

# JAV200 : Java EE Web Component Development

**Code :** JAV200

**Duration :** 4 days

**Category :** Java EE

## Audience :

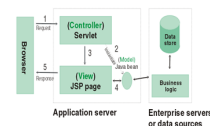
Developers who want to build Java Web applications with Java EE components like Servlets, JSP's, custom tags, Struts and JSF.

## Prerequisites :

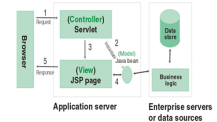
To participate in this course experience with Java programming and object orientation is required.

## Realization :

The theory is treated on the basis of presentation slides and is interspersed with exercises. Demos are used to clarify the theory. All topics asked at the Java Web Component Developer Exam (CX 310-083) are discussed. The course material is in English.



## Java EE Web Development



## Contents :

This course covers how servlets and JSPs are constructed and used in Java EE Web Applications. First the main methods of servlets are on the agenda, like the ones used in servlet initialization, reading HTTP request data and writing HTTP response data. The different scopes of Web Applications such as session scope and application scope are explained. Next the basic syntax of JSP's scriptlets, expressions and declarations are covered and the different JSP page directives are treated. A central element in the course is the MVC design pattern for Java Web Applications where servlets act as controller for program logic and JSP's as view for output data. In discussing this pattern, the RequestDispatcher interface is treated as well as the ways attributes can be stored and retrieved in different scopes. Ample attention is paid to techniques to separate Java code from the JSP view. In particular the use of Java beans and custom tags for this purpose is discussed. Also the role of deployment descriptors is part of the subject matter and security in Web applications, filters and the event framework are addressed. On the last day of the course an overview will be given of two widely used frameworks for Java Web Applications, Struts and JSF (JavaServer Faces). The relative emphasis on these frameworks will depend on the participants of the course.

### Module 1 : Introduction

- Java Editions
- Java EE Standard
- Java EE Servers
- What is a servlet?
- Possible servlet tasks
- Simple Servlet
- What is a Java Server Page(JSP)?
- Simple JSP
- Problems with Servlets and JSP
- Classic MVC pattern
- Model 2 Architecture
- Example MVC Framework

### Module 2 : Servlets

- Servlets
- Servlet interface
- Reading initialization parameters
- Concurrent Access
- ServletContext interface
- Destroying servlets

### Module 3 : Web Application Structure

- Web applications
- Purposes of Web Applications
- Structure of a Web application
- Example Structure
- Registering a Web application
- Defining Custom URL's
- WAR Files
- Handling Relative URL's

### Module 4 : HTTP Servlets

- HTTP Requests and Responses
- HttpServlets
- service, doGet and doPost
- Reading Form Data
- HTTP Request Headers
- Other HttpServletRequest Methods
- Populating the Response
- HTTP Status Codes
- HTTP Response Headers

### Module 5 : Scope Objects

- Sharing data with Scope Objects
- Attributes
- ServletContext
- Application Scope
- Session Scope
- Request Scope
- Page Scope

### Module 6 : Sessions

- Why Session Tracking?
- Session Tracking Mechanisms
- Sending and reading cookies
- Methods in the Cookie API
- Session tracking with Cookies
- URL Rewriting
- Hidden from fields
- HttpSession methods
- Session tracking API

### Module 7 : JSP's

- The need for JSP
- Types of scripting elements
- Benefits of JSP
- Translation and Request Time
- Setting up your environment
- Expressions
- Predefined variables
- Scriptlets
- Declarations
- jspInit and jspDestroy

### Module 8 : JSP Directives

- What are JSP directives
- JSP page directive
- import attribute
- contentType attribute
- generating Excel data
- isThreadSafe attribute
- session attribute
- buffer and autoflush attributes
- extends attribute
- errorPage and isErrorPage
- include directive
- taglib directive

### Module 9 : JSP Standard Actions

- Including files at request time
- jsp:include
- Including applets
- jsp:plugin, jsp:param and jsp:params
- What are beans?
- Basic use of beans in JSP
- Accessing bean properties
- Setting bean properties explicitly
- Association with input parameters
- Sharing Beans
- Values of the Scope attribute
- Conditional Bean Operations

## **Module 10 : MVC Architecture**

Why combine servlets and JSP?  
Handling a single request  
MVC Approach  
Implementing MVC  
Dispatching requests  
Storing Data in Servlet Request  
Storing data in Session  
Storing data in ServletContext  
Forwarding requests  
Including requests

## **Module 13 : Deployment Descriptors**

Deployment Descriptor  
Version 2.3 versus 2.4  
Defining Custom URL's  
Notes on Custom URLs  
Disabling invoker servlet  
Application Wide Initialization  
Preloading pages  
Welcome pages  
Error pages  
Session Time-Outs

## **Module 16 : Event Listeners**

Life-Cycle Events Framework  
Available Listeners  
Implementation Strategy  
Reason for listeners  
ServletContext Listeners  
ServletContextAttributeListeners  
HttpSession Listeners  
SessionAttribute Listeners

## **Module 19 : JSF**

Advantages of JSF  
JSF and Struts  
Steps in JSF  
Simple Navigation  
faces.config  
Dynamic Navigation  
Action Controllers  
Managed Beans  
Converter and Validators  
JSF tag libraries

## **Module 11 : Expression Language**

Main point of EL  
Advantages of Expression Language  
Activating the Expression Language  
Invoking the EL  
Common EL problem  
Referencing scoped variables  
Accessing bean properties  
Using EL operators

## **Module 14 : Security**

Major security concerns  
Declarative security  
Programmatic security  
Form-based authentication  
Deployment Descriptor settings  
Login Screens  
BASIC authentication  
Problems with declarative security  
Combining security mechanisms  
Pure Programmatic Security  
Programmatic Security with SSL

## **Module 17 : Java EE Design Patterns**

Intercepting Filter  
Front Controller  
Business Delegate  
Service Locator

## **Module 12 : Custom Tags**

What are tag libraries?  
Custom Tag Features  
Comparison of tag extensions  
Components of a tag library  
Simple Tag Handler  
Simple Tag Library Descriptor  
Accessing Custom Tags from JSP  
Tags that use attributes  
Tags that use body content  
Tags that optionally use body content  
JSP-based tags (tag files)  
Tags manipulating their body  
Tags with dynamic attribute values  
Complex objects for attributes  
Looping tags  
Nested tags

## **Module 15 : Filters**

What are Filters?  
Advantages of Filters  
Filter Interface  
Creating Filters  
doFilter method  
Servlet Filter Related Classes  
Filters in a Chain  
Sample Reporting Filter  
Filter Mapping  
Accessing the Servlet Context  
Filter initialization parameters  
Modifying the Response

## **Module 18 : Struts**

What is Apache Struts?  
Advantages of Struts  
Disadvantages of Struts  
Struts Schematic Overview  
Struts Major Components  
Struts Action Mappings  
Java Beans and Scope  
ActionForm beans  
Action Classes  
Properties and ActionForm beans  
Resources files  
Struts tag libraries