

Problem D. Identity Function

Input file: *standard input*
Output file: *standard output*
Time limit: 4 seconds
Memory limit: 256 mebibytes

You are given an integer N , which is greater than 1.

Consider the following functions:

- $f(a) = a^N \pmod N$
- $F_1(a) = f(a)$
- $F_{k+1}(a) = F_k(f(a)) (k = 1, 2, 3, \dots)$

Note that we use \pmod to represent the integer modulo operation. For a non-negative integer x and a positive integer y , $x \pmod y$ is the remainder of x divided by y .

Output the minimum positive integer k such that $F_k(a) = a$ for all positive integers a less than N . If no such k exists, output -1 .

Input

The input consists of a single line that contains an integer N ($2 \leq N \leq 10^9$), whose meaning is described in the problem statement.

Output

Output the minimum positive integer k such that $F_k(a) = a$ for all positive integers a less than N , or -1 if no such k exists.

Examples

standard input	standard output
3	1
4	-1
15	2