

UNIVERSITY OF QUEENSLAND

Computer Centre

WEEKLY NEWSLETTER

Date : Week ended 10 December 1970
Authorization : Director of Computer Centre

1. OPERATIONS

1.1 GE-225 System

Normal Schedule: Maintenance 0700-0900
: Operations 0900-2400

1.2 PDP-10 System

Normal Schedule: Maintenance 0700-0930
Operations 0930-2330
Development as required by systems development group.

Friday 4 December System maintenance 1700-2000, disk pack read errors
Monday 7 December Setup of disk pack monitor system 0930-1000
Tuesday 8 December Accounting problems 0915-1050

2. NEW FORTRAN COMPILER

On Monday 14 December a new version of the FORTRAN compiler is to be released for general use. The new compiler is based on DEC's version 21B, which has cured a substantial number of the reported errors and also provides additional facilities and improved code generation.

While every attempt has been made during testing to ensure that errors have been eliminated, it is possible that some errors may have escaped detection. The complexity of this program makes it impossible to test rigorously for all possible error conditions and the Computer Centre cannot be responsible for the effects of miscalculations inadvertently introduced by this or other system changes. We would ask your help in reporting suspected errors promptly, so that they may be investigated and corrective action taken.

It is the user's responsibility to include some degree of consistency checking in his program to guard against the possibility of incorrect results caused by hardware or software errors. The user should also be aware that discrepancies may occur and particularly after a system change, should check runs carefully for discrepancies.

2.1 ERRORS CORRECTED

The new version of the compiler corrects the following errors reported in the Bulletin and Weekly Newsletter.

- (a) Similar subscript calculations within the same statement are now made correctly i.e.
$$A(1,J) = A(I,J)$$
 now compiles correctly.
(See Bulletin vol. 3 p. 53; Weekly Newsletter WN-13)
- (b) Common subexpressions are now handled properly.
(See Bulletin vol. 3 pp. 53, 78)
- (c) Use of a variable name as a scalar and subsequently as a function name is recognized and indicated as being in error.
(See Bulletin vol. 3 p. 73)
- (d) Correct code is now created for a subroutine using variable dimensioning and Arithmetic Statement Functions.
(See Bulletin vol. 3 p. 84)
- (e) An attempt to compare a complex function and a real variable now produces a diagnostic message.
(See Weekly Newsletter WN-11)
- (f) A new routine for the creation of real constants is used.
(See Weekly Newsletter WN-13)

2.2 KNOWN ERRORS STILL REMAINING

The following errors or peculiarities of usage have not been changed by the new compiler.

- (a) Use of an integer expression as exponent to a real variable is still handled in real mode.
(See Bulletin vol. 3 p. 49)
- (b) DO loop index restoration is not properly handled for the LOGICAL IF, RETURN combination
(See Bulletin vol. 3 p. 72)
- (c) Invalidly deep parentheses nests will still cause a compiler error.
(See Bulletin vol. 3 p. 72)
- (d) DATA statements do not take into account the mode of the variables listed.
(See Weekly Newsletter WN-7)

2.3 ADDITIONAL FACILITIES

The presentation of output by this compiler has been improved. Source program errors are better indicated, and further and more meaningful diagnostics are given. The compiler tables are also listed in tabular form, rather than the single column of the previous version.

The compiler also incorporates a number of other improvements and the more important of these are listed below for user's information.

- (a) Octal constants are now handled in a manner that allows specification of the most significant bit.
- (b) Functions may now be used in subscript expressions.
- (c) An optional comma is now allowed between the ')' and I/O list of an unformatted and general unit defining READs and WRITEs.
- (d) A REREAD statement is now available at source level.

Thus, the following statement may be used.

```
REREAD 10, list
```

- (e) The compiler now correctly handles a dummy array used as a format array.
- (f) The compiler will now properly handle I/O lists included in parentheses.
- (g) The compiler will now allow the STOP statement to be optionally followed by a string of from 1 to 5 octal digits.
- (h) DIMENSION, NAMELIST, DATA and TYPE statements may now appear after executable statements but before the variables they define. (Note that this feature may cause incompatibility with other FORTRANs. NAMELIST does not work with the present version of the FORTRAN operating system.)

2.4 REPORTED DEFICIENCIES

DEC reported that the following known deficiencies still exist.

- (a) Incorrect code is generated for some mixed mode expressions.
- (b) Nested implied DO loops in input/output statements are not compiled correctly when the control digits are variables or expressions.
- (c) Logical operations involving an integer function generates a spurious call to FLOAT.