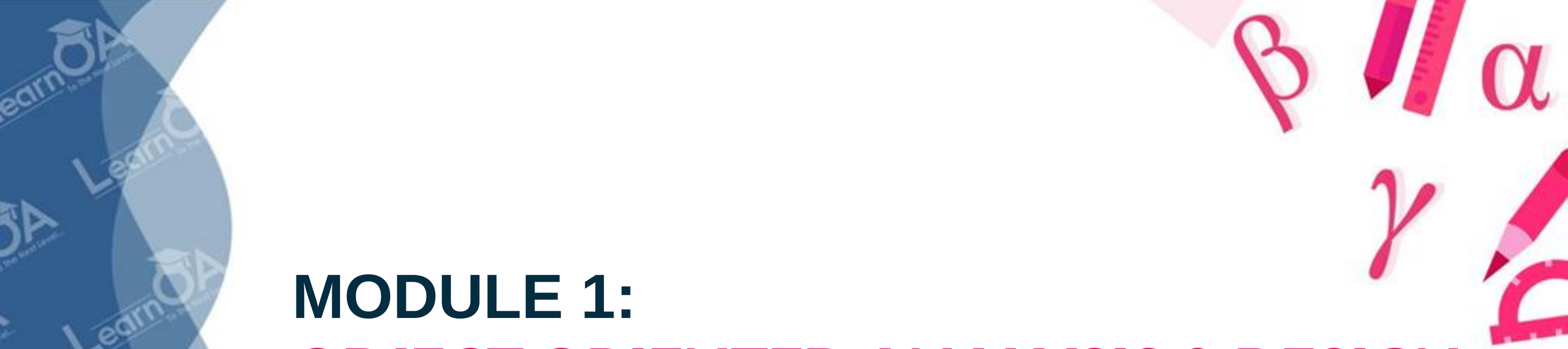


MODULE 1:
OBJECT ORIENTED ANALYSIS & DESIGN
DATA STRUCTURES & ALGORITHMS

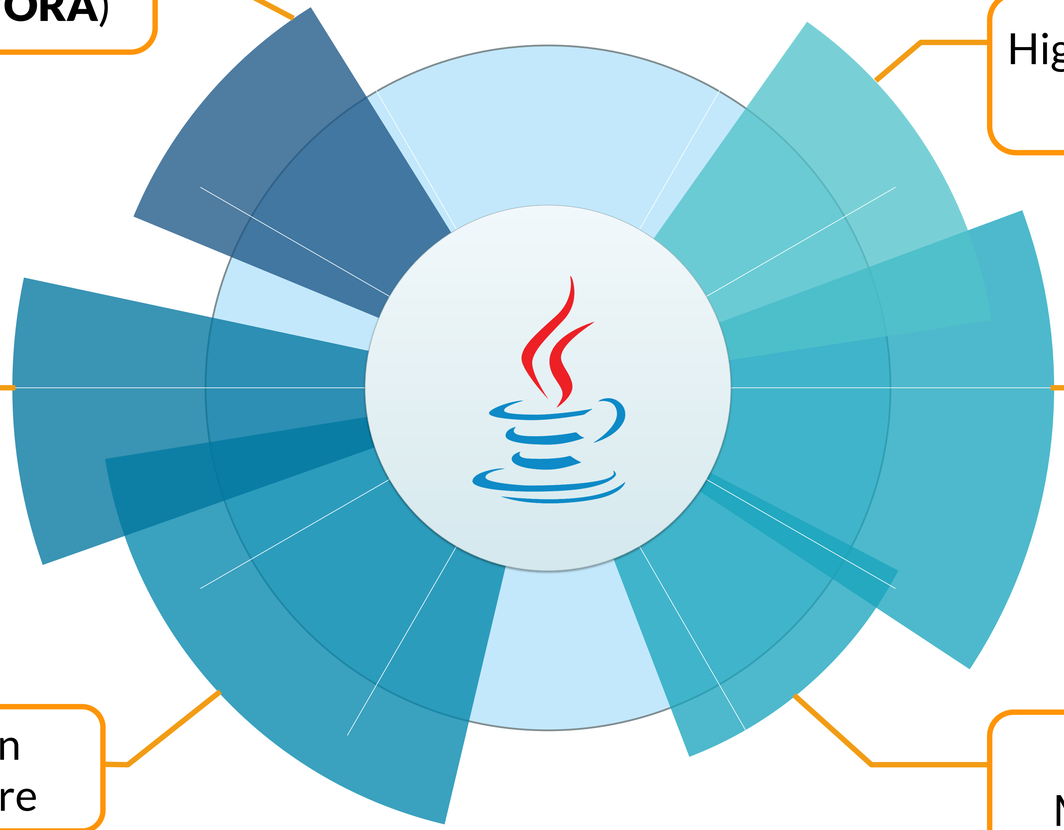
Overview of Programming in Java

LearnOA
To The Next Level...

Introduction to Java

Write Once Run Anywhere (**WORA**)

High Level Programming Language



Originally called OAK

Father of Java is James Gosling

Free and Open Source Software

Released by Sun Microsystems in 1996

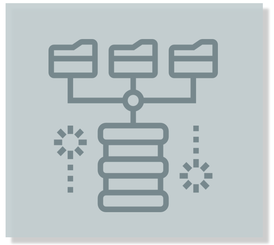
Features of Java

Easy

Robust

Portable

Distributed



Object Oriented

Platform Independent

Secure

Interpreted

Multithreaded

JVM vs JRE vs JDK

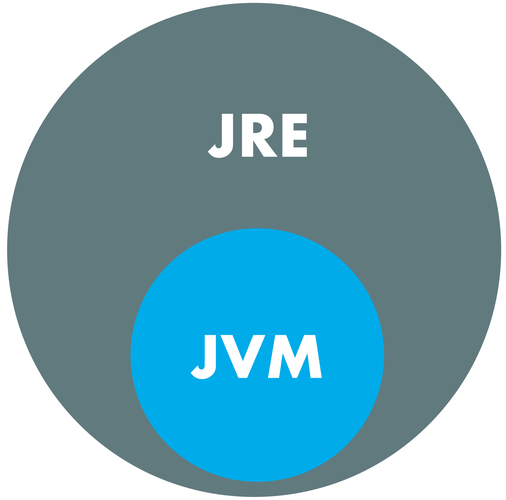
Java Virtual Machine

- ✔ JVM is an abstract machine that doesn't exist physically
- ✔ Provides runtime environment to drive the Java Code or applications
- ✔ It compiles the Java code into bytecode
- ✔ It is platform dependent

JVM vs JRE vs JDK

Java Runtime Environment

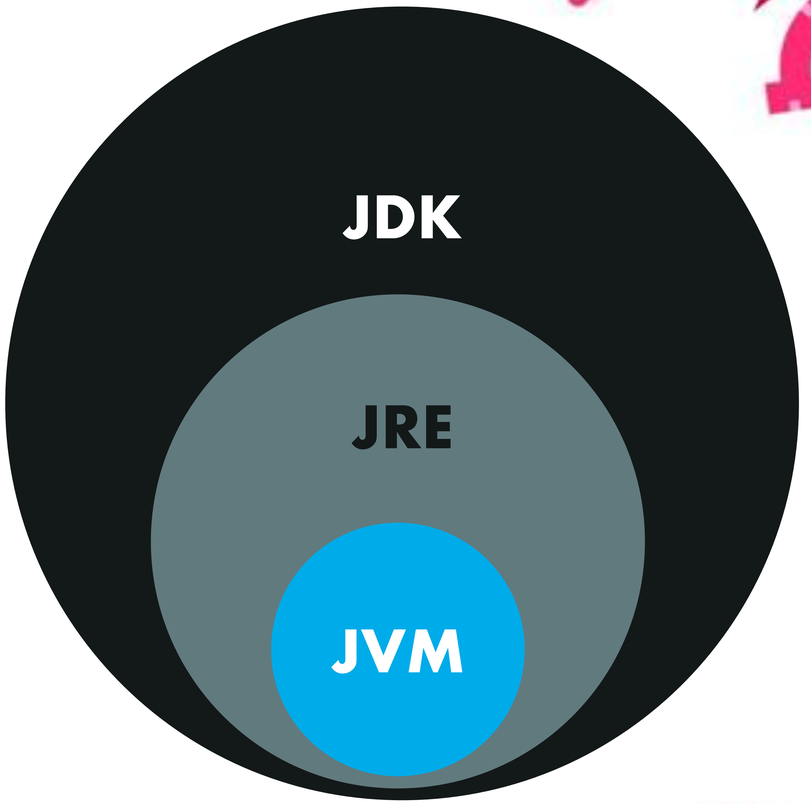
- ✔ JRE is the environment within which the JVM runs
- ✔ It contains a set of libraries + other files that JVM uses at runtime
- ✔ Also called Java RTE



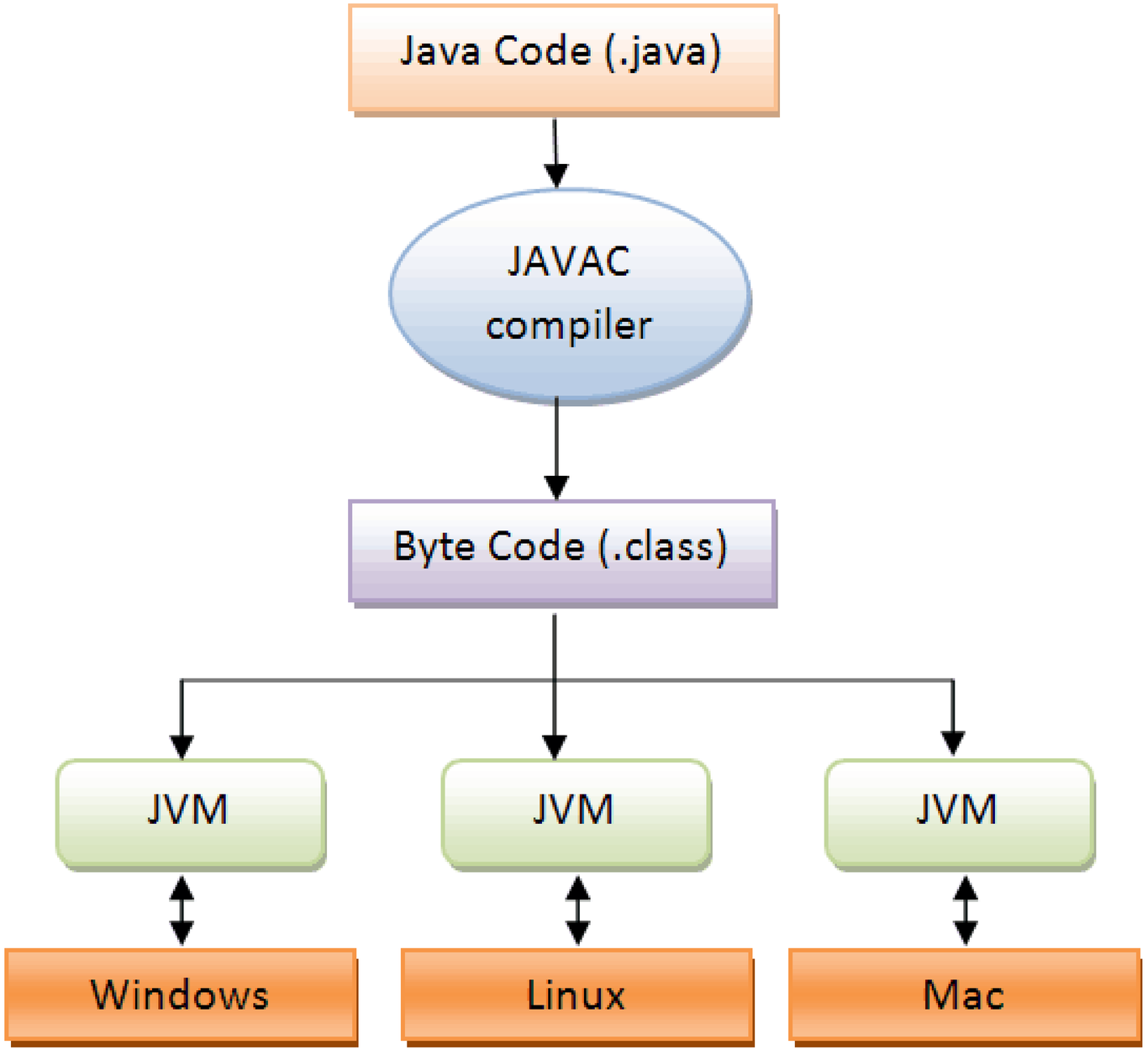
JVM vs JRE vs JDK

Java Development Kit

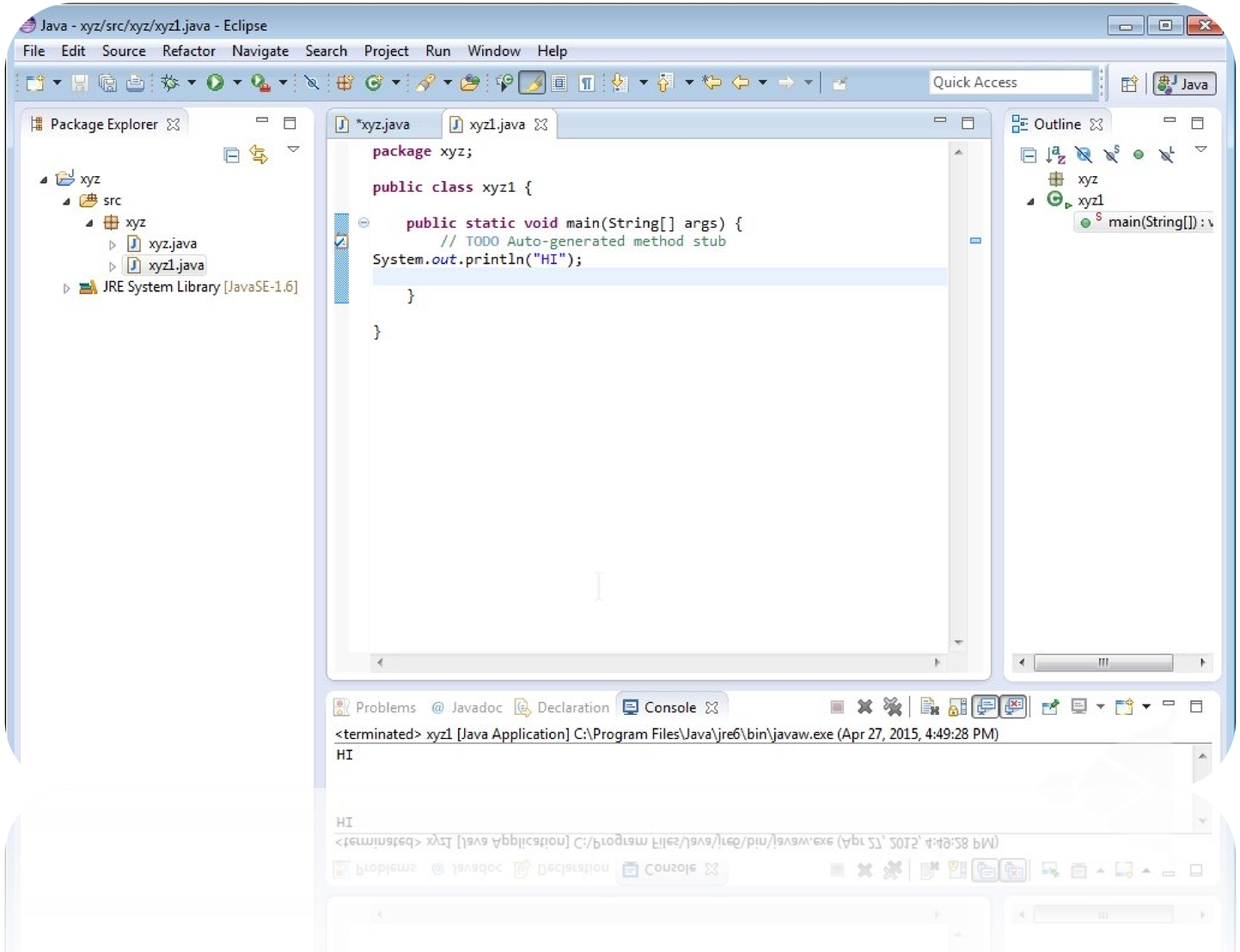
- ✔ JDK is a software development environment which is used to develop Java applications and applets
- ✔ It contains Development Tools and JRE




Java Compilation and
Execution


Java Code (.java)
JAVAC compiler
Byte Code (.class)
JVM
JVM
JVM
Windows
Linux
Mac

Eclipse IDE


Java - xyz/src/xyz/xyz1.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help
Quick Access
Java
Package Explorer
xyz
src
xyz
xyz.java
xyz1.java
JRE System Library [JavaSE-1.6]
*xyz.java
xyz1.java
package xyz;
public class xyz1 {
public static void main(String[] args) {
// TODO Auto-generated method stub
System.out.println("HI");
}
}
Outline
xyz
xyz1
main(String[]) : v
Problems
Javadoc
Declaration
Console
<terminated> xyz1 [Java Application] C:\Program Files\Java\jre6\bin\javaw.exe (Apr 27, 2015, 4:49:28 PM)
HI

My First Java Program

```
class Demo{
    public static void main(String args[])
     System.out.println("Hello World!!!");
    }
}
```

My First Java Program

```
public static void main(String args[])
```

My First Java Program

```
public static void main(String args[])
```

`public`	It is the access modifier of the main method
`static`	It is a keyword which identifies the class related thing
`void`	It is used to define the Return Type of the Method
`main`	It is the name of the method that is searched by JVM as a starting point for an application with a particular signature only
`String args[]`	It is the parameter to the main Method where the argument name could be anything

NOTE: *main() in Java is the most important method as it is the entry point of any java program*

Java Fundamentals

Java Fundamentals - Variables

Variable refers to the name of reserved memory area

1. Local Variables
2. Instance Variables
3. Static Variables

Java Fundamentals - Constants

A constant is the one whose value cannot be modified

1. literals

2. final variables

Java Fundamentals - Comments

Comments can be used to explain Java code, and to make it more readable.

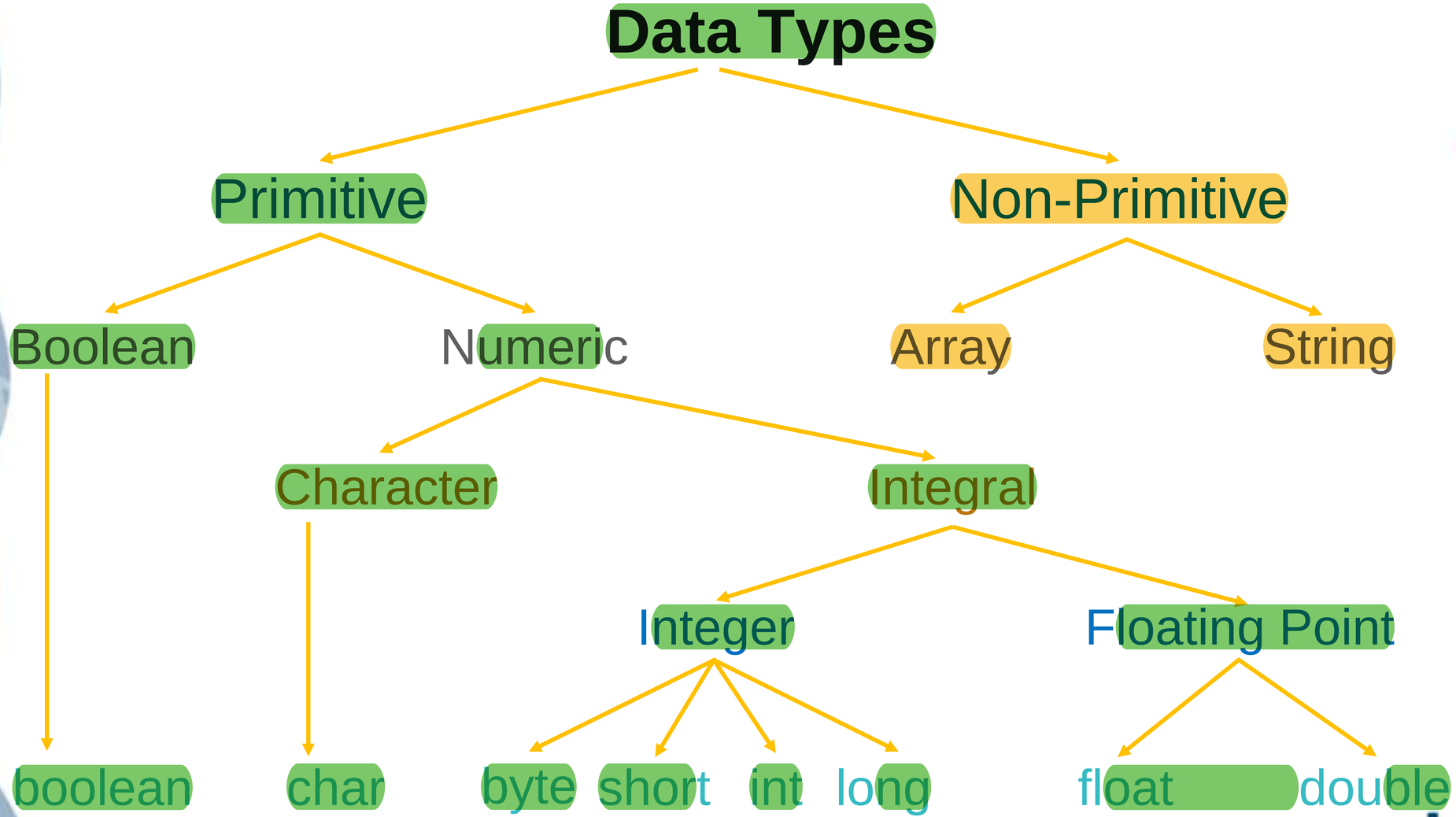
- **Single Line**

  Single-line comments start with two forward slashes (//).

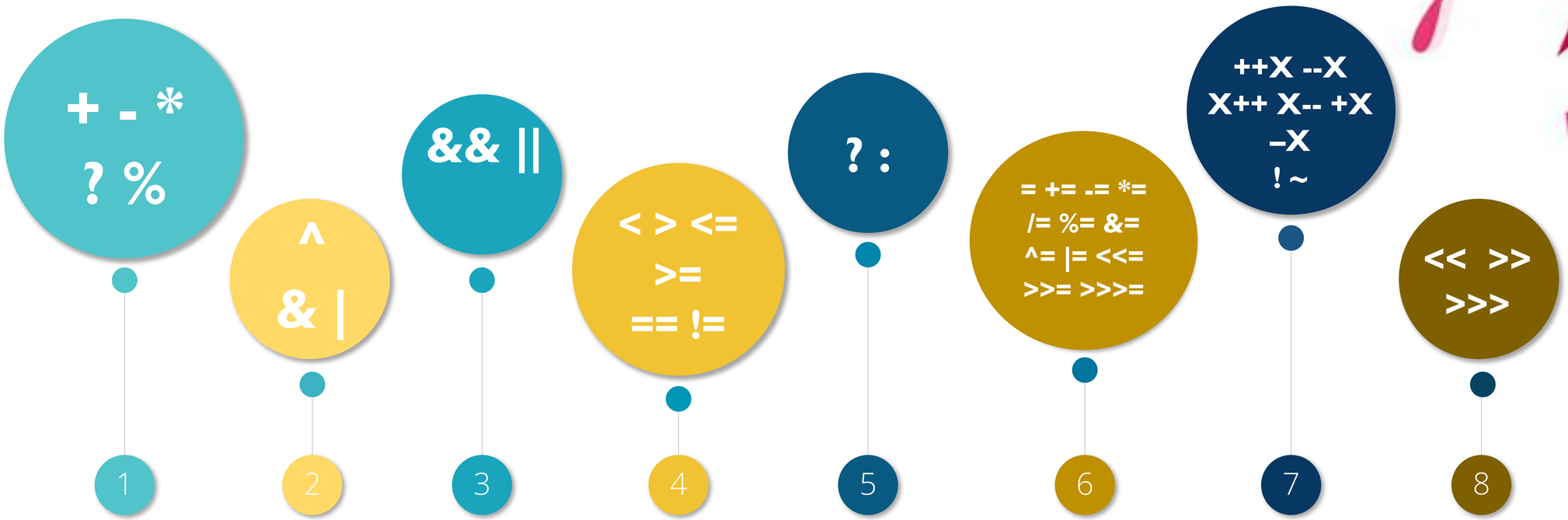
- **Multi Line**

  Multi-line comments start with /* and ends with */.

Java Fundamentals – Data Types



Java Fundamentals - Operators



Conditional Statements

Conditional Statements - If

It is the simplest selection statement in the Java language that checks the condition and executes the loop if condition is true

Conditional Statements - If

If is the most simple decision making statement that decides whether a certain statement or block of statements will be executed or not

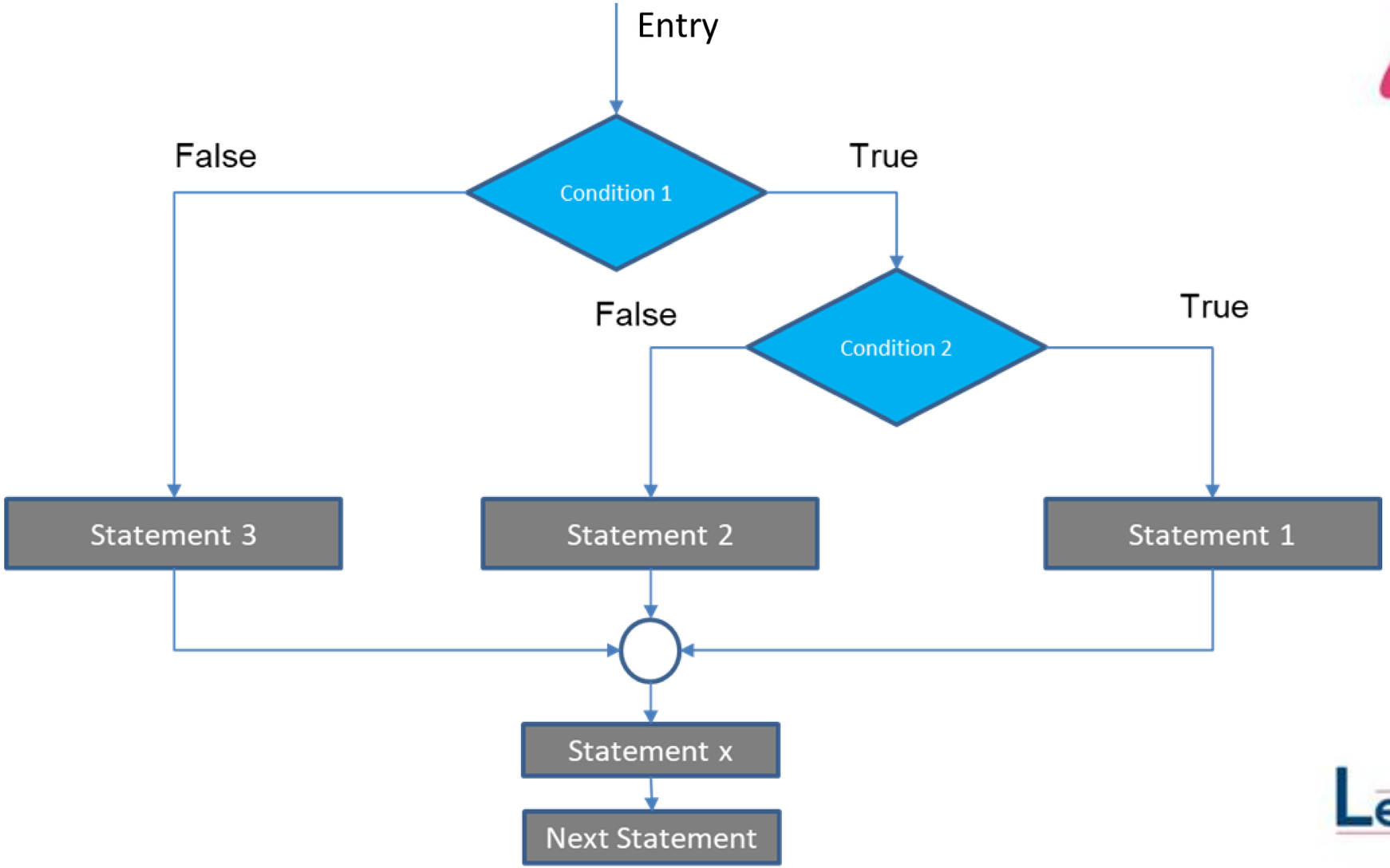
Conditional Statements - If

Syntax

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

Conditional Statements - If

It is an if statement or an if-else statement within an if statement



Conditional Statements - If

Syntax

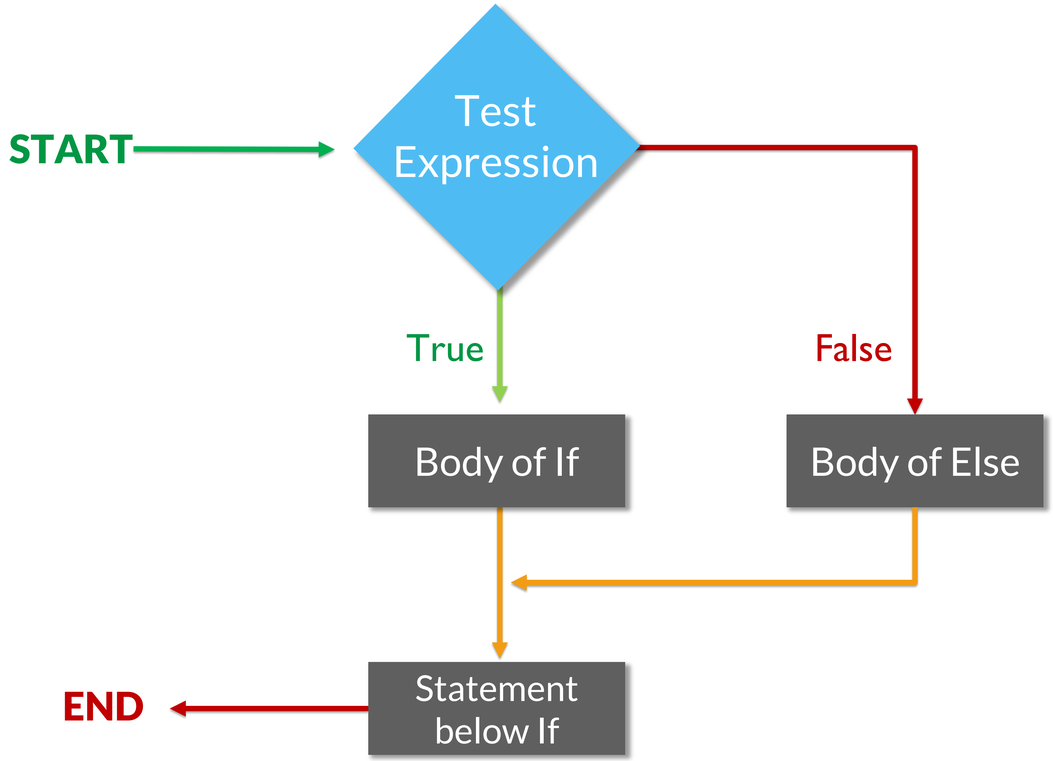
```
if (condition1)
  {
    // Executes when condition1 is true
    if (condition2)
    {
      // Executes when condition2 is true
    }
  }
```

Conditional Statements - If Else

It is an upgraded if statement that tests the condition and if the condition is false then ‘else’ statement is executed

Conditional Statements - If Else

It tests the condition and if the condition is false then ‘else’ statement is executed



Conditional Statements - If Else

If-Else

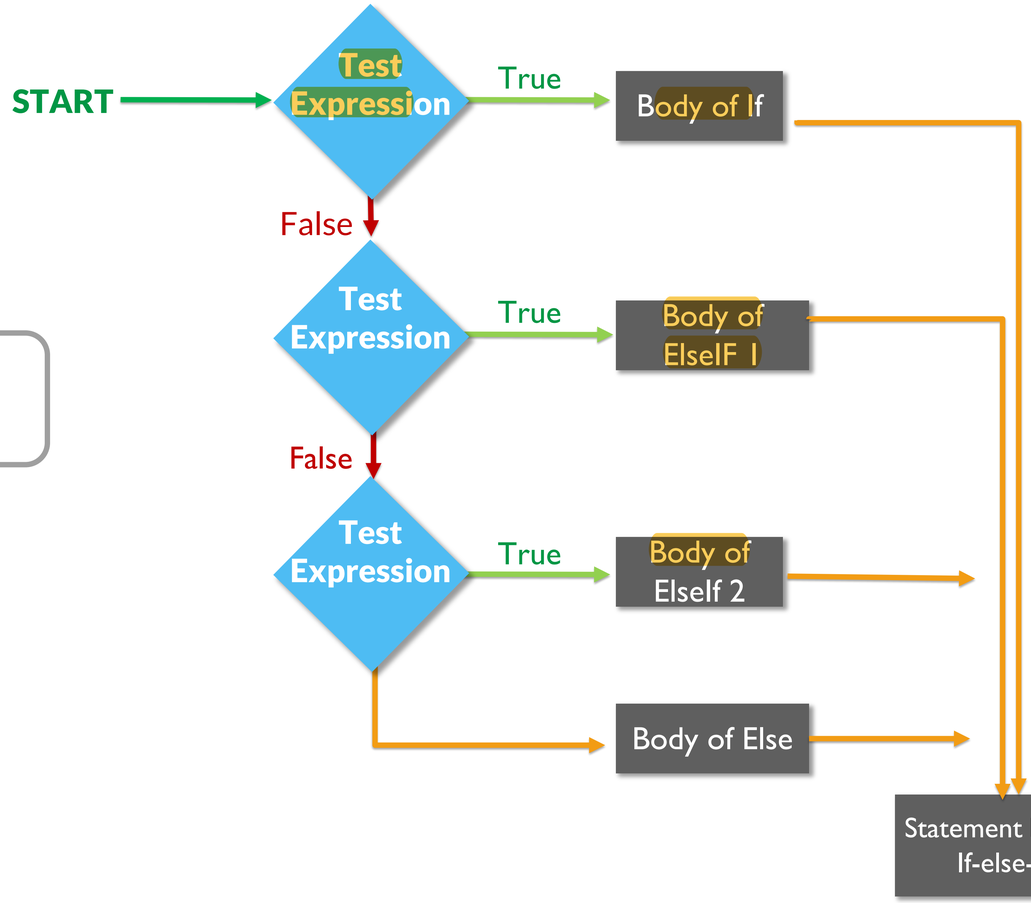
If-Else-If Ladder

Syntax

```
if (condition)
  {
    //Executes this block if condition is
true
  }
    else
    {
      //Executes this block if condition
is false
    }
```

Conditional Statements - If Else

If-else-if ladder allows the user to use many if else statement within a loop and in case one of the condition holds true the rest of the loops is bypassed



Conditional Statements - If Else

If-Else

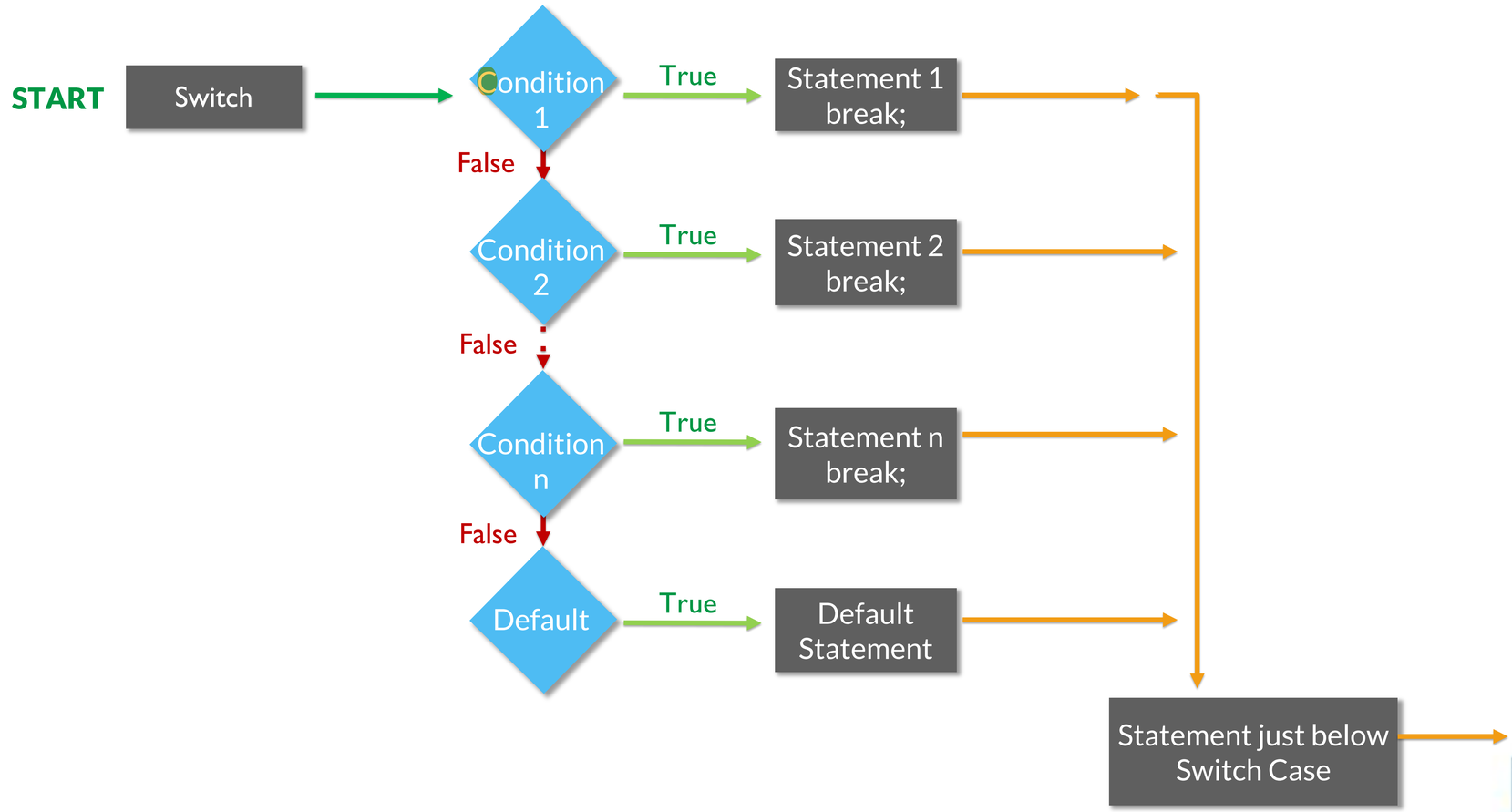
If-Else-If Ladder

Syntax

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

Conditional Statements - Switch

The switch statement provides an easy way to execute conditions to different parts of the code



Conditional Statements - Switch

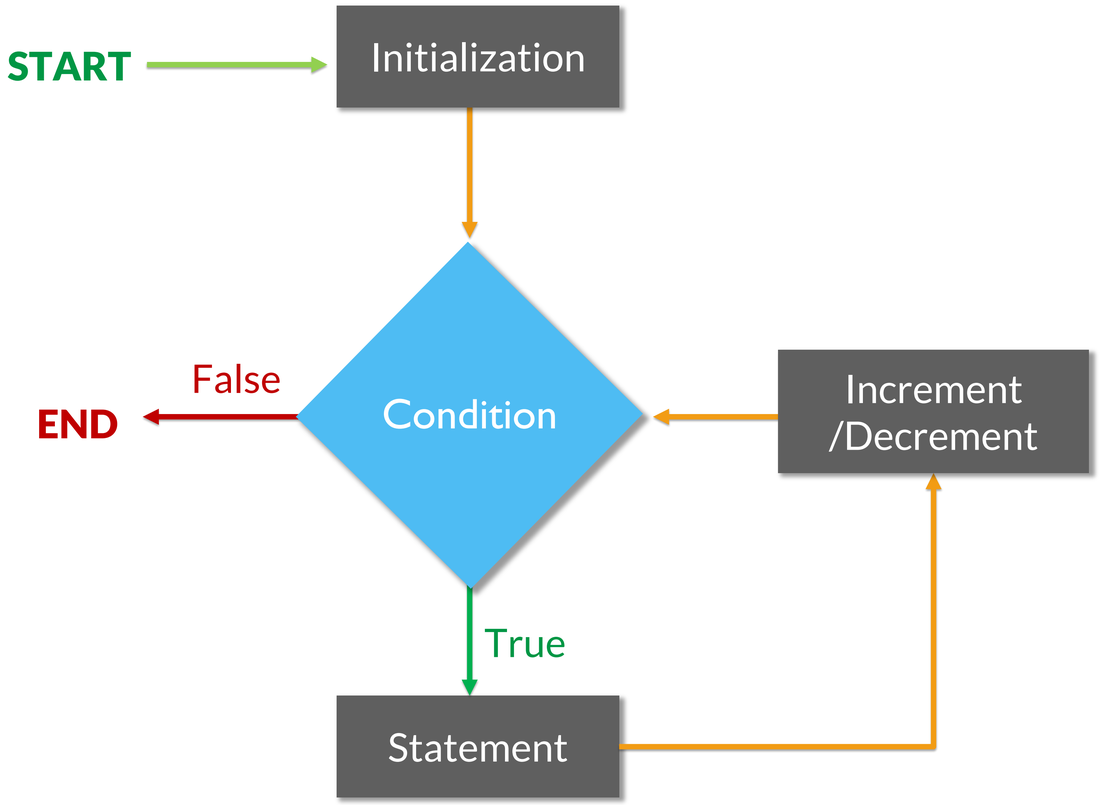
Syntax

```
switch (expression)
{
    case value1:
        statement1;
        break;

    case value2:
        statement2;
        break;
    .
    .
    case valueN:
        statementN;
        break;

    default:
        statementDefault;
}
```

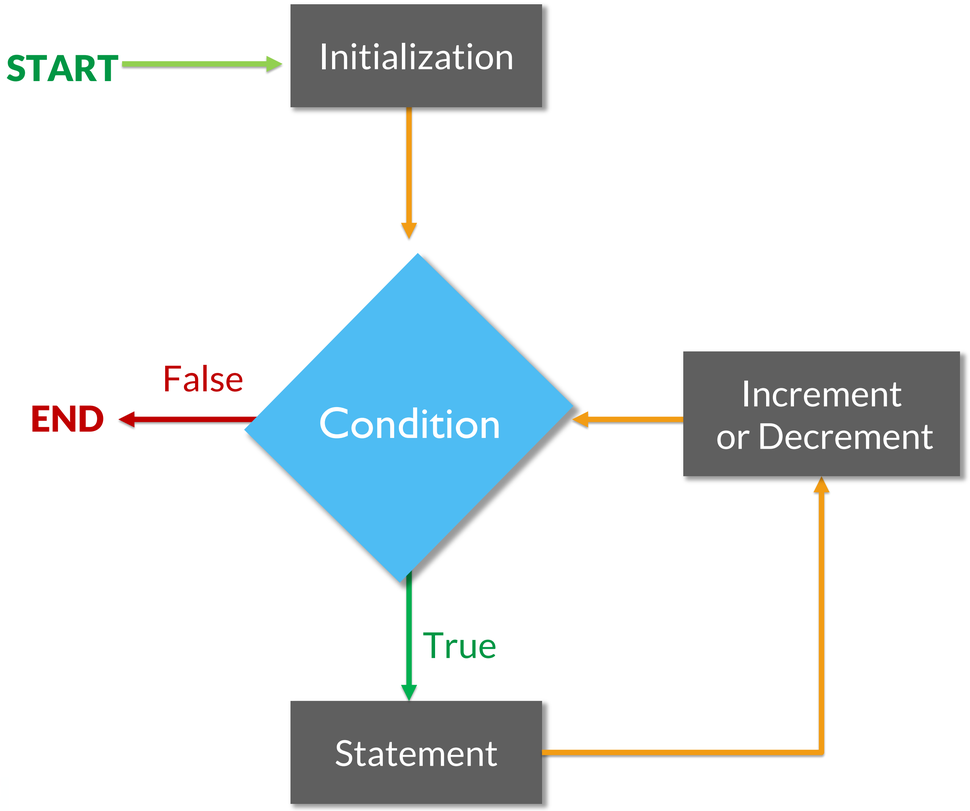
Iterative Statements

Iterative Statements – For Loop

It is a control structure that allows us to repeat certain operations by incrementing and evaluating a loop counter



Iterative Statements – For Loop

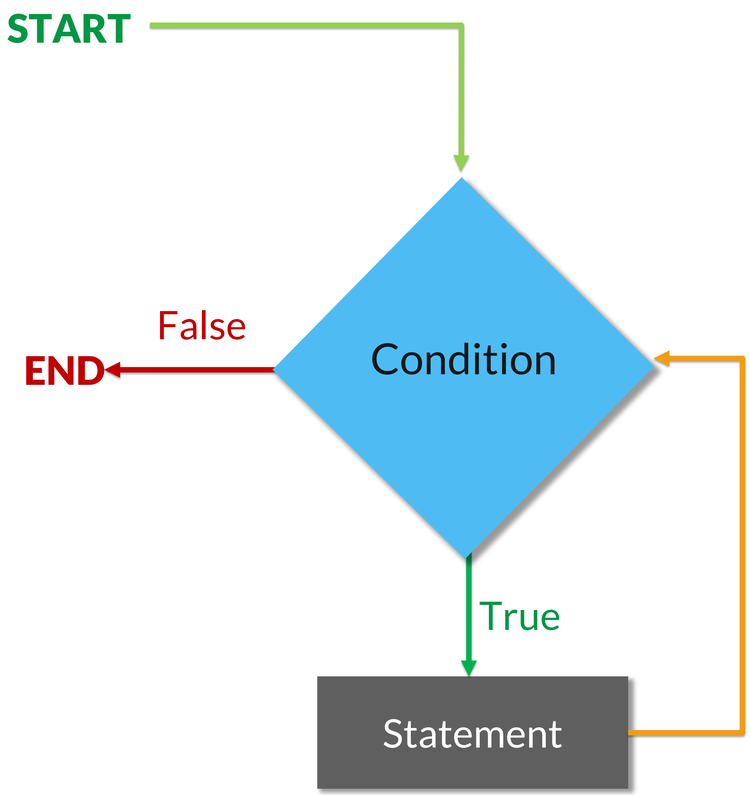


Syntax

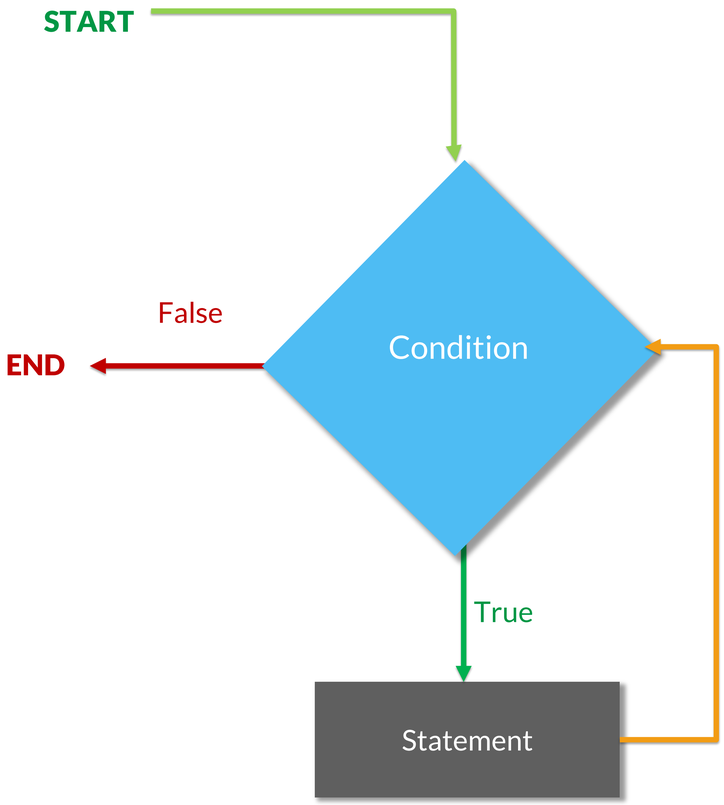
```
for(init; condition; incr/dcr)
   {
      code block;
   }
```

Iterative Statements – While Loop

It is a control structure that allows us to specify that a certain statement is to be executed repetitively until the loop condition is false



Iterative Statements – While Loop

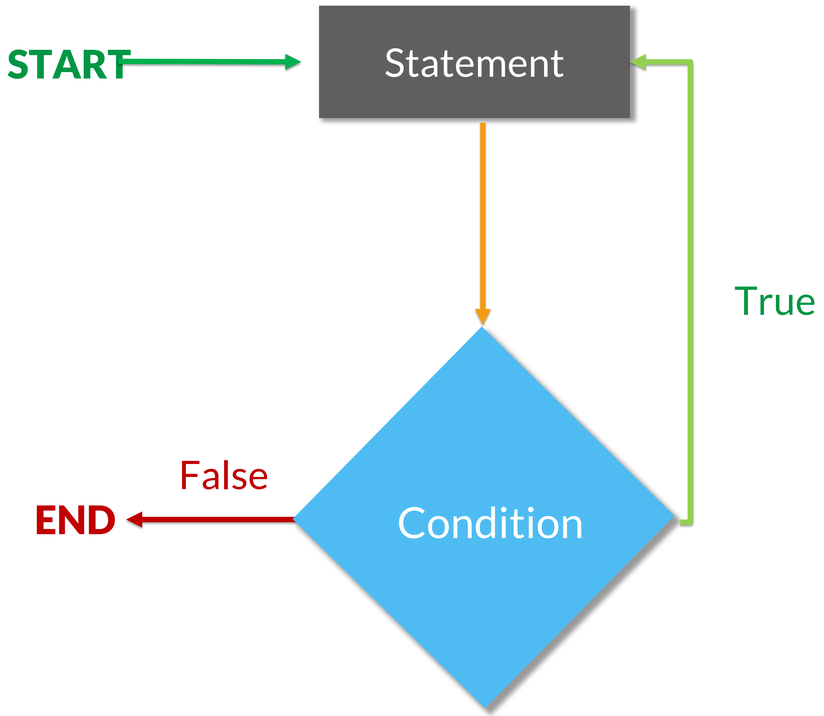


Syntax

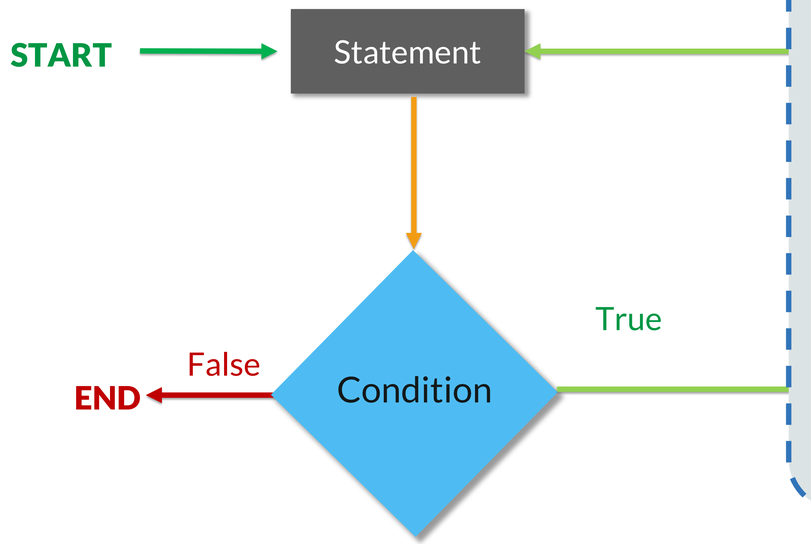
```
while (boolean condition)
{
    loop statements...
}
```

Iterative Statements – Do While Loop

It is a control structure that allows code to be executed repeatedly based on a given Boolean condition and tests the condition before executing the loop body



Iterative Statements – Do While Loop



Syntax

```
do{
//code to be executed
  }
while(condition);
```

Java 8 Features

Java 8 Features

- Lambda Expressions
- Pipelines and Streams
- Date and Time API
- Default Methods
- Type Annotations
- Nashorn JavaScript Engine
- Concurrent Accumulators
- Parallel operations
- PermGen Space Removed
- TLS SNI

Thank You!