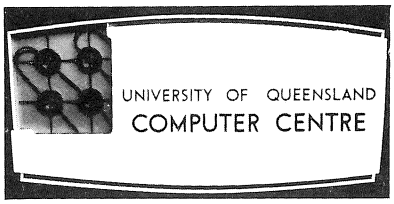

COMPUTER CENTRE BULLETIN

Volume 4, Number 1.
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Editor:
S. J. Barry.

THIS EDITION

This month the Computer Centre is releasing remote terminals for the PDP-10. Consequently, this edition is devoted to announcements concerning the release and several related seminars and courses which the Centre is organizing.

The preliminary seminars have been arranged purely for the convenience of computer users intending to use remote terminals. They are only short introductory lectures, but it it hoped that they will provide a useful introduction to the PDP-10 Timesharing System. The seminars are free and persons wishing to attend need not advise Centre staff. The dates and times of the seminars are given in the article AVAILABILITY OF REMOTE TERMINALS.

STAFF NEWS

Miss Patty Glynn has joined the Computer Centre staff as a Computer Operator. We hope she will enjoy working at the Centre.

AVAILABILITY OF REMOTE TERMINALS

The Computer Centre's Timesharing Service from the first allocation of remote terminals on the PDP-10 will commence operation at 10 a.m. on Monday 11 January 1971.

The following details outline the service which will be provided.

(a) Facilities

This initial release of facilities makes available to the remote terminal user the programming languages FORTRAN, BASIC and AID. An EDITOR program allows the user to create and modify source programs kept as files on disk. Thus, from a remote terminal, a user can develop and run programs, the results being returned directly to his terminal.

In addition, an amount of disk space is allocated to each remote terminal project for the permanent storage of files.

(b) Schedule of Operations

Initially, the Timesharing Service will be available during the periods 10 a.m. - 12 noon and 2 p.m. - 4 p.m. daily. These periods will be continually under review and extended subject to the satisfactory operation of the system.

(c) Charges

To enable users to become quickly acquainted with the new system, all remote terminal computing during the month of January 1971 will be free of charge. The revised schedule of Computer Centre charges, effective on the 1st January, 1971 will apply to remote terminal usage from Monday, 1st February, 1971.

There is no change in the accounting procedures used by the Computer Centre.

(d) Authority to Use a Remote Terminal

Before a project can be accessed from a remote terminal, an authority to do so must be obtained from the head of the department or organization which owns that terminal. This will provide a mechanism by which departments can control the usage of their terminals.

The appropriate form, 'Authority to use Remote Terminal' can be obtained from the Computer Centre, and the completed form should be returned to the Computer Centre's Administrative Officer.

Users with existing projects on the PDP-10 need only obtain the authority to use the same project from a remote terminal as well as from batch processing.

(e) Seminars

During January and February, a short seminar will be given a number of times to introduce clients to the use of the Timesharing Service.

This introductory seminar will cover the operation and use of a teletype, log in and and log out, the command language and administrative procedures. It will be a three-hour seminar and will be held in lecture room B18 of the Engineering Administration Building on Circular Drive from 10 a.m. to 1 p.m. on the following dates.

Friday, 8th January

Tuesday, 12th January

Tuesday, 19th January

Tuesday, 26th January

Tuesday, 9th February

Tuesday, 23rd February

This seminar will assume a knowledge of FORTRAN programming and the use of batch processing on the PDP-10. Interested persons would be welcome to any of these sessions and there is no need to advise the Computer Centre.

(f) Manuals

A number of new manuals covering the use of the Timesharing Service and the new languages are currently being produced by the Computer Centre.

The Editor manual is now available at the University Bookshop. This is a teaching manual for the file editing program used to create and edit files via a remote terminal.

As other manuals become available notice will be given in the weekly Newsletters and the Bulletin.

(g) Batch Operation

Batch processing will be unchanged, except that revised charges will be applied from January 1st; the revised charges will reduce the cost of printing.

(h) Restrictions of the Initial System

There are a number of limitations in the initial system.

(i) Remote terminal users will be unable to reference the line printer or card reader from the terminal. All input and output must be done via the terminal.

(ii) Because of the limited amount of disk storage available, it is necessary to impose some quotas on file storage. Each project will have assigned 12.5 K words of permanent file storage (i.e., a logged out limit). While that project is logged in, it will have an additional 125 K words of scratch file space available (i.e., a total logged in limit of 137.5 K words). Initially, a maximum of 15 projects can be authorized to use any one terminal.

REVISED CHARGES FOR COMPUTER SERVICES

From operational experience and statistics of use of Computer Centre equipment during 1970, the Computer Centre Executive Committee recommended a revised scale of charges for the year 1971. These charges were approved by the University Senate to become effective from January 1st. The most significant change is a reduction of 40% in line printer charges.

During 1970, a number of the operational aspects of timeshared computing have become clearer, with the result that remote I/O and file charges have been adjusted to distribute more equitably the real costs of providing these facilities.

Over the past few years, the cost to the Computer Centre of providing programming courses has increased, and this has resulted in quotas being imposed on courses. In order to cover the costs involved and remove the limitations of course numbers, the Unviersity Senate has approved the introduction of a fee for these courses. A table of fees for present and possible future courses is now included in the schedule of charges.

The revised schedule of all charges for Computer Centre services can be obtained on application to the Computer Centre.

COMPUTER CENTRE COURSES

Two programming language courses will be offered by the Computer Centre in February 1971. Further courses will be announced later as lecture room availability becomes known.

The first of these, commencing at 9 a.m. on Tuesday, 2nd February will be a course in the BASIC language. This is a simple Fortran-like language specifically deisgned for interactive work on a remote terminal.

It is expected that persons attending this course will have access to their own department's remote terminal for doing exercises, and that they will have attended one of the introductory seminars on the remote terminal system.

Formal course work will be conducted in lecture room B18 of the Engineering Administration Building from 9 a.m. to 1 p.m. on Tuesday and Wednesday, 2nd and 3rd February. The remainder of the week will be devoted to exercises, and the lecturer will be available to assist students during this time.

The second course will be a FORTRAN programming course. This course will be of one week's duration, each day 9 a.m. to 1 p.m. and will commence at 9 a.m. on Monday, 15th February in lecture room B18 of the Engineering Administration Building. It is assumed that candidates for this course have no prior knowledge of computing.

Users wishing to attend either of these courses must obtain a nomination form from the Secretary of the Computer Centre and return it at least one week prior to the commencement of that course. The Centre will attempt to accommodate all those who wish to attend.

In accordance with the revised schedule of charges for Computer Centre Services for 1971, a fee will be charged for each person attending a course. This has been necessary because the Computer Centre being largely self supporting must cover the costs involved in providing courses. The Centre will provide a nominal amount of machine time to enable persons attending these courses to work exercises.

FORTRAN COMPILER ERRORS

(a) Significant Digits for Real Constants

In the creation by the compiler of real constants, if the number of significant digits exceeds the capability of the machine representation and an exponent is included then an unnormalized quantity nearly zero in magnitude is created.

example:

```
RAP = 3.1415927376E-3
```

creates a constant whose value is very nearly zero

(b) Common Subscript Expressions

In handling similar subscript expressions, the compiler does not produce the correct code where the second subscript is a variable and the first is alternately a variable and a constant (see Bulletin Vol. 3, p. 53)

example:

```
A(1,J) = A(N,J)
```

will produce incorrect code

This error also applies to expressions where the arrays referenced in the expression are not the same, provided both arrays are compatibly dimensioned.

example:

```
DIMMENSION STEP (1Ø,1Ø), AA(1Ø,1Ø)
STEP (1,J) = AA(N,J)
```

NEW SOFTWARE SYSTEM RELEASED

On Monday 7 December 1970 a new software system was implemented on the PDP-10.

This release consisted of a new monitor and a number of new system routines. The new monitor contains several new facilities which will improve overall system operation, and incorporates most of the developments needed to make remote terminals available.

Of the new system routines, the only one of direct significance to the user is the Loader. When the SYMBOL option is requested on a RUN card, the detailed SYMBOL map will now be printed before the program is run. (Previously, the SYMBOL map was printed after the results of the run.)

Although this new system has been rigorously tested, and so fas as is known no errors exist, it is impossible to test completely a system of this complexity.

The Centre seeks the cooperation of users in reporting promptly any suspected errors, so that these can be investigated and corrected.

NEW FORTRAN COMPILER

On Monday 14 December a new version of the FORTRAN compiler was 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 malcalculations inadvertently introduced by this or 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.

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 arenow 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)

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)

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 specifications 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 statment is now available at source level. Thus, the following statement may be used.

```
REREAD 1Ø, 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.)

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.

ERROR IN FORTRAN LIBRARY

The new FORTRAN compiler removed redundant code with restored a register containing the index of a DO loop after some calls to library routines. Unfortunately, the occurrence of this redundant code with the previous compiler cancelled the fact that the complex divide routine improperly used this register.

While this error existed, a complex divide operation within a DO loop resulted in an erroneous value being given to the DO loop index after the divide operation. This problem was corrected on 16 December 70.

CONDITIONS OF USE AND LIABILITY STATEMENT

Experience within the Computer Centre has shown that it is necessary for the Centre to accept orders for computing services subject to defined conditions of use and defined limits of liability in the event of a claim. This is common practice in the majority of computing centres.

The Conditions of Use and Liability Statement below, as approved by the Vice-Chancellor, will condition the acceptance of work from January 1st, 1971. 1971.
Further orders for computing services will have the Statement printed on the reverse side and will have the following paragraph printed immediatley above the signature of the person requesting services.

> I acknowledge that I am aware of the conditions printed on the reverse of this form and that if the order is accepted the work will be done by the University subject to my/our acceptance of these conditions.

1. In these conditions

(i) the word "client" shall mean the person, whether a memebr of the staff of the University or not, ordering the work and responsible for the payment therefor;

(ii) the word "work" shall mean the work undertaken by the University in fulfilment of the order on the face hereof.

2. The University shall be under no liability for breach of contract or as to any matter or thing of whatsoever nature arising out of or in connection with its undertaking the work, save an except as provided in these conditions, and in particular and without limiting the generality of the foregoing, the University will not in any circumstances be liable for any incidental or consequential damages of any nature or kind whatsoever.

3. The client shall within fourteen days of the completion of the work notify the Director of the Computer Centre in writing of any error resulting or alleged to have resulted in incorrect or lost results. In the event of no such notification being received by the Director, the work shall be deemed to have been accurately and correctly performed.

4. Subject to the next succeeding condition, where such notification has been received and it is established that an error has caused incorrect or lost results, the Computer Centre will undertake a re-run of the work at no extra charge, provided that a re-run is possible. In the event that no re-run is possible, the University will refund to the client an amount equal to the amount paid by the client to the University as the cost of the run in which the error was detected, but shall be under no other or greater liability.

5. (a) If such notification is in respect of an error which has either been reported by the Computer Centre or is attributable to failure by the client to conform with procedures of which the Computer Centre has given notice by publication in the Computer Centre's Bulletin more than fourteen days prior to the occurrence of the error, the University and the Computer Centre will be under no liability to re-run or to make any refund in respect of that error.

(b) The University shall be under no liability to re-run or allow credit where an error in results has resulted from an error of judgement or interpretation by Computer Centre personnel.

(c) The University will be under no liability for any loss resulting from the failure of the client adequately to safeguard himslef against the possibility of loss of information within the system.

6. Without limiting the effect of any of the above conditions, if any material furnished by the client is lost, destroyed or damaged as a result of neglect on the part of personnel employed in the Computer Centre or breakdown or fault in the machinery, and the client provides the Computer Centre with all source information in machine readable form necessary to restore that material, the Computer Centre will so do.

7. Nothing in the above conditions shall require the University or the Computer Centre to accept any liability or undertake any re-run when incorrect results, loss of results or material, or destruction of or damage to material occur as a result of or in connection with the use by the client of other than the supported facilities or the use of supported facilities in other than the approved manner.

8. The University will instruct all personnel engaged in the Computer Centre that they must protect the confidentiality of information and material furnished by clients but shall be under no liability whatsoever in the event of any improper discloser by such personnel.

9. The University will be under no liability for any loss or damage resulting from or in connection with delay in proceeding with or completing the work.

10. The work is undertaken by the University on the condition that the client warrants that the work can be performed without the infringement of any patent or breach of any copyright and the client hereby indemnifies and forever saves harmless the University and each and every member of its staff against all actions, claims or demands for infringement of patent or breach of copyright which may be brought or made against the University or any such member of its staff arising out of or in connection with the performance of the work.

11. The client acknowledges that no warranty, condition or representation on the part of the University has been given or is to be implied from anything said or written between the parties or their representatives or contained in any publication of the University or the Computer Centre, and any warranty, condition or representation, including but not limited to any warranty, condition or representation as to the ability of the computer system is hereby expressly excluded.

AUSTRALIAN COMPUTER CONFERENCE

The Australian Computer Conference is held every three years. The first three conferences (Sydney 1960, Melbourne 1963, Canberra 1966) were organised by the Australian National Committee on Computation and Automatic Control (A.N.C.C.A.C.). This body was sponsored by various societies and professional bodies. However, in 1968 it was dissolved and its functions and aims taken over by the Australian Computer Society.

The Fourth Conference, held in Adelaide in 1969, was the first conference convened by the A.C.S. The Fifth Conference is to be held in Brisbane in 1972. The dates, 22 May to 26 May, have been chosen to coincide as far as possible with university and school vacations in all states. The venue will be the University of Queensland.

Those interested in submitting papers for presentation at the Conference are invited to do so. Original papers, from 3,000 to 6,000 words in length, on any aspect of the computer industry (whether theoretical, experimental, or applied) may be submitted. Final dates are as follows:

(i) Four copies of a working title and 300-word summary of the proposed paper must be received before the 31 October 1971.

(ii) Three copies of the full paper must be received before the 14 January 1972.

Summaries and full papers should be sent to:

Professor G.A. Rose,
Chairman, Papers Committee,
c/- Computer Centre,
University of Queensland,
St. Lucia, QLD 4067.

Further details about the Fifth Conference will be published in the Bulletin in due course.