

# Assignment-1

## History of JAVA :-

Java - programming lang. the environment that turns static web Pages into interactive, dynamic, animated documents.

Java → creator James Gosling in the year 1991.

OAK was conceived in the mid-1991

- James Gosling and their team initiated the Java language Project in 1991. The team of sun engineers called Green Team
- Initially, it was designed for small like set top boxes
- It was called Greentalk and file extension was .gt
- After that it was called OAK as a part of Green project
- In 1995, OAK was renamed as 'Java'.
- JDK 1.0 was released on Jan 23, 1996

## Features of Java

Java Buzz words are Java Marketing words.

- |                         |                          |
|-------------------------|--------------------------|
| 1. simple               | 6. Robust                |
| 2. object oriented      | 7. Multi-threaded        |
| 3. portable             | 8. Dynamic               |
| 4. platform independent | 9. high performance.     |
| 5. secured              | 10. distributed          |
| JDK features            | 11. Architecture Neutral |

Java  
Buzzwo  
rds

1. Pattern matching for switch → Java 21  
Record Patterns

String Templates  
unnamed classes and instance main methods  
virtual threads

Java 21

sealed types → fixed set of direct subtypes. → Java 17

- Pattern matching for instance }  
Records } Java 16

Text Blocks → Java 15

Switch expressions → Java 14

var keyword → Java 10.

## JDK version

To build and run Java applications, a Java compiler, Java runtime libraries, and a virtual machine are required to implement Java.

Jdk 8 version → lambdas

Jdk 9 → modules

Jdk 10 → var

## Jdk and JRE file structure

Jdk → root directory.

Bin → executables for all development tools in Jdk

Lib → files used by dev tools. includes tools.jar

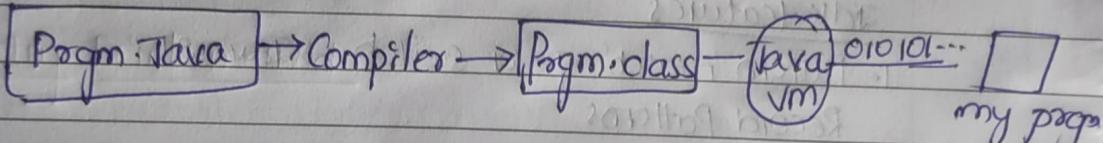
Jre → Runtime environment used by jdk tools

Bin → files for tools and libraries used by Java Platform

Lib → code libraries.

Security → contains files used for security mgmt

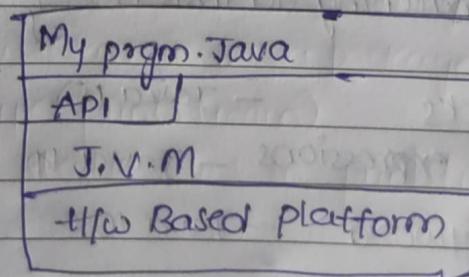
Applet → Jar files that contain support classes.



Platform: It is the hw or sw environment in which a program runs.

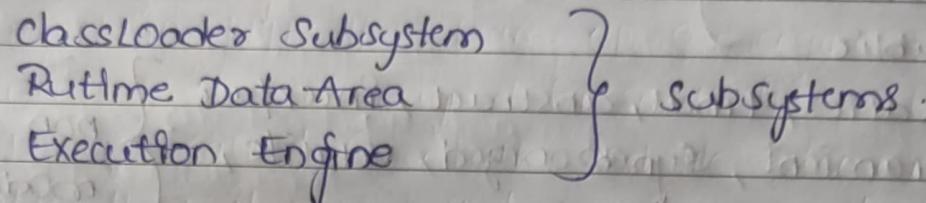
→ Java Virtual Machine

→ Java Application prog. Interface (API)



## JVM Architectures:

A Virtual Machine is SW implementation of physical machine  
The concept is WORA (Write Once Run Anywhere)



### classLoader Subsystem

dynamic class loading functionality.

#### 1.1 Loading

- Bootstrap classLoader - static
- Extension classLoader - Jre/lib
- Application classLoader

#### 1.2 Linking

- Verify
- Prepare
- Resolve

#### 1.3 Initialization

### 2. Execution engine

Interpreter

JIT compiler

Garbage Collector.

### 2. Runtime Data Area

- Method Area

- Heap Area

- Stack Area

- local variable Array

- Operand Stack

- Frame data

- PC registers

- Native method stacks