

Control Statements and Loops in C Plus Plus

Module 1 - Conditional Statements in C Plus Plus

 CBSE

This module discusses the statements that control a program's flow of execution. There are three categories of selection statements,

- which include the if and the switch;
- iteration statements, which include the for, while, and do-while loops;
- and jump statements, which include break, continue, return, and goto.

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C++ if Statement

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The C++ **if statement** is the most simple decision-making statement. It is used to decide whether a certain statement or block of statements will be executed or not executed based on a certain type of condition.

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Syntax:

```
if(condition)
{
    // Statements to execute if
    // condition is true
}
```

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Example:

```
// C++ program to illustrate If statement
```

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

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```
int main()
{
    int i = 20; // Changed number to 20

    if (i < 25) { // Changed condition to 25

        cout << "20 is less than 25 \n";
    }
}
```

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```
cout << "I am Not in if";
```

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C++ if else Statement

The *if* statement alone tells us that if a condition is true it will execute a block of statements and if the condition is false it won't. But what if we want to do something else if the condition is false. Hence, we use C++ **else statement**. We can use the else statement with if statement to execute a block of code when the condition is false.

Syntax:

```
if (condition)
{
    // Executes this block if
    // condition is true
}
else
{
    // Executes this block if
    // condition is false
}
```

Example:

```
// C++ program to illustrate If-Else statement
#include <iostream>
using namespace std;

int main()
{
    int number;
    cout << "Enter a number: ";
    cin >> number; // Taking input from the user

    if (number % 2 == 0) { // Check if the number is divisible by 2
        cout << number << " is even.\n";
    }
    else { // Executes if the condition in 'if' is false
        cout << number << " is odd.\n"; }
    return 0;
}
```

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C++ if else if Ladder

In C++, the **if-else-if ladder** helps the user decide from among multiple options. The C++ if statements are executed from the top down. As soon as one of the conditions controlling the if is true, the statement associated with that if is executed, and the rest of the C++ else-if ladder is bypassed. If none of the conditions is true, then the final statement will be executed.

Syntax:

```
if (condition)
    statement 1;
else if (condition)
    statement 2;
.
.
else
    statement;
```

Example:

```
// C++ program to illustrate If-Else If ladder
#include <iostream>
using namespace std;

int main()
{
    int marks;
    cout << "Enter your marks (out of 100): ";
    cin >> marks; // Taking input from the user

    if (marks >= 90) {
        cout << "Grade: A\n";
    } else if (marks >= 75) {
        cout << "Grade: B\n";
    } else if (marks >= 50) {
        cout << "Grade: C\n";
    } else if (marks >= 35) {
        cout << "Grade: D\n";
    } else {
        cout << "Grade: F (Fail)\n";
    }
    return 0;
}
```

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Assignment

Ques 1: Write a program to check if a given number is positive. If it is, display a message: "The number is positive".

Ques 2: Write a program to check if a person is eligible to vote. The program should take the age as input and display "Eligible to vote" if the age is 18 or above.

Ques 3: Write a program to check whether a number is divisible by 5. If it is, display "Divisible by 5"; otherwise, display "Not divisible by 5".

Ques 4: Write a program that takes a number as input and checks:

- If the number is greater than 0, display "Positive".
- If the number is less than 0, display "Negative".
- If the number is 0, display "Zero".

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