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COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

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SECTION I

INTRODUCTION TO

SYSTEM/IS.MAINT

INTRODUCTION TO SYSTEM/IS.MAINT

SYSTEM/IS.MAINT is a normal-state utility program that performs
library maintenance functions for index sequential files.

Index sequential files consist of one cluster file, one direct
file, and any number of index files.

The cluster file has the same name as the index sequential file
and contains a dictionary, listing the names of all associated
subfiles (direct and index files).

RELATED DOCUMENTATION

For further information, refer to the following documents.

MCPII Product Specification 2212 5462

COBOL74 Corporate Standard 1283 0022

SYSTEM/COPY Product Specification 2222 2905

SECTION II

OPERATING PROCEDURES

OPERATING PROCEDURES

EXECUTION

This program can be executed in one of three ways:

- via operator display terminal (ODT)
- via card reader
- via psuedo-deck.

A sample of an execute from the ODT is shown in Figure 2.1.   To
execute from the ODT, the following statement is entered.

    EX SYSTEM/IS.MAINT

Program commands can be entered via the ODT or via a data file.
If program input is via the ODT, the program goes to
beginning-of-job (BOJ) and responds with accept messages
requesting program input.

If program input is via a data file, a file equation must be
entered at the time of the execute as shown in the following
examples:

    EX SYSTEM/IS.MAINT;FI SOURCE NAME CARD.FILE CARDS

    EX SYSTEM/IS.MAINT;FI SOURCE NAME IS/INPUT DISK

INPUT VIA ODT

The name of the cluster file upon which maintenance is to be
performed, is entered in response to the command prompt ENTER
FILE NAME. If the file cannot be found or is invalid, the
program informs the operator and repeats the accept operation.
If the file is found and is a valid cluster file, the program's
response is the display of the message ENTER COMMAND and the
performance of another accept operation. All commands entered
from this point are performed on the previously specified cluster
file.

INPUT VIA DATA FILE

Input from a data file requires that the internal file SOURCE be
file-equated to the desired input file, at execution time. The
file is opened using input blocking, and each record in the file
corresponds to a single accept message from the ODT. Command
prompts that normally appear are not displayed.

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```
**** SPO INPUT -----
**** SPO INPUT -----EX SYSTEM/IS.MAINT;
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 BOJ. PP=4, MP=4 TIME = 10:30:37.7
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER FILE NAME
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXCL/FILE
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER COMMAND
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXLIST SPO
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 FILE NAME   : CL/FILE
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 FILE TYPE   : INDEX SEQUENTIAL
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 # SUBFILES : 2
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 KEY/1                              06/08/79   11:46:42.5
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 CL/DATA                            06/08/79   11:46:42.6
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER COMMAND
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXCHANGE KEY/1 CL/KEY1
**** ZIP MSG
**** SPO OUTPUT     : "KEY/1" CHANGED TO "CL/KEY1"
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 1 STRUCTURE CHANGED
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER COMMAND
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXNEXT
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER FILE NAME
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXEMPLOYEE/INFO
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER COMMAND
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AXVERIFY
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 "LINE" = "BACKUP.PRT/19"
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 "BACKUP.PRT/19" RELEASED
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 VERIFICATION COMPLETE - 3 ERRORS
**** SPO OUTPUT     : % SYSTEM/IS.MAINT =38 ENTER COMMAND
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 ACCEPT.
**** SPO INPUT -----38AX
**** SPO OUTPUT     : SYSTEM/IS.MAINT =38 EOJ. TIME = 10:32:53.9
```

Figure 2.1   Sample Program Execution

SECTION III

COMMAND SUMMARY

COMMAND SUMMARY

COMMAND ENTRY

Commands are entered via the ODT in response to the prompts,   or
via a data file.

COMMAND SYNTAX OVERVIEW

```
|-->CHANGE--->   <file name>---------<file name>---------------->#
|                              |--TO--|                         |
|                                                               |
|---->COPY---------><tape name>-------------------------------- |
|         |--TO--|                                              |
|                                                               |
|----->END-------------------------->-------------------------- |
|  |-->EOJ             |                                        |
|  |--><null entry>---                                          |
|                                                               |
|----->HELP------------------------------HELP----------------- |
|  |-->TEACH                                                    |
|                                                               |
|---LIST---------------------->------------------------------->|
|            |---SPO---------|                                 |
|            |              |                                  |
|            |-->PRINTER----|                                  |
|                                                               |
|-->NEXT------------------------------------------------------ |
|                                                               |
|-->REMOVE---------------------------------------------------- |
|                                                               |
|-->UPDATE----><file name>---------><file name>-------------- |
|                          |        |                          |
|                          |-->TO--|                           |
|                                                               |
|-->VERIFY---------------------------------------------------- |
```

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COMMAND CROSS-REFERENCE TABLE

COMMAND	FUNCTION	PAGE REFERENCE
CHANGE	Changes name of file in disk directory; modifies data in cluster file to reflect new name	3-3
COPY	Copies files to tape	3-3
END	Terminates program	3-4
EOJ	Terminates program	3-4
HELP	Displays operating instructions	3-4
LIST	Produces list of names and version dates for all files; output can be sent to printer or ODT	3-4
NEXT	Calls up new cluster file	3-5
<null entry>	Terminates program	3-4
REMOVE	Removes cluster file	3-5
TEACH	Displays operating instructions	3-5
UPDATE	Modifies cluster file dictionary	3-6
VERIFY	Determines if subfiles are present in disk dictionary; produces hardcopy listing of results	3-6

COMMAND LISTING

CHANGE

Syntax:

```
------> CHANGE -----> <file name> -------- <file name> ---->
                                  I        I
                                  I- TO -I
```

The CHANGE command changes the name of the file in the disk
directory, and modifies the data in the cluster file to reflect
the new name.   In all cases, the names of files that are part of
an index sequential file, should be changed by this command as
opposed to using the similar Master Control Program (MCP)
construct.

The names used within this instruction may take the form of
either:

     <pack-id>/<multifile-id>/<file-id>

                    OR

     <pack-id>/<multifile-id>/=.

Both names must have the same pack-id.   The first name used must
be on disk and in the cluster file dictionary, whereas the second
name must be neither on disk nor in the cluster file dictionary.

COPY

Syntax:

```
------- COPY ------------> <tape name> -------------------->
              I        I
              I-> TO -I
```

The COPY option generates a COPY message for the MCP which causes
the cluster file and all associated subfiles to be copied to tape
via the SYSTEM/COPY program.   SYSTEM/IS.MAINT resumes execution
when SYSTEM/COPY has gone to end-of-job (EOJ).   If any subfiles
are missing, the command is not processed.

Index sequential files can be reloaded with the MCP instruction:

        COPY =/= FROM <tape name>.

Subfiles can also be distributed to different packs as they are loaded, via the syntax provided in SYSTEM/COPY. To accomplish this, the user must know the names of all the files involved and their associated keys. It is also necessary, then, to modify the cluster file to reflect the names of the packs that now contain each of the files (see UPDATE option).

END, EOJ, OR <null>

Either of the commands END or EOJ, or the entering of a null message, terminates the program.

HELP

The program displays its operating instructions via the ODT in response to this command. The TEACH command functions in the same capacity.

LIST

Syntax:


```
------> LIST -------------------------------------------------->
              |---> SPO ------|
              |               |
              |---> PRINTER --|
```


The LIST command instructs the program to produce a listing of the names and version dates of the cluster file, direct file, and all index files. If SPO is specified as the list destination, the listing is displayed on the ODT. If PRINTER is specified, a hardcopy listing is produced. If no destination is specified, the default destination is the printer.

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NEXT

The NEXT command provides the capability to reference another cluster file. The program repeats the process of displaying the prompt "ENTER FILE NAME" and performing the accept operation. After the new cluster file name is specified, command entry proceeds.

REMOVE

This command removes the cluster file and all of its associated subfiles, the names of which are contained in the cluster file. For a file to be removed, it must have the correct version date and no users.

If a subfile is missing, the program displays the following message.

> NOT ALL STRUCTURES ARE PRESENT
> DO YOU WANT THE REMOVE TO CONTINUE? - YES OR NO

If the user enters a NO response, the program asks for another command. If the response is YES, the program removes the files that are present.

After completing the remove operation, the program repeats the process of displaying an "ENTER FILE NAME" prompt, and performing the associated accept operation.

TEACH

In response to this command, the program displays its operating instructions via the ODT. This command functions in the same capacity as the HELP command.

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UPDATE

Syntax:

```
------>   UPDATE ------> <file name> ---------- <file name> --->
                                      |         |
                                      |-> TO -|
```

The UPDATE command allows the user to modify data in the cluster
file dictionary to reflect the new names of direct or index
files. The names may take the form of either:

    <pack-id>/<multifile-id>/<file-id>

    <pack-id>/<multifile-id>/=

    <pack-id>/=/=

If the first name used cannot be found in the cluster file, or if
the second name is already present in the cluster file, an error
message is displayed.   The program makes no effort to determine
if these files are actually on disk.

VERIFY

With the VERIFY command,   the program determines if all the
subfiles are present in the disk directory, and if their version
dates are   correct.   A hardcopy   summary   of the verification
results is listed on the printer and the results are also
displayed on the ODT.

APPENDIX A

ERROR MESSAGES

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ERROR MESSAGES

Error messages are displayed on the ODT. Error messages for this
program are one of two types indicated by the precedence of the
word ERROR or WARNING.

Those error messages preceded by the word ERROR are displayed
when the command is entered incorrectly and consequently cannot
be processed. Messages in this category, and their descriptions,
are listed in alphabetical order.

"ERROR - BOTH NAMES ARE THE SAME"
The file names used in the UPDATE or CHANGE commands cannot
be the same.

"ERROR - CLUSTER FILE IN USE BY ANOTHER PROGRAM"
No other users can be accessing the cluster file while
SYSTEM/IS.MAINT is accessing it.

"ERROR - CLUSTER FILE IS CORRUPTED"
The cluster file dictionary of subfiles could not be read.

"ERROR - CLUSTER FILE NOT FOUND"
In response to the ENTER FILE NAME prompt, a cluster file
was specified that could not be found.   Ensure that file is
on the system.

"ERROR - COMMAND NOT ALLOWED IN THIS CONTEXT"
The program expected the entry of a file name.   Commands
acting on a file are not allowed.

"ERROR - COMMAND REQUIRES PARAMETERS"
The entered command required parameters that were omitted.
Refer to command syntax.

"ERROR - DIFFERENT PACK-IDS NOT ALLOWED IN CHANGE"
The pack-ids used in the CHANGE command must be the same.
Refer to command syntax.

"ERROR - ID EXCEEDS 10 CHARACTERS"
The pack-id, multifile-id, or file-id name cannot contain
more than 10 characters each.   Refer to B1800/B1700 file
naming conventions.

"ERROR -   INVALID COMMAND, TRY "TEACH" FOR LIST OF VALID
COMMANDS"
Either the command was erroneously entered or the command is
not recognized by this program. By entering a TEACH or HELP
command, a listing of valid commands can be consulted.

"ERROR - MCP DENIED COPY REQUEST"
The MCP failed to process this command, possibly because of invalid file or tape names. Refer to SYSTEM/COPY program for further explanation.

"ERROR - MISSING ENDING QUOTE"
The file name requiring quoted text lacks the final quotation character.

"ERROR - MORE PARAMETERS EXPECTED"
The program expected more parameters that were omitted. Refer to command syntax or operating instructions.

"ERROR - NAME CONTAINS ILLEGAL DELIMITER"
Special characters within a file name such as ";" require enclosure quotation marks. Ensure that file name conforms to B1800/B1700 file naming conventions.

"ERROR - NAMES HAVE UNMATCHED EQUALS"
The UPDATE or CHANGE commands have been used improperly and the file names have mismatched equals (=). See command semantics.

"ERROR - NOT AN INDEX SEQUENTIAL FILE"

"ERROR - ONLY "SPO" OR "PRINTER" ALLOWED AFTER "LIST""
The ODT or printer are the only allowed output destinations. Refer to command syntax.

"ERROR - ONLY THREE IDS ALLOWED IN NAME"
The file name can contain only the pack-id, multifile-id, and file-id. Refer to B1800/B1700 file naming conventions.

"ERROR - STRUCTURE IS NOT PART OF THIS FILE"

"ERROR - UNEXPECTED TEXT FOLLOWING <COMMAND or NAME>"
More than one command was encountered. Only one command is allowed per accept operation.

"ERROR - "/" IS INCORRECTLY USED"
File names such as "/A/B" or "A//B", for example, are not allowed. Ensure that use of slash conforms with file naming conventions.

"ERROR - "=" NOT ALLOWED AS <PACK-ID, MULTIFILE-ID, or FILE-ID>"
In some cases, the special character "=" is not allowed as a replacement for the pack-id, multifile-id, and/or file-id. Refer to command syntax.

Error messages preceded by the word **WARNING** are displayed when a
command being processed encounters problems with part of the
task. The commands REMOVE, CHANGE, and UPDATE are subject to
this type of error message because they may require action on
more than one file. These error messages have the following
format.

    WARNING -<file name 1> **NOT** < **REMOVED, CHANGED,** or **UPDATED** >
    [**TO** <file name 2>] - <explanation>

The accompanying explanations may be any of the following:

        - **MCP DENIED REQUEST**
        - **NOT ON DISK**
        - **PACK NOT ON-LINE**
        - **ALREADY IN DICTIONARY**
        - **ALREADY ON DISK**
        - **VERSION MISMATCH**
        - **HAS USERS**

APPENDIX B

INTERNAL FILES

INTERNAL FILES

Internal File Name	Function
IS_FILE	The cluster file that is currently being accessed.
COPY	Used to pass copy requests to the SYSTEM/COPY program.
SOURCE	If file-equated to a name other than IS.MAINT/IS.MAINT/IS.MAINT, this file is used for input commands instead of the ODT.
LINE	Used for printer output.

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