

# Solution Review: Find out if the Given Number is Prime

Let's go over the solution review of the challenge given in the previous lesson.

## We'll cover the following ^

- Solution
- Explanation
- Illustration

## Solution #

```
#include <iostream>

using namespace std;

int main() {
    // Initialize variables
    int number = 7;
    bool isPrime = true;
    // if block
    /*Checks if the value of a `number` is less than or equal to
    1. If yes, then execute line No. 13 to 16. If no, then execute
    line No. 18*/
    if (number <= 1) {
        //Sets the value of `isPrime` to false
        isPrime = false;
    }
    // for block
    for (int counter = 2; counter <= number / 2; counter++) {
        // if block
        if (number % counter == 0) {
            isPrime = false;
            // jump to line No. 27
            break;
        }
    }
    // if-else block
    /*If isPrime = true then execute line No. 30.
    If no, then execute line No. 32*/
    if (isPrime) {
        cout << "Number is prime";
    } else {
        cout << "Number is not prime";
    }

    return 0;
}
```



## Explanation #

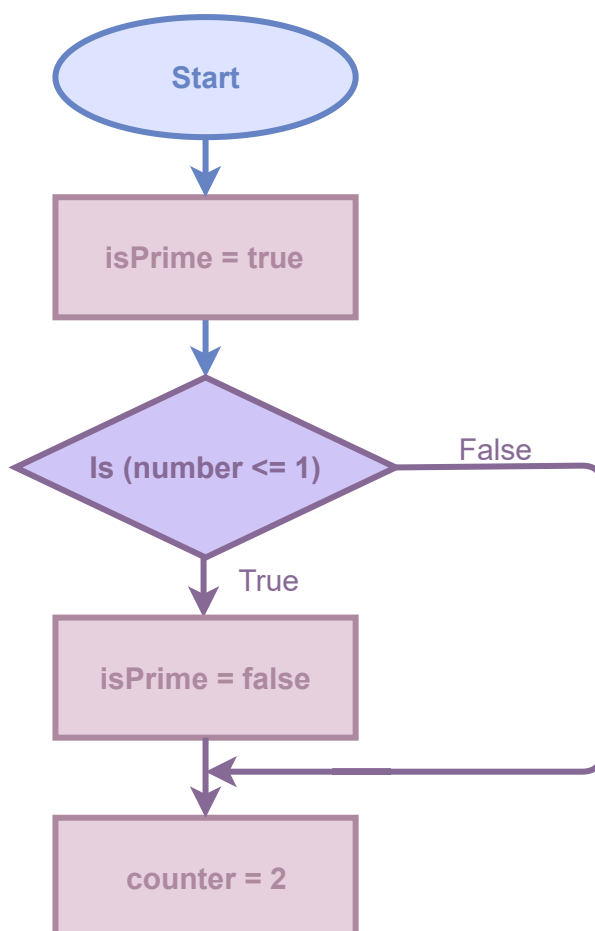
We have initialized the variable `isPrime` of type `bool` that keeps track of the `number`. If the given number is prime, then we set `isPrime` to `true`. If not, then we set it to `false`. Initially, `isPrime` is set to `true`.

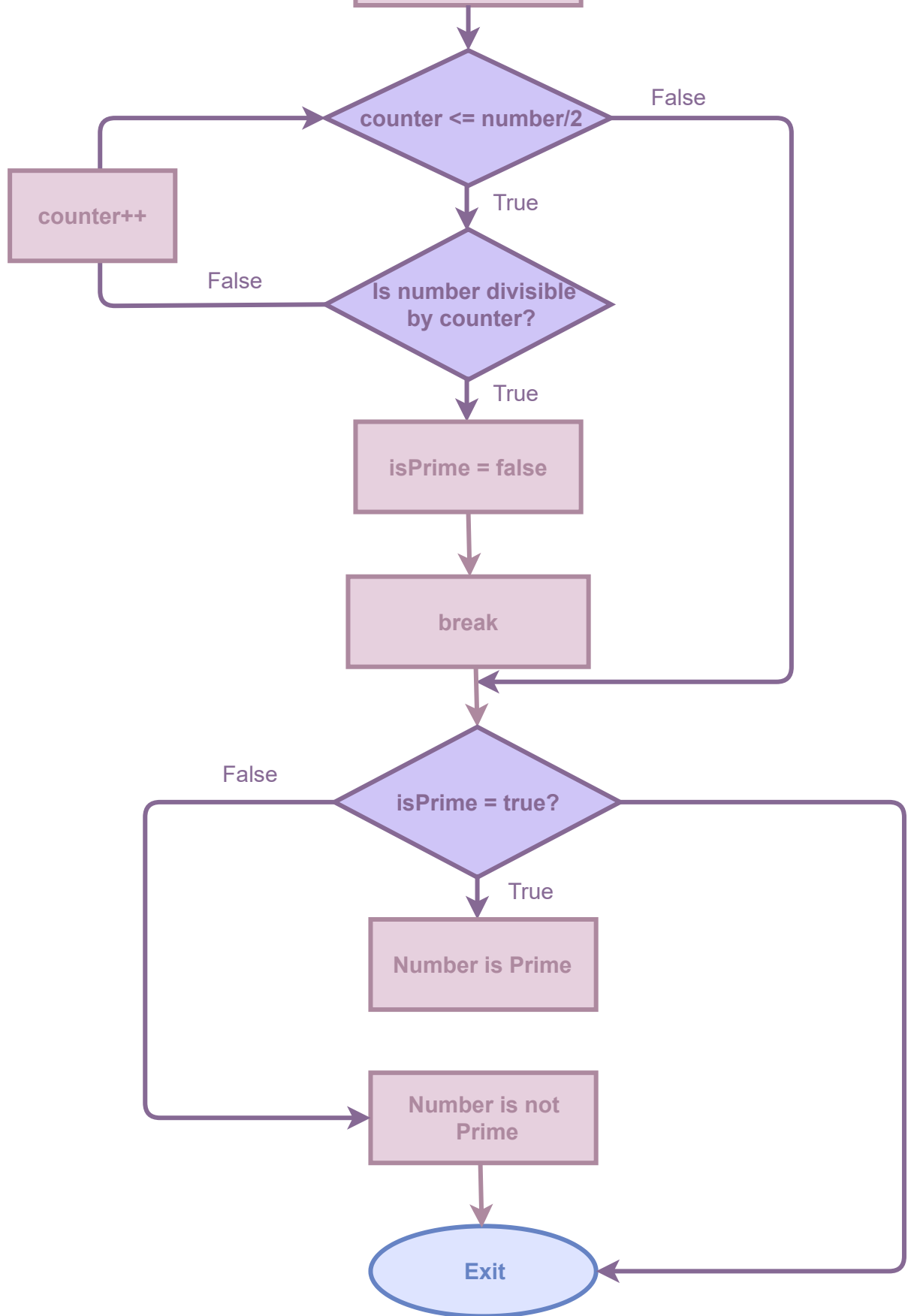
We know that numbers less than `2` are not prime. Therefore, we write a condition on **Line No. 13** that will check if the `number` is less than or equal to `1` and then sets the `isPrime` to `false`.

A `number` is prime if it is only divisible by `1` or itself. Therefore, we initialize a `for` loop with `counter = 2`, and we increase the value of the `counter` by `1` in each iteration. If the `number` is perfectly divisible by the loop `counter` variable, then it is not a prime number. In this case, we set the `isPrime` to `false` and terminate the loop.

If the condition on **Line No. 20** evaluates to false for every value of the counter, then the given number is prime. In this case, the value of `isPrime` is `true`.

## Illustration #





Interesting so far? Let's solve some more challenges related to loops.