

EXERCISES

2.38 Apply the normalization process to the Veterinary Office List relation shown in Figure 1-26 to develop a set of normalized relations. Show the results of each of the steps in the normalization process.

2.39 Apply the normalization process to the Veterinary Office List—Version Two relation shown in Figure 1-27 to develop a set of normalized relations. Show the results of each of the steps in the normalization process.

2.40 Consider the following relation.

STUDENT (StudentNumber, StudentName, SiblingName, Major)

Assume that the values of SiblingName are the names of all of a given student's brothers and sisters; also assume that students have at most one major.

- A.** Show an example of this relation for two students, one of whom has three siblings and the other of whom has only two siblings.
- B.** List the candidate keys in this relation.
- C.** State the functional dependencies in this relation.
- D.** Explain why this relation does not meet the relational design criteria set out in this chapter (i.e., why this is not a well-formed relation).
- E.** Divide this relation into a set of relations that do meet the relational design criteria (i.e., that are well formed).

2.41 Alter question 2.40 to allow students to have multiple majors. In this case, the relational structure is:

STUDENT (StudentNum, StudentName, SiblingName, Major)

- A.** Show an example of this relation for two students, one of whom has three siblings and the other of whom has one sibling. Assume each student has a single major.
- B.** Show the data changes necessary to add a second major only for the first student.
- C.** Based on your answer to part B, show the data changes necessary to add a second major for the second student.
- D.** Explain the differences in your answers to questions parts B and C. Comment on the desirability of this situation.
- E.** Divide this relation into a set of well-formed relations.

2.42 The text states that one can argue that “the only reason for having relations is to store instances of functional dependencies.” Explain what this means in your own words.

ACCESS WORKBENCH EXERCISES

AW.2.1 In the “Access Workbench Exercises” in Chapter 1, we created a database for the Wedgewood Pacific Corporation (WPC) of Seattle, Washington, and created and populated the EMPLOYEE table. In this exercise, we will build the rest of the tables needed for the database, create the referential integrity constraints between them, and populate the tables.