Day 1

Java was developed in **Sun Micro Systems Laboratories in the year 1995 by James Gosling.**

* Java is a Programming Language: Java is considered as a **High-Level, robust and secure programming language**. At that time C and C++ was the language used, which is considered as the high-level language. Java was developed with advanced features to overcome the drawbacks of C and C++. Since C and C++ was considered as low-level language, compared to this Java was considered as the high-level language.
* **Java is a considered as a platform**: It creates an environment for the compilation and execution of the program. These programs are compiled into byte code and that byte code is platform independent.

**Types of Applications where Java is used:**

1. Desktop Applications (Standalone applications)
2. Web Applications
3. Enterprise Applications (Banking applications)
4. Mobile Applications
5. Embedded Applications (where machines connected)
6. Games

**JDK, JRE, JVM**

1. **JVM: JAVA Virtual Machine** - Java Virtual machine is an abstract machine because it doesn't really exist. It is used to execute bytecode. JVM takes our bytecode and translate it to the native code (machine language) for the operating system.

The **functionalities of JVM** are:

A) Loads the code

B) Verify the code

C) Execute the code

D) Provides run time environment

1. **JRE: Java Runtime Environment** - Java Runtime Environment contains both JVM as well as set of library files. It is considered as a set of software tools for developing java applications. It is used to provide runtime environment and it is the implementation of JVM. It is the collection of libraries and other files that are used by JVM at runtime.
2. **JDK: Java Development Kit** – Java Development Kit is a software development environment which is used to develop Java applications. It has a compiler, bunch of codes that can be reused and JRE.

**Features of Java**

1. Simple
2. Object Oriented
3. Portable
4. Platform Independent
5. Secure
6. Robust
7. Architecture neutral
8. Interpreted
9. High Performance
10. Multithreaded
11. Dynamic
12. **Java is Simple**: Java is considered as simple because,

a) **It is Easy to Learn**

b) **Its Syntax is Easy**: When compared to C and C++ its syntax is easy. Complex features in C like operator overloading, pointers concept is not used in Java.

c) **Automatic Garbage Collection**: In Java unreferenced memory allocation is automatically freed. So, memory space is more and issues related to memory allocation never happens. Thus, extra memory is gained and the stability and performance of the application is maintained.

1. **Object oriented:** Java is an Object-Oriented language.

a) **Object**: Something which has a physical existence and state that are used for a special purpose and it needs memory for its allocation.

b) **Class**: Classes are considered as the blueprints of objects.

c) **Inheritance**: It is the property of inheriting the behavior and properties of the parent class by the child classes.

d) **Polymorphism**: It is the process of showing only the relevant data by hiding the background details.

e) **Encapsulation**: It is the process of wrapping both data and the code together.