

Advanced Java and J2EE

COURSE CONTENTS

Course Objective: the main objective of this course is to develop web applications using Servlets, Jdbc, Jsp, Hibernate and Spring

Database Programming using JDBC

- Introduction to JDBC
- JDBC Drivers & Architecture
- Driver Manager, Connection, Statement, Resultset
- CRUD Operation using JDBC Prepared Statement
- proceduresCallableStatement
- ResultSetMetaData & Database Metadata
- Connecting to non-conventional Databases
- Overview of Database Driver Architecture
- JDBC Driver Types
- Batch Updates
- Scrollable Resultset
- Working with Rowsets
- Handling Binary Data(Operation on Image files)
- Parameter Metadata
- Using Save point
- Connection Pooling

Servlets

- Need of Server side Programming
- Comparison with CGI
- Architecture and challenges of Web Application
- Introduction to Servlets
- Servlet Life Cycle
- Developing and Deploying Servlets
- Generic Servlets
- ServletConfig, Servlet Context,
- ServletRequest, ServletResponse
- Database Operation Using Servlets
- Deploying Servlets in Apache Tomcat Server, Weblogic Server etc
- Exploring Deployment Descriptor(web.xml)
- HttpServlets
- Session Tracking & Management
- Transferring Request

- Accessing Web Context
- Passing INIT and CONTEXT Parameter
- Filtering Request and Response
- Filter Servlets
- Servlet Chaining
- Include & Forward Mechanism
- Internationalization using Servlets
- Event Listeners in Servlets
- ServletRequestWrapper
- ServletResponseWrapper
- Web Application Security

Java Beans

- Component Model Services
- Java Beans Properties
- Bean Persistence
- Introspection

Java Server Pages

- Basic JSP Architecture
- Life Cycle of JSP
- JSP Tags and Expressions
- Comparison with Servlets & JSP
- Scriptlets, Declarations, Expressions & Directives
- Action Tags
- JSP to Servlets & Servlets to JSP
- Java Beans in JSP
- JSP Session
- JSP Scope
- Custom Tags in JSP
- JSTL

Networking using Java

- Networking Essentials
- Socket Programming
- Java.net.InetAddress
- Datagrams
- URL
- Multicast Sockets

Struts Framework

- Struts Architecture
- Struts classes –ActionForward, ActionForm,ActionServlet, Action classes
- Understanding struts-config.xml
- Struts flow with an example application
- Use of ActionForms
- Struts Tag Libraries
- DynaActionForms
- Builtin Actions in Struts
- Struts Tiles Framework
- Struts Validation Framework
- Internationalizing Struts Application
- Pagination and Sorting using Display tag
- Hibernate Integration in Struts
- Struts2 vs. Struts 1.x

Hibernate Framework

- Hibernate Overview and Benefits
- Configuring Hibernate
- Working with sessions and Persistent Objects
- Logging-log4j Overview and configuration for Hibernate
- CRUD Operations
- HQL- Hibernate Query Language
- Named Queries, Projection Queries, Aggregate Queries
- Query By Criteria
- Query BY Example
- Persistent, transient, and detached objects
- Hibernate first-and second-level cache
- Object Relationship Overview
- Mapping Collections of Value Objects
- Entity Relationships: 1-N, N-1, N-N, 1-1
- Queries Across Relationships(Lazy and Eager)
- Inheritance Mapping
- Collection Mapping
- Versioning

Spring

- Spring Architecture
- Spring setup
- Design Patterns
- Spring Core
- Inversion of Control (IoC)
- Aspect Oriented Programming
- JDBC Data Access
- MVC Framework

Oracle SQL

- Introduction
- Data Definition Language
- Date Manipulation Language
- SQL Operators
- SQL Functions
- PL SQL

Project

- Guidance for a Project using Struts and Hibernate