COPYALL — A general purpose file copying program written in FORTRAN

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Abstract

COPYALL is a general purpose program for copying or displaying data and handling files. Files may be blocked or unblocked and the record lengths changed during the copying process. Provision is made for handling multiple files on magnetic tape.

INTRODUCTION

The Division of Mines operates a Concurrent Computer Corporation mini-computer and makes extensive use of the COPY32 utility for tape to tape, tape to disc, and disc to tape file copying. No such utility exists for UNIX systems and COPYALL was written to provide some COPY32 functionality on UNIX or DOS-based systems with minor modification.

The following conditions apply

(i)   Record lengths are shortened during the copy process by truncation.

(ii)   Record lengths are increased during the copy process by adding spaces.

(iii) File marks can only be written or skipped on magnetic tape.

(iv)   At the end of each successful copy to magnetic tape two filemarks are written and the tape positioned between them.

(v)   Logical unit 1 is the input unit.

(vi)   Logical unit 2 is the output unit.

(vii) Logical unit 3 is the list unit

(viii) Logical unit 5 is the command unit.

(ix)   If the log file name is the same as the list file name logging is to unit 3. Otherwise it is to unit 9.

(x)   Logical unit 8 is used for some file operations.

COMMANDS

(i)   ALLOCATE

Format

$$\underline{\text{AL}}\text{LOCATE fd, }\underline{\text{IN}}\text{DEX } \left[, \left\{ \begin{matrix} \text{lrecl} \\ 80 \end{matrix} \right\} \right] \left[/ \left\{ \begin{matrix} \text{records per block} \\ 1 \end{matrix} \right\} \right]$$

Parameters

fd   is the file descriptor of the device or file to be allocated.

lrecl   is a decimal number specifying the logical record length of a dataset. Its default is 80 bytes. It may be optionally followed by a slash (/) which delimits lrecl from a decimal number giving the number of records per block.

Examples

AL M500:FRED, IN,80

−   Allocate a file having 80 character records, 1 record per block.

AL THIS.FTN, IN, 80/10

−   Allocate a file having 80 character records, 100 records per block.

(ii)   BRECORD

Format

$$\underline{\text{BR}}\text{ECORD } \left\{ \begin{matrix} \text{INPUT} \\ \text{OUTPUT} \end{matrix} \right\} \left[, \left\{ \begin{matrix} \text{n} \\ 1 \end{matrix} \right\} \right]$$

Parameters

INPUT   specifies that the command applies to the current input file.

OUTPUT specifies that the command applies to the current output file.

n   is a decimal integer specifying the number of blocks to be skipped. The default is 1.

Functional details

BRECORD skips backwards over 1 or more blocks. A filemark counts as one block.

Examples

    BREC IN,5

    – Backspace the input 5 blocks.

(iii) COPY

Format

    COPY *,* [,NRECS = m]

Parameters

*   denotes either the current input or output file.

m   is a decimal number specifying the number of records to be copied. The default is all records until a filemark.

Functional details

The COPY command copies data from the input file to the output file. All or part of a single file may be copied.

Examples

    COPY *,*,NR=20

    – Copy 20 records from input to output. If this is less than the number of records in an output block the output block will be filled with spaces.

    COPY *,*

    – Copy all the input data to the output.

(iv) DELETE

Format

    DELETE fd

Parameters

fd   identifies the file to be deleted.

Functional details.

This command is used to delete a disc file. A file may only be deleted if it is not protected or assigned to any other task. The only exception to this is when the file is in use by COPYALL.

Example

    DEL ART.DEC

(v) DISPLAY

Format

    DISPLAY * [,NRECS = m]

Parameters

*   denotes the current input file

m   is a decimal number specifying the number of records to be displayed. The default is all records until a filemark.

Functional details

This command displays a file in hexadecimal and ASCII format. The display is output to the list device.

Examples

    DI *

    – Display the input file until a filemark.

    DISP *,NR=6

    – Display 6 records from the input file.

(vi) END

Format

    END

Functional details

This command terminates COPYALL

(vii) FFILE

Format

$$\text{FFILE} \left\{ {\text{INPUT} \atop \text{OUTPUT}} \right\} \left[, \left\{ {n \atop 1} \right\} \right]$$

Parameters

INPUT   specifies that the command applies to the input file.

OUTPUT specifies that the command applies to the output file

n   is an integer specifying the number of filemarks to be skipped. The default is 1.

Functional details

This command skips forward over one or more filemarks on magnetic tape.

Examples

    FF IN

    – Skip one filemark on the input.

– Applies only to magnetic tape

FF OUT,3

– Skip three filemarks on the output

– Applies only to magnetic tape.

(viii) FILES

Format

<u>FI</u>LES

Functional details

This command produces a display of current input, output, list and log files.

Shown are the file name, dataset record length, number of records per block, the number of blocks read, the number of records written, and also whether the last record read or written was a filemark.

(ix) FRECORD

Format

$$\underline{F}RECORD \left\{ \begin{matrix} \text{INPUT} \\ \text{OUTPUT} \end{matrix} \right\} \left[, \left\{ \begin{matrix} n \\ 1 \end{matrix} \right\} \right]$$

Parameters

INPUT   specifies that the command applies to the current input file.

OUTPUT specifies that the command applies to the current output file.

n   is an integer specifying the number of blocks to be skipped. The default is 1.

Functional details

This command skips forward over one or more blocks until either n blocks are skipped or a filemark encountered.

Examples

FR I

– Skip forward 1 block on the input device.

FR OUT,3

– Skip forward 3 blocks on the output device.

(x) INPUT

Format

$$\underline{IN}PUT \ fd \ \left[, \left\{ \text{lrecl} \right\} \left[/ \left\{ \begin{matrix} \text{records per block} \\ 1 \end{matrix} \right\} \right] \right]$$

Parameters

fd   is the file descriptor of the input file. This file becomes the current input file. If fd is a disc file it must already exist.

lrecl   is a decimal number specifying the logical record length of a dataset. It must be specified for magnetic tapes. If not specified for a disc file the blocksize of the file is used.

records per block

        a decimal number specifying the number of records per block. The default is 1.

Functional details

The INPUT command allows information to be specified about the input file.

Examples

IN MAG1:, 80/10

– The tape on MAG1: becomes the current input with a record length of 80 bytes and 5 records per block.

IN FRED.DAT,80

– Make FRED.DAT the new input file. The disc file, which must exist, must have 80 characters per block.

IN FRED.DAT,40/2

– Make FRED.DAT the new input file. The disc file, which must exist, must have 80 characters $(= 40 \times 2)$ per block and will be read with 40 character logical records.

(xi) LIST

Format

<u>L</u>IST fd

Parameters

fd   is the file descriptor of the new list file

Functional details

The list and log devices may be the same. In this case the list and log outputs are intermixed, as the same logical unit is used for both.

Examples.

LIST PR:

– Use PR: as the list device

LI FRED.LST

– Use FRED.LST as the list file

(xii) LOG

Format

<u>LOG</u> fd

Parameters

fd   is the file descriptor of the new log file.

Functional details.

The log and list files may be the same. In this case the log and list outputs are intermixed, as the same logical unit is used for both.

Example

LOG PR:

  – Use PR: as the log device.

(xiii) NOLOG

Format

<u>NO</u>LOG

Functional details.

This command suspends logging until a log comment is entered.

(xix) OUTPUT

Format

$$\underline{OU}TPUT \; fd \; \left[, \left\{ \text{lrecl} \right\} \left[/ \left\{ \begin{matrix} \text{records per block} \\ 1 \end{matrix} \right\} \right] \right]$$

Parameters

fd   is the file descriptor of the output file. This file becomes the current output file. If fd is a disc file it must already exist.

lrecl   is a decimal number specifying the logical record length of a dataset. It must be specified for magnetic tapes. If not specified for a disc file the blocksize of the file is used.

records per block

     a decimal number specifying the number of records per block. The default is 1.

Functional details

The OUTPUT command allows information to be specified about the output file.

Examples

OUT MAG1:,80/10

– The tape on MAG1: becomes the current output with a record length of 80 bytes and 5 records per block.

OUT FRED.OUT,80

– Make FRED.OUT the new output file. The disc file, which must exist, must have 80 characters per block.

OUT FRED.OUT,40/2

– Make FRED.OUT the new output file. The disc file, which must exist, must have 80 characters (= 40 x 2) per block and will be written with two 40 character logical records per block.

(xv) PAUSE

Format

<u>PA</u>USE

Functional details

This command caused COPYALL to pause and operating system commands may then be entered. A CONTINUE command causes COPYALL processing to resume.

(xvi) RENAME

Format

<u>REN</u>AME oldfd, newfd

Parameters

oldfd   is the old filename.

newfd   is the new filename.

Functional details

This command is used to change the name of a disc file. A file may only be renamed if it is not protected and it is not currently assigned to any task. If the file specified is currently in use by COPYALL the corresponding unit is closed and the file is then renamed.

Example

REN A.DAT,FRED.DAT

– Change the name of A.DAT to FRED.DAT

(xvii) REWIND

Format

$$\underline{RE}WIND \; \left\{ \begin{matrix} \underline{IN}PUT \\ \underline{OU}TPUT \end{matrix} \right\}$$

Parameters

INPUT   specifies that the command applies to the current input file.

OUTPUT specifies that the command applies to the current output file.

Functional details

This command repositions a file or device at its beginning record.

Example

REW IN

– rewind the current input file.

(xviii) VERIFY

Format

VERIFY *,* [, NRECS = m]

Parameters

* denotes either the current input or output file

m is a decimal number specifying the number of records to be verified. The default is all records until a filemark.

Functional details

The VERIFY command compares the current input file to the current output file record by record.

If a pair of records is found which do not match, the two records are displayed on the list device in the hexadecimal dump format produced by the DISPLAY command. The number of the first byte which does not match is also written.

All or part of a file may be verified.

If the input and output files differ in record length only the smaller number of bytes is verified in each record.

Examples

VER *,*

– Verify the current input and output files

VER *,*,NRECS=20

– Verify 20 records of the current input and output files.

(xix) WFILE

Format

$$\underline{W}FILE \left\{ {LIST \atop OUTPUT} \right\} \left[, \left\{ {n \atop 1} \right\} \right]$$

Parameters

LIST specifies that the command applies to the current list file

OUTPUT specifies that the command applies to the current output file.

n is a decimal integer specifying the number of filemarks to be written. The default is 1.

Functional details.

This command writes one or more filemarks on the current output file or current list file. It is only supported on magnetic tape.

Examples

WF OUT,2

– Write two filemarks on the output file.

WF LIST

– Write one filemark on the list file.

[2 April 1993]