March 2, 1965

CTSS BULLETIN 79

SUBJECT: FAP Command, a New Version

Purpose

The macro - FAP assembler has been updated to include the latest IBM modifications, as described in the current revised FAP manual (form C28-6235-3). In addition, certain features peculiar to CTSS assemblies have been corrected or modified.

Implementation

The new version is available as command CTEST6. It will replace the current FAP command in the near future.

Modifications

1. IBM modifications

Most IBM MOD's (MOD 26 through MOD 45 have been added) correct obscure bugs in the assembler and are not listed here. The following may be of general interest.

MOD 26. The macro-processor has been changed to correctly assemble a Hollerith literal containing blanks or the concatenation feature.

MOD 28. Cards with a $ in column 1 are treated as remarks.

MOD 30. Unmatched parentheses in macro-definition cards are flagged with the error flag "()".

MOD 37. The EVEN pseudo-operation is added.

MOD 39. Insure proper redefinition by SET of previously defined symbols.

2. Absolute assembly

The binary output from an absolute assembly will be given the secondary name ABS to permit loading with the LDBS command.

3. Update pseudo-operations.

Update facilities described in the FAP manual are still not available in CTSS FAP, but use of update pseudo-operations will no longer terminate an assembly. The update pseudo-operations are treated as NULL pseudo-operations except that a warning flag F will appear in the assembly listing.

4. INSERT pseudo-operation.

The following replaces the previous definition.

The pseudo-operation INSERT NAME will cause the contents of the file NAME FAP to be inserted and assembled in place of the INSERT instruction. The END card may occur within an inserted file.

INSERT has a nesting level of one, and illegal nesting will cause a "NO END CARD" diagnostic. Generated files retain the primary name of the main input file.

INSERT is always included in an assembly listing. It cannot be used as a prototype instruction in a macro definition.

5. Off-line assembly listing.

The off-line listing file which is provided by the FAP ALPHA (LIST) command is now the same as described in the FAP manual. The listing file is called ALPHA BCD. Changes include page headings, subtitles, and correct processing of the list control pseudo-operations. Note that an FMS control card (e.g. * FAP) in the input file may be interpreted as the page heading card.

6. Console error lines.

A line containing the warning flag M will be included in the list of error lines printed. Assembly will not be deleted if no other error lines appear.

Octal translation will not be included in an error line unless the LISTNG pseudo-operation is in effect.

7. Console diagnostics.

The following diagnostics:

```
0000 IS THE FIRST LOCATION NOT USED BY THIS
PROGRAM.
00000 IS THE LAST LOCATION NOT USED BY THIS
PROGRAM.
ERROR IN ABOVE ASSEMBLY.  EXECUTION DELETED.
```

have been replaced by

```
LENGTH 0000
COMMON BREAK00000
ASSEMBLY FAILED
```

for console listing. Off-line listing is unchanged.

8. Disk error diagnostics.

Error returns from the disk routines are provided and appropriate diagnostics printed on the console.

(a) FILE ALPHA XXX IN READ ONLY MODE NOT DELETED
SOURCE ERROR, TS FAP
where the secondary name XXX may be ABS, BSS, SYMTB, or BCD to indicate that a user's old file cannot be deleted. This diagnostic occurs before assembly begins.

(b) FILE XXXXXX FAP NOT FOUND
SOURCE ERROR, ITS FAP
refers to input files, either main or inserted. Assembly is terminated.

(c) TRACK QUOTA EXCEEDED
YOU MUST CLEAR TRACKS AND CHANGE MODE FOR FILES LISTED
followed by one line.

YOUR NEW ALPHA XXX FILE IS IN TEMPORARY MODE
for each generated file to which the diagnostic applies. Track quota is not extended by FAP, and the user must determine (e.g. using a LISTF command) the number of tracks required before taking action. Assembly has been completed when this diagnostic appears.

(d) ERROR CODE 0, DISK SUBR .XXXXX, FOR FILE NAME1 NAME 2 MACHINE OR SOURCE ERROR
is used for all other disk error returns, and assembly is terminated. This diagnostic implies machine error, available space on module exhausted, or a bug in FAP. Try again, then complain.