**Java Topics:**

Introduction to java

Installation of JDK and eclipse

Classes and Objects

Constructor

Inheritance

Method overloading

Method overriding

Typecasting

Polymorphism

Abstraction

Encapsulation

Object class

String class

Wrapper class

Arrays

Collection

Exception handling

**Languages:**

1.Low level or machine level language: 0’s and 1’s

2.Assemply or middle level Languages: microprocessor 8085, microcontroller

3.High level language: Its made up of English like instructions

e.g. : Java, C, C++, C#..etc..

**What is Java:**

Java is a programming language and a platform.

Java is a high level, robust, object-oriented and secure programming language.

**Platform**: Any hardware or software environment in which a program runs, is known as a platform. Since Java has a runtime environment (JRE) and API, it is called a platform.

**Types of Java Applications**

There are mainly 4 types of applications that can be created using Java programming:

**1) Standalone Application**

Standalone applications are also known as desktop applications or window-based applications.

Examples: Media player, antivirus, etc.

**2) Web Application**

An application that runs on the server side and creates a dynamic page is called a web application.

**3) Enterprise Application**

An application that is distributed in nature, such as banking applications, etc. is called enterprise application.

**4) Mobile Application**

An application which is created for mobile devices is called a mobile application. Currently, Android and Java ME are used for creating mobile applications.

**Java Platforms / Editions**

There are 4 platforms or editions of Java:

**1) Java SE (Java Standard Edition)**

It is a Java programming platform. It includes Java programming APIs such as java.lang, java.io, java.net, java.util, java.sql, java.math etc. It includes core topics like OOPs, [String](https://www.javatpoint.com/java-string), Exception, Inner classes, Multithreading, I/O Stream,Collection, etc.

**2) Java EE (Java Enterprise Edition)**

It is an enterprise platform which is mainly used to develop web and enterprise applications.

**3) Java ME (Java Micro Edition)**

It is a micro platform which is mainly used to develop mobile applications.

**4) JavaFX**

It is used to develop rich internet applications. It uses a light-weight user interface API.

**Features of Java**

1. Simple
2. Object-Oriented
3. Platform independent
4. Secured
5. Robust (Powerful/Strong)
6. High Performance
7. Dynamic

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| **For executing any java program, you need to**  1.Install the JDK  2.Set path of the jdk/bin directory.  3.Create the java program  4.Compile and run the java program  **How to Create a java program and run it in Eclipse:**  1.Launch/Open Eclipse  2.Choose the Workspace path(folder path)    3.Click on Launch button  4.Close the Welcome Window/tab  5. Create a Java project : Go to File->New->Select/click “Java Project”->Specify the project name in the “Project name” text field ->Click on Finish button  6. Create a Package : Expand Java project->Right click on “src”->new->click on “package”->specify the name of a package->click on “Finish”  7. Create a class : Right click on packge->new-click “Class”->Specify the name of  a class and select “ public static void main(String[] args)” check box->click on Finish Button  8. Run the program: Click on the Run Button/F11 key  9.Analyze the result in the console. |
| **Java is both compiled and interpreted:** |
| Java is platform independent i.e. if you have class file then you can execute it on any platform |
| JDK:JRE+JVM  JRE:JVM+Development tools:It provides runtime environment  JVM: performs the following main tasks:   1. Loads code 2. Verifies code 3. Executes code 4. Provides runtime environment   **Steps to write and execute java program**   1. Create a Java project 2. Create a Package 3. Create a class 4. Run the programs 5. Analyze the result   **Java Programs Contains:**  **1.Keywords:**are predefined words used to communicate with programming language. In java all keywords are in lower case  **2.Identifiers:** It’s a name given by programmer to identify a component such as class/method/variable/interfaces  **3.Operators:**  a. Arithmetic Operators (+, - , / , \* )  b. Relational operators (>, <, <=, >=, == , != )  c. Logical Operators  &&-->Logical AND  || -->Logical OR  ! - ->Logical NOT  **4.Literals:** Literals are the programmer’s data  **5.Comments**: it’s a non-executable line in the program  a.// ----this is single line comment  b. /\*-----  This is a multiline comment  -----\*/  **DATA TYPES:**  **A. Primitive Type**  1.byte  2.short  3.int  4.long  5.float  6.double  7.char  8.boolean  **B. Derived Type/customized type:** we have to create (In the later classes)  Program:  1.How to create a class  2. How to create a method  3. How to Declare, initialize and use a variable  Local variable and global variables  **Access Specifiers:**(Detailed explanation in other class): Sets the visibility  1.Private  2.Default/friendly---no keyword  3.protected  4.public |
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