

# For Loop in C++

---

A for loop is a repetition control structure that allows us to write a loop that is executed a specific number of times. The loop enables us to perform n number of steps together in one line.

## Syntax:

```
for (initialization expr; test expr; update expr)
{
    // body of the loop
    // statements we want to execute
}
```

## Example1:

```
for(int i = 0; i < n; i++)
{
    // BODY
}
```

## Example2:

```
for(auto element:arr)
{
    //BODY
}
```

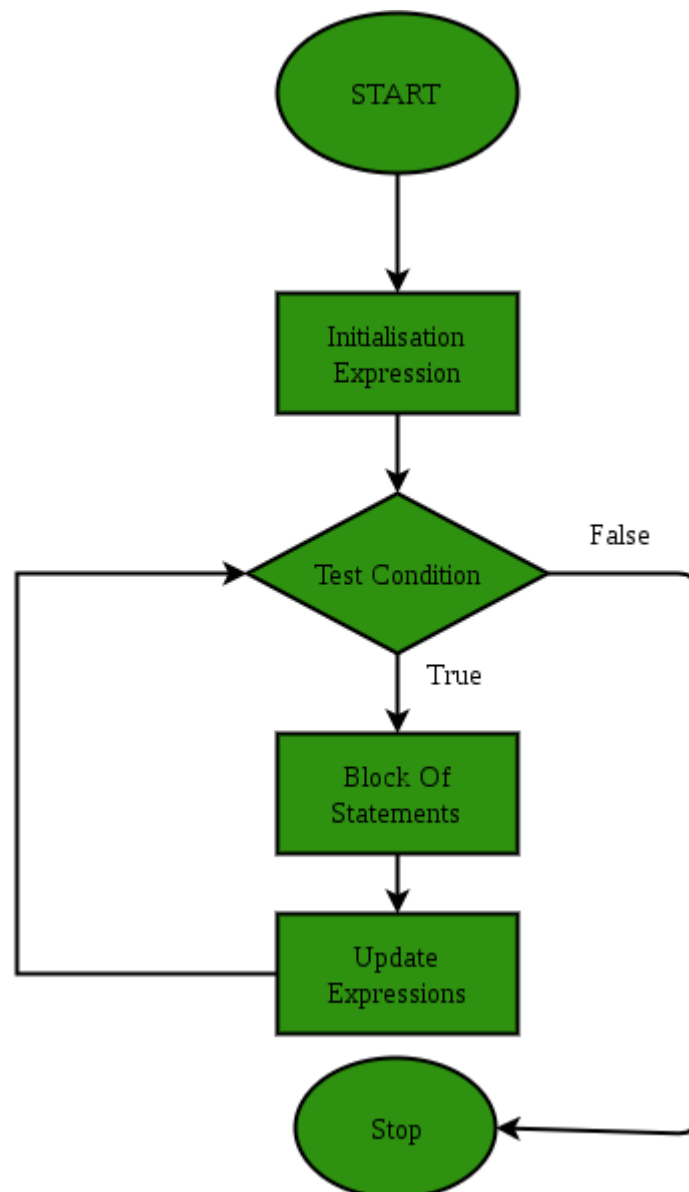
In for loop, a loop variable is used to control the loop. First, initialize this loop variable to some value, then check whether this variable is less than or greater than the counter value. If the statement is true, then the loop body is executed and the loop variable gets updated. Steps are repeated till the exit condition comes.

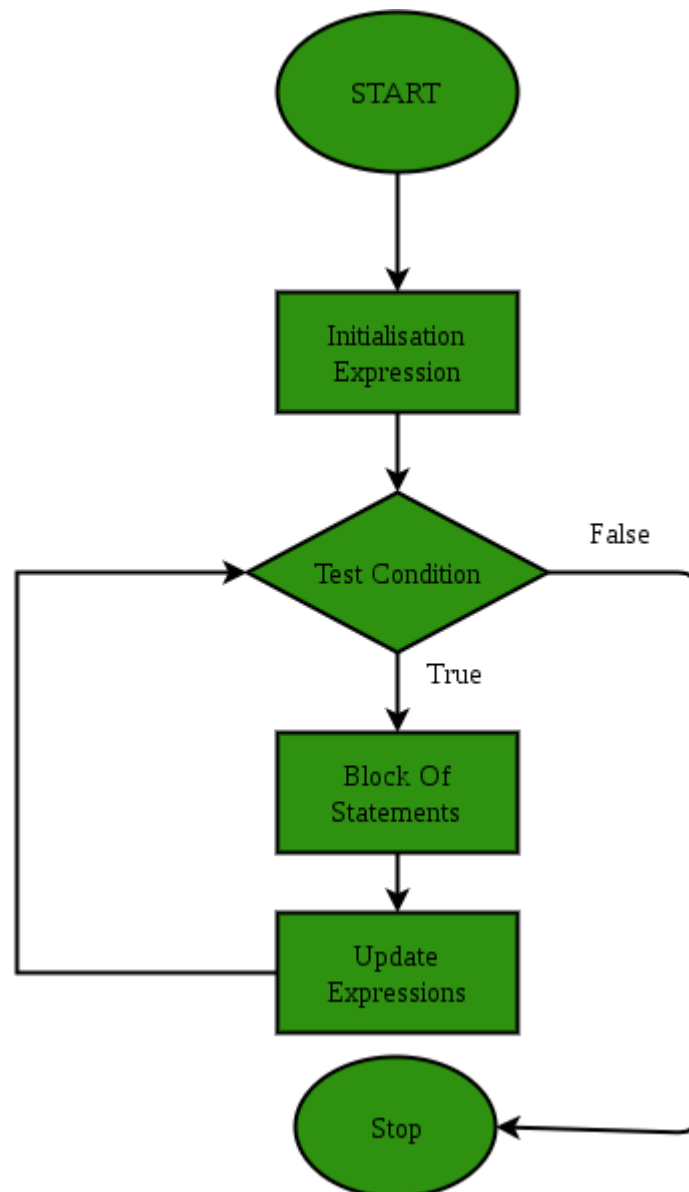
- **Initialization Expression:** In this expression, we have to initialize the loop counter to some value. for example: `int i=1;`
- **Test Expression:** In this expression, we have to test the condition. If the condition evaluates to true then we will execute the body of the loop and go to update expression

otherwise we will exit from the for a loop. For example:  $i \leq 10$ ;

- **Update Expression:** After executing the loop body this expression increments/decrements the loop variable by some value. for example:  $i++$ ;

### Flow Diagram of for loop:





### Example-

```
#include <iostream>
using namespace std;

int main() {
int arr[] {40, 50, 60, 70, 80, 90, 100};
for (auto element: arr){
cout << element << " ";
}
return 0;
}
```

```
}
```

## Output

```
40 50 60 70 80 90 100
```