

Enterprise Java using EJBs and WSAD

Course No.

3446

Description

This course prepares students for creating Java enterprise applications using Enterprise Java Beans. After learning the architectural foundations, students will learn how to write and deploy Session, Entity and Message-Driven Beans using IBM WebSphere® and WebSphere Studio Application Developer (WSAD). Best practices and implementation patterns are stressed in lecture and extensive hands-on exercises.

Prerequisites

Students should be proficient with Java, and be familiar with compiling and testing programs with WSAD.

Objectives

- Learn the EJB architecture
- Develop stateful and stateless session beans
- Develop entity beans, container managed and bean managed
- Develop Message Driven Beans
- Use transactions with EJBs
- Implement EJB security
- Write EJBs and clients using proven techniques and patterns

Major Topics

- Architectural Overview
- Bean Fundamentals
- EJB Clients
- Bean Deployment
- Stateless and Stateful Session Beans
- CMP Entity Beans
- Best Practices and Design Patterns
- Transaction Handling
- BMP Entity Beans
- Bean Security
- Message-Driven Beans

Duration

4 days



Course Contents

1. EJB Architecture

- J2EE Model
 - Container and Application architecture
 - Enterprise JavaBeans
- The motivation for EJBs
- Container Services
 - Component Pooling and Lifecycle Management
 - Client Session Management
 - Database Connection Pooling
 - Transaction Management
 - Authentication and Access Control
 - Persistence
- EJB Types
 - Session
 - Entity
 - CMP vs. BMP

2. Bean Fundamentals

- Bean pieces
 - Remote interface
 - Home interface
 - Bean class
 - EJBObject
 - Exception Handling
- EJB Client
 - Lookup with the Home
- Deploying a Bean
 - Deployment Descriptor
 - EJB Jar

3. Session Beans

- Session Bean Types
 - Stateful
 - Stateless
- LifeCycle
 - Pooling
 - Activation and Passivation Callbacks
- Method Implementations
- Local and Remote interfaces

4. CMP Entity Beans

- Persistence concepts
- Entity Bean Pieces
 - Primary Key
 - EntityBean Interface
- Home Interface
 - Finder Methods
- Bean Implementation Class
- Entity Contexts
- Lifecycle
- Callback methods
- Relationships
 - Types
 - Collections
- Referential Integrity
- EJB Query Language

5. Best Practices

- Local vs. Remote Interfaces
- Stored Procedures
- Session Façade Pattern
- Value Object Design Pattern
- Composite Entity Design Pattern
- Entity Beans vs. DAO
- Performance Tips

6. Transactions

- ACID properties
- Compensating Transactions
- Transaction models
 - Flat
 - Nested
 - Chained
 - Sagas
- Transactions and EJBs
- Transaction Attributes
- Context Propagation
- Transaction Events
- Transaction Isolation
- Specifying Isolation Level
- Exception handling



7. Bean Managed Persistence

- BMP model
- Transaction Handling
- Choosing Between CMP and BMP
- Lifecycle
- BMP Pieces
 - Home Interface
 - Remote Interface
 - Bean Implementation Class

8. Bean Security

- Security Model
 - Authentication
 - Authorization
 - Security Propagation
- Application security design
 - Roles
 - Method level permissions
 - Exclude list
 - Identities
 - Security Context Propagation

9. Message-Driven Beans

- Asynchronous Communications
- Communication Models
- JMS Messaging
 - Message Domains
 - API
- Message-Driven Pieces
- Lifecycle
- Issues
 - Message Ordering
 - `ejbRemove()`
 - Poison Messages

