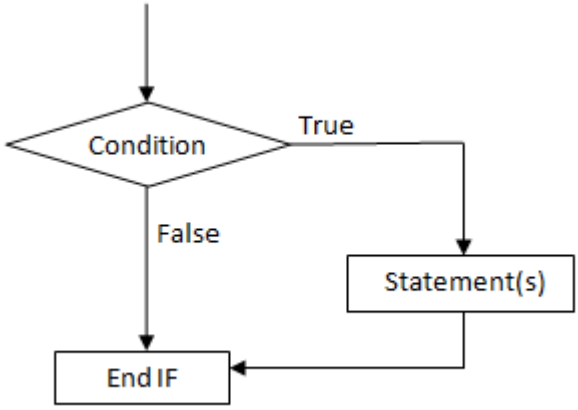
If-Else Statement

If-Else statement is the type of condition statement used in JAVA which is used to check a particular condition. Here, If, Else If and Else keywords are used on which respective conditions are placed and output is displayed based on those conditions. Based upon its usages it has several types which are as;

a. If Statement

An **if** statement checks a particular condition; if the condition evaluates to true, it will execute a statement or a set of statements. Otherwise, if the condition is false, it will ignore that statement or set of statements. The test expression of if must be of *boolean* type.



The general form or syntax of the if statement is:

```
if( test-condition)
{
  //statement(s);
}
```

Here, the statement can be a single statement, a compound statement or even an empty statement. If we do not provide the curly braces '{' and '}' after the if statement then by default it will consider the immediate single statement after the if statement.

For example,

```
if( test-condition)
   //statement1;
   //statement2;
```

In the above code, if the condition is true then the if statement considers the only statement1 to be inside the if-block.

Now let us see an example as;

```
class IfStatementDemo
{
    public static void main(String args[])
    {
        int i = 5;

        if (i % 2 == 0)
            System.out.println("5 is divisible by 2");
        // This statement will be executed
        // as if considers one statement by default
        System.out.println("I am Not in if block");
    }
}
```

Output

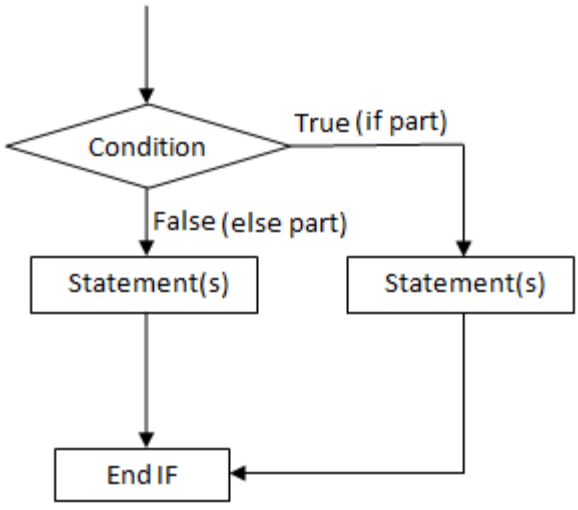
```
I am Not in if block
```

b. If-Else Statement

The if statement only allows us to execute a set of statements if a condition or expression is true. What if there is another course of action to be followed if the expression evaluates to false?

So, there comes another form of if that allows for this kind of either-or condition by providing an else clause.

It is called an if-else statement in which we can use the else statement with an if statement so that we can execute a block of code when the test condition is false.



The general form or syntax of the *if-else* statement is:

```
if( test-condition)
{
  //statement(s);
}
else
{
  //statement(s);
}
```

Now let us see an example as;

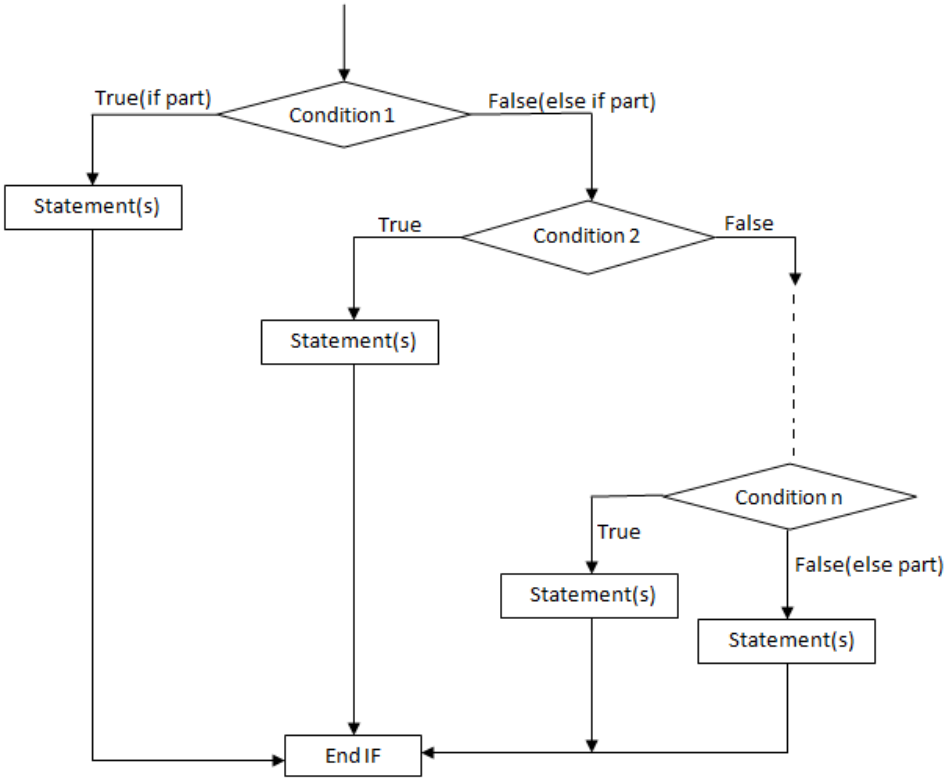
```
class IfElseStatementDemo
{
    public static void main(String args[])
    {
        int i = 5;

        if (i % 2 == 0)
            System.out.println("5 is divisible by 2");

        else
            System.out.println("5 is not divisible by 2");
    }
}
```

Output

```
5 is not divisible by 2
```

c. If-Else If(Else) Statement

The if-else-if ladder is a very common programming concept in JAVA, which is also called the if-else-if staircase because of its appearance. We can use many if-else-if statements in our program.



The general form or syntax of the if-else-if ladder statement is:

```
if( expression1)
  statement1 ;
else if(expression2)
  statement2;
  .
  .
else
  statement3;
```

Now let us see an example as;

```
class IfElseIfDemo
{
   public static void main(String[] args)
   {
      int number=-13;

      if(number>0) {
         System.out.println("The number is POSITIVE");
      }
      else if(number<0) {
         System.out.println("The number is NEGATIVE");
      }
      else {
```

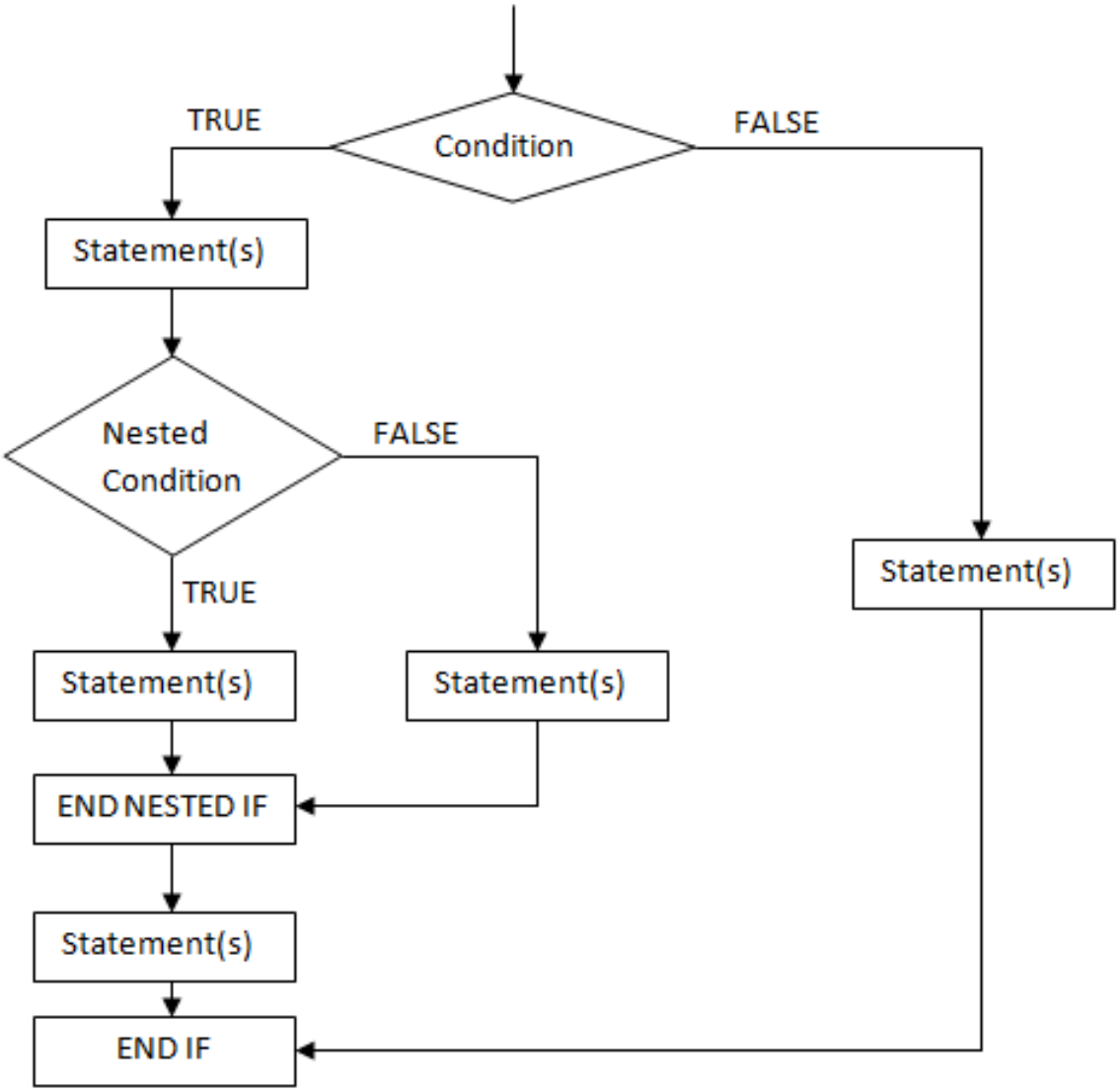
```
        System.out.println("The number is equal toZERO");
      }
    }
}
```

Output

```
The number is NEGATIVE
```

d. Nested If Statement

A nested if is an if statement that has another if in its if's body or in its else's body. As Java allows nested if statements, we can place an if or else-if statement inside another if statement.



The general form or syntax of the Nested if statement can either be in 3 forms:

```
if(expression1) {
  :
     if(expression2)
  statement1;
     else
  statement2 ;
     :
}
else
  body of else;
```

Now let us see an example as;

```
class NestedIfDemo
{
   public static void main(String args[])
   {
      int age = 18, weight = 50 ;

      if (age >= 18)
      {
         System.out.println("You are eligible to vote");
         if (weight >= 50)
            System.out.println("You are eligible to vote and donate blood");
         else
            System.out.println("you are not eligible to donate blood") ;
      }
      else
         System.out.println("you are not eligible for both!!") ;
   }
}
```

Output

```
You are eligible to vote
You are eligible to vote and donate blood
```

Task to Do:

1. Write a JAVA program to find maximum between two numbers.
2. Write a JAVA program to find maximum between three numbers.
3. Write a JAVA program to check whether a number is negative, positive or zero.
4. Write a JAVA program to check whether a number is divisible by 5 and 11 or not.
5. Write a JAVA program to check whether a number is even or odd.
6. Write a JAVA program to check whether a year is leap year or not.
7. Write a JAVA program to check whether a character is alphabet or not.
8. Write a JAVA program to input any alphabet and check whether it is vowel or consonant.
9. Write a JAVA program to input any character and check whether it is alphabet, digit or special character.
10. Write a JAVA program to check whether a character is uppercase or lowercase alphabet.
11. Write a JAVA program to input week number and print weekday.
12. Write a JAVA program to input month number and print number of days in that month.
13. Write a JAVA program to count total number of notes in given amount.
14. Write a JAVA program to input angles of a triangle and check whether triangle is valid or not.
15. Write a JAVA program to input all sides of a triangle and check whether triangle is valid or not.
16. Write a JAVA program to check whether the triangle is equilateral, isosceles or scalene triangle.
17. Write a JAVA program to find all roots of a quadratic equation.
18. Write a JAVA program to calculate profit or loss.
19. Write a JAVA program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

    Percentage >= 90% : Grade A

    Percentage >= 80% : Grade B

    Percentage >= 70% : Grade C

    Percentage >= 60% : Grade D

    Percentage >= 40% : Grade E

    Percentage < 40% : Grade F
20. Write a JAVA program to input basic salary of an employee and calculate its Gross salary according to following:

    Basic Salary <= 10000 : HRA = 20%, DA = 80%

Basic Salary <= 20000 : HRA = 25%, DA = 90%

Basic Salary > 20000 : HRA = 30%, DA = 95%

21. Write a JAVA program to input electricity unit charges and calculate total electricity bill according to the given condition:

    For first 50 units Rs. 0.50/unit

    For next 100 units Rs. 0.75/unit

    For next 100 units Rs. 1.20/unit

    For unit above 250 Rs. 1.50/unit

    An additional surcharge of 20% is added to the bill