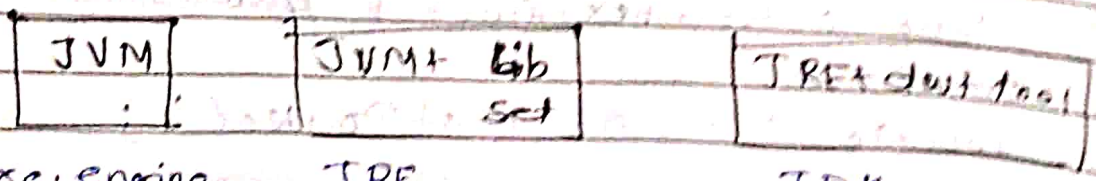
Assignment 2

Q. 1 Difference bet' JDK, JRE, & JVM ?



exe. engine JRE JDK.

- JVM = Java virtual machine.
  - It has not physical existance.
- It provides runtime env in which java bytecode executed.

JRE - Java runtime env.
- It is set of software tools which used for java app. dev provide runtime env.
- JRE has physical existance
- It implement JVM.

JDK - Java development kit.
- software dev env which used to develop 'java appl'.
- JRE comes with JDK

Q. 2 JIT compiler -
JIT is integral part of JVM. It accelerates execution performance at runtime.
- JIT compilation has two approaches
(1) AOT (Ahead of time) - compiler code into native machine lang.

- It transform bytecode of VM into machine code.

working -

JVM read .class file (bytecode) for interpretation after that it passes to JIT compiler for further process.

- After getting bytecode JIT compiler transform it into native code.

- we know interpretation of java bytecode reduces performance i.e. why JIT compiler implement.

3. class loader -

- Java class loader is abstract class
- It belongs to java.lang package.
- It loads classes from diff source.
- Java class loader is used to load the classes at runtime.
- classes are loaded into JVM according to need.

* class loader principles:

i) Delegation - It forword req for class loading to parent class loader.
- It only loads class if parent doesnot find or load class.

ii) Visibility - child class loader see all classes loaded by parent class but not vice versa.

iii) Uniqueness - It allows to load a class once

4. History of Java.

Java is high level robust object oriented & secure pro. lang.
- Java developed by sun-microsystem (now oracle) in year 1995
- James Gosling is father of Java.
- Before Java its name was Oak, since Oak was already registered company, so James gosling & his team change name from Oak to Java.

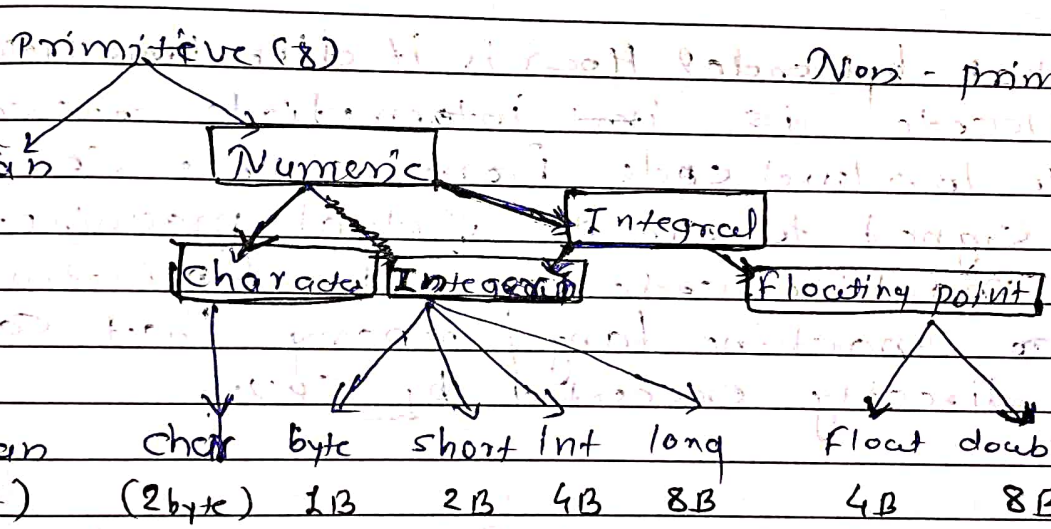
5. what gives Java its WORA write once & run anywhere in g nature.?
- Java is platform independent lang. hence it is write once & run anywhere lang.
- Java code executed on multiple platform e.g- windows, linux, macos etc. Java code is compiled by compiler & converted into bytecode. This bytecode is platform independent code because it can run on multiple platforms, i.e. WORA

6. what was original name of Java & why it was renamed?
- → Initial & called Oak after an Oak tree that stood outside Gosling's office. "Oak" is symbol of a strength choosen as national tree of many country like USA, France, Germany, Romania etc.
- In 1995 Oak was renamed because it was already trademark by Oak Tech.

8. List features of Java?

i) simple
ii) object oriented
iii) Portable
iv) platform independant
v) secured
vi) robust
vii) Architecture neutral
viii) Interpreted
ix) High performance.
x) Multithreaded.
xi) Distributed
xii) Dynamic

9. Datatypes in Java:



10)

i) System.out.print() → print on same line. Std O/p on same line/one line.

ii) System.out.println() → print std. O/p.

iii) System.out.print

iv) System.err.println() → It will print std. errors.

(11) How is java platform independent!
Java compiler javac compiler java code & generates .class file
- The .class file is bytecode that does not understand by O.S.
- JVM converts bytecode to machine code so computer can understand.
- JVM is available in every machine where JRE is installed. Any bytecode interpreted by JVM irrespective of O.S. hence Java is platform independent.

12. What bytecode? How is it diff from machine code
- Bytecode is intermediate code compiled into low level code from source code & designed to run on virtual machine.
& machine code is set of instruction in machine lang / binary that can be directly executed by CPU.

13 diff bet" Jar file & Runnable Jar file.
→ with the std. JAR file, you have to specify the class with the main method on the command line when running the Jar.
- with the runnable JAR, there is a manifest file that will hold that information so you can just type
" java -jar myRunnable.jar ", ~~or simply~~

14. Difference bet runnable jar file & exe file.

→ A Exe file is an executable file that can be executed in OS environment.

- Jar file is contains of class of java class file, including other resources related to the project. jar file can be executed only if java runtime environment

15. How is C platform dependant lang?

→ It is platform dependant because the C compiler generates a machine code which can be understand by respective platform. (i.e. .obj file generated is diff for diff platform)

16. what is difference bet path & class path?

- Path is set for java tools in java programs like java & javac, which used to compile your code.
- whereas Classpath is used by system or application etc class loader to locate & load compiles java bytecode stored in class file.