LAB #04: If statement

Name:____________________ **Reg #:____________________**

Lab Objective:

Learn how to use if in programming.

Lab Description:

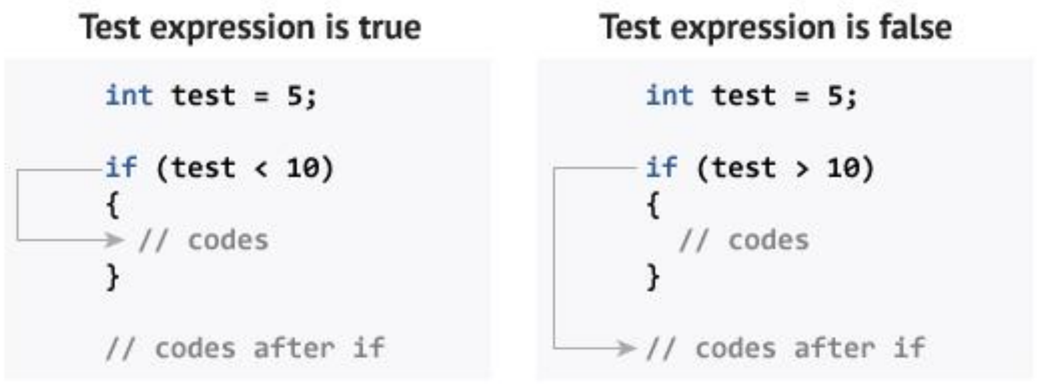
Use

To specify the conditions under which a statement or group of statements should be executed.

```
if (testExpression)

{

   // statements

}
```

The `if` statement evaluates the test expression inside parenthesis. If test expression is evaluated to true, statements inside the body of `if` is executed. If test expression is evaluated to false, statements inside the body of `if` is skipped.

How if statement works?



Test expression is true

```
int test = 5;

if (test < 10)
{
  // codes
}

// codes after if
```

Test expression is false

```
int test = 5;

if (test > 10)
{
  // codes
}

// codes after if
```

Flowchart of if Statement

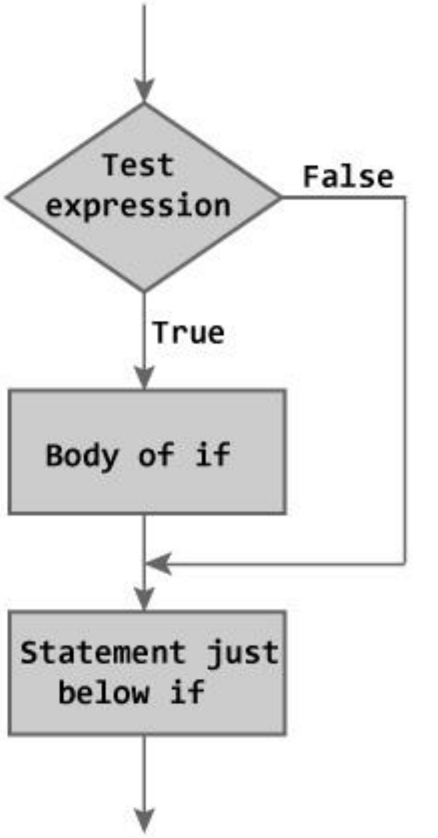


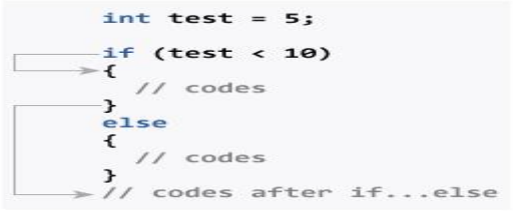
Figure: Flowchart of if Statement

if...else

The `if else` executes the codes inside the body of `if` statement if the test expression is true and skips the codes inside the body of `else`.If the test expression is false, it executes the codes inside the body of `else` statement and skips the codes inside the body of `if`.

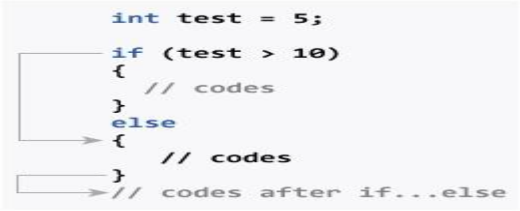
How if...else statement works?

Test expression is true



```
int test = 5;

if (test < 10)
{
  // codes
}
else
{
  // codes
}
// codes after if...else
```

Test expression is false



```
int test = 5;

if (test > 10)
{
  // codes
}
else
{
  // codes
}
// codes after if...else
```

Flowchart of if...else

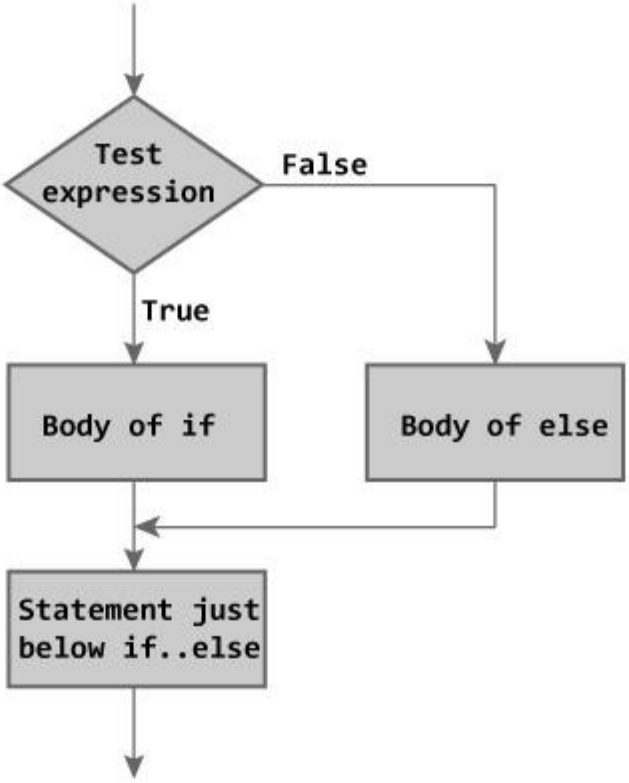


Figure: Flowchart of if...else Statement

C++ Nested if...else

The `if...else` statement executes two different codes depending upon whether the test expression is true or false. Sometimes, a choice has to be made from more than 2 possibilities.

The nested `if...else` statement allows you to check for multiple test expressions and execute different codes for more than two conditions.

Syntax of Nested if...else

```
if (testExpression1)
{
   // statements to be executed if testExpression1 is true
}
else if(testExpression2)
{
   // statements to be executed if testExpression1 is false and testExpression2 is true
}
else if (testExpression 3)
{
   // statements to be executed if testExpression1 and testExpression2 is false and testExpression3 is
true
}
.
.
else
{
   // statements to be executed if all test expressions are false
}
```

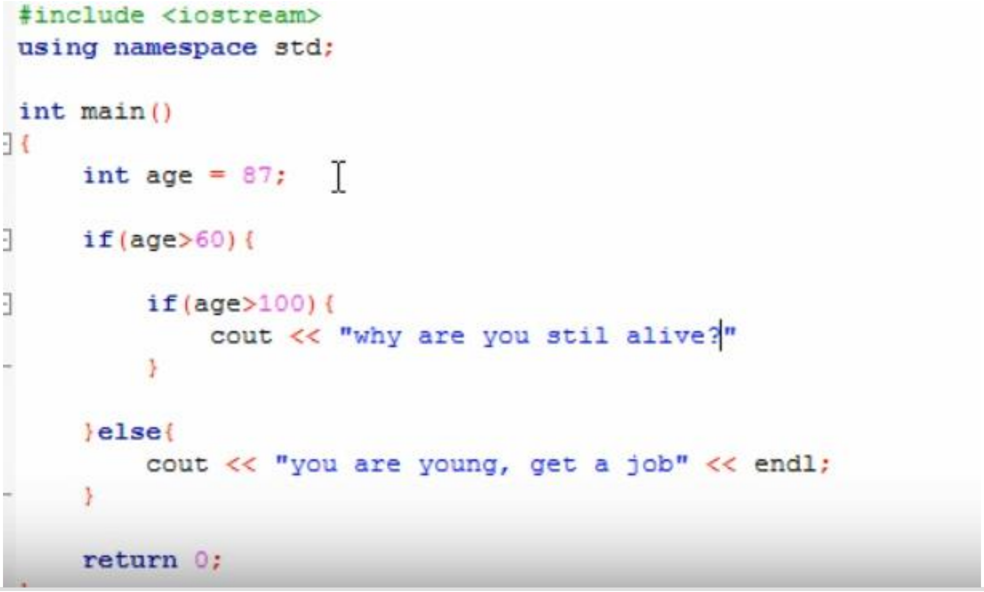
Nested If:

In C++ we can use if statement in the another else block. or we can also include if block in the another if block.

Syntax : C++ Nested If

```
if( boolean_expression 1)
{
   // Executes when the boolean expression 1 is true
   if(boolean_expression 2)
   {
      // Executes when the boolean expression 2 is true
   }
}
```

Example : Nested If



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

int main()
{
    int age = 87;

    if(age>60){

        if(age>100){
            cout << "why are you stil alive?"
        }

    }else{
        cout << "you are young, get a job" << endl;
    }

    return 0;
```

We can nest else if…else in the similar way as you have nested if statement.

Example : Nested If-else

```
#include <iostream>

using namespace std;


int main ()

{

   int marks = 55;

   if( marks >= 80) {

      cout << "U are 1st class !!";

   }

   else {

      if( marks >= 60) {

          cout << "U are 2nd class !!";

      }

      else {

        if( marks >= 40) {

          cout << "U are 3rd class !!";
        }
        else {
          cout << "U are fail !!";
        }
      }
   }
   return 0;
}
```

Task1:

Write a program to print positive number entered by the user.

If the user enters negative number print number entered is positive otherwise print number is negative.

Task2:

Program to check whether an integer is positive, negative or zero.

Task3:

Input : Mark
Process : If mark greater than and equal to 75, score will be A
  If mark less than 75 and greater than and equal to 60, score will be B
  If mark less than 60 and greater than and equal to 45, score will be C
  If mark less than 30, score will be D
Output : Print the grade of your score.

Task4:

Find Largest Number Using Nested if...else statement.
Check whether the number entered by the user is positive or not. If it is positive then calculate how many digits the number have.