

TT6262-JEE5: Building JEE (JavaEE) Applications using Servlets/JSPs and Struts 2.0 (5 days)



Building Java EE / JEE5 Applications using Servlets/JSPs and Struts 2.0 is a five-day hands-on course geared for experienced Java developers new to JEE, who need to get up and running with essential Struts 2 development skills. Created in collaboration with several leading JEE / JavaEE and Struts authors and industry experts, this comprehensive course teaches students how to design and program servlets and JSPs, including all the important concepts and hands on labs that will have you building working Struts 2 applications in no time flat. This course provides core Struts 2 knowledge that can be used as the foundation for developing

production-quality web applications to a basic level.

► Course Overview

Servlets and JavaServer Pages are key server-side Java technologies for building web applications. Servlets are programs that run on a web server; they can respond to client requests and create dynamic content.

Java Servlets allow flexible generation of dynamic content without the limitations of CGI-based applications or those created in a web server-specific manner. The JavaServer Pages (JSP) technology allows one to separate static from dynamic content while harnessing the power of Java Servlets.

New enhancements in JEE 5 simplify web application development, supporting the use of annotations, dependency injection, and a Common Expression Language (for use with both JSPs and JSF). One of the most significant enhancements to JEE 5 is EJB 3.0 and the inclusion of the Java Persistence API (JPA).

Struts 2 is an open source, Model-View-Controller (MVC) framework developed by The Apache Software Foundation as part of its Jakarta project. Struts 2 is built on top of JSP, Servlets, and tag libraries. 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 is a manifestation of Sun's JEE MVC vision.

Struts 2 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 2 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 2 in a very short time. It includes all the important concepts, and hands on labs that will have you building working Struts 2 applications in no time flat. As an additional bonus, the course includes a preview of Struts 2.0 and how it relates to existing Struts 2 applications.

COURSE SNAPSHOT

Duration: 5 days

Skill Level: Beginner-Intermediate

Focus: JEE essentials in prep for Struts 2 application development, basic Struts 2

Audience: Experienced Java developers, new to JavaEE (JEE)

Format: Extensive hands-on programming labs, expert lecture combined with open discussions and high-Level demonstrations and dynamic group exercises.

Language / Tools: JEE-focused, available for most IDEs and application servers.

Delivery Format: Available for onsite private classroom presentation, or live online / virtual presentation

Customizable: Yes

► Course Objectives: What You'll Learn

Students who attend this course will leave the course armed with the required skills to design and build scalable, secure, maintainable web applications - leveraging Trivera Technologies' extensive experience in the delivery of scalable enterprise applications with complex web interfaces based on JEE technologies.

Throughout this training, you will be confronted with common web application design problems and given the tools you will need to solve them, such as JEE design patterns. You will also be exposed to a range of JEE and web technologies such as Servlets, JSPs, EJBs, JNDI, Struts 2 and XML, and advice on when and how to use them. Students will also learn about the capabilities of servlets, their advantages over CGI, servlet architecture, and session management. Developers will also learn about JSP syntax, deployment, and application models, how to use Java as a scripting language, how to use custom tags, and how to build robust and capable web applications using Servlets and JSP.

Working in a dynamic, lab-intensive hands-on coding environment students will learn to:

- Design and build web applications from both business and technical requirements
- Build web interfaces with JSPs and Servlets, using the latest technologies in JEE 5.

- Write maintainable web applications that separate HTML and Java
- Understand the design and development of web applications using Servlets and JSPs
- Make Servlets cooperate and share data
- Store and process session information
- Deal with concurrency issues
- Understand and create JavaServer Pages (JSPs)
- Link Servlets and JSPs
- Use Java as a scripting language in JSPs
- Use the built in JSP objects
- Embed JavaBeans in a JSP
- Use JavaBeans in a JSP
- Use servlets and JSP together
- Understand and work with JEE 5 persistence options, including JPA
- Work with new annotations included in JEE 5
- Understand good design techniques including MVC, Command and State patterns
- 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 and either XML configuration files or annotations
- 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

The course provides a solid foundation in basic terminology and concepts, extended and built upon throughout the engagement. Processes and best practices are discussed and illustrated through both discussions and group activities.

Attending students will be led through a series of advanced topics comprised of integrated lectures, extensive hands-on lab exercises, group discussions and comprehensive demonstrations.

Please see below for additional information about the hands-on lab work.

► Audience & Pre-requisites: Who Should Attend

This is an **intermediate level** JavaEE (JEE) developer course, designed for experienced Java developers, new to JEE, that need to further extend their skills in web development and Struts.

Attendees should have an extensive working knowledge in developing basic Java applications.

► Related Courses – Suggested Learning Path

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

- **TT2101 Core Java Programming Fundamentals**

Take Instead: We offer other courses that provide different levels of knowledge or focus:

- For teams who need more focus on essential JEE topics without struts should consider **TT5100 Mastering J2EE Web Applications (Servlets, JSPs, JDBC, Security, etc.)**
- For team who wish to focus purely on struts, who have basic JEE experience, consider **TT6260 Core Struts 2.0 Development**
- For teams with existing Struts 1.x development experience, please consider **TT6212 Transitioning to Struts 2.0**
- If you need a more advanced struts course please consider our five day **TT6240 Mastering Struts2.0 Developer’s Workshop**

Take After: We offer a variety of introductory through advanced security, development, project management, engineering, architecture and design courses. Students may want to consider the following topics as a follow-on to this course.

- Additional advanced Java EE topics
- Java or J2EE Security topics
- Service-Oriented Analysis and Design
- Web Services – Intro through Advanced
- AJAX, XML or other Web Development topics
- Java EE topics: EJB3.0; Spring; Hibernate; Design Patterns & more.
- Architecture & Analysis courses

Please note all development courses may also be offered in other programming languages or tailored to suit your unique requirements. Please contact us for recommended next steps tailored to your longer term education, project or development objectives.

► Experiential Learning: Hands-On Labs

This class is “technology-centric”, designed to train attendees in essential Struts 2.0 development skills, coupling the most current, effective techniques with the soundest industry practices.

This workshop is about **50% dynamic lab exercises** and **50% lecture**. 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. Multiple detailed lab exercises are laced throughout the course, designed to reinforce fundamental skills and concepts learned in the lessons. 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.

► **Student Materials: What You'll Receive**

Our robust course materials include much more than a simple slideshow presentation handout. Trivera Technologies Student materials include a comprehensive hard-copy course manual, complete with detailed course notes, code samples, diagrams and current reference materials, all directly related to the course at hand, indexed for ease of use. Step-by-step lab instructions and project descriptions are clearly illustrated and commented for maximum learning and ease of use.

Our course kits are designed to serve as an excellent and useful reference set, long after we leave your classroom.

► **Delivery Environment & LoadNGo™ Classroom Set Up**

Although this training is skills-centric, this course may run using a variety of IDEs and application server combinations, including but not limited to: JBoss 4.x; BEA WebLogic Server 8.1/9; IBM Rational Application Developer (6.0 or 7.0); Oracle JDeveloper 10g; JBuilder; Apache TomCat; Eclipse Web Tools Project, MyEclipse; and others. Note that many of these IDEs do not have specific tooling to support Struts 2.0.

Our lab guides are complete with software-specific instructions, screen shots and detailed tutorials for using the software you select. In most cases we can easily port our classes to run in the environment of your choosing.

For course deliveries or virtual presentation using open-source tools, we'll provide our unique **LoadNGo Instant Classroom Kit**,

which enables students to run the entire course off of a DVD that hosts the entire course set up software, labs, and other pertinent useful educational resources, whitepapers and more. You only need to provide the hardware and appropriate O/S, and we'll do the rest. No installation needed. **Great for secure environments.** Minimum set up burden for your team or firm, with maximum results for your students.

No matter which set up option or software your firm requires, we're pleased to provide a detailed set up guide for all private or on-site courses, and as much assistance as you require to prepare your students or classroom for the course. Our support personnel and instructors can be contacted for any advice you may require to prepare your classroom and/or students for attendance.

► **Optional Pre-Testing & Assessment**

We work with you to ensure that your resources are well spent. Through our basic pre-testing, we ensure your team is up to the challenges that this course offers. We will work with you to come up with the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to prepare for this course.

Please contact us for details about our online pre and post test assessment services, custom managed training plans for one student or your entire organization, and our custom online training program management system for monitoring the courses or progress while skilling your students of all experience levels.

Workshop Topics Covered

Session: JEE Application Architecture

- Technical Overview of JEE 5
- JEE Application Architectures (Web based)
- JEE 5 Enhancements and Features

Session: Web Applications

- Understanding Web Applications
- Configuring Web Applications
- Understanding the JEE 5 Persistence Options

Session: Writing HTTP Servlets

- Introduction to Servlets
- Processing Input Data
- Server-side Control
- Client-side Control
- Maintaining Client State - Sessions
- Application and Session Events
- Annotations

- Dependency Injection and Servlets

Session: Filters

- Overview of Filters
- Filtering the Request and Response
- Annotations
- Dependency Injection and Filters

Session: Writing JSP Pages

- Introduction to JSP
- Implicit Objects
- Actions, JavaBeans, and Custom Tags
- Common Expression Language
- JSTL

Session: Getting Started with Struts 2.0

- Jakarta Struts Project
- MVC and Struts
- Review Filters, Servlets, JSP and Web Applications

- Struts Architecture
- Struts Components: FilterDispatcher, Interceptors, Actions, and Results

Session: Your First Struts Application

- Struts 2.0 components
- Configuring web.xml
- Configuring struts.xml: package, results, exceptions, and actions
- Action implementation
- Adding basic view components

Session: Validation and Interceptors

- XWork validation framework
- Implementing validation
- Type conversion
- Interceptor role
- Using interceptors

Session: Mapping the Model to the View

- Review using Custom Tags
- Introducing Struts Tags
- Generic Tags
- UI Tags
- Themes and Templates
- Tag Reference
- Ajax Tags
- ValueStack technology
- OGNL for type conversion

Session: Localization and I18n

- Locales
- Formatting Messages

- Resource Bundles
- Internationalization
- Tags
- I18n Interceptor

Session: Putting It All Together

- Create the Application
- Actions
- Searching
- Prepopulating Forms
- Validating forms
- Showing and Editing Error Messages
- Handling Exceptions
- Add/Edit/Delete Listing

Need more info? Please note that a more detailed outline of the course table of contents, lists of lab exercises and project descriptions is available. Please contact us at Training@triveratech.com for info.

Need courseware? This course is fully customizable, and also available for license with complete support for qualified organizations. Please contact Courseware@triveratech.com for details

► Why Work With Trivera Technologies?

- **We provide a solid struts and J2EE development foundation.** Students will learn how to develop (and reuse!) essential Java and Struts design skills and concepts properly, using best design practices, grounding them for advanced curriculum. Students will be prepared for designing and implementing real solutions, right after the class ends. Students will learn the importance of developing well-designed J2EE applications.
- **Our courses are focused - no "fluff" included.** We offer more than a "laundry list" approach to teaching. All lessons have clear objectives, are fundamental to core J2EE or JavaEE development and design practices, and are reinforced by hands-on labs and solid practical examples. Each lesson has performance driven objectives that ensure students will learn technologies and skills core to fundamental J2EE application design – nothing more, nothing less.
- **Our materials are comprehensive, and current.** Our comprehensive manuals include not only a hard copy of the course presentation, but also detailed reference notes, pertinent diagrams and charts, current lists of suggested online resources and articles, and often technical tutorials or white papers geared to the topics at hand.
- **We set you up!** Hands-on courses also include our unique materials for each student, complete with our **LoadNGo Instant Classroom** course set up DVD, software, and a multitude of learning resources that complement the course. Run the course right off the DVD – minimal set up for your company – maximum results for your students.
- **We foster "Learning by Doing".** Progressive labs are designed in such a way that students get a firm grasp on fundamental skills while they work toward defending a complete application. All labs are take-home, and all solution code is presented in an easy to use self-study format for future use and review.
- **True content ownership gives us flexibility & quality above the rest.** These course materials are wholly-owned by our company and fully customizable - at little or no cost - to help you best meet your learning objectives. We have many dedicated experts available worldwide to instruct your team, and can provide services around the globe, either locally or virtually. We work closely with you to produce the most effective events and materials for your team, within your desired timeframe and budget.
- **We have to adhere to higher standards.** As a courseware provider, our content and hands-on lab materials are licensed internationally by dozens of firms, and are therefore subject to very stringent quality requirements. Not only will your organization benefit from our own technical team's technical expertise, but also the feedback of hundreds of students and trainers using these materials, worldwide, on a regular basis. This unique fact guarantees that our materials are not only robust and interesting, but also technically correct, current and of the highest quality and usability.
- **We bring years of practical, current experience into the classroom and content.** Our instructors and course authors are also skilled mentors, Java, J2EE, .Net, SOA, and web services developers, architects and security-oriented professionals. We believe that learning, using and maintaining solid software execution and delivery methods are as important as gaining sharp coding skills. Best Practices for software development and execution, beyond technical coding skills, are enforced throughout all of our courses and discussions. Our team brings this extensive experience into every classroom and engagement.
- **We're skills-centric.** Although our team has extensive experience using a variety of tools and solutions, our core content is "technology-centric". Our aim is to teach you the best skills and solutions out there – not to sell you software from any particular vendor.
- **We're Java & J2EE authors and industry speakers.** Our team was selected to write the online *J2EE, EJB, EJB CMP-CMR and Web Services Tutorial Series for IBM developerWorks®* (www.ibm.com) These are the same instructors who train our classes and author the courseware. Most of our trainers/consultants have also authored additional articles on web services, EJB< Struts, J2EE and advanced Java topics, and are

recognized speakers and presenters on the industry technical seminar circuit. Our team is comprised on several successful published authors. Members of our team have written or contributed to: *Eclipse Kick Start*, *Mastering Eclipse*; *Professional Jakarta Struts*; *Using Java Tools for Extreme Programming*; *Mastering Resin*; *Mastering TomCat* and others.

- **Our services are guaranteed.** Whether you're a stakeholder organizing your firm's educational services, a student in our live or virtual classroom or a trainer using our materials to educate your own client or team – **Our core mission is to make YOU a success in the classroom.**

► **For Additional Information**

Need dedicated training? All courses can be brought onsite for a **private presentation**, customized to suit your unique requirements or goals. Please contact Training@triveratech.com for course details, Public Schedule dates and locations, and Special Discount Offers.

Need courseware? Let us take the risk out of your classroom delivery! All materials are also available for corporate license with complete instructor support and free corporate branding. We guarantee our pricing and service. Samples of our course materials, as well as live client references for all of our services are available upon request. Please contact Courseware@triveratech.com for details.

For more information about our training, mentoring or courseware licensing options, or to see our complete list of course offerings and services, please visit us at www.triveratech.com, email Training@triveratech.com or call 609.953.1515.



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