

Course Description: This is an advanced intro to EJB technology, introducing concepts to those who have never used EJB. Also included are advanced concepts students can use to complete large-scale EJB projects.

Who Should Attend: This course is for intermediate to advanced Java programmers. System architects will find the advanced concepts especially beneficial in designing a framework.

Prerequisites: Students should understand the core Java libraries; be familiar with web application programming; and have experience using IBM RAD.

Benefits of Attendance: Upon completion of this course, students will be able to:

- Understand the EJB 2.1 specification at an expert level.
- Understand how to utilize EJBs with RAD.
- Gain knowledge of J2EE Design Patterns and Best Practices.

Course Outline:

RAD v7

WebSphere Studio Family
Eclipse Platform
WebSphere Studio Product Family
Key Features in RAD v7
WSAD Integration Edition
WebSphere Studio Enterprise Developer
Views, Perspective and Editor Areas
Basic Operations with RAD
Java & Debug Perspectives
Package Explorer
Navigator, Outline, and Task Views
Build and Validation
Templates and Code Completion
Searching
Setup Compiler Class Path
JRE Switching
Import and Export Project
Features of Eclipse 3.0
Eclipse SDK V3.0
JDK 1.4 – New Features
Control Flow of Logging
Logging API

J2EE and Rational Platform

Java Web Applications
J2EE Architecture
WAP Model – MVC
Infrastructure for Enterprise Web Applications
IBM WebSphere Platform
Rational Web Developer
RAD and WAS
WebSphere Editions
WAS Services and Architecture
WebSphere Administrative Topology
WebSphere Application Server Components
Server Profile
WAS Administration tools
RAD J2EE Development
RAD Project Structure
WebSphere Test Environment in RAD
EJB Test Client in RAD

Overview

Needs for EJB
Distributed Computing, Transaction, and Security
EJB Remote Method Call
EJB Architecture Components
EJB Client, JAR File, Server, and Container
Session and Entity Beans
EJB Classes and Interfaces
Basic Components of Entity and Session Beans

EJB Home Interface and Object
EJB Remote Interface
EJB Local Interface
Remote and Local EJB Objects
EJB Implementation Class
EJB Container - Relationships
Remote v. Local EJBs
EJB Application Development
Deploying Enterprise Beans
Major Components of Deployed EJBs

Session Bean

Home, Remote, and Local Interfaces
Session Bean Class
ejbCreate() Method
Business Methods
EJB Context
Session Bean Lifecycle
Lifecycle - Stateless and Stateful
Concurrency Issues
Invoking Session Beans from client Application
Home Object
Create an EJB Object
RAD for EJB Development
Developing a Session Bean using RAD
EJB Project in RAD
Create an EJB project
Create a Session Bean
Code methods
Promote methods to interfaces
Deploying EJBs
Run on server
JNDI Explorer
Test the home and component interface
Exporting EJB JAR
EJB JAR File Structure

EJB 2.1 Changes

Web Service Clients
Component Interface
Web Service Component Interface
Web Service Client View
Web Service References
Web Service Reference
Programming Interfaces
Declaration Of Web Service References
Container-Managed Timer Service
EJB Timer Service
TimedObject Interface
Annotation Based EJB Development
@ejb.create-method
@ejb.finder, @ejb.home, @ejb.interface, @ejb.transaction
Annotation Based EJB Development

Annotation Based EJB Development
Disabling Tag Sets
Enhanced EAR File Editor
Deployment Descriptor Of An Enterprise File
Exporting an Enterprise Application into an EAR File

Entity Bean

Container
Primary Key Class
(Remote) Home Interface
Local Home Interface
Remote and Local Interfaces
Entity Bean Class
Entity Instance
Entity Object Lifecycle
Bean Instance Lifecycle
Persistence
Writing BMP and CMP Beans
Persistent Fields
Writing finder methods
EJB Query Language
Using EJBQL in a CMP bean
Business Methods
EntityContext
Defining and Mapping CMP Fields
Developing Entity Beans in RAD
Adding a CMP Entity EJB
EJB Deployment Descriptor
Add an EJBQL query
Import Database Schema
Copy Database Schema
Creating a database mapping
Choosing a backend
Choosing a mapping type
Specifying the mapping
EJB and EJB 2.0 Relationships
WebSphere Extensions

EJB Exception

Exception Types
Bean Class
Containers and Clients
Standard Exceptions
Local EJBs

EJB Security

Goals of the EJB Security Specification
Declarative EJB Security – Method Permission
Configure Security Roles
Configure Method Permissions
Generated XML in ejb-jar.xml
Unchecked option
Excludes List
EJB Delegation Policy
Configuring EJB Delegation Policy with RAD
Programmatic EJB Security

Message-Driven Beans

Messaging to the Rescue
Message-Oriented Middleware
Messaging Domains
Publish/Subscribe
Point-to-Point
Java Message Service
JMS Programming: Overview
The JMS Interfaces
Integrating JMS and EJB
Durable Subscription
Message-Driven Bean Interfaces
javax.ejb.MessageDrivenBean
javax.jms.MessageListener
javax.jms.Message
Lifecycle
Class MessageCounter
Processing the Message
Deployment Descriptor Entry
Binding the Queue or Topic
JMS in RAD
Configure a Service Integration Bus in RAD
Add Application Server as Bus Member
Create and Configure a Queue
Configure the JMS Resources
Configure Connection Factory
Configure Activation Specification
Configure the Activation for MDB
Transactions and Security
Load Balancing
Clustering and Topics
Clustering and Queues
Poison Messages
Building a Response
Potential Problems
Type Checking and Messages
Testing Message-Driven Beans

Best Practices

Transaction Management
Object Transaction
EJB Transaction Basics
Transaction Propagation
Client, Bean, and Container Managed Transactions
Transaction Outcome
Vetoing a Transaction
Transaction Isolation
CMP EJB Access Intent
Setting Access Intent
Setting Data Source Isolation Level

EJB Design Patterns

Types of EJB patterns
Session and Message Facade Pattern
Session Facade
EJB Command pattern
Generic Attribute Access pattern

Data Transfer Object
Data Transfer Rowset
Version Number pattern
Fast Lane Pattern
Data Access Command Beans
EJBHomeFactory
Business Delegate
Sequence Blocks
Stored Procedures for Autogenerated Keys

Basic Admin.

Administration Roles and Clients
The Console
Creating a Profile
wasprofile command
Managing an Application Server
Enable Server Process Restart
Basic Application Server Configuration
Configure the JVM
Web Container Transport Chain
Configure Transport Chain
Configure Session Management
Configure an EJB Container
Preparing to Host Applications
Resource Scope and Variables
Configure a Virtual Host
Configure a JDBC Provider
Select JDBC Provider Type
JDBC Provider Options
Data Source
Clustering and Data Source
Mail Providers
The Administrative Console
Installing an Enterprise Application into WAS
Saving the Master Configuration
Configuring the Web Server plugin
WebSphere Apps on the file system
The Plugin