

**CETPA INFOTECH PVT. LTD.**  
**CURRICULUM OF JAVA**

❖ **INTRODUCTION TO JAVA**

- History and Features of Java
- Comparison of C, C++, and Java
- Java Versions and its domain areas
- Life cycle of Java program
- Writing first Java program
- Analyze the tokens of Java program

❖ **INPUT/OUTPUT**

- Getting Input from the keyboard using Scanner class
- Displaying Output with printf, println, and print methods

❖ **CLASSES & OBJECTS**

- The concepts of OOPS
- What is the class and object
- How to create a class and object
- The content of class (blocks, variables, constructors, methods etc)
- Access modifiers
- The Constructors (the internals)

❖ **METHODS IN JAVA**

- Method prototype and signature
- Method overloading and var-args methods
- Method with parameters (primitives and object)
- How to return primitive/object from a method

❖ **RELATIONSHIP BETWEEN OBJECTS**

- The implementation of Association
- How to implement association and aggregation in java

❖ **INHERITANCE & POLYMORPHISM**

- Concept of Inheritance
- The 'this' and 'super' keyword
- The introduction to Object class (the ultimate super-class) and its methods
- The garbage collection in java
- The Concept of Abstract Class and abstract methods
- Concept of Interface and their internals
- Multiple Inheritance using interfaces
- Abstract Class versus Interface

❖ **EXCEPTION HANDLING**

- What is Exception in Java
- Need of exception in Java
- Difference of exception and error
- The try/catch/throw/throws/finally keywords
- Multiple Exceptions
- Custom Exception
- Assertions in Java and their usage

❖ **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

❖ **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

❖ **PACKAGES**

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

❖ **STRING**

- What is String
- Creating String literals
- The constructors of String
- The methods of String
- String immutability and its use

❖ **STRING BUFFER & STRING BUILDER**

- What is StringBuffer class
- The constructors of StringBuffer
- The methods of StringBuffer
- The StringBuilder and its usage

❖ **THE COLLECTION FRAMEWORK**

- Introduction of Collection Framework
- Need of Collection
- Collection API (the classes and interfaces)
- The methods of Collection interface
- List Interface (the ArrayList, Vector, LinkedList, and Stack classes)
- The Iterator, ListIterator, and Enumeration interfaces
- Set Interface (the HashSet, and LinkedHashSet classes)
- Map Interface (the Hashtable, HashMap, LinkedHashMap classes)

- The Comparable and Comparator interfaces
- The TreeMap and TreeSet classes
- The Collections class and its need
- How Collection Framework is used in industry (the real project development)
- Writing an application using Collection API and JDBC

#### ❖ 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 Java Driver
- Difference between the JDBC drivers
- Connecting with Databases (MS Access, My Sql, and Oracle)
- Executing query in database
- Other miscellaneous topics in JDBC

#### ❖ SERVLETS AND JSP

- Introduction of Servlet
- Difference b/w CGI, PHP, ASP, and Servlet
- Lifecycle (callback) Methods Of Servlet
- Servlet Implementation & Configuration
- ServletRequest and ServletResponse Interface and their method
- SevletConfig and ServletContext Interface and their method

- Introduction to Server i.e. Sun Glassfish, Apache Tomcat, Oracle Weblogic
- Introduction to IDE (Integrated Development Environment) like: Eclipse, NetBeans
- The JSP (Java Server Pages)
- The concept of Java Beans
- Using Java Beans with the JSP

#### ❖ STRUTS 2.X

- Introduction Of MVC Design Pattern
- Introduction of Sututs2
- Struts2.x Architecture
- Introduction of Component of Struts 2 like: Action, Results & Interceptors
- Heart of Struts2.x i.e. Interceptor
- Working of Param Interceptor
- Working of model Driven Interceptor
- Working of ServletConfig Interceptor
- Working of execAndwait Interceptor
- Working of Validation Interceptor
- Object Graph Navigation Language(OGNL)
- Struts 2 Dynamic Method Invocation
- Struts 2 Tags
- Struts 2 UI Tags
- Struts 2 Control Tags
- Struts 2 Tile Introduction
- Integrating Struts2 and Hibernate

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