Introduction to Spring and JPA

Course Summary

Description

This course is designed for Java programmers that want to learn Spring and the Java Persistence API. The course provides students with a solid foundation in Spring and JPA that allows them to take what they learn during the course and immediately apply it on real world applications. A key feature of the course is the integrated case study at the end of the course that challenges the students to build a small application using all the techniques that they have learned during the class. The course uses numerous short executable examples to illustrate the various features of Spring and JPA along with the several longer examples that demonstrate real world usage.

Topics

- Dependency Injection / Inversion of Control
- Spring Architecture
- Spring IOC container
- Aspect Oriented Programming
- Spring Aspect Oriented Programming
- Spring Data Access Framework
- Object Relational Mapping
- Java Persistence API Architecture
- Mapping Objects to Tables with JPA
- JPA Object Query Language
- JPA in the Real World
- Integrating Spring and JPA
- Spring + JPA Integrated Case Study

Audience

This course is designed for programmers & Architects who need to quickly get up to speed on Spring and the JPA.

Prerequisites

Students should have Java programming experience.

Duration

Five days

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

ProTech
protechtraining.com

"Charting the Course ...

... to Your Success!"

Introduction to Spring and JPA

Course Outline

I. Dependency Injection
- A. What is Dependency Injection
- B. Benefits of Dependency injection
- C. Dependency Injection Frameworks
- D. Cost of Dependency injection

II. Spring Architecture
- A. Overview of Spring
- B. Architecture of the Spring Project
- C. Spring Distribution
- D. Configuring Spring Projects
- E. Selecting which parts of Spring to use

III. Spring IOC Container
- A. Spring IOC Container Overview
- B. XML based Spring IOC
- C. Factory Beans
- D. Bean Life cycle
- E. Annotation based Spring IOC

IV. Aspect Oriented Programming
- A. What problem does AOP Solve?
- B. Code tangling, Code Scattering
- C. Cross Cutting Concerns
- D. Aspects, Weaving, Join Points, Point Cuts, and Introductions.
- E. AOP programming environments
- F. Load Time Weaving, Compile Time Weaving

V. Spring AOP
- A. Java Dynamic Proxies
- B. Java Byte code Enhancement
- C. Proxy based Spring AOP
- D. Configuring aspects using XML
- E. Configuring aspects using AspectJ annotations
- F. Integrating Spring and AspectJ Load Time Weaving

VI. Spring Data Access Framework
- A. Spring Data Access Architecture
- B. Common Exception Hierarchy
- C. Spring DaoSupport classes
- D. Transaction Management with Spring
- E. Spring JDBCTemplate class

VII. Object Relational Mapping (ORM)
- A. Object Persistence Problem
- B. Statement Mapping
- C. Object Relational Mapping
- D. Statement Mapping vs. ORM
- E. Benefits of ORM
- F. Costs of ORM
- G. ORM products and their history

VIII. JPA Architecture
- A. JPA overview
- B. Examples JPA
- C. Key JPA concepts
- D. JPA configuration
- E. JPA implementations

IX. JPA Architecture
- A. Toplink Overview
- B. Toplink Configuration

X. Mapping Objects to Tables with JPA
- A. Basic Mapping
- B. Mapping Primary Keys
- C. Mapping one to one relationships
- D. Mapping one to many relationships
- E. Mapping many to many relationships
- F. Compound Primary Keys
- G. Entity Manager
- H. Entity Object Lifecycle
- I. Transactions
- J. Concurrency and Locking

XI. JPA Query Language
- A. Object Query Languages Overview
- B. Basic Queries
- C. Named Queries
- D. Select Queries
- E. Aggregate Queries
- F. Update and Delete Queries
- G. Projections and Joins
- H. Query Hints
- I. Native Queries

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

Introduction to Spring and JPA

Course Outline (cont'd)

XII. JPA in the Real World

A. Configuration Best Practices
B. Mapping Best Practices
C. Query Best Practices
D. JPA Design Patterns

XIII. Integrating Spring and JPA

A. Spring JPA support
B. Spring Transaction Management with JPA
C. Implementing Data Access Objects with Spring and JPA
D. Configuring Spring + Toplink + JPA

XIV. Spring + JPA Integrated Case Study

A. Students will be asked will be asked to implement the data access layer for a phone book contact management application.
B. Students will put into practices all the skills that they learn during the week to configure Spring and JPA and to implement the data access layer using Spring + Top link

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically