java intro

- java is called a **two stage system**

  * first java compiler javac translates source code into an intermediate code known as byte code (.class file)

  * in the second stage Java Virtual Machine (a program) converts the byte code into machine instructions which then can be elected by the processor

- output of compiled java program is a .class file (byte code)

- this then makes java **platform independent**, same code can run on unix and windows machines

- java is **secure**

  * java verifies all memory access but also insures that no virus are communicated with an applet (java program)

- java is a **object oriented**, almost everything in java is an **object**, all program code and date resides within **objects** and **classes**

- java is **robust**

  * java has strict compile time and runtime checking for data types

  * java has the capability to handle garbage things automatically (**garbage collection**)

  * java provides **exception handling** mechanism which is used to handle exceptions

- java is **multithreaded**

  * multiple tasks executing simultaneously is know as **multi-tasking**

  * there are two types of multi-tasking, such as

    ** **process based multi-tasking**

    ** **thread based multi-tasking** (known as **multi-threading**)

  * each job is considered as *one thread*

    ** this is one of the biggest advantages of java technology

- java is **architecture-neutral**

  * one of the major problems facing programmers is that no guarantee exists that if one writes a program *today*, it will run *tomorrow*

  * JVM was made to alter this situation with a goal of

    ** **write once run anywhere, anytime forever**

- java is **distrubuted**

  * information is distributed on various computers over a network

  * one can write java programs which are distributed to the clients

    ** this is possible because java can handle the protocols like **TCP/IP** and **UDP**

- java is **dynamic**

* java is capable of *dynamically linking* in new class libraries, methods and objects
* while executing the java program the user can get the required files *dynamically* from a local drive or from a computer thousands of miles away from the user just by *connecting with the internet*