Dear Sir:

On page 35 of the June 1975 issue of Computer, Professor Ellis Horowitz presents an example of a binary search program written in SF (structured FORTRAN) and the output of his SF translator program. Unfortunately this example raises several difficulties.

First, there are two errors in the translated version of the program. The lefthand side of statement 10 should be “BINSRH” not “BINSRCH” and the GO TO in statement 104 should be to 10 not to 100. That this latter error appeared in the published text surprises me since Professor Horowitz takes the trouble to point out the double GO TO of which it is a part while failing to notice that it makes a successful search impossible.

Second, it is a pity that the indentation of the source text is not preserved in the translation. It would help if a translator created statement began in the same column as its generating statement.

Finally, the search algorithm presented is simply wrong. For example, on a list of the integers from 1 to 9, the routine will fail to find 1, 3, 4, 6, 7 and 9.

It is sad that structured programming, which can be so useful in producing and understanding correct programs, should be illustrated by such a flawed example. More careful work by both authors and editors is surely in order if Computer is to achieve professional stature.

George E. Beine

And furthermore...

Dear Sir:

With reference to my letter of 21 June, there is a third error in the translated program which I neglected to include in the litany—The GO TO 102 prior to statement 102 should be GO TO 105. Other than that, my original comments stand.

George E. Beine

Horowitz replies

Dear Mr. Beine:

Thanks for pointing out the flaws in the FORTRAN version of BINSRH. Three of the errors are typographical and would not have occurred if an automatic structured FORTRAN translator had been available. More important is the logic error where I forgot to maintain the invariant relation, namely that

“ITEM(BOT+1) to ITEM(TOP-1) contains the remaining items to be checked.”

changing BOT = MID and TOP = MID will correct this error.

Alas, it seems that even with structured programming as applied by mortals, errors are possible.

Ellis Horowitz

COMPUTER's unstructured proofreaders will have to take their lumps for the "BINSRCH."

Sorry.

Ed.