

**Time Duration – 80 Hours No. of Sessions - 40**

Overriding Methods  
this, super Keyword

**Session 1 - Introduction to Java**

OOPs Concepts  
Java Language Features  
Implementation of OOPs by Java

**Session 12 - Advanced Class Features-1**

Method Overriding Rules  
Returning Primitives and References  
Recursion

**Session 2 - Object Oriented Programming**

Downloading and Installing JDK/JRE  
Classes and Objects  
Sample Java program

**Session 13 - Advanced Class Features-2**

Packages  
Compiling and Running Packages

**Session 3 - Java Language Elements**

Identifiers, Literals, Keywords  
Primitive and Reference Variables  
Primitive Datatypes  
Type Conversion

**Session 14 - Exception Handling-1**

Exception Handling  
Exceptions and Errors  
Exceptions Hierarchy

**Session 4 - Operators**

Operators  
Operators Precedence and Associativity

**Session 15 - Exception Handling-2**

Common Exception Types  
Identification of Exceptions Based On Scenarios  
try, catch and finally Blocks

**Session 5 - Control Flow-1**

Control Statements  
if, if-else  
while, do-while, for Loops

**Session 16 - Exception Handling-3**

throw and throws Clause  
Checked and Unchecked Exceptions  
Defining Exceptions in Method  
Overriding

**Session 6 - Control Flow-2**

Labelled Loops  
Break, Continue

**Session 17 - Exception Handling-4**

User Defined Exceptions  
Lab Sessions

**Session 7 - Arrays-1**

Array as an Object  
One dimensional Arrays  
Multidimensional Arrays

**Session 18 - Assertions**

Assertion Mechanism  
Enabling/Disabling Assertions At Runtime  
Appropriate/Inappropriate Usage of Assertions

**Session 8 - Arrays-2**

Reference Arrays  
Anonymous Arrays  
Array Type Conversions  
Handling Command-line Arguments

**Session 19 - Nested Classes-1**

Nested Classes and Types  
Static Member Class and Interface  
Declaration and Instantiation

**Session 9 – Class Design-1**

Constructors  
Default and Parameterized Constructors  
Accessibility Modifiers  
Non-accessibility Modifiers

**Session 20 - Nested Classes-2**

Non-static Member Class  
Declaration and Instantiation  
Method Local Inner Classes  
Declaration and Instantiation

**Session 10 - Class Design-2**

Inheritance and Types  
Abstract Classes vs Interfaces  
Upcasting, Downcasting

**Session 21 - Nested Classes-3**

Anonymous Classes  
Static/Non-static Initializer Blocks  
Subclassing of Nested Classes

**Session 11 - Class Design-3**

Overloading Methods  
Pass by Value

**Session 22 - Threads-1**

Multitasking vs Multithreading  
Thread Execution and Platform  
Dependency  
Creating Threads Using java.lang.Thread  
and java.lang.Runnable

**Session 23 - Threads-2**

Thread Manipulation Using Common  
Methods  
sleep(), join(), yield()

**Session 24 - Threads-3**

Synchronization and Implementation  
Types  
wait(), notify(), notifyAll()

**Session 25 - Wrapper Classes**

java.lang.Object and Common Methods  
Wrapper Class Constructors  
Conversion Methods

**Session 26 - String Manipulation-1**

String Features – Immutable, Interned  
Strings  
Common String Methods

**Session 27 - String Manipulation-2**

String vs StringBuffer  
Important StringBuffer Methods  
Overview of StringBuilder

**Session 28 - Collections Framework-1**

Collections API  
Implementation Classes and Features  
Collections Creation and Traversal

**Session 29 - Collections Framework-2**

Iterators, ListIterators  
Maps and Implementation Classes

**Session 30 - Collections Framework-3**

Traversing Maps  
equals() and hashCode() Contract

**Session 31 - Advanced I/O Streams-1**

I/O Basics  
Byte Streams and Implementation  
Characters Streams and Implementation  
Buffering of Streams, PrintWriter

**Session 32 - Advanced I/O Streams-2**

Serialization and Implementation  
java.io.Serializable Implementation Rules

**Session 33 - Developing Windows GUIs**

Applets vs Applications  
Applet Life Cycle  
Java.awt.Component Hierarchy

**Session 34 - Building Java GUIs-1**

Windows vs Panels  
Developing and Running Applets and  
Frames  
Multithreading Implementation within  
GUIs

**Session 35 - Building Java GUIs-2**

Creating GUI Components  
Setting Up Components and Panels

**Session 36 - Building Java GUIs-3**

Layout Managers  
Practical Implementation of Layout  
Managers

**Session 37 – GUI Event Handling**

- Event Handling and Listeners
- Action, Mouse, Keyboard Events

**Session 38 – Advanced GUI**

- Frames and Dialogs
- Creating Menus

**Session 39 – 40 – A Mini Project**

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of Sessions - 40**

**No.**

## **Part 1: Advance Java**

### **Session 1 - Introduction to Databases**

- DDL, DML Statements
- Creating, Updating, Altering Tables
- Querying Databases

### **Session 2 - JDBC-1**

- JDBC Architecture
- Types of JDBC Drivers

### **Session 3 - JDBC-2**

- Statement
- PreparedStatement
- Implementing JDBC in GUI Applications

### **Session 4 - JDBC-3**

- Callable Statements
- Executing Stored Procedures Through JDBC

### **Session 5 - RMI**

- Remote Method Invocation
- Implementing Client and Server

### **Session 6 - HTML/JavaScript**

- Brief HTML Tutorial
- Brief JavaScript Tutorial

### **Session 7 - Servlets-1**

- The Servlet Model
- HTTP Request/Response

### **Session 8 - Servlets-2**

- GET/POST Methods
- Request/Response Headers

### **Session 9 - Servlets-3**

- Installation and Configuration of Tomcat
- Running a Basic Servlet Application

### **Session 10 - Servlets-4**

- The Container Model
- The Servlet Life Cycle

### **Session 11 - Servlets-5**

- Generating HTML Through Servlet
- Servlet Context and Config
- Reading Config/Context Params

### **Session 12 - Servlets-6**

- Request Forwarding
- Request Redirecting

### **Session 13 - Servlets-7**

- Session Tracking
- Using HttpSession

### **Session 14 - Servlets-8**

- URL Rewriting, encodeURL(), encodeRedirectURL()

### **Session 15 - Servlets-9**

- Session Tracking Through Cookies

### **Session 16 - Java Server Pages-1**

- Creating JSP Scripts
- Types of JSP Tags
- Compilation and Execution of JSPs

### **Session 17 - Java Server Pages-2**

- Creating Simple JSP Scripts
- Brief MVC Tutorial

### **Session 18 - Java Beans**

- Java Beans
- Setter and Getter Methods

### **Session 19 - Java Server Pages-3**

- Implementing JSP Action Tags
- Calling Java Beans Through JSPs

### **Session 20 - Java Server Pages-4**

- Implementing Setter and Getter JSP Properties
- Using Polymorphic Bean References

### **Session 21 - Java Server Pages-5**

- Creating JSP Custom Tags

### **Session 22 - Java Server Pages-6**

- Implementing JSP Custom Tag Libraries

### **Session 23 - Web Applications**

- Developing Web App Using POJOs, Servlets and JSPs

### **Session 24 - Web App Security**

- Implementing Web Application Security
- Using HTTPS Protocol Over SSL
- Configuring Security On Tomcat

## **Part 2: Enterprise Java**

### **Session 25 - Introduction to J2EE**

- J2SE vs J2EE
- Identification of J2SE/J2EE model
- 1-Tier, 2-Tier, n-Tier Architecture

### **Session 26 - Enterprise Java Beans-1**

- EJB Model
- Introduction to J2EE App Server
- Web Server vs Application Server

### **Session 27 - Enterprise Java Beans-2**

- Access Control List
- Connection Pooling
- Instance Passivation

### **Session 28 - Enterprise Java Beans-3**

- Session Bean vs Entity Beans
- Stateless vs. Stateful Beans

### **Session 29 - Enterprise Java Beans-4**

- Creating Remote Interface, EJBHome
- Creating Server/Client

### **Session 30 – Enterprise Java Beans-5**

- Implementing Stateful Beans

### **Session 31 – Enterprise Java Beans-6**

- Setting Up Entity Beans

### **Session 32 - Enterprise Java Beans-7**

- Container Manager Persistence

### **Session 33 - Enterprise Java Beans-8**

- Bean Managed Persistence

### **Session 34 – Model-View-Controller-1**

- Overview of MVC
- Implementing Model-View-Controller

### **Session 35 - Model-View-Controller-2**

- MVC 1.0 vs MVC 2.0

### **Session 36 – Struts-1**

- Converting MVC Apps to Struts
- The Struts Model

### **Session 37 – Struts-2**

- Downloading Struts
- Setting up Classpaths
- Deploying ActionServlet, ActionForm

### **Session 38 – Struts-3**

- ActionMapping and ActionErrors

### **Session 39 – 40 – A Mini Project**