Assignment -2

Q.1 What is difference bet^n JDK, JRE & JVM ?

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JDK	JRE	JVM
1) JDK stands for 'Java Developement Kit'	1) JRE stands for 'Java Runtime Environment'	1) JVM stands for 'Java virtual Machine'
2) It is often called as 'supperset of JRE'.	2) It is a set of software tools responsible for execution of Java program or application	2) JVM loads, verifies and execute java bytecode
3) It is the foundational component that enables 'Java Appl^n' & Java applet development	3) It uses heap space for dynamic memory allocation for java objects	3) It is known as 'Interpreter'. 4) It is also platform-dependent

4) JDK contains all the tools required to compile, debug & run a program developed using the java platform.	4) JRE is completed of a verify of other supporting software tools & features to get the most out of java application.	4) JIT is specially responsible for converting byte code to machine specific code & it neccessary in both JDK & JRE

Q.2 What is JIT compiler?

⇒ 1) JIT is an 'integral part of JVM' (Java - In - Time)

2) It is a long-running, computer intensive program that provides the best environment performance.

3) It is optimizes the performance of the java application at compile or run. time.

Advantage - 1) It requires less memory usage's.

2) The code optimization is done at run-time.

3) It uses different level of optimization.

4) It reduces the page faults.

Disadvantages:

1) It increases the complexity of program.
2) The program with less line of code does not take the benefit of the JIT compliler
3) It uses lots of cache memory

Q-3 What is class loader?

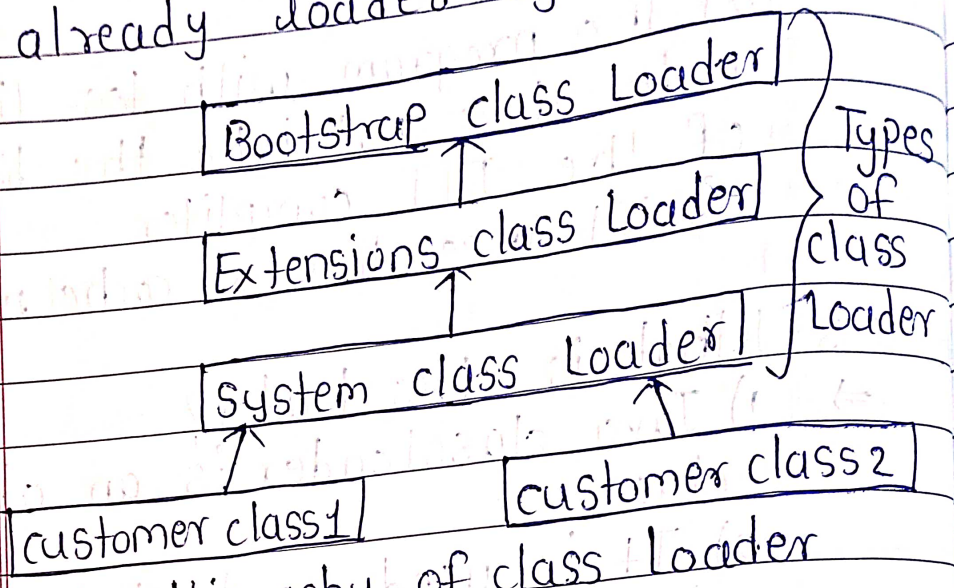
⇒ 1) Java classLoader is an abstract class
2) It is used to load the classes at run-time
3) It belongs to a java.lang package.
4) Java classLoader is based on 3 princple:

a) Delegation : It forwards the request for class loading to present class loader.

b) Visibility - It allows child class loader to see all the classes loaded by parent classloader, but the parent classloader cannot see classes loaded by child class loader.

c) Uniqueness : It allows to load a class once it is achieved by

delegation principle. It ensures that child classLoader doesn't reload the class, which is already loaded by the parent.



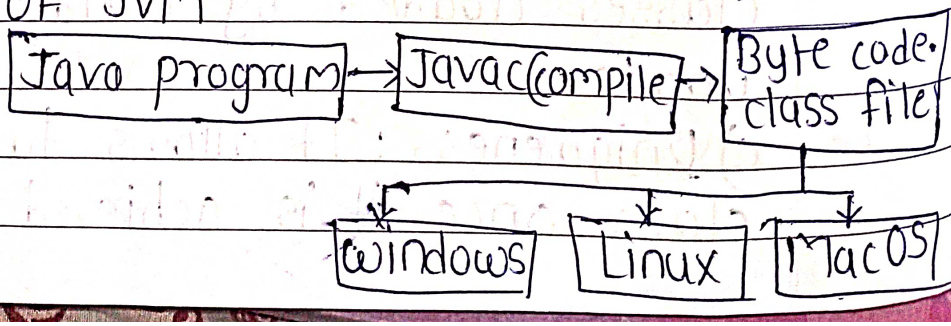
Hierachy of class Loader

Q.4 What given java its "Write Once & Run Anywhere nature?

⇒ 1) Java applications are called WORA i.e (Write Once and run Anywhere)

2) This means programmer can develop java code on one system and can expect it to run on any other Java-enabled system without any adjusment

3) this is all possible because of 'JVM'



4) In java, the program is not converted to code directly understood by Hardware rather it is converted to 'bytecode (.class file), which is interpreted by JVM. So once compiled it generated byte code file, which can be run anywhere (any machine) which has JVM & hence it gets the nature of 'Write once & Run Anywhere.

Q.5 Explain History of java & who invented java?

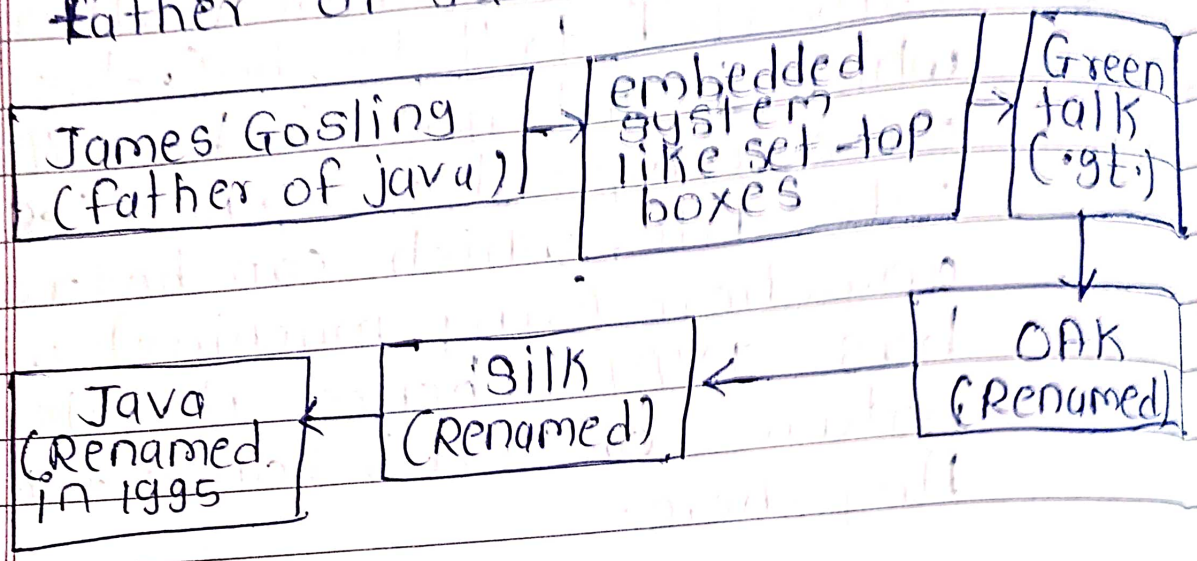
⇒ 1) History of java starts ~~from~~ with 'Green team'.

2) The principles for creating Java programming were "Simple, Robust, Portable, platform-independent, Secured, High-performance" etc.

3) Java is used in internet programming, mobile devies, game e-bussiness solutions etc.

4) James Gosling, Mike sheridan, Patrick Naughton, Chris Warth, Ed Frank, initiated java language project in June 1991. These small team of sun engineers called "Green Team".

5) Java was developed by "James Gosling" who is known as father of Java, in 1995.



Q.6 What was the original name of java? why it was renamed?

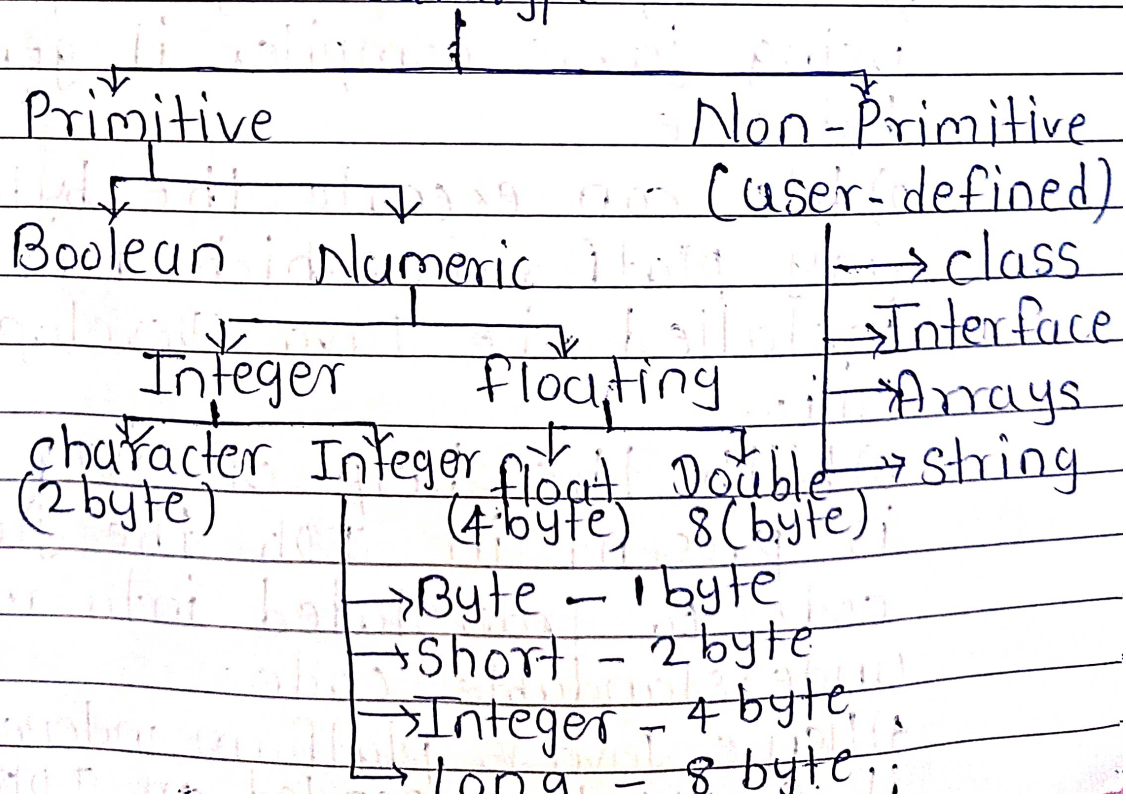
⇒ 1) The original name of java was 'OAK' which was developed by a small team of engineers working for 'Sun Microsystems'.
2) They called themselves the 'Green Team'.
3) The 'OAK' name was ~~already registered as par~~ renamed due to the fact that OAK was already registered as part of another trademark.

Q.7 List features of Java?

⇒ The following are the features of Java:

1) Simple
2) Object-oriented
3) Portable
4) Platform-Independent
5) Secured
6) Robust
7) Architecture neutral
8) Interpreted
9) High performance
10) Multithread
11) Distributed
12) Dynamic

Q.8 List various Datatypes in java



Q.9) What is difference bet^n System.out.print(); & system.err.print, System.out.println();

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System.out.print()	System.out.println()	System.err.print()
The control or cursor remains on the same line after printing	The control/cursor moves to the next line after printing	System.err.print() is used to display error messages The o/p is displayed in 'red' Colour.

Q.10) How is java platform independent?

⇒ 1) When you compile java programs using javac compiler it generates bytecode

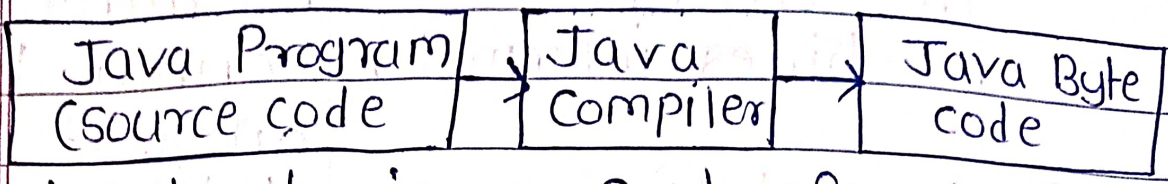
2) We can execute the bytecode in any platform which has JDK installed. i.e Java Development Kit.

3) With the help of JVM which is present in JDK the java byte code to translated into machine understandable code.

4) Hence, Java is platform independent but it is purely depended on JDK

Q.11) What is bytecode? How is it different from machine code?

⇒ Bytecode:



1) Bytecode is a sort of command that is suited for software translation operation.
2) Commonly known as 'p-code' due to portability that is provides.
3) It is a intermediate code compiled into a low-level code from the source code for efficient execution by a software interpreter

Bytecode	Machine Code
1) It is an intermediate code designed to run on a virtual machine instead of a central processing unit (CPU)	1) It is a computer program made up of the native instructions associated with that particular computer.
2) The fun of byte code is to be	2) Machine code is the language which all programs must be converted into before they can be run.

a format that can be executed efficiently by the virtual machines interpreter	3) It is not platform independent meaning it cannot be run on just any platform with the same operating system.
3) It is platform independent because it can be executed on any platform using the virtual machine.	

Q.12) Explain various memory logical partitions?

⇒ 1) A logical Partition(LPAR) is the division of a computer's memory, and storage into multiple sets of resources so that each set of resoures can be operated independently with its own operating system instance & applications.
2) The number of logical partitions are used for different purposes such as database operative or client /server operation or the separate test & production environment. 3) Each partitions can communicate with the other partitions as it other partition is in a separate machine

Q. 13) What is difference betⁿ jar file & Runnable jar file?

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Jar file	Runnable jar file
1) Jar file is a java applⁿ which requires a command line to run; a runnable JAR file can be directly executed by double clicking	1) Runnable jar file allows a use to run java classes without having to know class names and type them in command prompt, rather the user can just double click on the jar file & the program will file up.
2) A JAR (Java Archive) is a package file format typically used to aggregate many java class files associated metadata & resources into one file to distribute applⁿ software or libraries on the java platform.	2) A runnable jar allows java classes to be loaded just like when a user clicks on exe. file.

Q.14) What is difference betⁿ Runnable jar file & exe. file?

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Runnable jar file	exe. file
1) Jar file are like deadbody.	1) exe. file are like living men
2) Jar file is the combination of complied java classes	2) Executable jar file is also combinatⁿ of complied java classes with main class.

Q.15) How is c platform dependent language?

⇒ 1) C is a portable programming language because it is not tied to any h/w of system.

2) we can say, it is a h/w independent language or platform independent language.

3) That is why c is called 'Portable language'.

4) C programs does not depend on actually but the executable file that is generated at the end for running the c-program many depend on a platform.

5) When you use os you get other extension for executable files.

Q.16 What is difference betn path & class path?

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Path	class path
1) Path variables is used to set the path for all java software tools like javac.exe, java.exe, java doc.exe, and so on.	1) class path variable is used to set the path for java classes
2) Variable name: PATH variable value: c:\program files\ Java\jdk\17.0.21\ bin;	2) variable name: classpath variable value: c:\program files\ java\jre1.6.0\ jre\lib\rt.jar