

C.S.I.R.O.

DIVISION OF COMPUTING RESEARCH

NEWSLETTER NO. 33 - 1st APRIL, 1968

I. GENERAL

Publications Issued this Month

NL - Newsletter No. 33

LM - Library Accession List No. 22 - March 1968.

Other Publications Available

DISCDOCS - A Display Library Program. This program enables a keyboard display user to effect disc and drum transfers.

Seminars

The following seminars will be held at 2.00 p.m. in the Lecture Room of the Division of Computing Research, Clunies Ross Street, Black Mountain, A.C.T. Each is on a Thursday.

April, 4th - Computing Best Approximations with Applications to Basic Mathematical Functions.

(M.R. Osborne, Head of the Computer Centre, A.N.U.)

April 18th - The Control Data 3300 and the MASTER Operating System.

(C.L. Watson, Control Data Australia Pty. Ltd.).

May, 2nd - Computer Systems and Operation Techniques in a Multiprocessing Environment.

(D.A. Harragan, Computer Service Centre, Bureau of Census & Statistics, Canberra).

May, 16th - A Computer Graphics System for Plane Region Maps.

(R.B. Stanton, Dept. of Electronic Computation, University of N.S.W.).

Basic Fortran Courses

Adelaide - April 29th, 1968.

Sydney - A Course will be held in Sydney during the week commencing 13th May, 1968. A few places on this Course are still available. Anyone wishing to attend should apply to the Education Officer, Division of Computing Research, C.S.I.R.O., Canberra.

Armidale - A Course is expected to be held at the Pastoral Research Laboratory, Armidale during April. Those interested should contact Dr. J.L. Wheeler of the Division of Animal Physiology.

Brisbane - A Course will be held at the Cunningham Laboratory, St.Lucia during the week commencing 3rd June, 1968. Application to attend this Course should be made to Mr. D.R. Ross, Head of the Brisbane Branch of the Division (telephone 73121 extension 209).

Canberra - June, 1968.

Melbourne - July, 1968.

#### Director of Technical Services

Mr. J.J. Russell, Officer-in-Charge of the Melbourne Branch of the Division, has been appointed to the new position of Director of Technical Services for the Division.

In this capacity he will attempt to improve the quality, compatibility and uniformity of the services which the Division provides at its Branches throughout the Commonwealth.

The Director of Technical Services will be responsible for suitable scheduling systems for both jobstack and multi-access environments and for special applications schedules. He will be responsible for the orderly maintenance and development of software and for hardware maintenance schedules and back-up procedures. The provision of performance and usage analyses and of accounting, control and planning procedures will be included in his duties together with the supervision of operators and data preparation services.

Mr. Russell will control documentation, standards, operations personnel functions and transport arrangements for computer materials. He will also manage and control user data files on direct access and magnetic tape devices.

Mr. Russell will be spending some time in Canberra from April onwards, and will be in Canberra full-time from 3rd June, 1968.

#### Publications Index

Mr. D.R. Ross of the Brisbane Branch of the Division has produced an index to D.C.R. publications (Newsletters, Manual Supplements, Technical Notes, Memoranda, Seminar Papers etc.). Publications up to March 1968 are indexed and it is planned to have frequent updates.

The index is available for inspection at D.C.R. Branches. Copies are not available for general distribution at present, but consideration is being given to this.

Control Data Publications

Users are reminded that requests for the permanent issue of Control Data publications should be made to the Publications Assistant, Canberra and that the relevant Charge Code must be quoted. It is very helpful if the Publication Number of each Manual requested is also quoted.

Unit Handling Control Statements and Subroutines

In order to rationalize the use of logical units, as distinct from magnetic tapes as logical units, it has been decided to redefine what were previously called "Direct tape handling functions". These were previously defined in Manual Supplement 19. Further Fortran calls have been added to both the 3200 and 3600 software. These control functions and calls have slightly different (but not conflicting) meanings on each machine. The definitions below supersede those given in Manual Supplements 8, 19 and 23 which are to be consolidated and reissued in the near future.

The control statements and their equivalent Fortran calls are:

<u>Control Statement</u>	<u>Fortran Statement</u>	
*MARKEF,u,m	ENDFILE u	Writes an end of file on unit u.
*ERASE,u,m	CALL ERASE (u)	Erases 6" of tape on unit u.
*SKIP,u,m	CALL SKIP (u)	File skipping on unit u.
*BSPF,u,m	CALL BSPF (u)	File backspacing on unit u.
*BSPR,u,m	BACKSPACE u	Record backspacing on unit u.
*RELEASE,u,c	CALL RELEASE(u) or CALL RELEASE(u,c)	Releases the assignment of logical unit u.
*UNLOAD,u	CALL UNLOAD(u)	Unloads unit u.
*REWIND,u	REWIND u	Rewinds unit u.

Notes : 1. The parameter "m" in the first five control statements is optional and specifies the number of times the operation is carried out. If left out, it is automatically set to 1.

2. The parameter "c", if non-zero, will cause any SV declaration to be ignored. If c is zero or omitted, SV will be acted on.

The changes are currently implemented but the previous definitions (viz. those with T appearing as the last character e.g. SKIPT) will remain valid for approximately one month.

Staff News

Mr. J.J. Russell will relinquish his position of Officer-in-Charge in Melbourne to become Director of Technical Services based in Canberra (see earlier Newsletter item).

Mr. A.V.L. Cook will become Officer-in-Charge in Melbourne when Mr. Russell moves to Canberra.

Mr. K.J. Barnes has taken up duty as a Technical Officer with the Division in Canberra and is working with Dr. W.T. Williams.

Mrs. G. Magi has been appointed Supervisor of Data Preparation in Canberra in place of Mrs. B.L. Rye who has left the Division.

II. 3600

Displays Inactive Jobs

The use of the \*DESC,DI card occasionally causes some difficulty in 3600 scheduling and operations. In most cases it appears that the displays inactive requirement can be obviated by a minor program reorganization, and users with an apparent current need for this feature are requested to seek the advice of the professional staff at their local Branch (or at the Centre) so that no unnecessary processing delays will occur.

Disc Control Statements

The disc control statements mentioned in the last Newsletter are now in the system and under test. A description of these will be included in the next Newsletter.

DESC Statement

This DAD control statement provides a description of certain characteristics of the job to which it applies. The format is:

\*DESC, d1, d2, d3

where d1, d2, d3 are declarations which are defined below.

The DESC card should be the first card of a job deck after the JOB card. Otherwise it will be ignored without any diagnostic. Similarly, a DESC statement is ignored if the job containing it is executed by means of BREAKIN request from a display. Errors in the declarations of a DESC statement will in no case cause job termination.

The declarations, which may appear in any order, in any combination and in free format are:

DI, BK, DF, deadline

but any text may also appear. TY is no longer a recognized declaration.

DI is used to indicate that the job cannot run unless the display system is inactive.

BK indicates that the job will require the BREAKOUT facility.

If a DI job comes to the head of the Execution List when the display system is active it will be left at the head of the queue and an attempt made to start some other job. Similar remarks apply to a BK job when the BREAKIN or BREAKOUT facilities are already in use.

DF which is intended for use with the disc control statements is similar in effect to \*EQUIP,65=DF, but will assign the disc to the job only until the first occurrence of one of the following control statements.

LOAD, LOADMAIN, RUN, COMPASS, FTN, KTN, ALGOL

The deadline option allows a user to specify that his job should not start before a given time. This facility will generally be used only in Vista jobs requiring the user to be present. The deadline is given as a number (up to 4 decimal digits) specifying a time in the 24 hour system. Note that the deadline does not imply that the job will be run at the time stated, but that it will not be started before the time stated, even if it comes to the head of the Execution List. A time of 0000 should not be used, as zero or blank fields cause the scanning of the DESC statement to terminate. Any combination of the above declarations is legal.

#### Time Limits when using BREAKOUT

Vista programs are able to economise the use of computer time by swapping the program from core to drum by using the BREAKOUT macro (CALL36 64). The swapped out job returns to core storage and regains control after an interrupt is received from Vista. The BREAKOUT program, on regaining control has the job time and run time limits set according to the following rule:

If the remaining run time is less than 2 minutes, and the job time is less than 20 minutes, the run time is set to 2 minutes, and the job time to the current elapsed time plus 2 minutes.

Thus, a Vista job can be sure of having 20 minutes computer time available even if the originally requested job time is less, e.g. 4 minutes, as long as bursts of use are less than 2 minutes.

Addition to the STATUS Macro

A further macro, an augmented STATUS macro (call code : 64 + 13), has been added to the DAD system. This macro returns information from the logical unit tables to A and Q, viz.

A : LIMTABLE entry for the specified lun

Q : LUNTABLE entry for the specified lun

These registers then contain information, not accessible by other means, e.g. the document length (in drum sectors) in bits 37-24 of Q, the document length limit (in drum sectors) in bits 38-24 of A, and the document edition number in bits 23-15 of A.

The calling sequence is

LUNTABLE n

where n is the logical unit number.

SIMSCRIPT

The following system deficiencies have been corrected:

1. The "COMPUTE" Statement now works correctly.
2. The use of a floating point expression with a computed "GØ TØ" now compiles properly.
3. Several initialization problems have been corrected.

III. 3200

CSIDISC 3.2

It is expected that CSIDISC 3.2 will be released at all Branches at about the time this Newsletter is issued. Many changes have been introduced for reasons of internal efficiency and no description is warranted. The new features of interest are detailed below:

Dump

As in previous versions of the 3200 system, no complete dump will occur without the appropriate option appearing in the JOB card, as defined below. Under an abnormal exit of any type there will be a minimal dump of 64 locations either side of the program exit point.

Options - ND : equivalent to blank field viz. minimal dump to OUT on abnormal exit.

DP : dumps all of core to OUT on abnormal exit.

DR : dumps all of core to OUT on normal or abnormal exit.



COMPASS

Lines containing assembly errors are now output on the line printer even if the L option has not been requested on the \*COMPASS control card.

Overlays

It is now possible to form overlays on the disc on the 3200. In the past, it has been the practice for some programmers to form overlays on tape and to save the overlay tape. However, overlays are absolute records of machine core and are not relocatable. They are therefore restricted in that they may be used only under the system on which they were created. Since system changes are relatively frequent, the practice of saving overlay tapes is not recommended - particularly as overlays can now be formed on the disc with little loss of time.

The recommended method of using overlays is to save the load-and-go tape and to prepare overlays on the disc each time the job is submitted. A few of the features of the availability of the disc for preparation of overlays are listed below:

- (i) Overlay preparation is now very much faster.
- (ii) If the LGØ is not specifically equipped to disc, any XFER, MAIN, OVERLAY or SEGMENT cards which reference LGØ will force it to be magnetic tape.
- (iii) If overlays are formed on the disc, the disc driver (500 words) will remain in core during program execution.
- (iv) The routine FLOVER (with entry points OVERLAY and SEGMENT) has been increased in size by 86 locations.
- (v) The current recommendation for this type of usage is:

- \*JØB,c,i,t
- \*EQUIP,56 = MT, (name),RØ,SV
- \*EQUIP, u = DR
- \*LØAD,56
- \*RUN,t,p



IV. PUZZLE CORNER

No correct answers were submitted for last month's puzzle. The solution is as follows:

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DIMENSION CARD(10), IC(2)
EQUIVALENCE (IC,CHAR)
IC(1) = IC(2) = 4H
READ (60,2) CARD
2 FORMAT (10A8)
DO 3 I = 1,10
  IF (CHAR.EQ.CARD(I))3,4
3 CONTINUE
4
  .
  .
  .

```

One of the subtleties involved uses the fact that, on the 3600, the Hollerith constant 4Hbbbb is left-justified and the word is blank filled.

The puzzle for this month is to arrange the digits from 1 to 9 as an integer plus a fraction that adds up to exactly 100. One possible solution is  $91\frac{5742}{638}$ . Work out another with only one digit in the integral part.

