

C.S.I.R.O.

COMPUTING RESEARCH SECTION

NEWSLETTER NO. 25 - 1st JULY, 1967

I. GENERAL

- IMPORTANT NOTICE -

MAILING LIST ANNUAL CHECK

It has been decided to make an annual check of the names and addresses of all those on the mailing list. If you wish to remain on the list you must complete and return the last page of this Newsletter.

Publications Issued this Month

NL Newsletter No. 25
TN Technical Note No. 21 Halftone. Dr. A.K. Head,
 C.S.I.R.O. Div. of Tribophysics.
M2 Manual Supplement No. 29 Explanation of 3200
 Diagnostics. D.R. Ross, C.R.S., Adelaide.

Other Publications Available

C3 CSIR ELF Incomplete elliptic integrals
C3 CSIR ELE of the first and second kind.
 Author: A.F. Bennett, C.R.S., C.S.I.R.O. Melbourne.

Our Man in Brisbane

Mr. D.R. Ross, who is the acting Officer-in-Charge of the Adelaide subsidiary, has been appointed to a position as C.R.S. consultant in Brisbane. Although he is expected to take up his position within a few weeks he will maintain his responsibility for the Adelaide subsidiary until the Officer-in-Charge returns. All of the network users in Queensland will receive an official notice when Mr. Ross's transfer date has been decided.

Our Man in Griffith

It is hoped that a member of the C.R.S. staff will shortly be stationed at the Irrigation Research Laboratory, Griffith, N.S.W. to take charge of the programming tasks and the computing equipment to be installed there early next year.

Long Jobs (Canberra)

Computer jobs which have an indicated run time of more than 80 minutes will not be run unless a very adequate reason is included on the job request form. Jobs of this length should be partitioned into conveniently sized sub-units. The main reason for this policy is that long jobs are scheduled for the last period of the day's run and where for example there would not be time to run a 150 minute job there would be time to run several component parts of such a job.

Optimizing Production Programs

The operations staff at Canberra have recently been giving more attention to speeding up some of the standard library routines.

This is part of a general effort to reduce the running times of production jobs. Users who regularly run production jobs which take say 20 minutes are requested to contact H. Hudson or P. Hanlon. Certain service subroutines are available which when used can indicate program areas where improvement in the coding would be significant. Already the use of these techniques has resulted in reduction in run times of up to 50%.

The following points may help users to improve their programs generally.

1. Integer arithmetic is faster than floating point arithmetic. (However bear in mind the possible effects of truncation).
2. Do not mix modes unnecessarily.

3. Floating point multiplication is faster than floating point division:

e.g. use $A = B * \text{RECIP}$ where $\text{RECIP} = 1/\text{CONST}$
 instead of $A = B/\text{CONST}$
 Assuming that this calculation is repeated
 many times.

4. Do not repeat 'constant' calculations within a DO loop

e.g. $X = A * B + C - D$
 DO 9 I = 1,100
 9 P(I)*X

not DO 9 I = 1,100
 9 P(I) = Q(I)*(A*B+C-D)

5. Try not to use non-standard subscripts.
 6. Reduce time in updating the addresses of formal parameters in subroutines by the following dodge.

```
SUBROUTINE  XXX(AA,BB,CC,DD)
      A = AA
      B = BB
      C = CC
      D = DD
```

Then in the body of the routine use the local variables A, B, C, D where you would have used the formal parameters AA,BB,CC and DD.

(N.B. AA,BB,CC and DD cannot be array names.)

Users are invited to send in other programming hints.

II. 3600

Standard Input (Logical Unit 60)

The usage parameter for logical unit 60 has been changed from RØ (Read Only) to RW (Read/Write). This means that the following SENTRY calls are now meaningful and legal on the standard input unit:-

READ, WRITE, BSPR, BSPF, REWIND, UNLOAD, SKIP, MARKEF, as well as insert or delete calls. Thus it is now possible for a run in a multiple execution to create control cards, program or data for subsequent runs. It is particularly useful for inserting or modifying control cards. Under DAD, of course, a job cannot affect the standard input of other jobs. The restriction of lun 60 to RØ usage can therefore be quite safely relaxed.

Revision of the DAD Manual

A new edition of the DAD System Programmers Manual will be issued shortly. Revisions will also be made to Memoranda 5 and 6.

SIMSCRIPT Course - Canberra

A SIMSCRIPT programming course will be held on Mondays at 2.00 p.m. starting 10th July. For further details and application form contact the Education Officer, C.R.S., Canberra.

Puzzle Corner

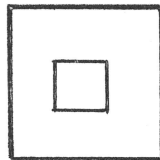
Correct answers to the intersecting circles puzzle were received from T.S. Holden, D. Colless, G. Petru and J. Hassick.

The maximum number of parts is 32 for $n = 6$. This formula can be deduced by considering the number of parts resulting from the intersection of smaller numbers of circles and forming the different tables.

No. of Circles	Parts	1st diff.	2nd diff.
1	2	2	
2	4		2
3	8	4	2
4	14	6	(2)
		(8)	
5	(22)		(2)
6	(32)	(10)	

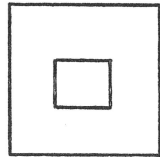
The figures in () are interpolated from the results for circles 1-4. In general for n circles these are $n^2 - n + 2$ parts.

A simple puzzle this month. A solid figure has a plan view and side elevation as below. What is the side elevation.



Plan

? Side Elevation



End
Elevation

N.B. Following normal drawing convention hidden lines if present are shown -----.

