

Assignment-1

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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 year 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 up 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 |
| | 11. Architecture Neutral |

} Java Buzzwords → rds

Jdk features

- 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

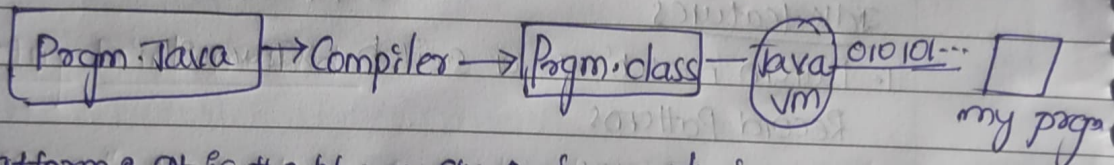
Jre → Runtime environment used by jdk tools

bin → files for tools and libraries used by Java Platform

lib → code libraries.

Security → contains files used for security mgt

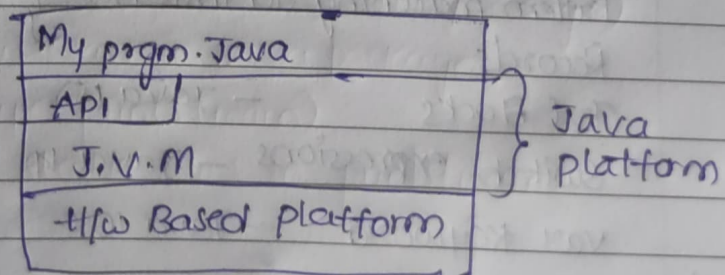
applet → jar files that contain support classes.



Platform: It is the h/w or s/w environment in which a prgm runs.

→ Java Virtual Machine

→ Java Application prog. Interface (API)



JVM Architecture:

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

ClassLoader Subsystem
Runtime Data Area
Execution Engine } Subsystems.

ClassLoader Subsystem

dynamic class loading functionality.

1.1 Loading

- Bootstrap classloader - rt.jar
- Extension classloader - jre/lib
- Application classloader

1.2 Linking

- Verify
- Prepare
- Resolve

3. Execution engine

Interpreter
JIT compiler
Garbage Collector.

1.3 Initialization

2. Runtime Data Area

- Method Area

- Heap Area

- Stack Area

- local variable Array

- operand Stack

- Frame data

- PC registers

- Native method stacks