

Assignment Number 3

① what is Java?

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- ① Java is the general purpose programming language
- ② JAVA support object oriented programming
- ③ Java language invented by James Gosling
- ④ Java is invented in Sun micro system in USA in 1991.
- ⑤ Java language is more flexible, reliable and portable

② what is a packages in Java? List down various advantages of package

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packages:- A Java packages is a group of similar type of classes, interfaces and sub packages

Advantages of packages:-

- ① Java packages are used to categorize the classes and interfaces so that can be easily maintained.
- ② Java package provides access protection.
- ③ Java package remove naming collision.

Different Types of package :-

- ① Language Support package
- ② Utilities package
- ③ Input / output package
- ④ Networking package
- ⑤ AWT package
- ⑥ Applet package.

③ Explain JDK, JRE and JVM

⇒

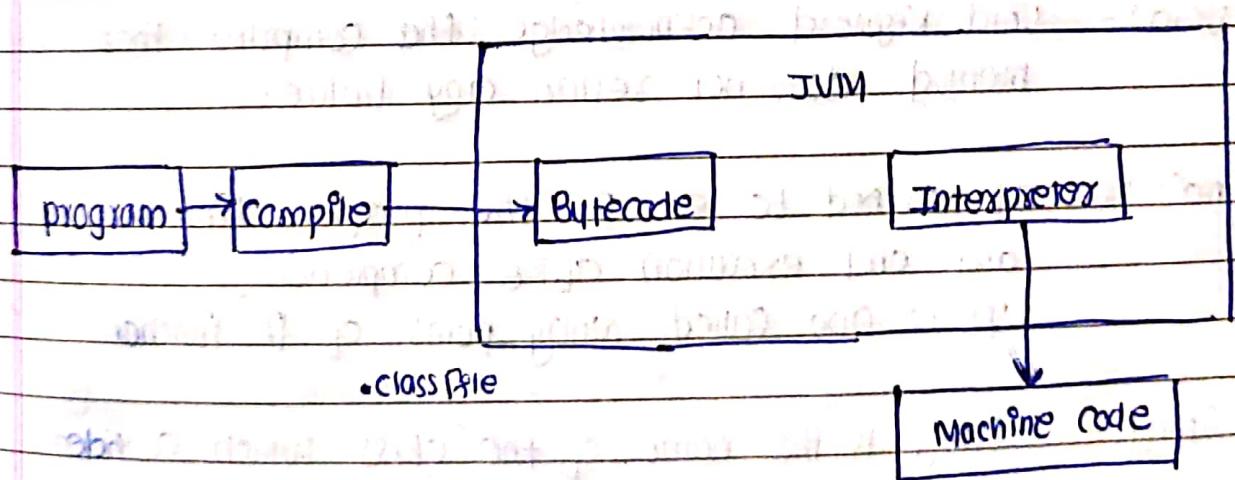
JVM - JVM stands for Java Virtual Machine, which is an abstract.

It is called Virtual machine because it does not physically exist.

It is a specification that provides a runtime environment in which Java bytecode can be executed. It can run other programs which are written in other language and compiled to Java bytecode.

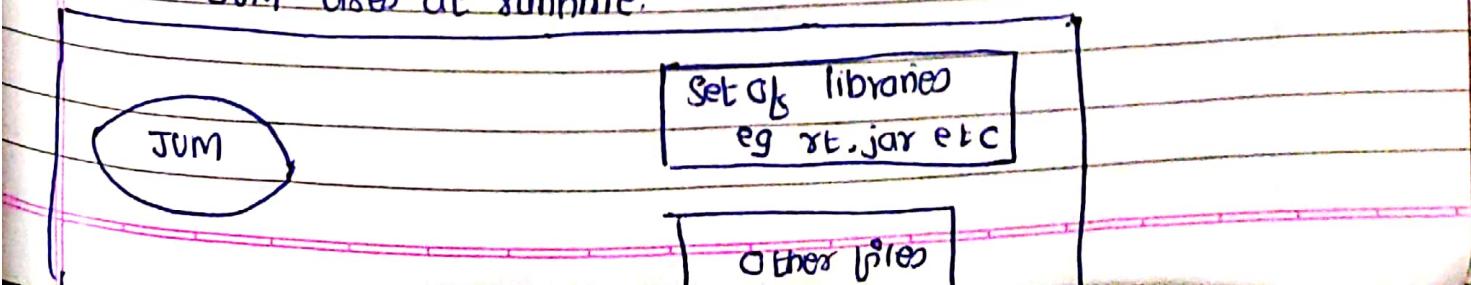
JVM performs following main task:

- ① Load code
- ② Verifies Code
- ③ Execute code
- ④ Provides runtime environment.



JRE - JRE stands for Java runtime environment

It is a set of software tools which are used for developing Java application. It is physically exist. It contains set of libraries and other files that JUM uses at runtime.



JDK:- It is stands for Java development kit.

It is a software development environment which is used to develop Java application and applets.

It is physically exists. It contains JRE + development tool.

(4) Explain public static void main (String args[]) in Java?

public:- It is a access specifier main function should be public because it should be called by the JVM.

static:- main function should be static function of our class because main function should be called by the JVM without creating the object of the class.

void:- void keyword acknowledge the compiler that main() method does not return any value.

main:- It is used to execute the program line by line and end execution after completion.
It is also called entry point of the function.

String:- String is the name of the class which consider as data type

args[]:- It is a array which is used to accept command line argument.

⑤ what is the difference b/w C++ and Java

C++

Java

① C++ is platform dependent ① Java is platform-independent.

② It is used for system programming ② It is used for application programming like window, web-based, enterprise and mobile application.

③ Supports multiple inheritance ② does not support multiple inheritance through class. It can be achieved by interface in Java.

④ Supports operator overloading ④ Java does not support operator overloading

⑤ It supports pointers

⑤ does not support pointers.

⑥ Why Java is platform independent?

=>

Java application gets executed on any operating system due to which it is considered as platform independent.

⑦

What is the wrapper class in Java?



They treat primitive data type as a class.

In Java for every primitive data type there is corresponding wrapper class.

They provide mechanism to convert primitive into object and object into primitive.

⑧

Why pointer is not present in Java?



because usage of pointer leads illegal access of data i.e. pointer shows the exact address of the data and using this address any modification can be made to information stored leading lack of security.

⑨

List features of Java:



- ① Object Oriented
- ② Platform Independent
- ③ Robust
- ④ Network Savvy
- ⑤ Compiled and Interpreted
- ⑥ Multithreading

⑩

Why Java is Architectural Neutral?



Our Java program application gets executed on any microprocessor format due to which it is architecture neutral.

⑪ How Java enable High performance?

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Java used "Just in time compiler" to enable high performance.

"Just in time" (JIT) Compiler is a program that turns Java bytecode, which is a program that contains instruction that must be interpreted into instruction that can be sent directly to the processor.

⑫ Why Java Consider as a dynamic?

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Java Consider as a dynamic because of bytecode. The source code which is written in one platform that can be executed in any platform.

It loads the class file during runtime only. Hence anything that happens in runtime is dynamic.

⑬ What is Java Virtual Machine and how it is considered in context of Java platform independent feature?

⇒

Java is a virtual machine which is an abstract. It is called virtual machine because it does not physically exist.

It can run other programs which are written and compiled to Java bytecode.

⑭ List Two Java IDE?

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- ① Eclipse
- ② BlueJ
- ③ JCreator
- ④ NetBeans

⑮ Why Java called "platform"?

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Java is a platform independent because it having its own JVM so that it can run on any platform.

Java is platform independent, which means once written you can run it anywhere.

The platform is a hardware or software used to run application.

⑯ Is Java pure object oriented language?

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Java language is not pure object oriented language because it contains primitive data types.

⑰ Which version you have learned? Name some of the new features added to it?

⇒

I have learned Java 1.8 version. Which support or provides ① Lambda Expression ② Method reference ③ Functional reference ④ Default Methods.

⑧ what gives Java its "write once and run anywhere" nature?



Java compiler compiles a Java program (.java file) and converts it into class file (.class) that contains bytecode which is the intermediate language between source code and machine code.

These bytecode is not platform dependent. So with the help of JVM it can run on variety of platforms.

The JVM is platform dependent i.e. its implementation differs from platform to platform (like window, mac, linux) but there all JVM can execute the same Java bytecode.

⑨ what is a difference betn PATH and CLASSPATH?



⑩ what is the signature of main function in Java?



It is a default signature which is predefined in the JVM. It is called JVM to execute a program line by line. And end the execution after completion of this method.

Q1) What is the difference b/w JDK and JRE?

→

JDK

JRE

- ① A software development environment used for developing Java application on Java platform such as Standard Edition, Enterprise edition and micro edition.
- ② A part of JDK that provides the minimum requirement to execute Java application.
- ③ Allows developing and running Java programs.
- ④ only allows running Java programs.
- ⑤ consist of JRE and other development tools.
- ⑥ consist of JVM, class libraries and other supporting files.

Q2) What is JVM? What is does?

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JVM is Stands for Java Virtual machine which is an abstract.

It is called virtual machine because it does not physically present.

It provides runtime environment in which Java byte code can be executed.

(3) Why JVM is called as "Virtual machine" ?

Ans.

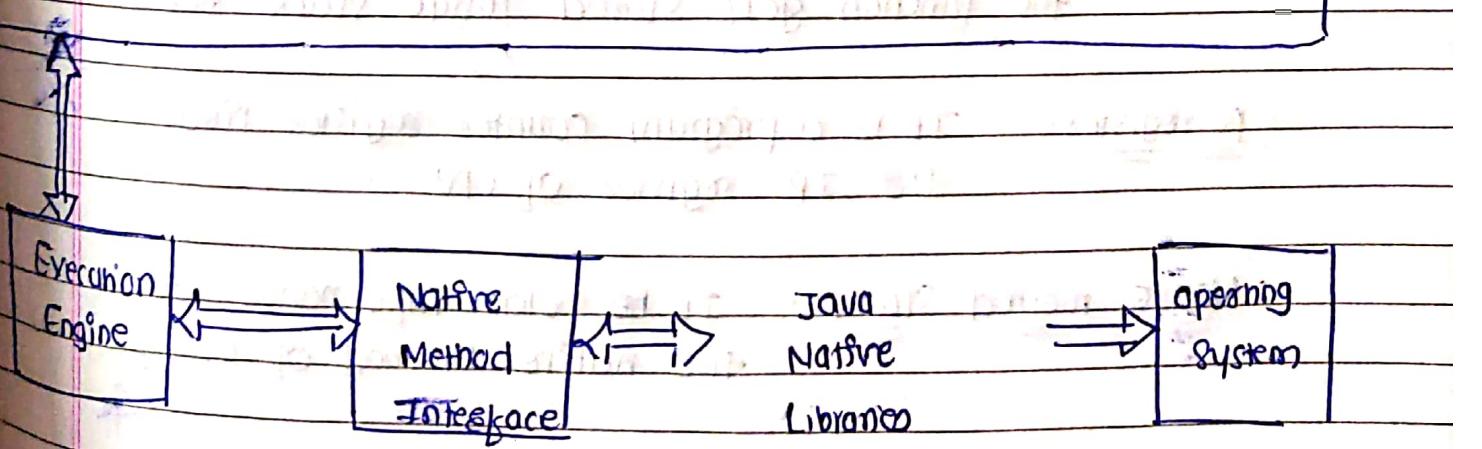
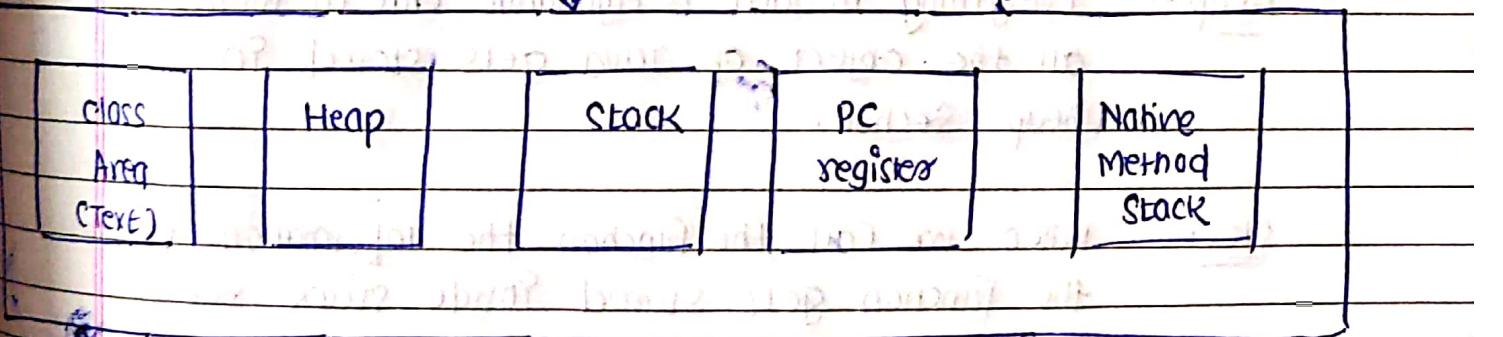
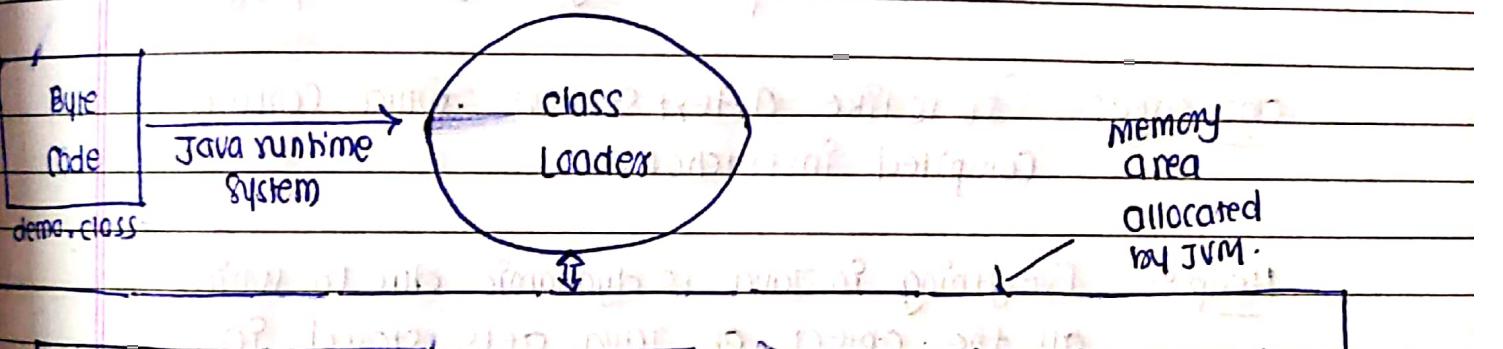
It is called Virtual machine because it does not physically present.

It provides runtime environment in which java byte code can be executed.

(4) Explain JVM architecture?

Ans.

JVM consists of several components.



After compilation of .java file we get its corresponding .class file.

Class Loader :- When we run the Java program .class file from the hard disk gets loaded into the memory.

Loading task .class file is performed by Class Loader.

After loading .class file into memory JVM allocates separate region for our program.

Class Area :- It is like a text section which contains compiled instruction.

Heap :- Everything in Java is dynamic due to which all the objects of Java gets stored in heap section.

Stack :- When we call the function the information about the function gets stored inside stack section.

PC Registers :- It is a program counter register like the IP register of CPU.

Native Method Stack :- It holds information about the native method of our program.

Execution Engine :-

It is purely responsible to execute our Java program.

Native Method Interface :- At this section actual call to native method gets resolved and internally calls from Java native methods libraries.

Q6 Is empty .java file name a valid source file name?

⇒

Yes. an empty .java file is a perfectly valid source file

Q7 Is JRE different for different platform?

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Java is platform independent means we won't need to change our code to run on different platform however we have to use platform specific jre version to run the program.

So different OS different JRE.