* * * C O R R E C T I O N * * *

We will not be charging for short courses beginning in the fall of 1980 as described in this newsletter.

Only courses given by UCC through Continuing Education and Extension will carry fees. All other regularly scheduled short courses offered by UCC will be free.

Please disregard any reference contrary to the above statements in this newsletter.

L. Fetcher, 376-1637

* * * C O R R E C T I O N * * *

MIT W

University Computer Center Newsletter

UNIVERSITY COMPUTER CENTER   UNIVERSITY OF MINNESOTA-TWIN CITIES   MINNEAPOLIS, MINNESOTA 55455

contents

bulletins

LABOR DAY HOLIDAY HOURS

	ExpEng	Laud
DOWN	2400 8/29(Fri)	1800 8/30(Sat)
UP	0800 9/ 2(Tue)	0800 9/ 2(Tue)

UCC newsletter

Volume 14   Number 8   August, 1980

Director: Peter C. Patton
Editor : Naomi Miner

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

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

number crunchers

We have secured a large amount of time on a CRAY-1 computer system. The system has 0.5 million words of memory and runs approximately 12 times faster than the Cyber 74 for scalar operations and 24 times faster than the Cyber 74 for vector operations. Most FORTRAN applications can be easily converted to run on the CRAY. We will provide a complete conversion service and will transport materials between Lauderdale and the CRAY site. The cost of running an average job on the CRAY will be approximately what the cost would have been if the job were run at NOFRILLS rate on the Cyber 74. If you are interested in taking advantage of this opportunity, you should call

T. Lanzatella, 376-5606

system 2000

On August 30, the large and small core versions of System 2000 will be changed from FUTURE products to current products. You will no longer need a FUTURE control statement to access PLICOBS, PLICOBL, PLIFORS, PLIFORL, S2000S, or S2000L. You will need a FETCH control statement to access PLILGOS and PLILGOL.

This change should not affect any previously compiled and running applications. It is being made in preparation for INTEL/MRI's predicted release of System 2000 Version 2.80 scheduled for October 1.

The new System 2000 should have the large, small, and regular core versions combined. It will provide a non-key WHERE clause, text searching, and an enhanced string function capability. In addition there will be a new program language interface called PLEX. PLEX provides support for 16 LOCATE files, an extended WHERE clause, new item types, and aliases. PLEX is not downward-compatible.

We do not have any documentation for 2.80 yet, but as soon as we receive further information from INTEL/MRI, we will arrange a special seminar covering its new features. We will be a test site for 2.80, and if you would like to use it before it is made available for general use, call,

S. A. Reisman, 376-1755
S. P. Nachtsheim, 373-7878

GRG2

We have installed the GRG2 (Generalized Reduced Gradient) package of FORTRAN subroutines that solve nonlinear programming (nonlinear optimization) problems. It maximizes or minimizes nonlinear functions subject to linear or nonlinear constraints. You may supply the function and the gradient, or you may let GRG2 calculate it using the function with a finite difference approximation. GRG2 only uses as much memory as the problem requires. The set of routines has been made available as a user library for FTN Version 4 only. What follows is a sample deck:

```
FTN (VERSION 4) EXAMPLE
Job card
USER card
FETCH,GRG2/V=FTN.
FTN.
LGO.
7-8-9 card
.
.
.
Fortran program with calls to the GRG2
routines
.
.
.
END
7-8-9 card
Data cards, if any
.
.
.
6-7-8-9 card
```

We tested the package with a sample problem and it ran satisfactorily. Documentation for GRG2 is available for the price of duplication from

M. J. Frisch, 376-1636

short course change

This fall we must begin charging fees for some of our regularly scheduled short courses. The specific fees and policies, and the 1980 Fall Quarter day schedule will be published in the September newsletter. We will try to keep fees as low as possible.

We will continue to offer the following introductory courses without a fee, until further notice:

Computing, What is it?
Introduction to UCC
NOS Control Statements
Interactive System Commands
Batch Introduction
Introduction to Programming
Pascal for Programmers
Beginning FORTRAN
Beginning COBOL
SPSS
Introduction to System 2000
Introduction to Microcomputers
Using Micros: TERAK and APPLE II

Starting this fall we will supplement our day classes by offering a selected group of short courses through Continuing Education and Extension. These classes will be held in the evenings and will not replace the day classes. Fees will be charged for all Extension classes. The schedule for our courses offered through Extension will be published in the September newsletter. The schedule may be found in the "Professional Improvement Courses" section of the 1980-1981 Extension bulletin, available in Westbrook Hall. For questions, call

L. Fetcher, 376-1637

writeupdate

July was an active month for WRITEUPs, with many old ones being revised, and many new ones appearing. Here is a tempting selection for your reading pleasure.

CAL (74/172) - Describes the Pascal calendar plotting package for making beautiful personalized wall calendars.

CONSULT (74/172) - Gives consulting sites and hours for Summer Session II.

ENQUIRE (ALL) - Describes the features of the ENQUIRE, STATUS, LENGTH, and SUMMARY control statements.

FORMS (74/172) - Provides information on using special output forms at Lauderdale and having punched cards interpreted. See the June 1980 issue of the Newsletter, p. 59.

FORSUBS (ALL) - Modified to include a new section on CLOSMS, and two new parameters for WRITMS.

LABHOUR (MERITSS) - Gives the new MERITSS lab hours as of June 22, 1980.

ONL80 (ALL) - Represents the new SPSS/ONLINE Version 8.0 Reference Manual.

PACKMS (74/172) - Gives instructions for alternatives to the PACKMS control statement for packing FORTRAN structured random files. PACKMS has been removed from the system (see July issue, p. 74).

PUTUP (ALL) - Modified to reflect minor changes in RFM for persons wishing to create, modify, or delete WRITEUPs.

RESTORE (74/172) - Modified to include descriptions of three new parameters: ENQ, DEL, and MI.

RPG (74/172) - Provides a brief introduction to the use of the RPGII report generating language and compiler.

UPONL80 (ALL) - Represents the update manual for the UCC publication SPSS/ONLINE Version 4.0. This new manual describes the differences between version 4.0 (now PAST,SPSSONL) and version 8.0 (the current version). See the July issue, p. 75 for a discussion of the upgrade.

J. T. Jaynes, 376-5262

enquire

As of July 24, the JN option in ENQUIRE has been expanded in two ways. You may now specify any name for the job name. Previously, only jobs having the user number hash as the first four characters were reported by ENQUIRE. The JN parameter is now defined as:

ENQUIRE(JN) - All jobs whose first four characters are the hash.

ENQUIRE(JN=1-3 chars) - All jobs whose first four characters are the hash and the next 1-3 characters match the JN value.

ENQUIRE(JN=4-7 chars) - All jobs whose first 4-7 characters match the JN value.

In addition, ENQUIRE will now report on jobs on the "other" Cyber machine. For example, if you route a file from the Cyber 172, you may enter ENQUIRE(JN) to determine the job's status. Your output might look like:

```
 AEPA007 EXECUTING.
MID=74
 AEPA007 IN PRINT QUEUE.
```

If you have jobs which are executing on the other machine, and you enter ENQUIRE(JN), the response will always be IN ROLLOUT QUEUE, whether the job is rolled out or executing.

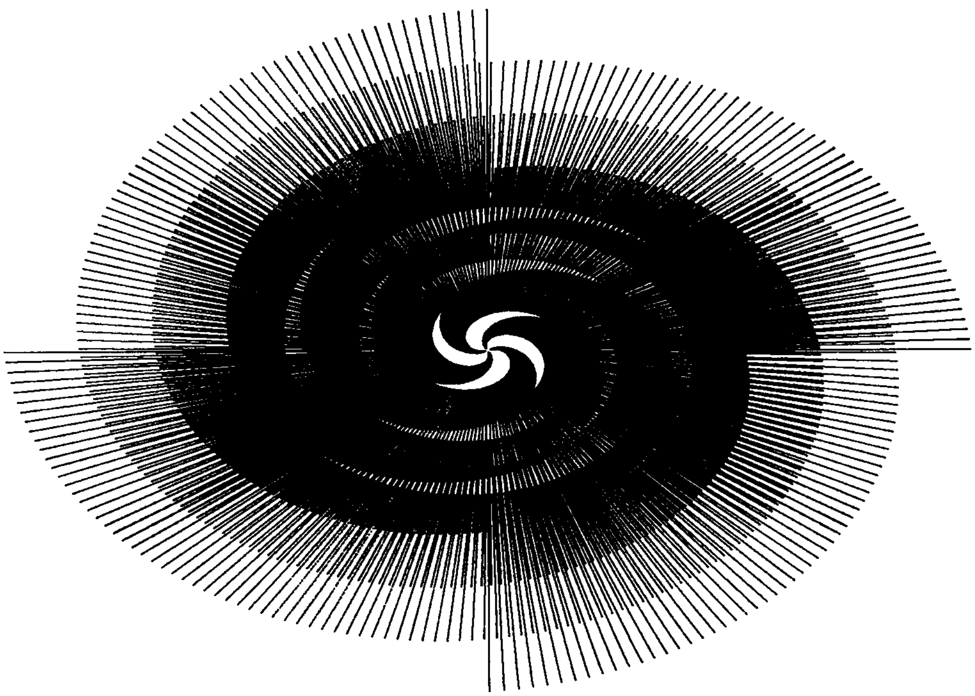
T. J. Hoffmann, 376-5262

microcosm

If you did not receive a user survey in early July from the Microcomputer Group please call the Micro HELP-line and we'll send you one. The primary purpose of this survey is to collect the names and mailing addresses of all University microcomputer users. Later this summer, we will send out a detailed questionnaire concerning your present and planned microcomputer use. We will use the results of this survey to define our future goals.

M. D. Collins, 37-MICRO

electronic pinwheel



Produced by the Terak using our UCSD Pascal Hiplot graphics package on the Houston Instruments Hiplot plotter. (Graphic by Mike Collins)

annual statistical review

	1978-1979	1979-1980	% Change
Central Processor hours	2332/1051(2631/2158)	1900/2096(2116/3233)	-18.5/99.4
SUBMIT jobs	219,628	265,567	20.9
Batch jobs and MIRJE sessions	1,221,029 (1,360,071)	1,361,986 (1,490,439)	11.5 (9.6)
MIRJE sessions	309,067	402,311	30.2
MIRJE connect hours	131,884 (156,415)	171,997 (199,145)	30.4 (27.3)
Mass storage transfers (KPR)	4,117,700 (5,297,348)	4,731,717 (5,958,331)	14.9 (12.5)
Magnetic tape transfers (KPR)	79,944 (135,891)	126,193 (183,850)	57.9 (35.3)
Pages printed, charged from UCC	11,273,400 (12,700,253)	11,669,430 (13,163,509)	3.5 (3.6)
Cards punched	5,097,124 (6,371,450)	4,528,303 (4,981,273)	-11.2 (-21.8)
Microfilm frames produced	334,904 (4,597,319)	312,688 (5,472,169)	- 6.6 (19.0)
Statos plotting production (feet)	99,481	91,938	- 7.6
Tapes mounted	140,946	146,785	4.1
Average file storage (characters)	1,978.7million	2,640.1million	33.4
Mean time between failures	75.5/134.9hours	71.7/78.1hours	- 5.0/-42.1
Available during scheduled hours	98.8/99.2	98.8/99.0	0.0/-.2

(totals in parentheses include staff development, accounting, and maintenance runs) (Cyber 74/172)

see article facing page

annual statistical review

This month we present a table comparing the usage statistics for the past fiscal year with the previous one. To show trends, percentage increases (minus signs indicate decreases) are shown for each item compared.

central processor hours
magnetic tape transfers

It is unusual to report that the highest percentage increases for the year in Cyber 172 CP hours of 99.4 (49.8) and Magnetic tape transfers of 57.9 (35.3) did not represent real total increases for the combined system. If the Cyber 172 CP hour is considered to be .4848 of a Cyber 74 hour (this is the value used in the accounting algorithm), then translating the joint hours to a common Cyber 74 hour or 172 hour gives the following table:

	1978-79	1979-80	%change
CP as 74hours	2842(3677)	2916(3683)	2.6(.2)
CP as 172 hours	5861(7584)	6051(7598)	

Since total jobs and sessions increased by about nine percentage points more than did combined hours, this meant that the average job was smaller this year. The average amount of SRUs used per job was 11.3 in 1978-1979 and 10.1 in the first 11 months of 1979-80. A dramatic increase in June 1980 to the figure of 13.1 SRUs/JOB raised the year's average to 10.4 SRUs/JOB in 1979-80. We wonder if somehow we lost the "big" jobs in the first 11 months and "found" them in June.

Last September with the upgrade to NOS 1.3, magnetic tape users noticed increases in charges. As reported in the November 1979 issue of this newsletter, we corrected a CDC "bug" that did not charge for positioning. This correction accounts for most of the percentage change in Magnetic Tape transfers since the number of tapes mounted increased by only 4.1 percent.

interactive MIRJE sessions, SUBMIT jobs

We examine trends in our past usage statistics to project future usage. We believe that the increase in interactive sessions (and in SUBMIT jobs from those sessions) and the relative decrease in jobs entered from RJE's and at central sites, will continue in 1980-81. The following table displays the job entry data for the last three years and the projected use in 1983-84.

K=1000	77-78	78-79	79-80	Est --- 83-84
RJE Jobs	872K	831K	822K	710K
Interactive Sessions	215K	309K	402K	763K
SUBMIT	123K	220K	266K	602K

interactive MIRJE connect hours

Timesharing in preference to remote job entry processing is becoming the dominant means of processing jobs. The transition to a predominance in interactive processing may readily be seen in the usage statistics for the asynchronous 1200 baud service (installed three years ago). The following table shows the number of connect hours for the last three months of fiscal years 1979 and 1980:

Connect Hours	78-79	79-80	% Increase
110-300 baud	37,745	46,662	23.6
1200 baud	4,961	8,739	76.2
Total	42,706	55,401	29.7

We are installing additional 1200 and 110-300 baud ports this summer so that this growth may continue without hindrance. We do not want you to encounter busy signals when dialing up, and we do not want you to feel you must "hold" a port between work sessions.

availability and mean time to failure

The Control Data customer engineers, and our Systems and Operations staffs have maintained the good availability figures that were reached the previous year. The mean time to failure figures decreased because we experienced different kinds of hardware outages that took less time to repair.

mass storage transfers and average file storage

Both of these items continued to show good growth. We have added more storage with the addition of two FMD disk units (each with 1385 million characters). We have lowered the price for storage of files July 1 and anticipate an additional reduction for file storage in January of 1981.

pages, cards, microfilm and plotting

The figures for the number of pages used show a level pattern, a good pattern in light of resource use and the sharp increase in the cost of paper. Cards punched continue to decrease; with a sharp total reduction due to the completion of the conversion of user 026 to 029 card decks in early 1979.

The more we do in accounting and in keeping records of complete system dayfiles, the more we use microfilm. We highly recommend that you use microfilm to save trees and paper and space.

We believe Statos plotting decreased due to some problems with maintaining a dark contrast on the machine. Our Engineering staff has modified the equipment and has found toner that has restored the quality of plotted output.

L. A. Liddiard, 373-5239

final survey responses

After publishing the first twenty-five survey responses in the June newsletter, we expected additional responses to arrive prompted by that publication. But since only twenty more have arrived, we conclude either that you are generally pleased with our services, or the preliminary responses matched what you would have replied, or that the average user is tired of answering survey questions. (This is certainly true of computer centers where one or two surveys per week arrive with questions on all aspects of the center's planning.) To shorten this article, only responses differing in content from previous responses have been tabulated under each subheading.

computation needs not currently provided

Software

1. Subaccounting with separate password and connect time for interactive sessions
2. Cancellation of SUBMIT and QUEUE jobs without going through HELP-line
3. Generational data set capabilities, like IBM OS
4. Machine-retrievable writeups on non-IMSL subroutines
5. More information when ROUTE command used
6. CRT-oriented word processing with page data entry and retrieval
7. CLUSTER analysis for continuous data
8. OSIRIS IV package for statistical analysis

Service

1. Short course on Structured Programming
2. More convenient and faster self-service RJE stations
3. Earlier newsletter or notices printed with greater lead time
4. More core for interactive daytime use
5. Single user accounting for MERITSS

services particularly liked

1. Overall usability and good range of equipment
2. Innovative services
3. Grants
4. Business Data products consulting
5. Automatic file archiving
6. Newsletter

dislikes

1. Uneveness of advice given by consultants at Experimental Engineering
2. Only next day account stats, no run-by-run update of accounting information
3. Slow turnaround for ROUTEd output
4. Messy documentation and manuals at RJE user rooms
5. Many of the documents on (WRITEUP=CONTROL) are out of date

We would like to respond here to some of the suggestions made in the "Software Needs Not Currently Provided" section of the Preliminary Survey Response article in the June, 1980 Newsletter. We believe we are already providing two of the software packages requested. M77 is designed to be "a student-oriented implementation of FORTRAN 77." A new version of RPG has been written, called RPGII, which replaces our old UMRPG. It is a nearly complete implementation of RPG II; we are unsure if it meets the definition of "a student-oriented implementation of RPG II."

A third software package, SCSS (SPSS Conversational Statistical System), is being converted to run on CDC computers by our supplier, Northwestern University. When they release it, we will obtain and install it, thus satisfying the request for "SCSS to replace SPSS On-line." However, we may keep SPSS On-line until its usage drops to very low levels.

We have no plans, nor does CDC, to implement "full ASCII character processing in FORTRAN" on our current CDC 6-bit-based computers. We feel it is impractical. Instead, we are considering obtaining 8-bit-based computers as early as 1981.

responses to more recent returns

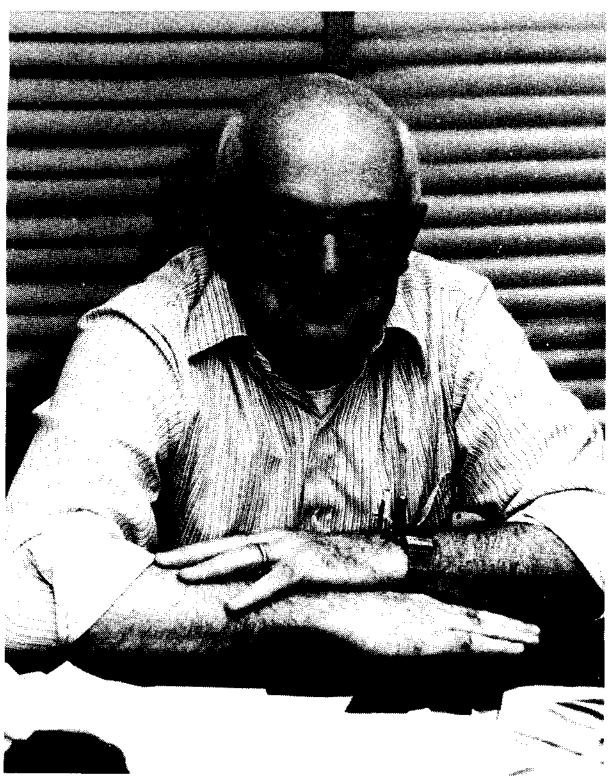
We believe we are already providing "CLUSTER analysis for continuous data." There are three programs in the BMDP series for cluster analysis in addition to the CLUSTER program. SPSS is expected to release a cluster analysis program shortly. We have a prerelease version of it which users may test.

We are in the process of providing "Machine-retrievable writeups on non-IMSL subroutines." WRITEUP(FORSUBS=routine) provides calling sequence information on some of the routines on the Minnesota Subprogram Library (MINNLIB) as well as on EISPACK and BESPACK. The full text for MINNLIB writeups is difficult to provide because of special symbols (e.g., integral signs, square root signs). We will try to set up a writeup file with special symbols replaced by ordinary text sometime in the future.

"CRT-oriented word processing with page data entry and retrieval" will most likely be part of the facilities we obtain to satisfy the full ASCII needs mentioned above.

We have looked at earlier versions of the "OSIRIS IV package for statistical analysis" and did not find it to be more valuable than what we now provide in SPSS, BMDP, and MINITAB. If there is enough interest from other users, we will reconsider obtaining it.

We are committed to investigating new services requested by users and by our staff. Selection of services and software is done on the basis of quality, suitability for our users and durability. We must also find staff time for teaching, writing, and consulting about new services. Only when use falls to a low level, or a better service becomes available, do we drop a service.



tabulating survey responses.

New services we expect to offer include:

1. Beginning in fall quarter, CAD/CAM service using AD2000
2. CRAY-1 time for large vector and production programs (see Attention Number Crunchers article, this newsletter)
3. Transactional Processing on the Cyber 172
4. Additional graphics packages
5. Scientific text processing packages including D. Knuth's "TEX," when available
6. An RPG II compiler (See WRITEUPDATE article, this newsletter)

We will continue to respond to the survey in future newsletters.

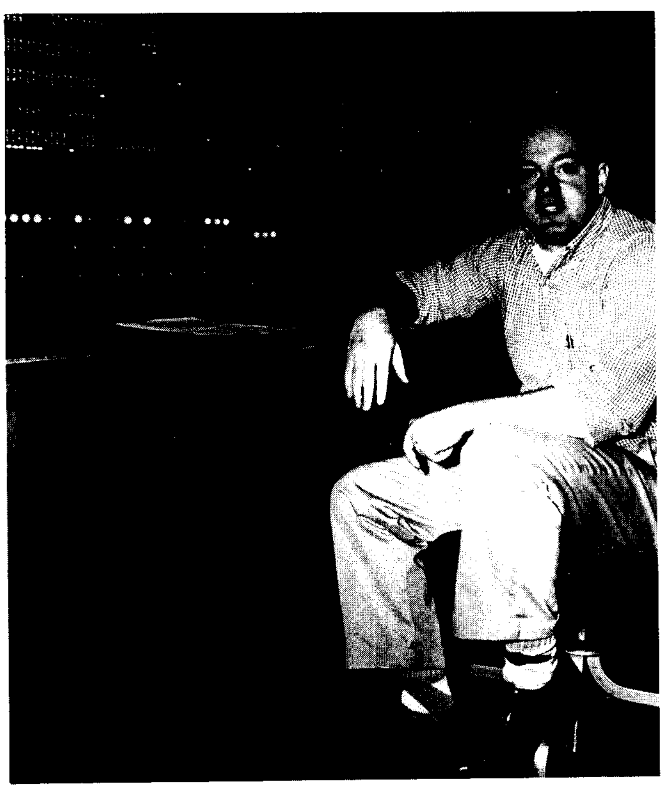
L. A. Liddiard, 373-5239
M. J. Frisch, 376-1636

author profile: l.a. liddiard

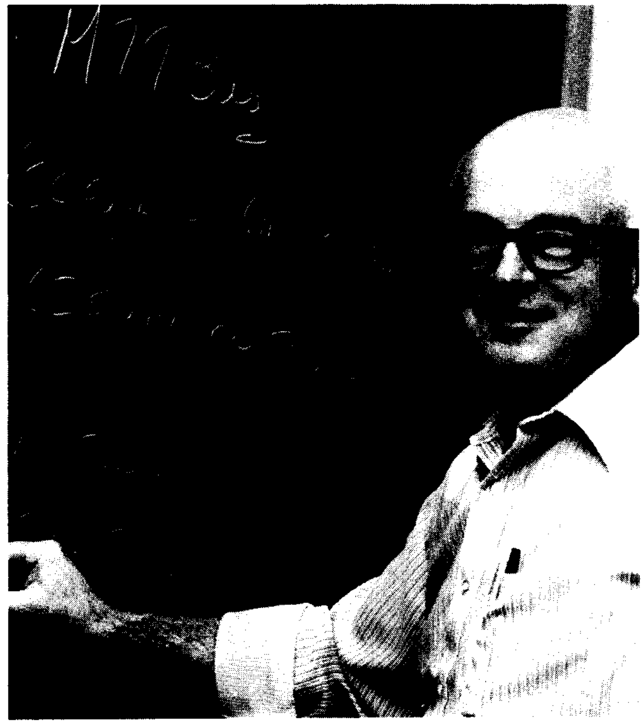
Larry Liddiard, author of several articles in this newsletter and a frequent contributor, is the Associate Director for Systems. Larry has been with us since 1960, when we were NAC, Numerical Analysis Center. He is an expert on computer hardware and systems and has been involved with the selection of all our successor machines and upgrades since our first machine, a Univac 1103. He has worked extensively on software in factor analysis, function approximation and compilers. He has done considerable research on code optimization and computer arithmetic (from integer to multiple precision). Larry received his Bachelor's degree in Math in 1958 and Master's degree in Math in 1963.

R. L. Hotchkiss, 373-5756

discussing statistics of computer usage.

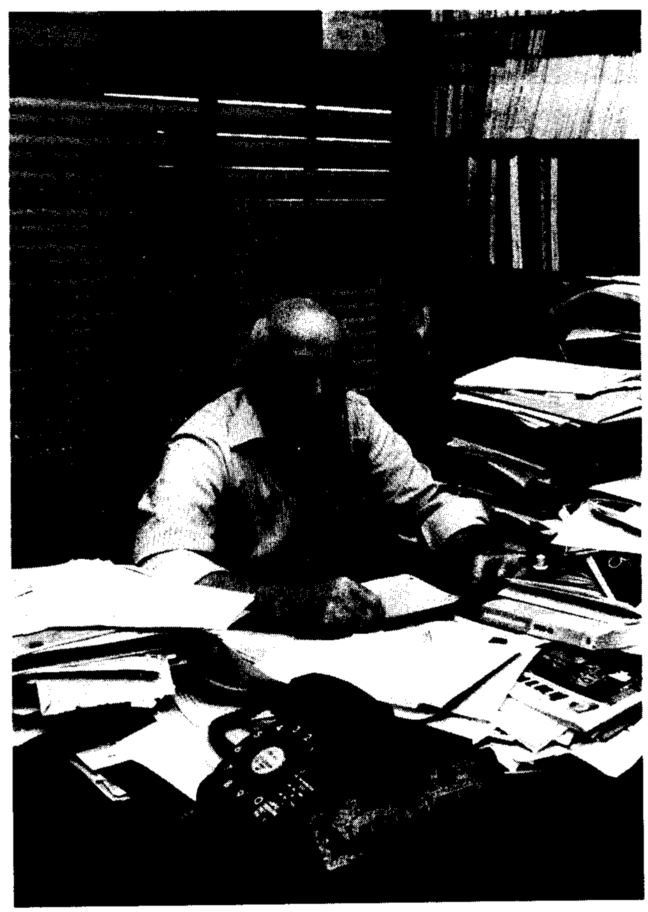


Liddiard at the console of the Univac 1103 in 1961.



working on compiler problems.

photos by R. Hotchkiss.



his desk is always piled with work.

language processor statistics

This month we present a table of language processor usage statistics for the Cyber 74/172 and MERITSS computer systems for the period July 1, 1979 through June 30, 1980 and for comparison those figures for 1978-1979 and for 1977-1978. A language name followed by "(T)" gives the totals for that language when more than one processor (listed after that name) exists for that language.

Pascal is becoming the dominant instructional language; perhaps this has caused the instructional use of FORTRAN, BASIC and SNOBOL to decline. Newer processors, such as COBOL5 and M77, are increasing in usage, probably causing the decrease in usage of older versions.

For 1979-1980, of all available compilers and interpreters, five dominate usage, as the table below shows:

PROCESSOR	TOTAL	MERITSS	CY74/172
FORTRAN	47.6%	36.7%	63.9%
Pascal	23.6%	34.1%	7.9%
BASIC	18.9%	24.7%	10.1%
COBOL	4.3%	0.2%	10.5%
SNOBOL	1.9%	1.9%	1.9%
	-----	-----	-----
	96.3%	97.6%	94.3%

ALGOL = CDC ALGOL 3 compiler
APL = CDC APL 2 interpreter
ASM11 = U of Minnesota PDP-11 cross-assembler
ASM68 = Motorola 6800 cross-assembler
BASIC = CDC BASIC 3 compiler
COBOL4 = CDC COBOL 4 compiler
COBOL5 = CDC COBOL 5 compiler
COMPASS = CDC COMPASS 3 assembler
EMULATE = U of M CDC 3200 assembler
FTN = CDC FORTRAN 4 compiler
GPSS = Northwestern GPSS 5 translator
LISP = U of Texas LISP 4 interpreter
MAC80 = INTEL 8080 cross-assembler
MIMIC = CDC MIMIC interpreter
MIXAL = U of M MIX assembler
MIXBYTE = U of M MIX interpreter
MNF = U of M FORTRAN 5 compiler
MP = U of M MicroPlanner interpreter
M77 = U of M FORTRAN-77 compiler
PASCAL = ETH Zuerich/U of M Pascal compiler
PLM80 = INTEL 8080 PL/M cross-assembler
PL1 = NYU PL/1 compiler
SIMS = CDC SIMSCRIPT 2 compiler
SIMULA = CDC SIMULA 1 compiler
SNOBOL4 = U of Colorado SNOBOL4 3.10 interpreter
SNOBOLC = U of California SNOBOL4 2 interpreter
SYMPL = CDC SYMPL 2 compiler
TSF = U of M interactive FORTRAN compiler
UMRPG = U of M RPG translator

A. B. Mickel, 376-7290
L. A. Liddiard, 373-5239

LANGUAGE	1979-1980			1978-1979			1977-1978		
PROCESSOR	TOTAL	MERITSS	CY74/172	TOTAL	MERITSS	CY74/172	TOTAL	MERITSS	CY74/172
ALGOL	878	496	382	113	87	26	366	321	45
APL	4,994	2,869	2,125	6,484	2,821	3,663	12,820	3,843	8,977
ASM11	238	10	228	742	378	364	158	43	115
ASM68	172	137	35	-	-	-	53	39	14
BASIC	420,413	330,573	89,840	491,258	433,757	57,501	429,276	372,398	56,878
COBOL(T)	96,422	2,617	93,805	105,582	904	104,678	156,853	2,150	154,703
COBOL4	38,721	544	38,177	66,087	904	65,183	156,853	2,150	154,703
COBOL5	57,701	2,073	55,628	39,495	-	39,495	-	-	-
COMPASS	34,735	15,674	19,061	39,261	14,564	24,697	50,914	23,491	27,423
EMULATE	14,399	6,602	7,797	18,061	10,007	8,054	10,674	-	10,674
FORTRAN(T)	1,061,607	490,895	570,712	1,099,452	545,396	554,056	1,025,656	545,365	480,291
FTN	84,859	-	84,859	95,394	-	95,394	82,752	-	82,752
MNF	403,062	69,426	333,636	396,777	57,850	338,927	380,675	48,021	332,654
M77	136,116	103,044	33,072	933	107	826	-	-	-
TSF	437,570	318,425	119,145	606,306	487,397	118,909	525,633	432,270	93,363
GPSS	1,921	23	1,898	1,100	4	1,096	515	-	515
LISP	1,792	1,006	786	4,136	3,564	572	3,380	1,364	2,016
MAC80	613	145	468	480	344	136	1,184	758	426
MIMIC	335	-	335	330	5	325	213	-	213
MIXAL	19,740	4,400	15,340	6,324	4,450	1,874	8,959	2,291	6,668
MIXBYTE	1,326	10	1,316	2	-	2	780	-	780
MP	28	-	28	13	-	13	139	-	139
PASCAL	525,446	455,098	70,348	400,922	349,762	51,160	272,583	223,756	48,827
PL1	255	3	252	121	10	111	220	-	220
PLM80	31	3	28	65	-	65	28	12	16
SIMS	-	-	-	2	-	2	45	-	45
SIMULA	481	6	475	3,312	14	3,298	1,936	-	1,936
SNOBOL(T)	42,593	25,394	17,199	78,292	61,597	16,695	57,091	44,879	12,212
SNOBOL4	5,547	26	5,521	3,009	117	2,892	3,034	-	3,034
SNOBOLC	37,046	25,368	11,678	75,283	61,480	13,803	54,057	44,879	9,178
SYMPL	173	5	168	124	4	120	125	-	125
UMRPG	419	-	419	170	-	170	953	-	953

statistics

***PRODUCTION USAGE SUMMARIES: Cyber 74/172

	June, 1980	June, 1979
System resource units (SRU)	1,573,777 (1,925,720)	1,227,144 (1,566,291)
Batch jobs and MIRJE sessions	119,854 (130,125)	99,958 (110,217)
Total central processor (CP hours)	187/256 (223/323)	200/110 (217/212)
DELAY queue CP hours	47/37 (55/48)	76/21 (77/37)
NO FRILLS queue CP hours	9/35 (9/35)	--/-- (--/--)
MIRJE terminal hours	17,591 (19,882)	13,119 (15,101)
Mass storage transfers (KPR)	460,245 (563,711)	354,404 (452,152)
Magnetic tape transfers (KPR)	13,103 (19,677)	7,114 (11,849)
Pages printed, charged from UCC	1,179,753 (1,315,768)	964,140 (1,073,054)
Cards punched	374,271 (428,464)	387,317 (421,777)
Microfilm frames produced	20,662 (507,382)	25,977 (380,668)
Number of terminal sessions	39,051	30,520
Statos plotting production (feet)	7,244	8,170
Tapes mounted	12,910	12,347
Average file storage (char)	3,267.5 million	2,085.7 million
Mean time between failures	86.9/173.8 hours	129.0/103.2
Available during scheduled hours	99.6/99.6 percent	99.9/ 99.6 percent

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

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

	0800-1800 M-F		other		total	
Total possible scheduled uptime hours	220.0	220.0	303.0	303.0	523.0	523.0
Total downtime hours (see Schedule A)	4.7	4.1	.9	.9	5.6	5.0
Total uptime hours	215.3	215.9	302.1	302.1	517.4	518.0
Uptime (percent)	97.9	98.1	99.7	99.7	98.9	99.0
Average downtime per occurrence (min)	56.8	81.3	10.8	17.0	33.8	49.2
Mean time between failures (hours)	44.0	73.3	60.6	101.0	52.3	87.2
Subsystem failures						
SUPIO	1	-	1	-	2	-
TELEX	0	0	0	1	0	1
EXPORT	5	-	1	-	6	-

Schedule A: downtime hours

	Number		Total hours		Average minutes	
(1) Preventive maintenance over-runs	0	0	0.0	0.0	0.0	0.0
(2) Software related problems	3	0	0.4	0.0	8.7	0.0
(3) Hardware related problems	3	2	1.1	0.4	21.0	12.5
(4) Indeterminate problems	0	1	0.0	0.2	0.0	10.0
(5) External Problems	4	3	4.2	4.3	62.3	86.7

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

	June, 1980	June, 1979
Number of jobs run	150,362	116,919
Central processor hours	124.1	161.7
MERITSS terminal hours	20,295	14,993
Number of terminal sessions	39,528	29,152
Maximum number of simultaneous users	144	118
Average file storage (char)	418.3 million	374.8 million
Mean time between failures	49.7 hours	119.9 hours
Available during scheduled hours	96.5 percent	99.0 percent

operations

CYBER 74/172 OPERATING HOURS

```
-------------------------------------------------------------
S|                                        |$$$$$$$$$$$$$$$$|
M|*|                      |<><><><><><><><><><><><><><><><><$$|
T|*******|                |<><><><><><><><><><><><><><><><><$$|
W|*******|                |<><><><><><><><><><><><><><><><><$$|
T|*******|                |<><><><><><><><><><><><><><><><><$$|
F|*******|                |<><><><><><><><><><><><><><><><><$$|
S|***************|$$$$$$$$$$$$$$$$$$|                        |
-------------------------------------------------------------
    ^       ^         ^                    ^               ^
0100  0400    0800                      1715            2400

<><><> Lauderdale, ExpEng, NORMAL rate
$$$$$$$$ Lauderdale, ExpEng, DELAY rate
******** Lauderdale only, DELAY rate
```

See WRITEUP(HOURS) for schedule of batch job pickup/delivery service.

CYBER 170-720 OPERATING HOURS

```
-------------------------------------------------------------
S|<>                                       |><><><><>|
M|                    |><><><><><><><><><><><><><><><><><>|
T|<>|                 |><><><><><><><><><><><><><><><><><>|
W|<>|                 |><><><><><><><><><><><><><><><><><>|
T|<>|                 |><><><><><><><><><><><><><><><><><>|
F|<>|                 |><><><><><><><><><><><><><><><><><>|
S|<>                                       |><><><><>|
-------------------------------------------------------------
      ^                ^                       ^          ^
   0130             0745                    1800       2400

****** up, not attended
<><><> up, attended
```

See WRITEUP(LABHOUR) for a schedule of open hours in the student computer laboratories.

TWIN CITIES CAMPUS PUBLIC REMOTE JOB ENTRY SITES

SITE	ID	SUPERVISOR	PHONE	*
>>>East Bank<<<				
ElectE 38	4V	V. Zahhos	373-5346	2
EltH N640	4W	D. Anderson	373-5827	2
ExpEng 130	4B	I/O Coordinator	373-4596	1
ExpEng 130	4N	I/O Coordinator	373-4596	1
FrontH	4E	D. Schumacher	373-2740	1
KoltH S191	4Z			4
HS-A 1-752	4C	L. Ellis	373-0331	1
MinMet 321	41	R. Larson	376-2668	3
Physics 69	44	L. Whitney	376-7627	3
SpaSci 134	43	A. Perandi	373-7881	1
TerrH W106	4I	B. Hackett	373-6621	1
D388 Mayo	24	L. Croatt	373-7714	1
M39 MasonH	2D	L. Croatt	373-7714	1
Zoology 314	4J	E. Cushing	373-2232	1
>>>West Bank<<<				
SocSci 167	4X	D. Lund	373-3608	2
SocSci 1009	4K	T. Kroening	373-0168	1
>>>St. Paul<<<				
BioSci 257A	47	M. Simmons	373-1961	1
ClaOff 125G	48	C. Bingham	373-0988	3
McN H	42	G. Wahlert	373-0939	1
NorH 24	4G	J. Colten	373-0990	1
NorH 24	40	J. Colten	373-0990	1
>>>Lauderdale<<<				
User´s Room	49	Secretary	373-4912	5

*--indicates keypunches at each site. Additional keypunches in 131 ExpEng, 86 BlegH, 140 ExpEng, and 90 BlegH.

TWIN CITIES INSTRUCTIONAL COMPUTER LABORATORIES

SITE	SUPERVISOR	PHONE	EQUIPMENT
>>>East Bank<<<			
CentH	R. Rickgarn	3-2289	TTY33(2)
ComH	C. Youngdale	3-2453	TTY43(1)
DiehlH 535	N. Sauro	6-7005	CRT(2)
EltH 121, 125	D. Anderson	3-5827	TTY33(6) Hazeltine(3) Teleray(1)
FrontH	D. Schumacher	3-2740	TTY33(1)
HS-A 1-752	L. Ellis	3-0331	TTY33(4) TTY43(2) Teleray(1)
LindH 25	M. Schneider	3-0137	CDC713(6) Decwriter(5) Tektronix4013(1) Teleray(1) TTY43(11)
MechE 308	D. Riley	3-0340	TTY33(4) Teleray(3) Decwriter(5)
SanfH	M. Kilbury	3-3434	TTY33(1)
TerrH	B. Hackett	3-3567	TTY33(1)
VincentH 4	W. Stenberg	3-2586	TTY33(2) CDC713(2) Decwriter(7) Teleray(2)
WaLib 204*	R. Estelle	3-2538	TTY43(10) CRT(2)
>>>West Bank<<<			
BlegH 140	D. Lund	3-3608	TTY43(13) Teleray(1)
MdbH	R. Baker	3-9818	TTY33(1)
SocSci 167	D. Lund	3-3608	TTY33(5) Teleray(3) Decwriter(2)
>>>St. Paul<<<			
ClaOff 125	C. Bingham	3-0988	TTY33(6) Hazeltine(2) Decwriter(4)

*for CAI use only

phone numbers

Accounting 373-4548, 373-2521
Computer-Aided Instruction 376-2975
Computer Hours (recorded message) 373-4927
Computer Store 373-4877
Consulting
  HELP-line 376-5592
    9 AM - 5 PM, Monday - Friday
  Business Data Products 376-1761
    10-11 AM and 1-3 PM, Monday - Friday
  COBOL Language 376-1761
    11 AM - 12 N Monday - Friday
  Statistics Packages 376-5062
    1-2 PM, Monday - Friday
  System 2000 376-1761
    10-11 AM and 1-2 PM, Monday - Friday
  Microcomputers 376-4276
    10-12 AM and 2-4 PM, Monday - Friday
Contract Programming 376-1764
Data Base Applications 373-7878
Educational Services 376-3963
EDUNET Interface 373-7745
Equipment Purchase or Lease 376-8153
Experimental Engineering I/O 373-4596
Field Engineering 376-7584
Graphics Software 376-1636
HELP-line 376-5592
    9 AM - 5 PM, Monday - Friday
HOURS-line (recorded message) 373-4927
Information, Experimental Engineering 373-4360
Information, Lauderdale 373-4912
Information Systems 373-7878
Instructional Labs 376-8806
Job Status, ExpEng (recorded message) 373-4994
Lauderdale Operations 373-4920
Lauderdale Services 373-7538
Lauderdale Users' Room 373-4921
MECC, University 373-4573
Microcomputers 376-4276
Microfilm Operator 373-4995
Newsletter Subscription 373-7744
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 373-5754
Short Courses 376-1637
Shuttle Bus Service 376-3068
System Status (recorded message) 373-4927
Tape Librarian and EBR Operator 373-4995
Technical Writing 373-2522
User Numbers
  Instructional Batch 373-2521
  Instructional Timesharing 373-7745
  Research Batch 373-2521
  Research Timesharing 373-2521
User Services 373-4599

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

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