**Check for Prime**

**What are prime numbers?**

* A prime number is a natural number greater than **1**, which is only divisible by 1 and itself. First few prime numbers are: 2 3 5 7 11 13 17 19 23…



* In other words, the prime number is a positive integer greater than 1 that has exactly two factors, 1 and the number itself.
* There are many prime numbers, such as 2, 3, 5, 7, 11, 13, etc.
* Keep in mind that 1 cannot be either prime or composite.
* The remaining numbers, except for 1, are classified as prime and composite numbers.

**Some interesting facts about Prime numbers:**

* Except for 2, which is the smallest prime number and the only even prime number, all prime numbers are odd numbers.
* Every prime number can be represented in form of **6n + 1** or **6n – 1** except the prime numbers 2 and 3, where n is a natural number.
* Two and Three are only two consecutive natural numbers that are prime.
* [Goldbach Conjecture:](https://en.wikipedia.org/wiki/Goldbach%27s_conjecture)Every even integer greater than 2 can be expressed as the sum of two primes.
* [Wilson Theorem](https://www.geeksforgeeks.org/wilsons-theorem/): Wilson’s theorem states that a natural number p > 1 is a prime number if and only if

(p - 1) ! ≡ -1 mod p

OR (p - 1) ! ≡ (p-1) mod p

* [Fermat’s Little Theorem](https://en.wikipedia.org/wiki/Fermat's_little_theorem): If n is a prime number, then for every a, 1 <= a < n,

an-1 ≡ 1 (mod n)

OR

an-1 % n = 1

* [Prime Number Theorem](https://en.wikipedia.org/wiki/Prime_number_theorem): The probability that a given, randomly chosen number n is prime is inversely proportional to its number of digits, or to the logarithm of n.
* [Lemoine’s Conjecture](https://www.geeksforgeeks.org/lemoines-conjecture/): Any odd integer greater than 5 can be expressed as a sum of an odd prime (all primes other than 2 are odd) and an even semiprime. A semiprime number is a product of two prime numbers. This is called Lemoine’s conjecture.

**Properties of prime numbers:**

* Every number greater than 1 can be divided by at least one prime number.
* Every even positive integer greater than 2 can be expressed as the sum of two primes.
* Except 2, all other prime numbers are odd. In other words, we can say that 2 is the only even prime number.
* Two prime numbers are always coprime to each other.
* Each composite number can be factored into prime factors and individually all of these are unique in nature.

**Prime numbers and co-prime numbers:**

It is important to distinguish between prime numbers and co-prime numbers. Listed below are the differences between prime and co-prime numbers.

* A coprime number is always considered as a pair, whereas a prime number is considered as a single number.
* Co-prime numbers are numbers that have no common factor except 1. In contrast, prime numbers do not have such a condition.
* A co-prime number can be either prime or composite, but its greatest common factor (GCF) must always be 1. Unlike composite numbers, prime numbers have only two factors, 1 and the number itself.
* **Example of co-prime:**13and 15 are co-primes. The factors of 13 are 1 and 13 and the factors of 15 are 1, 3 and 5. We can see that they have only 1 as their common factor, therefore, they are coprime numbers.
* **Example of prime:**A few examples of prime numbers are 2, 3, 5, 7 and 11 etc.

C++

#include<bits/stdc++.h>

using namespace std;

int main()

{

int n;

cin >> n;

if(n == 0 && n == 1){

cout << "Neither Prime nor Composite";

return 0;

}

int i = 2;

while(i < n){

if(n % i == 0){

cout << "No";

return 0;

}

i++;

}

cout << "Yes";

return 0;

}

**INPUT :**

23

**OUTPUT :**

Yes