Java Loop Statements

Lecture - 4

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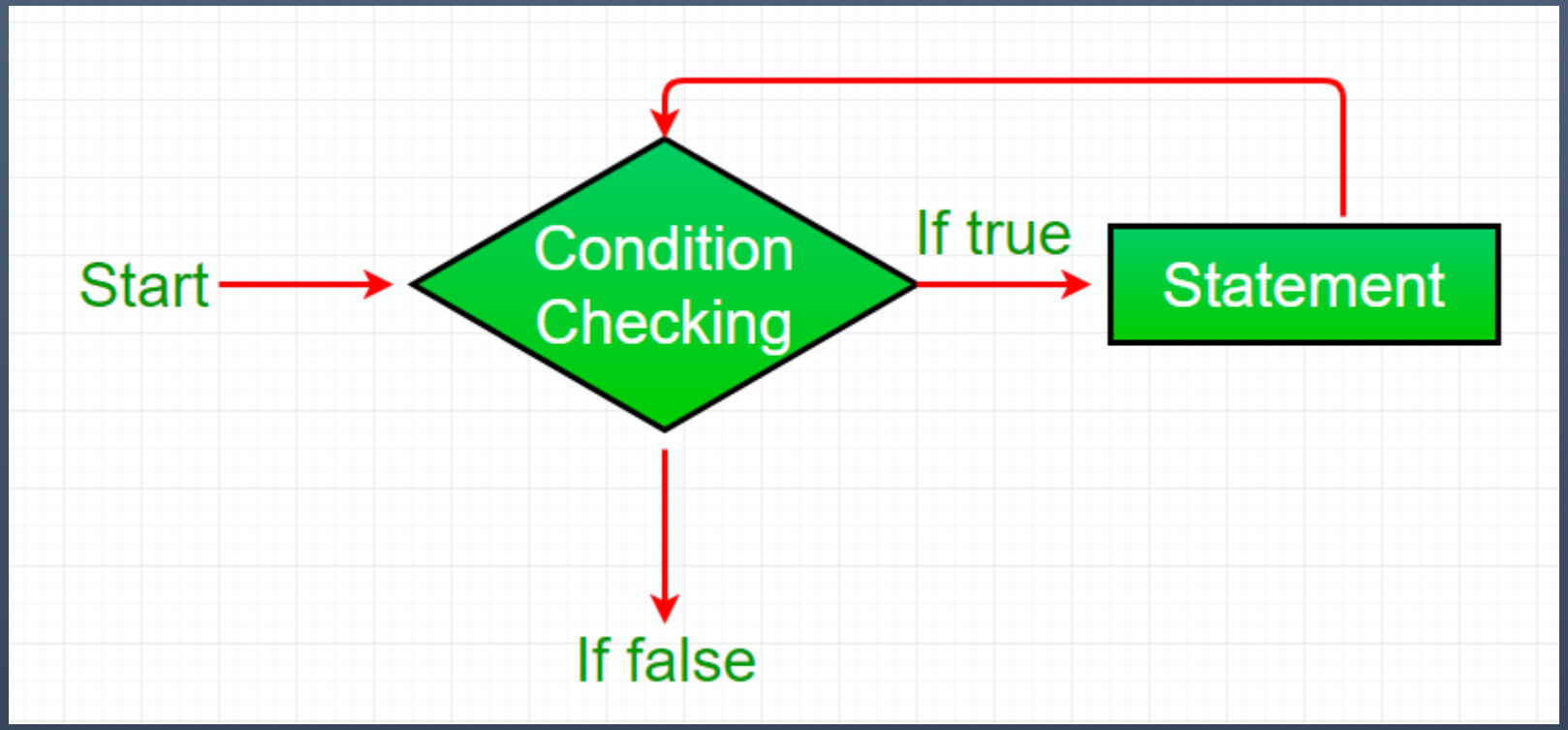
Java Loops

- loops are used to repeat a block of code.
- Java has very flexible three looping mechanisms.

1. while Loop
2. do...while Loop
3. for Loop

While Loop

- A while loop is a control flow statement that allows code to be executed repeatedly based on a given Boolean condition.
- While is an entry-controlled loop.



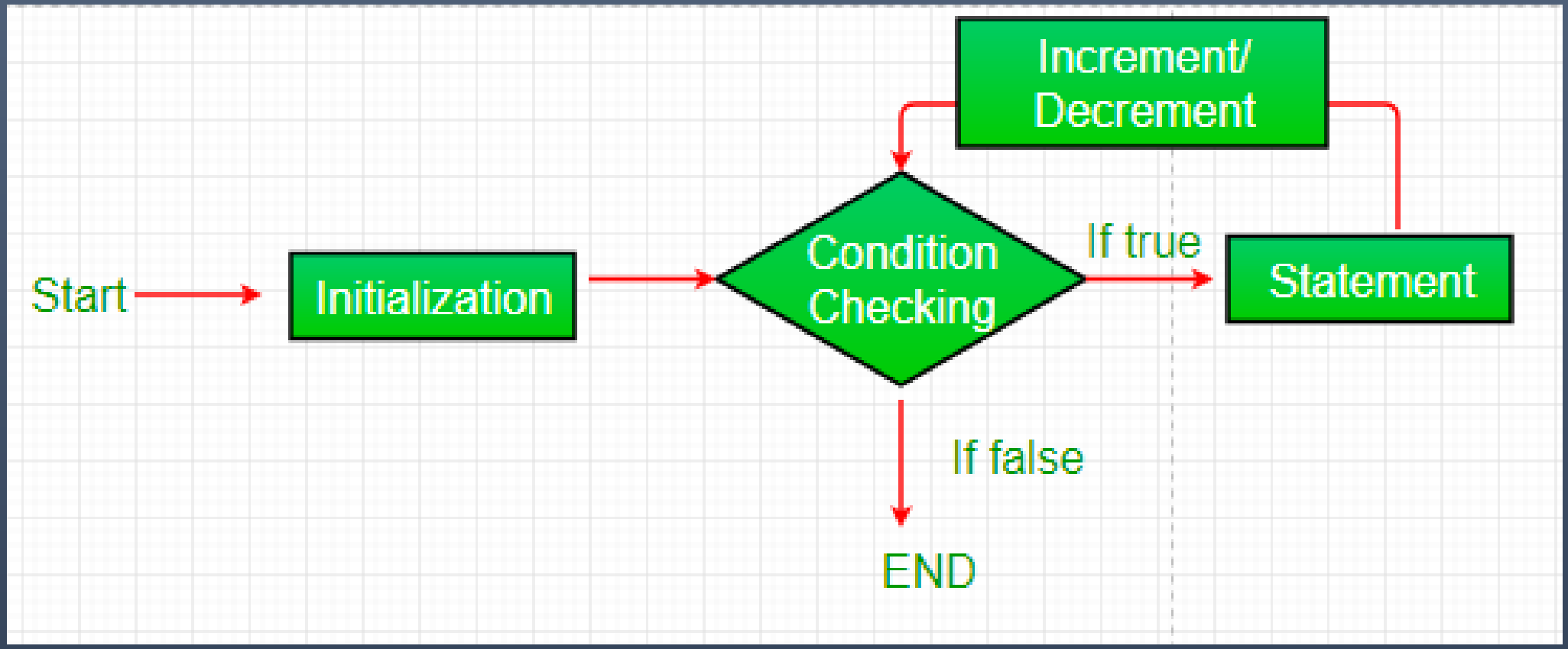
while Loop

```java
// Java program to illustrate while loop
class whileLoopDemo
{
    public static void main(String args[])
    {
        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++;
        }
    }
}
```

```
Value of x:1
Value of x:2
Value of x:3
Value of x:4
```

for Loop

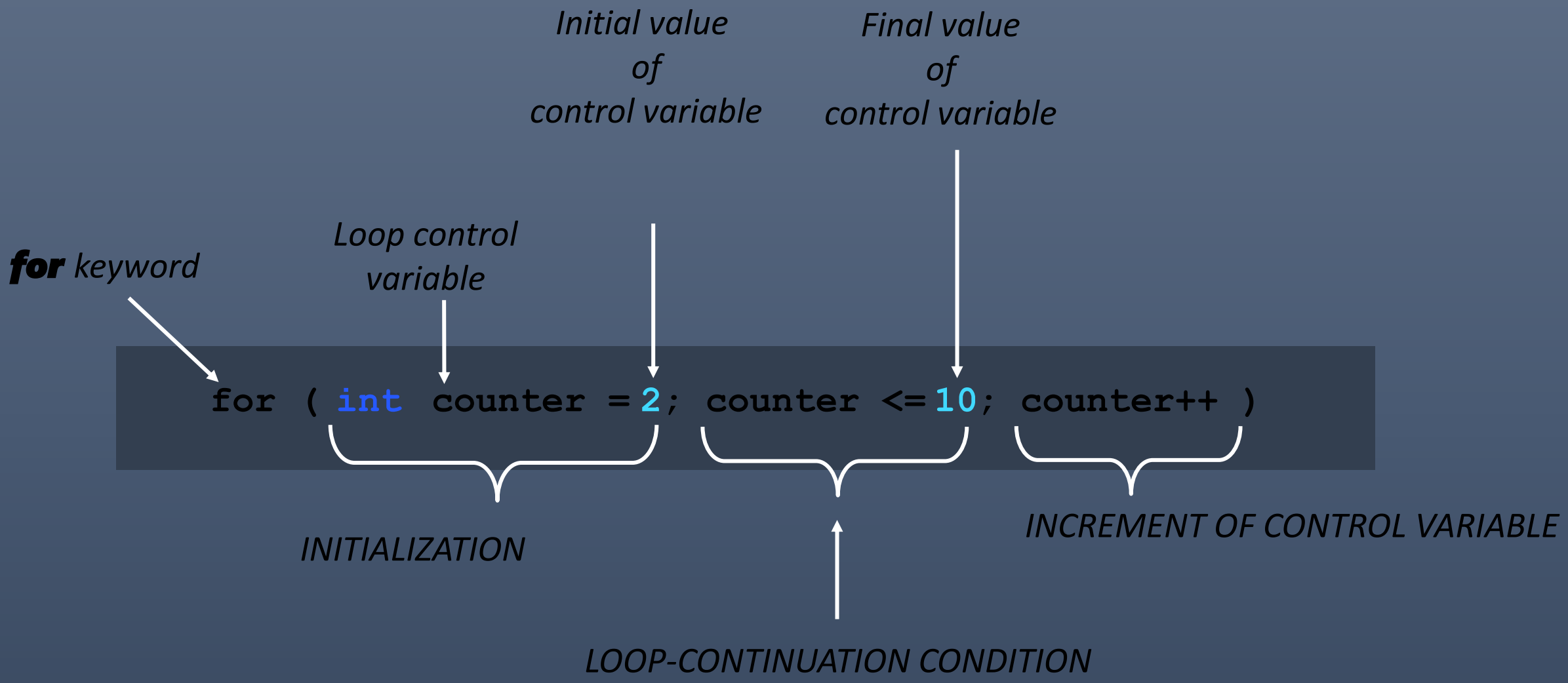
- For loop provides a concise way of writing the loop structure. Unlike a while loop, a for is made of the initialization, condition and increment/decrement in one line thereby providing a shorter, easy to debug structure of looping.



for Loop

```java
// Java program to illustrate for loop.
class forLoopDemo
{
    public static void main(String args[])
    {
        // for loop begins when x=2
        // and runs till x <=4
        for (int count = 2; count <= 10; count++)
            System.out.println("Value of x:" + count);
    }
}
```

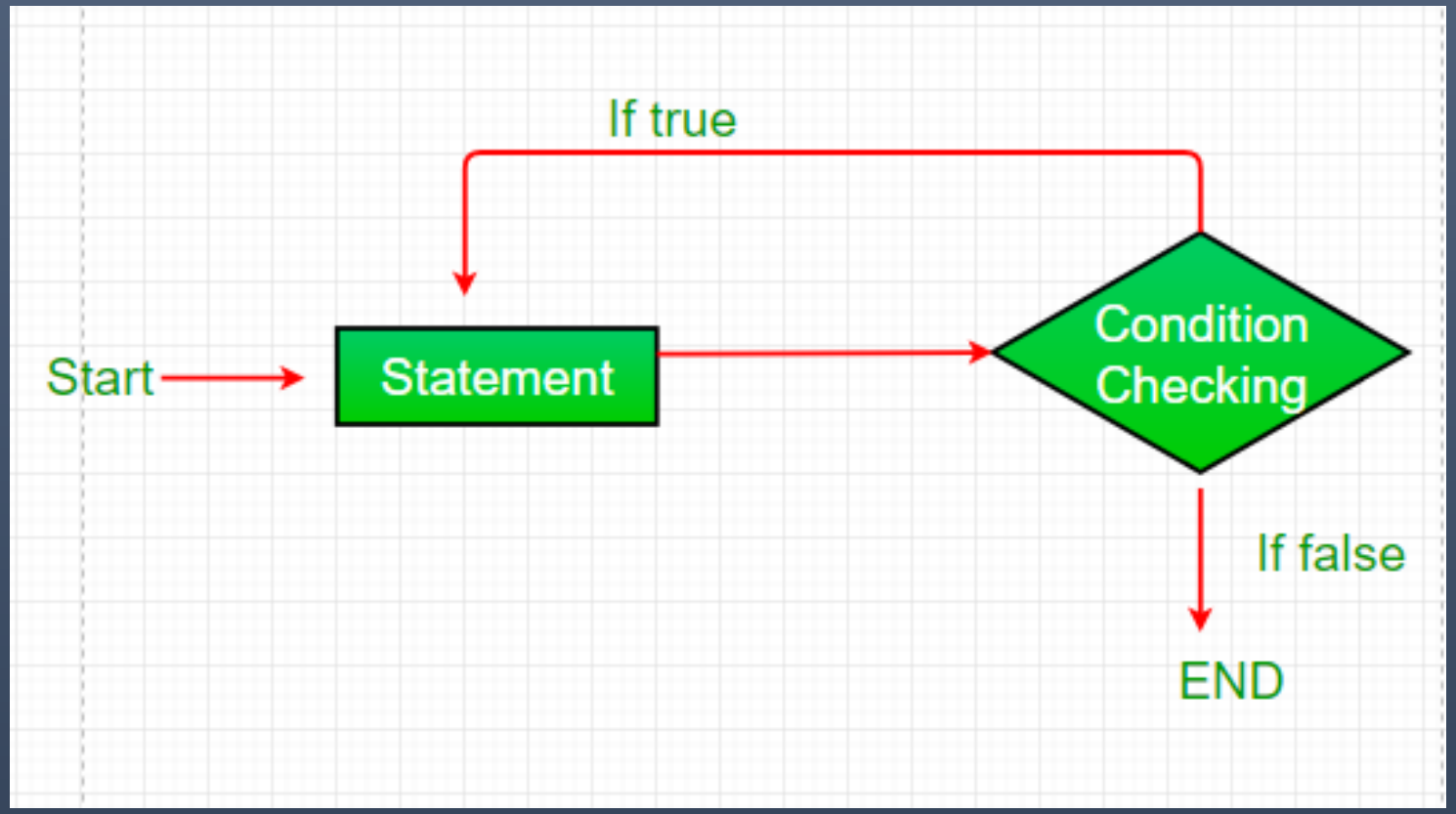
```
Value of count:2
Value of count :3
Value of count :4
```



Typical structure of for loop header.

do while loop

- do while loop is similar to while loop with only difference that it checks for condition after executing the statements, and therefore is an example of **Exit Control Loop**.



do while loop

```java
// Java program to illustrate do-while loop
class dowhileloopDemo
{
    public static void main(String args[])
    {
        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);
    }
}
```

```
Value of x: 21
```

Enhanced for loop / for-each loop

Enhanced for Loop

- Java also includes another version of for loop introduced in Java 5.
- Enhanced for loop provides a simpler way to iterate through the elements of a collection or array.

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

Enhanced for Loop

- Also note that the object/variable is immutable when enhanced for loop is used i.e it ensures that the values in the array can not be modified, so it can be said as read only loop where you can’t update the values
- cannot reverse, means you can start from the last element and go back towards the first element.

Enhanced for Loop

```
// Java program to illustrate enhanced for loop
public class enhancedforloop
{
    public static void main(String args[])
    {
        String array[] = {"Ron", "Harry", "Hermoine"};

        //enhanced for loop
        for (String x:array)
        {
            System.out.println(x);
        }

    }
}
```