

### 338 Long Multiplication

In traditional “long multiplication” we determine the product of two integers,  $x$  and  $y$ , by multiplying  $x$  and the individual digits of  $y$ , in turn, starting with the units digit. The results of these multiplications are arranged appropriately and added, yielding the completed product.

The representation of these operations is usually done in a particular manner. Consider the multiplication of 123 by 95:

```

      123
      95
      ---
      615
     1107
    -----
    11685

```

The numbers to be multiplied,  $x$  and  $y$ , are each displayed on a separate line, followed by a horizontal line. The results of multiplying each digit of  $y$  by  $x$  are then displayed on separate lines, followed by another horizontal line, and then the final product. In this problem you are to perform a sequence of such multiplications, displaying the results in this traditional representation.

#### Input

Each line of the input data, except the last, will contain two integers,  $x$  and  $y$ , separated by whitespace (one or more blanks and tab characters). Whitespace may also precede the first integer and follow the second integer. Each integer will have no more than 10 digits. The last line of the input data contain only a zero, and marks the end of the input.

#### Output

For each pair of integers (that is, each input line except the last), perform the multiplication of  $x$  by  $y$ , displaying the results in the form shown above and in the examples shown below. Follow the output for each multiplication by a blank line. If  $y$  contains only a single significant digit, omit the second horizontal line and the sum (since in that case it would be superfluous). Display 0 digits only when they are significant.

The number of hyphens in the first horizontal line should be the same as the number of digits in the larger of  $x$  and  $y$ . The number of hyphens in the second horizontal line, if it is produced, should be the same as the number of digits in the product of  $x$  and  $y$ .

#### Sample Input

```

  4 7
135 46
 12345 862
0

```

### Sample Output

```
4
7
-
28

135
46
---
810
540
----
6210

12345
862
-----
24690
74070
98760
-----
10641390
```