

J2SE 5.0: Java Web Development

Table of Contents

INTRODUCTION.....	INTRO-1
Prerequisites.....	INTRO-2
The Practice Files	INTRO-3
Installing the Practice Files	INTRO-3
What's on the Course CD?	INTRO-3
Technical Requirements for the Course	INTRO-4
Installing the Example Database	INTRO-5
About the Authors.....	INTRO-6
INTRODUCTION TO JAVA WEB DEVELOPMENT.....	1-1
Web Development in Java.....	1-2
Web Basics	1-2
Obtaining and Installing the JDK	1-4
Downloading the JDK	1-4
Installing the JDK and Documentation	1-4
Java Directories	1-5
JDK Configuration and Verification.....	1-6
CLASSPATH.....	1-6
PATH	1-6
rt.jar.....	1-7
Verifying the Installation.....	1-7
Web Containers and Servlet Engines.....	1-9
Servlet Lifecycle	1-9
Servlet Containers	1-10
Obtaining and Installing Tomcat	1-11
Download Apache Tomcat.....	1-11
Configuration.....	1-11
Verify Tomcat Installation.....	1-12
LAB 1: INTRODUCTION TO JAVA WEB DEVELOPMENT	1-17
Lab 1 Overview.....	1-18
Install Tomcat	1-19
INTRODUCTION TO SERVLETS	2-1
The Hypertext Transfer Protocol.....	2-2
HTTP Methods.....	2-3

Table of Contents

Servlet Architecture	2-6
The HttpServlet Class.....	2-8
Passing Data from Clients to Servlets	2-10
HEAD Requests.....	2-15
Servlet Containers	2-17
Deployment Descriptors.....	2-17
Servlet Creation	2-19
Destroying Servlets.....	2-22
Servlet Lifecycle.....	2-22
Last Modified Times.....	2-23
LAB 2: INTRODUCTION TO SERVLETS	2-27
Lab 2 Overview.....	2-28
Creating the First Servlet.....	2-29
Servlet Lifecycle.....	2-32
Persistent Data	2-35
SERVLET, SERVER, AND CLIENT INFORMATION.....	3-1
Web Application Data	3-2
Servlet Information.....	3-3
Customized Initialization Parameters.....	3-3
Server Information	3-9
Request Information.....	3-9
The Servlet Context	3-11
Client Information.....	3-17
The Client Machine	3-17
User Information	3-19
The Client Request	3-19
Request Parameters	3-20
Path Information.....	3-20
Request Headers	3-21
The Client Browser	3-22
The Request Input Stream.....	3-22
LAB 3: SERVLET, SERVER, AND CLIENT INFORMATION	3-27
Lab 3 Overview.....	3-28
Initialization Parameters	3-29
Client and Server Information	3-32
RESPONDING TO THE CLIENT	4-1

Parts of an HTTP Response	4-2
Sending the Response	4-4
Keep-Alive Connections.....	4-5
The Response Buffer	4-7
Buffer Utility Methods.....	4-8
HTTP Status Codes.....	4-11
Using Status Codes	4-12
Response Header Fields	4-15
Setting Header Field Values	4-15
Client Redirection.....	4-19
Tracking User Sessions.....	4-21
User Authentication.....	4-21
Hidden Fields	4-22
Rewriting the URL.....	4-22
Using Cookies.....	4-23
Java's Session Tracking API	4-23
Summary	4-25
LAB 4: RESPONDING TO THE CLIENT.....	4-29
Lab 4 Overview.....	4-30
Client Redirection	4-31
User Session Tracking.....	4-33
SERVLET DATABASE CONNECTIVITY	5-1
JDBC Overview	5-2
JDBC Driver Types	5-4
Type 1: JDBC-ODBC Bridge.....	5-5
Type 2: Native API/Partly Java	5-5
Type 3: Net Protocol/All Java.....	5-6
Type 4: Thin	5-6
Obtaining a Driver.....	5-7
Example Database Servlet	5-9
Important JDBC Classes	5-12
DriverManager	5-12
Connection.....	5-13
Statement.....	5-14
ResultSet	5-14
ResultSetMetaData.....	5-15
JDBC in Servlets.....	5-20

Table of Contents

Reusing Connection Objects	5-20
Database Init Parameters	5-24
Connection Pooling.....	5-26
 LAB 5: SERVLET DATABASE CONNECTIVITY	5-31
Lab 5 Overview.....	5-32
Display an HTML Table of Products	5-33
 INTRODUCTION TO JAVA SERVER PAGES.....	6-1
Java Server Pages	6-2
JSP Architecture	6-2
Code in JSP	6-5
JSP Tags	6-9
Directives	6-9
Scripting Elements	6-13
Comments.....	6-18
Actions	6-19
 LAB 6: INTRODUCTION TO JAVA SERVER PAGES	6-25
Lab 6 Overview.....	6-26
Create a Simple JSP	6-27
Identify Odd or Even Days.....	6-30
 JAVA BEANS	7-1
JavaBeans	7-2
Introspection	7-3
Properties.....	7-4
Parameterless Constructors	7-4
Persistence	7-4
Creating JavaBeans	7-6
Implementing the Constructor?.....	7-6
Declaring Bean Properties	7-7
Boolean Properties	7-10
Indexed Properties.....	7-12
Listening for Session Events.....	7-14
Bean Types: Entity and Utility	7-15
Deploying Beans.....	7-15
Java Beans in JSP.....	7-17
The UseBean Tag.....	7-19
Bean Initialization.....	7-22
Reading Bean Properties.....	7-24

Setting Bean Property Values.....	7-26
Initializing Beans by Using Request Parameters	7-29
Bean Scope	7-32
LAB 7: JAVA BEANS.....	7-39
Lab 7 Overview.....	7-40
Create the Employee Entity Bean.....	7-41
Beans and JSPs	7-45
JSP DATABASE CONNECTIVITY	8-1
Java Database Connectivity (JDBC)	8-2
JSP Database Applications	8-3
JDBC and Scriptlets.....	8-3
Using Beans to Encapsulate Data	8-7
LAB 8: JSP DATABASE CONNECTIVITY	8-23
Lab 8 Overview.....	8-24
Data-Aware Beans.....	8-25
JSP Data Display.....	8-30
ERRORS AND DEBUGGING.....	9-1
They're Throwable	9-2
Error Class	9-2
Exception Class	9-3
Syntax.....	9-4
Exception Propagation.....	9-6
Rethrowing Exceptions	9-7
Instantiating Custom Exceptions	9-8
Exception Hierarchy.....	9-10
Checked and Unchecked Exceptions	9-11
Runtime Exceptions	9-11
Throws Clause.....	9-12
Exception Handling in Servlets	9-13
Exception Handling in JSP	9-16
Error Pages.....	9-18
Application-Wide Error Pages.....	9-18
Page-Specific Error Pages.....	9-20
LAB 9: ERRORS AND DEBUGGING.....	9-27

Table of Contents

Lab 9 Overview.....	9-28
Additional Information	9-28
Throw Exceptions	9-29
Servlets and Error Pages.....	9-31
JSP Error Pages	9-34
WEB APPLICATION DESIGN.....	10-1
Application Components.....	10-2
Model-View-Controller	10-2
Web Application Flow	10-5
Architecture and Design	10-6
Servlet-Only	10-6
Model 1 (Page-Centric).....	10-10
Model 2 (Servlet-Centric)	10-15
LAB 10: WEB APPLICATION DESIGN	10-35
Lab 10 Overview.....	10-36
Model 2 Application	10-37
WEB APPLICATION DEPLOYMENT.....	11-1
Web Application File Structure	11-2
The Document Root.....	11-5
The WEB-INF Directory	11-8
The Deployment Descriptor	11-9
General Application Properties	11-9
Servlet Properties	11-11
Deploying Tag Libraries	11-16
Additional Configuration.....	11-17
The Apache Ant Build Tool	11-18
Obtaining and Installing Ant.....	11-18
The Ant Build File.....	11-19
LAB 11: WEB APPLICATION DEPLOYMENT	11-33
Lab 11 Overview.....	11-34
Ant Deployment	11-35
TAG LIBRARIES AND THE JSTL	12-1
Tag Libraries.....	12-2
Using Tag Libraries.....	12-3
The JSP Standard Tag Library (JSTL)	12-10
The JSTL Expression Language.....	12-15

Table of Contents

Creating Custom Tag Libraries.....	12-18
Action Execution	12-18
LAB 12: TAG LIBRARIES AND THE JSTL	12-25
Lab 12 Overview.....	12-26
Custom Tag Iteration	12-27
INDEX.....	INDEX-1

Table of Contents
