Java EE, Part 1 of 8: Servlets and JSP Fundamentals

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Meet the expert: Susan Bryant is an experienced IT trainer and consultant with a broad array of skills. She has over 15 years experience in information systems with roles including systems consulting, project management, staff management, staff mentoring, and certified technical trainer. Susan has a strong technical knowledge of IBM WebSphere Application Server, WebSphere Portal Server, WebSphere Process Server, Lotus Domino, and web application development technologies including, Struts, JSF, EJBs and AJAX.

Prerequisites: This course is intended for Java programmers who build server-side web applications in leveraging Eclipse to streamline their development cycle. You should understand essential concepts of object-oriented programming and should be able to write simple Java programs with assistance.

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Course description: This course provides the ideal starting point for developers just getting into Java EE programming. This course covers programming topics specific to Java Servlets and JavaServer pages (JSP). In addition to covering the basics, this course will cover more advanced topics including JDBC, JSP Standard Tag Library, Model/View/Controller (MVC), and JavaBeans.

Course outline:

Overview
- Introduction
- Introduction
- Java Community Process
- Introduction to Java EE
- Why move to Java EE
- JAVA EE-New & Enhanced Features
- Java EE Software Packaging
- Java EE Technologies
- Summary

Eclipse Overview
- Introduction
- Eclipse Platform
- Eclipse Workspace
- Perspectives, Views & Editors
- DEMO: Features in Eclipse
- Perspectives, Views & Editors2
- Basics of Views & Perspectives
- The Java Perspective
- The Debug Perspective
- Navigator View
- Package Explorer
- Outline View
- Problems View
- Eclipse Preferences
- Build and Validation
- Completion, Templates & Snippets
- Searching
- Configure Compiler Class Path
- JRE Switching
- Eclipse WTP
- Java EE Perspectives
- Project Explorer View
- Servers View
- JPA Tools
- Summary

Environment Setup
- Introduction
- DEMO:Server-Test Enviornment
- Summary

Servlets
- Introduction
- History - CGI
- Server Extension APIs
- Java Servlet
- New in Servlet 2.5
- Servlet Container
- Servlet Responsbilities
- Java EE and Servlet
- The Servlet Class
- The HttpServlet Class
- The Servlet API
- An Example - Hello World
- The Servlet Container
- DEMO: Create a Servlet
- Summary

Life Cycle
- Introduction
- Life Cycle - Initialization
- Example Initialization
- Life Cycle - Processing
- Life Cycle - Destroy
- User Input
- Example - User Input
- Output to Client
- Servlet Error Handling
- Threading Issues
- DEMO:Init Parameters
- DEMO: doGet method
- Summary

Parameters and Attributes
- Introduction
- Request
- Request Parameters
- Request Attributes
- Request Headers
- Request Path
- Other Request Information
- Response
- Cookies
- Components of a Cookie
- Issuing Cookies
- Retrieving Cookies
- Deleting a Cookie
- DEMO: Review
- Summary

Servlet Context and Config
- Introduction
- Servlet Context
- Servlet Context Attributes
- Resource
- DEMO: Servlet Context Object
- Summary

Session Tracking
- Introduction
- Tracking Techniques
- Cookies
- Cookies - an Example
- HTML Hidden Fields
- Using HttpSession
- Session Invalidation
- Session Tracking
- Example: Session Tracking Code
- DEMO: Session Tracking Code
- HttpSession - URL Rewriting
- Summary

JSP Basics
- Introduction
- JavaServer Pages
- JavaServer Pages 2.1
- A Simple Example - Hello.jsp
- JSP Benefits
- Dynamic Content Technologies
- How JSP Works
- JSP Invocation
- DEMO: JSP
- Summary

JSP Page Directives
- Introduction
- JSP Scripting Elements
- The XML Syntax

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- JSP Directive
- page Directive Attributes
- page Directive - an Example
- page Attribute - errorPage
- page Attribute - isErrorPage
- Using XML Syntax
- DEMO:pageDirectives&Attributes
- Summary

JSP Page Includes
- Introduction
- Directives - include
- Include - an Example
- Include: compile vs request
- Request time inclusion
- DEMO: Include statements
- Summary

Expressions and Scriplets
- Introduction
- JSP Declarations
- Declarations - an Example
- JSP Expressions
- JSP Expressions - an Example
- JSP Scriptlets
- JSP Scriptlets - an Example
- JSP Comments
- DEMO: JSP Elements
- Summary

JSP Predefined Variables
- Introduction
- JSP Predefined Variables
- The request Object
- The response Object
- The out Object
- Out - an Example
- DEMO: Predefined Variables
- Summary

JavaBean Features
- Introduction
- What is JavaBean
- Structure of a JavaBean
- Life Cycle
- Properties
- Very Simple Bean
- DEMO: JavaBean Code
- Summary

JavaBeans in JSP
- Introduction
- Using Java Beans in JSP
- The <jsp:useBean> tag
- Java Bean scope
- <jsp:useBean> in Action
- The <jsp:getProperty> tag
- The <jsp:setProperty> tag
- Mapping request parameters
- Another Example
- Mixing Scriptlets & Bean tags
- DEMO: JavaBeans
- Summary

MVC
- Introduction
- Key Issues
- MVC Model
- Model
- View
- Controller
- JavaBeans
- MVC Implementation
- Request Dispatching
- Forward vs. Include
- Forward Request to JSP
- HTTP Redirection
- Dispatch vs redirection
- Redirecting to a JSP
- SupplyResultInformation to JSP
- A Simple Example
- DisplayJavaBeanPropertiesinJSP
- DEMO: MVC Architecture
- Summary

Browse Derby in Eclipse
- Introduction
- DEMO:Derby in Eclipse
- What is JDBC
- JDBC Architecture
- JDBC: Basic Steps
- Loading a Driver
- DB2 UDB JDBC Drivers
- Oracle JDBC Drivers
- Create a Connection
- Connection
- Statement
- PreparedStatement
- PreparedStatement advantages
- ResultSet
- ResultSet...
- Ex:JDBC Servlet w/Transactions
- Close the Connection
- DEMO:DBC Connect
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Pooling and Data Sources
- Introduction
- Need for Connection Pooling
- Connection Pooling in JDBC 2.0
- Connection Pooling
- Basic Steps: Connection Pooling
- Accessing a DataSource
- Types of JBoss Data Sources
- Adding JDBC drivers
- Configure Data Source
- Common Data Source Properties
- Connection Pool Properties
- Get a Connection
- Release Connection
- Connection Pool Example
- Resource References
- DEMO: Connections
- Summary