

Multiplication Puzzle

(Also suggested to think of an analytic solution in your spare time.)

Definition of the puzzle

A 3-digit multiplicand is multiplied by a 2-digit multiplier and a 5-digit product is produced.

All of the digits in the multiplicand, multiplier, and product are different from each other.

Only one digit of the mentioned ten digits (it can be any digit of the multiplicand, the multiplier, or the product.) will be given as the only clue for solution.

Write a program in C to find solution for such puzzles. (All solutions if more than one exist. Also prompt user that there is no existing solution if it is the case.) Please note that your implementation is going to be a brute force solution.

Please note that you are also expected to find a way of receiving puzzle form the user in run time. (Hint: The clue may be a digit of three different entity as mentioned above, you should also receive the value of and place of the digit. For the first example below these are "product", "1" and "units". For the second example below these are "multiplicand", "8", and "tens".)

1st Puzzle Example

```
   XXX
*   XX
-----
  XXXX1
```

2nd Puzzle Example

```
   X8X
*   XX
-----
  XXXXX
```

A Solution Example (All digits used once!)

```
   345
x   78
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 26910
```