AEC-NASA TECH BRIEF

Encode/Decode Facility for FORTRAN IV

The problem:

To develop a program which will allow operations on alphanumeric data prior to storage or writing. The FORTRAN IV formatted READ and WRITE statements cause transfer of alphanumeric data to or from the external input or output device selected by the unit number. However, for some applications, it is convenient if such data can be transferred instead to or from an area in memory, so that further operations can be performed.

The solution:

An ENCODE and DECODE facility, a subroutine added to a FORTRAN IV library, allows alphanumeric data to be transferred to or from an area in memory rather than to or from external input/output devices. A buffer storage array allows the operations on the data prior to writing.

How it's done:

An ENCODE/DECODE facility can be added to a FORTRAN IV system by adding a suitable subroutine, appropriating an I/O unit number that is not otherwise used. The subroutine is written to transfer the data to or from an array.

For the DDP-24 computer, the array is designated by the statement "CALL BUFDEF (M,N)," where M is the integer array that receives or supplies the alphanumeric data, and N is an integer constant or variable indicating the number of data words transferred. N must not be larger than the length of the array M, nor greater than the length of the buffer area used by the I/O conversion routines. These assignments apply to all subsequent operations until altered by another CALL BUFDEF statement. The number of characters per word (four for the DDP-24) depends upon the computer word length.

The unit number 8 was selected for this use. The statement "READ (8,n) list" takes N words of alphanumeric data from the array M and converts them according to FORMAT statement n to fulfill the list. In the process, the input-output buffer area is loaded with N words of data from M. If N is less than the buffer length, the remainder of the buffer area is filled with space codes. The contents of M are not altered. (If the list and FORMAT statement are such as to call for multi-line input, the contents of M are transmitted repeatedly.)

Reversing direction, the statement "WRITE (8,n) list" converts the list according to FORMAT statement n, and stores the first N words of the result in the array M. (If the list and FORMAT statement produce multi-line output, the output from later lines will overwrite the output from earlier lines.)

Notes:

1. Users, on input, may read different card or record formats without a prior knowledge of the READ statement format.

2. Additional details are contained in *Software Age,* Vol. 2, No. 8, Page 16, September, 1968.

3. Inquiries concerning this information may be directed to:

   Office of Industrial Cooperation
   Argonne National Laboratory
   9700 South Cass Avenue
   Argonne, Illinois 60439
   Reference: B69-10169

   . Source: C. E. Cohn
   Reactor Physics Division
   Argonne National Laboratory
   (ARG-10335)

Patent status:

Inquiries concerning rights for commercial use of this innovation may be made to:

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