

Beginning Database-Driven Application Development in Java™ EE

Using GlassFish™



Yuli Vasiliev

Beginning Database-Driven Application Development in Java™ EE: Using GlassFish™

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To my father.

Contents at a Glance

About the Author	xvii
About the Technical Reviewer	xix
Introduction	xxi

PART 1 ■ ■ ■ Introduction

■ CHAPTER 1	Setting Up Your Working Environment	3
■ CHAPTER 2	Getting Started with GlassFish	27
■ CHAPTER 3	Introducing EJB 3 and the Java Persistence API	49

PART 2 ■ ■ ■ Planning the Application

■ CHAPTER 4	Planning a Java EE Application	79
■ CHAPTER 5	Planning the Underlying Database	135

PART 3 ■ ■ ■ Building the Database Tier

■ CHAPTER 6	Implementing the Database Tier	161
■ CHAPTER 7	Setting Up the Data Source	183

PART 4 ■ ■ ■ Building the Persistence Tier

■ CHAPTER 8	Designing JPA Entities	199
■ CHAPTER 9	Object/Relational Mapping	223
■ CHAPTER 10	Using EntityManager	253
■ CHAPTER 11	Using Java Persistence Query Language (JPQL)	283

PART 5 ■ ■ ■ Building the Business Logic Tier

■ CHAPTER 12	Designing Session Beans	305
■ CHAPTER 13	Managing Transactions	319

PART 6 ■ ■ ■ Building the Presentation Tier and Testing

■ CHAPTER 14	Building the Presentation Tier	337
■ CHAPTER 15	Testing the Application	357

PART 7 ■ ■ ■ Appendix

■ APPENDIX	Getting Familiar with Relational Databases	365
■ INDEX	393

Contents

About the Author	xvii
About the Technical Reviewer	xix
Introduction	xxi

PART 1 ■ ■ ■ Introduction

■ CHAPTER 1	Setting Up Your Working Environment	3
	Setting Up the GlassFish Application Server	3
	Obtaining GlassFish	3
	Installing GlassFish	5
	Testing the GlassFish Installation	6
	Testing the GlassFish Admin Console	7
	Setting Up the NetBeans IDE	10
	Obtaining the NetBeans IDE	10
	Installing the NetBeans IDE on Windows	11
	Installing the NetBeans IDE on Linux	12
	Connecting the NetBeans IDE to GlassFish	12
	Setting Up Oracle Database XE	14
	Obtaining Oracle Database XE	14
	Installing Oracle Database XE on Windows	14
	Installing Oracle Database XE on Linux	15
	Testing the Database Server with Oracle SQL*Plus	16
	Setting Up the hr/hr Demonstration Schema	17
	Testing the Database Home Page	18
	Setting Up MySQL	19
	Obtaining MySQL	19
	Installing MySQL on Windows	20
	Installing MySQL on Linux	21
	Setting Up a New User Account with the MySQL Command-Line Client	22
	Managing the Database Server with MySQL GUI Tools	23
	Summary	25

CHAPTER 2	Getting Started with GlassFish	27
	Overview of the GlassFish Application Server	27
	GlassFish: What Is It?	27
	Why GlassFish?	28
	How to Get Started	29
	GlassFish Documentation	30
	Commercial Support for GlassFish	30
	Starting the Application Server	31
	Performing GlassFish Administration with Admin Console	32
	Using the Admin Console Interface	33
	Using the Admin Console Help System	34
	Configuring the GlassFish Application Server	35
	Performing GlassFish Administration with asadmin	36
	Deploying Applications to the Server	37
	Creating a Simple Web Application	37
	Creating Deployment Descriptors	39
	Packaging the Application	40
	Deploying the Application Using Autodeploy	40
	Deploying the Application with asadmin	41
	Deploying the Application with Admin Console	41
	Testing the Application	43
	Creating and Deploying a Web Application with the NetBeans IDE	44
	Creating a “Hello World!” Application	44
	Deploying an Application with NetBeans	45
	Understanding GlassFish Domains	46
	Creating a Domain	46
	Running Several Domains Simultaneously	47
	Deleting a Domain	47
	Summary	48
CHAPTER 3	Introducing EJB 3 and the Java Persistence API	49
	Overview of EJB 3	50
	What Is EJB 3?	50
	Advantages of EJB 3	50
	EJB Container	51
	EJB 3 Components	51
	Your First EJB 3 Application	57
	Creating a Simple Enterprise Bean	57
	Packaging the Enterprise Bean	60

Deploying the Enterprise Bean to GlassFish	60
Creating the Client Application	61
Packaging the Client Application	62
Creating the Application Archive	63
Testing the Application	64
JPA at a Glance	64
What Is JPA?	65
JPA Implementation at GlassFish	65
JPA Entities and ORM Mapping	65
Your First EJB JPA Application	66
The Project Structure	67
Using the Java DB Database	68
Setting Up the Data Source	69
Creating the Entity	70
Creating the Session Bean	72
Creating the persistence.xml Configuration File	73
Packaging and Deploying the Session Bean	73
Creating the Client	74
Compiling and Packaging the Client	75
Testing the Application	76
Summary	76

PART 2 ■ ■ ■ Planning the Application

■ CHAPTER 4 Planning a Java EE Application	79
Understanding the Structure of a Java EE Application	79
Understanding the Multitier Architecture	79
Understanding the Architecture of the Java EE Container	81
Distributing Business Logic Between Application Tiers	82
Planning Application Components and Their Interactions	84
Planning JPA Entities	84
Transaction Considerations	99
Planning for Security	111
XML Deployment Descriptors vs. Annotations	115
Application Organization and Reuse	119
Collecting Information	119
Thinking of Reusability	122
Planning the Structure of Your Application	127

Planning the Steps to Building and Deploying Your Application	128
The General Steps to Building the Underlying Database	130
The General Steps to Building an EJB Module	130
The General Steps to Building a Web Application Module	131
The General Steps to Building an Enterprise Application Module	131
Planning the Sample Application	132
Planning the Sample Structure	132
Planning the Steps to Building and Deploying the Sample	133
Summary	134

■ CHAPTER 5 **Planning the Underlying Database** 135

Planning the Persistence Tier Upon an Existing, Underlying Database	135
Using Database Views	136
Utilizing New Database Schemas	137
Implementing Some Business Logic of an Application Inside the Database	139
Moving Business Logic Into Triggers	140
Moving Business Logic Into Stored Procedures	146
Thinking of Reusability	150
Knowing When You Might Want to Use Native SQL Queries	151
Planning Applications Invoking Stored Procedures Directly from Within the Business Logic Tier	154
Planning the Database Tier of the Sample Application	156
Planning the Structure of the Underlying Database	156
Planning the Steps to Building the Database Tier	157
Summary	158

PART 3 ■ ■ ■ **Building the Database Tier**

■ CHAPTER 6 **Implementing the Database Tier** 161

Creating the Database Schema for the Sample Application	162
Creating the Database Schema in MySQL	162
Creating the Database Schema in Oracle	163
Creating Database Tables to Store Application Data	164
Building Database Tables in MySQL	164
Building Database Tables in Oracle	166
Populating the Tables with Initial Data	168

Building the Stored Subprograms	169
Building the Stored Subprograms in MySQL	171
Building the Stored Subprograms in Oracle	173
Defining the Triggers	175
Defining the Triggers in MySQL	175
Defining the Triggers in Oracle	176
Testing the Underlying Database	177
Summary	181

CHAPTER 7	Setting Up the Data Source	183
	Overview of JNDI	183
	Installing a Database Driver on the Application Server	185
	Obtaining and Installing the JDBC Driver for MySQL	186
	Obtaining and Installing the JDBC Driver for Oracle	186
	Setting Up and Configuring the Data Source	186
	Setting Up the Data Source to Interact with MySQL	187
	Setting Up the Data Source to Interact with Oracle	190
	Performing a Quick Test of the Data Source	192
	Configuring the Settings of an Existing Data Source	195
	Summary	196

PART 4 ■ ■ ■ Building the Persistence Tier

CHAPTER 8	Designing JPA Entities	199
	Creating JPA Entities Upon the Underlying Database Tables	199
	Diagramming the Persistence Tier	200
	Creating the Entities	201
	Compiling the Entities	208
	Adjusting the Database Tier	209
	Adjusting the Database Tier Implemented with MySQL	209
	Adjusting the Database Tier Implemented with Oracle	210
	Testing the Additions	210
	Performing a Quick Test of the Newly Created JPA Entities	213
	Building the Sample with the NetBeans IDE	221
	Summary	222

CHAPTER 9	Object/Relational Mapping	223
	Mapping Java Objects to the Underlying Database	223
	Object-Oriented and Relational Paradigms	224
	The Big Picture	225
	Specifying Object/Relational Mapping Metadata	227
	Using Mapping Annotations	227
	Specifying Mapping Metadata in orm.xml	227
	Utilizing Entity Relationships	232
	Navigating Over Relationships	232
	Cascading Operations Performed on Related Entities	234
	Dealing with Entity Primary Keys	239
	Dealing with Composite Primary Keys	239
	Generating Values for Primary Key Columns	244
	Summary	252
CHAPTER 10	Using EntityManager	253
	Managing Entities	253
	The Big Picture	254
	Persistence Contexts	255
	Managing the Life Cycle of Entity Instances	260
	EntityManager Interface	262
	Using EntityManager to Manipulate Entities	262
	Obtaining an Instance of EntityManager	263
	Uses of EntityManager	264
	Using Entity Life-Cycle Callback Methods	276
	Summary	282
CHAPTER 11	Using Java Persistence Query Language (JPQL)	283
	Defining Queries Over Entities	283
	What Is JPQL?	283
	When You Might Want to Use JPQL	285
	Operations Supported in JPQL	285
	Dealing with JPQL Statements	286
	Using Query API	288
	Retrieving Entities with JPQL	289
	A Simple Example of JPQL in Action	289
	Are Retrieved Entities Managed?	291
	Navigating Over Relationships in the Retrieved Entities	293
	Using JPQL Fetch Joins	296

Using Native SQL Queries	300
Dealing with Native SQL Queries	300
A Simple Example of Native SQL Query	301
Summary	301

PART 5 ■ ■ ■ Building the Business Logic Tier

■ CHAPTER 12 Designing Session Beans..... 305

Creating Session Beans Implementing the Sample	
Application Logic	305
Planning the Business Logic Tier	305
Creating the Stateless Session Beans	306
Creating the Stateful Session Beans	308
Compiling, Packaging, and Deploying the Session Beans	310
Testing the Newly Created Session Beans	311
Testing Session Beans with Servlets	311
If Something Goes Wrong	317
Continuing with the Sample Project in the NetBeans IDE	317
Summary	318

■ CHAPTER 13 Managing Transactions..... 319

Using Transactions in Java EE Applications	319
JTA Transactions	320
Types of Transaction Demarcation	320
Using Declarative Transaction Demarcation	321
Demarcating Transactions Programmatically	324
Using Transaction Demarcation in Client Code	326
Dealing with Resource-Local Transactions	327
Some Transaction Scenarios	328
Transactional Behavior of a Business Method Involving	
Operations of More Than One Container-Managed	
EntityManager	328
Defining Transactions in Stateful Session Beans	333
Summary	334

PART 6 ■ ■ ■ Building the Presentation Tier and Testing

■ CHAPTER 14	Building the Presentation Tier	337
	Accessing Java EE Functionality from a Presentation Tier.	337
	Choosing a Web Tier Technology	338
	Planning the Presentation Tier.	339
	Using JAAS to Secure Java EE Applications.	341
	Creating a JDBC Realm in GlassFish	341
	Building the Sample's Presentation Tier with JSF.	345
	Diagramming the Project	345
	Developing JSF Managed Beans.	346
	Developing JSF Pages.	349
	Creating Security Pages	351
	Configuring the Application	352
	Summary.	355
■ CHAPTER 15	Testing the Application	357
	Launching the Sample Application.	357
	Log In to the Sample.	358
	Filling Up the Shopping Cart	359
	Looking Through the Cart Items and Placing an Order	359
	Testing the Functionality of the Sample	360
	Finding Weaknesses	360
	Fixing the Problems.	361
	Summary.	362

PART 7 ■ ■ ■ Appendix

■ APPENDIX	Getting Familiar with Relational Databases	365
	What Database to Choose?	366
	The Underlying Database Is Part of the Entire Solution.	366
	Understanding the Architecture of Your Database.	367
	Knowing Your Database Features	375

Using the SQL Database Language	376
What Is SQL?	376
Categories of SQL Statements.....	377
Performing DDL Operations	378
Performing DML Operations.....	382
Performing Transaction Management Statements	385
Performing Administrative Tasks	388
Using Management Tools Shipped with Your Database.....	390
MySQL Command-Line Tool	390
Oracle SQL*Plus.....	391

■ INDEX	393
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About the Author

■ **YULI VASILIEV** is a software developer, freelance author, and consultant currently specializing in open source development, Java technologies, databases, and service-oriented architecture (SOA). He has more than ten years of software development experience as well as several years of technical writing experience. He also wrote a series of technical articles for Oracle Technology Network (OTN) and *Oracle Magazine*.

About the Technical Reviewer



■ **GORDON YORKE** is a technical lead on the Oracle TopLink, EclipseLink, and Glassfish TopLink Persistence projects. He is a current member of the JPA 2.0 expert group and the EclipseLink Architecture council. Having worked on Oracle TopLink since its infancy, he has considerable ORM and Java EE application experience; he also has a bachelor's degree in computer science from Acadia University. In addition, he has been known to make speaking appearances at industry conferences.

Introduction

In most cases, developing a data-centric Java EE application doesn't start with building the persistence tier. Instead, you first have to build an underlying database or adjust an existing one to be utilized within your application. Even if you're not charged with building an underlying database for your application, you will look much better if you choose to understand how it works in detail.

Beginning Database-Driven Application Development in Java EE: Using GlassFish is an example-driven, practical book that explains in detail how to develop Java EE applications utilizing relational database technologies with examples using Oracle and MySQL as well as the GlassFish application development framework and deployment platform—all based on Java EE. The book brings together the most useful Java EE technologies such as EJB, JPA, and JSF, providing information that can be immediately put to work.

Over the course of this book, you will be guided through every step of building and deploying a data-centric Java EE application. As you work through the book-length case study, you will learn how to develop each tier of a Java EE application, including the database tier, persistence tier, business logic tier, and presentation tier.

Who Is This Book For?

Beginning Database-Driven Application Development in Java EE: Using GlassFish is aimed at anybody who wants to learn how to build data-centric Java EE applications. Regardless of whether you have already gotten your feet wet with Java EE technologies or just want to start now, there will be something in this book for you. To get the most out of this book, however, you should have some familiarity with the basics of Java EE.

How Is This Book Structured?

The book includes fifteen chapters and an appendix, with the chapters grouped into six logical parts. The first part of the book guides you through the process of installing and configuring the software components required to follow the examples provided in the following chapters. Also, it explains some basics of the Java Persistence API and EJB 3 technologies used to implement the persistence tier and the business logic tier of a Java EE application, respectively. (The basics of relational databases are explained in the appendix.)

In the second part, you will look at the planning stage of the development process. In particular, you will learn how to plan a multitier architecture for your Java EE application and efficiently distribute business logic between the application tiers.

The third part of the book walks you through the process of creating an underlying database to be used with a Java EE application. You will learn how to plan and then develop an underlying database, using Oracle and MySQL—the two most popular databases nowadays.

This part also explains how to set up data sources in your GlassFish server for the underlying database just created.

With the underlying database already in place, the next four chapters grouped into the fourth part cover building the persistence tier, and they explain how to design the JPA entities through which your Java EE application will actually interact with its underlying database. Here, you will also look at the object/relational mapping facility available in Java EE and how to use Java Persistence Query Language (JPQL) as well as native SQL when it comes to querying JPA entities.

The fifth part of the book focuses on building the business logic tier of the Java EE application sample application. In particular, it explains how to create session beans to be utilized within the sample. Also, it covers transactions, explaining how to develop transactional enterprise beans and client applications.

Finally, the sixth part discusses how to build the presentation tier; you'll build JSF beans through which you will access the session beans already in place. Then, you will see how to test the entire application.

What Will You Need to Use This Book?

The examples in the book are designed to be deployed to the GlassFish application server. Also, you will need to implement the underlying database in either MySQL or Oracle. Chapter 1 explains in detail how you can install all these software components. Then, Chapter 2 gives you the information required to get started with GlassFish.

The complete source code for the examples discussed in the book is available in the Source Code/Download section of the Apress website at <http://www.apress.com>.