Assignment-3

Q.1) Explain components of JDK ?

→ Java Development Kit has tools needed for Java programming such as Compiler, JRE and other like Java Doc and Javap.

Q.2) Diff b/w JDK, Jvm and JRE ?

→ JDK :- Full suite needed to develop Java apps, including JRE and development tools. (Java Development Kit)

JVM :- (Java virtual machine) :- A part of JRE, it runs Java bytecode and provides a runtime environment.

JRE :- (Java Runtime Enviroment) :- Includes JVM and libraries necessary to run Java apps.

Q.3) Role of Jvm in Java ? How does Jvm execute Java code?

→ Jvm is responsible for executing Java bytecode, It loads verifies and Interprets bytecode, Converting it into machine code for execution.

Q.4) Explain memory management system of Jvm :-

→ It is divided into heap (for dynamic mem alloc), stack, (calls), Method Area (class struc), Pc registers, Native Method stacks. The Garbage Collector auto reclaims memory no longer in use.

Q.5) What are the JIT Compielers and its role in JVM? What is bytecode and why is it imp for Java?

→ Just-in Time Compieler optimizes bytecode to Machine-code at runtime.
Bytecode is Platform-independent code generated after Compiling Java Source code.

Q.6) Describe Architecture of JVM?

→ It includes class Loader, Memory Area (Heap, stack), Execution Engine (JIT Compieler, Interpreter), Native Method Interface, and Garbage Collector. It runs Java in Secure and optimized environment.

Q.7) How Java achieve platform independence through JVM?

→ By Compiling Source Code into byte code, which is done by JVM, making code runnable on diff O.S.

Q.8) What is Significance of class loader in Java? what is process of garbage Collection in Java?

→ The class loader loads class into memory when they are req. at runtime. Garbage Collection is an automatic process in Java that reclaims by removing objects no longer refered by apps.

Q.9) What are access modifiers in Java, How do they differ?
→ public : Accessible anywhere
protected : within Same Package and by Subclass
private : only within Same class
Default : only within Same Package.

Q.10) Diff b/w Public, protected & default?

→ Public : Accessible everywhere
protected : within Same Package & Same Sub-class
default : within Same Package

Q.11) Can you override a method with diff access modifier in a sub-class?

→ Yes, but overridden method cannot have more restrictive access.

Q.12) Diff b/w Protected and default access?

→ Protected allows access within Same Package and subclass in other package
Default allows access within Same Package

Q.13) Is it possible to make a class Private in Java?

→ No, top level classes cannot be declared protected or private. They can be public only.

Q.14) Can top-level class in Java be protected or private

→ No, only it can be public only or no modifier

Q.15) What happens if a variable or method as private in class A try to access it from another class within same package?

→ Private member is not accessible from any other class even within same package.

Q.16) Explain "Package-Private" or "default" access.

→ When no access modifier is specified, the default access level is package-private, means member is accessible only within class in same packages.