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DECUS NO.	12-54
TITLE	QUIP - QUICK ASSEMBLER FOR THE PDP-12
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DATE	October 19, 1971
SOURCE LANGUAGE	DIAL

ABSTRACT

QUIP (Quick Assembler for the PDP-12) is a modification of the DEC Floating Point Assembler to enable it to handle LMODE as well as PMODE instructions. All of the floating point handlers have been removed, and in their place have been substituted handlers for LINC code, ring buffer handlers, and NOPAUSE tape operation, as well as the complete set of DIAL-MS I/O routines. Because both the LMODE and PMODE symbol tables are core resident and because of the symbol table search algorithm used, operation is up to four times faster than the DIAL Assembler.

HARDWARE REQUIREMENTS

QUIP will run on any PDP-12 that supports DIAL-MS. It will use DF32, RFØ8, or RKØ8 disks; ANALEX or LPØ8 line printers and LINCtape.

SOFTWARE REQUIREMENTS

The program uses the DIAL-MS I/O routines for its disk and LINCtape transfers. Like the Floating Point Assembler, it reads these from the system device at load time (unit 1Ø if a disk system, or unit Ø if a tape system).

OPERATION

Refer to the Floating Point Assembler manual (DEC-12-AQZA-D) for details and error codes. A brief summary is given below, as well as the main differences between QUIP and the DIAL Assembler.

To assemble a program, the first source must be in the text working area. This can, in turn, "CHAIN" to a source on any DIAL unit. QUIP is loaded by:

                    LO QUIP, U   Where U = UNIT

When loaded, QUIP first reads in the I/O routines, then begins to assemble the source, starting with whatever is in the text working area.

DIFFERENCES

The following points must be kept in mind when using QUIP instead of the DIAL Assembler:

a) Origins are given by "ORG XXXXX" instead of "*XXXX" and "FIELD X". The "ORG" statement takes up to a fifteen-bit argument, replacing both the "*" and "FIELD" pseudo-ops. "*" now signifies multiplication. (The expression 2*2 will yield 4.)

b) The pseudo-op "SEGMNT" has been removed.

c) "PAGE" can no longer take an argument ("PAGE 16" is illegal) and it generates an automatic "EJECT" on a line printer.

d) The perennial DIAL problem of referencing symbols in LMODE that were defined in PMODE has been corrected to some degree. All expressions used with the LMODE instructions ADD, STC, and JMP are truncated to 1Ø bits before being used, so that "ADD 6Ø2Ø" will no longer come out as "JMP 20".

e) "PMODE", ORG 2ØØ is assumed at the start of an assembly, and the mode is NOT reset at the end of pass 1.

f) Literals are available, in PMODE only.

g) "LISTAPE -N" is available, for adding patches to the binary working area. It works just as in DIAL-MS. A space is required before the "-".

h) "LISTAPE +N" has not been included, as CREF12 couldn't process the output anyway.

i) The listing pass may be stopped by typing CTRL/L. However, because the printer is buffered, there may be some delay before the listing actually stops, especially if output is to the teletype.

j) CTRL/D will stop assembly and return to DIAL. If typed during the symbol table listing, the binary will be preserved and will be correct.

k) LINCtape will run in NOPAUSE mode if DIAL-MS version SE2E is used. Older versions of DIAL will not.

ASSEMBLY

QUIP is made up of three sources, LIN018A, LIN018B, LIN018C, plus a parameter list LIN018. The parameter list defines the units containing the other three sources and chains to LIN018A. It should be added into the working area and then assembled with QUIP (QUIP must be assembled with itself). Starting address is PMODE, 112ØØ.