

# Python Program to Check if Number is Prime

- Level: Easy

Given a positive integer N. The task is to write a Python program to determine if the number is prime.

## Examples:

```
Input: n = 11
Output: true
```

```
Input: n = 15
Output: false
```

```
Input: n = 1
Output: false
```

The idea to check if number is prime is to iterate through all the numbers starting from 2 to  $\sqrt{N}$  using a for loop and for every number check if it divides N. If we find any number that divides, we return false. If we did not find any number between 2 and  $N/2$  which divides N then it means that N is prime and we will return True. The algorithm can be improved further by observing that all primes are of the form  $6k \pm 1$ , with the exception of 2 and 3. Below is the Python program to check if a number is prime:

## Code

```
1 #py
2 #Function used to ceck if number is prime
3 def isPrime(n) :
4     # Corner cases
5     if (n <= 1) :
6         return False
7     if (n <= 3) :
8         return True
9     # This is checked so that we can skip
10    # middle five numbers in below loop
11    if (n % 2 == 0 or n % 3 == 0) :
12        return False
13    i = 5
14    while(i * i <= n) :
15        if (n % i == 0 or n % (i + 2) == 0) :
16            return False
17        i = i + 6
18    return True
19
20 # Driver Program
21 number=12
22 if (isPrime(number)) :
23     print(" true")
24 else :
25     print(" false")
26 ###
```