JADE Computer Note 18

J. Allison
P. Dittmann
E. Elsen
L. O'Neill
P. Steffen
S. Yamada

Febr. 1, 1979

How to change existing analysis routines to become fully BOS compatible

The feeling of the JADE collaborators present at the last offline software meetings was that it is now dangerously late to commit the offline software group to a radical changeover of all routines accessing the common block "CDATA" from "fixed pointer" to "bank" coding. The necessary changes would appear to be straightforward, but all routines accessing "CDATA" would have to be changed at the same time, and this would necessarily entail some difficult-to-estimate number of days during which nothing would be accomplished except the debugging of routines which are now working. Furthermore appearances may be deceptive. No one in the JADE collaboration has been working with BOS within real analysis routines or can say with any confidence that no unforeseen difficulties will arise. Finally, a consideration not related to the software development schedule, the use of the BOS as opposed to our current fast read routine will involve some small but probably significant sacrifice of throughput rate at the stage of the first data reduction, probably of the order of 10%. In view of the predictable shortage of CPU time at DESY in the future this should not be considered trivial.

On the other hand the meeting took note of the fact that later stages of data analysis, after the first reduction, will use the BOS system. It was considered very desirable that existing routines, which will be used in the first data reduction, be changed so that they can also be used in programs using BOS. The following recommendations are accordingly made:

1) The standard libraries should be changed so that the common "CDATA" is introduced only via the standard MACRO of the same name. It may be necessary to implement routine specific DIMENSION and EQUIVALENCE statements.

2) A FORTRAN routine CLOC should be written - according to BOS specifications - which locates a given bank in the data COMMON:

CALL CLOC (IND,NA,NR)

where NA = name of the bank (4HJETC)
NR = number of the bank (1)
IND = pointer to the bank (= 0, if bank does not exist)

This routine must be optimized by someone who knows the details of the first data reduction step. In any case calls to CLOC should be minimized. The routine should be appended to the standard libraries.

3) The total length variable now at the beginning of CDATA must be removed if BOS is to work. The length should be maintained as the last pointer in the fixed pointer array.

4) In all existing analysis routines, references to the fixed pointer table should be replaced by calling CLOC:

BEFORE		AFTER
.		.
.		.
C PICKUP 'MUEV' POINTER.		C PICK UP 'MUEV' POINTER.
IP=IDATA(63)	←CHANGE→	CALL CLOC(IP,4HMUEV,1)
IF(IP.EQ.0)GO TO 20		IF(IP.EQ.0)GO TO 20
.		.
.		.
C PICK UP MU DATA.		C PICK UP MU DATA.
I=IDATA(IP+5)		I=IDATA(IP+5)
.		.
.		.

5) When the location of all data in the NORD output format has been settled, a routine should be written, to be called in the standard analysis sequence, or used as a separate program, which creates the fixed pointer table and simultaneously does all necessary reformatting of e.g. the jet chamber data. (Since a rough estimate indicates JADE will write only about one condensed IBM tape per day and the number of tapes is not threatening to get out of hand, it may be desirable to create a new generation of tapes immediately following the condensed tapes - first generation to be kept -

on which reformatting and fixed pointer creation have been done once and for all. This measure will save CPU time if, as seems likely, the reformatting program can become well tested and go into production running very fast, while the program doing the first data reduction will be run many times on the same data before it is considered well tested, i.e. before it generates any output tapes at all.)

6) After 1) - 4) has been done the name of the common in MACRO "CDATA" should be changed to "BCS", the BOS common name, and the first word, NWORD, should be removed.

Consequences of Adopting above Proposals:

1) There is no need to change all affected subroutine at once.

2) Programs can use the existing routines together with the BOS system, provided that the function CLOC (and other BOS functions) gets loaded from the BOS-Library.