

## Assignment - 23

Q.1.

What are the features of Java programming?

- Java programming language is developed by James Gosling in 1995.

• Features of Java :

1. Java is simple & easy to learn compared to other languages.

2. Java is pure object oriented language.

3. Java is compiled & interpreted programming language.

4. Java is virtual machine based language.

5. Java is platform independent language.

6. Java is architecture neutral language.

7. Java is dynamic in nature (Everything in Java is decided at run time).

8. Java supports inbuilt concept of multithreading.



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9. Java is considered as robust language due to strong support of exception handling mechanism.
  10. Java support all databases (almost) in the world.
  11. Java supports automatic garbage collection.
  12. Java is also used for GUI programming.
  13. Java support almost all concepts of networking.

Q.2 What is meant by platform independent and architecture neutral.

• Platform Independent :

means code written java can be executed on any operating system i.e windows, Mac, Linux.

• Architecture Neutral :

means the program of java can be executed on any processor i.e intel, AMD, ARM, Motorola.



Q.3.

Explain JVM architecture?

- JVM is considered as mini-operating system.

- JVM performs 5 tasks internally:

1. Process Management
2. File management
3. Memory management
4. CPU scheduling
5. Hardware abstraction

- We execute our java program JVM is gets loaded into the main memory.

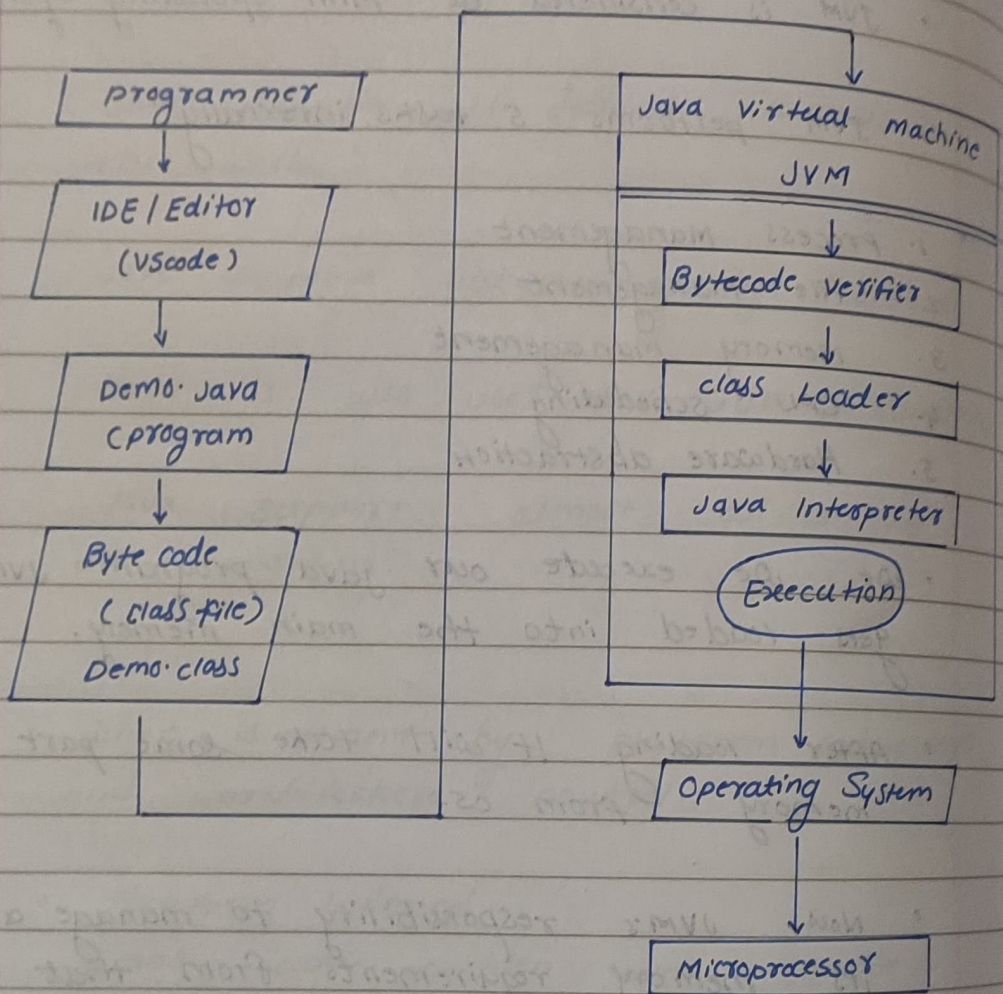
- After loading it will take some part of memory from OS.

- Now, JVM's responsibility to manage all of its memory requirements from that borrowed memory.

for eg. Suppose we have 4 GB of RAM then OS will allocate 1 GB from it to JVM.

Q.4

Explain tool chain of Java 9





Q.5 what is meant by JDK, JRE & JVM?

1. JVM : Java Virtual Machine

- It is like a mini OS. JVM is responsible for execution of Java code.
- JVM is a specification that provides the runtime environment for execution of Java bytecode.

2. JRE : Java Runtime environment

- It is a set of tools which are used for developing Java applications.
- It is used for to provide runtime environment.
- It contains set of libraries & other files that JVM uses at runtime.

3. JDK : Java Development kit

- It is also software development environment which is used to develop Java applications.
- JDK contains a private Java Virtual Machine (JVM) & a few other resources such as Interpreter/loader, a compiler (javac), a archiver (jar), documentation generator (javadoc).



Q.6. Why Java is considered as pure object oriented programming language?

• because everything in Java is written in a class & object.

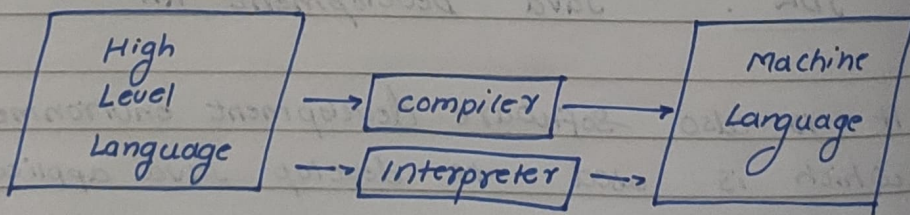
Q.7. What is mean by WORA in Java?

• WORA (Write once run anywhere) is a strategy of Java i.e. we can write program on any OS once and can run on any OS without rewrite it.

Q.8. What is difference between compiler & Interpreter?

• Compiler:

The compiler is translator which converts High-level Language code into machine code (assembly).





- Interpreter : is a program that translate a programming language (HLL) into an intermediate language (.i). It contains pre-compiled, source code, etc.

Q.9. what is difference between native language & virtual machine based language?

- Native programming languages are close to kernel.
- They can interact with operating system directly
- eg : C, C++
- Virtual machine based languages are unable to interact with OS directly.
- They have their virtual environment in which execution of program done.
- eg. Java, python.

Q.10. why Java considered as secure language?

1. Java virtual machine :
  - Execution of Java program is done in JVM.
  - Java has object access restrictions & this

JVM Verifies if anyway control jumps to any unsafe location, or any inaccessible object are being accessed.  
- It provides extra security layer.

2. lack of pointer.

3. Memory Management.

4. Exception handling.