University Computer Center

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

CONTENTS

BULLETINS

NEW SHORT COURSE

A new short course on SPSS has been added to the Winter Quarter schedule:

SPSS: Mondays only, February 28 through March 7 from 2:15 - 4:15 PM in Room 1250 Mayo.

WINTER QUARTER OPEN USER'S MEETING

The user's meeting this quarter will be on Wednesday, February 23rd from 2:00 - 5:00 PM in Room 209 Aero. If you have topics you wish discussed or questions you want answered, please call Rich Franta at 376-3963 or Lincoln Fetcher at 376-1637 and ask that they be added to the addenda.

UCC newsletter

SYSTEMS

COMPUTER SYSTEMS HARDWARE UPDATE

The October newsletter stated that an additional 9-track tape unit would be delivered in October, but it still has not arrived. It is still on order and we expect it to arrive shortly.

Three additional double density disk units (DJ's) were installed in January. The last three leased single density units (DI's) were returned to Control Data and one DI was transferred to the 6400 (MERITSS). Mass storage configurations are now (capacity is in millions of characters):

#	type	name	removable	capacity	use
Cyber 74					
7	DJ	none	no	1541M	Temporary files, user direct and indirect permanent files, UCC staff indirect permanent files.
1	DJ	PF01	no	221M	Large user direct access permanent files.
1	DJ	UCC	no	221M	System is loaded to this device; temporary files; it is the backup DJ if any DJ is down.
2	DI	none	yes	220M	Two removable disk pack units; one is the backup DI if any DI is down on the Cyber 74 or the 6400.
1	DI	STF	no	110M	UCC staff permanent files.
1	DI	SP	no	110M	FUTURE, current, and PAST compilers, libraries, and special packages.
1	DB	none	no	64M	All MIRJE timesharing and batch rollouts go to this device.
CDC 6400					
4	DI	none	no	440M	User and system permanent files.
1	DB	none	no	64M	Rollouts and temporary files.

This gives totals of 9 DJ's, 4 DI's, and 1 DB (2493 million capacity) on the Cyber 74; 4 DI's and 1 DB (504 million capacity) on the 6400.

PERFORMANCE MONITORING AND MEASUREMENT

One of the many activities of the Systems Group is to monitor the performance of the computer complex with an eye to detecting bottlenecks or to proposing specific recommendations for additional equipment that would improve reliability, batch throughput, or timesharing response. In combining operating systems last summer, we expected that timesharing response might be slower since one axiom regarding new versions of an operating system is that they will usually take more core, more CPU, and (although new functions are allowed), any previous simple function will take longer to perform. (See the December 1976 newsletter for more information.)

In order to understand how additional equipment would improve timesharing response for the current operating system, Kevin Matthews, Manager of Operating Systems, and two timesharing staff members, Bob Williams and Bill Sackett, worked with Dave Fletcher, the CDC analyst, to study the same 192 simultaneous ports "stimulation run" on our CDC 6400 and Cyber 74 and on a Cyber 73 at the benchmark labs of Control Data. Before the "stimulation runs" were performed, we thought that these equipments (in descending priority) would be needed to best improve our response time:

  1 Disk controllers
  2 PPUs
  3 Central Memory
  4 ECS
  5 CPU

However, the stimulation runs gave the following priority list of additional equipments to provide shorter timesharing job throughput with percentage improvement as shown:

  1 Disk units (33%)
  2 ECS (29%)
  3 Disk controllers (23%)
  4 Central Memory or CPU (8%)
  5 PPUs (1%)

Since additional disk units headed this list, we added an additional single density disk to the 6400 configuration when our additional double density units were delivered in January.

The stimulation runs, and the resulting priority list, showed us that the seek-overlap software which allows disk units to have magnetic heads positioned at the next requested track during the time that other units are transmitting PRUs through the disk controller does effectively improve disk performance.

We consider ECS to be too expensive to add at this time, but an additional disk controller will be installed on the 6400 before the next school year in order to further improve timesharing response.

One other interesting characteristic was discovered in the comparison of similar systems with additional controllers (identical except 98K central memory vs. 65K memory). Short jobs went through faster (23% to 10%) on the 65K central memory configuration; the 98K configuration improved response time for large timesharing jobs significantly.

Besides additional equipment, the stimulation runs showed that smaller binary execution field length and elimination of any unnecessary rollouts are the keys to improving timesharing response. The Systems Group is actively investigating various software changes that would help insure that these requirements can be met. In addition, we would like to acknowledge the help given us by the Control Data Corporation (especially the benchmark labs) and our CDC sales representative and staff.

L. Liddiard, 373-5239

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THE NEW STANDARD MNF

We have already started work on the new standard version of MNF which will be designed to conform to the ANSI 1976-77 FORTRAN standard. In the November newsletter was published a list of features which CDC plan to remove from their new standard version of FTN. A similar list for MNF is given below. We plan to remove less features than CDC, and in particular, the following features will be retained:

    Multiple statements per line
    Octal (B) constants
    ... fields in FORMAT
    Optional commas after X and string FORMAT
        fields
    2 branch logical IF statement
    IF(EOF) test

The main features we plan to remove are:

(1) Alternate form of the DATA statement, DATA(A=1.0)
(2) DATA statement list items of the form r*(constant+list), but r(constant list) will be permitted
(3) TYPE as a keyword, TYPE REAL I
(4) ECS statement
(5) ENTRY statement (must be changed to new standard form)
(6) 2 branch arithmetic IF (not allowed by current MNF)
(7) CALLS/RETURNS feature (not allowed by current MNF)
(8) Out of range index on computed GOTO will go to next statement
(9) .GQ. .NQ. .EQ. .GR. .LS. relational operators
(10) .I. .R. .IND. .INF. "constants" (please let me know if you think that this feature is useful)
(11) FOR statement (use new extended DO statement)
(12) MNF(C=RUN) calling sequence
(13) Periods round .END.= and .ERR.= in READ statement
(14) UNLOAD statement
(15) TRACE SUBPROGRAM ENTRY statements
(16) *...* constants (except in FORMAT) -- PRINT, *TEXT* (this will not be allowed in the next version of MNF to be installed)

As the work progresses, we may find it necessary to change other features but such changes are likely to be very obscure (such things as signed Hollerith constants).

Despite this notice, the new standard version of MNF is not expected to be ready for over a year. Nonetheless, this may be a good time to start removing some of the obsolescent features from your programs.

C. Schofield, 373-5239

R U N

RUN COMPILER TO BE DROPPED

A while ago we ended support of RUN and its related routines because of our limited manpower and because CDC had ended its support. Also, we found that the code generated by RUN is slower than the code for MNF or FTN. Since RUN is slower and is taking valuable disk space, we have decided to drop it from the operating system. We plan to do this after the end of the second summer session in 1977 so you have plenty of time to convert any RUN programs you have to MNF or FTN.

We will be removing the RUN library routines; this means that relocatable binary decks from RUN will not be usable. While absolute overlays could be made from the relocatable binary, we do not recommend this. Start conversion now so that any problems that arise can be taken care of before it is too late.

L. Liddiard, 373-5239

M P O S

A NEW VERSION OF MPOS

A new version of MPOS (Multi-Purpose Optimization System Version 3.0) was installed on the Cyber 74 on January 17. Two new algorithms have been added, and some revisions have been made to others. There are also some new language features; among them the capability to specify maximum field lengths for central memory and ECS. For information, see the manual in the UCC Reference Room.

The previous version (MPOS version 2.0) can still be accessed by executing the following control card:
        PAST,MPOS.
Version 2.0 will remain until the end of winter quarter at at which time it will be deleted.

The documentation for MPOS Version 3.0 is: "Multi-Purpose Optimization System User's Guide Version 3.0", 1976: NUCC 320. A reference copy of this manual is available in the UCC Reference Room. If you wish to order this manual, write:

        Vogelback Computing Center
        Northwestern University
        2129 Sheridan Road
        Evanston, Illinois 60201

If you have any questions, or problems with MPOS, please call me

K. Fjelsted, 373-5754

R J E

RJE NOTES

Any RJE user who would like to obtain a copy of the SUPIO cumulative statistics report for the year 1976, can do so by executing this control statement:

    WRITEUP,RJE1976

The report is 7 pages long and is in the same format as the monthly statistics file. Only production time, between January 6, 1976 and December 31, 1976 (inclusive), is included in this report.

G. Jensen, 373-5754

Some new developments in computers and art are taking place at UCC. To reflect the growing interest in computer art by programmers and non-programmers alike, several art programs have been developed or acquired, and adapted to the available visual display media. These media include teletypes, CRTs, line printers, a Varian electrostatic plotter, Calcomp drum plotters (10 and 30 inch), and an FR-80 microfilm plotter (35 mm black and white film). Also, to aid the programmer in producing visual displays, we have some new graphics subroutines for the plotters and printers.

You may not know that the overlap of these two fields, computers and art, predates the birth of the computer age. This overlap is in the use of an algorithm or a sequence of instructions in the development of an art work. This concept likely had its origin beside those of mathematics and logic.

Over the last two decades a growing number of people have been using computers to produce visual, audible, or other sensorial works of art. Many of these have involved the collaboration of the artist and the technologist. This collaboration may strike you as unusual although an artist using a computer really need be no more skillful at programming than does an artist using color photography need be skillful at darkroom technology.

It is in this light that these art programs are being developed. The presence of progressive graduate school programs in computer art, such as the one at the University of Ohio, demonstrates the need for this development so that those interested in this field no longer need to re-invent the wheel. The schools of Art and Journalism at the University of Minnesota have expressed interest in the development of courses focusing on this rapidly expanding field, following the example set last year by the schools of Computer Science and Psychology. In the past, interested students have registered for directed study in the Studio Art department to work with the medium.

In future issues of this newsletter, I will describe, in more detail, the various art programs that are available and how to use them. The art program documentation ranges from 'mostly sunny' to 'heavily overcast' and is being revised. I am most interested in hearing your comments or ideas concerning these new directions.

K. McMahon, 376-5262

Seated Nude   Jean Bevin
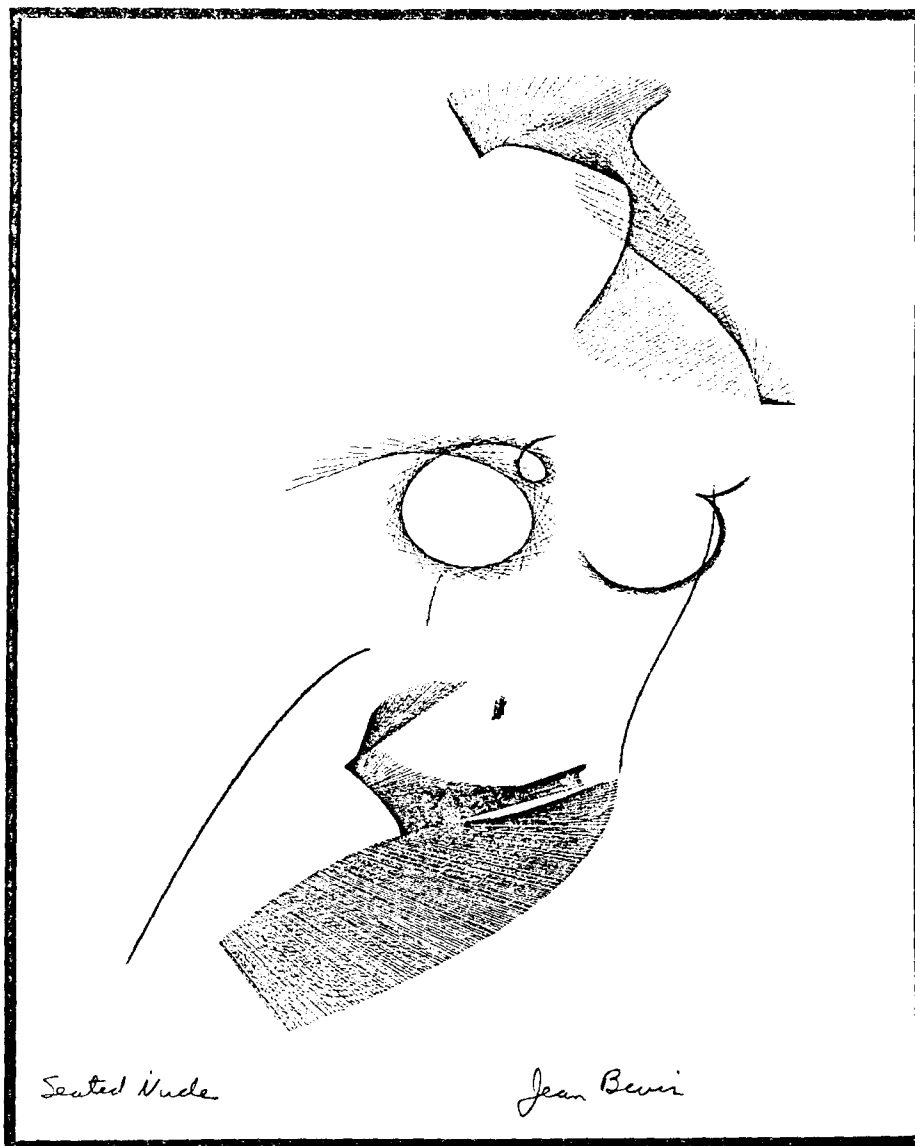
ARTISTS   **use**   **COMPUTERS**
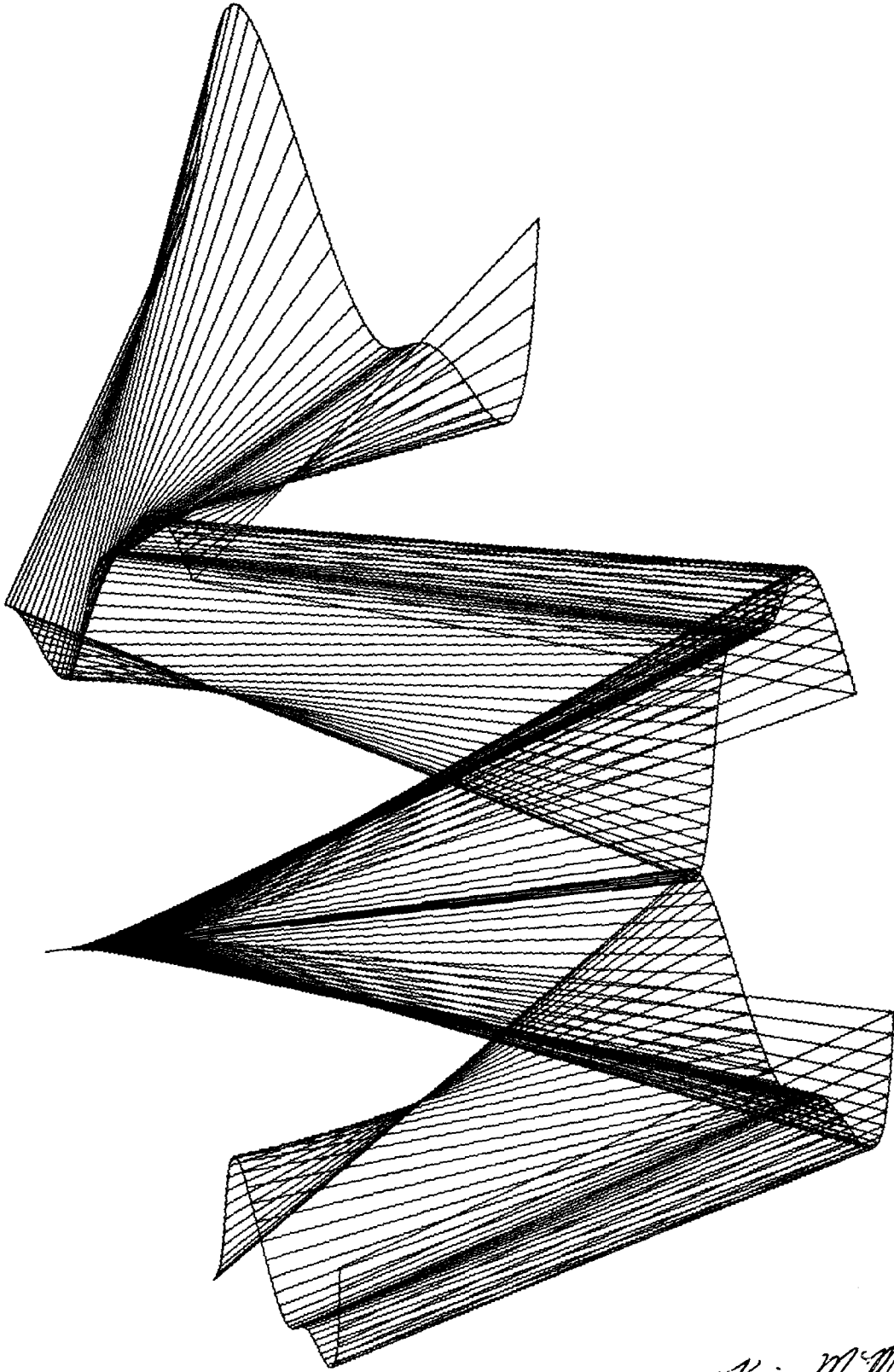
Serpent

Kevin McMahon

TIMESHARING EFFICIENCY AND MEMORY MANAGEMENT

Central memory is one of the resources of a computer system that must be managed efficiently by the operating system and the user. We will outline here the philosophy that underlies effective use of central memory and then cite specific steps we are taking, and steps you may take, to improve response time for your work and for that of other users.

A timesharing terminal session comprises a number of individual runs or jobs. The entering of RUN, RNH, CALL, or any control card in BATCH mode are examples of the initiation of a run. Each run must execute with some amount of memory, or field length. The field length used may be specified explicitly by the user or, for convenience, the system may determine a field length automatically. This invisible determination feature is primarily designed for the novice and is not very precise in most instances.

When the run is a compilation (e.g., MNF, BASIC), the system will be liberal with field length allocation to avoid an overflow while compiling (when the program starts execution, field length will be lowered to the exact amount required). The initial amount is based on the compiler used and the size of the program file.

EXECUTE (binary) files run at a field length that is computed in a similar manner. A base memory amount is added to a field length that is a function of the file size. Unfortunately, there are two types of binary files: absolute (overlays), which are ready to run without the addition of any external system routines (for example input-output packages) and relocatable, which do require additional packages before they may be run. The file size in the absolute case completely defines the field length needed (except in the case where blank common has been used; the amount of blank common must be added to memory requirements based on the file size) while the relocatable clearly needs much more than that indicated by the size of the file alone to accomodate the extra routines. Since the automatic field length control is for the novice, the system assumes that EXECUTE files are of the relocatable type and is generous with memory.

Control statements executed in BATCH and procedure files depend on the last RFL statement value that was set (20000 octal words by default).

It is clear that allowing the system to automatically determine field length requirements is easy, but inefficient. A short summary of how the user can specify field length to be used would be helpful.

One way to control memory used has already been described in the discussion of the use of the RFL statement in BATCH and procedure file work. The RUN and RNH commands allow you to specify the field length to be used through equivalenced parameters. The MI parameter allows specification of the incremental amount of field length to be used above that which the system calculates. The MA parameter lets you set the absolute amount of central memory to be used for this job. Both values are in octal numbers of words. Thus, to run any type of program (MNF, EXECUTE, PASCAL) with 45000 octal words, the command "RUN,MA=45000" would be used.

But how do we know what field length is appropriate for our task? You can determine memory requirements in many diverse ways. The first phase most source programs go through, that of compilation, often needs the most memory. Many compilers (PASCAL, for instance), indicate their memory needs in the dayfile. Others indicate their usage in the listing. The best general method for determining a proper value is through use of the MA parameter on the RUN and RNH commands in a trial and error process. In BATCH, a similar procedure using RFL is advantageous.

The same can be said for the load and execute operations, although the loader also provides an additional aid. The control statement, "MAP,S", selects a three-line message every time a program is loaded; this message indicates the memory needed to load and run the program. If the binary is left as relocatable, the larger of these two values should be used in the future while if an absolute (overlay) is constructed (through LINK or some similar method), the memory needed to run should be used. ("MAP,S" must be entered in BATCH or by "X,MAP,S" and is reversed with "MAP,OFF". See the example.)

So we know how field length is calculated automatically, how you can control it, and how the amount a task needs can be determined. How, then, can this be used to improve performance?

Clearly, any memory that is reserved over the amount actually needed is a waste. Because smaller jobs are given better treatment by the system due to their reduced tax on resources, the individuals who are reserving more core than they need are punishing themselves. At the same time, when their jobs do execute, others will have to wait for memory to become available while some is going unused. To avoid this, minimum requirements should be established and used, particularly for those jobs that are run often. The GAME program, CHESS, is a good example. This absolute (overlay) will run in under 30000 words but if the field length is not specified with MA on the RUN command in the EXECUTE subsystem, 55000 words are used. This wasted 25000 words is enough to run many other applications (for example, XEDIT).

You can also use RFL cards in procedure files and BATCH to utilize memory optimally. Packages such as LIBGEN and LIBEDIT that build tables in the course of performing their tasks are like compilers in that they will not reduce from the field length they were given.

Use TSF, the small version of MNF, in procedures and in BATCH, whenever possible, since it requires less memory and allocates buffer space that is smaller and more in line with that needed for timesharing applications.

We are also working on field length management in several areas. One ongoing study is being made of the automatic subsystem field length calculations. This has already yielded some positive action (for example, soon the PASCAL base field length calculation will drop from 55000 to 52000) and will hopefully lead to other changes.

We have seen that use of more field length than is required for the task is analogous to the mailing of a small gift in a large package. It may take longer to get the same job accomplished, causing problems for the sender, receiver, and carrier.

R. Williams, 373-4573

EXAMPLE

```
MNF
READY.
NEW,XX.
CP          0.003 SECS.
READY.
100 PROGRAM XX(OUTPUT,INPUT)
200 PRINT , *THIS IS A TEST.*
300 STOP
400 END
RNH
THIS IS A TEST.
STOP
CP          0.252 SECS.
RUN COMPLETE.

MAP,S
ILLEGAL COMMAND.
X,MAP,S
READY.
RNH
FL REQUIRED TO LOAD      15500
FL REQUIRED TO RUN        6400
INITIAL TRANSFER TO XX - 2164
THIS IS A TEST.
STOP
CP          0.260 SECS.
RUN COMPLETE.

X,MAP,OFF
READY.
RNH
THIS IS A TEST.
STOP
CP          0.251 SECS.
RUN COMPLETE.

BYE
```

permanent files

ORGANIZING PERMANENT FILES

Are you burdened by expensive permanent file costs? Confused about organizing your multitudinous data files on tape? Not sure what to do with all those old programs that are gathering dust in your permanent file catalog? ARCHIVE may be the answer for you.

A new permanent file dump/load utility is now available as a user callable control statement. ARCHIVE, developed at the University of Minnesota, provides a convenient and reliable method for managing a file dump tape. ARCHIVE was designed to fulfill two primary goals:

1. To provide a convenient way to create and update a dump tape.
2. To protect such a dump tape against hardware failure, defective tapes, and certain user errors.

ARCHIVE is oriented toward maintaining an existing dump tape. The permanent file user will want to periodically use ARCHIVE to backup those files which have changed since they were last dumped, and those files which are no longer accessed often enough to justify keeping them on disk. Then, when the need arises, ARCHIVE may be used to selectively load files back to disk. This is in contrast to the other permanent file backup package DUMPPF/LOADPF whose default mode of operation is to dump or load all permanent files at once.

One of ARCHIVE's fancy features allows the dumping of multiple versions of a single file, distinguished by a date or some other qualifier. ARCHIVE also provides a mechanism for maintaining a pair of dump tapes, one of which is automatically selected for dumping. This provides a measure of integrity in the case that one tape is damaged. The contents of an ARCHIVE dump tape is kept in alphabetical order, and a descriptive comment may be associated with each dumped file. By using this commenting feature, an ARCHIVE listing (as well as a CATALOG listing) of the dump tape provides an annotated index to the collection of files which reside on that tape.

The intent is to encourage permanent file users to build up archival storage on a tape library. ARCHIVE's purpose is to help organize such storage, and to make such a library almost as easy to maintain as a permanent file catalog. For a more detailed explanation of ARCHIVE, use the control statement

WRITEUP(ARCHIVE).

J. Strait, 376-7290

?!?!

THE SUGGESTION BOX

I WOULD LIKE TO SEE A POLICY CHANGE FOR USE OF THE 1004 IN THE STUDENT I/O ROOM, TO WIT: DON'T READ IN CARDS WHILE A JOB IS PRINTING. THIS MACHINE OFTEN CRASHES WHILE READING CARDS BUT I HAVE NOT SEEN IT CRASH WHILE PRINTING. ALSO, WHEN IT READS AND PRINTS SIMULTANEOUSLY, THE TWO PROCESSES TAKE AT LEAST AS LONG AS EACH ONE WOULD IF RUN SEPARATELY. THEREFORE, BOTH USERS HAVE TO WAIT THE FULL TIME FOR BOTH TO FINISH. ALSO, IF THE 1004 CRASHES WHILE READING, THE PRINT JOB RESTARTS FROM THE BEGINNING, THUS CREATING LONGER DELAYS. THROUGHPUT FOR ALL CONCERNED WOULD BE SPEEDED UP IF USERS LET A JOB FINISH PRINTING BEFORE READING IN ANOTHER JOB.

S.M.:16NOV76

We understand your concern over this type of problem. However, the facts are these: about 1/4 of total read/print time is saved when done together. Also, the F command will allow printing only that portion of output remaining to be printed (see WRITEUP,RJECOM). If you have an important output, you could ask others to wait. Also, I feel certain that a change in policy would not be enforceable.

R. Franta

I SUGGEST THAT YOU INSTITUTE SOME EASILY ACCESSIBLE OVERRIDE OPTION FOR YOUR NEW POLICY WHICH DISPOSES OUTPUT FROM REMOTE TERMINALS TO EXP ENG. I RUN MOSTLY AT ELLIOTT HALL, USUALLY WHEN THERE ARE ONLY 1 OR 2 OTHER USERS PRESENT. IT SEEMS THAT ALLOWING LONGER PROGRAMS TO PRINT WOULD NOT UNDULY INTERFERE WITH GETTING OUTPUT TO OTHER USERS. IF IT WOULDN'T BE POSSIBLE TO OVERRIDE THE

SYSTEM COMPLETELY, AT LEAST YOU COULD LENGTHEN THE NUMBER OF PRU'S THAT COULD PRINT AT THE REMOTE TERMINAL. THIS IS A CONCERN OF A NUMBER OF OTHER USERS AT ELLIOTT BESIDES ME.

H.G.:16NOV76

As was discussed at the December user's meeting (were you there?) this is being worked on.

R. Franta

WHY DO KEYPUNCHES HAVE TO BE SHUT DOWN WHEN THE COMPUTER IS SHUT DOWN? HOW ABOUT PUTTING A LARGE NUMBER IN A ROOM THAT REMAINS OPEN IN LATE EVENINGS AND ON THE WEEKEND SO THAT PEOPLE DON'T HAVE TO WAIT AND COMPETE WITH OTHERS DURING THE WEEK WHEN THE MACHINE IS UP.

S.M.:24NOV76

At 1004 sites, most local supervisors will provide off hour access, if requested. Due to vandalism and theft, many locations are locked up during off hours. In some cases the buildings are locked, preventing use of keypunch equipment.

R. Fleagle

WHAT HAPPENED TO THE TRACE IN MIXAL? IT USED TO COVER THE PAGE WITH CONTENTS OF ALL REGISTERS FOR EACH INSTRUCTION; THIS TOOK A LONG TIME TO PRINT AND WAS PRETTY REDUNDANT. THEN, QUITE RECENTLY, IT WAS MODIFIED SO THAT IT ONLY PRINTED THE CONTENTS OF A REGISTER WHEN THEY WERE CHANGED. THIS WAS A GREAT IMPROVEMENT. NOW, SUDDENLY, IT'S BACK TO THE WAY IT WAS, PRINTING EVERYTHING ALL THE TIME. WHY THE CHANGE BACK AND IS THERE ANY CHANCE OF RETURNING TO THE FASTER TRACE?

S.M.:24NOV76

MIXAL has always had a console scoop of all the registers. One option (not default) of the MIXAL assembler/simulator is a smaller variant trace that is undocumented; revision of the MIXAL documentation is long overdue. I suspect you are simply using a different form of TRACE each time. Call me if you have further questions.

A. Mickel

WHILE THOSE OF US HAVING RESEARCH ACCOUNTS ON MERITSS CAN CHECK OUR TOTAL STORAGE WITH CATLSYS, WE HAVE NO WAY TO CHECK TOTAL CONNECT TIME FOR THE MONTH OR QUARTER. THIS MAKES IT VERY DIFFICULT TO PREPARE FOR "THE BILLINGS." COULD YOU PLEASE MAKE THAT INFORMATION AVAILABLE (PERHAPS ALSO THROUGH CATLSYS)?

M.T.:16DEC76

Connect time usage for the month and for the quarter will be available later this year through the control card callable utility ACCSTAT (accounting statistics).

B. Fox

IS IT POSSIBLE FOR YOU TO PRINT THE PERCENT USAGE OF ALL SYSTEM RESOURCES? IT WOULD BE INTERESTING TO SEE, I.E., TAPE DRIVES, CPU TIME, PP TIME, STORAGE SPACE, ETC.

D.DeH.:16NOV76

We do not plan to print percentage usage for all of the system resources since we are not convinced that such a statistic gives meaningful information (we will do it for mass storage space). For example, we have 14 PPU's attached to the Cyber 74 and, during peak periods, we are out of PPU's (3 to 6 times per second). We also have 18 medium speed ports, 2 nine-track drives, and 3 mass storage channels, but the criterion for these is saturated times vs. the average utilization since the latter convinces us that no additional resources are needed. Yet, we are buying an additional nine-track drive since we have had delays of over 25 minutes in mounting tapes during certain heavy use periods. In general, our machines seem to be saturated at 70-75 percent CPU utilization. From our monthly statistics you may note that utilization is 42 percent to 44 percent. We anticipate that the Cyber 74 will be saturated in approximately 3 to 4 years (at the current 25-30 percent per year growth rate.)

L. Liddiard

SINCE THE ELECTROSTATIC PLOTTER IS NOW ON-LINE, WHY NOT REMOVE THE SETUP CHARGE. THE SETUP CHARGE FORCES USERS INTO SEVERE CONTORTIONS IN ATTEMPTING TO PLOT AS MUCH ON A SINGLE JOB AS POSSIBLE RATHER THAN SUBMITTING JOBS IN A MORE REASONABLE STEP-BY-STEP MANNER. IT IS LIKE CHARGING OVERHEAD FOR PRINTING.

W.C.

We are planning to order a new plotter for delivery shortly after July 1. At that time, we will implement a new rate structure for plotting; watch the newsletter for details. We will announce the new plotting rates so that users can plan their budgets for the next fiscal year. We will keep your ideas about the setup charge in mind when we revise the rates.

M. Frisch

THIS IS AN ELABORATION OF MY PREVIOUS COMPLAINT: A WRITEUP FILE LISTING THAT HAS A WIDTH OF 72 CHARACTERS OFTEN GOES PAST COLUMN 72, PILING UP CHARACTERS AT THE END OF THE LINE. SOME FILES THAT DO THIS ARE COPYL, CALLPFM, ITEMIZE, AND POLISH.

W.M.:17DEC76

We are working on this problem and are aiming for a standard 70 character width for each WRITEUP file.

T. Hodge

WHY IS THE LIST OF UCC SHORT COURSES POSTED AT LAUDERDALE A LIST OF THE SUMMER SHORT COURSES? IT'S NOT SUMMER ANY MORE.

T.B.:21DEC76

We usually post the new course list over the old one. When someone "rips off" the new one, the old one, of course, pops up again. In future, we will remove old copies; when the new schedule

PRODUCTION USAGE SUMMARIES

	December, 1976	December, 1975

CDC Cyber 74
```
    Number of jobs run plus MIRJE sessions       61,300 ( 71,504)        68,699 ( 77,456)
    Central processor hours                         135 (    179)           117 (    146)
    Mass storage transfers (KPR)                 149,648 (194,051)       140,442 (183,115)
    Magnetic tape transfers (KPR)                  4,154 (  5,946)         3,973 (  8,533)
    Pages printed                                626,015 (727,643)       800,523 (927,147)
    Cards punched                                358,611 (385,665)       469,863 (559,188)
    Microfilm frames produced                      7,282 (202,837)        18,853 (193,569)
    Tapes mounted                                  7,130                   7,803
    Average file storage                           883.1 million char      569.9 million char
    Mean time between failures                      22.6 hours             17.7 hours
    Percentage available during scheduled hours     97.9 percent           97.2 percent
    SUPIO availability                              91.2 percent
```
(totals include staff development, accounting, and maintenance runs)

CDC 6400
```
    Number of jobs run                           114,153                 109,134
    Central processor hours                           78                      72
    Terminal hours                                14,976                  14,921
    Number of terminal sessions                   27,513                  30,228
    Maximum number of simultaneous users             111                     111
    Average file storage                           220.1 million char      137.8 million char
    Mean time between failures                      70.9 hours             19.8 hours
    Percentage available during scheduled hours     99.3 percent           98.0 percent
```

CYBER 74 DOWNTIME SUMMARY : January, 1977

	Monday-Friday 0800-1800	other	total
Total possible scheduled uptime hours	210.	304.	514.
Total downtime hours (see Schedule A)	4.3	2.3	6.6
Total uptime hours	205.7	301.7	507.4
Uptime percentage	98.0 percent	99.2 percent	98.7 percent
Average downtime per occurrence	17.1 minutes	23.0 minutes	18.8 minutes
Mean time between failures	13.7 hours	50.3 hours	24.2 hours
Subsystem failures			
SUPIO	9	8	17
TELEX	0	0	0
EXPORT	7	2	9

Schedule A: downtime hours

	Number	Total hours	Average minutes
(1) Preventive maintenance over-runs	0	0.0	0.0
(2) Software related problems	13	1.6	7.7
(3) Hardware related problems	5	3.8	45.8
(4) Indeterminate software/hardware problems	2	.4	12.5
(5) External Problems*	1	.7	40.0

*power failure at Lauderdale site

SUBMISSION SITE USAGE SUMMARY: TELEX EXCLUDED : January, 1977

submitted from	total jobs	%	pages printed	%	cards read	%
Lauderdale	2,775	4.9	262,964	25.8	1,477,912	15.2
ExpEng	7,127	12.5	209,599	20.5	2,321,794	23.9
West Bank	7,435	13.0	116,819	11.4	1,270,286	13.1
6400	1033	1.8				
SUPIO	38,746	67.8	431,613	42.3	4,639,910	47.8
TOTALS	57,116		1,020,995		9,709,902	

WRITEUP DOCUMENTS (* = new writeup)

01OCT76	ABCLIST	Extended CATLIST utility.
03MAR76	AMEND	Unit record manager.
03AUG76	APLUM	APL interpreter.
04SEP76	ARCHIVE	PF dump/load utility.
16AUG76	BKP	Breakpoint CP program.
12NOV75	BLANK	Write initial label.
05JAN76	BLOCKER	Write blocked stranger tapes.
23SEP76	CALLPFM	FORTRAN permanent file routines.
14SEP76	CALLPRG	Library search extension.
26OCT76	CATALOG	Catalog a file.
01NOV76	CATLIST	Catalog a permanent file.
10MAR76	CATLSYS	Extended CATLIST utility.
01OCT76	CHANGER	Extended CHANGE utility.
21AUG76	CHANGES	Merged system changes.
16OCT75	CIMSPL1	CIMS PL/1 user guide.
07MAY76	CKSPSS	SPSS utility program.
26MAY76	CONTROL	Descriptions of control cards (indexed).
28SEP76	COPYL	Cyber common utility; LIBEDIT.
11DEC75	COPYU	Copy unit records.
18JAN75	COST	Calculate job cost.
26JUL76	DELAY	DELAY queue feature.
16JUN75	DISPOSE	DISPOSE control card.
09NOV76	DIVERT	Re-route large output files.
13MAR75	DMPCOR	CM dump routine.
01MAR75	DMPECS	Dump ECS.
01MAR75	DRESS	Prepare source file for MODIFY and UPDATE.
21DEC76	DUMPPF*	Permanent file dump and load utility.
14SEP76	EISPACK	Descriptions of EISPACK programs (indexed).
11FEB75	ERRMESS	Dayfile error messages.
26FEB76	EXAMINE	Determine magnetic tape contents.
22DEC76	FILES*	Manipulate local files.
08JUN76	FMT	Text formating program.
17DEC76	FOCAL*	FORTRAN calculator.
27AUG76	FORSUBS	Desc of FORTRAN subprograms (indexed).
14SEP76	FUNPACK	Description of FUNPACK programs (indexed).
01OCT76	GETSAVE	PF utility.
26MAR76	HASH	Change user index to job name and vice-versa.
30MAR74	ISIS	Interactive statistics system.
28SEP76	ITEMIZE	Cyber common utility; CATALOG.
08AUG76	KCL	Control card processor.
18JAN75	LIBEDIT	Library editing program.
27AUG76	LIBLIST	Short descriptions of library files.
27AUG76	LIBRARY	Description of library files (indexed).
09AUG76	LISP	LISP information.
20NOV76	LIST80*	LIST80 documentation.
20NOV76	L072*	L072 documentation.
01OCT76	LPKODE	LP/IP/MIP package.
18JAN75	MODIFY	Source library editing program.
14APR76	MODUP	MODIFY to UPDATE conversion program.
03MAR75	PACKMS	Pack random file.
22SEP75	PASCAL	PASCAL information file.
26SEP76	PASCLIB	PASCAL library information.
28SEP75	PFGUIDE	Permanent files user's guide.
01NOV76	PFILES	Permanent files request processor.
11OCT76	POLISH	Edit ANSI FORTRAN modules.
01MAR75	PREVIEW	Preview display dump.
24JUL76	PROCPAC	Reference for calling system routines.
01OCT76	PURGER	Extended PURGE utility.
19NOV75	REBLOCK	Converts "S" AND "L" tapes to internal.
18DEC75	REFORM	Sequence/desequence T/S source lines.
24JAN77	RIGHTUP*	How to use WRITEUP.
26JUN75	RJECOM	Remote job entry commands.
14APR76	SEND	Send files to the 6400.
14APR75	SNOINFO	CAL 6000 SNOBOL.
09APR75	SNPSHOT	Write/restore registers and dump.
09SEP75	STRATEN	Straighten COMPASS source lines.
01APR75	SYSLIB	SYSLIB documentation.
23DEC76	TAPES*	Tape library manager.
05JAN76	TAPEUSE	Tape user's guide.
30MAR76	TDUMP	Dump a file.
23AUG76	TEKLIB	Library for TEKTRONIX terminals.
03JUL75	TESTCR	Card reader testing routine.
16JUN75	TESTLP	Printer and line test program.
23JUN74	TYPESET	Text reformating program.
12MAR75	UNPAGE	Edit carriage control characters.
10JUN76	XEDIT	Extended interactive text editor.
26DEC75	1004INT	1004 operating instructions.
03JUL75	1004SET	1004 character set conversion.

WRITEUP FILES WITH ROUTINELY CHANGING INFORMATION

AFmmmyy	Lists of archived files; mmm=month, yy=year.
CONSULT	Consulting sites and hours.
DOCLIST	List of documentation; publications sources.
HOURS*	Operating hours.
NOTE	T/S system notes.
PTRFORT	List of FORTRAN bugs.
PTRKR	List of operating system bugs.
PTRMISC	List of miscellaneous software bugs.
PTRSTAT	List of statistics packages bugs.
PTRS2K	List of System 2000 bugs.
RJDSTAT	Daily SUPIO statistics.
RJEMTOT	Monthly SUPIO statistics.
RJMSTAT	Cumulative SUPIO statistics.
SITEBIN	Output shelf locations.
SYSMODS	Latest system changes.
TSTATS	Tape mounting statistics.

UCC PUBLICATIONS

BMDP : local modifications (1976)
CAL 6000 SNOBOL (1975)
FOR THE NEW USER: A Complete Guide (1976)
IMP - An OMNITAB Mimic (1976)
Index to Cyber 74 User Software (1975)
Instructor's Guide to Batch Computing (1975)
Introduction to OMNITAB II (1974)
ISIS User's Manual (1976)
LISP at the University of Minnesota (1974)
MF501 : a microfilm printing routine (1974)
MINN subprogram writeups (see "Index")
MIX at the University of Minnesota (1972)
MNF Reference Manual (1976)
PRNTPLT : a PASCAL plotting routine (1976)
RPG AT THE University of Minnesota (1974)
SLIP at the University of Minnesota (1974)
SNOBOL4 at the University of Minnesota (1976)
SPSS 6.0 : Local implementation and extensions (1975)
SPSS/ONLINE (1976)
Student Guide to Batch Computing (1976)
System 2000 User Aids (1,2,3,4)
Timesharing Guide to Computing (1975)
UCC Instant (1976)
UMTIMER (1975)
Univac 1004 Operating Instructions (1975)
UNPAGE (1975)
UWM BASIC at the University of Minnesota (1975)
VIEW : TEKTRONICS graphics (1976)
XEDIT 2.1.6 : an extended text editor (1976)

CYBER 74 OPERATING HOURS

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Sun|------------------|||||||||||||||||||||
Mon|***|            |<><><><><><><><><><><><><
Tue|*******|        |<><><><><><><><><><><><><
Wed|*******|        |<><><><><><><><><><><><><
Thu|*******|        |<><><><><><><><><><><><><
Fri|*******|        |<><><><><><><><><><><><><
Sat|**************|<><><><><><><|           |
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    2    4      8AM          4PM        Midnight
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******* 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 terminals) comes up 1/2 hour after operation
begins and closes down 1/2 hour before operation ends.
    TELEX (MIRJE terminals): the operator will issue a 10
minute warning before TELEX is dropped.

TWIN CITIES CAMPUS REMOTE JOB ENTRY SITES

Site	ID	supervisor	phone	keypunches*
East Bank				
ElectE 38	4V	J. Guentzel	373-5404	2
		M. Cook	373-3895	
EltH N640	4W	D. Anderson	373-5456	2
ExpEng 130	4B	Shift Supervisor	373-4596	7
KoltH S191	4Z	N. Mullaney	373-2348	4
HS-A 1-752	4C	L. Ellis	373-0331	1
MinMet 321	41	R. Brown	373-2308	3
Physics 69	44	R. Scarlett	373-0243	3
		D. Olson	373-5320	
SpaSci 134	43	R. Weinberg	373-7881	1
TerrH W106	4I	R. Baker	373-3567	1
Zoology 314	4J	E. Cushing	373-2232	1
West Bank				
SocSci 167	4X	J. Shea	373-3608	2
		B. Shattuck	373-3608	
SocSci 1009	4K	R. Anderson	373-0177	1
St. Paul				
BioSci 257A	47	R. Comstock	373-0979	1
		P. Kaufman	373-0927	
ClaOff 125G	48	C. Bingham	373-0988	3
		S. Weisberg	373-1068	
		Consultant	373-0829	
		Consultant	376-3846	
CofH 415	21	D. Nelson	376-7003	1
		T. Ehlen	376-7003	
NorH 24	40	J. Colten	373-0990	2
Lauderdale				
User's Room	49	Shift Coordinator	373-4940	5

*additional keypunches in 131 ExpEng(1), 86 BlegH(11) and
90 BlegH(1).

CDC 6400 OPERATING HOURS

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Sun|                        |***********
Mon|------------------|<><><><><><><><><><><><>
Tue|***|            |<><><><><><><><><><><><><>
Wed|***|            |<><><><><><><><><><><><><>
Thu|***|            |<><><><><><><><><><><><><>
Fri|***|            |<><><><><><><><><><><><><>|
Sat|              |<><><><><><><><><><><><><><>|
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    1:30AM       7:30          6PM      11:00PM
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****** up, not attended
<><><> up, attended

TWIN CITIES CAMPUS INSTRUCTIONAL COMPUTER LABORATORIES

Site	Supervisor	phone	equipment
East Bank			
CentH	R. Rickgarn	373-2289	TTY(1)
EltH 121,125	D. Anderson	373-5456	TTY(6)
			CRT(5)
			Printer(1)
Ex 140	T. Hodge	373-4599	CRT(3)
HS-A 1-752	L. Ellis	373-0331	TTY(6)
			CRT(2)
LindH 136A	M. Schneider	373-7582	CRT(6)
			Decwriter(2)
			Printer(1)
MechE 308	A. Erdman	373-2977	TTY(10)
			CRT(2)
TerrH	R. Baker	373-3567	TTY(1)
VincentH 4	W. Stenberg	376-7529	TTY(11)
			CRT(2)
WaLib 204*	R. Estelle	373-5195	Decwriter(10)
			CRT(4)
West Bank			
MdbH	W. Bakkenist	373-9818	TTY(1)
SocSci 167	J. Shea	373-3608	TTY(8)
			CRT(4)
			Decwriter(1)
SocSci 1009	R. Anderson	373-0177	TTY(3)
			CRT(2)
St. Paul			
ClaOff 125	S. Weisberg	373-1068	TTY(9)
			CRT(3)
			Decwriter(2)
			DI/AN(1)

*for CAI use only

disappears, you will know that one of your fellow students took it. We strongly suggest that those of you who want copies of the short course schedule subscribe to our newsletter (it's free) or call 373-7744 and ask for a copy. Please don't rip off your colleagues.

T. Hodge

brief notes

➡ BATCH BASIC NAME TO CHANGE

To permit FUTURE and FETCH versions of the CDC BASIC, we have found it necessary to change the name of the Batch BASIC (UWM BASIC) from BASIC to BASICB. This name change will be done at the quarter break in March; watch for a SYSNOTE giving the exact day.

● NEWS FROM SYSTEM NOTES

WRITEUP is a utility designed to provide quick and easy access to machine retrievable documents on the Cyber 74 and the 6400. The WRITEUP index can be obtained with the control statement
        WRITEUP.
The index will give you this information:
(1)   the name of the WRITEUP document.
(2)   The length of the document in 66-line pages.
(3)   The column width of the document.
(4)   The format; that is, whether its designed for line printer or teletype.
(5)   The last date on which the document was changed.
(6)   Whether or not the document is indexed.
(7)   A one-line description of the contents of the document.

Use the control statement
        WRITEUP,RIGHTUP
for more information.

RETURN TO:
    UNIVERSITY COMPUTER CENTER
    227 EXPERIMENTAL ENGINEERING
    UNIVERSITY OF MINNESOTA - TWIN CITIES
    208 UNION STREET SE
    MINNEAPOLIS, MINNESOTA 55455