Section 9: PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

Objectives

- Explain the purpose of defining PRIMARY KEY, FOREIGN KEY, and CHECK constraints
- Write CREATE TABLE statements which include PRIMARY KEY, FOREIGN KEY and CHECK constraints defined at the table level and at the column level
- Explain the effects of ON DELETE CASCADE and ON DELETE SET NULL when a parent row is deleted
- State the restrictions on defining CHECK constraints.

Vocabulary

Directions: Identify the vocabulary word for each definition below.

1. _____   Allows a foreign key row that is referenced to a primary key row to be deleted

2. _____   Explicitly defines a condition that must be met

3. _____   A column or set of columns that uniquely identifies each row in a table

4. _____   Constraint ensures that the column contains no null values

5. _____   Allows a row to stay in a table when the data is deleted without deleting the whole row

6. _____   Establishes a relationship between the foreign key column and a primary key or unique key in the same table or a different table

Try It / Solve It

1. What is the purpose of a
   a. PRIMARY KEY
   b. FOREIGN KEY
   c. CHECK CONSTRAINT

2. Using the column information for the animals table below, name constraints where applicable at the table level, otherwise name them at the column level. Define the primary key (animal_id). The license_tag_number must be unique. The admit_date and vaccination_date columns cannot contain null values.

   animal_id NUMBER(6)
   name VARCHAR2(25)
   license_tag_number NUMBER(10)
   admit_date DATE
   adoption_id NUMBER(5),
   vaccination_date DATE

3. Create the animals table. Write the syntax you will use to create the table.

4. Enter one row into the table. Execute a SELECT * statement to verify your input. Refer to the graphic below for input.

ANIMAL_ID	NAME	LICENSE_TAG_NUMBER	ADMIT_DATE	ADOPTION_ID	VACCINATION_DATE
101	Spot	35540	10-OCT-04	205	12-OCT_04

5. Write the syntax to create a foreign key (adoption_id) in the animals table that has a corresponding primary- key reference in the adoptions table. Show both the column-level and table-level syntax. Note that because you have not actually created an adoptions table, no adoption_id primary key exists, so the foreign key cannot be added to the animals table.

6. What is the effect of setting the foreign key in the ANIMAL table as:
   a. ON DELETE CASCADE
   b. ON DELETE SET NULL

7. What are the restrictions on defining a CHECK constraint?