UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

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Send all comments, criticisms and contributions to the editor: T. M. Lanzatella
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NOTICE OF CHANGES TO THE SYSTEM

NOS 460 Changes

The following changes are effective on Thursday, 14 June.

Tom Lanzatella changed 1AJ so that a dump is produced when a job encounters a time limit. A dump is only produced the first time a time limit is reached and only for non-TXOT or non-SYOT jobs.

John Larsen contributed a new common deck, COMCCUM (check user match). The routine determines whether one 7-character quantity is subordinate to another which contains asterisks in the usual * - hierarchy scheme. Credit Don Mears with the algorithm.

Tim Salo installed code into SUPIO which makes the package compatible with the R4 system. The code is not assembled unless an assembly option is specified.

Marisa Riviere corrected MFEBR so that a bin number and user number are included on the film leader. Marisa also repaired two long-standing bugs in WRITEUP (PTR items too).

1) Writeup requests of the form WRITEUP (X = *, Y =*) which previously produced garbage for Y now work correctly.

2) Writeup requests of the form WRITEUP (X=A, X = B) previously resulted in the message WRITEUP NOT FOUND. The response will now be DUPLICATE REQUEST IGNORED. The proper form of the request is WRITEUP (X = A + B).

Bill Sackett installed Bob Williams proposed (and approved) change in the way master users are allowed to use secondary user commands (see DSN 5, 8 p. 64). Without restating the proposed, the effects of this change are as follows. Master users (users with *'s in their user numbers and CMUC in their access words) can now issue secondary user commands to subordinate user numbers only. Master users will also be able to user back to their own user number. An important feature in this change is that the login user number is now kept in the control point area.

Brad Blasing installed the PSR485 version of COMPASS.

KRONOS Changes

John Larsen installed his proposed change to CATLIST which provides a way to obtain a list of all permanent files with UC values subordinate to the value specified with the UC parameter (see DSN 5, 8 p. 67). John also added COMCCUM (mentioned above).

Bill Sackett installed the password hashing facility. Bill also installed changes to the way master users can specify secondary user commands which are identical to those described above.

Marisa Riviere applied a small change to RFM correcting a problem with UC processing.

NOS 485 Changes

Tom Lanzatella converted the following mods.

GENMSF - Install a special function processor into MAGNET.

GENRSX - A new mod used to generalize RESEX error messages.

AUTUNL - Install AUTOUNLOAD and DONTUNLOAD DSD commands.

BLNKFI - Allow an FI or L option on the BLANK command.

ECPDIS - Local enhancements to the E,P display.

EXPRES - Install UCC express tape library.

GETVSN - Install a UFM function which returns certain tape attributes.

MAGDMP - Enhancement to MAGNET abort processing.

MAGFLG - Adds a function to clear "file opened flag." Used by COPYMF.

MTACT - Install tape accounting messages.

MTSTAT - Install tape unit usage statistics gathering.

MULTI - Multi-file tape enhancements.

NXTVSN - Install NEXTVSN command used to skip forward in a multi-reel set.

PREMAT - Liberalize CDC VSN assignment restrictions.

PREVIEW - Local changes to tape mounting priority scheme.

RSXLIM - Enforce local file limit in RESEX.

RSXROL - Roll out ECS when waiting for tapes or packs.

SETDEN - Install DENSITY command.

TAPSEC - Install ID option on LABEL.

UPREW - Correct MAGNET not checking user processing on rewind.

Bill Sackett installed changes which restrict secondary user commands issued by master users (as above).

Kevin Matthews reinstalled GENMMF, TID, GENDSP and SYSSUB correcting several small but devastating errors.

Tim Hoffmann installed the following changes.

KRA611$ - Some PSR code received from CDC which essentially rewrites COMCZAP. All programs which call the routine were altered too since the calling sequence also changes.

CATALF - Alphabetize CATLIST report.

UC - Installs UCW manipulating features along with John Larsen's changes to CATLIST (see above).

MODRED - A new change to MODIFY which causes MODIFY to abort if the file specified on a *READ lfn,* directive does not contain a deck name as the first line.

UNPAGE - Install paper saving features.

Marisa Riviere installed changes to CALLPRG and MFEBR identical to those described above.

Brad Blasing converted the following changes.

PFILE - Install PFILE function into KCL.

CONTUZ - Reorganize CONTROL preset code.

CTLARG - Ensure correct number of arguments on certain control statements.

CTLID - Install ID function.

CTLLIT - Install LIT function.

DATIME - Install PD,PT and DW variables.

FILSIZ - Install SIZE function.

MID - Install MID keyword.

DECARG - A new mod which combines DECTL and DECSET.

SYTIME - Install SYSTIME directive in SET and SYSTIME in CONTROL.

Brad also installed a new version of CCL (Cyber Control Language) which recognizes subsystems.

PROPOSED CHANGES TO THE SYSTEM

Shuffle Off to Buffalo - by John Strait

This article proposes a new control statement to meet needs which are listed below. One of the open questions about this utility is its name. So, in this article, I will refer to this new utility as X.

Motivation

There is no utility currently available which can

1. read and write full ASCII or EBCDIC nine-track tapes [1]. Currently, when a full ASCII or EBCDIC tape is read, the character set is folded into the CDC 63-character set. Lower case folds to upper case and special characters fold to other special characters. An attempt to write a full ASCII (6/12 bit format) file to a tape will result in translating each twelve-bit character to two characters: a circumflex (^) or commercial at (@) followed by some other character.

2. read and write all of the IBM nine-track tape formats [2] or all of the ANSI tape formats [3]. The closest we have to such a utility are the pair of programs REBLOCK and BLOCKER which can read and write fixed-length blocked tapes and the program COPY8P which can read IBM print files.

3. translate between display code and the 8 in 12 bit character set which has been recommended by CDC [4,5].

4. translate between an arbitrary pair of display code character sets [1]. The closest we have to such a utility is CONVERT which can translate from scientific (61) character set to ASCII subset (63) character set in normal or extended mode and/or from 63-character set to 64-character set. The inverse translations are unavailable and the normal/extended and 63/64 characteristics of input and output files must agree.

Proposal

It is to meet the above needs that I am proposing the new X utility. X is primarily designed for information interchange, and so must be able to read and write diverse character sets and formats. A fortunate side effect is that X can translate between pairs of CDC's myriad internal character sets. X can read and write disk files and nine-track tapes in the following formats:

Internal disk file formats

NORMAL	Normal mode - 6 bit charcters only.
EXTEND	Extended mode - 6/12 bit characters.
8IN12	8 in 12 bit full ASCII as described in [4,5].

ANSI tape formats

F	Fixed length lines - blocked.
FU	Fixed length lines - unblocked.
D	Variable length lines - blocked.
DU	Variable length lines - unblocked.
S	Variable length lines, possibly spanned from one block to the next - blocked.
SU	Variable, spanned - unblocked.

IBM tape formats

F,FU	Same as ANSI F and FU formats.
V	Variable length lines - blocked.
VU	Variable length lines - unblocked.
VS	Variable, spanned - blocked.
VSU	Variable, spanned - unblocked.

X can read and write the following character sets:

character sets for NORMAL,EXTEND

ASC63	ASCII subset, 63 character set display code.
ASC64	ASCII subset, 64 character set display code.
SCI63	Scientific 63 character set display code.
SCI64	Scientific 64 character set display code.

character sets for F,FU,D,DU,S,SU,V,VU,VS,VSU

ASCII	Full 8-bit ASCII character set on nine-track tapes.
EBCDIC	Full 8-bit EBCDIC character set on nine-track tapes.

The parameters to the X control statement are order independant and are described below. "[]" enclose defaults; "=lfn" means a file name; "={a,b, ... }" means a value chosen from a list of words; "=n" means a decimal number; "(req)" means required.

I=lfn [IFILE]
Input file name (disk or tape).

IFM={NORMAL,EXTEND,8IN12,F,D,S,V,VS} (req) []
Input format. Note that the choices for IFM do not distinguish between blocked and unblocked formats. When reading a tape it is unnecessary to know ahead of time whether that tape was written blocked or unblocked.

ICS={ASC63,ASC64,SCI63,SCI64,ASCII,EBCDIC}
[ASCII for ANSI formats,
EBCDIC for IBM formats,
ASC63 for display code formats]
Input character set.

IBL=n [2048]
Input block length.

ILL=n [80]
Input line length.

INR []
Input no rewind, default is rewind before copy.

O=lfn [OFILE]
Output file name (disk or tape).

OFM={NORMAL,EXTEND,8IN12,F,FU,D,DU,S,SU,V,VU,VS,VSU} (req) []
Output format.

OCS={ASC63,ASC64,SCI63,SCI64,ASCII,EBCDIC}
[ASCII for ANSI formats,
EBCDIC for IBM formats,
ASC63 for display code formats]
Output character set.

OBL=n [2048]
Output block length.

OLL=n [80]
Output line length.

ONR []
Output no rewind, default is rewind before copy.

P={EVEN,ODD,SET,CLEAR} [CLEAR]
Full ASCII parity option. The parity bit (bit 7) within ASCII characters is not considered to be part of the character itself. This parity may be even, odd, always set, or never set. Conventionally, and according to [5], the parity bit is never set.

DC []
Delete control characters, default is to copy any control characters (ASCII characters 0-31).

N=n [1]
Number of files to copy. "N=0" and "N" select a copy to a double endfile or end of information.

L=lfn [OUTPUT]
Listing file. If either input or output file is a tape, a summary is written to output. This summary gives a description (either by block or by file) of the number of lines and characters read from or written to that tape. Any errors that are detected in input tapes are diagnosed in the listing. If both input and output files are internal files, no summary is produced.

LB []

List by blocks, default is to list by files.

Open questions

The following is a list of open questions about X. I suggest that we have a minimum of discussion about these and put them to a vote, so please give them some thought before the Systems Meeting.

1. Name. Some possibilities are SHUFFLE, SWAP, XCHANGE, PERMUTE, COMMUTE, RECAST, REMODEL (thanks to RTF and ABM).

2. Meaning of the N=n parameter for internal files. Options:
   * number of logical records to copy, making a logical equivalence between record marks on disk and file marks on tape.
   * number of files to copy, ignoring record marks.
   * number of files to copy, translating record marks to some (as yet undefined) special indicator on tape.

3. Processing of padded ~~lines and~~ blocks. The ANSI tape standard [3] allows the padding of ~~lines and~~ blocks in consideration of machines which must write fixed length blocks or cannot write partial words. X never pads when it writes a tape (using control words), but may encounter such padding when it reads a tape. It appears that processing ANSI padding will be a real pain. The simplest solution seems to be to produce an error message indicating a bad input line and not copy lines which have errors.

4. Naming of tape formats. Perhaps the notation
   F Fixed, unblocked.
   FB Fixed, blocked.
   etc.
   should be used instead. This notation is the one used by IBM, but the ANSI notation does not distinguish between blocked and unblocked formats. Another alternative is not to distinguish between blocked and unblocked in the IFM and OFM parameters, but rather have another parameter (OBLKD?) to control blocking of the output file.

5. HDR2 labels. Under the ANSI standard, the HDR2 label contains the block length, line length, and format. If X could read the HDR2 label, the IFM, IBL, and ILL parameters would be unnecessary for labelled tapes. If X could write HDR2 labels, it could produce tapes which would be more readable. At this time, however, I have no information about IBM HDR2 labels. Is HDR2 label processing really worth the added complexity?

6. Seven-track tape support. At this time, I have no information about IBM or ANSI seven-track tape formats. Thus I have not proposed that X be able to read and write seven-track tapes. I do not see this as a serious drawback. We are moving away from the use of seven-track tapes -- it seems that this is a general trend. We do not have character set problems with seven-track tapes since external BCD is inherently a six-bit code. I understand that most wierd tapes we receive are nine-track tapes anyway, and besides, FORM can read and write seven-track IBM tapes. Is seven-track tape processing really worth the added complexity?

7. Position dependent file parameters. The file parameters are really not optional parameters. Who wants to copy from IFILE to OFILE? Or from TAPE1 to FILE (the REBLOCK defaults)? Or from TAPE1 to TAPE2 (the BLOCKER defaults)? Perhaps X should conform to other copy routines: X(ifn, ofn, parameters) The main objection is that this would be a flaw in the consistency of having all input parameters start with I and all output parameters start with O.

References

1. Standard CDC Character Sets, 8-Bit Subroutines Manual Rev. B, CDC pub. #60359400, app. A.

2. IBM Tape File Record and Block Formats, 8-Bit Subroutines Manual Rev. B, CDC pub. #60359400, app. B.

3. Magnetic Tape Labels and File Structure for Information Interchange, ANSI X3.27-1978, pp. 16, 22-25, 46.

4. 8-Bit Characters on CYBER machines, VIM 28 Proceeidngs, pp. 23-26.

5. Cyber 170 Extended Character Set Format, CDC Design Action Paper.

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XEDIT 3.1 REVISION - by Steven E. Collins

Command Enhancements

Bn

Allow a numeric parameter on the BOTTOM command. This will advance the pointer to the bottom of the Nth record in the file.

MODIFY n

Allow a numeric parameter on the MODIFY command. This will bring MODIFY syntax into conformity with other commands.

Additional Commands

ASCII and NORMAL

Change the current character set for XEDIT INPUT/OUTPUT processing routines.

EXPAND n (EX)

Expand the tab characters in a line in the edit file.

LENGTH n (LEN)

Print the number of characters in the next N lines in the EDIT file.

RJ n and LJ n

Right or left justify the non-blank characters within the current window margins, using the appropriate margin for the justification margin.

JUSTIFY n (J)

"Typeset" the text between the current window margins to fill the window.

STATUS (S)

Print all the current execution statistics, e.g., TAB settings, TAB and DELIMIT characters, current line number, ASCII/NORMAL character set, EOR and EOF flag status, etc.

Additional Enhancements

If the file XEDINIT is local to the job when XEDIT is called, it will be used as a command file to initialize XEDIT. Also, the XEDIT control card parameter *IN* may be used to change the name of the initialization parameter.

Addition of a *U* QUIT option. This option would update the permanent copy of the EDIT file. That is, Q,,R for indirect access files and Q,,C for direct access files.

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End of Month - Part Two Point Five - by T. J. Hoffmann

RELOAD(MO=month, Z, ALL,NOT,I=lfn,PN=packnam,UN=usernum)/pfn/pfn...

The following three parameters control the global selection criteria:

MO= The three character name of the month that the file was *not* used. ARCLIST displays files grouped by the month that the files were not used. In other words, ARCLIST and RELOAD work the same.

PN= A pack name. A file is always reloaded to the device it came from. Given file name XYZ that was archived from SPL, SHA, and the zero pack, RELOAD(Z)/XYZ will cause all three copies to be reloaded. However, RELOAD(Z,PN=0)/XYZ will only reload the file that originally resided on the zero pack. The other two files will be ignored.

UN= A user number subordinate to the number executing the RELOAD statement. Files are always reloaded to the number under which they resided prior to being archived.

The next four parameters control which files are to be or not to be reloaded:

Z A list of file names appears after the control statement.

I= A file consisting of a list of file names, one name per line. This is the same file format that the ARCLIST RF= parameter produces. RF= will be added to ARCLIST when RELOAD is available. [Note that Z and I= cannot appear together.]

ALL All files not used during the month specified should be reloaded. PN= and UN= are also, as always, in effect. [Note that Z and/or I= cannot be used with ALL.]

NOT This says that all files EXCEPT those given with either the I= or Z parameters should be reloaded. [ALL and NOT together are not allowed.]

Example ARCLIST output:

List Of Archived Permanent Files Fri May 25, 1979 1:26 P.M.

>>Files Not Accessed During Apr 79<<

Userindex	Usernum	File Name	MI	Pack Name
01074	YZE6042	BFE	72	SPL
		DIV	72	SPL
		LOAD	72	SPL
		PACKAGE	72	SPL
		PROCBIN	72	SPL
		PROCLIB	72	SPL

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The Block Proposal - by J. J. Drummond

I would like to propose some changes to the current BLOCKER and REBLOCK utilities. These are mostly logical changes with the basic functions remaining the same.

These changes can be divided into three broad areas:

1) Change the name(s) of these routines so that their functions are better described by their names.

2) Install some additional capabilities into these routines, in terms of additional control statement parameters.

3) Consolidate these routines into a single deck to take advantage of common code and to provide for more consistent parameter usage.

The new control statements would be:

BLOCK(ifile,ofile,optional-parameters)
UNBLOCK(ifile,ofile,optional-parameters)

BLOCK would transfer disk files to tape packing one or more records into each block (equivalent to the current BLOCKER utility). UNBLOCK would transfer records from tape to disk unpacking the records from blocks if necessary (equivalent to the current REBLOCK utility). The parameters would be as follows:

ifile - input file name (required).
ofile - output file name (required).

optional-parameters would include any of the following in any order:

B1 - Sets binary mode on the input file (ifile) such that code conversion is not performed. The default would be to perform code conversion (coded mode). This parameter would be valid only when the input file was an *S* or *L* format 7-track tape (i.e. UNBLOCK).

B2 - Sets binary mode on the output file (ofile) such that code conversion is not performed. The default would be to perform code conversion (coded mode). This parameter would be valid only when the output file was an *S* or *L* format 7-track tape (i.e. BLOCK).

BF - Blocking factor. Indicates how many unit records are to be combined per block.

When BLOCKing (from disk to tape), BF unit records would be combined from the disk file and written on the tape file as a single block. The default is BF=1.

BS - Block size. Selects a maximum block size for the input file if it is an *L* format tape (therefore, valid only on the UNBLOCK control statement). Allows processing of arbitrarily long tapes (limited only by the amount of memory available). The default block size for *L* tapes would be 4000 (octal) words or 20480 characters.

N - File count. Indicates how many files are to be blocked or unblocked to or from tape. N=n will process n files; N=0 will process to a double EOF: N will process to the EOI (undefined for unlabeled *S* and *L* tapes because a EOI condition does not exist for these tapes). The default is N=1.

NR - No rewind parameter. If specified, the input and output files will not be rewound before and after processing. The default is to rewind both files before and after processing. Illegal if specified with the V parameter.

R - Record count. Indicates how many unit records are to be transferred (useful for just examining the first few records on a tape). The default is R=infinity.

RL - Record length. Indicates how long each unit record is considered to be. When BLOCKing (from disk to tape), unit records would be padded with blanks or truncated as necessary. When UNBLOCKing (from tape to disk), unit records of length RL would be extracted from each block until the block is empty (a warning message is issued if an exact multiple of records is not found). The default is RL=80.

V - Verify option. Indicates that the new output file is to be verified to ensure that it was correctly written. This applies only to tape files that are written (e.g., BLOCK). Illegal if specified with the NR parameter.

These proposed routines offer a number of advantages over the existing utilities. These advantages include:

1) The ability to process *L* format tapes of arbitrary size (limited only by the amount of central memory available).

2) The ability to process just a few records (the R parameter) in order to, say, inspect just a few lines of a tape file.

3) The N parameter has been changed to conform to other system utilities (e.g., CATALOG).

4) A verify option is now valid whenever a new tape file is generated (previously, a verify option was only available on REBLOCK--which unblocked tape files to disk). Since magnetic tapes are more expensive and less reliable than disk files, the verify option should apply to new tape files.

5) A message is issued indicating the number of times that a short record was found when UNBLOCKing a tape file to disk. This often indicates an incorrect record length.

6) A number of additional informative messages are also issued to diagnose inefficient use of *L* format, the specific control statement parameters that are in error (if any), etc.

7) Both routines will be installed, maintained and documented together--providing a more consistent package for the users.

8) These routines will have new names to eliminate any confusion that may otherwise result from changing or adding parameters to existing packages.

SYSTEM MAINTENANCE: People and Procedures

Last Week's Systems Group Meeting - by T. W. Lanzatella

The following proposals were accepted or rejected.

1) Tim Hoffmann's proposal to remove COMCGST and replace it with COMCGMS was rejected in favor of simply adding COMCGMS. This method was considered to have the least effect on users.

2) Tim Hoffmann's proposal to add a permanent file RELOAD utility was accepted in principle but tabled pending further study. These areas were addressed:

   a) People were confused about what the month (m) option actually meant.
   b) We felt that a Z option should be added and that directives should be allowed on a file.
   c) An "all except" ability is needed.
   d) People were confused about the meaning of the PN option.
   e) We felt that ARCLIST ought to produce a file which is acceptable as input to RELOAD.

3) Elie May's proposal was deemed too broad for the system group to approve or disapprove. We did however discuss the suggestions at length. Two notable comments dominated the discussion. Larry Liddiard insisted that a more precise evaluation of costs and benefits be drawn up. Arnie Nelson suggested that any future development in the PDP-11 area might be easier on a standard system while projects which have been completed should remain under the current maintenance scheme. Most people agreed that any further work in this area ought to be conducted in the System Strategy Committee.

VIM reports were delivered by MJF, EJM and SAR. Details can be had from these individuals.

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Callprg and Library Tape News - by M. Riviere

On June 14, S. Yen introduced a future version of SIR on the CDC 6400 Callprg index. Also on June 14, B. Hinkley introduced future versions of MINITAB on the Cybers and the CDC 6400 Callprg indices. Betty's modification to the Cyber Callprg index also applies to the future Level 4 index.

On June 14, B. Sackett changed BASIC on the CDC 6400 tape. The change consists mainly of repairing several small problems.

The next set of Callprg and Library Tape modifications will be taking place on July 3. Modifications for that date should be submitted before noon June 21.

Modifications needed to convert the current Callprg index for Level 4 (PSR 485) and additions to the future Library Tape will be made upon request. Please remember that we will start running test time for users on June 17 and so far the Library Tape is incomplete. Also take into account that modifications for the Level 4 Callprg index should be implemented on CPOPL85 (the statement FETCH,CPOPL85 retrieves the future index program library in file CPOPL).

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Callprg Library Tapes at Level 4 - by M. Riviere

The Callprg Tape Library (LB tapes) will be converted from 7-track tapes to 9-track.

I am taking care of reproducing the tapes and converting the index entries that use the tape parameters.

If you have rewritten any 7-track LB tape(s) since June 6, please let me know so that I can update the copy if it is needed. I will also be checking accuracy of the copies' dates with the tapes audit processors.

Once the new Callprg 9-track Tape Library is set up, I will start again permitting tapes in write mode upon request.

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Cyber Deadstart Dump Analysis from Monday, 21 May through 10 June - by K. C. Matthews

Tuesday, 22 May

08:45 (DD-2) Cyber 74

PFM hung while processing a request on equipment 11. Analysis showed that the label track (zero) and the 16 catalog tracks which link to it had been released. These tracks were then quickly used for scratch files, thus wrecking the permanent file catalog for equipment 11. We were unable to determine which PP program had released the catalog tracks. The permanent file device had to be reloaded.

Someday, when things are going a little slower, I'd like to move all the label and catalog information from the start of the disk (as it is now) to the middle (as it was in MOMS). This helps prevent these types of disasters and may improve the average positioning time after a disk catalog search.

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TELEX and TELEX PDP11 Crash Analysis (May 21 to June 10) - by D. W. Mears

There were no TELEX crashes during this period.

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Plotter Crash Analysis (May 21 to June 10) - by D. W. Mears

There were 7 crashes where the interrupt vectors had been garbled. On 6/6 there was solid memory failure. Since the defective memory was replaced there have been no more crashes of this type.

There were 2 crashes caused by junk plot files.

There were 4 reloads after the plotter went not ready.