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NOTES & COMMENTS

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**********HOLIDAY HOURS**********

The UCC will close at 4 AM Thursday, November 25th and will resume normal operating hours at 8 AM Saturday, November 27th.

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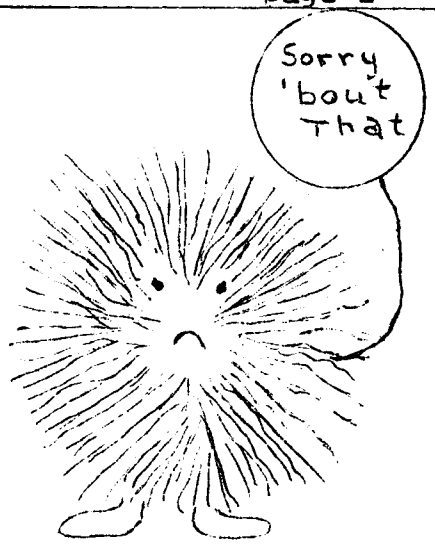
NOTES & COMMENTS NOTES & COMMENTS

Volume 5, Number 11
November, 1971

University Computer Center
University of Minnesota

NOTES

DISK PACK FILES



The recent crash (the first in four months) of disk pack UCC001 has brought up again the design philosophy of the files on these packs. The main philosophy can be summed up in the words "minimum cost" both to the user of the disk packs and to UCC. The CDC 3553/841-3 controller and three disk pack drives cost UCC $3009 per month to rent. There are 1015 record blocks (RB's) of 35,840 characters on each on-line disk pack. Allowing for hourly expansion and contraction of files, the pack, in practice, is full at about 5/6 of capacity. Thus the revenue generated by three full disk packs would be 1000*5/6*3*1.25 = $3125 per month. Time sharing systems having permanent files charge approximately 3 to 30 times the UCC price for disk storage space. (The two time sharing systems with CDC 6000 machines cost approximately 16 times the UCC cost.) The pack files are not permanent files. (Permanent files require system overhead to either dump the entire pack or to do periodic dumps of those files which have been altered since the previous dump.) By not being permanent files the savings in system, programmer, and operator time to dump and load the files can be passed directly to the individual user.

Protection of pack files is then the user's responsibility. If the file is a "read only" file then a copy of the data should be kept on another medium. If the file is updated at periodic intervals during the day or week, then the user must decide at what point dumping of the file to another storage medium is justified because of the manpower or machine cost needed to recreate the current pack file.

We again emphasize that every important file should be backed up on another medium and if possible, at another location. See the last section of this article for information on dumping and loading disk pack files.

A pack consists of:

1) A Label or Header of 1 PRU	
2) Subdirectory tables of 55 PRU's	1 RB
3) File tables (RB chain information)	15 RB
4) User data	999 RB
	1015 RB

(continued on next page)

The pack crash showed that we were unable to recover files from a pack with unreadable physical record units in the File Tables. The disk pack controller hung the channel and the PP when a read was attempted. Our current recovery procedure only allows recovery of the pack information if the bad physical record unit or record block are in the user's data. We are attempting to implement a new off-line disk pack recovery routine that will (hopefully) allow us to recover any accessible and valid subdirectories (files) on the disk pack when either a subdirectory of File Table becomes inaccessible.

Future expansion of disk pack files

Since the CDC 841-3 is currently nearly full, UCC plans to rent two more spindles, upgrading to a CDC 841-5. Sometime next summer, plans call for the purchase of a CDC 844 with three drives. This will replace the 841. The 841 will be kept for some overlapping time in order that 844 software can be developed and disk pack files copied to the 844. Each disk pack on the 844 holds 3 1/3 times the data on an 841 pack. The cost is similar to the 841 so that file storage charges on the 844 will drop. Current estimates are that an 844 record block will be 61,440 characters and should cost 80 to 90 cents a month. UCC will provide the time to copy files from the 841 to the 844 when we upgrade to this system next summer.

The 844 disk packs are physically identical in size to those on the 841 but a higher bit density is used to record information on the 844. Higher bit density and a faster rotation requires that the 844 disks have a better oxide surface than the 841, and thus users with their own disk packs should rent them until the 841 leaves. The transfer rate and head movement time of the 844 are at least twice that of an 841 so that better disk throughput will be seen with the 844.

Disk pack utility programs
(for loading and dumping files)

LISTPAK(vrn)	lists the names and lengths of all files on the disk pack specified by vrn.
LISTPAK(vrn,SD=sdn1,sdn2,...)	lists the names and lengths of all files in sub-directories sdn1, sdn2, ...
DUMPSD(P1,P2,...,Pn) LOADSD(P1,P2,...,Pn)	Dump or load files to or from a specific sub-directory. Each file is written as one logical record using special blocking. The options (Pi) are:

(continued on next page)

SD=sdname	sdname is the name of the sub-directory to be loaded or dumped. (Sub-directory must be attached with appropriate permission.)
B=fname	fname is the name of the file to which the sub-directory is dumped or from which it is loaded. Usually this would be a magnetic tape file previously requested with a REQUEST card.
R*	Rewind file fname before operation.
*R	Rewind file fname after operation.
RR	Rewind file fname before and after operation.
D	Destroy files after they are dumped.
SF=fn1, fn2, ...	Dump or load only files fn1, fn2, ... Default is that all files are loaded or dumped.
EX=fn1, fn2, ...	Do not dump or load files fn1, fn2, ... Default is that all files are loaded or dumped.

ERROR CORRECTION

The telephone number for Randy Byers (OMNITAB maintenance and consultation) is 373-4376. It was incorrectly listed in the September newsletter.

Price Changes for Magnetic Tapes

The prices for magnetic tapes purchased from UCC are now as follows:

600 feet	$ 8.00
1200 feet	$ 10.00
2400 feet	$ 12.00
3200 feet	$ 20.00

LIBRARY ADDITIONS & CORRECTIONS

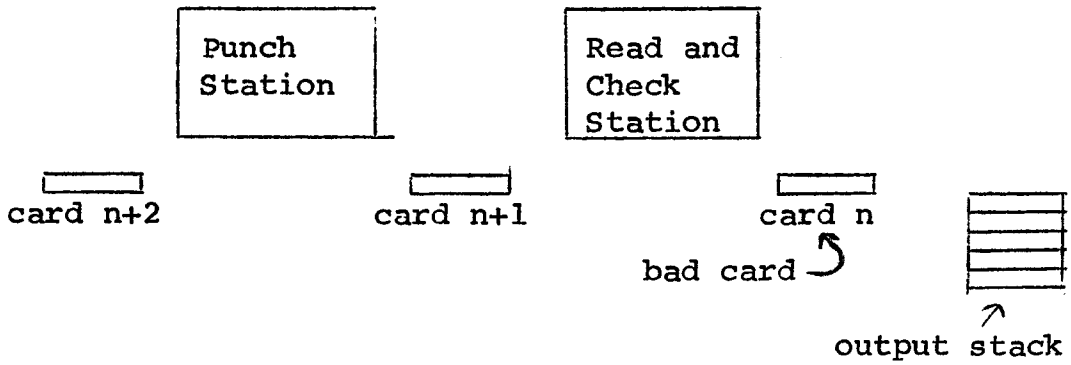
A writeup for GENSORT, GENSRT2, SPACZRO, and ZROSPAC is now available in Room 238 Experimental Engineering.

CONSULTANT'S CORNER

Punch Card Output

As cards are produced on the online card punch, there are three types of cards that the punch stacker offsets (pushes slightly aside in the deck). These offset cards are end-of-record (7-8-9) cards, a special blank card signaling the end of the job, and possible punch error cards (that is, two cards approximately identical to the next two cards of the punched deck).

In the card punch, each card passes through two stations as it is punched and read (see the diagram below)



Suppose the cards in a punch deck are sequentially numbered 1,2,3... Suppose also that the read and check station has just detected an error in the nth card. At this point the punching process is as shown in the above diagram. Card n+1 has already been punched. The bad card is re-punched as card n+2, and card n+1 is re-punched as card n+3 (to maintain the proper sequence). Cards n and n+1 are offset and removed by the operator.

Up to this point your friendly corner consultant has been trying to describe the punched card device--now to elaborate.

Sometimes the punch "forgets" or is not told in time to offset those 2 punched cards that are thought to be in error. In this case, the operator does not remove them from your card deck. If you have a binary deck read in at Lauderdale and it has erroneous cards in it, you will see the result of this by words such as

SERIAL CHK.RC.0009,CD.0048

right after the header on your output listing. If the same deck is read in at Experimental Engineering, the card reader will halt, as it does on binary checksum errors, and the operator will annotate the place in the card deck where the error occurred; then the job will routinely be dropped. Currently, serial numbers are not checked on binary decks at the West Bank Station during input, but they will be checked at some time in the future (date to be announced).

(continued on next page)

If you are good at reading binary numbers, you can locate these errors by examining column 80 which contains the binary sequence number. Otherwise, bring the deck to a consultant and he will locate the problem for you.

Currently, the UCC is considering a scheme in which the number of possible punch errors is put out in large letters on a card at the end of the punch deck. The letters will be similar to those of the BIN number and although the operator will continue to mark all offset cards, he will no longer remove them from the deck.

SYSTEM NOTES ARCHIVES

*** S Y S T E M N O T E S - TUE 05OCT71. *** 25.

DISK PACK USERS:

1) ALL NEW SUBDIRECTORIES SHOULD BE CREATED ON PACK UCC002 SINCE PACK UCC001 IS ALMOST FULL.

2) SUBDIRECTORY BATCHER HAS BEEN MOVED FROM UCC901 TO UCC002.

3) PLANS TO CREATE A SUBDIRECTORY LONGER THAN 100 RECORD BLOCKS ON A UCC OWNED PACK (IE UCC002) SHOULD FIRST BE APPROVED BY PHIL HOULE (373-5543) OR LARRY LIDDIARD (373-5239).

4) THE PROGRAM LISTPAK IS AVAILABLE TO LIST THE NAMES AND SIZES OF FILES WITHIN A SPECIFIC SUBDIRECTORY:

```
LISTPAK(VRN,SD=SDNAME)
```

5) A WRITEUP (PACK) OF THE UCC DISK PACK SYSTEM IS NOW ON THE INFO FILE.

COMPASS USERS:

SNPSHOT: A NEW REGISTER DUMP ROUTINE IS NOW AVAILABLE AS A DEBUGGING AID TO SAVE, WRITE, AND RESTORE ALL A, B, AND X REGISTERS.

LPR: A PP VERSION OF LABELPR IS NOW ON THE SYSTEM. THIS PERMITS PRINT DISPOSITION FILES TO BE LABELED BY AN INTERNAL CALL.

RAW: A NEW VERSION OF RAW (UPWARD COMPATABLE) IS NOW ON THE SYSTEM.

UMTEXT: THE SOURCE OF UMTEXT AND RELATED MOMS COMMON DECKS IS NOW AVAILABLE ON THE PERMANENT FILE STFOPL (MODIFY FORMAT). THE FOLLOWING CARDS WILL GENERATE A LISTING OF UMTEXT:

```
MODIFY(P=STFOPL,A)
COMPASS(I,S=0,B=0)
7
8
9
*EDIT,UMTEXT
```

TO OBTAIN WRITEUPS OF THE ABOVE MENTIONED ROUTINES INSERT THE APPROPRIATE CONTROL CARD IN YOUR DECK:

```
WRITEUP,SNPSHOT.
WRITEUP,LPR.
WRITEUP,RAW.
WRITEUP,PACK.
```

*** E N D O F N O T E ***

SYSTEM NOTES ARCHIVES

*** S Y S T E M N O T E S - TUE 19OCT71. *** 26.

ALGOL USERS: VERSION 2 OF THE ALGOL COMPILER HAS REPLACED VERSION 1. THE OBJECT ROUTINES ON SIMLIB HAVE ALSO BEEN REPLACED. INFORMATION PERTAINING TO ALGOL VERSION 2 MAY BE FOUND IN:

ALGOL 2 REFERENCE MANUAL
(REVISION C. 4-12-71)
PUBLICATION NUMBER: 60306100.

COBOL USERS: CORRECTIONS HAVE BEEN MADE TO BOTH COBOL AND ITS OBJECT ROUTINES ON COBLIB.

SNOBOL USERS: SNOBOL4 VERSION 3.6 (RELOCATABLE) IS NOW AVAILABLE FOR EXPERIMENTATION ON THE PERMANENT FILE SNOBOLX.

* * * E N D O F N O T E * * *

The time has come to bring our mailing list up to date. Please look at the address label on the back of this sheet. Is your name correct? Do you still live at that address? Do you still want this newsletter? If you do want the newsletter, correct the label (if necessary) and return this sheet to me. Otherwise, your name will not be on the mailing list for December.

Amy Koepke
Univ. Comp. Ctr.
227 Exp. Eng.
East Bank Campus

p.s.

UCC is also distributing a newsletter, edited by Ed Coover, for the MERITSS system. (See the August newsletter for a description of the timesharing system.) If you want copies of the MERITSS newsletter also, check below and we will put your name on that mailing list.

☐ I would like to receive the MERITSS newsletter.