Problem C
New Maths


A Cam from a Babbage Analytical Engine

"Drat!" cursed Charles. "This stupid carry bar is not working in my Engine! I just tried to calculate the square of a number, but it's wrong; all of the carries are lost."

"Hmm," mused Ada, "arithmetic without carries! I wonder if I can figure out what your original input was, based on the result I see on the Engine."

Carryless addition, denoted by $\oplus$, is the same as normal addition, except any carries are ignored (in base 10). Thus, $37 \oplus 48$ is 75, not 85.

Carryless multiplication, denoted by $\otimes$, is performed using the schoolboy algorithm for multiplication, column by column, but the intermediate additions are calculated using *carryless addition*. More formally, Let $a_m a_{m-1} \ldots a_1 a_0$ be the digits of a, where a_0 is its least significant digit. Similarly define $b_n b_{n-1} \ldots b_1 b_0$ be the digits of b. The digits of $c = a \otimes b$ are given by the following equation:

$$c_k = (a_0 b_k \oplus a_1 b_{k-1} \oplus \cdots \oplus a_{k-1} b_1 \oplus a_k b_0) \bmod 10,$$

where any a_i or b_j is considered zero if $i > m$ or $j > n$. For example, $9 \otimes 1\,234$ is 9 876, $90 \otimes 1\,234$ is 98 760, and $99 \otimes 1\,234$ is 97 536.

Given N, find the smallest positive integer a such that $a \otimes a = N$.

Input

The input consists of a single line with a positive integer N, with at most 25 digits and no leading zeros.

Output

Print, on a single line, the least positive number a such that $a \otimes a = N$. If there is no such a, print '-1' instead.

Examples

Sample Input 1	Sample Output 1
6	4

Sample Input 2	Sample Output 2
149	17

Sample Input 3	Sample Output 3
123476544	11112

Sample Input 4	Sample Output 4
15	-1

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