

# JAVA CURRICULUM

## ❖ Introduction to Java

- Features of Java
- Java Virtual Machine
- C , C++ & Java : A comparison
- Platforms of Java & Versions
- First Java Program

## ❖ Data Types & Identifiers

- 8 Data types in java, complete overview.
- Types of variables Operators & statements
- Reading input from java.util.Scanner class
- Displaying output with System.out.printf()
- Displaying formatted output with String format()

## ❖ Classes & objects

- Oops concepts
- Creating an object
- Initializing an instance variable
- Access modified
- Constructors & its types

## ❖ Methods in Java

- Method prototype, static keyword
- Static methods
- Mutators & Accessors
- Passing parameters in methods (primitives & Objects)

## ❖ Relationship B/W objects

- Relating objects using references
- Inner classes

## ❖ Encapsulation, Inheritance & Polymorphism

- Concept of inheritance
  - The keyword 'super and final'
- Abstract classes
- Interface
- Packages

## ❖ Abstract Classes & Interfaces

- Abstract Method & Classes
- Interface
- Multiple Inheritance using Interfaces
- Abstract Classes vs. Interfaces

## ❖ ARRAYS

- Why java arrays are different from the array of C and C++
- How array can be created in java
- How is array iterated in java
- The zigzag array
- How array can be used in software development.

## ❖ Strings

- Creating Strings
- String class methods
- String comparison
- Immutability of strings
- Spring 3 Architecture
- Introduction to Inversion Of Control

## ❖ String buffer & string Builder

- Creating string buffer object
- String buffer class methods
- String builder class

## ❖ Packages

- Concept of Packages
- Need to packages
- How to create packages using compiler
- How to use packages
- Concept of JAR file
- How to create the JAR file

## ❖ Exception handling

- Errors in java program
- Concepts of exceptions
- Keywords: throw, throws,
- Multiple exceptions

## ❖ Wrapper Classes

- Number Class
- Character Class
- Byte, Short, Integer, Long, Float, Double, Boolean Classes
- Math Classes

## ❖ MULTI THREADING

- What is a Java thread
- Need of thread in Java
- The constructor and methods of Thread class
- Life cycle of Java thread
- Writing Thread using Thread Class and Runnable Interface
- Daemon and Non-Daemon threads
- Synchronization in java
- Thread collaboration
- Writing a real life application using multi-threads

## ❖ Streams & Files

- Creating a File
- Reading & Writing data from a File
- Serialization/de-serialization of Objects

## ❖ COLLECTION FRAMEWORK

- Introduction of Collection Framework
- Need of Collection
- Collection API (the classes and interfaces)
- The methods of Collection interface
- List Interface (the Array List, Vector, Linked List, and Stack classes)
- The Iterator, ListIterator, and Enumeration interfaces
- Set Interface (the HashSet, LinkedHashSet classes)
- Map Interface (the Hashtable, HashMap, LinkedHashMap, classes)
- The Comparable and Comparator interfaces
- The TreeMap and TreeSet classes

## □ DATABASE CONNECTIVITY (THE JDBC)

- Concepts of JDBC
- Need Of JDBC
- Types Of JDBC Drivers
- Type1: Jdbc-Odbc bridge Driver
- Type2: Native API Driver
- Type3: Middleware layer Driver
- Type4: Pure JavaDriver
- Difference between the JDBC drivers
- Connecting with Databases (MS Access, My Sql, and Oracle)
- Executing query in database
- Other miscellaneous topics in JDBC

## □ Localization

- Advantages of localization
- Defining locale
- Read and set locale using the Locale object
- Resource bundles
- Format messages, dates and numbers

