

Intermediate programming(C++)- *Lab 2 - Conditions*



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If conditions



Condition is true

```
int number = 10;  
  
if (number > 0) {  
    // code  
}  
  
// code after if
```

A teal arrow originates from the 'if' statement, loops around its left side, and points to the code block inside the curly braces, indicating that the code inside the if-statement is executed when the condition is true.

Condition is false

```
int number = 10;  
  
if (number < 0) {  
    // code  
}  
  
// code after if
```

A teal arrow originates from the 'if' statement, loops around its left side, and points to the code block after the closing curly brace, indicating that the code inside the if-statement is skipped when the condition is false.

If conditions - Example



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

int main() {
    int x = 20;
    int y = 22;

    if(x < y)
        cout << "X is less than y";

    return 0;
}
```



If conditions – Multiple if

```
#include <iostream>
using namespace std;
int main() {
    int x, y;
    cout << "Enter x: ";
    cin >> x;
    cout << "Enter y: ";
    cin >> y;

    if(x > y)
        cout << "X is greater than y";
    if(x < y)
        cout << "X is less than y";
    if(x == y)
        cout << "X is equal y";

    cout << "End of if conditions..";
    return 0;
}
```

If conditions – if.....else



Test expression is true

```
int test = 5;

if (test < 10)
{
    // codes
}
else
{
    // codes
}

// codes after if...else
```

A flow diagram showing the execution path for a true condition. An arrow points from the 'if' statement to the first code block, and another arrow points from the 'else' statement to the second code block. A third arrow points from the end of the second code block to the code after the if-else structure.

Test expression is false

```
int test = 5;

if (test > 10)
{
    // codes
}
else
{
    // codes
}

// codes after if...else
```

A flow diagram showing the execution path for a false condition. An arrow points from the 'if' statement to the first code block, and another arrow points from the 'else' statement to the second code block. A third arrow points from the end of the second code block to the code after the if-else structure.



If conditions – if.....else - Example

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

int main() {
    int number;
    cout << "Enter an integer: ";
    cin >> number;

    if (number >= 0)
        cout << "You entered a positive integer: " << number << endl;
    else
        cout << "You entered a negative integer: " << number << endl;

    cout << "This line is always printed.";

    return 0;
}
```

If conditions – if.....else if.....else



1st Condition is true

```
int number = 2;  
if (number > 0) {  
    // code  
}  
else if (number == 0){  
    // code  
}  
else {  
    //code  
}  
//code after if
```

A blue arrow points from the 'if' statement to the first code block. Another blue arrow points from the 'else if' statement to the second code block. A third blue arrow points from the 'else' statement to the third code block. A final blue arrow points from the end of the 'if' block to the code after the 'if' block.

2nd Condition is true

```
int number = 0;  
if (number > 0) {  
    // code  
}  
else if (number == 0){  
    // code  
}  
else {  
    //code  
}  
//code after if
```

A blue arrow points from the 'if' statement to the first code block. Another blue arrow points from the 'else if' statement to the second code block. A third blue arrow points from the 'else' statement to the third code block. A final blue arrow points from the end of the 'if' block to the code after the 'if' block.

All Conditions are false

```
int number = -2;  
if (number > 0) {  
    // code  
}  
else if (number == 0){  
    // code  
}  
else {  
    //code  
}  
//code after if
```

A blue arrow points from the 'if' statement to the first code block. Another blue arrow points from the 'else if' statement to the second code block. A third blue arrow points from the 'else' statement to the third code block. A final blue arrow points from the end of the 'if' block to the code after the 'if' block.



If conditions – if.....else if.....else - Example

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

int main() {
    int number;
    cout << "Enter an integer: ";
    cin >> number;

    if (number > 0)
        cout << "You entered a positive integer: " << number << endl;
    else if (number < 0)
        cout << "You entered a negative integer: " << number << endl;
    else
        cout << "You entered 0." << endl;

    cout << "This line is always printed.";
    return 0;
}
```

If conditions – Nested if



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

int main() {
    int num;
    cout << "Enter an integer: ";
    cin >> num;

    if (num != 0) {
        if (num > 0)
            cout << "The number is positive." << endl;
        else
            cout << "The number is negative." << endl;
    }
    else
        cout << "The number is 0 and it is neither positive nor negative." << endl;

    cout << "This line is always printed." << endl;
    return 0;
}
```

Ternary operator



if condition in one line: `condition ? expression1 : expression2;`

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

int main() {
    double marks;

    cout << "Enter your marks: ";
    cin >> marks;

    string result = (marks >= 40) ? "passed" : "failed";
    cout << "You " << result << " the exam.";

    return 0;
}
```

Ternary operator



Nested ternary operator:

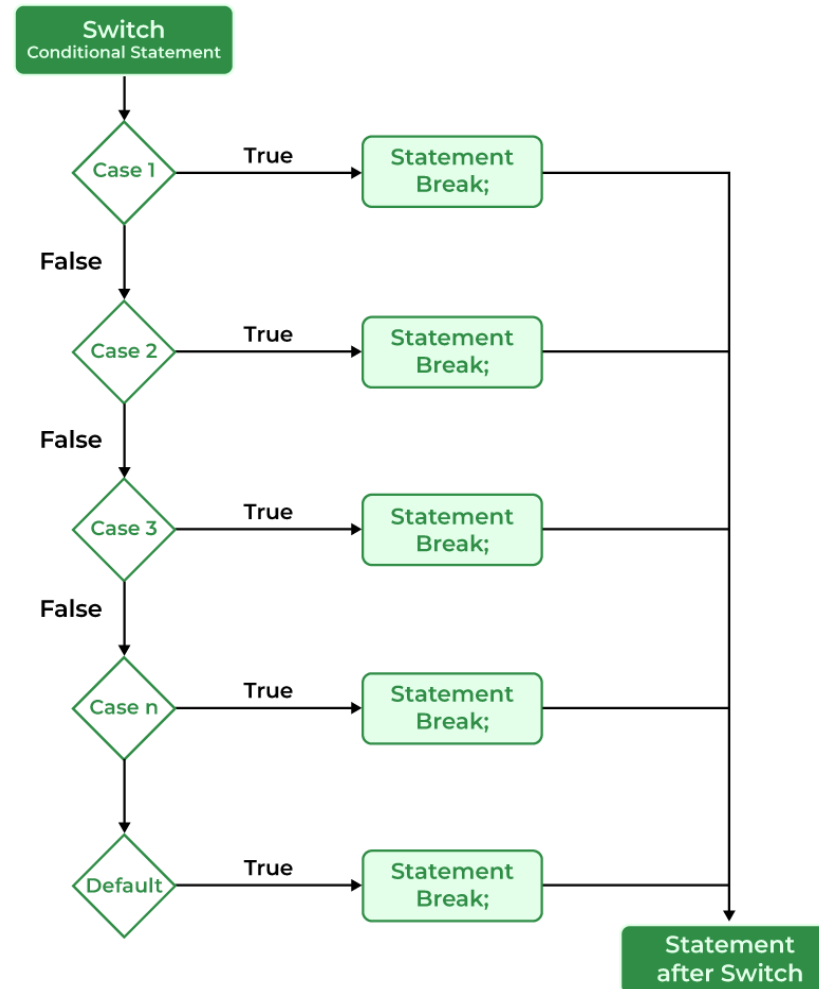
```
#include <iostream>
#include <string>
using namespace std;

int main() {
    int number = 0;
    string result;

    result = (number == 0) ? "Zero" : ((number > 0) ? "Positive" : "Negative");

    cout << "Number is " << result;
    return 0;
}
```

Switch case



Switch case - example



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

int main() {
    char oper;
    float num1, num2;
    cout << "Enter an operator (+, -, *, /): ";
    cin >> oper;
    cout << "Enter two numbers: " << endl;
    cin >> num1 >> num2;

    switch (oper) {
        case '+':
            cout << num1 + num2;
            break;
        case '-':
            cout << num1 - num2;
            break;
```

```
        case '*':
            cout << num1 * num2;
            break;
        case '/':
            cout << num1 / num2;
            break;
        default:
            cout << "Error!"
            break;
    }

    return 0;
}
```

Lab tasks



- Task 1:

Write a single C++ statement to accomplish each of the following:

- Read an integer from the keyboard and store the value entered in integer variable a.
- If number is not equal to 7, print "The variable number is not equal to 7."

- Task 2:

Write a program to

- Display a number if it is negative
- Check whether an integer is odd or even

- Task 3:

Write a program that finds the smallest of three integers

Lab tasks



- Task 4:

Write the output of the following program and mention the reason why we get it:

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

int main(){
    int feet,inches;
    cout << "Enter the value of feet: ";
    cin >> feet;

    //converting into inches
    inches = feet * 12;
    cout << "Total inches will be: " << inches;
    return 0;
}
```