**29.7 Wrap-Up**

In this chapter, we introduced the Java Persistence API (JPA). We used the NetBeans IDE to create and populate a Java DB database. We created a NetBeans project and configured it to support JPA and accessing a Java DB database. Next, we used the NetBeans IDE’s object-relational-mapping tools to autogenerate entity classes from a database’s schema. We then used those classes to interact with the database.

We queried the databases with both dynamic queries created in code and named queries that were autogenerated by NetBeans. We accessed data from multiple database tables. We discussed some of the JPA features in the autogenerated entity classes.

Next, we used transactions to insert new data in a database. We also discussed other JPA operations, such as how to update existing data in and remove data from a database. Finally, we listed several online JPA resources from which you can learn more about JPA.

### Exercises

**29.1** ***(Query Application for the*** ***books Database)*** Using the techniques shown in this chapter, define a query application for the books database. Enable the user to perform the following predefined queries:

a) Select a specific author and list all books for that author. Include each book’s title, year and ISBN. Order the titles alphabetically.

b) Select a specific title and list all authors for that title. Order the authors alphabetically by last name then by first name.

**29.2** ***(Address Book Modification: Update an Existing Entry)*** Modify the program in [Section 29.5](http://proquest.safaribooksonline.com/9780133813036/ch29lev1sec5_html#ch29lev1sec5) to provide a JButton that allows the user to update the data in the database for the currently displayed contact. Use the update technique discussed in [Section 29.5.5](http://proquest.safaribooksonline.com/9780133813036/ch29lev2sec17_html#ch29lev2sec17).

**29.3** ***(Address Book Modification: Delete an Existing Entry)*** Modify the program of [Exercise 29.2](http://proquest.safaribooksonline.com/9780133813036/ch29lev1sec8_html#ch29que02) to provide a JButton that allows the user to delete an entry in the AddressBook database. Use the delete technique we discussed in [Section 29.5.5](http://proquest.safaribooksonline.com/9780133813036/ch29lev2sec17_html#ch29lev2sec17).