



JAVA PROGRAMMING LANGUAGE

What is Java ?

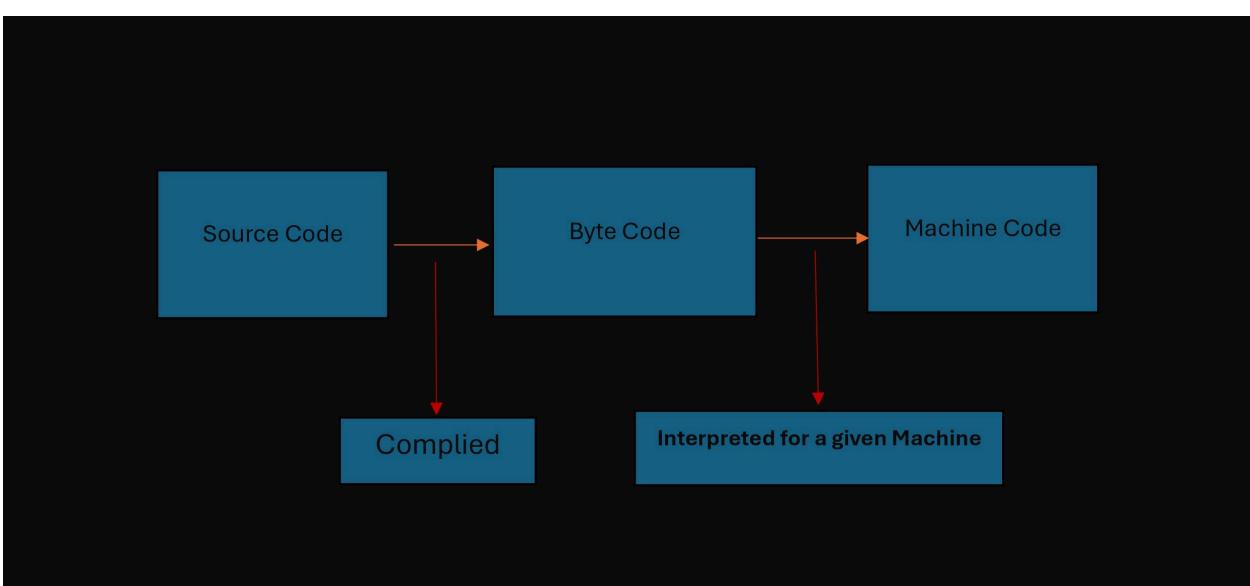
Java is an object oriented programming language ,developed by Sun MicroSystems of USA in 1991.

It was originally called oak by James Goslin . (one of the inventors of java)

JAVA - Purely Object Oriented

How Works JAVA ?

Java is Compiled into the bytecode and then it is interpreted to machine code.



JDK → JAVA DEVELOPMENT KIT

Collection of tools used for developing and running java program.

JRE → JAVA RUNTIME ENVIRONMENT

Helps in Executing program developed in Java.

Basic Structure of a Java Program

```
package mypackage;           // 1. Package declaration (optional)
    public class MyFirstProgram { // 2. Class definition (mandatory)
        public static void main(String[] args) { // 3. Main method (mandatory)
            System.out.println("Hello, World!"); // 4. Statements and print command
            (program logic)
        }
    }
```

Explanation of Each Part

1. Package Declaration (optional)

- Used to organize classes into groups (like folders).
- Example:

```
package mypackage;
```

2. Class Definition (mandatory)

- Every Java program must have at least one class.
- Syntax:

```
public class ClassName {
    // class body
}
```

3. Main Method (mandatory)

- Entry point of the program; execution starts here.
- Syntax:

```
public static void main(String[] args) {
    // statements
```

```
}
```

4. Statements or Print (Program Logic)

- Actual code you want to execute, such as input/output, loops, or conditions.
- Example:

```
System.out.println("Hello, World!");
```

1. Import Statements (optional)

- Used to access built-in or user-defined classes from other packages.
- Example:

```
import java.util.Scanner; // Strating  
  
// Code Here...  
  
sc.close(); // Ending
```

Java Imports – Default vs Required

Classes Imported by Default

These belong to the `java.lang` package.

They are **always available** in every Java program without needing an `import` statement.

- `String`
 - `Object`
 - `System`
 - `Math`
 - Wrapper classes: `Integer`, `Double`, `Float`, `Boolean`, `Character`
 - Exception classes: `Exception`, `Throwable`, `Error`
- ⇒ You can use these **directly** without importing.

Classes That Require Import

For all other packages, you must explicitly use an `import` statement.

Utility Classes (`java.util`)

- `Arrays`

- `Scanner`
- `ArrayList`
- `HashMap` , `HashSet` , `LinkedList`
- `Collections`

Input/Output Classes (`java.io`)

- `File`
- `BufferedReader` , `BufferedWriter`
- `FileReader` , `FileWriter`

Date & Time Classes (`java.time`)

- `LocalDate`
- `LocalTime`
- `LocalDateTime`

Important Points

- The **file name must match the public class name** (case-sensitive).
 - Example: Class name `MyFirstProgram` → File name `MyFirstProgram.java`.
- Every statement in Java ends with a **semicolon (;)**.
- Without the `main()` method, the program won't run (except in special cases like applets or JavaFX).