



## **JAVA SYLLABUS FOR 4 WEEKS**

### **Java 4-Weeks**

#### *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

#### *DATA TYPES, IDENTIFIERS AND VARIABLES*

- Java data types
- The concept of Variables, Operators, and control Statements

#### *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 methods with var-args
- Method with parameters (primitives and reference)
- How to return primitive/reference 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 Verus 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

#### **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

#### **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

### *REFLECTION API*

- What is reflection API
- Need of reflection
- The Method, Field, Constructor, and Modifier class
- Implementation of the reflection concepts
- Access private members of a class using Reflection API

### *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 of Web 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

Project work is mandatory after the completion of the training program.