Java Loops

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Agenda

Loops?

Loops are used to execute a set of statements repeatedly until some condition evaluates to false.
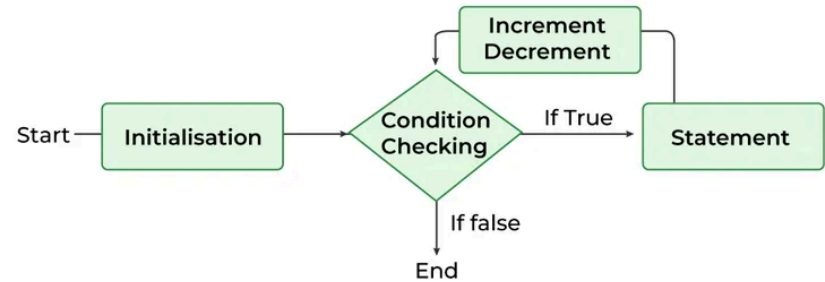
LOOPS REPEAT
ACTIONS...
SO YOU DON'T HAVE TO

There are **three(3)** types of loops in Java:

- *For Loop*
- *While Loop*
- *Do-While Loop*

For Loop

- **Initialization:** Start variable/value of the loop. It is executed only once.
- **Condition:** The loop continues until the condition is true.
- **Increment/Decrement:** Increases or decreases the value of the loop variable.
- **Statement:** The code block that is executed in each iteration.

```
for (Initialization; Condition; Increment/Decrement) {
    // Inner code block
}
```

For Loop Example

```java
public class Main {

    public static void main(String[] args) {
        for (int i = 0; i < 5; i++) {
            System.out.println(i);
        }
    }
}
```

```java
for (int i = 0; i < 3; i++) {
    System.out.println("i is now " + i);
}
```

Nested For Loop Example

```java
public class Main {

    public static void main(String[] args) {
        for (int i = 0; i < 3; i++) { // Outer loop

            for (int j = 0; j < 3; j++) { // Inner loop
                System.out.println("i: " + i + ", j: " + j);
            }

        }
    }
}
```

While Loop

- **Condition:** The loop continues until the condition is true.

```
while (Condition) {
    // Inner code block
}
```
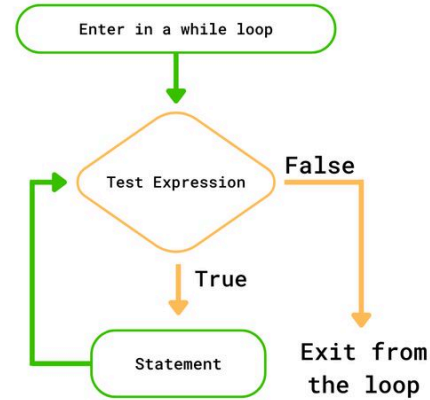
code | output

```
1   a = 1
2   while a < 10:
3     print (a)
4     a += 2
```

variables

While-loop

Enter in a while loop

Test Expression — False

True

Statement — Exit from the loop

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While Loop Example

```java
public class Main {

    public static void main(String[] args) {
        int i = 0;
        while (i < 5) {
            System.out.println(i);
            i++;
        }
    }
}
```

Infinite Loop Example

```java
public class Main {

    public static void main(String[] args) {
        while (true) {
            System.out.println("Infinite Loop");
        }
    }
}
```
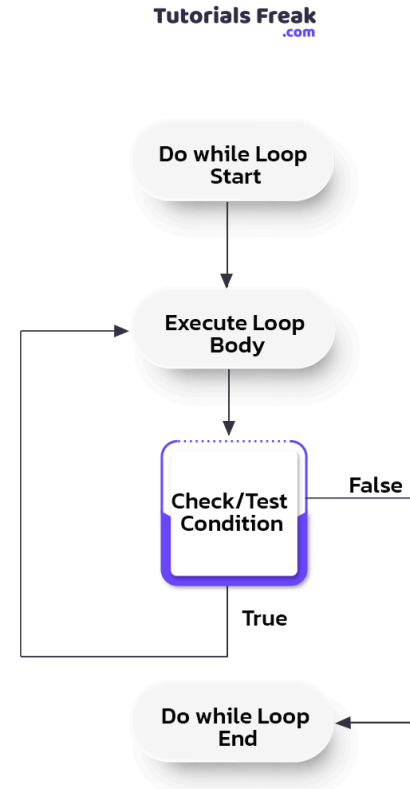
Do-While Loop

Do while loop is every similar to a while()-loop, the major difference is that the block inside the loop block will always run once, because the condition is checked after the code is ran.

```
do {
    // Inner code block
} while (Condition);
```

```
1    public class Main {
2
3        public static void main(String[] args) {
4            int i = 0;
5            do {
6                System.out.println(i);
7                i++;
8            } while (i < 5);
9        }
10   }
```


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Do while Loop Start

Execute Loop Body

Check/Test Condition

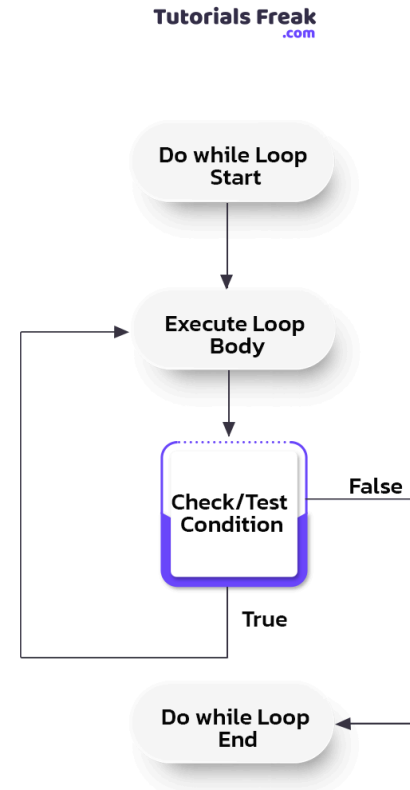False

True

Do while Loop End

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Do while Loop Start

Execute Loop Body

Check/Test Condition

False

True

Do while Loop End
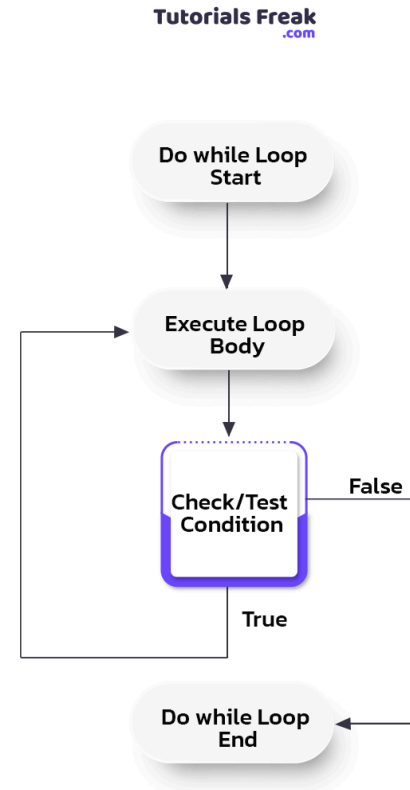
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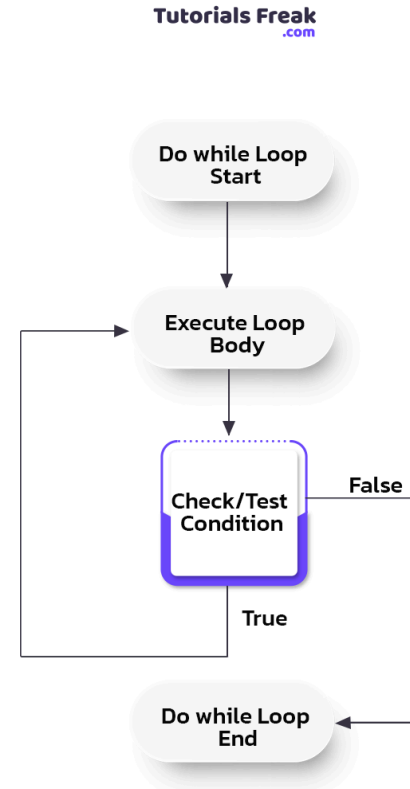

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Do while Loop Start

Execute Loop Body

Check/Test Condition

False

True

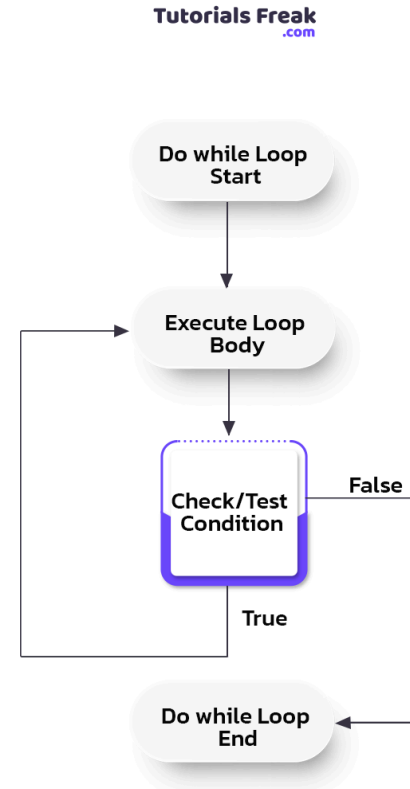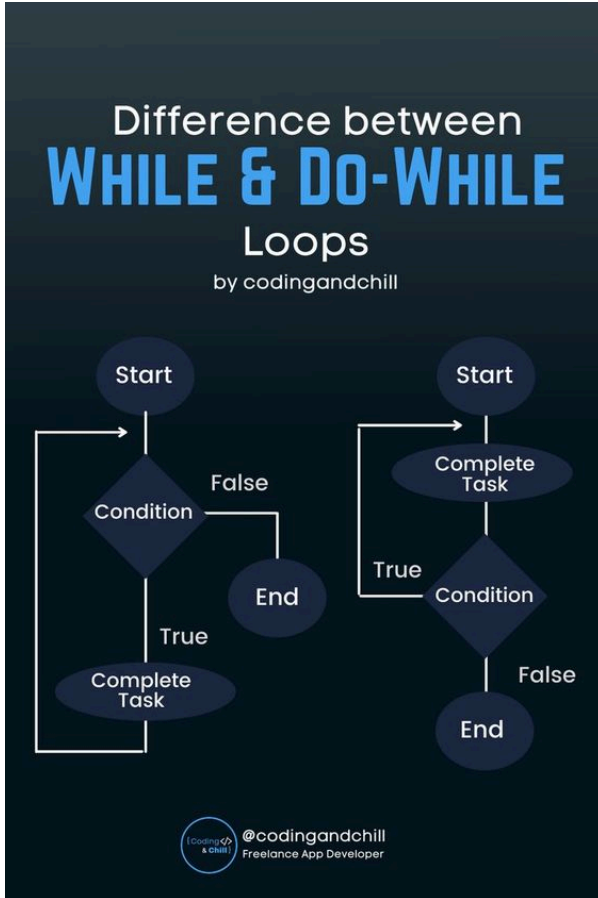Do while Loop End

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Do while Loop Start

Execute Loop Body

Check/Test Condition

False

True

Do while Loop End

Difference between While and Do-While Loop

Java for-each Loop

Syntax:

```
for(dataType item : array) {
    ...
}
```

- array - an array or a collection
- item - each item of array/collection is assigned to this variable
- dataType - the data type of the array/collection

Example

```java
int[] numbers = {1, 2, 3, 4, 5};
for(int number : numbers) {
    System.out.println(number);
}
```

Thank you ❤️

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