



# Course Brochure

## ADV Java & J2EE

### Overview

- Java Enterprise Edition or Java EE is a widely used platform for server programming in the Java programming Language. The Java platform (Enterprise Edition) differs from the Java Standard Edition Platform (Java SE) in that it adds libraries which provide functionality to deploy fault-tolerant, distributed, multi-tier Java software, based largely on modular components running on an application server

### Pre-requisites

- Basic Java programming is essential.

### Applications

## COURSE CONTENTS

### Networking using Java

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

### SWINGS

- ❖ GUI Application Development
- ❖ Introduction to Swings
- ❖ Different Swing Components

### Database Programming using JDBC

- ❖ Introduction to JDBC
- ❖ JDBC Drivers & Architecture
- ❖ DriverManager, Connection, Statement, ResultSet
- ❖ CRUD Operation using JDBC
- ❖ Prepared Statement
- ❖ Calling SQL functions, Database stored proceduresCallableStatement
- ❖ ResultSetMetaData & DatabaseMetadata
- ❖ Connecting to non-conventional Databases
- ❖ Overview of Database Driver Architecture & JDBC Driver Types
- ❖ Batch Updates
- ❖ Scrollable ResultSet
- ❖ Updated ResultSet
- ❖ Working with Rowsets
- ❖ Handling Binary Data(Operation on Image files)
- ❖ Type mapping & SQL3 Data types
- ❖ ParameterMetaData
- ❖ Using Savepoint
- ❖ Connection Pooling

### 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 secong-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)
- ❖ Native SQL queries
- ❖ Inheritance Mapping
- ❖ Collection Mapping
- ❖ Versioning

### 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

## 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

## Spring Framework

- ❖ Introduction to Spring Framework
- ❖ Spring Modules
- ❖ Spring Core Module
- ❖ Spring DAO Module
- ❖ Spring ORM Module
- ❖ Spring JEE Module
- ❖ Spring Web MVC Module
- ❖ Spring AOP

- ❖ Transaction Management in Spring
- ❖ Spring Multi Action Controller
- ❖ Spring Integration with Web Services
- ❖ Spring Integration with Java Mail
- ❖ Spring integration with Scheduler
- ❖ Spring Remoting
- ❖ AspectJ pointcut expression language

## Distributed Applications

- ❖ RPC
- ❖ RMI overview
- ❖ RMI Architecture
- ❖ Example demonstrating RMI
- ❖ Working with Registries
- ❖ Dynamic Stub Loading & Bootstrapping
- ❖ Java Naming and Directory Interface
- ❖ RMI over IIOP

## Enterprise JAVA Beans

- ❖ Enterprise Bean overview
- ❖ Types of enterprise beans
- ❖ Advantages of enterprise beans
- ❖ The Life Cycles of Enterprise Beans
- ❖ Working with Session Beans
- ❖ Stateful vs Stateless Session Beans
- ❖ Working with Entity Beans
- ❖ BMP Vs. CMP
- ❖ EJB QL
- ❖ Transaction in EJB
- ❖ Relationships in EJB
- ❖ Message Driven Beans
- ❖ EJB 3

## Java Messaging Service [JMS]

- ❖ Overviews of Message Oriented Middleware
- ❖ JMS Architecture
- ❖ JMS Messaging Domains PTP & Pub/Sub Messaging
- ❖ JMS API Programming & Examples
- ❖ JAAS

## XML

- ❖ Why XML?
- ❖ DTD
- ❖ XML & XSL
- ❖ XML Schema
- ❖ XML Parsers

## Webservices

- ❖ Interoperability
- ❖ Service Oriented Architecture
- ❖ SOAP, UDDI, WSDL
- ❖ JAXP, JAX-RPC, JAXB, JAXR, JAXM, SAAL, JAXWS
- ❖ Apache AXIS

## Java Mail API

- ❖ Internet Mail Protocols
- ❖ Architecture of Java MailAPI
- ❖ Send and Receive Mail
- ❖ Working with Mail Attachments
- ❖ Reply, Forward and Delete Mails

## AJAX

- ❖ Using of AJAX
- ❖ XMLHttpRequest
- ❖ MSXMLDOM
- ❖ AJAX Examples

## Java Server Faces

ANT, Maven, JUnit, Log4J