

Course 435: Mastering Struts (5 days)

Course Description...

Created in collaboration by several leading J2EE and Struts authors and industry experts, this intensive course will give you the skills to design and build scalable, secure, maintainable web applications - leveraging ROI's extensive experience in the delivery of scalable enterprise applications with complex web interfaces based on J2EE technologies. This course is ROI's flagship Struts course, providing core Struts knowledge and then building on that in several potential directions. This course extends that discussion to cover a preview of Struts 2.0 and how it relates to current Struts applications.

Struts is an open source, Model-View-Controller (MVC) framework developed by The Apache Software Foundation as part of its Jakarta project. Struts is built on top of JSP, Servlets, and tag libraries. After reading the first J2EE 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 is a manifestation of Sun's J2EE MVC vision.

Struts addresses many major issues in using vanilla Servlets/JSP to build web systems. It solves the problem of controller complexity by removing the workflow logic from the Servlets, and directing workflow in an XML configuration file. Struts improves on the limited form support in JSP by adding numerous capabilities to form processing including easy validation, easy error display, and the refilling of form input on form retries from a users 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 in a very short time. It includes all the important concepts, and hands on labs that will have you building working Struts applications in no time flat. Struts has become a large and complex set of technologies and tools. As such, this course is highly customizable to allow you, the client, to select a course that fits your needs. For example, there are selectable, optional modules on how to extend the Struts framework to fit your unique needs; how to develop and use custom tags within the framework; how to work with JSP 2.0, EL, and JSTL; and how use the Tiles constructs within Struts. As an additional bonus, the course includes a preview of Struts 2.0 and how it relates to existing Struts applications. Please contact ROI Training to build a course the meets your needs.

Hands-On Workshops...

Throughout the course students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review.

This class is "technology-centric", designed to train attendees in essential J2EE development skills coupling the most current, effective techniques with the soundest coding practices.



This workshop is about 50% hands-on lab and 50% lecture. Multiple detailed lab exercises are laced throughout the course, designed to reinforce fundamental skills and concepts learned in the lessons. Because these lessons, labs and projects are presented in a building block fashion, students will gain a solid understanding of not only the core concepts, but also how all the pieces fit together in a complete application. At the end of each lesson, developers will be tested with a set of review questions to ensure that he/she has fully understands that topic.

Learning Objectives...

This course provides coverage of all the standard components, renderers, converters, and validators, along with advice on how to use them to create solid applications. Working in a hands-on, lab-intensive environment, students will explore and use complex user interface layouts, prototyping, and integrating templates with back-end model objects. Topics include:

- Understand the problems with vanilla servlets/JSP, and the motivation for Struts
- Understand MVC and the Struts architecture Understand the Struts controller, Struts views, and Struts resource bundles
- Create & configure applications using Struts
- Define views, actions, and FormBeans
- Use Struts for form processing
- Use ActionMappings
- Handle errors and debug Struts applications
- Utilize Struts validation framework
- Use the Bean, Logic, and HTML Custom Tag Libraries
- Use the flow-of-control custom tags
- Preview of changes in Struts 2.0 and how they relate to current Struts applications for each topic and lesson

Optional Sessions

- Advanced Form Management using DynaAction and Validator frameworks
- How to extend Struts
- How to use Tiles and advanced Tiles constructs
- Working with JSP 2.0, EL, and JSTL

Who should attend...

This an intermediate level Struts training course, designed for J2EE developers that need to further extend their skills in web development and Struts. Attendees should have an extensive working knowledge in developing J2EE applications

Prerequisites...

Students should have basic development skills and a working knowledge in the following topics, or attend these courses as a pre-requisite:

- Essential Java Programming (Crs. 430)

See next page for a detailed course outline...



Course Outline...

Getting Started with Struts

- Jakarta Struts Project
- MVC and Struts
- Review Servlets, JSP and Web Applications
- Struts Controller, Views and Resources
- Struts Architecture
- What's New in Struts 2.0

Your First Struts Application

- Configuring Struts applications
- Input JSP
- Defining Actions
- Defining Action Forms
- Defining FormBeans
- Action Mappings

Mapping the Model to the View

- Review using Custom Tags
- Introducing Struts Tags
- Defining beans into the model
- Working with headers
- Working with Beans
- Using Logic Tags
- Using HTML Tags
- Handling message resources
- Working with HTML forms and form beans
- Iterating over lists and sublists
- Conditionally including parts of your JSP
- Using JSTL in place of the Struts Custom Tags (optional lesson)

Uploading Files and I18n

- Locales
- PropertyResourceBundles
- Formatting Messages
- Message Resources
- Internationalization

Putting It All Together

- Create the Application
- Forward Action
- Searching
- Prepopulating Forms
- Validating forms
- Showing and Editing Error Messages
- Handling Exceptions
- FormBeans vs. Value Objects
- Add/Edit/Delete Listing



Advanced Forms Management

- Working with DynaActionForms
- Struts Validator : Email, mask, range, length, date and credit card validation
- Creating Validation Rules
- Validation.xml
- Use the Correct Form Bean
- Put it together: Add into the Project

Working with the Tiles Custom Library

- Defining templates
- Using put and insert
- Advanced tile features (optional lesson)

OPTIONAL SESSIONS – By Request Only

NOTE: The following sessions are optional and must be requested additionally. Adding these sessions may extend the course beyond five days. A brief technical call to assess your training goals and challenges can help us adjust the agenda to best suit your needs, and fit in the skills and topics of most importance to your team to meet your objectives.

Advanced Tiles (Optional)

- Advanced Tiles
- Tiles as Visual Components
- Using Tiles to Write Visual Components
- Extending Definitions (Optional)

Developing Custom Tags (Optional)

- Creating Custom Tags
- Developing Custom Tags
- Struts Utility Classes
- Custom Tags using Struts Utilities
- Custom Tags Development with JSTL

Extending Struts (Optional)

- Review of Struts Architecture
- Custom Config Objects
- Plugins
- RequestProcessor
- Case Study
- Best Practices

JSP 2.0 (Optional)

- Introduction
- The Expression Language
- EL Functions
- Simple Tag Handlers
- JSTL 1.1
- Introduction
- JSTL Core
- JSTL Format
- JSTL SQL
- JSTL XML