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Appendix

Loader control directives

We will describe the features currently proposed for HARTRAN, in order to indicate the possible action. The format could be different in other local operating systems, but the facilities would be similar.

   * DEFINE X = Y,   I = 50,   J = I + 3

This directive creates new symbols in the Loader Symbol Table (LST). There can be as many definitions as will go on each DEFINE card. Each new name comes before an = sign; the value and mode are obtained by working out the expression on the right-hand side (in which all symbols must have been previously defined). A new entry is made in the LST. No other entries are changed.

   *   RENAME U/V, I/J

This allows the names of symbols in the LST to be changed. The new name comes before a / sign; the old name comes after the slash. There can be as many changes as will go on each RENAME card.

In case there are any forward references using the old names, the Forward Reference Table (FRT) is processed whenever a RENAME card is met. The name in each entry is compared with names in the LST, and if a coincidence is found, the forward reference is filled in.

Otherwise, the name is compared with the old names on the RENAME card, and changed if necessary. The entry is then moved to compress the FRT.

When the FRT has been processed, each old name on the RENAME card is compared with names in the LST. When a coincidence is found, the entry in the LST is changed. No new entries are created.

   *   GLOBAL A,B

This specifies that routines or arrays A and B are to be assigned storage in the global region. An entry for each is made in the LST with length zero and mode global.

   *   CHAPTER N

The chapter number N may be a decimal integer, or a parameter. The previous chapter (if there was one) is completed and the current chapter number noted. Then loading of the chapter can begin. The chapter is terminated by another CHAPTER or an ENTER directive.

   *   ENTER N

The number N defines the chapter to be entered. It may be a decimal integer, or parameter, or blank (meaning the last chapter loaded).

This directive marks the end of the program part of the job: the data follows immediately.

Correspondence *(continued from p. 155)*

language of the computer he is currently using, inquires whether programs will be interchangeable between two quite different machines he will be using in the future and, by implication, instructs the manufacturers to see to it.

The problems here are substantial, and not to be solved by expressions of indignation, however righteous. A manufacturer can provide a sound users' organization for the exchange of ideas and co-ordination of intentions, can make effort available to meet users' requirements in system development, and can do his best to provide a good family of programming languages. However, the systems and languages provided will always be capable of improvement, perhaps by each user personally on his own site. Clearly, *compatibility* cannot be provided by the manufacturers alone; the users must discipline themselves, and must want compatibility sufficiently to sacrifice the immediate local improvement.

The question of compatibility of programs among different models of computer raises a number of technical difficulties; some of these are currently being considered by various groups of manufacturers and others implementing similar languages for different machines. It is too early yet to forecast the degree of success. The British Computer Society's Standard Programming Languages Committee, which was recently set up, may be able to make some contribution to the solution of these problems.

To avoid accusations of not playing the game, I should say that Dr. Fox himself has kept a very straight bat towards the autocodes of his current machine, and has recently arranged a match between the manufacturers with which he is particularly concerned.

Incidentally, so fastidious a numerical analyst as Dr. Fox would doubtless wish not only to run the same programs but also to get the same answers. He may yet be mercifully unaware that although the two computers he mentions both use 48-bit words, they have different representations for floating-point numbers and different rounding-off procedures.

18, Chaldon Way,   Yours faithfully,
Coulsdon, Surrey.   G. M. Davis.
15 May 1962