

Getting Started With Java

- Java is a high level programming language introduced by Sun Microsystems in June 1995
- It was developed by a team lead by James Gosling
- Java has become a standard for internet applications. It provides interactive processing, graphics and animation on the internet
- Java is object oriented language built upon C and C++. It derives its features from C and its object oriented features from C++.
- Java can be used to create applications and applets.
- An Application is a program that runs on the users computer under its operating system.

- An Applet is a small window based program that runs on HTML page using a Java Enabled Web Browser like Internet Explorer, Netscape Navigator or an applet viewer

Features Of Java

- Simple: Java Language Constructs are easy to learn and use. Though Java is derived from a complex language like C++, the complexities associated with it have been eliminated
- Object Oriented: Java is designed around the object oriented model. In Java the focus is on the data and the methods that separate and not just on the procedures.
- Platform Independent: The term platform refers to the computer operating system and its CPU. Platform Independence means the ability of the program to run on different platforms without any modifications. A program written in Java can be run on different computers-
"Write Once Run Anywhere" This feature makes the language more popular.

- Robust: Java is a robust language since it has strict compile time checking of code. This minimizes the programming errors. Error handling is taken care of in Java by 'exception handling' feature.
- Secure: Java Security ensures that its programs that run from web pages are safe. Java programs running on the web cannot open, read, write, manipulate or delete files on the users system.
- Distributed: Java can be used to develop applications that are portable across multiple platforms, operating systems and graphical user interface (GUI's)
- Dynamic: Java is a dynamic language designed to adapt to an evolving environment.

- How to compile a java program

Syntax: [javac filename.java]

- How to run a java program

Syntax: [java filename]

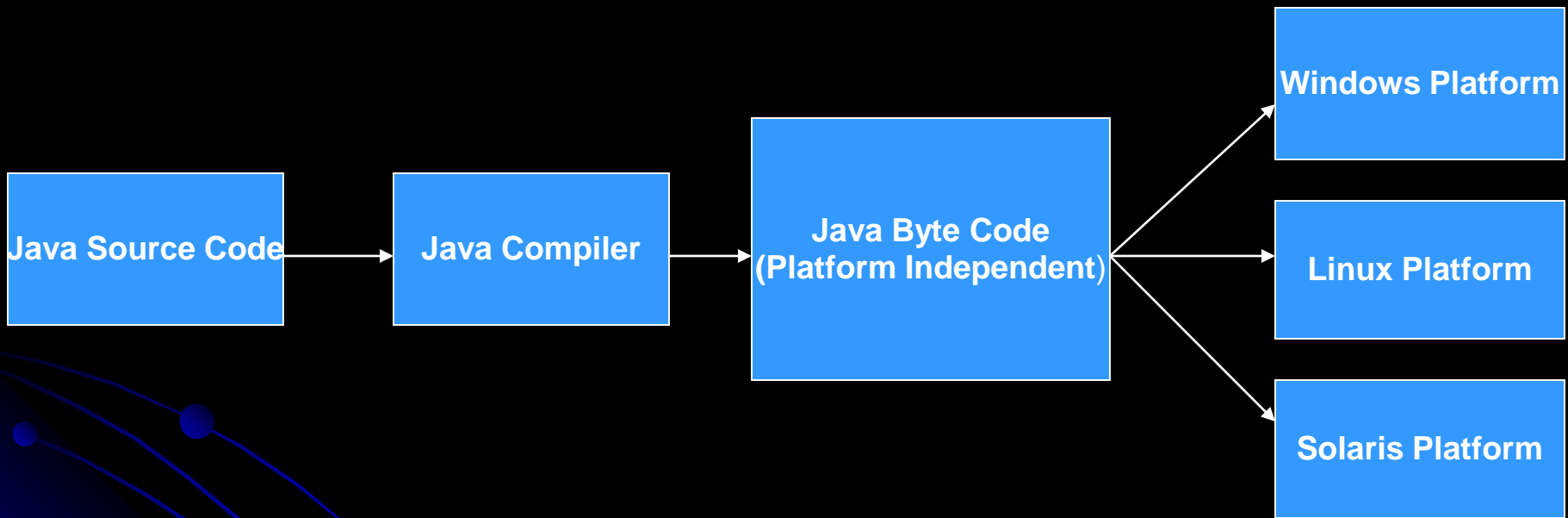
Note: “javac” is Java compiler

“java” is Java interpreter

What exactly is Java?

- Java is a programming language popularly used to build programs that can work on the internet.
- Its primary features also include being object-oriented in addition to being a cross platform language.
- By cross platform means that its programs can run across several platforms such as Microsoft Windows, Apple Macintosh etc.
- Java is not only used for standalone applications or net based programs but also to program consumer devices and accessories such as cellular phones, palm pilots and other gadgets.

The Following Figure shows how Java works as a cross platform language



What Is JVM?

- The Java Virtual Machine or JVM, as it is popularly known acts as an interpreter between Java Byte Code and a computers operating system.
- Using a JVM, you can run Java code on any platform such as Microsoft Windows, Macintosh ,Unix, etc.
- A JVM normally reads and executes java statements on at a time.
- A JVM can however include a JIT (just-in-time) compiler within it.
- A JIT compiler converts whole programs to bytecode and is thus faster than conventional JVM

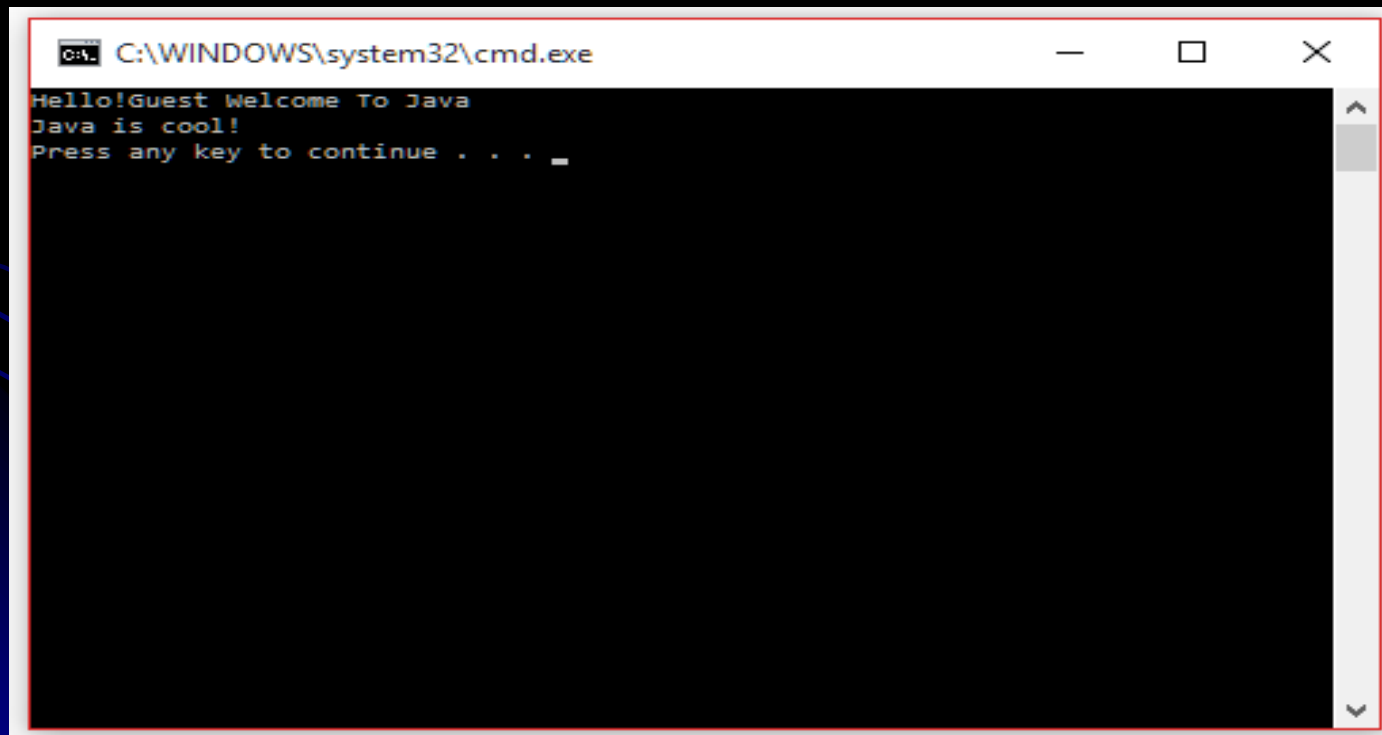
- The JVM does not know anything about the Java programming language
- It only recognizes a particular binary format of a file called *class file*.
- *A class file contains Java Virtual Machine instructions.*
- *Each class file contains the definition of a single class or interface.*

Types Of Java Programs

- Command Line Applications
- Applets
- Servlets
- GUI Applications
- Packages
- Database Applications

- Command Line Applications: These are Java programs that run from a command prompt and do not display any GUI based screen.

The following figure shows a command line Java application



```
C:\WINDOWS\system32\cmd.exe
Hello!Guest Welcome To Java
Java is cool!
Press any key to continue . . . _
```

- Applets: Applets are Java programs that are created specially to work with the internet. They can run through a Java enabled browser such as Netscape or Internet Explorer. An Applet can be created using any Java development editing tool such as notepad, netbeans IDE, etc. It must be contained or embedded within a web page or HTML file. When the Web page or HTML file is displayed on a browser the applet is loaded and executed.

The following figure shows Applet Window displaying a welcome message



Applet Viewer: javaapplication1/MyFirstApplet.class



Applet

Hello Guest! Welcome To Applet!

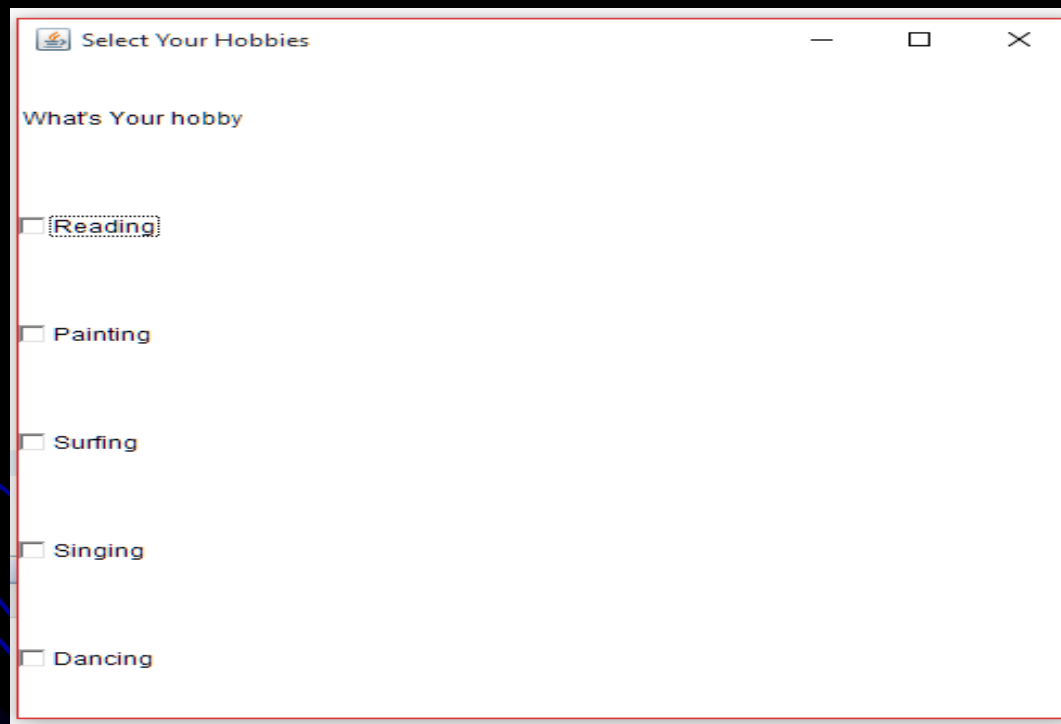
Applet started.

- Servlets: Java is suitable for web based n-tier application development. An Applet is a GUI based client side program that can be run in a browser. In web based applications, client sends request to a server while server processes the request and sends back the response to client.

The server side program processes and responses to clients request are taken care of by server side Java APIs. These server side APIs extend capabilities of standard Java APIs and are known as Java Servlets.

- GUI Applications: These are the Java programs that run stand-alone and accept user input through a GUI based screen.

The following figure shows a GUI application



- Packages: These are the class libraries in Java. A programmer may create his own packages or use the built in packages available with the Java 2 platform, java.awt, java.io and java.applet are some of the in built packages provided as a part of Java 2 platforms.
- Database Applications: These are the programs that use the JDBC API for database connectivity. They could either be applications or applets, though applets may face the usual security problems when dealing with database.