

Assignment No. :- 02

Q.1 what is difference between JDK, JRE & JVM ?

| JDK | JRE | JVM |
|--|--|---|
| <p><1> JDK stands for Java Development Kit</p> | <p><1> JRE stands for Java Runtime Environment</p> | <p><1> JVM stands for Java Virtual Machine</p> |
| <p><2> It is also called as 'superset of JRE'</p> | <p><2> It is a set of software tools responsible for execution of Java Program.</p> | <p><2> JVM reads, verifies and executes byte-code of Java source code.</p> |
| <p><3> JDK contains all the tools required for compile, debug & run a Program developed using the Java Platform.</p> | <p><3> JRE is composed of a variety of other supporting software tools & features to get the most of Java Application.</p> | <p><3> It is specially responsible for converting bytecode to machine level code and it is available in both JDK & JRE.</p> |

Q.2 what is JIT Compiler

- <1> JIT stands for Just in Time Compiler.
- <2> JIT compiler is a long running, computer intensive program that provides best performance during compilation of program.
- <3> It ~~is~~ optimizes the performance of Java code at compile or runtime.
- <4> JIT is an integral part of Java Virtual Machine.

<5> Advantages of JIT Compiler are as follows :-

- ① It requires less Memory usages.
- ② It reduces the Page faults
- ③ The Code is optimized during run-time
- ④ It uses different level of Optimization hence effective.

<6> Disadvantages of JIT Compile are as follows :-

- ① It increases the Complexity of Program
- ② It uses lot of cache memory
- ③ The Program with less line of code does not take benefits of JIT Compiler.

Q.3 What is class loader :-

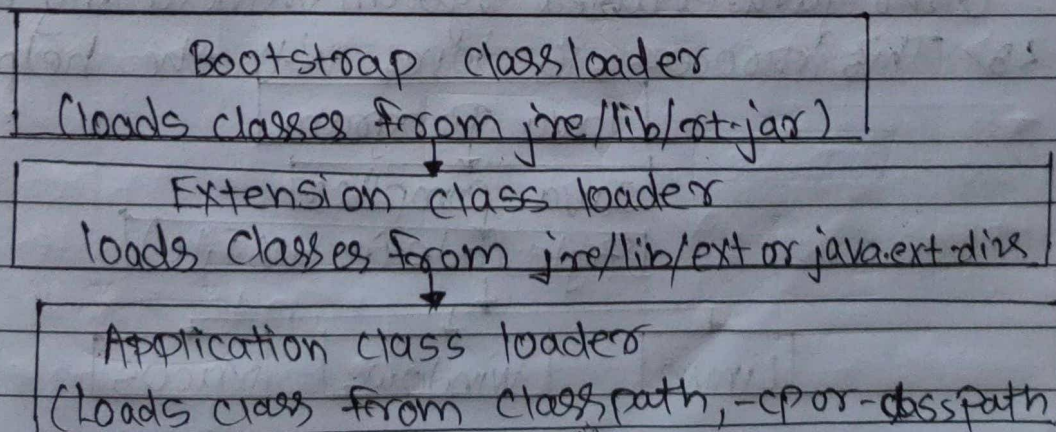
→ <1> The class loader is a Part of the Java Runtime Environment that dynamically loads Java classes into Java Virtual Machine.

<2> There are basically three types of class loader.

- ① Bootstrap class loader
- ② Extension Class loader
- ③ System class loader

<3> There are basically three principles on which class loader works as follows :-

- ① Delegation Model
- ② Visibility Principle
- ③ Uniqueness Property

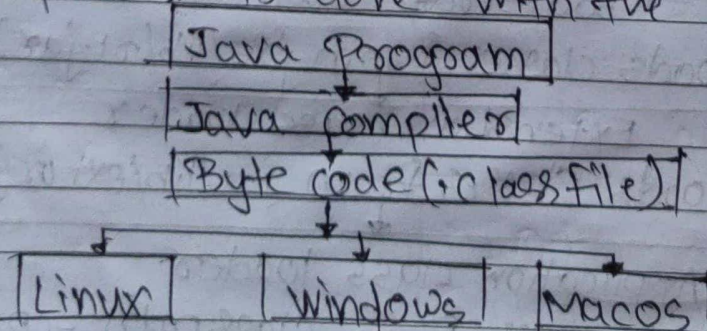


Q.4 Explain Various Memory logical Partitions.

- <1> A logical Partition is the division of computer's Memory and Storage into multiple sets of Resource as that each Set of resources can be operated independently with its own operating system instance & applications.
- <2> The number of logical Partitions are used for different purpose such as database, operative or client/server operation or the Separate test environment.
- <3> Each Partition can communicate with the other Partitions as if other partition is in separate machine.
- <4> The logical Partitions are generally used various Purpose and are based on Requirements.

Q.5 what gives Java its "write once and run anywhere nature".

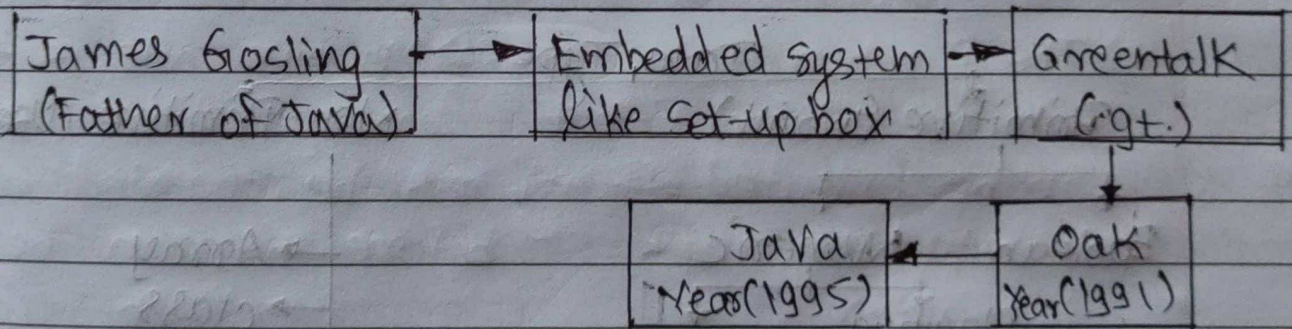
- <1> Java Applications are called as write once and Run Anywhere (WORA). This is the one of the main feature of Java Applications.
- <2> This means Programmer can develop a java code on one system and can expect it to run on any other java-enabled system without any adjustment.
- <3> This process is done with the help of JVM.



<4> In Java, the Program is not converted into code directly understood by Hardware rather it is converted to 'bytecode' (.class file) which is interpreted by JVM so once compiled it generates bytecode file which can be run anywhere (any Machine) which has JVM & hence it gets the nature of 'write once and RunAnywhere'

Q.6 Explain History of Java & who invented Java?

- <1> Java was developed by James Gosling who is known as 'father of Java'.
- <2> Java is invented in 1991 by Sun Microsystems, USA.
- <3> The principle of Java Programming was simple, Robust, Portable, secured and Platform independent.
- <4> Initially, Java is known as Green Team. This Green Team includes James Gosling, Mike Sheridan and Patrick Naughton.



Q.7 what was original name of java & why it was renamed?

- <1> The original name of java was 'Oak' which was developed by small team of Engineers working for Sun Microsystems.
- <2> They are called as 'Green Team'.

<3> The Oak name was renamed due to fact that oak was already registered as part of another trademark.

<4> Hence, further the name is changed from oak to Java.

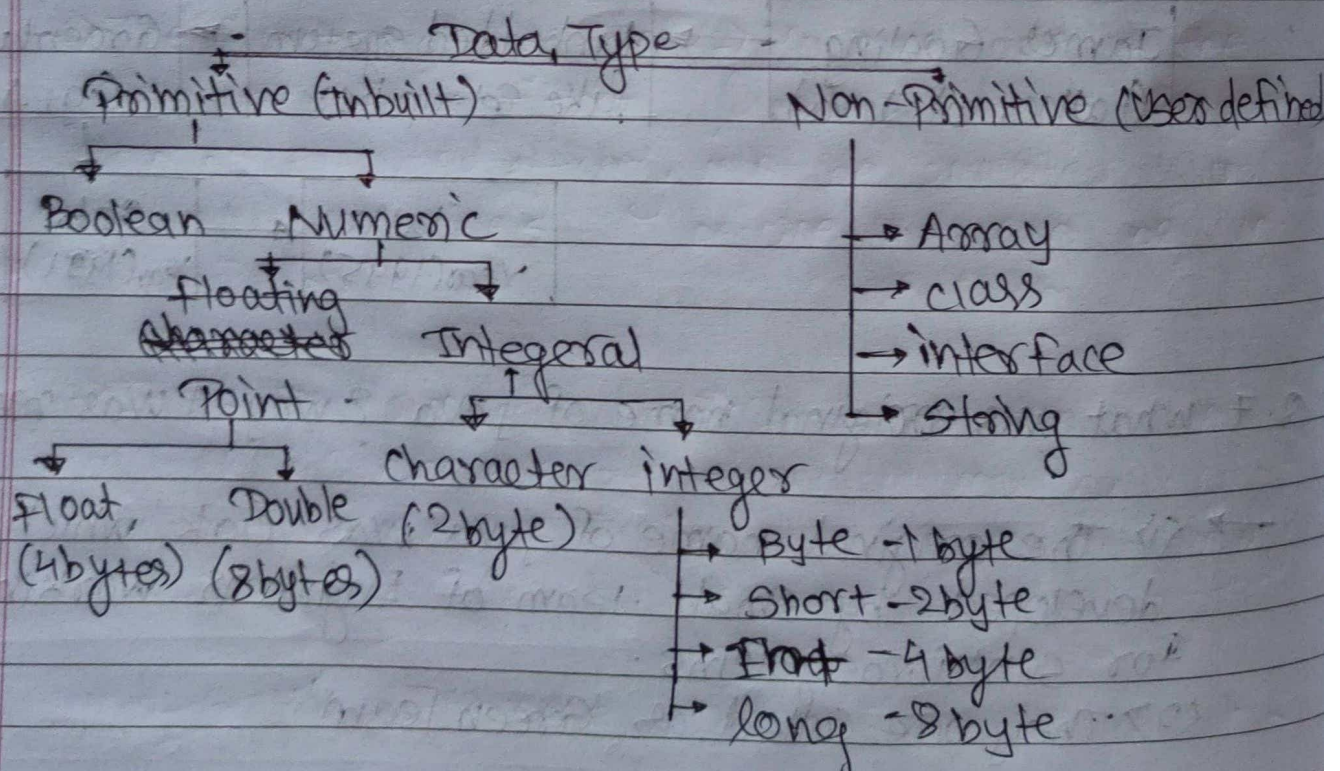
Q.8 List the features of Java.

→ The following are the features of Java.

- <1> Simple <2> Object oriented <3> Portable
- <4> secured <5> Robust <6> Platform independent
- <7> Architecture Neutral <8> Interpreted
- <9> Multithread <10> Distributed

Q.9 List various data types in Java.

→ The various data types in Java are as follows



Q.10 What is difference between `System.out.print`, `System.out.println`, `System.err.print`.

| → <code>System.out.print</code> | <code>System.out.println</code> | <code>System.err.print</code> |
|--|--|--|
| <ol style="list-style-type: none"> 1> The cursor remains on the same line after printing. 2> compatible only with Argument operations. | <ol style="list-style-type: none"> 1> The cursor moves to the next line after printing. 2> IS operable with all types Arguments. | <ol style="list-style-type: none"> 1> <code>System.err.print()</code> function print the error message with red colour. 2> It is mostly compatible with Arguments. |

Q.11 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 bytecode is translated into Machine understandable code.
 - 4> Hence, Java is Platform independent but it is purely depended on JDK.

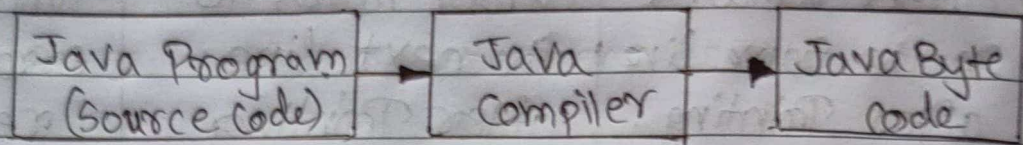
Q.12 What is bytecode & How is it different from machine Code.

- - 1> Bytecode is a sort of Component that is suited for

Separate Software translation operation.

<2> It is commonly known as 'p-code' due to Probable that it provides.

<3> It is intermediate code compiled into a low-level code from the source code for efficient execution by software interpreters.



| Bytecode | Machine Code |
|--|---|
| <p><1> It is an intermediate code designed to run on a virtual machine instead of a central processing unit (CPU).</p> | <p><1> It is a compiler program made up of the native instructions associated with that particular computer.</p> |
| <p><2> The function of bytecode is to be a format that can be executed efficiently by virtual machine's interpreter.</p> | <p><2> Machine code is the language which all programs must be converted into before they can be run.</p> |
| <p><3> It is platform independent because it can be executed on any platform using virtual machine.</p> | <p><3> It is not platform independent meaning it cannot be run on just any platform with the same operating system.</p> |

Q.13 What is the difference between Runnable jar file &

Jar file ?

| Jar file | Runnable jar file |
|---|---|
| <p><1> Jar file is a java Application which requires a command line to run, a runnable JAR file can be directly executed by double clicking.</p> <p><2> A (Java Archive) JAR is a package file format typically used to aggregate many java class files associated metadata and resources into one file to distribute application software or libraries on the java platform.</p> | <p><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 and the program will Executable</p> <p><2> A Runnable jar allows java classes to be loaded just like when a user clicks on executable file.</p> |

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

| Runnable jar file | exe File |
|---|--|
| <p><1> Java file like dead body which contain only instruction.</p> | <p><1> exe file are living thing which contain instruction which is in Machine language.</p> |

| Runnable jar File | exe file |
|---|---|
| <2> Jar File is the combination of compiled java classes. | <2> Executable jar file is also combination of compiled java classes with main class. |

Q.15 How is C platform dependent language?

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- <1> C is a Portable programming language because it is not tied to any Hardware of System.
 - <2> We can say, it is a hardware independent language or platform independent language.
 - <3> That is why C is called 'portable language'.
 - <4> C Program 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 the difference between path & class path?

| Path | Class Path |
|---|--|
| <p><1> Path Variable is used to set the path for all java Software tools like javac.exe, java.exe, javadoc.exe and so on.</p> <p><2> Variable name: PATH Variable Value: c:\Program Files\Java\jdk1.7.0_21\bin.</p> | <p><1> Class path Variable is used to set the path for java classes.</p> <p><2> Variable name: Class path Variable Value: c:\Program Files\Java\jdk1.6.0_19\lib\rt.jar</p> |