

Problem 2

Despite the glorious fall colors in the mid-west, there is a great deal of time to spend while on a train from St. Louis to Chicago. On a recent trip, we passed some time with the following game.

We start with a positive integer S . So long as it has more than one digit, we compute the product of its digits and repeat. For example, if starting with 95, we compute $9 \times 5 = 45$. Since 45 has more than one digit, we compute $4 \times 5 = 20$. Continuing with 20, we compute $2 \times 0 = 0$. Having reached 0, which is a single-digit number, the game is over.

As a second example, if we begin with 396, we get the following computations:

$$3 \times 9 \times 6 = 162$$

$$1 \times 6 \times 2 = 12$$

$$1 \times 2 = 2$$

and we stop the game having reached 2.

Input: Each line contains a single integer $1 \leq S \leq 100000$, designating the starting value. The value S will not have any leading zeros. A value of 0 designates the end of the input.

Output: For each nonzero input value, a single line of output should express the ordered sequence of values that are considered during the game, starting with the original value.

Example input	Example output
95	95 45 20 0
396	396 162 12 2
28	28 16 6
4	4
40	40 0
0	