

C.S.I.R.O.

DIVISION OF COMPUTING RESEARCH

NEWSLETTER No. 37 - 1st AUGUST, 1968

I. GENERAL

Publications Issued this Month

NL - Newsletter No. 37

LM - Library Accession List No. 26 - July, 1968

MS - Manual Supplement No. 32 - SORT under the DAD System.

P. P. Hanlon, June, 1968.

TN - Technical Note No. 24 - CARDIMED - A Card Image Editing Program for the Control Data 3600, Ed.2. by G. R. Knowles, Division of Computing Research, Canberra. April, 1968.

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.

August 15 - Solving Mathematical Problems Using the VISTA DISPLAY DEVICE.
(G. Shearing, Division of Computing Research, C.S.I.R.O.)

August 29 - On-line computing.

R. H. Hudson and J. A. B. Palmer will describe their experience in programming and editing with INTERP, BASIC, FOCAL, FRED and KWIKTRAN, and present a survey of some of the time-sharing systems available in Australia. Users will be welcome to participate and describe features they desire in on-line systems.

Basic Fortran Courses

During August courses are planned for Hobart and Griffith. Anyone wishing to attend the Hobart course should apply immediately to the Education Officer, Division of Computing Research, C.S.I.R.O., Canberra.

During September courses are planned for both Townsville and Canberra.

Special Lectures

G. Knowles, who has been responsible for revising the card-image editing routine CARDIMED, will be visiting several branches to give two talks entitled "Maintaining a Magnetic Tape Program and Data Library using CARDIMED",

and

"The Use of the Vista Graphical Display Device".

The dates and places are as follows:-

Thursday,	22nd August	-	Canberra (CARDIMED only)
Friday,	30th August	-	Brisbane
Monday,	2nd September	-	Sydney
Tuesday,	3rd September	-	Adelaide
Wednesday,	4th September	-	Melbourne (CARDIMED)
Thursday,	5th September	-	Melbourne (VISTA)

Further details can be obtained from the respective branches, and persons planning to attend are asked to inform the local branches.

Advanced Lectures in Sydney

Date: Friday, 23rd August

Two lectures will be given; one on the use of magnetic tape and the other on plotting. These lectures are aimed at enabling Fortran programmers not at present using these facilities to do so. Familiarity with elementary Fortran will be assumed. Details of time and place are available from the Sydney Branch of the Division ('phone 680566).

ALGOL Course

It is intended to hold a two-day ALGOL programming course in Canberra during September or October. If there is sufficient demand, the course will probably be repeated at other centres. The aim of the course will be to give Fortran users a working knowledge of ALGOL so that they may be able to read and use or transliterate published ALGOL programs. ALGOL compilers exist for both the 3200 and 3600 computers. Anyone who would be interested in attending such a course is asked to contact the Education Officer, Division of Computing Research, Canberra.

Publications Index

A new edition of the D.C.R. Publications Index has been produced and is available for inspection at the branches.

Simscrip Group

A number of people currently using simulation techniques have formed a group to exchange information on the subject. The group's first "Information Sheet" has been published. Copies are available from the Publications Assistant of the Division, but those wishing to join the group and to be placed on the regular mailing list should contact Mr. J. S. Armstrong, Forestry Department, A.N.U., Canberra.

CARDIMED

A substantial revision of this card image editing program has been made and the latest system is fully described in Technical Note No. 24. Several new options have been added, diagnostics have been expanded and known bugs removed.

G. Knowles, who did the revising, will be visiting several branches to describe the features of this program. The dates of these visits are given under "Special Lectures" in this Newsletter.

POST Control Card

A control card having the form

*POST,u,p

where u is a logical unit number, 1 - 49

p is a program name of 1 - 8 characters (blanks ignored)

is available on both the 3200 and 3600 operating systems. Its function is to position logical unit u (e.g. a magnetic tape) so that a subsequent *LOAD,u will load the relocatable binary subprograms in the file whose first subprogram has name p. This feature is intended to facilitate loading programs from a personal library of frequently used programs. If two contiguous end-of-file marks are found, that is, normally at the end of information on the tape, the search, which proceeds in a forward direction only, will be terminated with the message

SUBP. CANNOT BE FOUND

Control Card Changeover

Control cards such as JOB, EQUIP, FTN etc. originally were required to carry a $\frac{7}{9}$ punching in column 1. With the advent of the DAD system for the 3600 a * in column 1 became the preferred form. The 3200's now also accept a * in column 1 of control card and this is now the standard preferred form throughout the C.S.I.R.O. network.

From September 1st 1968 a * in column 1 will become the required form for the 3600 computer system and the preferred form for the 3200's, although the 3200's will continue to accept $\frac{7}{9}$ cards.

Users are strongly urged to replace all $\frac{7}{9}$ control cards in their possession with cards punched in the standard form. This is desirable with 3200 programs for compatibility purposes.

Magnetic Tapes

(a) Charging - Reminder Notes

The accounting aspects of the use of magnetic tapes have now been centralized in Canberra, from which centre are also issued the monthly reminder notices; these latter are distributed in bulk where appropriate to the Branches who will send them to the people concerned. One useful feature of this centralization is that it allows consolidation of tape holdings throughout the network.

It is timely to comment that the monthly reminder notices are actually "reminders" from the Division of Computing Research; they should not necessarily be used by the programmer to absolve him of responsibility for a certain amount of internal bookkeeping. In other words, they should serve as a check for him on his current tape holdings.

(b) Transfer between Branches

(i) Overnight Transfer

A tape stored at one of the Branches may be required for processing of a single job at another Branch or at the Centre. Filling in of the programmer tape information on the Job Request Card is sufficient to ensure that this tape is sent with the jobstack and returned upon completion of processing.

(ii) Permanent Transfer

Occasionally a tape, normally stored at one Branch, is required for permanent use in another area, and the Save Tape cards were designed with this possibility in mind. As the Save Tape card now represents hard cash, it is felt that it should

remain in the programmer's possession until such time as release is required. Accordingly, a perforated green sticker has been designed (supplies are obtainable from the Branches or from the Centre) so that the user may fill in the top two portions; the first he attaches to his Save Tape card, and the lower two are sent to the Branch holding his tape. The Tape Librarian will attach the lower sticker to the appropriate spool and send the tape to its relevant destination. The remaining sticker will then be placed in the tape storage cabinet in the position from which the tape spool was removed.

Brisbane Jobstack

There are now two batches of jobs per day to both the 3600 and the 3200. The closing times for acceptance of jobs are 11.30 a.m. and 3.30 p.m. and the results should be available by 2.00 p.m. and 9.00 a.m. (the following day) respectively for the 3200 and by 12 noon (the following day) for the 3600 although varying flight times may cause results from the later batch to be delayed until 9.00 a.m. the day after. This means that even under the most unfavourable circumstances, it should be possible to obtain two runs on the 3600 every three days improving to one run each day when the flights are on time.

It is important for users to realise, that although there are two collections a day for the 3600, jobs from both times may be in the system simultaneously, so that the user must ensure that no two job cards on the same day have the same identification field.

Staff News

New Appointment:

Mr. J. A. Neal has joined the Melbourne branch as a consultant. Mr. Neal was previously with the Aircraft and Armament Experimental Establishment, Boscombe Down, England for six months and then with the Computing Unit of the University of Surrey for six months.

Overseas Visits:

Dr. M. B. Clowes will be overseas during August and September where he will deliver a paper to the Machine Workshop at Edinburgh University and will lecture at the NATO Automatic Interpretation and Classification of Images Summer School in Pisa on Transformational Grammars and the Organisation of Pictures. He will also visit the National Bureau of Standards at Stanford Linear Accelerator Centre and other groups working on picture processing.

Mr. T. S. Holden is attending the IFIPS Conference in Edinburgh and the CO-OP Conference in Los Angeles. He will also examine the use of large systems in computer installations in the United Kingdom, France, Switzerland, Canada and the United States. He will return in November.

Mr. D. J. Langridge is at present overseas until October where he is investigating on-line graphics and picture processing systems research. He will attend the NATO Automatic Interpretation and Classification of Images Summer School in Pisa, and will visit the Lincoln Lab at MIT, General Motors, C.E.R.N. and other research centres.

Mr. T. Pearcey will be on leave for twelve months from the first of August, during which he will be working with Control Data Corporation in Minneapolis as a Specialist Consultant. He will be concerned with the organisation of advanced computer systems, particularly special systems for Information Retrieval.

II. 3600.

Disc Saving

Formerly, disc documents were retained during the week only, maintenance at weekends causing loss of these documents.

Now the disc documents are transferred to magnetic tape storage at the beginning of this weekend maintenance period, and are restored at its end according to the following algorithm:

At disc shutdown, all disc documents are sorted on the date of most recent activity, and saved on magnetic tape.

During disc startup, documents are returned to the disc in order of most recent activity, until all documents are restored, or until the disc reaches a pre-determined level of capacity.

COBLOC

The COBLOC analogue simulation system is now available as a disc document and may be accessed in the following manner:

- *JOB, cc, id, t
- *DESC, DF
- *ERASE, 51
- *DFCOPDR, 51, CBC*****, COBLOC
- *LOADMAIN, 51
- *RUN, t, 1
- .. COBLOC data cards ..
- *EOD

A complete discussion of disc control statements can be found in Manual Supplement 31.

DAD System - Unlabelled Magnetic Tapes

It is proposed to change the handling of unlabelled magnetic tapes by the system. At present, it is necessary for the operator to type in the number of the tape deck on which the required unlabelled reel is mounted. This causes a complete stoppage of the system, and is most distressing to users of the on-line consoles (displays and teletypes).

After the change, the system will treat an unlabelled tape as a labelled tape in which the label text is:

"UNLAB."

However, a rewind operation on such a tape will still return to the load point, and not to the point past the first record.

Notes:

- (1) The change will be introduced on or after August 5th.
- (2) If more than one unlabelled reel is mounted at the time a job requiring an unlabelled tape commences, the tape on the highest numbered drive will be taken. Hence a job using more than one unlabelled tape must determine internally the correspondence between tapes and logical units.
- (3) In any case, a program which uses an unlabelled tape should check that the required tape has been assigned.
- (4) The change will mean that the operators will be forced into allowing at most one unlabelled tape job to enter the execution queues at any time, and there may be an increase in the turnaround times for such jobs.
- (5) A labelled tape in which the text is "UNLAB." will be treated correctly.

III. 3200

There is no 3200 news this month.

IV. PUZZLE CORNER.

A great deal of interest was shown in the puzzle for last month with many people sending in solutions, no two of which were the same. Those from whom solutions were received are B. Austin, J. Clarke, J. Goncz, P. Jones, H. Kinns, D. Langridge, I. Morgan, J. Palmer, H. Rabich, R. Rotly, C. Sabine, J. Tindale, P. Ward and N. Westwood.

The solution from the designer of the puzzle which no-one came up with is as follows:-

```

PRØGRAM P
DIMENSION K(7,7)
DØ 1 I = 1,7 $ DØ 1 J = 1,7
1 K(I,J) = 15/((IABS(I-4)+3)*(IABS(J-4)+3))
WRITE (61,100) ((K(I,J), J = 1,8), I = 1,8)
100 FØRMAT (10X, 8I1)
END

```

To conserve space, we will print only a few of the shorter solutions received, although the longer ones also displayed ingenuity.

In the above program, statement 1 could be replaced by one of

- (a) $1 K(I,J) = ((I*(8-I))/4+(J*(8-J))/4)/7$
- (b) $1 K(I,J) = (1.0/10.1)*(ABS(1.0/(J-3.9))+ABS(1.0/(K-3.9)))$
- (c) $1 K(I,J) = (1-I*J/28)*(1-4/I/J)*(1-(1-I/4*4/I)*(1-J/4*4/J))$

Another method is to replace the DO-statements by

```
DØ 1 I = 5,11 $ DØ 1 J = 5,11
```

and then statement 1 can be

```
1 K(I-4,J-4) = ((I/6-I/11)*(J/8-J/9)+(J/6-J/11)*(1/8-I/9)+1)/2
```

A solution that does not quite fit the problem definition (having a masking rather than an arithmetic replacement) and is 3600 only shows, nevertheless, quite an elegant approach. The declaration "INTEGER SHIFT" should be inserted after PRØGRAM P and statement 1 can be replaced by

```
1 K(I,J) = 1.AND.SHIFT(138577773056,7*I-7+J)
```

The puzzle for this month is to write a single Fortran statement that will give I the value 3200 or 3600 depending on which machine the statement is used.