

Contents

<i>About the Author</i>	<i>xiii</i>
<i>About the Technical Reviewer</i>	<i>xv</i>
<i>Acknowledgments</i>	<i>xvii</i>
<i>Introduction</i>	<i>xix</i>

Part One

Getting Started with WebSphere Studio Application Developer (WSAD) 5.01

Chapter 1 Introducing WSAD 5.03

<i>Why Learn WSAD?</i>	<i>3</i>
<i>Understanding the Major Features of WSAD 5.0</i>	<i>5</i>
Supporting the J2EE 1.3 and EJB 2.0 Specifications	<i>5</i>
Supporting JMS Message-Driven Beans	<i>6</i>
Understanding Other Significant WSAD 5.0 Enhancements	<i>7</i>
Exploring the WebSphere Studio Family of Products	<i>8</i>
<i>Understanding the Resource Requirements</i>	<i>9</i>
Referring to the WSAD 5.0 Migration Guide	<i>10</i>
Targeting WAS 4.0x, WAS 5.0, and WAS Express	<i>10</i>
<i>Summary</i>	<i>10</i>

Chapter 2 Setting Up the Development Environment11

<i>Downloading and Installing the DB2 Database</i>	<i>11</i>
Setting Up Your System for DB2 Installation	<i>11</i>
Configuring DB2 to Use JDBC 2.0 Drivers	<i>13</i>
<i>Downloading the WSAD 5.0 Installation Files</i>	<i>13</i>
Picking the Files to Download	<i>13</i>
Understanding the Installation Requirements	<i>15</i>
<i>Installing WSAD 5.0</i>	<i>18</i>
<i>Summary</i>	<i>20</i>

Chapter 3 Working with the WSAD 5.0 Workbench	21
<i>Understanding the Workbench Window Layout</i>	21
<i>Using WSAD Perspectives and Views</i>	23
Learning Multiple Ways to Select Perspectives	27
Working with Commonly Used Perspectives	28
Customizing Perspectives	41
<i>Understanding WSAD Projects</i>	43
Web Project	43
EJB Project	43
Application Client Project	43
J2EE Project	43
Additional Project Types	44
<i>Customizing the Workbench</i>	45
Workbench	46
Perspectives	46
External Tools/Internet	46
Java	46
Web Browser	47
<i>Building a Simple “Hello World” Java Application</i>	48
Creating a New Java Project	48
Creating a New Package	52
Creating a New Java Class	53
Debugging the “Hello World” Application	55
Working in the WSAD Testing Environment	57
<i>Summary</i>	61
 Chapter 4 Developing Database Applications	 63
<i>Understanding the TECHBOOK Database</i>	63
<i>Building the TECHBOOK Database</i>	65
Checking the Database and Tables in the Control Center	71
Checking the Table Data	72
<i>Developing Your First J2EE Database Application</i>	74
Creating the Database Project	74
Building the Database Connection	75
Creating a New Web Project	77
Building the User Interface Screens	88
Customizing the Input Screen	89
Setting the Application Deployment Descriptor	93
<i>Summary</i>	103

Part Two

Working with J2EE:

The Distributed Application Framework.....105

Chapter 5 J2EE Development.....107

Quick Introduction to J2EE107

Understanding JNDI108

Using JNDI for Locating EJB Components109

Using the JNDI dumpSpace Utility112

Exploring the New Features of the J2EE 1.3 Framework113

Understanding the EJB 2.0 Tier of the J2EE 1.3 Application113

Using EJB 2.0 Entity Beans116

Understanding the Web Tier of the J2EE 1.3 Application132

Managing EJB Transactions158

Using the Entity Bean Commit Option162

Understanding Data Integrity171

Setting the EJB Transaction Isolation Level173

Setting J2EE Application Security175

Protecting Web Resources177

Protecting EJB Resources178

Understanding Programmatic Security180

Setting Security Delegation181

Understanding User Authentication183

Using HTTP Basic Authentication184

Using Form-Based Authentication184

Using HTTPS Client Certificate Authentication184

Summary185

Chapter 6 J2EE EJB Development187

Understanding the EJB Project Organization187

Developing Entity Beans188

Developing CMP Entity Beans188

Developing BMP Entity Beans227

Developing Session Beans251

Developing Stateless Session Beans252

Testing the Stateless Session Bean261

Developing Stateful Session Beans264

Testing the Stateful Session Bean277

Summary281

Chapter 7 J2EE Web Development	283
<i>Understanding the Web Project Organization</i>	283
<i>Understanding Web Application Development</i>	284
Creating the Web Project	285
Understanding Stateless Web Session Development	287
Improving the Form Design	293
Working with WSAD-Generated Files	296
Adding the Business Logic	300
Designing the Output User Interface	305
Testing the Application	307
Using the WSAD Page Designer	308
Developing the Stateful Web Session	331
Adding the Processing Logic	339
Examining the BookByPlatformHelper1 Code	344
Discussing the BookByPlatformController Servlet	348
Developing the BookByPlatformOutputForm Output Form	348
Generating a Dynamic Table	351
Testing the Stateful Web Application	363
Understanding Multiscreen Conversational Sessions	370
<i>Summary</i>	372
 Chapter 8 J2EE XML Development	 373
<i>Introducing XML</i>	373
Understanding XML Schema Support for Namespaces	375
Understanding XML Namespace Declarations	377
<i>Using WSAD's XML Tools</i>	384
Building an XML Schema	385
Validating XML Schema	395
Building XML Documents	395
Parsing XML Documents	401
<i>Integrating XML and DB2</i>	424
Installing the DB2 XML Extender	425
Generating the DAD file	428
Generating the Test Harness	429
Enabling DB2 for the XML Extender	430
<i>Understanding XSL Transformations</i>	434
<i>Building an XML Project</i>	434
Creating the XSLT Stylesheet	434
Debugging the XSL	435
Editing the Stylesheet	438
Creating the XSL Transformation Another Way	441
<i>Summary</i>	443

Part Three

Working with Enterprise Messaging445

Chapter 9 J2EE Enterprise Messaging447

Understanding JMS448

 Understanding the P2P Domain of Communication449

 Understanding the Pub/Sub Domain of Communication449

Communicating with JMS Messages450

Understanding JMS P2P Programming454

 Using the JMS QueueConnection Object457

 Handling a Rollback460

 Closing JMS Objects461

 Receiving Messages462

 Using JMS Message Driven Beans (MDBs)467

 Regulating Message Persistence472

 Using Message Selectors472

Understanding JMS Pub/Sub Programming473

Understanding Two-Phase Commit Transactions478

Summary479

Chapter 10 Using the WSAD-Embedded JMS Provider481

Installing WSAD Embedded Messaging Support482

Developing a Point-to-Point JMS Application484

 Developing the Receiving Part484

 Developing the Sending Part508

Developing a Publish/Subscribe JMS Application515

 Setting Administered Objects516

 Building the Sending Part of the Application518

 Setting References to the Administered Objects522

 Testing the Pub/Sub Application524

Using Two-Phase Commit Transactions525

Summary530

Chapter 11 Using WebSphere MQ as the JMS Provider ..531

Introducing WebSphere MQ532

 Understanding MQ Messages533

 Understanding Queue Managers, Queues, and Channels533

 Understanding MQ Clients534

<i>Downloading and Installing WebSphere MQ</i>	<i>535</i>
Configuring Your Windows Account	535
Installing MQ as the WSAD JMS Provider	536
Extending the WebSphere MQ Middleware	539
Running the Example with the MQ JMS Provider	542
<i>Using the MQ JMS Provider</i>	<i>543</i>
Building the New Application Examples	544
Building the Unit Test Server Project	545
Configuring Deployment Descriptors	562
<i>Summary</i>	<i>569</i>
 <i>Appendix Deploying This Book's J2EE Examples</i>	 <i>571</i>
Preparing the WAS Environment for Deployment	572
Defining the Datasource for WAS 5.0	577
Deploying the DBDatasourceProjectApp Application	582
Exporting the DBDatasourceProjectApp Application from WSAD	582
Installing the DBDatasourceProjectApp Application	583
Deploying the TechLibApp Application	591
Exporting the TechLibApp Application from WSAD	591
Installing the TechLibApp Application	592
Running the TechLibApp Application	602
Summary	604
 <i>Index</i>	 <i>605</i>