VMS CRAY Station Now Available

It is now possible to submit jobs to the CRAY-1 from UCC's VAX/VMS system.

A CRAY-1 running the COS operating system requires another computer to act as a "front-end" system. You prepare jobs and data on the front-end system, using whatever tools that system provides, then submit the files as a batch job to the CRAY for processing. Output is returned to the front-end system for viewing. The software that runs on the front-end machine to provide this communication is called a "station."

Since UCC first acquired our CRAY-1 supercomputer in October 1981, the CYBER CA system has been the front-end to the CRAY, running Cray Research Incorporated's (CRI) CYBER NOS station software product. In December 1982, CRI announced a Digital Equipment Corporation VAX/VMS station software product.

UCC has purchased and installed this VMS station on its VAX-11/780 system for two reasons:

—because some users prefer a VMS to a NOS environment for job preparation
—because it provided a way to connect the machine with the most graphics processing "horsepower," but bereft of output devices (the CRAY), to the machine weakest in processing power, but connected to graphics output devices (the VAX).

In particular, we wanted to combine the possibilities of DISSPLA and MNCORE that run on the CRAY with the new DICOMED D48C high-resolution color film recorder currently in preparation on the VAX.

Functions

The VMS station provides these functions:

—It submits jobs to the CRAY-1, and returns output as a file under the user's VMS directory.
—It transfers files between the machines using the COS ACQUIRE and DISPOSE commands. The source of an ACQUIREd file can be disk or tape; the destination of a DISPOSEd file can be disk, tape, printer, or the VMS batch input queue.
—At your option, it sends bulletins to the terminal chronicling the job's progress: staged to CRAY, ACQUIREs and DISPOSEs in progress, and job completion (CINFORM command).
—It lets you see if the CRAY is up and what jobs are waiting for transmission to the CRAY, and allows you to cancel a job before it is sent (CQUEUE and CREMOVE commands).
—It lets you see a CRAY status display showing your job running on the CRAY, its status, quotas, and resources used to date (CSTATUS command).
—It lets you query the last CRAY log file message the job has produced while the job is still running (CJOB command).
—It records VMS messages in the COS job logfile so that you can determine why an ACQUIRE or DISPOSE failed.
—It supports file transmission in character blocked, binary blocked, and transparent modes.

User Interface

The CRAY station follows the idiom of the VMS system fairly closely. It is implemented as a series of commands entered in response to the system's $ prompt. The commands look like VMS commands: they have parameters and /qualifiers; they follow much the same syntax and interpretation rules (for example, wild cards are handled correctly); and they prompt for required parameters not present on the command line. You can always recognize a station command, though, because it always begins with the letter C. For example, the station command to submit a job to the CRAY is CSUBMIT. The command to remove a job from the input queue is CREMOVE. Station commands can be used in procedure files and batch jobs. Station error messages look like VMS error messages.

Alternately, the station provides something called "CRAY context." After you enter the command CRAY, you will be in a facility—as MAIL or PHONE are facilities—where you can enter station commands without the C preface. None of the job status functions works at the present time in CRAY context, however.

The station has its own help facility. Within CRAY context you can ask for general help. Outside of CRAY context, type

HELP station-command

for command and parameter descriptions. At any point, inside or out of CRAY context, you can respond to any prompt for information by typing HELP, and the choices available at that point will be explained.

The sample job in the box accompanying this article will help you get the flavor of using the

CRAY through the VMS station.

VAX Facility Improvements

We plan to have doubled the VAX's disk space capacity at the beginning of June, both to support new station users and to relieve the disk space shortage that has troubled that system in the last few months.

We are also working to establish Telenet access to the VAX system for remote users.

VMS and CYBER Stations

Differences

The VMS and CYBER stations perform much the same functions. There are, however, some significant differences:

—You have to be more security-conscious on the VAX than on the CYBER. You must take a few extra steps to ensure that job files containing user numbers and passwords are secure.
—There are detail differences. For example, a jobname is required on the COS JOB card, not optional as on the CYBER.
—The VMS station uses the parameters on the ACQUIRE and DISPOSE statements differently, most particularly the TEXT field. Whereas on the CYBER the TEXT field contains a NOS job stream, on the VAX it holds one of four station-defined "staging commands" that describe the destination or origin of the file in question, and particulars about its characteristics.

Documentation described later in this article spells out these differences in detail.

Communication

Both the VAX/VMS and CYBER CA systems are now front-ends to the CRAY. By and large, they function independently. An ACQUIRE in a CYBER origin CRAY job does not get confused about which machine it should look for the file on; it gets the file from the CYBER. The VMS station CJOB command cannot retrieve information about CYBER-origin jobs. (Although the VMS station CSTATUS command does show CYBER-origin jobs.)

Can the two machines communicate through the CRAY? Yes, in a limited fashion using the ACQUIRE and DISPOSE commands, and the MF (mainframe identifier) parameter. The primary restriction is that any job that attempts to pass files between machines must have been submitted from the VMS machine (MF = VA). CYBER-origin (MF = CA) jobs cannot exchange files with the VMS machine.

Which Station?

The most significant advantage of the VMS station is its job monitoring facilities: you can see what is happening to your job. Beyond that, the CYBER and VMS stations are functionally equivalent.

Which station you decide to use will depend upon three interrelated issues: your primary application, whether you prefer the VMS or NOS environment, and cost.

If your primary application is graphics with MNCORE or DISSPLA, most of our graphics output devices are connected to the VAX and are most easily accessed from that machine.

System preference is a largely subjective consideration. The VMS editor, EDT, does support screen editing on VT100 or VT52-compatible terminals; the CYBER has no screen editor. VMS is a virtual memory system; the CYBER is not. For most other functions, for example a FORTRAN-77 compiler for preliminary debugging, there are approximately equivalent facilities on both systems.

Comparing costs between the CYBER and the VAX is difficult: which system is less expensive in the long run depends upon what you are trying to do. In general VAX CPU time is more expensive than CYBER, connect time and I/O roughly equal, and disk space less expensive on the VAX. The VAX is better at character processing, but its EDT editor operating in screen mode is expensive to use.

One area that CRAY users must be concerned with is the cost of transferring files between the front-end system and the CRAY. In this area, the VAX has an advantage over the CYBER because both

This example shows a person submitting a CRAY job from a VMS terminal session. Three input files are involved: deck1.cos contains the COS control statement deck, program.cft contains a CFT source program, and newdata.dat contains the data for the CFT program.

1. The user logs-in to VMS and checks to see if the station is working (CQUEUE).
2. She then TYPEs out the COS JCL in deck1.cos to make sure it's correct. There is a jobname given explictly on the COS JOB card. /ACCOUNT takes the place of the COS ACCOUNT card allowing interactive CRAY password entry. The next three statements remove any permanent dataset named DATA on the CRAY that might have been left over from previous runs. The ACQUIRE gets the newdata.dat file from the VAX using the VMS station $DISK staging command. ASSIGN makes this ACQUIREd file the FORTRAN unit 5 input file. CFT and LDR compile and execute.
3. The last preparatory step is to turn on the station information broadcast messages with CINFORM.
4. She submits the job. Deck1.cos and program.cft are appended with COS end-of-file marks.
5. /ACCOUNT (a UCC-added feature) asks for her CRAY password.
6. She examines the station input queue with CQUEUE.
7. Now the broadcast messages enabled with CINFORM send bulletins saying that job TRY5 has been sent to the CRAY; next that newdata.dat has been successfully ACQUIREd.
8. She looks at activity on the CRAY with CSTATUS. TRY5 is executing.
9. She sees what step the job is likely in with CJOB.
10. INFORM messages tell her the job is finished. The output is in try5.cpr.
11. She enters the editor to examine her output.

1. Username: **MYUSERNAME**
   Password:
   > Welcome to VAX/VMS version V3.1
   > University of Minnesota — 12 May 83, 3:02 P.M.

   $ **cqueue**
   VAX CRAY STATION STAGING QUEUE 12-MAY-1983 15:03:20.82
   * Queue Status : logged on and staging
                   Acquires   Jobs   Saves   Inputs
   %CX-S-NONE_QED, No staging queue entry found to display

2. $ **type deck1.cos**
   JOB,JN = TRY5.
   /ACCOUNT
   ACCESS,DN = DATA,ID = OBSCURE,UQ,NA.
   DELETE,DN = DATA,NA.
   RELEASE,DN = DATA.
   ACQUIRE,DN = DATA,ID = OBSCURE,UQ,TEXT = '$DISK NEWDATA.DAT'.
   ASSIGN,DN = DATA,A = FT05.
   CFT.
   LDR.

3. $ **cinform**
   %CX-S-INF_ON, Information broadcasts turned on

4. $ **csubmit deck1.cos,program.cft**

5. Cray password (ABC1234) :
   %CX-S-SUB_OK, Job: TRY5 queued for submission

6. $ **cqueue**
   VAX CRAY STATION STAGING QUEUE 12-MAY-1983 15:04:03.81
   * Queue Status : logged on and staging
                   Acquires   Jobs   Saves   Inputs

Req type	Queue ident.	User-name	Job-name
LJOB	3480011	LBM	TRY5

   %CX-S-QED_OK, QUEUE display complete

7. $
   VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion
   VAX TO CRAY: FILE = TRY5.SUB;1
   VAX TO CRAY: 10303 BYTES TRANSFERRED
   $
   VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion
   VAX TO CRAY: FILE = USERA:[MYUSER]NEWDATA.DAT;1
   VAX TO CRAY: 15884 BYTES TRANSFERRED

8. $ **cstatus**
   CRAY STATUS   12-MAY-1983 13:05:11

jsq	dc	dataset	class	status	pri	time used	field limit	length	id	tid
940	IN	ABCDBND	NORMAL	s-mem	7.5	116	2000	3371	CA	ABCDBND
947	IN	BCDECHD	NORMAL	r-out	7.5	115	600	1030	CA	BCDECHD
956	IN	TRY5	NORMAL	EXCTNG	13.9	3	8	145	VA	11,10

9. $ **cjob try5**
   COS JOB TRY5
   LD000 - BEGIN EXECUTION

10. $
    CRAY TO VAX: %RMS-S-NORMAL, normal successful completion
    CRAY TO VAX: FILE = USERA:[MYUSER]TRY5.CPR;
    CRAY TO VAX: 10668 BYTES TRANSFERRED

11. $ **edit try5.cpr**
    .
    .
    .

it and the CRAY are ASCII machines. While the CYBER must translate its 6-bit display code into 8-bit ASCII, the VAX needs to perform only minimal reformatting.

We ran a series of tests comparing file transfer costs for both transparent (DF = TR) and character blocked (DF = CB) files. For transparent data, the CYBER and VAX costs are approximately equal. For character blocked data, the VAX cost was from one-third to one-fifth that of the CYBER cost.

Documentation

The Cray Research, Inc. publication *DEC VAX/VMS Station Reference Manual* (SR-0020) explains how to use the VMS station. The manual is for sale at the UCC Computer Store, 211 Experimental Engineering for $10.80 (ask for item number 370). A copy is available for inspection in the UCC Reference Room, 140 Experimental Engineering.

The *Station Reference Manual* is also available as an on-line writeup. Cray Research, Inc. has granted our users permission to retrieve copies for their personal reference use. It is available on the VAX in the file

usera:[writeups]crayst1.lis

You can TYPE this file at your terminal (about 100 pages) or use the following command to get a line printer copy:

print /nofeed usera:[writeups]crayst1.lis /name = site.bin

It is also available on the CYBER CA/CB systems as:

writeup(crayuse = crayst1)

We have written a *Supplement* to the VMS *Station Reference Manual* that describes the details of working with the station at UCC, discusses security considerations, corrects a few errors in the manual, and is the only printed source of information on the station's job status monitoring commands. (The status commands were added to the station after the manual was published.)

The *Supplement* is already included in the on-line version of the *Station Manual*. If you buy a *Station Manual* at the Computer Store, you will get it as a separate packet for free. If you have a copy of the *Station Manual* from some other source, you should retrieve just the supplement on-line as VAX file

usera:[writeups]crayst2.lis

or CYBER

writeup(crayuse = crayst2)

We are working on additional on-line CRAY information for the VAX.

To Get Started

Call the UCC HELP-line at (612) 376-5592 for more information about the VMS CRAY station, or to discuss special VAX communications needs you may have.

To have an account opened on the VAX or CRAY, call the UCC Accounts Manager at 373-4548. (CRAY accounts can be supported with UCC grant funds, while VAX accounts cannot. Thus you may need two accounts to use the VAX station.) (L. B. Merims)

UCC Grants for 1983-84

The Fiscal Policy Subcommittee of the University Computer Services Advisory Committee has made the following recommendations with regard to graduate student and faculty research grants for the 1983-84 fiscal year. The grant money comes from state instructional funds for graduate student (G) accounts and from commercial user surcharges for faculty research (R) accounts.

Supply costs, such as those for disk storage, printer and plotter output, and connect time, would be 100% user funded for both graduate student and faculty research accounts. Processor costs (SRU or SBU) would be funded according to the steps outlined in Table 1.

This plan incorporates Vice President Keller's desire that all users pay an initial fee for use and the concern expressed by the University's Computer Centers that their out-of-pocket costs be fully recovered from non-Computing Center funds. Other proposals currently before the Legislature seek additional funding for both

Table 1. Graduate student and faculty research use: grant percentages and costs and user costs for 03 charges.

	Usage	Grant Step %	Cumulative Grant	Cumulative User Cost
G-accounts	$ 25	0	$ 0	$ 25
	1,000	75	731	269
	5,000	5	931	4,069
	10,000	2	1,031	8,969
R-accounts	$ 100	0	$ 0	$ 100
	1,000	75	675	325
	5,000	5	875	4,125
	10,000	2	975	9,025

graduate student and faculty computing research. If these proposals are enacted, the Fiscal Policy Subcommittee recommends that the supply costs (05 and 09 charges) be funded in the same way as processor costs (03 charges). The recommendation for the funding of processor costs is expected to pass at the meeting of the full Advisory Committee in late May. The Committee will decide at that time whether the

base user fee required in a faculty account will stay at $100 or be reduced to $50.

The State Legislature will have ended its current session by the end of May; we expect the processor cost grants as described in Table 1 to have been approved and we hope to have additional information about supply cost grants that we will pass on to you in the July UCC Newsletter.

(Lawrence A. Liddiard)

The GREMLIN in the Classroom: Computer-Aided Instruction in Linguistics

One way to achieve scientific understanding of something is to model it, a technique linguists use to understand the workings of language. Learning how to build such models, technically known as generative grammars, is part of every linguist's education.

In the usual scenario, a student is given a collection of data from some language consisting of a set of well-formed ("grammatical") sentences accompanied by another set of word sequences which, while they differ only slightly from the grammatical examples, are ungrammatical. The problem is to write what amounts to an algorithm for constructing exclusively grammatical sentences, using a precise formulaic notation to express the required information.

One of the biggest stumbling blocks the novice encounters is the degree of precision required, and one common way to explain the task is to compare the grammar to a computer program—a tactic that succeeds better in some cases than in others. It seems natural, therefore, to treat these grammars as computer programs not just in principle but in fact.

With this goal in mind, a team from the Department of Linguistics, with support from the University's Educational Development Program and a matching grant from the National Science Foundation, undertook the development of a computerized system to test the compatibility of a generative grammar with the linguistic data for which it should

account. This system, called GREMLIN, is now operational and has completed its shakedown with a group of students from Linguistics 5201 (Introduction to Syntax).

As far as I know, nothing like this has ever been tried before. While other grammar-testing programs do exist, they are intended for research by practicing professionals (and are rarely used even in that context); to have such a program available for beginning students is evidently unprecedented.

The input to GREMLIN consists of the data to be accounted for and the student's grammar. The structure types generated by the grammar are identified, and the types found in the data are then matched against them. Errors are

reported whenever a student's grammar either fails to generate a grammatical sentence or succeeds in generating an ungrammatical one.

The grammars themselves are written in a format closely related to EBNF (Extended Backus-Naur Form) which, under the name "phrase structure grammar," has long been used by linguists. Our ultimate intent is to extend the program to accommodate trans-formational grammars, though this is an enormously subtle and complex task.

The beauty of this particular application of computer-aided in-struction (CAI) lies in the fact that it grows logically out of the in-trinsic nature of the subject mat-ter. It is not, as some types of CAI have been accused of being, mere technological window-dress-ing. And a spinoff benefit is that it provides a degree of computer literacy and hands-on experience to a population that, in the pres-ent scheme of things, might not acquire it any other way.

(*Michael B. Kac,*
Department of Linguistics)

SYSTEM NEWS/NOTES

Microcosm

MICROS AND MONEY

When it comes to microcomputer hardware and software, money is not the only cost.

The Microcomputer Systems Group at UCC is often asked about the price of our micro hardware and software. We have gone through the normal University bidding process to establish contracts with vendors for the supply of a variety of hardware and software at a given price. By going through this process, we ensure that the product in question can be integrated with existing University equipment, that it is servicable, and that it is the best product available from a reputable vendor.

Occasionally we hear comments like "I can buy that cheaper from XYZ Company" or "I saw that software advertised for $50 less." Such statements may be true, since we do not always have the cheapest price in town. But although many good vendors and some genuine bargains do exist, you should remember the classic warning *caveat emptor*—let the buyer beware—when you check out such deals.

Here are some problems you might encounter when you purchase hardware or software.

With hardware, you may be unaware of details that can be important. Ask yourself the following questions when you consider a purchase:

- Do you need special cables to use the new component?
- Where can you get the needed cable?
- Who will service the new augmented system?
- Is service available locally?
- Will the new part really work with your equipment? Have you seen it work?

- Will your present warranty still be valid?
- Is there a warranty on the new component(s)?
- Is the component new or used?
- Is the component equivalent to the higher priced version to which you're comparing it, or is it just "functionally equivalent"?
- Can the vendor deliver the component in a reasonable length of time? (Beware!)
- Did the vendor say, "Don't worry . . ."?
- If you need supplies (paper, disks, ribbons, etc.), are they available?
- Is the price of supplies reasonable?
- Is there more than one local source for those supplies?
- What are the power requirements of the new component?

Most of these questions exhibit simple common sense, but trouble could be brewing if you can't answer them to your satisfaction. These are only some of the more common problems that our bids try to eliminate. Though we try our best, we still encounter problems from time to time, so we can almost guarantee that you'll have a few if you choose the lowest-cost option for equipment purchase.

With software purchases, the possible problems are often much more subtle—thus you are more likely to make a mistake. Here are some questions to ask before making a software purchase:

- Where did the software come from: an established firm or Fly-by-Night, Inc.?
- Is the documentation easy to use?
- Is the document printed or machine readable?
- What version of the program are you buying?

- Where and to whom do you report problems?
- Is consulting available?
- How many copies of the software have been sold and for how long a time?
- Does the software match the document?
- Do you get updated versions free of charge?
- Have you seen a demonstration of the software?

If you fail to ask these questions, you can lose both time and money. And if the software has problems of which you are unaware, you could end up with results that are misleading or simply false.

Even if you ask all these questions, you may still have problems. "System integration" problems result when your hardware and software don't match. Software can fail due to incompatibility with the operating system, CPU, memory size, screen/printer, keyboard, cables, modems, and almost anything else. Very small changes in almost any hardware component can have dramatic effects on software. You must be very careful to ask lots of questions when you put together a system.

So while cheaper products may be available on the market, you must ask yourself, "Will they work?" Products that have proven themselves over time cause the fewest problems. If they cost a bit more, you might consider the extra cost as insurance that you'll have no trouble. But if you find a bargain you think you can't resist, go through these questions once again and remember—money is not the only cost!

(*Richard T. Franta*)

Grants for Research

Here are a few recently published books you might find helpful in your search for the perfect grant proposal and the perfect foundation to which to submit it.

How to Write Successful Foundation Proposals by Joseph Dermer ($11.50) provides examples of actual grant-winning presentations and commentaries outlining the thinking that went into each.

The Quick Proposal Workbook by Daniel Lynn Conrad ($13.95) is designed for grant seekers who want to simplify the proposal writing process.

The New How to Raise Funds From Foundations by Joseph Dermer ($11.50) is the third revised edition of this manual, first published in 1968. It covers every aspect of foundation fund raising from writing proposals to getting appointments.

All three are available from:

Public Service Materials Center
111 North Central Avenue
Hartsdale, New York 10530

All orders should include $2.00 for postage and handling; payment must be in U.S. currency. You can examine all books for sixty days and return them for a full refund if they do not prove helpful.

Documentation News

This column provides information about new or revised UCC documentation of interest to our users. Materials announced in this column are available for sale in our Computer Store, 211 Experimental Engineering unless otherwise noted. On-line documentation is discussed in the *Writeupdate* column.

M77 MANUAL

The price for the new *M77 Ref-* *erence Manual*, which was described in last month's *Newsletter* has now been set. It is available at the Computer Store for $12.

TAPE GUIDE

The *Guide to Magnetic Tape Usage*, which was out-of-stock for a short time, has been reprinted and is once again available at the Store. It has a snazzy new cover but still costs a mere $4.15.

Exhibit 1. The contents of WRITEUP(BRIEF).

WRITEUP(BRIEF = INDEX)	Introduction to WRITEUP(BRIEF)
WRITEUP(BRIEF = BEGIN)	Getting Started at UCC
WRITEUP(BRIEF = REFROOM)	Reference Room and Documentation Services
WRITEUP(BRIEF = WRITEUP)	Writeup information
WRITEUP(BRIEF = NONTRAD)	Non-Traditional Computing Services
WRITEUP(BRIEF = MATHSTA)	Mathematics and Statistics Routines
WRITEUP(BRIEF = S2K)	Processing the System 2000 Control Statement
WRITEUP(BRIEF = SORTMER)	Brief Guide to Sorting Data with Sort/Merge
WRITEUP(BRIEF = *)	The entire writeup

Writeupdate

The *Writeupdate* column is intended to keep you informed about additions to or substantial changes in on-line documentation (WRITEUPS) available on our CYBER computer systems. For general information about writeup, use the control statement:

WRITEUP

For a list of the 200-plus UCC WRITEUP documents, use:

WRITEUP(INDEX)

WRITEUP(BRIEF)

This is an indexed writeup that includes the short (1-4 pages) documents available free in printed form in 140 Experimental Engineering. The Briefs include some basic information about computing at UCC. The individual briefs included and the information they provide are described in Exhibit 1.

Statistics

SPSS VIDEOTAPES AVAILABLE

The videotape set *Practical Data Analysis with SPSS* is now available in the Walter Library Learning Resources Center. These tapes cover a variety of topics encountered in social science research and statistics courses. (They are not meant to constitute a course, however.) Each tape considers data from one or two research studies and deals with:

- what research questions are appropriate
- how to request analysis from the SPSS program
- what to look for in the computer printout
- how to interpret the statistical results.

Booklets supplementing the tapes contain outlines and annotated reproductions of key SPSS control statements and printouts.

Faculty can arrange showings of the tapes at other sites. Direct your inquiries or comments to Professor Andrew Ahlgren, Associate Director, Center for Educational Development, 317 Walter Library, 373-4537.

BMD SERIES WILL BE REMOVED IN AUGUST

The forerunner of the present BMDP statistical programs was a series called BMD. Use of BMD has declined steadily since BMDP's implementation several years ago. For that reason, the BMD series will be removed from the system at the end of the second summer session. We recommend that you begin converting your BMD programs to BMDP to accomodate that change. BMDP81, presently available as FUTURE(BMDPxx), will become current at that time.

(Patricia C. Bland)

CYBER Notes

COBOL 4 TO BE REMOVED IN FALL

We will remove the COBOL 4 compiler from the system at the beginning of fall quarter 1983. You must convert your COBOL 4 programs to COBOL 5 by then. If you have questions about this change or need assistance, call our Information Management Systems Group at 376-1761. COBOL 5 documentation is available at the Computer Store. We will also remove CYBER Record Manager Advanced Access Methods Version 1 in the fall.

(Steve Reisman)

CDC SUPPORT FOR FTN ENDS THIS MONTH

Control Data Corporation (CDC) is removing support for FTN, FORTRAN Extended Version 4, on June 30, 1983. This means that no corrections will be made to the FTN compiler after that date. While FTN will still be available at UCC for many years, we cannot guarantee that FTN programs will work on future releases of NOS (the Control Data CYBER Network Operating System).

We strongly recommend that you develop new programs in FTN5 or M77 and convert FTN and MNF programs as time permits. Conversion may be as simple as recompiling your program using one of the compilers that conforms to the new standard and checking for correct results. If, however, you must make some changes to the program, F45, a conversion aid, may prove helpful (especially with long programs). The F45 *Reference Manual* (CDC publication number 60483000) is available for use in our Reference Room, 140 Experimental Engineering, or you can

purchase a copy for $5.30 from the Computer Store, 211 Experimental Engineering. Differences between MNF and M77 are documented in WRITEUP(M77).

While you are converting your programs, you may want to make them conform to ANSI standards. This makes them more portable and makes any future conversions easier. Non-standard statements can be detected by using the EL=0 parameter on the M77 control statement or the ANSI parameter on the FTN5 control statement. For more information or assistance, call Janet Eberhart, 373-5907. *(Janet Eberhart)*

All Systems Bulletins

DEMISE OF THE 1004 RJE STATIONS: A REMINDER

We will remove all remaining Univac 1004 RJEs from service on July 1, 1983. SUPIO, the UCC software required to drive the 1004s, is non-standard and difficult to maintain through system and hardware upgrades. Our records also show that RJE use continues to decrease as interactive use grows. So don't be surprised when the venerable 1004 workhorses are retired in July.

(Richard L. Hotchkiss)

FOR SALE

Decwriter IV, model LA34-AA hardcopy computer terminal. As-new condition. $600. Modem available. Call Dept. of Political Science, 373-2651.

SUMMER SHORT COURSES AT UCC

INTRODUCTORY COURSES

PRICES: U. student $10, U. staff $20, Non-University $30

010	Introduction to Computer Terms (Jerry Larson) June 20-24(MWF)	3:15-5 p.m.
070	Introduction to UCC Graphics (John Cornelison) June 20-27 (MWF)	1:15-3 p.m.
020	A Taste of Computing (staff) June 23-30 (Th, M-Th)	3:15-5 p.m.
080	Introduction to Microcomputers (Mark McCahill) July 5-19 (TTh)	3:15-5 p.m.
050	NOS (CYBER operating system) (Tom Kovarik) July 6-18 (MWF)	3:15-5 p.m.
130	XEDIT (Michael Dunham) July 12-21 (TTh)	1:15-3 p.m.
055	CYBER Interactive System Commands (Tom Kovarik) July 20-22 (WThF)	3:15-5 p.m.
180	Introduction to CRAY-1 and COS (Tom Kovarik) August 2-4 (TWTh)	3:15-5 p.m.
040	Introduction to VAX/VMS (Linda Merims) August 11-25 (TTh)	1:15-3 p.m.

ADVANCED COURSES

Prices: U. student $20-30, U. staff $30-50, Non-University $50-100

^620	Advanced CYBER/CRAY FORTRAN (Janet Eberhardt) June 27-July 15 (MWF)	3:15-5 p.m.	$35-$45-$65
^580	WordStar (Simin Hickman) July 18-20 (MW)	2:15-4p.m.	$20-$30-$50
510	System 2000 Data Base Package (Cheryl Vollhaber) July 25-August 10 (MWF)	3:15-5 p.m.	$30-$40-$50
530	SPSS (statistics package) (Patricia Bland) July 25-27 (MTW)	2:15-3:30 p.m.	$20-$30-$55
^570	TELL-A-GRAF and DISSPLA (Carol Saylor and John Cornelison) July 25-August 5 (MWF)	1:15-3 p.m.	$30-$40-$75

NOTE: Caret (^) indicates a new course.

HOLIDAY: Monday, July 4, is a University holiday. No classes will be held.

REGISTRATION: You can register at the UCC Computer Store, 211 Experimental Engineering (hours: 9 a.m.-3 p.m., Monday through Friday, and 5-7 p.m., Monday through Thursday). A self-service terminal for registration is located outside the Store. We accept mail registrations for an additional $1 fee per class. Registration deadline is store closing on the last working day *before* the class begins. You may pay course fees with cash, check, University journal voucher, or charge them to your non-instructional UCC user account.

REFUND POLICY: *No* refunds are made after the class begins. Refunds are made in the same form as the fee was paid, i.e., check, journal voucher, UCC account credit.

If you have questions about short courses or about registration, call Jerry Stearns, 376-8806, or see WRITEUP(CLASSES) on the MERITSS or CYBER systems.

SPECIAL HOURS JULY 1 AND 4

We will do our end-of-fiscal-year accounting on June 30. The CYBER CA (including the CRAY-CYBER station) and the CYBER CB will go down at 10:30 p.m. on that date. They will be up for production at 7 a.m. July 1. MERITSS, the VAX, and the CRAY will maintain normal operating hours.

The schedule for the July 4 holiday is as follows:

	Down	Up
Lauderdale	1 a.m. Monday 7/4	7 a.m. Tuesday 7/5*
Exp. Eng. I/O room	4 p.m. Saturday 7/3	8 a.m. Tuesday 7/5

*MERITSS comes up at 7:45 a.m.

The VAX will be up during the holiday but will have no operator coverage.

PHONE NUMBERS

Access:
CYBER(CA)—10, 30 cps 376-5730
—120 cps 376-5706
MERITSS(ME)—10 cps 376-7710
—30 cps 376-7730
—120 cps 376-7120
VAX/VMS(VA)—(autobaud) 376-9770
Budgets 373-2521
Computer-Aided Instruction 376-2975
Computer Hours (recorded message) 373-4927
Computer Store 373-4877
Consulting
HELP-line 376-5592
9 a.m.-5 p.m., Monday-Friday
Business Data Products 376-1761
1-3 p.m., Monday-Friday
Statistics Packages 376-5062
1-2 p.m., Monday-Friday
Data Bases 376-1761
1-3 p.m., Monday-Friday
Microcomputers 376-4276
10-12 a.m. and 2-4 p.m., Monday-Friday
Non-Traditional Computing 373-5780
10:30-11:30 a.m., Monday, Wednesday, Friday
TELL-A-GRAF/DISSPLA 376-2663
1-3 p.m. Tuesday, Thursday
Text Processing 376-2943
9 a.m.-noon Tuesday-Thursday
Contract Programming 376-1764
Data Base Applications 376-1764
Educational Services 376-3963
EDUNET Liaison 373-7745
Engineering Services 376-1023, 376-8153

Equipment Purchase/Information 376-8153
Experimental Engineering I/O 373-4596
Field Engineering 376-7584
Graphics Software 376-5592
HELP-line 376-5592
9 a.m.-5 p.m., Monday-Friday
HOURS-line (recorded message) 373-4927
Image Processing 376-2895
Information, Experimental Engineering 373-4360
Information, Lauderdale 373-4912
Information Systems 376-1764
Instructional Labs 376-2703
Lauderdale Computer Room 373-4940
Lauderdale Services 373-4995
Lauderdale Services Manager 373-7538
Lauderdale Users' Room 373-4921
MECC Liaison 373-7745
Newsletter Subscription 373-4912
Permanent File Restoration 376-5605
Professional Services Division (PSD) 376-1764
Project Assistance 376-1764
Program Librarian 376-1636
Programming Languages 376-7290
Reference Room 373-7744
Remote Batch (RJE) Services 376-2703
Short Courses 376-8806
Shuttle Bus Service 376-3068
System Status (recorded message) 373-4927
Tape Librarian: see Lauderdale Services
Text Processing Services 376-2943
User Accounts 373-4548
User Services 376-3963

OPERATING HOURS

	Cyber CA/CB	Low rate	Cray (CR)	MERITSS (ME)	VAX (VA)
M-F	7 a.m. - 4 a.m.	8 p.m. - 4 a.m.	8 a.m. - midnight	7:45 a.m. - 1:30 a.m.	8 a.m. - 6 a.m.
Sat	4 a.m. - 5:15 p.m.	4 a.m. - 5:15 p.m.	8 a.m. - 5 p.m.	7:45 a.m. - 1:30 a.m.	24 hours
Sun	4 p.m. - 1 a.m.	4 p.m. - 1 a.m.	4 p.m. - midnight	4 p.m. - midnight	24 hours

PUBLIC LABS—TWIN CITIES CAMPUS

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

* Research cluster; access to Cyber 730 and VAX/VMS
X in interactive column indicates access to MERITSS
? Unknown at the present time

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