

EJB Development Using RAD v6.0

Course Summary

Description

This course teaches students how to develop Enterprise JavaBeans (EJBs) using IBM Rational Application Developer (RAD) v6.0. The course describes design patterns and "best practices" for building robust, distributed applications in an enterprise environment. The concepts taught in this course are reinforced by hands-on lab exercises.

Objectives

At the completion of this course, the students will be able to:

- Use RAD v6.0 to develop and test sessions, entity and message-driven EJBs and other J2EE components
- Understand how EJB 2.1 components fit into the J2EE architecture.

Topics

- J2EE Architecture Overview
- RAD Concepts
- RAD: Import and Export Wizards
- Enterprise JavaBean Overview
- RAD: J2EE Perspective
- Java Naming and Directory Interface Overview
- RAD: CMP Tools
- Object Serialization
- RMI over IIOP
- Session Bean Development
- J2EE Design Patterns
- Entity Bean Development
- Application Assembly Overview
- Transaction Management
- JMS Application Development
- RAD: JMS Support
- Web Sphere Security Overview
- Defining Security in RAD

Prerequisites

Students should have Proficiency as a Java programmer and experience with developing server side components such as Servlets and JavaServer Pages.

Duration

Four Days

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Course Outline

- I. J2EE Architecture Overview**
 - A. Enterprise Application Overview and Development Cycle
 - B. J2EE Architecture and Development Roles
 - C. Containers
 - D. EJB, Servlet and JSP
 - E. JDBC, JNDI and JTA
 - F. JavaMail, JMS and RMI Over IIOP
 - G. J2EE Connector Architecture
 - H. Deployment Descriptors
- II. RAD Concepts**
 - A. Workbench Features and Supported Standards
 - B. Eclipse
 - C. Perspectives
 - D. Creating Projects and Setting Project Properties
 - E. Adding Application Components
 - F. Enabling Roles
 - G. Using Editors and Views
 - H. Fast Views
 - I. Customizing Perspectives and Creating User Defined Perspectives
 - J. Getting Help and Using Cheat Sheets
- III. RAD: Import and Export Wizards**
 - A. Supported Files and Resources
 - B. Importing EARs, JARs, Projects and Tag Libraries
 - C. Server Configuration Issues
 - D. RAD Source Files
 - E. Exporting Resources
 - F. Generating a JAR Description
 - G. Specifying a Manifest File
- IV. Enterprise JavaBean Overview**
 - A. What are Enterprise JavaBeans and Why Use Them?
 - B. EJB Container, EJB Server
 - C. Session Bean Overview
 - D. Entity Bean Overview
 - E. Message-Driven Bean Overview
 - F. EJB Classes and Interfaces
 - G. Local vs. Remote Client View
 - H. EJB Deployment Code and Deployment Descriptors
 - I. EJB JAR File
 - J. Looking Up and Invoking an EJB
- V. RAD: J2EE Perspective**
 - A. Toolbar and Views
 - B. Defining Dependencies
 - C. Creating an EJB Project
 - D. Creating a Session EJB
 - E. Promoting Methods
 - F. Generating Deployment Code
 - G. Using the Universal Test Client
 - H. Application Deployment Descriptor: WebSphere V5 and WebSphere V6
- VI. Java Naming and Directory Interface Overview**
 - A. JNDI Architecture
 - B. Naming and Directory Services
 - C. JNDI Terms and Packages
 - D. Initial Context
 - E. JNDI Lookup Examples
 - F. Service Providers
- VII. RAD: CMP Tools**
 - A. Creating an Entity Bean
 - B. Generated Classes
 - C. Defining CMP Fields and Relationships
 - D. EJB to RDB Mapping
 - E. Adding Finder Methods and Specifying EJBQL
 - F. Editing Deployment Information
 - G. Controlling Activation and Passivation
- VIII. Object Serialization**
 - A. What is Serialization?
 - B. Creating Serializable Objects
 - C. Object Variables
 - D. Transient Variables
 - E. Reading and Writing Serialized Objects
 - F. Customizing Serialization
 - G. Implementing writeObject() and readObject()
 - H. EJBs and Object Serialization

IX. RMI over IIOP

- A. The History of RMI Over IIOP
- B. RMI/IIOP Basics
- C. RMI Interfaces and Implementation Classes
- D. Remote Interfaces and Objects
- E. Stubs and Ties
- F. RMI/IIOP Architecture
- G. Passing Objects Using RMI/IIOP
- H. PortableRemoteObject

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Course Outline (cont'd)

X. Session Bean Development

- A. Proper Usage of Session Beans
- B. Stateless Session Bean Usage and Lifecycle
- C. Pooling Stateless Session Beans
- D. Stateful Session Bean Usage and Lifecycle
- E. Callback Methods
- F. Passivation and Activation
- G. Session Bean Classes and Interfaces
- H. Adding Business Logic
- I. Session Bean Design Guidelines
- J. Invoking a Session Bean
- K. Handles
- L. Deployment Descriptors
- M. Stateless vs. Stateful
- L. Bean-Managed Persistence
- M. Developing BMP Entity Beans
- N. Implementing Callback Methods
- O. CMP Versus BMP
- P. Entity Bean Design Guidelines

XI. J2EE Design Patterns

- A. What Are Design Patterns and Why Use Them?
- B. Value Object, Session Façade and Business Delegate
- C. DAO, Fast-Lane Reader and Page-By-Page Iterator
- D. Composite Entity, Front Controller and Factory
- E. Putting It All Together

XII. Entity Bean Development

- A. Entity Bean Usage
- B. Creating and Removing an Entity
- C. Key Classes and Fields
- D. Finder Methods
- E. Types of Persistence
- F. CMP Entity Beans
- G. Object-Relational Mapping Approaches
- H. CMP Fields and Relationships
- I. EJB Query Language
- J. Deployment Descriptor Entries
- K. Entity Bean Lifecycle

XIII. Application Assembly Overview

- A. Application Assembly and Packaging
- B. Deployment Descriptors (EJB, Web, Connector and Client Modules)
- C. IBM Extensions and Bindings

XIV. Transaction Management

- A. What is a Transaction?
- B. ACID
- C. Two-Phase Commit
- D. JTA and JTS
- E. Bean-Managed and Container-Managed Transactions
- F. Valid Transaction Types
- G. Transaction Demarcation
- H. Defining Transaction Attributes
- I. Required Transaction Attributes
- J. Isolation Levels
- K. UserTransaction Interface
- L. Restrictions
- M. SessionSynchronization

XV. JMS Application Development

- A. JMS Architecture and Capabilities
- B. JMS Participants and Interactions

- C. JMS Objects
- D. Runtime Environment
- E. Messaging Styles: P2P and Pub/Sub
- F. Sending a Message
- G. Connection Factories and Destinations
- H. Message-driven Beans (MDB)
- I. Implementing the on Message() Method
- J. JMS and Transactions

XVI. RAD: JMS Support

- A. JMS Server Configuration (V5 and V6)
- B. Adding JMS References
- C. WAS Message Listener Service
- D. WAS Listener Ports

XVII. WebSphere Security Overview

- A. Security: Declarative and Programmatic
- B. Container Based Security
- C. Secure Associations
- D. Security Roles and Role Mappings
- E. Authentication vs. Authorization
- F. Lazy Authentication
- G. LTPA
- H. User Registries and Supported LDAP Servers

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Course Outline (cont'd)

- I. Run As Identity
- J. Secure Sockets Layer (SSL) and Transport Layer Security (TLS)
- K. Single Sign-On
- L. Java 2 Security
- M. Policy Files: Static and Dynamic

XVIII. Defining Security in RAD

- A. Enabling Security
- B. Defining Security Roles and Method Permissions
- C. Adding Security Constraints and Resource Collections
- D. Security Role References
- E. Security Identity
- F. Authentication Mechanisms
- G. Security Configuration Files