History:

* Java is the programming language developed by **James Gosling in May 1995**.
* One of the **favorite programing languages** in all IT Industry now a day.

**Features of Java**

1. Simple Language:

* If the user knows **any programming Language** then java is very **simple** to them **understand**.
* Many **features** from **previous technologies** are as it is **inherited** in java language.

1. Security:

* The coder can implement **security of all level** will making any projects.

1. Platform Independent:

* Developer type any code then **complier** comes into the picture **complies the code** and **create the byte code** then **interpreter** comes into the pictures then interpreter **produced the output** in the **Human Readable format (HRF).** if you **create byte code** in **any operating system** using **complier** then **same byte code** will produce **same output** on **another machine** that has different operating system.

1. Robust Programming Language:

* Java is called Robust Language because it has **very strong memory management** and also it has features like **exception handling** than handler **all possible error complier time and runtime.**

1. **Object-Oriented**:

* Follows OOP principles like inheritance, encapsulation, and polymorphism.

1. **Portable**:
   * Java programs can run on different operating system without modification

**Packages in Java**

A package in Java is a way to group related classes and interfaces together. It helps in organizing code, avoiding name conflicts, and providing access control.

1. Types of Packages

✅ Built-in Packages (Predefined by Java)

* Examples: java.util, java.io, java.lang, java.sql, etc.

✅ User-defined Packages (Created by the developer)

* We create our own packages for better code organization.

**Thread:**

Thread is a program in execution. In thread, when a program executes, automatically it enters into waiting state for some time and again starts execution. So, thread is a program in execution after specific interval of time.

The waiting time in thread is in seconds thread can be implemented in two ways:

* 1. Thread with class
  2. Thread with applet

Thread with class can be implemented in following five steps:

1. Create class
2. Extends thread
3. Super()
4. Start()
5. Public void run() –(Automatic access start to jump this run method)

Multithreading:

Multithreading is nothing but **running two or more threads at the same time** in the CPU area this is also called **interthread communication**.

In this concept when one thread will be in the **running state, another thread will be in the waiting state**.

When some amount of execution complete for threat one CPU automatically switch to the another thread so the thread which is in the waiting stage will get CPU so thread two will change state from waiting to running and this goes on up to the end of all process.

When the first thread will complete the execution, CPU switches to shift to another thread automatically to complete pending execution of the second thread.

Thread with applet:

Another way of implementing thread can be achieved using applet.

**Applet has own life cycle** and has many methods like-

1. Public void init()
2. Public void start()
3. Public void print()

The last state of applet is destroy. When will be close applet application destroy method get call automatically .

Thread can also we implemented using runnable interface with given steps

1. Create class implement Runnable
2. Thread t;
3. t = new Thread(this);
4. assign the values
5. t.start()
6. public void run()

AWT:

Awt stands for abstract window toolkit.

Few methods :

1. super()
2. add()
3. setSize()
4. setVisible()