J2EE Design Patterns

Course Summary

Description

This course teaches developers and architects how to design and build easily managed and maintainable J2EE applications by applying J2EE and “Gang of Four” design patterns.

Objectives

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

- Use J2EE patterns to develop faster and better J2EE applications
- Design and implement more effective J2EE applications using the J2EE design patterns
- Recognize potential architecture and design problems early on and design and implement an optimal solution
- Select the best combination and implementation of patterns for problem at hand
- Implement design pattern solutions with Servlets, JSPs, with and without EJBs

Topics

- Overview of J2EE Architecture
- Overview of J2EE Services
- UML - Unified Modeling Language
- Design Patterns
- Gang of Four Design Patterns
- J2EE Design Patterns
- Object-Oriented Design Principle
- Gang of Four
- Behavioral Patterns
- Creational Patterns
- Structural Patterns
- Introduction to J2EE Patterns
- Integration Tier Patterns
- Business Tier Patterns
- Presentation Tier Patterns
- Exploring AntiPatterns

Audience

This course is designed for enterprise architects, Java technology and J2EE software developers with a good understanding of Object Oriented design and programming.

Prerequisites

This course assumes that you have general competence in Object Oriented design and programming, as taught in the ProTech Object Oriented Analysis and Design course or equivalent. Proficiency in Java programming is preferred, but not strictly required.

Duration

Five Days

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Course Outline

I. J2EE Architecture
- A. J2EE Architecture
- B. Features
- C. Benefits
- D. Communication Technologies
- E. Messaging Technologies
- F. J2EE Architecture
- G. J2EE Modules
- H. HTTP Servlet
- I. JavaServer Pages
- J. Model-View-Controller
- K. Struts
- L. JSP Standard Library - JSTL
- M. Enterprise Java Beans

II. J2EE Services
- A. Naming Service
- B. Database Access Service
- C. Transaction Service
- D. Messaging Service
- E. JavaMail Service
- F. Security Service

III. Overview of EJB
- A. J2EE Containers
- B. What is EJB ?
- C. EJB Framework Components
- D. EJB Server
- E. EJB Container
- F. EJB Components
- G. EJB Deployment Descriptors
- H. Roles
- I. Benefits
- J. When to Use EJB
- K. EJB Architecture
- L. Component Interface Architecture
- M. Home Interface Architecture
- N. Types of EnterpriseBeans
- O. EJB Session Beans
- P. EJB Entity Beans
- Q. Message Driven Beans

IV. UML Overview
- A. Naming Service
- B. Types of UML Diagrams
- C. Use Case Diagram
- D. Class Diagram
- E. Relationships
- F. Associations
- G. Aggregate Associations
- H. Generalization
- I. Association Specifiers
- J. Sequence Diagram

V. Design Patterns
- A. Design Patterns Defined
- B. Design Pattern Catalog
- C. Documenting Design Patterns

VI. Object Oriented Design Concepts
- A. Cohesion
- B. Encapsulation
- C. Coupling
- D. Composition
- E. Interface Inheritancce
- F. Polymorphism
- G. OO Design Principles

VII. Gang of Four Design Patterns
- A. Categorization of GoF Patterns
- B. Behavioral Patterns
- C. Template Method
- D. Observer
- E. Command
- F. Strategy
- G. Creational Patterns
- H. Factory Method
- I. Abstract Factory Method
- J. Builder Pattern
- K. Structural Patterns
- L. Adapter
- M. Proxy
- N. Façade

VIII. J2EE Design Patterns
- A. J2EE Design Patterns Defined
- B. Tier Approach
- C. Client Tier
- D. Integration Tier
- E. Business Tier
- F. Integration Tier

IX. Integration Tier Patterns
- A. Data Access Object

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B. Service Activator
C. Domain Store
D. Web Service Broker

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X. Business Tier Patterns
- A. Business Delegate
- B. Service Locator
- C. Session Façade
- D. Application Service
- E. Business Object
- F. Composite Entity
- G. Transfer Object
- H. Transfer Object Assembler
- I. Value List Handler

XI. Presentation Tier
- A. Intercepting Filters
- B. Front Controller
- C. Context Object
- D. Application Controller
- E. View Helper
- F. Composite View
- G. Service to Worker
- H. Dispatcher View

XII. Exploring Anti-Patterns
- A. Anti-Patterns Defined
- B. No Pooling Connection
- C. Monolithic Consumer
- D. Sledgehammer for a Fly
- E. Using Remote and Local Interface
- F. Access Entities Directly Anti-Pattern
- G. Cacheless Cow Anti-Pattern
- H. Conversational Baggage
- I. Including Common Functionality in the Servlet
- J. Embedded Navigational Information

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