UNIVERSITY COMPUTER CENTER

NOTES & COMMENTS

HYBRID COMPUTER LABORATORY

Changes in Staff

On October 1, 1968, Mr. John Munson returned to full time employment with Control Data Corporation. Mr. Munson's duties in the area of hardware and operations have become the responsibility of Mr. Zoltan Strohoffer. Mr. Strohoffer is now fully responsible for all physical facilities and hardware of the Hybrid Computer Laboratory. This includes maintenance, operation and scheduling of equipment, as well as the administrative tasks formerly performed by Mr. Munson. Mr. Munson's duties in the area of software and consultation have become the responsibility of Mr. John Salasin. Mr. Salasin is responsible for the system software of the hybrid computer and for consulting with users of the system with regard to software and programming.

Overall management of the Hybrid Computer Laboratory will, as before, reside in the Director of the University Computer Center.

Documentation

The manuals and handbooks for the hybrid operating system are now located in the UCC library, room 227 Experimental Engineering. The books must be checked out from the librarian and are available only to those users who have a valid problem number for hybrid computer use.

Site change

The Hybrid Computer Laboratory, which was temporarily located in Lauderdale, has been moved to the Space Science Center. If you have any questions concerning changes in operation or scheduling, please call one of the following:

Zoltan Strohoffer	128 SSC	ext. 3-4877
John Salasin	123 SSC	ext. 3-7881
Thomas Chapogas	124 SSC	ext. 3-5768

Visits & Discussion

Visitors will be welcomed. For those not familiar with the equipment, it is suggested that an appointment be made in advance to insure that a staff member is available for the visit.

The staff of the Hybrid Computer Laboratory will be happy to meet with individuals or groups for discussions ranging from general hybrid computer applications (with, if possible, examples from your own field) to details of the hardware and software available at this facility. For further information, please call any member of the hybrid staff or the Computer Center office, ext. 3-4360.

6600 News

Supply Charges

Beginning November 1st, the supply charges have been changed as follows:

                printer paper - 1 cent per page
                punch cards   - $4/box = $2/1000 = $0.002/card
                magnetic tapes- $30

UMST Manual

The present UMST manual is now out of print. The University Computer Center is in the process of revising and correcting the manual since a number of typographical errors were found. If you have any suggestions, please write or call Douglas Anderson, room 205 Exp. Eng., ext. 3-5456.

UMST Programs

All of the UMST programs (except UMST590) have now been changed to conform to the descriptions in the recently issued manual. If you have any problems in using either the programs or the manual, please call Mike Frisch, room 212 Exp. Eng., ext. 3-5907.

UMST590 will not be available until further notice.

Short Courses

The UCC will offer no short courses during the winter quarter break. A short course in Fortran will be offered in the first two weeks of the winter quarter. See the December Newsletter for details.

Notes & Comments

The October, 1968 Communications of the ACM (Vol. 11, No. 10) contains a letter concerning a common programming problem encountered by people whose data concerns dates. We reprint in herewith:

EDITOR:

The need to determine the elapsed number of days between any two given calendar dates seems to be a common problem in writing computer programs. Generally speaking, rather elaborate logic is needed to take into account the varying number of days in each month, plus the occurrence of leap years, and perhaps also the omission of a February 29 in years divisible evenly by 100 but not by 400. The following algorithm takes advantage of the truncation feature of integer arithmetic in the FORTRAN programming language to solve this problem in a very compact way. It converts any given calendar date (I=year; J=month, a number from 1 to 12; K=day of month) to a Julian Date (JD)-a continuous count of days from an epoch in the very distant past. For example, noon at Greenwich, England, on January 1, 1970, is the beginning of Julian Date 2,440,588. So if I=1970, J=1, and K=1, then the algorithm gives JD=2440588. Clearly, the interval between any two calendar dates (on the Gregorian Calendar) can be found by obtaining the Julian Date for each, and finding the difference. The algorithm is given below (presented as a FORTRAN arithmetic statement function). It is valid for any Gregorian Date producing a Julian Date greater than zero:

```
JD(I,J,K) = K-32075 + 1461*(I + 4800 + (J - 14)/12)/4
            + 367*(J - 2 - (J - 14)/12*12)/12 - 3
            *((* + 4900 + (J - 14)/12)/100)/4
```

The authors have yet to discover the algorithm of comparable compactness for converting a Julian Date back to a calendar date. But in preference to leaving the problem undiscussed, the following is offered (presented as a FORTRAN subroutine):

```
SUBROUTINE DATE(JD,I,J,K)
L = JD + 68569          $ N = 4*L/146097
L = L - (146097*N + 3)/4 $ I = 4000*(L + 1)/1461001
L = L - 1461*I/4 + 31    $ J = 80*L/2447
K = L - 2447*J/80        $ L = J/11
J = J + 2 - 12*L         $ I = 100*(N - 49) + I + L
RETURN
END
```

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?QUESTION?

In this month's newsletter, the UCC is starting a new column which will (we hope) answer some of the recurrent questions that frequently 'bug' users. If you have any questions and feel that the answer will be of interest to many users, would you please send them to the Editor, 227 Exp. Eng. and we will try to answer them in this column.

QUESTION: Why has turnaround time been so slow lately?

ANSWER: First, we must apologize for the long delays in the past two months. We have installed Extended Core Storage and a new remote station at West Bank, and these installations have adversely affected the stability and reliability of the 6600 system. We have had many hours of down time and this frequently gave poor turnaround time.

We are now back on a normal operating schedule and the hardware is more reliable. We no longer have a large backlog of jobs so turnaround time should show noticable improvement over the past two or three months.

QUESTION: All right, so the system is now more stable, but how can I reduce the time it takes to get _my_ job back?

ANSWER: A number of ways. We're listing a few below. Check your job and see if any of them apply to you.

1. Field length and time limits
   The scheduling algorithm in the 6600 system gives preference to short field length and short time limit jobs. Since there is no way you can arbitrarily set a high priority on your job, you must manage through your field length and time limit assignments. Check the field length and time limit assignments on your job card, and set them as close to the actual requirement as possible. This will increase your job priority.

2. Printer output
   If your job prints large amounts of data, it will be diverted to the Lauderdale site for printing and must then wait for a scheduled courier delivery. (Deliveries are made about every 2 hours.) Check your output. Are you printing only what you need? Can you reduce the page count, e.g. print 5 columns per page instead of 1? What about all those pretty headings? Could they be omitted? If you reduce

your output you reduce the chance of your job being diverted. (You also save money, since you use fewer supplies and less printing time.)

3. Transient tapes

Jobs which use transient tapes must wait for a scheduled messenger run to be taken to the Lauderdale site and then must wait for another run to be returned. This results in several hours of unproductive waiting time for you. Logging in these tapes permanently will not only save you turnaround time but will also provide better care for the tapes.

4. Heavy job loads

When many people are submitting jobs they cannot all receive immediate attention. If you have a low priority job to begin with, more job submissions will simply push your priority down further. We have observed that the heaviest work load comes at the end of each quarter. It might be wise to check your own work schedule and plan to do major jobs at t beginning of the quarter or even during the quarter break.

5. Low priority jobs

Some jobs are always run with low priority. Among these are any jobs with four or more magnetic tapes, extremely large input decks, or very large printouts. We will do our best to get these jobs out as fast as possible, but they still must wait on other demands on the system.

6. BUT DON' DESPAIR!

If you feel that your turnaround time is especially bad or if you need special scheduling, please call Paul Barringer, ext. 3-4876.

QUESTION: Do I always get my Fortran program punching cards from COMPASS even if a subsequent program in the same deck aborts prematurely?

ANSWER: Punch cards from translators producing binary decks should always come back to the user. Punch cards from Fortran programs which have arithmetic errors and other errors not detected by the system may not be complete because only the user file OUTPUT is dumped when a job aborts.

ELECTRON BEAM RECORDER

Two tables are listed below illustrating the symbols available for printing with the EBR:

UPPER CASE

	x0	x1	x2	x3	x4	x5	x6	x7
0x	space	1	2	3	4	5	6	7
1x	8	9	0	#	@	:	>	see 1.
2x	space	/	S	T	U	V	W	X
3x	Y	Z	see 2.	,	%	γ	"	=
4x	-	J	K	L	M	N	O	P
5x	Q	R	!	$	*	]	;	see 3.
6x	&	A	B	C	D	E	F	G
7x	H	I	?	.	'	[	<	|

1. 17 = end of file mark   NOT AVAILABLE ON MF501: 13, 14, 34,
2. 32 = end of line mark   35, 36, 52, 55, 60, 72, 74, 75, 77
3. 57 = case shift mark

LOWER CASE

	x0	x1	x2	x3	x4	x5	x6	x7
0x	space	≡	≠	↱	∨	∧	↑	↓
1x	≤	≥	¬	□	α	:	β	see 1.
2x	space	/	s	t	u	v	w	x
3x	y	z	see 2.	,	π	Ω	"	∑
4x	-	j	k	ℓ	m	n	o	p
5x	q	r	!	∞	*	)	;	see 3.
6x	+	a	b	c	d	e	f	g
7x	h	i	?	.	ψ	(	θ	γ

1. 17 = end of file mark   NOT AVAILABLE ON MF501: 13, 14, 16,
2. 32 = end of line mark   34, 35, 36, 37, 52, 53, 72, 74, 76,
3. 57 = case shift mark   77, and all lower case letters.

NOTE: All but 5 of the 94 symbols in the standard USASCII-7
       are present. Missing are: \ , _ , ` , { , } .