics 69(1)			
TerrH W106(1)			

†includes 029 keypunch  
 \*includes interpreting card punch

**brief notes**

PROGRAM TROUBLE REPORTS --- The latest information on currently documented software bugs has been available by using WRITEUP,PTR. or WRITEUP,PTRLIST. To make it easier for user to get information on specific software, this has been divided into four individual lists:

PTRKR      Operating system bugs  
 PTRFORT    FORTRAN compilers and libraries bugs  
 PTRS2K     System 2000 bugs  
 PTRMISC    Any software not included above.

To get a complete current listing of all bugs, use the control card:  
 WRITEUP,PTRKR,PTRFORT,PTRS2K,PTRMISC.

We would like to again urge anyone who finds a software bug to fill out a PTR report (orange card available from a consultant or from the I/O stations) and send it to Betty Stahl, 227 Experimental Engineering.

MICROFICHE READER DEMONSTRATION --- UCC is considering asking local microfiche reader sales representatives to give a demonstration of their equipment to potential University users. If you are contemplating the purchase of such a reader and would be interested in attending such a demonstration, please call Mike Frisch at 373-5907.

THEA HODGE WILL BE ON LEAVE WINTER QUARTER --- Thea Hodge will be on quarter leave from January through March, 1976. Questions or problems which you normally direct to Mrs. Hodge may be brought to the following people during this period:

MIRJE : talk to or see Michael Skow, 373-7745.

RJE network: see Richard Franta, 376-3963

Documentation: talk to Amy Koepke, 373-7744

Consulting supervision: Meyer Kramer (376-5262) and Richard Franta (376-3963)

PTR's and MNF compiler testing coordination: Betty Stahl (376-7290)

Richard Hotchkiss will, of course, keep an eye on everything. Mrs. Hodge will be enjoying the rain and fog at Berkeley and will be back in April.

## RETURN TO:

UNIVERSITY COMPUTER CENTER  
 227 EXPERIMENTAL ENGINEERING  
 UNIVERSITY OF MINNESOTA  
 MINNEAPOLIS, MN 55455

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 IF YOU WISH TO HAVE YOUR NAME  
 REMOVED FROM THIS MAILING LIST,  
 WRITE TO:

EDITOR  
 UCC NEWSLETTER  
 AT THE ABOVE ADDRESS, OR CALL  
 373-7744.  
 -----

UNIVERSITY ARCHIVES  
 ROOM 11      WA LIB  
 MINNEAPOLIS CAMPUS