1. Explain the distinctions between the terms primary key, candidate key, and superkey.

2. Give an example of
   (a) simple and composite attributes
   (b) single-valued, multi-valued, and derived attribute.

3. What is the difference between a database schema and a database instance? Give an example.

4. What is the difference between an entity type and an entity set? Give an example.

5. What are the properties of a relation in a relational database system? How does it differ from a simple table of data?

6. What are the different types of integrity constraints? Give examples.

7. Answer the following questions based on the relational database schema shown in figure 3.2 below.

   a. List all entity types and relationship types in the relational database schema COMPANY.
   b. List the primary key for each entity type in the schema.
   c. List all composite and multi-valued attributes seen in the diagram.
   d. List the attributes of the relationship type MANAGES.
e. Assume we converted the WORKS_ON relationship type to a database table. What would be the primary key for the table? Why? What about the WORKS_FOR relationship type?

Figure 3.2
An ER schema diagram for the COMPANY database. The diagrammatic notation is introduced gradually throughout this chapter.