Chapter 6 Review Questions

1. What are the differences between a database state and a database schema? Explain with examples.
2. How does SQL allow implementation of the entity integrity and referential integrity constraints described in Chapter 3? What about referential triggered actions?

3. Write appropriate SQL DDL statements for declaring the LIBRARY relational database schema of Figure 6.6. Specify the keys and referential triggered actions.

4. How can the key and foreign key constraints be enforced by the DBMS?

5. Briefly describe the UPDATE command with a suitable example.

6. State the difference between PRIMARY KEY clause and UNIQUE clause.

7. Specify the following queries in SQL on the database schema of Figure 6.6.
   a. List names of borrowers and the corresponding book titles that they borrowed.
   b. List book titles followed by their author's name.
   c. List publisher's name for books authored by 'jk rowling'.
   d. List branch addresses that house the book titled 'Don Quixote'

8. Specify the following queries in SQL on the database schema of Figure 1.2.
   a. Retrieve the names of all senior students majoring in 'cs' (computer science).
   b. Retrieve the names of all courses taught by Professor King in 2007 and 2008.
   c. For each section taught by Professor King, retrieve the course number, semester, year, and number of students who took the section.
   d. Retrieve the name and transcript of each senior student (Class = 4) majoring in CS. A transcript includes course name, course number, credit hours, semester, year, and grade for each course completed by the student.

9. Write SQL update statements to do the following on the database schema shown in Figure 1.2.
   a. Insert a new student, <'Johnson', 25, 1, 'Math'>, in the database.
   b. Change the class of student 'Smith' to 2.
   c. Insert a new course, <'Knowledge Engineering', 'cs4390', 3, 'cs'>.
   d. Delete the record for the student whose name is 'Smith' and whose student number is 17

3 – general
6 – code

STUDENT

Name	Student_number	Class	Major
Smith	17	1	CS
Brown	8	2	CS

COURSE

Course_name	Course_number	Credit_hours	Department
Intro to Computer Science	CS1310	4	CS
Data Structures	CS3320	4	CS
Discrete Mathematics	MATH2410	3	MATH
Database	CS3380	3	CS

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
85	MATH2410	Fall	07	King
92	CS1310	Fall	07	Anderson
102	CS3320	Spring	08	Knuth
112	MATH2410	Fall	08	Chang
119	CS1310	Fall	08	Anderson
135	CS3380	Fall	08	Stone

GRADE_REPORT

Student_number	Section_identifier	Grade
17	112	B
17	119	C
8	85	A
8	92	A
8	102	B
8	135	A

PREREQUISITE

Course_number	Prerequisite_number
CS3380	CS3320
CS3380	MATH2410
CS3320	CS1310

Figure 1.2
A database that stores student and course information.

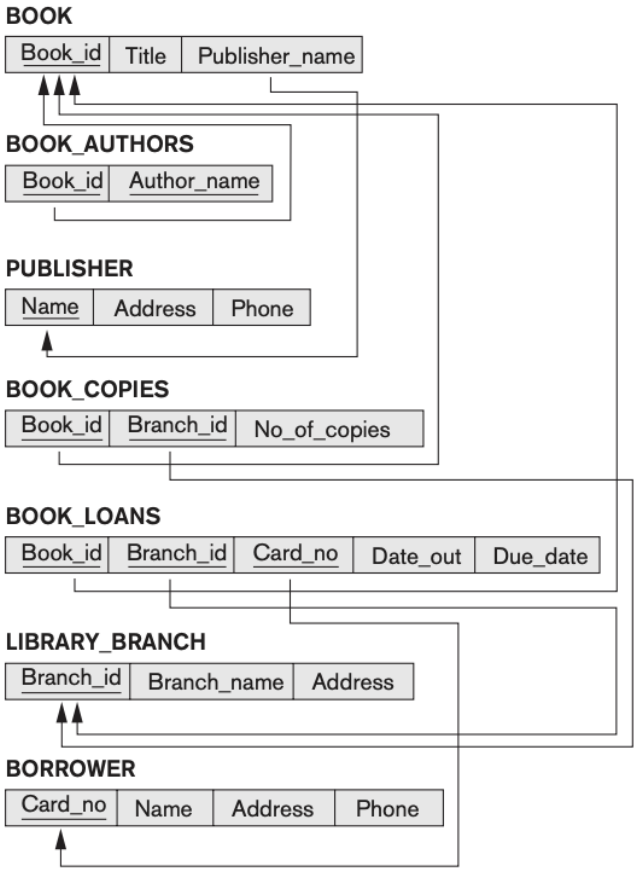

Figure 6.6
A relational database schema for a LIBRARY database.