Next Prime (Hard)

Brute Force Practice 3 — Hard Version

You love prime numbers. You own a number, but you suspect it might not be prime. You want a prime number, but it must be at least as large as the number you currently own. Find the smallest number that satisfies those conditions.

Input

The first line will have the integer N $(1 \leq N \leq 10^{18})$

Output

Print the number you want.

Sample Input

```
4
```

Sample Output

```
5
```