High-Level Java J2EE and J2SE Overview (3 Days)

Audience

Programming professionals that will be designing, developing and implementing large scale applications using Java for J2SE, JSPs, servlets, Enterprise JavaBeans and implementing them in an application server.

Course Abstract

This course will integrate a combination of instructor-led discussions and interactive workshops to demonstrate the development and testing of J2SE and J2EE v1.4 component model. This course will focus on illustrating at a high-level the use of Java for developing J2SE components, Applets, JVM and JRE, servlets, JSPs, JavaBeans and EJBs.

This seminar will focus on: J2SE architecture, J2EE environment, role of Java applications and applets, use of servlets and JSP component development, Model-View-Controller design, Servlet/JSP model, database access, session, message and entity EJB development, JCA and their resource adapters, Web Services framework, JMS and MQSeries, packaging and deployment issues, J2EE Design patterns and Struts development, deployment using JAR, WAR and EAR files.

Objectives

Upon conclusion, each participant will have acquired these skills:

- Understand the architecture of the J2EE and J2SE environments
- Explain the role of the JVM and JRE
- Depict the deployment of J2SE components
- Illustrate the J2EE component model and role in designing server-side applications
- Develop, debug and test servlet and JSP components
- Demonstrate the role of servlets and JSP web applications
- Understand role of JDBC to connect to relational structures
- Depict the deployment of J2EE applications
- Understand the role of Web Services, UDDI Registries and the Service Oriented Architecture
- Depict the role of JMS and messaging middleware
- Understand the use of EJBs in a J2EE application
- Demonstrate the usage of JCA and the role of resource adapters
- Illustrate J2EE projects and packaging
- Deploy applications to the embedded Application Server

Class Format

Lecture/Lab

Prerequisites

Each student should have a basic understanding of application development and have been exposed to an object-oriented programming language.

Course Topics

The following list represents the sections and topics discussed in this onsite instructor-led course offering:

J2EE Overview

- Multitiered overview
- N-tier architecture
- Model-View-Controller
- Browser role
- HTTP Server
- Application Server
- Standalone vs Network Deployment administration
- J2EE platform
- J2EE APIs
- J2EE services: JNDI, JDBC, Security, RMI, JMS, etc
- J2EE packaging
- Application lifecycle
- Architecture: Cells, Clusters, Nodes, Node Agents
- Eclipse development environment

JavaServer Pages

- JSP Components
- JSP & Servlet integration
- Servlet/JSP model
- JSP request cycle
- Operational model
- JSP translations
- Forwarding
- JSP methods: jspInit, jspService and jspDestroy
- JSP Tags and scripting elements
- Implicit objects
- Directives
- Declarations
- Expressions
- Scriptlets
- JSP Action tags
- JavaBean integration
- useBean Scope attribute
- Development using Eclipse

Servlet Development

- Servlet Evolution
- Characteristics
- Statement blocks
- Stateless vs Stateful
- Servlet message structure: HTTP header & FORM data
- Web Container: Instance Pool, JVM and JRE roles
- Lifecycle
- HTML FORM interaction: ACTION and METHOD parameters
- POST vs GET processing
- Reading POST data
- Java Servlet API
- init and destroy methods
- Development in Eclipse
- Servlet Operational model
- Deployment and testing

EJB Overview

- EJB benefits
- EJB portability foundation
- EJB container services and responsibilities
- Enterprise Bean types
- Session vs Entity vs Message beans
- Stateful vs Stateless Session
- Managing state data
- CMP vs BMP Entity beans
- EJB Container role
- Bean lifecycle management
- Transactional processing
- Security issues
- Development within Eclipse

Session Data

- Session support
- Session management
- Retrieve HttpSession
- Invalidation
- Accessing existing sessions

Web Services

- Service-oriented architecture
- Web service model
- Role of XML
- SOAP and SOAP messages
- WSDL

- RequestDispatcher
- Servlet Contexts
- Session configuration
- Persistent Session types
- Internal messaging: Peer-to-Peer vs Client/Server
- Session affinity
- Cookies

- UDDI registries
- Web Services Gateway
- JCA integration

JMS and Messaging middleware

- JMS and JMS Providers
- Asynchronous Messaging
- Publish/Subscribe
- Point-to-Point
- Connection Factories
- JMS Destinations
- JMS Listeners
- Listener Managers
- ejb-jar.xml updates
- WebSphereMQ
- Queue Managers and Brokers
- WebSphereMQ Clustering
- Network Deployment implementation

JSP Tag Libraries

- Custom Tag libraries
- Tag Handler classes
- Tag Library Descriptor file
- taglib page directive
- Defining TLD entries
- Deploying Tag libraries
- Using web.xml aliases
- JSP Standard Tag Libraries
- JSTL

Assembly & Deployment

- Application packaging
- IDE specific packaging
- earconvert tool
- EJB migration
- ejbdeploy command
- Servlet WAR creation
- Packaging WAR files
- Class loading policies
- Enterprise application installation

- Network deployment