



Fundamentals of programming I

Lab 2



Relation and Comparison operators

Operator	Name	Example
==	Equal to	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y



Logical Operators

Operator	Name	Description	Example
&&	Logical and	Returns true if both statements are true	<code>x < 5 && x < 10</code>
	Logical or	Returns true if one of the statements is true	<code>x < 5 x < 4</code>
!	Logical not	Reverse the result, returns false if the result is true	<code>!(x < 5 && x < 10)</code>

The if Statement

- ❖ Use the if statement to specify a block of C++ code to be executed if a condition is true.

Syntax

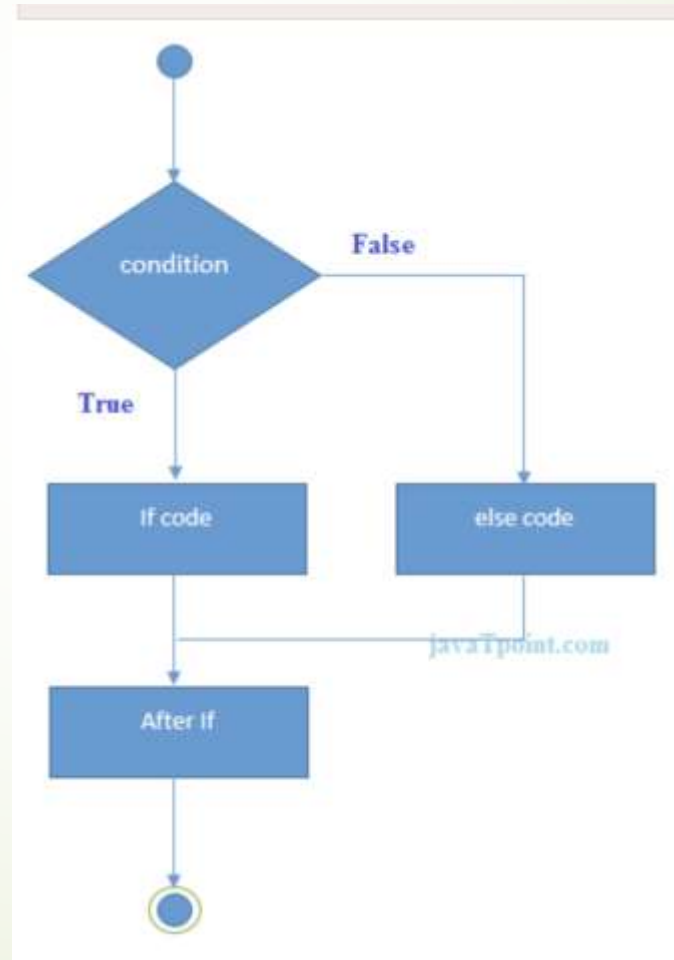
```
if (condition) {  
    // block of code to be executed if the condition is true  
}
```

The else Statement

- ❖ Use the else statement to specify a block of code to be executed if the condition is false.

```
if (condition) {  
    // block of code to be executed if the condition is true  
} else {  
    // block of code to be executed if the condition is false  
}
```

If-else flow chart



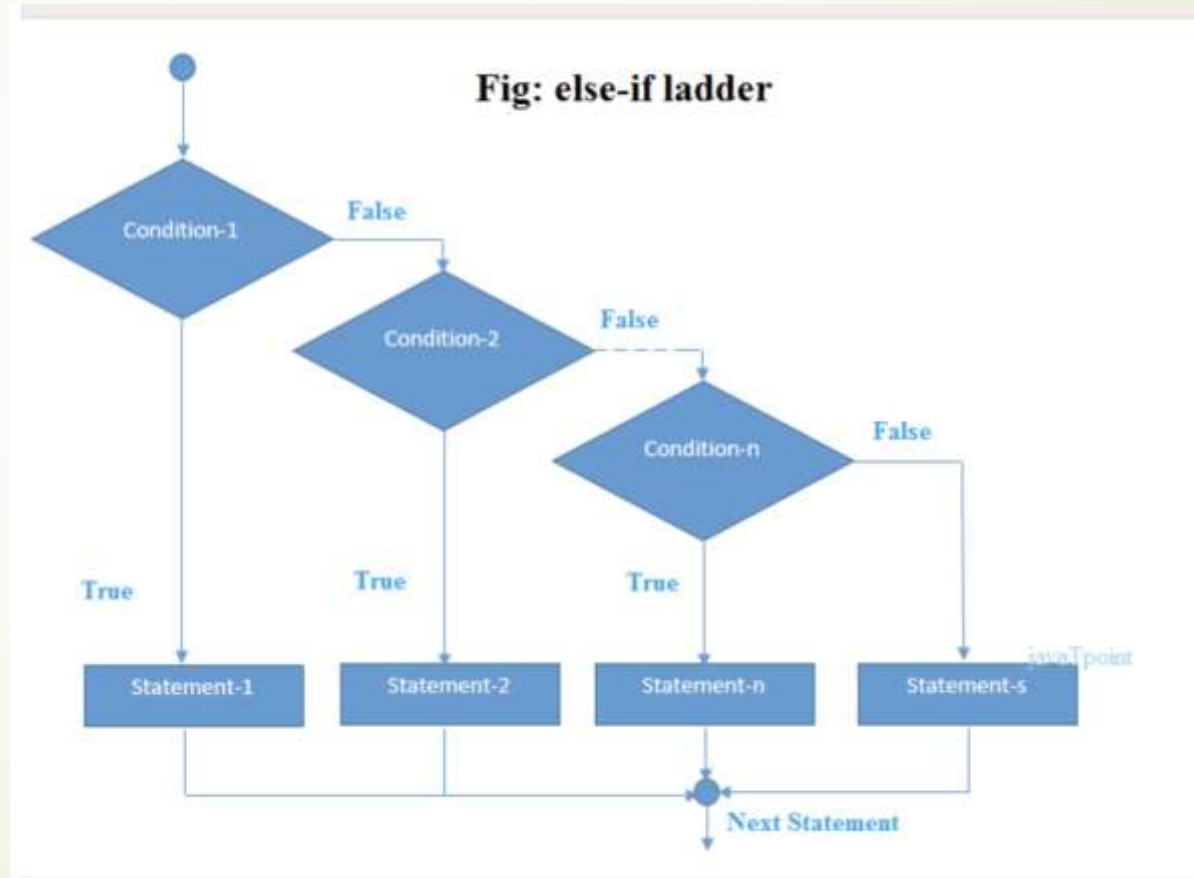



Example



```
int time = 20;  
if (time < 18) {  
    cout << "Good day.";  
} else {  
    cout << "Good evening.";  
}  
// Outputs "Good evening."
```

Else-if





Short Hand If...Else (Ternary Operator)

- ❖ There is also a short-hand if else, which is known as the **ternary operator** because it consists of three operands. It can be used to replace multiple lines of code with a single line. It is often used to replace simple if-else statements

Syntax

```
variable = (condition) ? expressionTrue : expressionFalse;
```

Example

```
int time = 20;
if (time < 18) {
    cout << "Good day.";
} else {
    cout << "Good evening.";
}
```

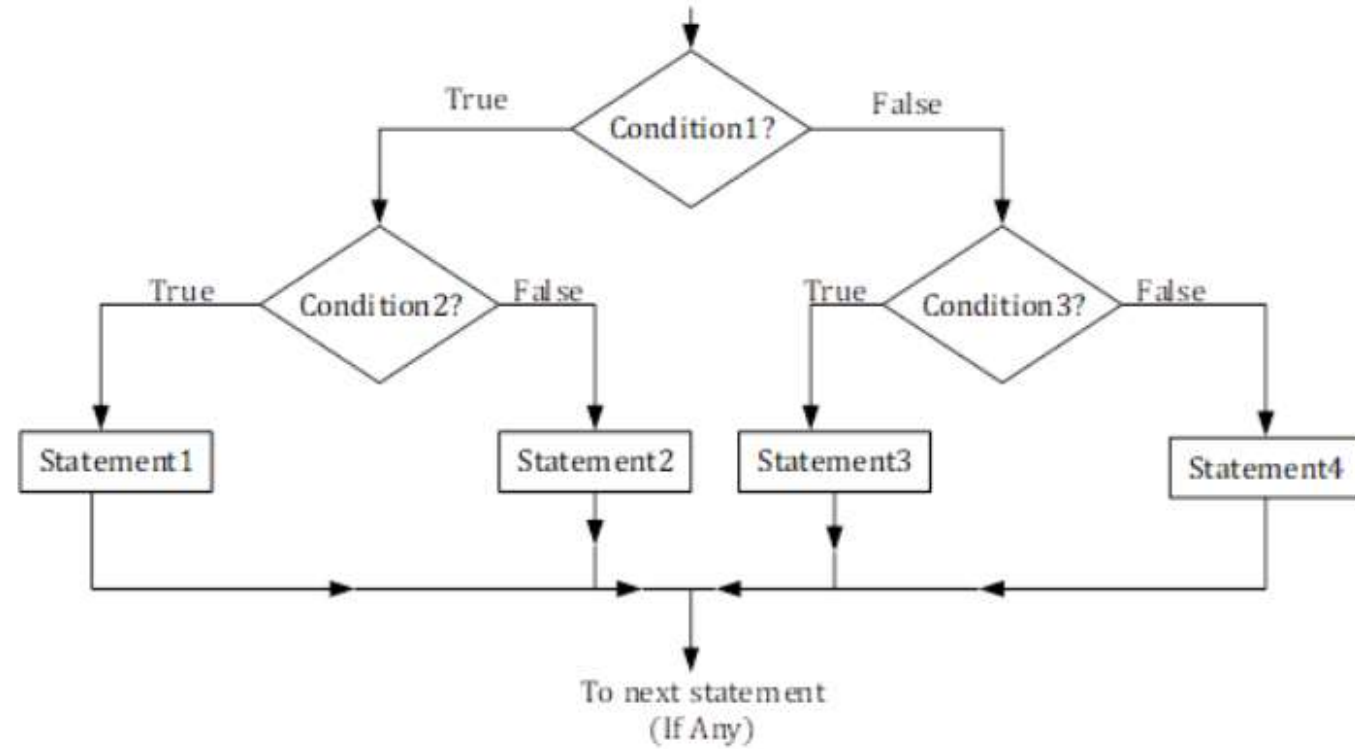
```
int time = 20;
string result = (time < 18) ? "Good day." : "Good evening.";
cout << result;
```

What is Nested If?

- ❖ When a number of if blocks are present one after another with the same scope (the same scope is under one { } block), then that condition is termed a Nested if condition.
- If the first condition is True, we go into the next if condition, and the subsequent condition is checked until we get a false condition and the checking stops.

```
if (Condition1)
{
    if (Condition2)
    {
        Statement1;
    }
    else
    {
        Statement2;
    }
}
else
{
    if (Condition3)
    {
        Statement3;
    }
    else
    {
        Statement4;
    }
}
```

Nested-if flowchart



Example

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

int main()
{
    int a = 20, b = 10, c = 2;

    // if this condition satisfies then
    // control goes to next if condition
    if (a > b) {
        // if this condition also turns out to be
        // true then the statements under
        // this block will get executed
        if (a > c) {
            cout << " a is the largest " << endl;
        }
    }
    return 0;
}
```

Output

a is the largest

Example

```
// C++ Program to
// Nested-if conditions
#include <iostream>
using namespace std;

int main()
{
    int a = 20, b = 10, c = 2;

    if (a == 20) {
        if (b == 10) {
            if (c == 2) {
                cout << "Sandeep Sir is Great!!" << endl;
            }
        }
    }
    return 0;
}
```

Output

Sandeep Sir is Great!!

Example

```
// C++ Program to
// Nested-if conditions
#include <iostream>
using namespace std;

int main()
{
    int a = 20, b = 10, c = 1;
    // this condition is true
    if (a == 20) {
        // this condition is also true
        if (b == 10) {
            // but this condition is false hence
            // we get out of the nested block
            if (c == 2) {
                cout << "Sandeep Sir is Great!!" << endl;
            }
        }
    }
    cout << "gfg\n";

    return 0;
}
```

Output

gfg

Example

```
// C++ Program to demonstrate
// Nested-if condition
#include <iostream>
using namespace std;

int main()
{
    int a = 220, b = 10, c = 1;
    // this condition is itself false we don't
    // get inside the nesting if block
    if (a == 20) {
        if (b == 10) {
            if (c == 2) {
                cout << "Sandeep Sir is Great!!" << endl;
            }
        }
    }
    cout << " No nested if condition is executed \n ";
    return 0;
}
```

Output

No nested if condition is executed



Thank You !