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*****DISK PACKS*****

Disk packs UCC001 and UCC002 are now nearly full. We suggest that disk pack users can assist each other in utilizing pack storage by removing those files not current and essential. Unfortunately, we do not have a better algorithm for creating free space on full packs.

Additional drives have been ordered and, when they arrive, packs UCC003 and UCC004 will be put into service.

COMMENTS NOTES & COMMENTS NOTES & COMMEN

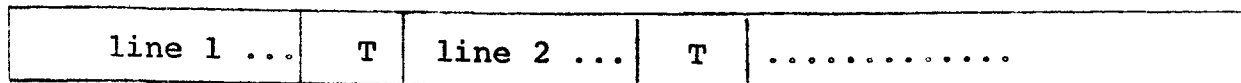
Volume 6, Number 2
 February, 1972
 University Computer Center
 University of Minnesota
 Minneapolis, Minnesota 55455

WRITING DATA TAPES

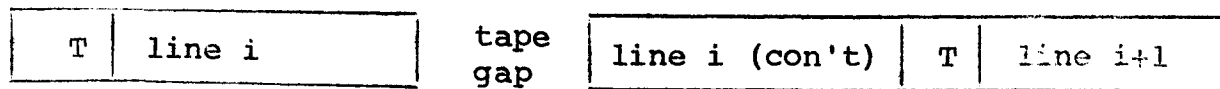
Users who find they want to send data to other installations often wonder how to build a magnetic tape which will be acceptable for the strange computer. Usually the user should attempt to find out what tape format is most acceptable to the person who is to receive the data. If no such specification is provided, the user can write the tape in card image format which is somewhat universal to various computer types.

On the CDC 6600 system there currently are three types or 'modes' of tapes. These are the "SCOPE" internal, the "X" (or external), and the "S" (or stranger). These tape formats will be described for coded tapes only as most users would not send or should not send binary tapes (i.e., with internal codes, floating-point formats, and other horrible stuff) to anyone with other than a CDC 6600 handy.

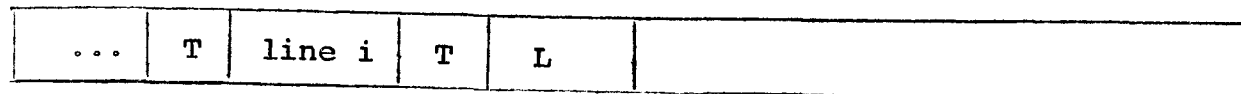
The SCOPE tape - SCOPE tapes are written in physical records of up to 1280 characters of data. These record units are called physical record units or PRU's. Each PRU contains several coded line images as follows:



The field indicated by T is a two-character field (12 bits) and contains 1632B. It indicates the end of the coded line image. Because most system routines truncate trailing blanks from coded lines, the length of each line in the PRU is not necessarily known until the terminator (T) field is located. Also, it is very probable that the last line of the PRU can be split between the current PRU and the next PRU:



SCOPE logical record marks are represented as PRU's which are less than 1280 characters in length. At the end of a "short" PRU an additional field of 12 bits or two characters is appended. This field indicates the level of the record:



Normally, record marks of level 17B or 15 decimal are considered to be end-of-file marks. SCOPE format tapes do not use the

hardware file mark.

If a user were to send a SCOPE format coded tape to another installation with a description as above, the tape could be read. However, it would be easier for the other computer to read an X or S mode tape.

The X and S tapes - We will consider the description of these two types of formats together because they are essentially the same. They differ only in that the X mode tape allows truncation of trailing blanks. In both cases there is a 12 bit field written at the end of each physical record unit (PRU).

Each coded line produces one physical record. In the case of X tapes, the record size physically written may depend on the number of trailing blanks removed. Consider the following program:

```
PROGRAM EXMPL(TAPE5,TAPE6,OUTPUT)
  INTEGER CARD(8)
100 READ(5,105) CARD
105 FORMAT(8A10)
  IF(EOF,5) 150,110
110 WRITE(6,105) CARD
  GO TO 100
150 ENDFILE 6
  END
```

If the above program is used with the following control cards:

```
JOBCARD.
FUN(S)
REQUEST(TAPE6,EW,X) ...
LGO(INPUT)
7
8
9
      (above program)
7
8
9
      (data cards)
6
7
8
9
```

The result is an X mode tape with each physical record containing one of the data cards. The length of each record would be dependent on the number of trailing blanks found on each card.

If the REQUEST card of the above is changed to:

```
REQUEST(TAPE6,EW,S) ...
```

the resultant tape is as above except all physical records would be 82 characters. Recall that the last 12 bits (2 characters) are appended by the system. They can usually be ignored by the person (or computer) reading the tape.

It is our intention that the standard utility functions COPYCR, COPYCF, etc. will perform correct mode changes on tape copies. However, this presently is not the case. Hopefully, we will soon be announcing this capability.

STUDENT CALCULATING AND PRINTER PLOTTING

Since many students at the University have taken or are taking computer programming courses, the UCC would like to encourage them and other potential users to take more advantage of our facilities for coursework. This would include all types of calculations that can be done in Fortran by those people who already know how to use the computer.

We would also like to encourage users to use facilities for plotting data from experiments or calculations made by the computer. The high speed line printer on the 6600 is very well suited for such purposes with the understanding that only rough plots will result because of the coarse grid size: 136 columns by 66 lines per page. Two Fortran library subroutines are available for printer plotting: SCLPLT (simple to use automatically-scaled one-page plots) and PRNPLOT (general purpose printer-plotting which is not quite as easy to use but is more versatile). The UCC will also provide a short Fortran program for those who have not used the computer before to read in a set of data points from user-supplied punch cards as input to these printer plotting programs.

The keypunch staff in Room 210 Experimental Engineering can punch data cards if data sheets are submitted to them. All that is needed is a UCC account number and a supply budget to cover the cost of printer paper and keypunching. Students who wish to use the computer for coursework should request the course instructor to obtain an account number by filling out the appropriate forms and making sure that a supply budget is available (usually from the instructor's department). Instructors themselves might in turn encourage their students to use the computer for calculating and plotting. If applications are correctly filled out, UCC assigns an account number (and informs the computer accounting program) within one working day, Monday through Friday. For now, the MNF student Fortran Batch system is to be used where the instructor can specify a page and time limit. For example, 10 pages and 1 CP second would be sufficient

for most students. Consulting about plotting problems and further information can be obtained from the staff in Room 238 Experimental Engineering, 9-5 weekdays.

MATHEMATICAL PROGRAMMING

UCC has recently acquired three linear programming codes for solving small-scale problems. All are in the form of Fortran subroutines. This means that the programmer must supply a calling program which reads or generates the data for his problem. Two of the codes use variations of the simplex algorithm. The third uses a dual algorithm and provides for the solution of integer programming problems by cutting plane methods.

Also available on an experimental basis is a subroutine for solving mathematical programming problems, the objective function and constraints of which are nonlinear. The user of this code must supply a calling program and a subroutine which performs certain evaluations pertaining to his problem.

Interested persons should contact Dennis Kuba, Room 215 Experimental Engineering (373-4886).

A NEW WORK AREA

A new work area for computer users is now available in Room 140 Experimental Engineering. The room is now staffed by consultants and is open during those periods when the I/O Room is open.

KEYTAPE UNIT

The UCC has leased an MAI100 keytape unit from the Genesis One Corporation for a minimum of one year. The unit puts line images from a keyboard directly onto magnetic tape. It is similar to a keypunch except that the medium is tape rather than cards.

We intend to key in some of our computer manuals (User's manual, UMST, MNF) on the machine and will encourage users of the closed shop keypunch service to request that large punching jobs be keytaped instead of keypunched. There is a possibility that there will be time available for users to do their own keytaping or to provide their own operator to do so. Further information about the machine and about scheduling its use may be obtained from Judy Krieg, 235 Experimental Engineering, 373-4548.

LIBRARY CHANGES AND ADDITIONS

1/18/72

- UNIT - Correction to make the RUN version type REAL
- SIMPSON - Correction to prevent mode errors under MNF
- *PRNPLOT - Spacing changed to take advantage of 6600
10-characters/word
- MARGIN in CALL 2 can be negative
- Arrows are not printed if the X-values in the
array U of CALL 4 are not in the range
(XMIN,XMAX)
- Y-values in the array V of CALL 4 are not printed
if they are not in the range (YMIN,YMAX)
- Y-values in the array V of CALL 4 are sorted
by PRNPLOT
- The order of calls (CALL 0, CALL 1, CALL 2, CALL 3,
CALL 4) is checked for consistency
- Correction in CALL 3 on NCHAR

*New writeup available in Room 238 Experimental Engineering

SYSTEM NOTES ARCHIVES

* * * S Y S T E M N O T E S - SUN 02JAN72.

29.

MNF CONTROL CARD CHANGE

THE TWO LOWER ERROR MESSAGE LEVELS HAVE BEEN INTERCHANGED.
THUS E=1 MEANS THAT *COMMENT* LEVEL MESSAGES ARE SUPPRESSED,
WHILE E=2 MEANS THAT *COMMENT* AND *NOTE* NON STANDARD LEVELS
ARE SUPPRESSED.

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



If you use statistical programs, please place a check in the box and return this form to Mrs. Hodge (see address below).

Are you interested in participating in a statistical users' group? ___ yes ___ no

Comment?

----- (first fold down here) -----

Name _____

Address _____

----- (second fold back here and staple) -----

Mrs. Thea D. Hodge
Manager, User Services
Room 232 Experimental Engineering
East Bank Campus