

Advanced Java Web Components

GWE10804

5 day

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Prerequisites

6 months – 1 year of Java programming

Course Summary and Lessons

Java Enterprise Edition is a powerful platform for building web applications. This platform offers all the advantages of developing in Java plus a comprehensive suite of server-side technologies. This course tells you what you need to know to design and build your own web applications. You'll learn the details of the key Java EE technologies and how to leverage the strengths of each, with special focus on Servlets and JSP. At the same time, you'll be learning about the big picture of Java Enterprise Edition and how to design web applications that are robust, efficient, and maintainable. If you want to deliver an application on the web, you'll find this course essential.

Lesson 1: JAVA EE Overview

- Java EE's Place within Java
- Java EE – Distributed Multitier Applications
- Important J2EE/Java EE 5 APIs
- Commercial Java EE Products
- Common Commercial Java EE App Servers
- Enterprise Applications – The Three Pillars
- Persistent Storage
- Business Logic
- Presentation Logic
- Presentation Logic – Servlets
- Presentation Logic – JavaServer Pages

Lesson 2: JAVA EE Architecture

- Multitiered Architecture
- Web-Based Architecture
- Web-Based Architecture with EJB
- Swing Client Architecture with EJB
- Supporting Both Web Clients and Rich Clients
- Playing Server Games
- SOA – Service Oriented Architecture
- Java EE Roles
- What's Next?

Lesson 3: How the Web Works

- Clients and Servers

- Client and Server Applications on the Web
- HTML – The Language of the Web
- Basic HTML Tags and a Basic HTML Page
- HTTP and Addressing
- Requests and Responses
- Browsing a Simple Web Page
- Java EE Web Applications
- Web Application Structure

Lesson 4: A Simple Servlet

- Servlets and Dynamic Content
- What are Servlets?
- How a Servlet Runs
- Advantages of Servlets
- Packages and Classes
- Creating a Servlet – The Simplest Way
- A Simple HTTP Servlet
- Declaring and Mapping Servlets

Lesson 5: HTML Forms and HTTP Review

- HTML Forms
- A Simple Search Form in HTML
- A Simple Form in the Browser
- HTTP Request and Response Details
- GET and POST Methods
- Request Parameters

Lesson 6: How Servlets Work

- Servlet Interface and Servlet Lifecycle
- Servlet Lifecycle – Initialization
- Servlet Lifecycle – The service() Method
- Important Types for Servlets
- Class Diagram for Servlet Types
- Class GenericServlet
- Requests and Responses
- Important ServletRequest/Response Methods
- Getting Data / Sending Responses
- Getting Data and Sending Response
- HTTP Servlets
- Class Diagram for HTTP Servlet Types
- Class HttpServlet
- HttpServletResponse
- More About web.xml
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- Look at the JavaDoc

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- HttpServletResponse Status/Error Methods
- HTTP Response Headers
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- Specifying a MIME Type

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- The ServletConfig Interface
- The ServletContext Interface
- Declaring and Mapping Servlets
- Servlet Init Parameters
- Retrieving Initialization Parameters
- Web App Init Parameters
- A Problem with SearchServlet
- Null and Empty String Parameters

Lesson 9: Error Handling

- Specifying Error Pages
- Error Page Configuration
- Error Handling

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- Shortcomings of Servlets
- What is a JSP?
- A Very Simple JSP – simple.jsp
- The Resulting Browser Output
- JSPs Look Like HTML
- JSP Expressions
- Comments
- JSPs are Really Servlets
- Lifecycle of a JSP
- The Generated Servlet
- Generated Code Fragment for simple.jsp

Lesson 11: Model View Controller (MVC) Architecture

- Servlet and JSP architecture
- Model 1 Architecture
- Model View Controller (MVC)
- Servlets as the Controller
- JSP as the View
- JavaBeans as the Glue and the Model

Lesson 12: Servlets as Controllers

- RequestDispatcher
- Servlets as Controller
- Forwarding to a Resource
- Including Output of Another Resource
- RequestDispatcher Paths

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- Object Buckets or Scopes
- Using the Scopes
- JSPs and JavaBeans
- Putting Data on a Scope
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- Predefined JSP Variables – Implicit Objects
- <jsp:useBean>
- <jsp:useBean> Details
- The Other Scopes
- JavaBean Properties
- <jsp:getProperty>
- Jsp:useBean Creates Page Scope References • JSP Mixes Dynamic and Template Data
- JSP Directives
- The include Directive
- <jsp:include> Action

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- Sun's Solution – Custom Tags
- Custom Tags
- Custom Tag Overview
- Tag Libraries
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- Taglib Definition – How it Works
- More About URIs and Prefixes

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- A Brief Word about JSTL & Jakarta Taglibs
- Introduction to Using JSTL Tags
- Using the c:out Tag to Output Data
- JSTL Expression Language
- Data Objects and the JSTL EL
- Request Parameters and JSTL
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- Iterating Over a Collection
- Using the c:forEach Tag for Iteration
- Using the c:url Tag for URLs
- Using the c:param Tag for URL Parameters

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- Online Shopping with a Stateless Protocol

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- Relational Database Description
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- O-R Mapping Tools
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- Scrollable, Updatable Result Sets
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- The Simple Approach – Analysis
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- Using Web Services – Analysis

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- How do Clients get Access to a DataSource?
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- JNDI Tree Structure
- JNDI in the Java EE Platform
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- Some Advantages of SOA
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- Web Services Defined
- TW-* Web Services Specifications

- The Web Services Stack
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- Architectural Details
- SOAP Concepts
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- When is Messaging Used?
- Two Messaging Models
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- What is Java Message Service?
- API Structure
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- Client Workflow
- Synchronous Queue Consumer Client
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