Q. What is difference between JDK, JRE and JVM

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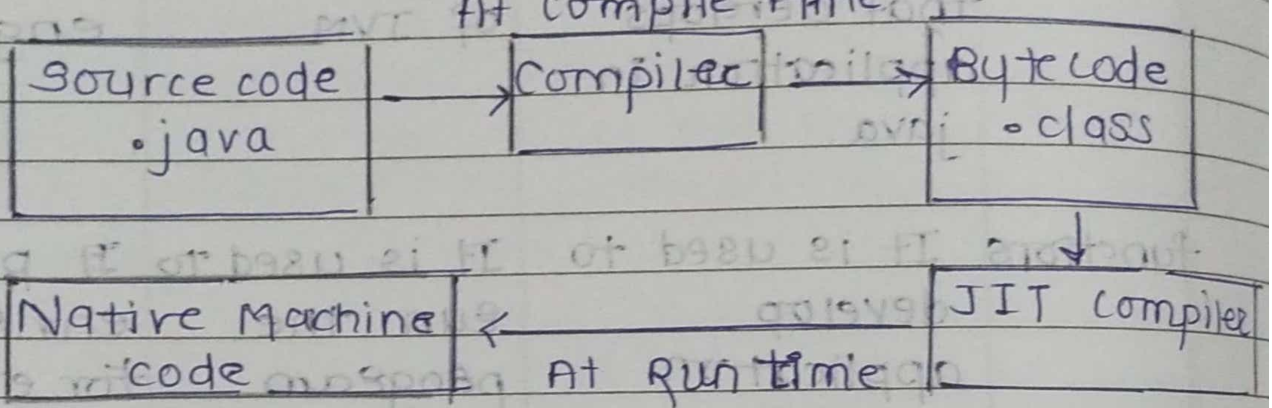
Parameter	JDK.	JRE	JVM
Full-Form	Java Development kit	Java Runtime Environment	Java Virtual Machine.
Def^n	JDK is software development kit that develops application in java.	JRE is implementation of JVM	JVM is an execution engine.
functions	It is used to develop application	It is used to run the program	It provide environment for execution of program.
Implementation	JDK = Development Tools + JRE	JRE = libraries for running the application + JVM	JVM = Only the runtime environment that helps in executing the java bytecode

Q. What is JIT compiler ?.

⇒ JIT (Just in time) compiler is a component of the runtime environment that improves the performance of java application by compiling bytecode to native machine code at run time.



JDK (javac, jar, debugging tools)

JRE

JVM

JIT compiler

Q. What is class loader?

⇒ 1] Class loadee is a paet of Java Runtime Envieonment that dynamically loads java classes into Java vietual Machine

2] Java classes aren't loaded into memory all at once, but when eequiеed by an application

3] At this point, the JavaclassLoadee is called by JRE and these classLoaders loads classes into memory dynamically.

4] To know, the class loadee that loads a class the getClassLoader() method is used

5] If any of classes aee not found then it eetuens a classNotfoundException.

Depending on type of class & path of class classloadee is decided.
A Java ClassLoader is of theee types.

1]. Bootsteap ClassLoadee :

- Bootsteap classloader is a Machine code which staets the opeeation when JVM calls it
- Its not a java class
- Its job is to load the fiest puee Java classload
- Bootsteap classloader loads classes feom location rt.jar
- Bootsteap classloadee does not have any paeent classloader so it is called as peimoedial classLoader.

2> Extension classloader :
- Extension classloader is a child of Bootstrap classloader and loads the extension of core java classes from the respective JDK extension library.

3). System ClassLoader -
An application classloader is also known as system classloader It. loads the application type classes found in the environment variable classpath, or cp command line option. The application classloader is a child class of Extension ClassLoader.

Explain History of java who invented java?

⇒ 1]. James Gosling, Mike Sheridan and Patrick Naughton initiated the java language project in June 1991.

2] Java was originally developed by James Gosling at Sun Microsystem and released in 1995.

3] The language was initially called Oak after an oak tree that stood outside Gosling's office.

4] Later the project went by the name Green and was finally renamed Java from Java coffee, a type of coffee from Indonesia.

5] Gosling and his team did a brainstorm session and after the session, they came up with several names such as JAVA, DNA, SILK, RUBY, etc.

6] Sun Microsystems released the first public implementation as Java 1.0 in 1996.

7] It is intended to be a production language not a research language.

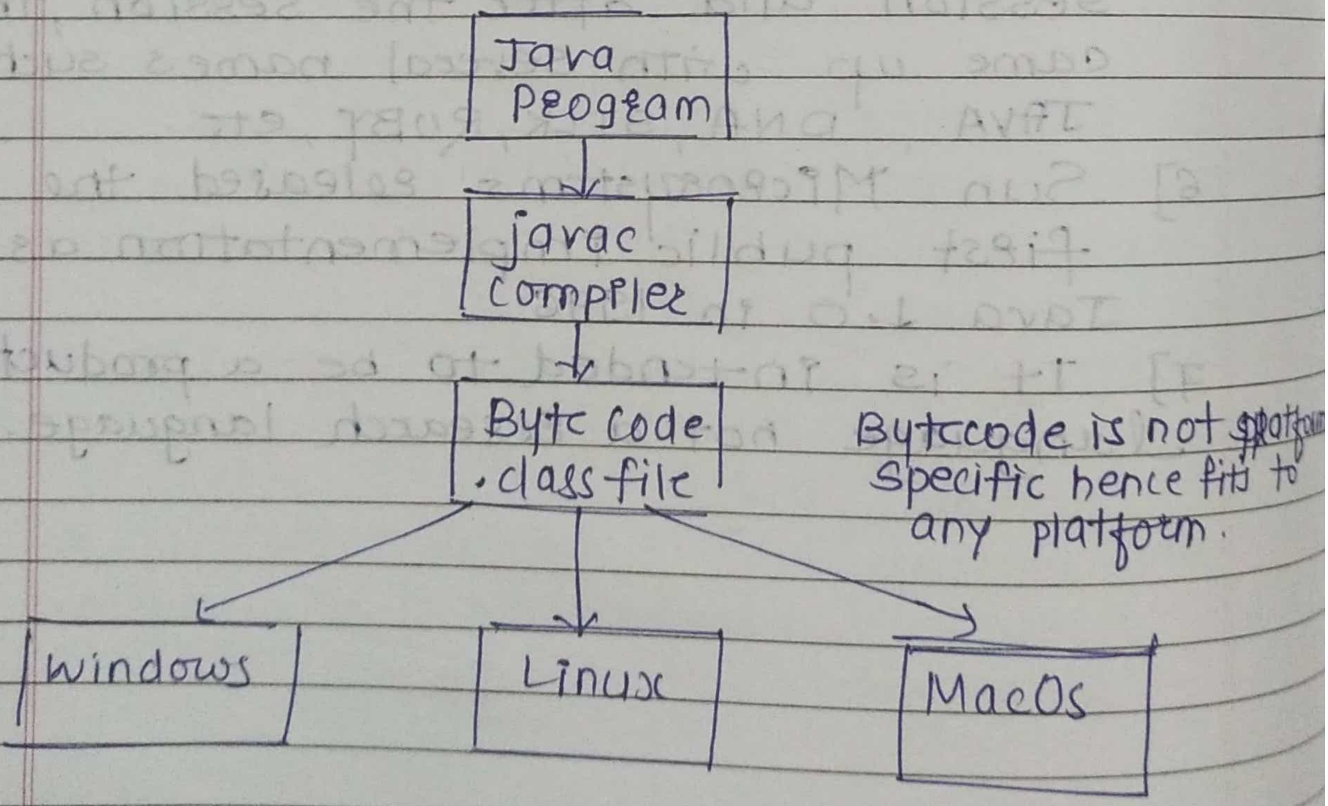
5] What gives java its "write once and run anywhere nature"?.

⇒ 1] Java gets its write once and run anywhere nature from its bytecode

2] Java codes are type in High level language and they are converted into a class file (a bytecode) an intermediate language before being converted into machine code

3]. Java applications as WORA; this means programmer can develop java code on one system & can expect it to run on any other java-enabled system without any adjustment.

4] This is all possible because of JVM



Bytecode is not platform specific hence fits to any platform.

7] What was original name of Java ?. Why it was renamed?.

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8. List features of Java.

⇒ A list of the most important features of the java language is given below:

1. Simple
2. Object - Oriented
3. Portable
4. Platform Independent
5. Secured
6. Robust
7. Architecture neutral
8. Interpreted
9. High Performance
10. Multithreaded
11. Distributed
12. Dynamic.

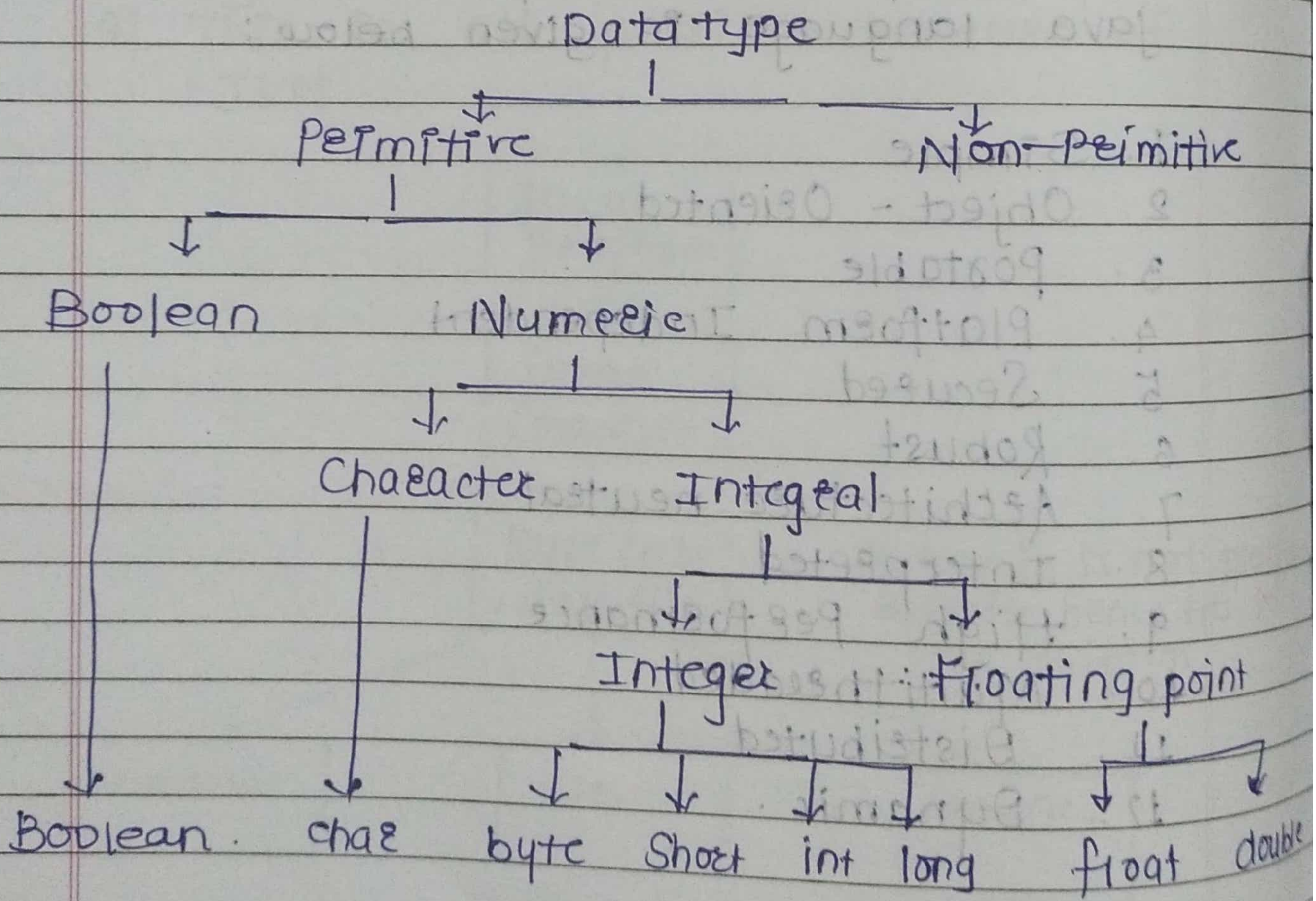
9] List of various Datatypes in Java?

⇒ Data types specify the different sizes & values that can be stored in the variables.

There are two types of data types in Java

1] Primitive data type :- Includes boolean, char, byte, short, int, long, float and double. There are 8 primitive data types.

2] Non-primitive data types :- Includes classes, Interface, Arrays etc



What is difference between
system. out. print
System. out. println
System. err. print

⇒ System. out. print () :
Prints the content without switching to next line after executing the statement

System. out. println()
prints the content and switch to the next line after execution of the statement

⇒ It will print the standard output of ~~Syst~~ the system

System: err. println():-
It prints the standard error
It is mostly used to print output error texts.

11 How is java platfoem independent?

→ 1] A Platfoem is a hardwaee or software envieonment in which a peogeam euns
2] Java code can be executed on multiple platfoems for eg: windows, Linux, Sun, Macos etc.
3] Java code is compiled by the compiler and converted into bytecode.
4] This bytecode is a platfoem-independent code because it can be eun on multiple platfoems i.e Weite once and Run Anywhere (WORA).

12] What is bytecode? How is it different feom machine code?.

⇒ 1] Byte code : is an intermediate code betn the source code and machine code.
2] It is low-level code that is the eesult of compilation of source code.
3] It is processed by viatual machine like Java Viatual Machine (JVM)
4] Byte code is non-eunnable code after it is teanslated by an interpreter into machine code then it is understandable by the machine
5]. Machine code is set of insteuction that is dieectly machine undeestable
6] Machine code is obtained after compilation or Inteepretation. It is also called machine language.

Byte Code	Machine code.
1] Byte code consist of binary, hexadecimal instruction and it is not directly understable by the CPU	Machine code consist of binary instructions that are directly understandable by the CPU.
2] Byte code is considered as the intermediate-level code.	Machine code is considered as the low-level code.
3] Byte code is executed by the virtual machine then CPU.	Machine code is not executed by a virtual machine it is directly executed by CPU.
4] It is platform-independent as it is dependent on the virtual machine ~~and~~	It is not platform independent.

What is the differeence betwreen jar file and runnable jar file?

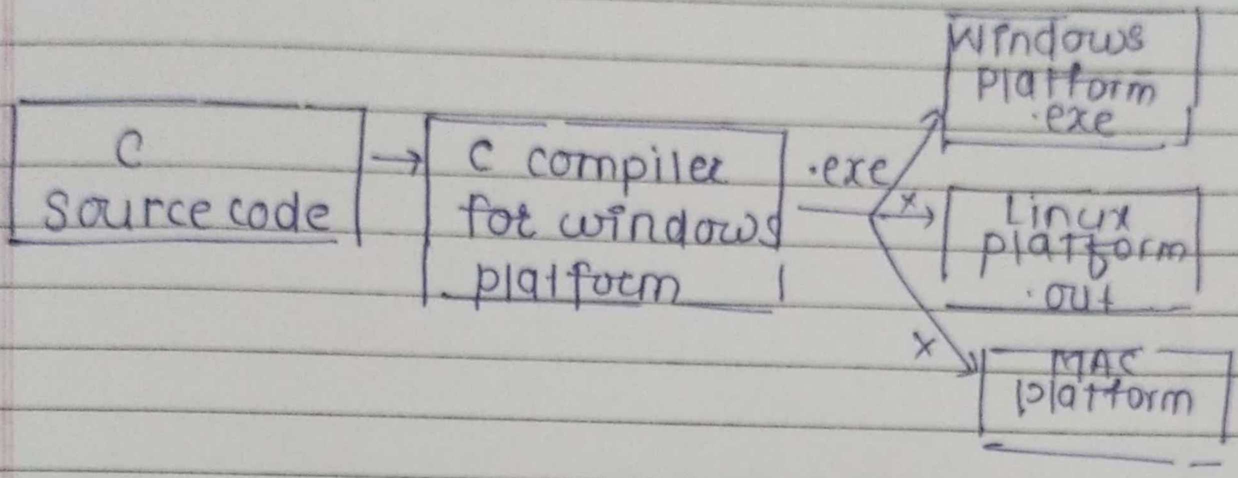
⇒ JAR file is a java application which requires a command line to run a runnable JAR file can be directly executed by double clicking it. A runnable jar file allows a use to run java classes without having to know class name and type rather the user can just double click on the jar file

What is the difference between Runnable jar file & exe file?

⇒ Jar file are like dead body, exe file are like living. Jar file is the combination of compiled java classes. Executable file is also combination of compiled java classes with Main class.

How is C platform dependent language?.

⇒ It is platform dependent because the C compiler generates a machine code which is understand by the respective platform



C compilee on windows platfoem generates .exe file after compilatron which only understand windows platform
Linux & Mac does not understand .exe so code C code compiled on windows platform do not work on Linux & MAC platform
This is the reason C is platfoem dependent means you have to download or use compiler according to platfoem on which you are running c code.

Q16] What is diffeeence between path & class path?

⇒ 1] Path - is an environment vaeiable which is used by the opeeating system to find the executables.
Classpath - is an envieonment vaeiable which is used by the java compilee to find the path of classes