ProTech protechtraining.com *"Charting the Course ... ... to Your Success!"*

Fast Track Core Struts 2.0

Course Summary

Description

Created in collaboration with several leading JEE and Struts authors and industry experts, Fast ***Track to Core Struts 2.0 Developer's Workshop*** is a lab-intensive, hands-on struts 2 training course that will provide students with the skills required to design and build scalable, secure, maintainable web applications - leveraging our team's extensive experience in the delivery of scalable enterprise applications with complex web interfaces based on JEE technologies. This course provides essential Struts 2.0 knowledge that can be used as the foundation for developing production-quality web applications.

Struts 2.0 is the second generation of the open source, Model-View-Controller (MVC) framework developed by The Apache Software Foundation as part of its Jakarta project. Struts 2.0 is built on top of a variety of components and technologies to provide tremendous flexibility and address many lifecycle issues. After reading the first JEE Blueprints from Sun with their explanation of MVC and how to accomplish it with custom tags, Servlets, and JSP, one can clearly see that Struts 2.0 is a manifestation of Sun's JEE MVC vision that uses many of the more recent innovations in both Java and JEE. Struts 2.0 addresses many major issues by using vanilla POJOs, filters, and other components to build web systems. It solves the problem of controller complexity by removing the workflow logic from the code, and directing workflow in an XML configuration file. Struts 2.0 improves on the limited form support in JSP (and first generation the Struts 1.x framework) by adding numerous capabilities to form processing including easy validation, easy error display, and the refilling of form input on retries from a user's previous entries. It minimizes the complexity of JSP pages by supplying a very extensive and flexible set of custom tag libraries for many of the standard operations needed in JSP pages. This course will get you up to speed with Struts 2.0 in a very short time. It includes all the important concepts, and hands on labs that will have you building working Struts 2.0 applications in no time flat.

Objectives

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

- Understand the problems with vanilla servlets/JSP, and the motivation for the general Struts framework
- Understand MVC and the Struts architecture
- Understand the lessons learned from Struts 1.x and how they influenced Struts 2.0
- Understand the Struts FilterDispatcher, actions, and results
- Create & configure applications using Struts 2.0
- Define, implement, and test ActionSupport and Action classes
- Use Struts for form processing
- Handle errors and debug Struts applications
- Utilize the Struts 2.0 validation framework
- Understand and work with the value stack to bind objects to views and request processing

Topics

- Getting Started with Struts 2.0
- Your First Struts Application
- Mapping the Model to the View
- Validation and Type Conversion
- Localization and I18n
- Putting It All Together
- Advanced Topics

Audience

This is an intermediate level Struts training course, designed for experienced JEE developers that need to further extend their skills in web development and Struts.

Prerequisites

Attendees should have an extensive working knowledge in developing JEE applications

Duration

Three days

Fast Track Core Struts 2.0

Course Outline

I. Getting Started with Struts 2.0

A. Jakarta Struts Project
1. What is Struts?
2. About the Struts Project
3. Web Applications Defined
4. Typical User Interactions
5. Web Application Development Challenges
6. JEE and Web Applications
7. Struts Builds on JEE components
8. Benefits of Using Struts

B. Review Servlets, JSPs, Filters and Web Applications
1. Dynamic Content
2. What are Servlets?
3. Where do Servlets Live?
4. Advantages of Servlets
5. Packages and Classes
6. Creating a Servlet - The Simplest Way
7. A Simple HTTP Servlet
8. Shortcomings of Servlets
9. What is a JSP?
10. A Very Simple JSP - simple.jsp
11. JSPs Look Like HTML
12. JSP Expressions
13. JSPs are Really Servlets
14. Example of the Lifecycle
15. The Generated Servlet
16. Object Buckets or Scopes
17. Using the Scopes
18. Using useBean
19. Understanding Filters
20. Filter Example
21. Web Applications
22. WAR Directory Structure
23. Web Application Descriptor – web.xml
24. Example web.xml file
25. Packaging Web Applications
26. Deploying Web Applications

C. MVC and Struts
1. MVC/Model 2 Architecture
2. MVC/Model 2 Architecture - Model
3. MVC/Model 2 Architecture - View
4. MVC/Model 2 Architecture - Controller
5. Struts and MVC
6. Struts and MVC - Model
7. Struts and MVC - View
8. Struts and MVC - Controller

D. What's new in Struts 2.0
1. Shortcomings in Struts 1.x
2. Changes and enhancements in Struts 2.0
3. Struts 2.0 Benefits
4. Struts 2.0 Basic Architecture
5. Key differences from Struts 1
6. Lesson: Struts 2 Architecture
7. Overview of the Struts 2.0 Architecture
8. Request Processing Flow
9. Request Processing Flow – One View
10. Request Processing Flow – Another View
11. Key components
12. Configuration files

E. Struts 2 Components Overview
1. Struts 2.0 Basic Architecture
2. FilterDispatcher
3. Action objects
4. Results
5. Interceptors

II. Your First Struts Application

A. Creating the Application
1. Creating a Web Project
2. Creating a Web Project (manually)
3. Creating a Web Project (IDE)
4. Creating a Web Project (Maven)
5. Web Project Structure
6. Web Project Structure Example
7. Web Project Structure - Maven

B. Configuring web.xml
1. web.xml Overview
2. web.xml – Struts information
3. Lesson: Configuring Struts.xml
4. Configuring Struts.xml
5. Administrative Elements
6. Request Handling Elements
7. Error handling Elements
8. Lesson: Implementing Actions
9. Creating Action classes
10. A simple Action Class
11. Another Simple Action Class

C. Adding Basic View Components
1. View Components
2. A Simple View Component
3. Configuring the View Component

Fast Track Core Struts 2.0

Course Outline (cont'd)

III. Mapping the Model to the View
- A. Review: Using Custom Tags
  1. JSP Limitations?
  2. Sun's Solution - Custom Tags
  3. Custom Tags
  4. Custom Tag Capabilities
  5. Custom Tag Overview
  6. Tag Libraries
  7. Tag Library Descriptor (TLD)
  8. Tag Libraries and JSPs
  9. Summary of Using Custom Tags
- B. Introducing Struts 2 Tags
  1. The Struts 2 Tag Library
  2. The Value Stack
  3. Tag Syntax
  4. Tag Reference
  5. Tag Reference – Generic Tags
  6. Tag Reference – UI Tags
  7. FreeMarker and Velocity
  8. FreeMarker Tags
  9. Velocity Tags
- C. Themes and Templates
  1. Overview of Templates and Themes
  2. Template Example
  3. The simple Theme
  4. The Default (xhtml) Theme
  5. The ajax Theme

IV. Validation and Type Conversion
- A. XWorks Validation Framework
  1. Validation Techniques
  2. XWork2 Validation
  3. Built-in Validators
  4. Built-in Field Validators - visitor
  5. Built-in Field Validators - conversion
  6. Specifying Validation
- B. Implementing Validation
  1. Basic Validation
  2. Basic Validation – the Form
  3. Basic Validation – the Validation Descriptor
  4. Custom Validators
- C. Type Conversion
  1. Type Conversion Basics
  2. Type conversion tips
  3. Custom Converters
  4. Custom Converter Example

V. Localization and I18n
- A. Locales and Internationalization
  1. Significant Issues for Localization
  2. Localization in Struts 2
  3. Locales
- B. Resource Bundles
  1. ResourceBundle
  2. Resource Bundle Naming
  3. Message Types in the Bundle
  4. Specifying the Resource Bundle
- C. Formatting Messages
  1. Tags with Locale Support: UI tags
  2. Tags with Locale Support: Messages
  3. Tags with Locale Support: date

VI. Putting It All Together
- A. Understanding the Design
  1. Creating TriveraTunes
  2. TriveraTunes Flow
  3. Searching CD's: The Request
  4. Searching CD's: Displaying The Results
  5. Choosing what to do next
  6. Editing the Details
  7. Showing Error Messages
  8. Handling Exception
  9. Database Access
  10. Database Access – A Technical Use Case
  11. Database Access – the Service Interface
  12. Database Access – Service Options
  13. DAO Overview
  14. DAO Benefits
- B. Implementing the Application
  1. TriveraTunes Flow – the Search Action
  2. Action Classes
  3. Searching CD's: The Request
  4. The Action
  5. Viewing the Results of the Search
  6. Add/Edit/Delete Listing
  7. Creating the Hyperlinks
  8. Pre-populating Forms
  9. Updating Album
  10. Validating Forms
  11. Validation Error Messages
  12. Showing Error Messages
  13. Handling Exceptions
  14. Exception Messages

Fast Track Core Struts 2.0

Course Outline (cont'd)

15. Action class vs. Value Object
16. Nested Beans
17. Creating the SelectBox
18. Struts 1 DispatchAction
19. Edit/Delete Example
20. Recap – Implementing Searches
21. Recap – Pre-populating forms
22. Recap - Validation
23. Recap: Error Messages
24. Recap: Exception handling

VII. Advanced Topics

A. Advanced Topics Overview
   1. Annotations
   2. Zero Configuration
   3. Dependency Injection
   4. Testing in Struts 2
   5. Advanced OGNL and the ValueStack

B. Leveraging the Struts 2.0 Architecture
   1. Leveraging the Struts 2.0 Architecture
   2. Make effective use of Packages
   3. Use Empty Actions for Forwarding
   4. Use Struts Components in your views
   5. Make effective use of Tiles
   6. Test your actions
   7. Handle Exceptions Declaratively
   8. Integrate Other Technologies
   9. Things to avoid
   10. Tag Reference – Generic Tags
   11. Control Flow
   12. Iteration
   13. Generating an iterator
   14. Processing a subset
   15. Other iterator tags
   16. Data tags