B. Complex Plane

time limit per test: 1.0 s
memory limit per test: 256 MB
input: standard input
output: standard output

During thanksgiving holidays where extended family members gather and meet, Thomas and Merry is holding a wedding, inviting friends and relatives. Alex, a professor at math department wants to bring some pieces of chocolate to the newly married. The professor is fascinated about number theory, so he will only give a prime number of pieces of chocolate.

A prime number p is an integer that will not be divided by any positive integer other than 1 and itself, or any integer other than ± 1 and $\pm p$ if you consider negatives. A gift in prime number carries Alex's best wish that the couple will never be divided or separated, no matter what happens in their lives.

Recently, Alex got to know that, if you think about complex numbers, sometimes a prime number can still be divided into "smaller" complex integers. A complex integer is a complex number $a + bi$ where a and b are integers. For example, 5, $-3i$, and $2 + i$ are all complex integers. If a prime p can not be written as a product of complex integers other than $\pm p$, $\pm pi$, ± 1 and $\pm i$, we call it a special prime. For example, 7 is a special prime, but 5 is not, because $5 = (2 + i)(2 - i)$.

Now that Alex knows about complex integers and special primes, he will only give pieces of chocolate in special primes.

Given a positive integer N, can you tell if it is a special prime or not?

Input
Input consists of an integer N.

For 50% of the input, $2 \le N \le 10^5$. For 100% of the input, $2 \le N \le 10^9$.

Output
Output "YES" if it's a special prime as specialized in the statement, and "NO" if it's not.

Examples

input	Copy
5	
output	Copy
NO	

input	Copy
7	
output	Copy

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YES
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Note

Multiplication between complex numbers goes like this:
$(a + bi)(c + di) = (ac - bd) + (ad + bc)i$. You know how to do division out of this. :)