



OBJECT ORIENTED PROGRAMMING

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Topic 5: Conditional & Iteration in
java

CONDITIONALS

- Sometimes, we need to make a decision based on the data we have
- If a certain condition is met, we may do thing A and otherwise thing B
- In other words, we want to structure the flow of our program to perform different actions based on the values of our variables.

TYPES OF CONDITIONALS

There are three types of conditionals-

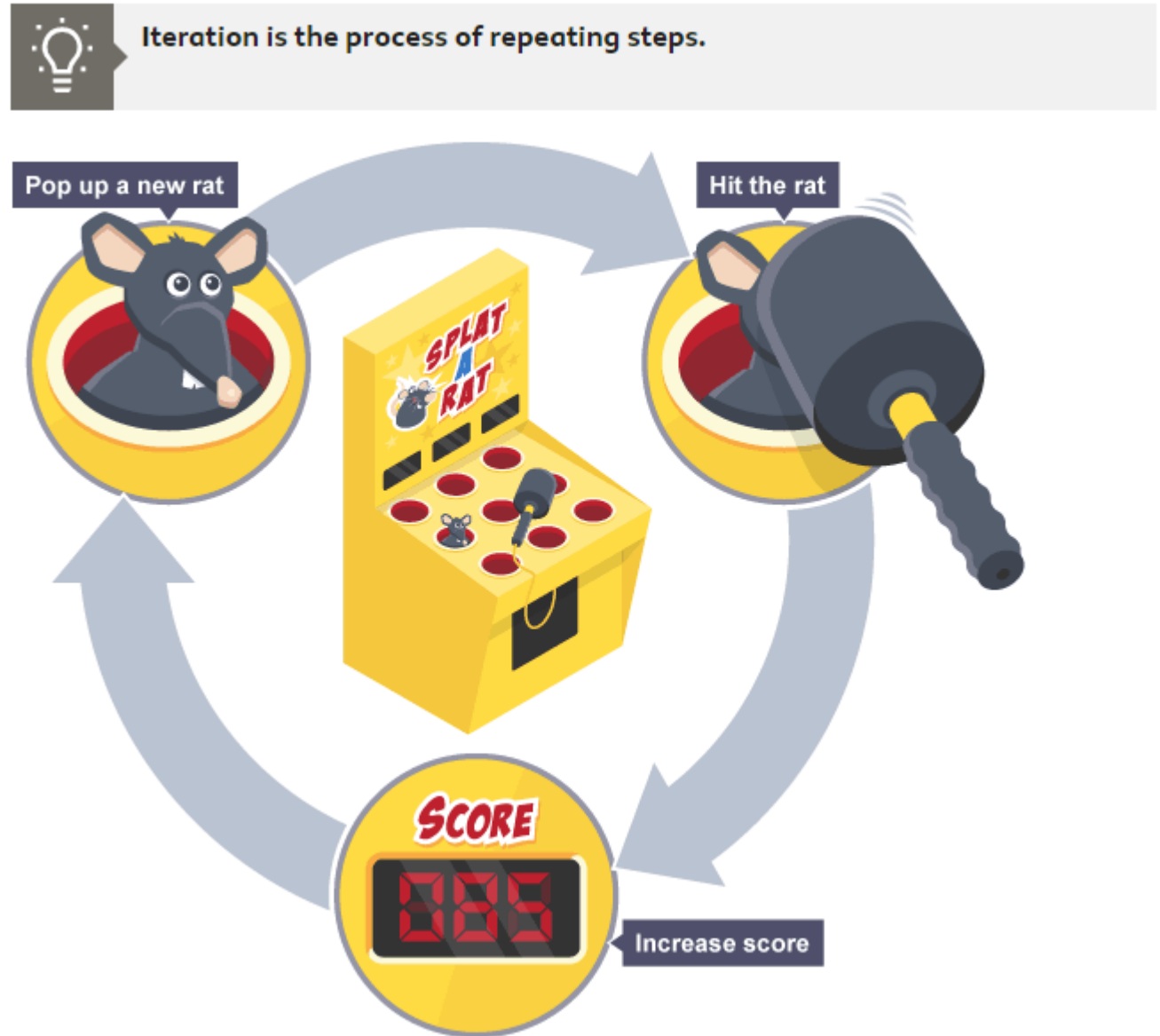
- ❖ Simple (If-else)
- ❖ Complex (if-elseif-else)
- ❖ Compound (if-elseif-else with logical operators)

CONDITIONAL IN JAVA

- If-else structure
- Switch case structure

ITERATIONS

*The repeated execution of some groups of code statements in a program is called **iteration**.*



TYPES OF ITERATION

1. Bounded or Finite Iteration --- Bounded iteration is iteration where the number of times has a determined maximum when it is started. This is typically (but not necessarily) the case in a for loop.

2. Unbounded or Infinite Iteration --- Unbounded iteration is iteration where the number of times has a determined maximum when it is started. This is typically (but not necessarily) the case in a while loop.

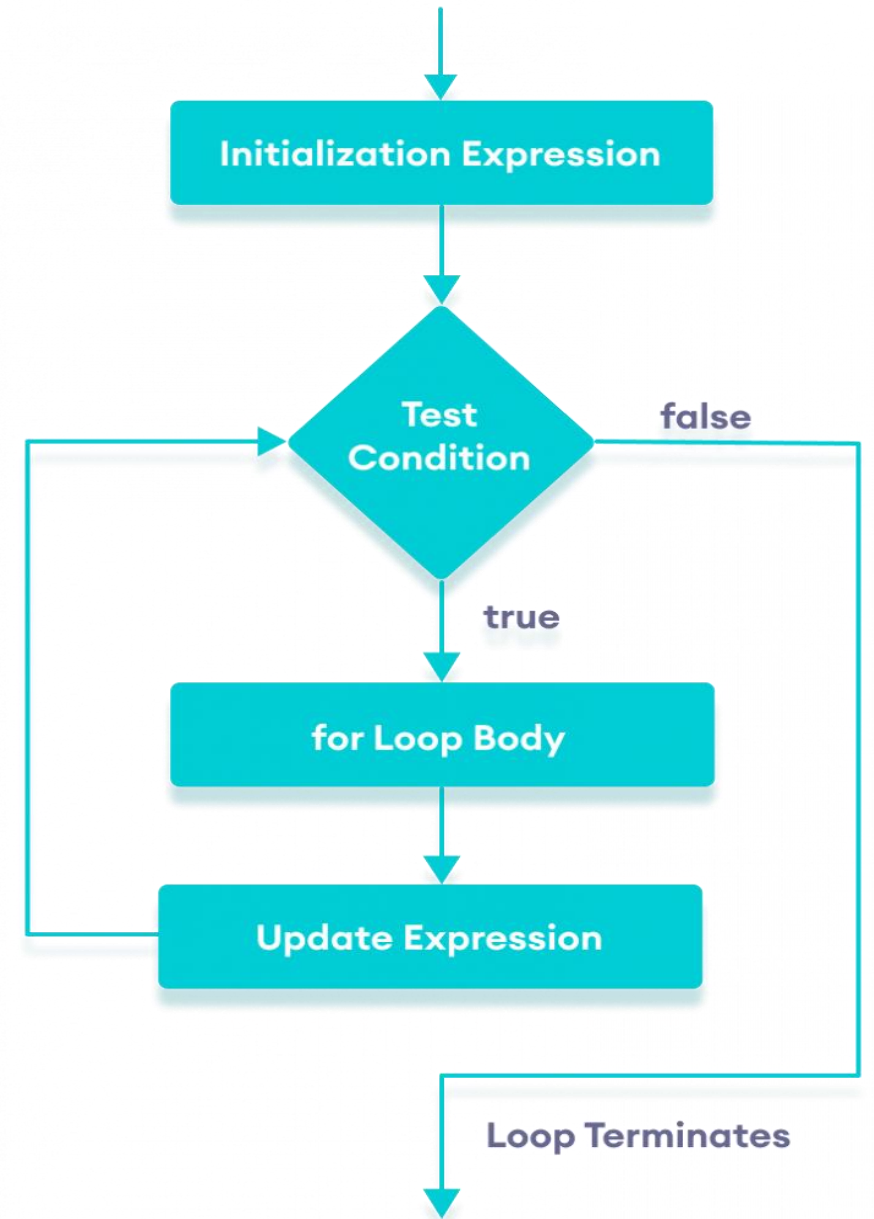
JAVA FOR LOOP

Java for loop is used to run a block of code for a certain number of times. The syntax of for loop is---

```
for (initialExpression; testExpression; updateExpression) {  
    // body of the loop  
}
```

Here,

- The initialExpression initializes and/or declares variables and executes only once.
- The condition is evaluated. If the condition is true, the body of the for loop is executed.
- The updateExpression updates the value of initialExpression.
- The condition is evaluated again. The process continues until the condition is false.



JAVA FOR LOOP SYNTAX

```
int n = 5; // for loop
for (int i = 1; i <= n; ++i)
{
    System.out.println("Java is fun");
}
```

ENHANCED FOR LOOP (FOREACH LOOP)

In Java, the **for-each** loop is used to iterate through elements of [arrays](#) and collections (like [ArrayList](#)). It is also known as the enhanced for loop.

```
// create an array
int[] numbers = {3, 9, 5, -5}; //
for each loop
for (int number: numbers)
{
    System.out.println(number);
}
```

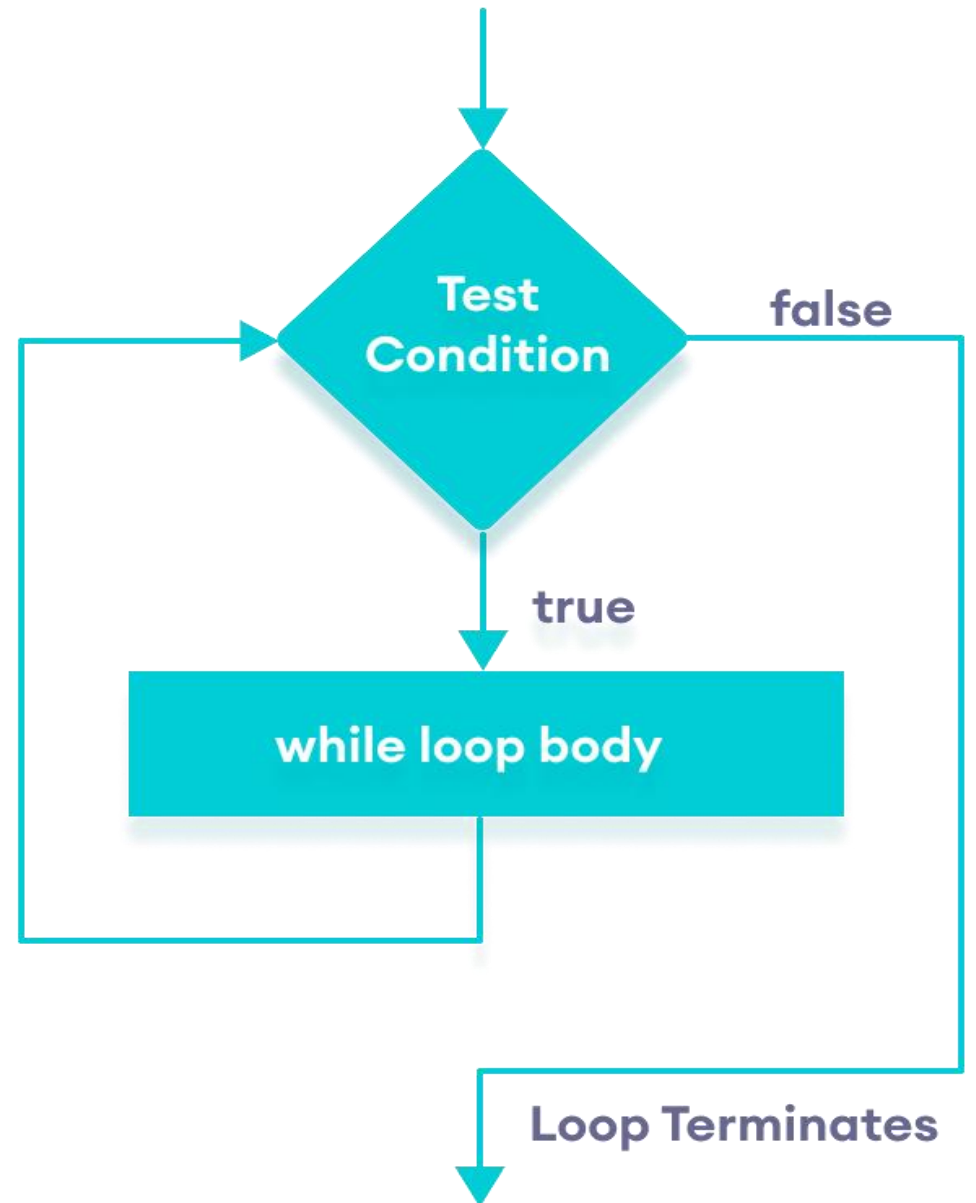
JAVA WHILE LOOP

Java while loop is used to run a specific code until a certain condition is met. The syntax of the while loop is:

```
while (testExpression) {  
    // body of loop  
}
```

Here,

- A while loop evaluates the textExpression inside the parenthesis ().
- If the textExpression evaluates to true, the code inside the while loop is executed.
- The textExpression is evaluated again.
- This process continues until the textExpression is false.
- When the textExpression evaluates to false, the loop stops.



JAVA WHILE LOOP SYNTAX

```
int x = 1;

// Exit when x becomes greater than 4
while (x <= 4)
{
    System.out.println("Value of x:" + x);

    // Increment the value of x for
    // next iteration
    x++;
}
```

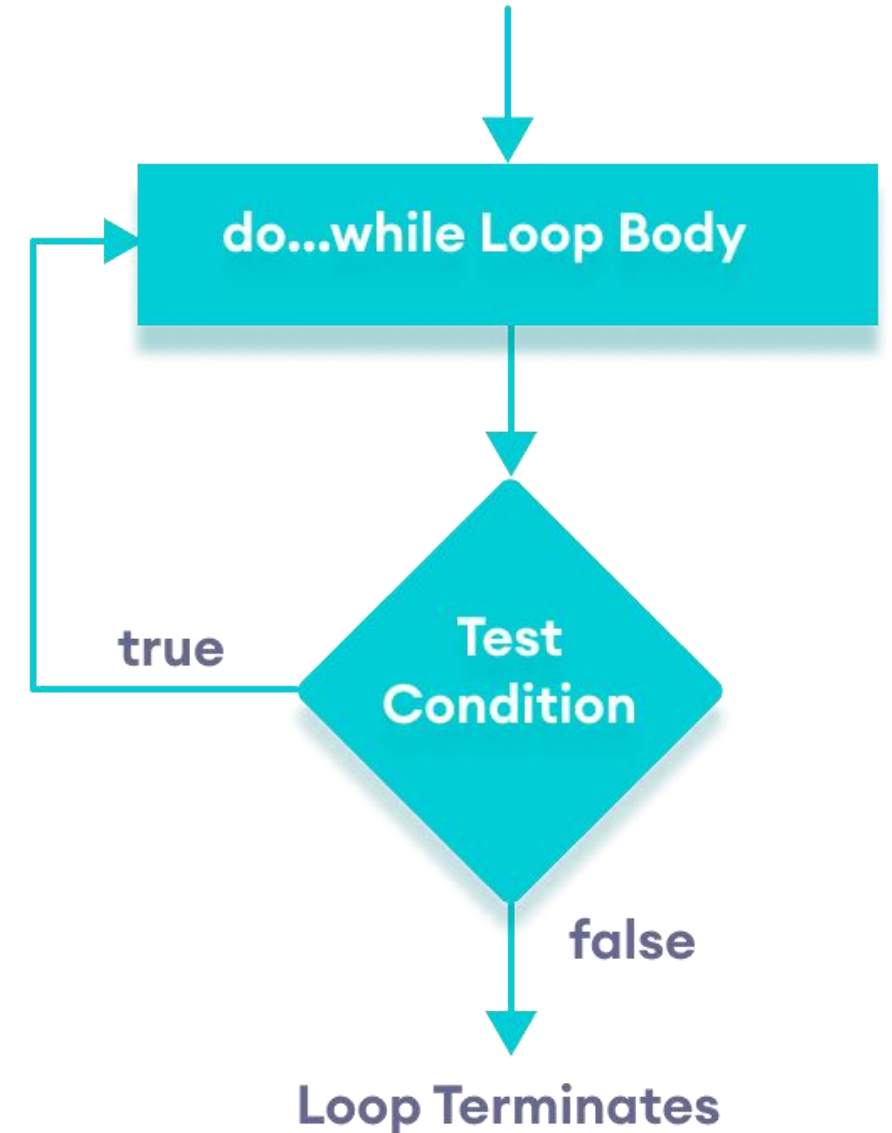
DO WHILE LOOP IN JAVA

The do...while loop is similar to while loop. However, the body of do...while loop is executed once before the test expression is checked. For example,

```
do {  
    // body of loop  
} while(textExpression)
```

Here,

- The body of the loop is executed at first. Then the textExpression is evaluated.
- If the textExpression evaluates to true, the body of the loop inside the do statement is executed again.
- The textExpression is evaluated once again.
- If the textExpression evaluates to true, the body of the loop inside the do statement is executed again.
- This process continues until the textExpression evaluates to false. Then the loop stops.



DO WHILE LOOP SYNTAX IN JAVA

```
int x = 21;
do
{
    // The line will be printed even
    // if the condition is false
    System.out.println("Value of x:" + x);
    x++;
}
while (x < 20);
```