

⇒ Youtube - ch.

Faisal Memon

## What is Java

- Web backends (Spring Boot, Jakarta EE)
- Android apps (Kotlin/Java)
- Desktop Software
- Cloud and enterprise systems
- Games, IOT, and more

### History

- Java was created in 1991 by James Gosling and his team at Sun Microsystems
- The original project was called "Oak".
- Later renamed to Java (inspired by Java coffee)
- In 2009, Oracle Corporation acquired Sun Microsystems, and now Oracle maintains Java.

### ★ Java SE - Standard Edition

Core Java → Syntax, OOP, Collections, Multithreading  
↳ (You'll start here)

### ★ Java EE (Jakarta EE) - Enterprise Edition

Enterprise/Web-level tools — Servlets, JSP, EJB.

\* Java ME — Micro Edition { Faisal Memon - Youtube  
For embedded or Mobile devices (less common today)

\* → Java - Install Step on Youtube  
{ Channel - Min → 2:46 }

⇒ JDK vs JRE vs JVM

JRE: Java Runtime Environment

JDK: Java Development Kit

JVM: Java Virtual Machine

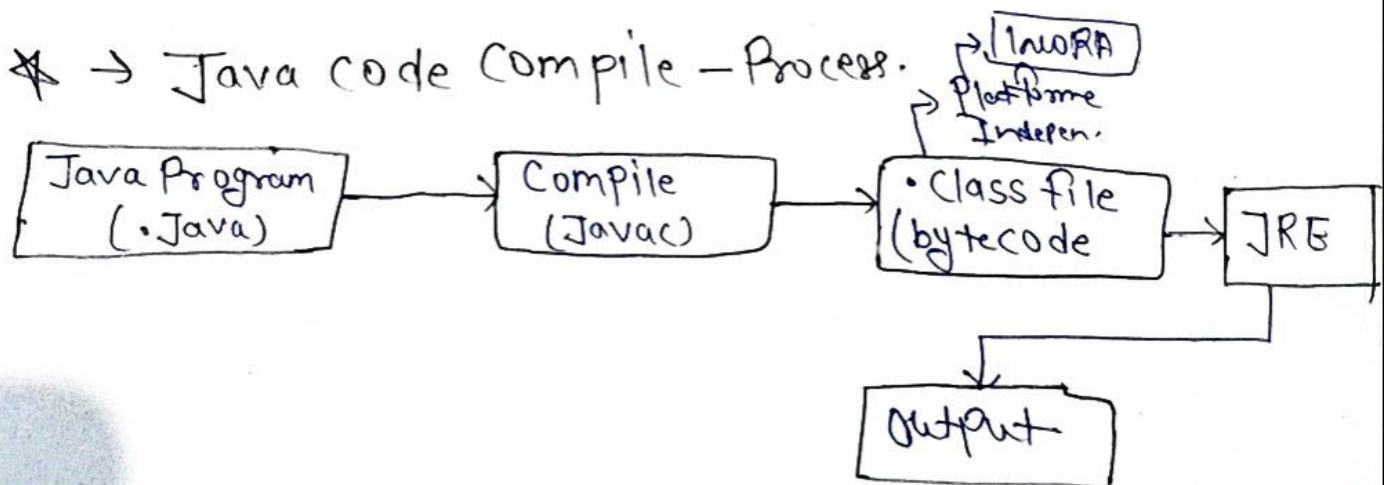
→ Used:

\* :- JVM = RUNS CODE

JRE = JVM + Standard Libraries

JDK = JRE + Development tools (Java, Javadoc)

\* → Java code Compile - Process.



Java File Run Step:- in CMD:

- ① → Save File Name - Using .Java (HelloWorld)  
File-Name
- ② Open CMD - (Where your file save)
- ③ Javac HelloWorld.java
- ④ In Same Folder you see .class file
- ⑤ Java HelloWorld
- ⑥ - Output - Hello, Java!

Note: if any changes in the program,  
you will have to compile it again.

★ What is Boilerplate Code in Java?

Boilerplate code means the standard, repetitive code that you have to write again and again in Java (or any language) just to make your program work - even if it does not do anything unique.

Example of Boilerplate Code in Java:



→

```

Public class HelloWorld {
    Public static void main (String [] args) {
        System.out.println("Hello, World");
    }
}

```

Part	Meaning
① Public class HelloWorld	- Declares a class HelloWorld. Every Java program must have at least one class
② {.....}	- Curly braces define the body of the class or method
③ Public static void main (String [] args)	- This is the main method - the starting point of any Java Program.
④ System.out.println (" ");	- Prints text to the console

# \* Key New Features in Java 25

## ① Compact Source File

You no longer need to write public class for small programs.

Example -

```
Void main() {  
    System.out.println("Hello Java 25");  
}
```

"Makes writing small or script-like programs easier"

## ② Flexible Constructor Bodies :

You can now write logic before calling `super()` or `this()` in constructors.

Example →

```
Class Student {  
    Student(String name) {  
        System.out.println("Validating");  
        this.name = (name == null) ?  
            "Unknown" : name;  
    }  
}
```

"Easier to add validation, logging, or Pre-checks inside Constructors."

### ③ Module Import Declarations:

You can now import modules directly inside your Java file.

Example

```
import module mytools;  
void main() {  
    System.out.println("Module Imported!");  
}
```

"Makes Modular programming simpler and more flexible"

### ④ Pattern Matching for Primitives

Pattern matching now works with primitive types like, int, double, etc

Example

```
Object obj = 25;  
if (obj instanceof int i)  
    System.out.println("value: " + i);
```

"Cleaner and more readable code when working with primitives."



### ⑤ Compact Object Headers:

JVM now uses smaller object headers - less memory usage. Internal improvement no code - Better memory efficiency and faster performance.

### ⑥ Generational Shenandoah

The Shenandoah Garbage Collector now supports generational mode.

Handles short-lived and long-lived objects separately faster GC and smoother performance.

### ⑦ → Removed 32 bit x86 Port:

Java 25 no longer supports 32 bit system - only 64 bit platforms are supported.

Cleaner, more optimized JVM for modern system.



## Variables in Java

A Variable in Java is a name that stores a value in memory

it acts like a container that holds data which can be used and changed in a program.

Syntax of a Variable:

dataType VariableName = Value;

int • age = 25;

↓                      ↓                      ↓  
dataType           Variable name           Value.

Constant Variable (final)

if you do not want the value to change use final.

Final double PI = 3.14;

"Now, PI cannot be changed:



★

## Java Keywords:

Keywords are reserved words in Java that have a special meaning to the compiler.

Example    int, class, if, for, return — all are Java keywords

## Total keywords in Java:

Java has 67 keywords (as of Java 25).

These words are predefined and cannot be changed.

★ What is a Comment:

A comment in Java is non-executable text used to explain code.

“ The compiler ignores comments  
They are only for readability  
and documentation.

Type	Syntax	Use
Single	//---	For short notes
Multi-line	/*---*/	For long
Documentation	/**---*/	For API or project docs