Date : - 09/09/2024
class - 1

Full Stack Java Developer

What is Java?

-> Java is a programming language

-> Java developed by James Gosling & his team in 1991 at Sun Microsystem Company

-> Initially they named it as 'OAK' programming language

-> In 1995, OAK language renamed to JAVA

Note: Oracle Corporation acquired Sun Microsystem in 2010. Now java is under license of Oracle corporation

-> Java is a free & open-source software

-> 3 billion devices run on Java language

-> Java is one of the most popular languages in the world

-> Java can run on any platform (It is platform independent)

Java is divided into 3 parts

1) J2SE / JSE (Java Standard Edition) → For stand-alone applications development

2) J2EE / JEE (Java Enterprise Edition) → For Web applications development

3) J2ME / JME (Java Micro / Mobile Edition) → For Mobile applications development

What we can develop using Java

-> Using Java, we can develop several kinds of applications like

1) Stand-alone applications

2) Web applications

3) Mobile Applications

4) Games

5) Servers

6) Databases and much more

Java Features

1) Simple: Java is easy to learn and its syntax is quite simple, clean and easy to understand.

The confusing and ambiguous concepts of C++ are either left out in Java or they have been re-implemented in a cleaner way.

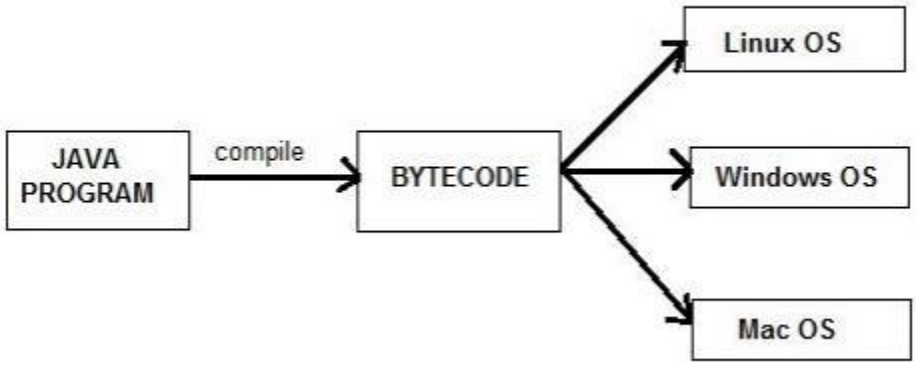
Ex: Pointers and Operator Overloading are not there in java

2) Platform Independent:

Unlike other programming languages such as C, C++ etc.

which are compiled into platform specific machines. Java is guaranteed to be write-once, run anywhere language.

When we compile java code it will generate bytecode. This bytecode is platform independent and can be run on any machine, plus this bytecode format also provide security. Any machine with Java Runtime Environment can run Java Programs.



3) OOP Language:

Java is an object-oriented programming language. Everything in Java is an object. Object-oriented means we organize our software as a combination of different types of objects that incorporate both data and behavior.

Object-oriented programming (OOPs) is a methodology that simplifies software development and maintenance by providing some rules.

OOPs Principles are:

➔ Object

➔ Class

➔ Inheritance

➔ Polymorphism

➔ Abstraction

➔ Encapsulation

4) Secure:

When it comes to security, Java is always the first choice. With java secure features it enables us to develop virus free, temper free system. Java program always runs in Java runtime environment with almost null interaction with system OS, hence it is more secure.

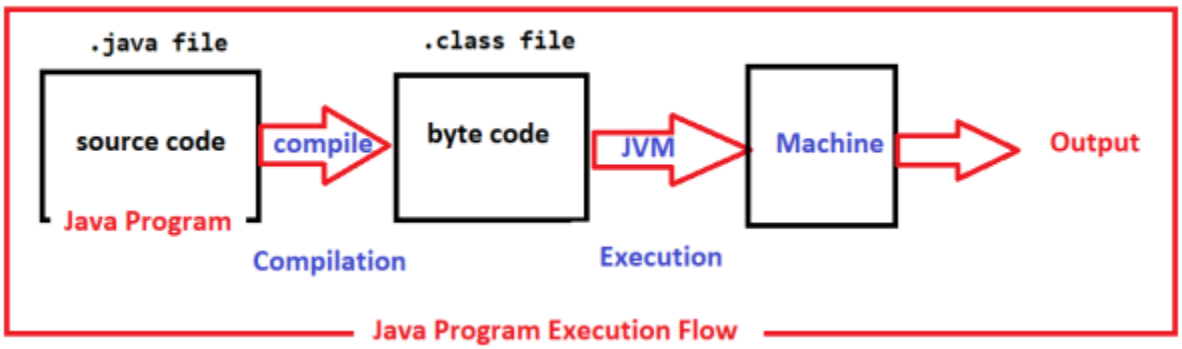
5) Multi-Threading:

Java multithreading feature makes it possible to write program that can do many tasks simultaneously. Benefit of multithreading is that it utilizes same memory and other resources to execute multiple threads at the same time, like While typing, grammatical errors are checked along.

6) Architectural Neutral: Compiler generates bytecodes, which have nothing to do with a particular computer architecture, hence a Java program is easy to interpret on any machine.

7) Portable: Java Byte code can be carried to any platform. No implementation dependent features. Everything related to storage is predefined, example: size of primitive data types.

Java Program Execution Flow



Step-1: We will write source code and we will save that code in a file using .java extension

Step-2: We will compile source code using java compiler (it will generate byte code)

Step-3: We will execute .class file (JVM will convert byte code into machine code & gives output)

Developing First Java Program

Step-1: Open any text editor (notepad / notepad ++ / edit plus)

Step-2: Write below java program

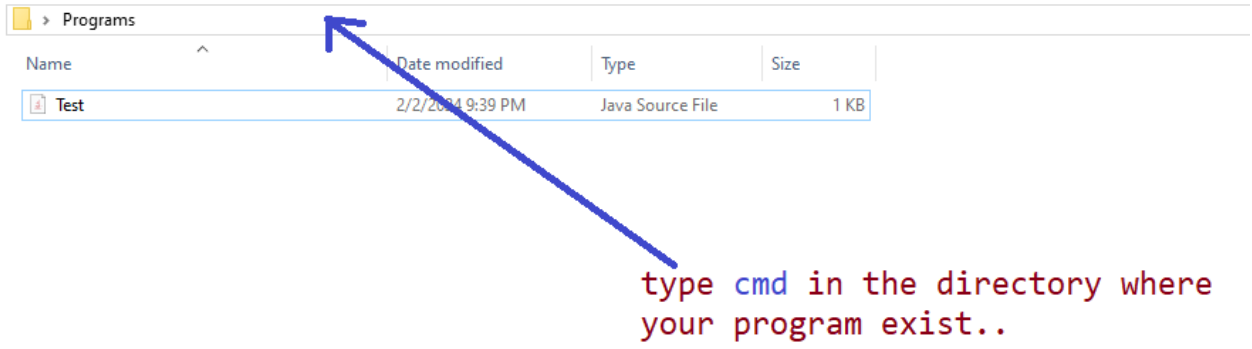
```
class Test
{
public static void main(String [] a)
{

System.out.println("Advance Institute Moradabad");

}
}
```

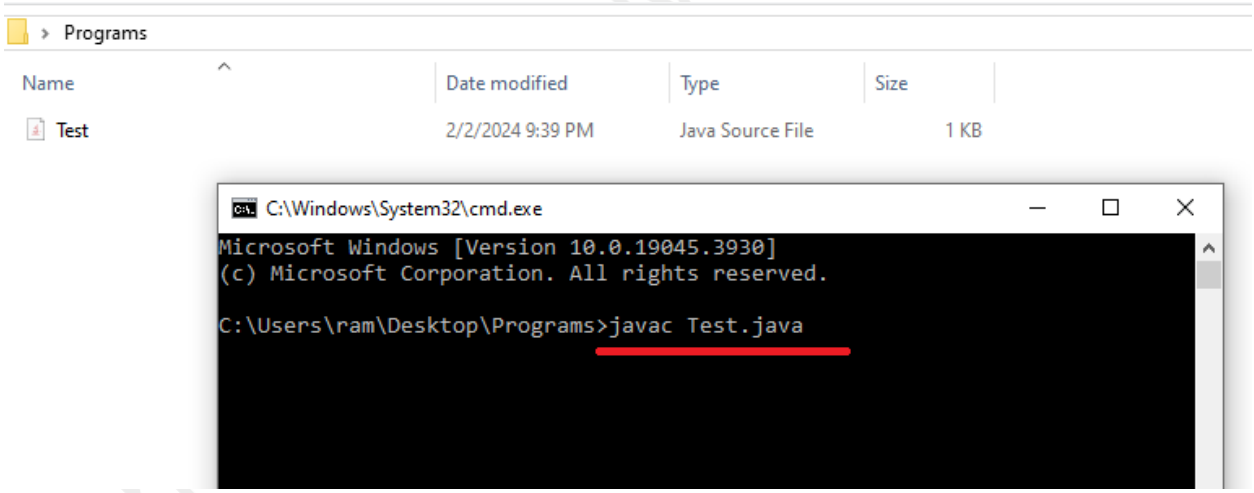
Step-3: Save the program with .java extension (Filename: Welcome.java)

Step-4: Open Command prompt and change directory location to the place where our java program is available.



Step-5: Compile the Java program with javac command

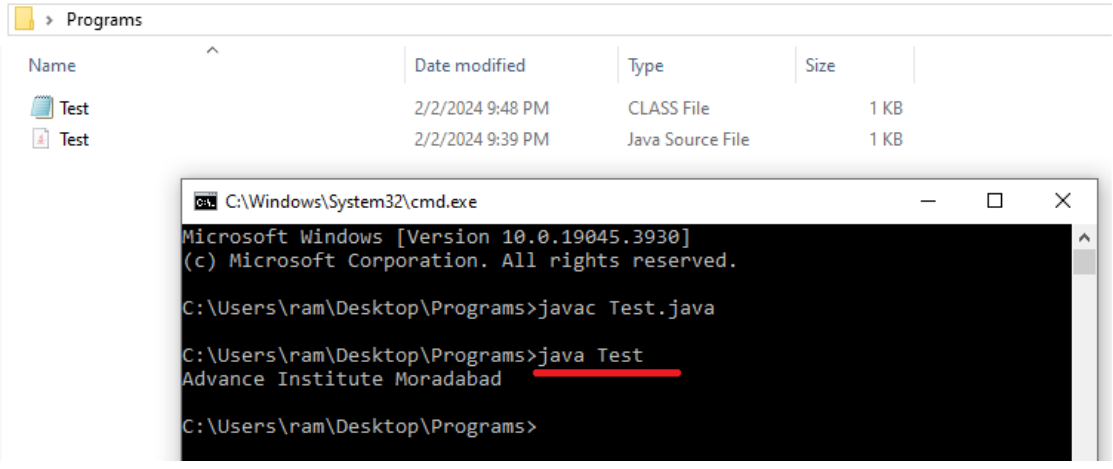
Syntax: ➢ **javac filename.java**



➔ We are able to see .class file that means our program compilation is successful

Step-6: Run the java program

Syntax: ➢ **Java filename**



-> We are able to see **“Advance Institute Moradabad”** as output of our program that means our program executed successfully.

Note: In Realtime, we will use IDE to develop java programs/ project.