Decision-Making Statements

Decision-making statements in C++ are similar to real-life decision-making, where an action is taken based on certain conditions.

For example:

if it's raining outside then we need to carry an umbrella. In programming also, we have some situations when we need a specific code to be executed only when a condition is satisfied.

The decision control statements help us in this task by evaluating a boolean expression and accordingly controlling the flow of the program.

Decision-Making Statements

C++ provides five main types of decision-making statements:

1. if Statement
2. if-else Statement
3. Nested if-else Statement
4. if-else-if Ladder
5. switch

Decision-Making Statements

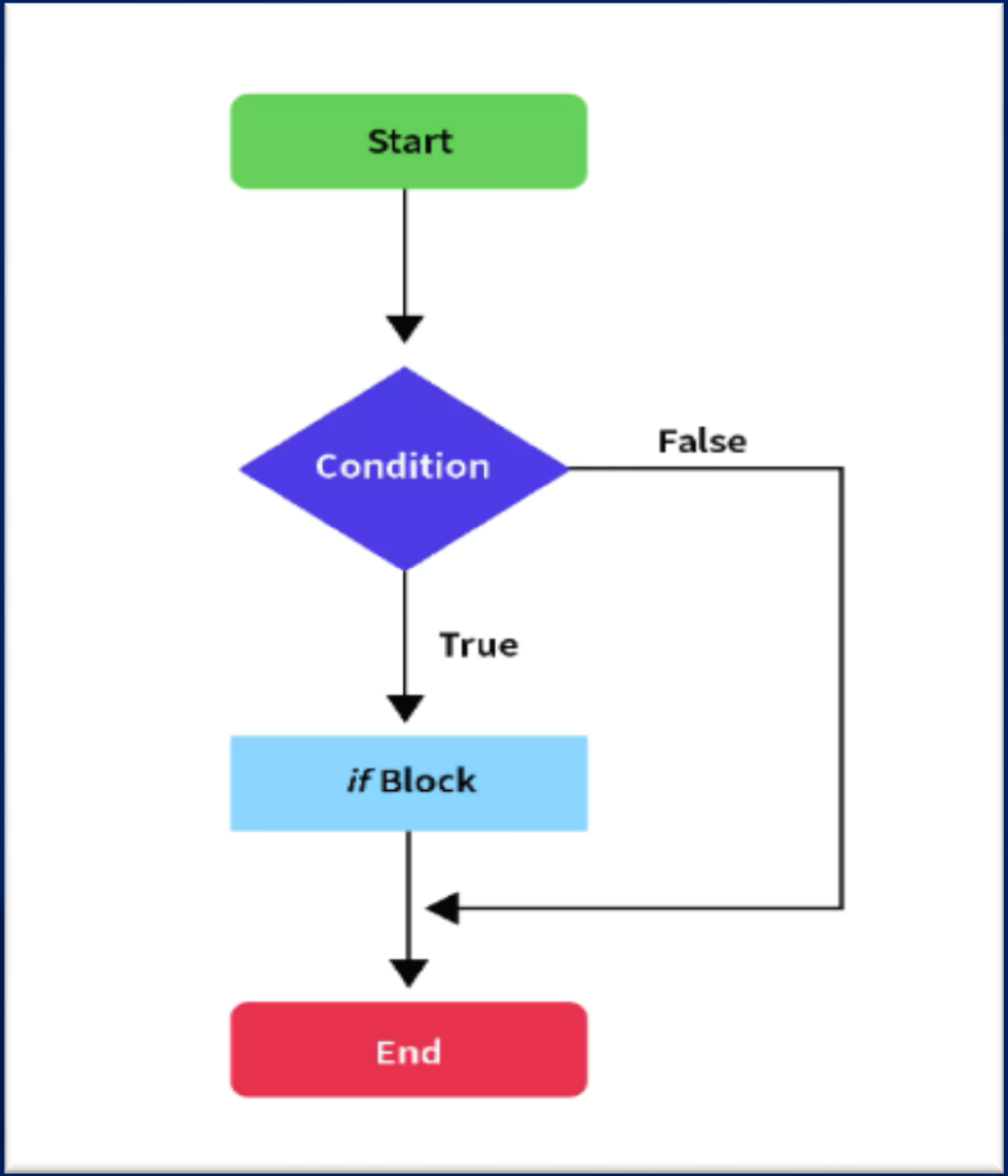
1. if Statement

- These are the **simplest and most widely used** control statements in C++.
- The if statement is used to **decide whether a particular block of code will be executed or not**, based on a given condition.
  - If the **condition is true**, the block is executed.
  - If the **condition is false**, the block is skipped.

Syntax :

```
If  ( condition ){
   //logic
}
```

Decision-Making Statements



Examples :

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

int main() {
    int age = 20;
    if (age >= 18) {
        cout << "You are eligible to vote." << endl;
    }
    return 0;
}
```

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

int main() {
    int temperature = 35;
    if (temperature > 30) {
        cout << "It's a hot day." << endl;
    }
    return 0;
}
```

Decision-Making Statements

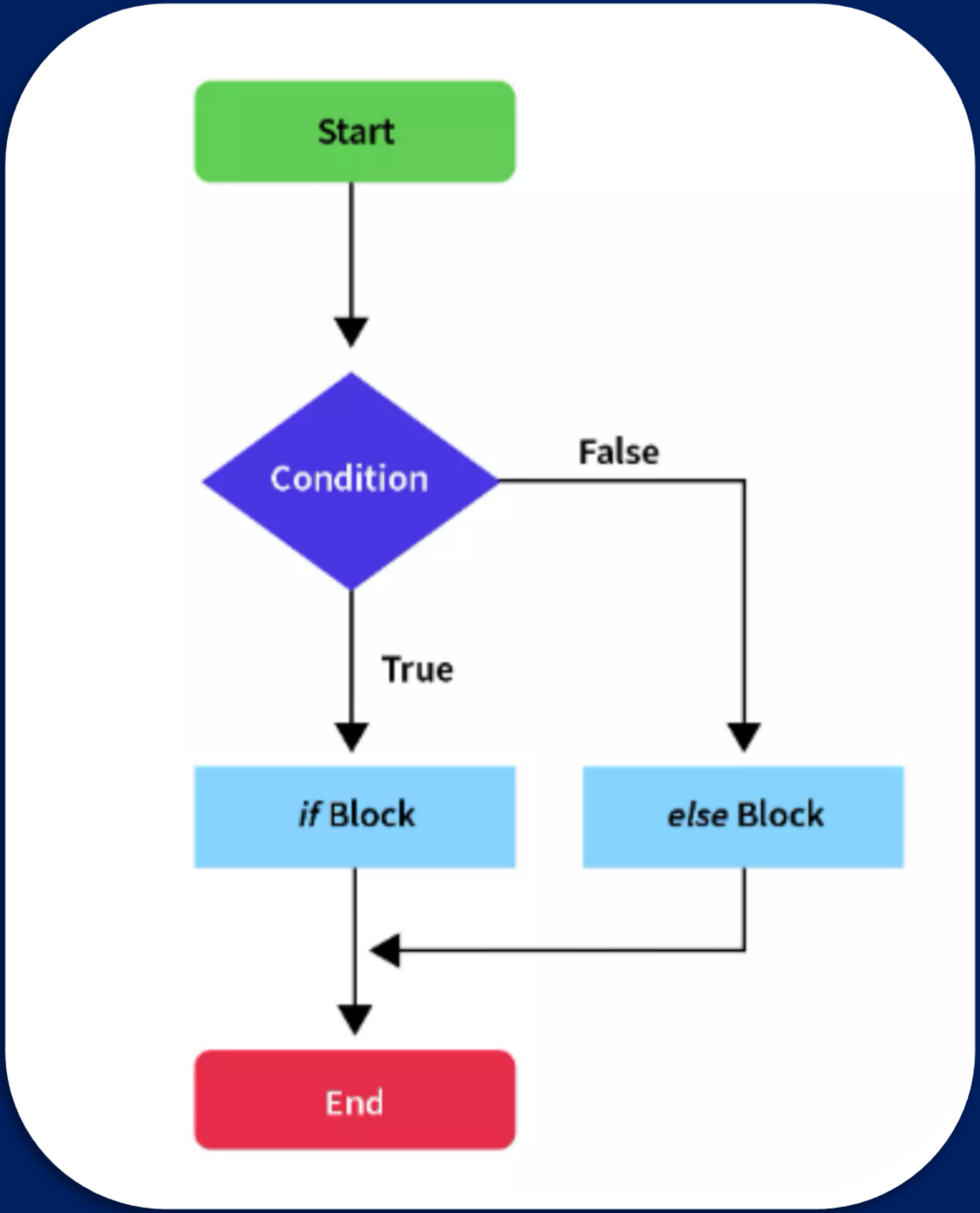
2. if-else Statement

- The if-else statement is used to execute **one block of code if the condition is true**, and **another block if the condition is false**.

Syntax :

```
If  ( condition ){
    //logic
}
else{
   //logic
}
```

Decision-Making Statements



Examples :

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

int main() {
    int number = 5;
    if (number % 2 == 0) {
        cout << "Even number" << endl;
    } else {
        cout << "Odd number" << endl;
    }
    return 0;
}
```

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

int main() {
    int marks = 45;
    if (marks >= 50) {
        cout << "Pass" << endl;
    } else {
        cout << "Fail" << endl;
    }
    return 0;
}
```

Decision-Making Statements

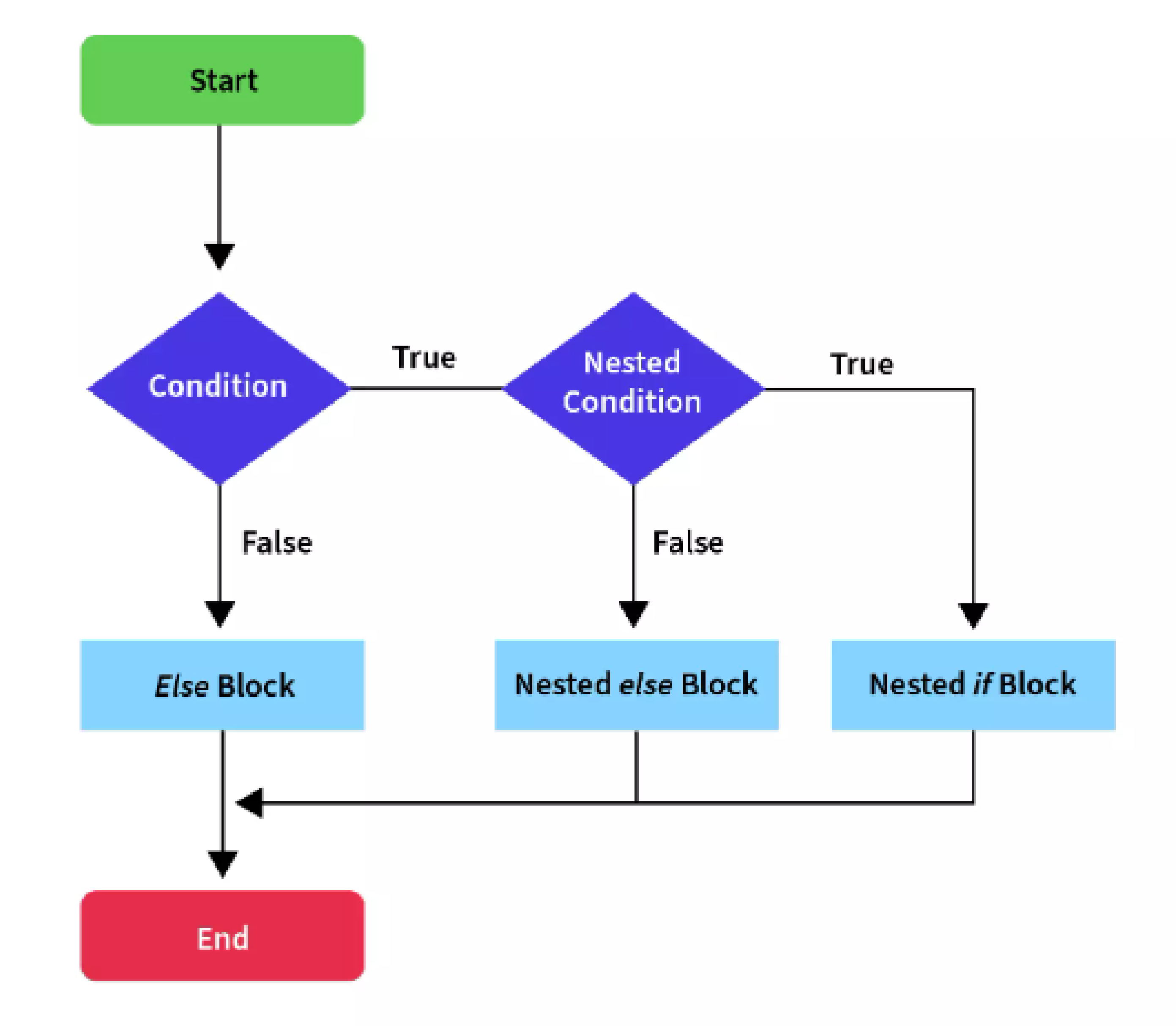
3. Nested if-else Statement

- When one if or else block contains another if-else statement, it is called a **nested if-else**.
- Used for checking **multiple related conditions** step by step.

Syntax :

```
If  ( condition ){
    If  ( condition ){
        //logic
     }
    else{
         //logic
     }
}
else{
    //logic
}
```

Decision-Making Statements



Examples :

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

int main() {
    int marks = 85;

    if (marks >= 40) {
        if (marks >= 75) {
            cout << "Distinction" << endl;
        } else {
            cout << "Pass" << endl;
        }
    } else {
        cout << "Fail" << endl;
    }
    return 0;
}
```

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

int main() {
    int age = 25;
    char gender = 'F';
    if (age > 18) {
        if (gender == 'M') {
            cout << "Adult Male" << endl;
        } else {
            cout << "Adult Female" << endl;
        }
    } else {
        cout << "Minor" << endl;
    }
    return 0;
}
```

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