

# Designing J2EE Enterprise Web Applications using Servlets/ JavaServer™ Pages and Struts (5 days)

**NETD6260-** Five day, Instructor led

## Introduction

This five-day, hands-on workshop offers a comprehensive hands-on tutorial in the design and programming of servlets and JSPs, and includes all the important concepts, and hands on labs that will have you building working Struts applications in no time flat. In addition, this course covers how to extend the Struts framework to fit your unique needs.

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. 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 address 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

## Audience

Experienced Java Developers who want to learn how to use J2EE components (Servlets and JSPs) to build enterprise web applications

## At Course Completion

This intensive course will give you the skills to design and build scalable, secure, maintainable web

applications - leveraging Trivera's extensive experience in the delivery of scalable enterprise applications with complex web interfaces based on J2EE 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 J2EE design patterns. You will also be exposed to a range of J2EE and web technologies such as Servlets, JSPs, EJBs, JNDI, Struts and XML, and advice on when and how to use them.

Throughout this intensive workshop students will learn to:

- Design and build web applications from both business and technical requirements
- Build web interfaces with JSPs, Servlets, Applets, and JavaScript (JavaScript is optional)
- 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 good design techniques including MVC, Command and State patterns
- Use custom tag libraries
- Use the struts framework
- 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

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

Hands-On Learning: The lab sequence for this course builds a simple enterprise application for an online music store.

**Part I: Servlets/JSPs and Custom Tags**

Session 1 J2EE Application Architecture

Lesson 1 Technical Overview of J2EE  
 Lesson 2 J2EE Application Architectures (web based)

Session 2 Writing HTTP Servlets

Lesson 1 Servlets  
 Lesson 2 Writing a Basic HttpServlet  
 Lesson 3 Form Processing  
 Lesson 4 Controlling Client Behavior  
 Lesson 5 Sessions and Cookies

Session 3 Writing JavaServer™ Pages

Lesson 1 Introduction to JavaServer™ Pages  
 Lesson 2 Basic JSP Syntax  
 Lesson 3 Implicit Objects  
 Lesson 4 Actions and JavaBeans™  
 Lesson 5 Brief Overview of JSTL

Session 4 Web Applications

Lesson 1 Understanding Web Applications  
 Lesson 2 Configuring Web Applications  
 Lesson 3 Application and Session Events

Session 5 Security (Optional)

Lesson 1 Overview of Security  
 Lesson 2 Form Based Security  
 Lesson 3 Basic Authentication  
 Lesson 4 Programmatic Security

language, how to use custom tags, and how to build robust and capable web applications using Servlets and JSP.

**Prerequisites**

Practice of Java Programming and understanding of object-oriented design

**Course Topics**

Session 6 Filters (Optional)

Session 7 Writing Custom Tags

Lesson 1 Introduction to Custom Tags  
 Lesson 2 Developing Custom Tags  
 Lesson 3 Developing Advanced Custom Tags

**PART II: Getting Started with Struts**

Session 1 Getting Started with Struts

Lesson 1 Jakarta Struts Project  
 Lesson 2 Struts Architecture

Session 2 Your First Struts Application

Lesson 1 Configuring Struts Applications  
 Lesson 2 Input JSP  
 Lesson 3 Defining ActionForms  
 Lesson 4 Defining Actions

Session 3 Mapping the Model to the View

Lesson 1 Review of Using Custom Tags  
 Lesson 2 Introducing Struts Tags  
 Lesson 3 Using HTML Tags  
 Lesson 4 Using Bean Tags  
 Lesson 5 Using Logic Tags

Session 5 Uploading Files and Internationalization

Lesson 1 Uploading Files  
 Lesson 2 Internationalization

Session 5 Putting It All Together

Lesson 1 Putting It All Together

Session 6 Advanced Form Management

Lesson 1 DynaActionForms  
Lesson 2 The Validator Framework

Session 7 Working with Tiles

Lesson 1 Using Tiles

OPTIONAL (By Request): Introduction to JavaServer Faces

OPTIONAL (By Request): JSF Architecture Overview

Addendum: JSP 2.0; Servlets 2.4 and HTML Overview