Decision Making in Java (if, if-else, switch, break, continue, jump)

Difficulty Level : Easy Last Updated : 09 Feb, 2022

Decision Making in programming is similar to decision-making in real life. In programming also face some situations where we want a certain block of code to be executed when some condition is fulfilled.

A programming language uses control statements to control the flow of execution of a program based on certain conditions. These are used to cause the flow of execution to advance and branch based on changes to the state of a program.

Java's Selection statements:

- if
- if-else
- nested-if
- if-else-if
- switch-case
- jump – break, continue, return

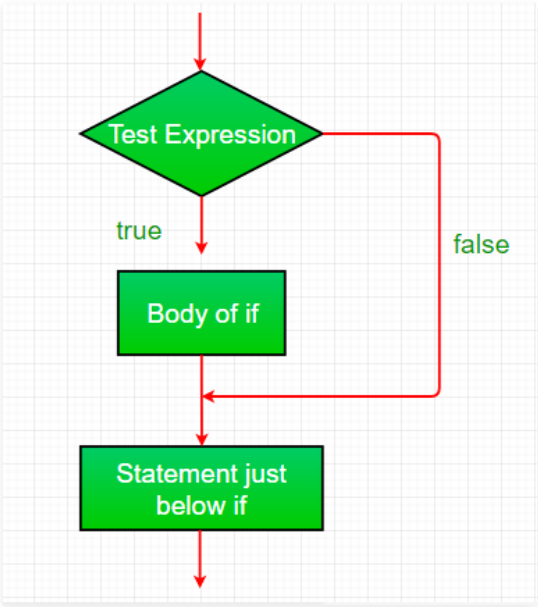
1. if: if statement is the most simple decision-making statement. It is used to decide whether a certain statement or block of statements will be executed or not i.e if a certain condition is true then a block of statement is executed otherwise not.

Syntax:

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

Here, the **condition** after evaluation will be either true or false. if statement accepts boolean values – if the value is true then it will execute the block of statements under it.
If we do not provide the curly braces '{' and '}' after **if(condition)** then by default if statement will consider the immediate one statement to be inside its block. For example,

```
if(condition)
   statement1;
   statement2;

// Here if the condition is true, if block
// will consider only statement1 to be inside
// its block.
```



Example:

```
// Java program to illustrate If statement
class IfDemo {
    public static void main(String args[])
    {
        int i = 10;

        if (i > 15)
            System.out.println("10 is less than 15");

        // This statement will be executed
        // as if considers one statement by default
        System.out.println("I am Not in if");
    }
}
```

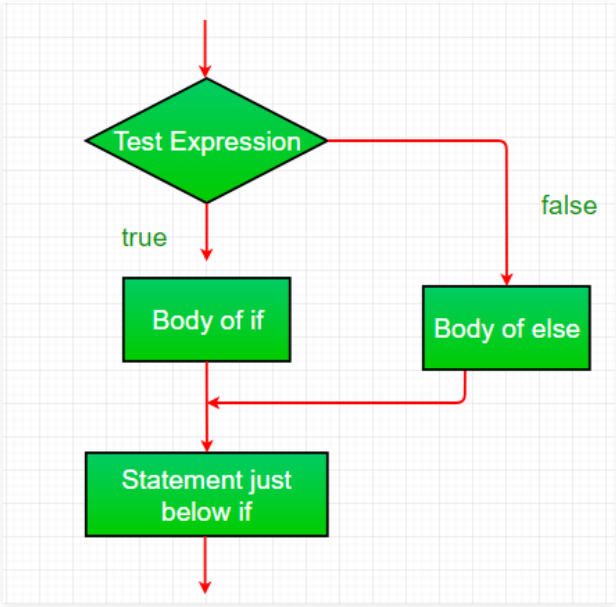
Output

```
I am Not in if
```

2. if-else: 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. Here comes the 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:

```
// Java program to illustrate if-else statement
class IfElseDemo {
    public static void main(String args[])
    {
        int i = 10;

        if (i < 15)
            System.out.println("i is smaller than 15");
        else
            System.out.println("i is greater than 15");
    }
}
```

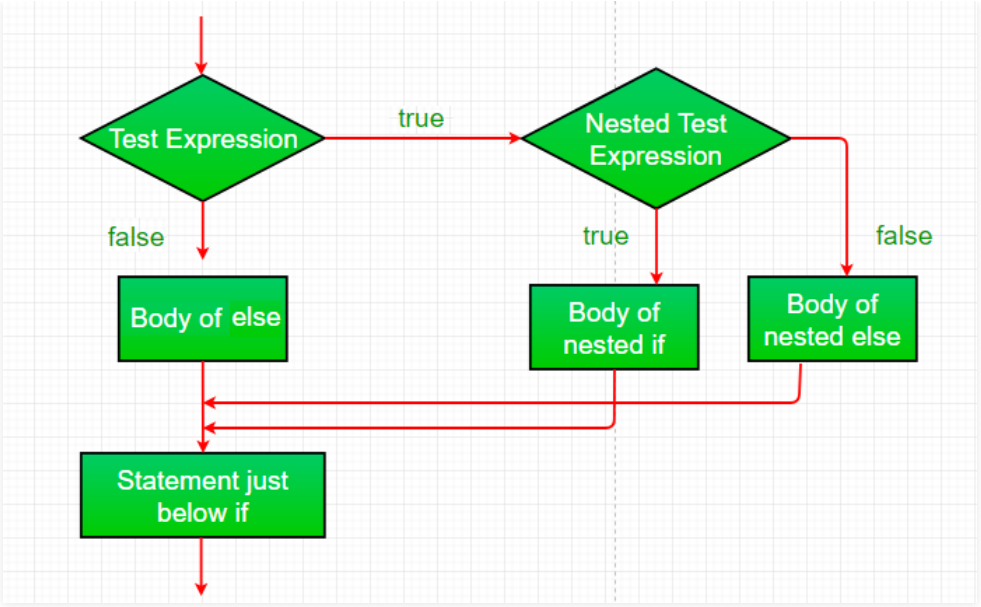
Output

```
i is smaller than 15
```

3. nested-if: A nested if is an if statement that is the target of another if or else. Nested if statements mean an if statement inside an if statement. Yes, java allows us to nest if statements within if statements. i.e, we can place an if statement inside another if statement.

Syntax:

```
if (condition1)
{
   // Executes when condition1 is true
   if (condition2)
   {
      // Executes when condition2 is true
   }
}
```



Example:

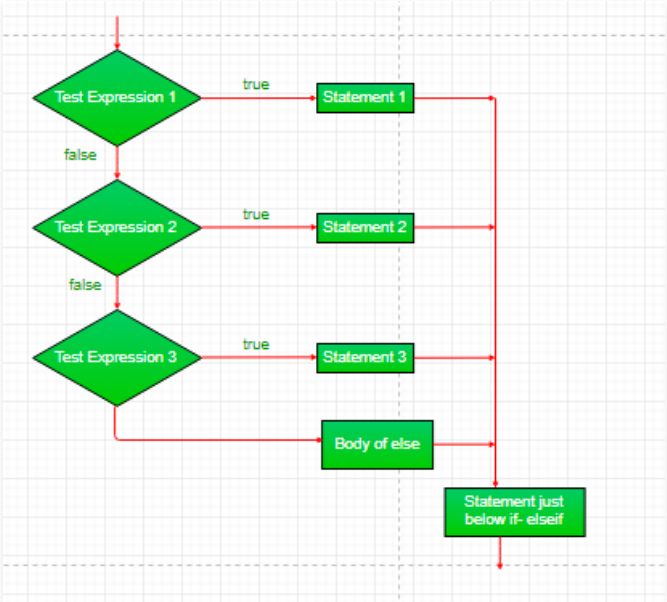
```
// Java program to illustrate nested-if statement

class NestedIfDemo {
    public static void main(String args[])
    {
        int i = 10;

        if (i == 10) {
            // First if statement
            if (i < 15)
                System.out.println("i is smaller than 15");

            // Nested - if statement
            // Will only be executed if statement above
            // it is true
            if (i < 12)
                System.out.println(
                    "i is smaller than 12 too");
            else
                System.out.println("i is greater than 15");
        }
    }
}
```

Output

```
i is smaller than 15
i is smaller than 12 too
```

4. if-else-if ladder: Here, a user can decide among multiple options.The 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 ladder is bypassed. If none of the conditions is true, then the final else statement will be executed.

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



Example:

```
// Java program to illustrate if-else-if ladder

class ifelseifDemo {
    public static void main(String args[])
    {
```

```
        int i = 20;

        if (i == 10)
            System.out.println("i is 10");
        else if (i == 15)
            System.out.println("i is 15");
        else if (i == 20)
            System.out.println("i is 20");
        else
            System.out.println("i is not present");
    }
}
```

Output

```
i is 20
```

5. switch-case: The switch statement is a multiway branch statement. It provides an easy way to dispatch execution to different parts of code based on the value of the expression.

Syntax:

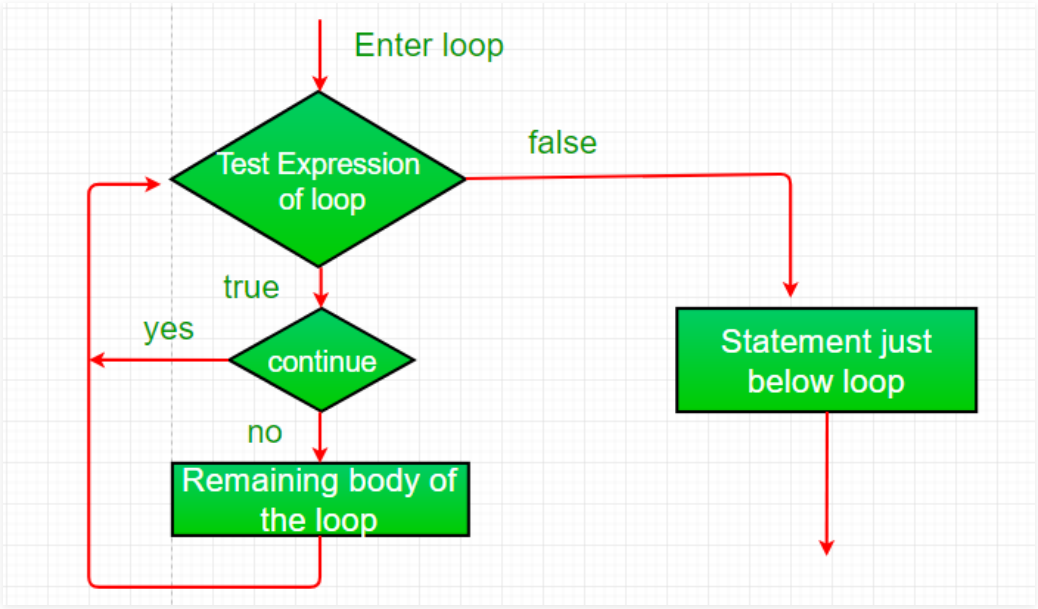
```
switch (expression)
{
  case value1:
    statement1;
    break;
  case value2:
    statement2;
    break;
  .
  .
  case valueN:
    statementN;
    break;
  default:
    statementDefault;
}
```

- The expression can be of type byte, short, int char, or an enumeration. Beginning with JDK7, *expression* can also be of type String.

- Duplicate case values are not allowed.
- The default statement is optional.
- The break statement is used inside the switch to terminate a statement sequence.
- The break statement is optional. If omitted, execution will continue on into the next case.

6. jump: Java supports three jump statements: **break, continue** and **return**. These three statements transfer control to another part of the program.

- **Break:** In Java, a break is majorly used for:
  - Terminate a sequence in a switch statement (discussed above).
  - To exit a loop.
  - Used as a "civilized" form of goto.
- **Continue:** Sometimes it is useful to force an early iteration of a loop. That is, you might want to continue running the loop but stop processing the remainder of the code in its body for this particular iteration. This is, in effect, a goto just past the body of the loop, to the loop's end. The continue statement performs such an action.



Example:

```
// Java program to illustrate using
// continue in an if statement
class ContinueDemo {
    public static void main(String args[])
    {
```

```
        for (int i = 0; i < 10; i++) {
            // If the number is even
            // skip and continue
            if (i % 2 == 0)
                continue;

            // If number is odd, print it
            System.out.print(i + " ");
        }
    }
}
```

Output

```
1 3 5 7 9
```

- **Return:** The return statement is used to explicitly return from a method. That is, it causes program control to transfer back to the caller of the method.

Example:

```
// Java program to illustrate using return
class Return {
    public static void main(String args[])
    {
        boolean t = true;
        System.out.println("Before the return.");

        if (t)
            return;

        // Compiler will bypass every statement
        // after return
        System.out.println("This won't execute.");
    }
}
```

Output

```
Before the return.
```

This article is contributed by **Anuj Chauhan** and **Harsh Aggarwal**. If you like GeeksforGeeks and would like to contribute, you can also write an article using write.geeksforgeeeks.org or mail your article to review-team@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.