



FIND THE SMALLEST NUMBER WHOSE DIGITS MULTIPLY TO A GIVEN NUMBER N

COURSE WORK #10

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PROBLEM STATEMENT

You have an integer number **N** ($0 \leq N \leq 10^9$). You need to find the smallest positive integer number **Q** whose digits multiply is the number **N**.

Input. The single number **N**.

Output. The single number **Q**. If the **Q** does not exist then print the **-1**.

Example

Input: 10

Output: 25

THE PROBLEM SOLVING

For a given **N** the following two cases are to be considered.

Case 1: $N < 10$, when **N** is smaller than 10, the output is always $N+10$. For example for $N = 7$, the output is 17. For $N = 9$, the output is 19.

Case 2: $N \geq 10$, find all factors of **N** which are between 2 and 9 (both inclusive). The idea is to start searching from 9 so that the number of digits in the result is minimized. For example, 9 is preferred over 33, and 8 is preferred over 24.

Store all found factors in an array. The array would contain digits in non-increasing order, so finally print the array in reverse order.

The image features a dark gray background with a subtle pattern of concentric circles. In the corners, there are white line-art illustrations of circuit boards or neural networks, with lines connecting to small circles.

**THANK
YOU!**