Database Programming with SQL
14-2: PRIMARY KEY, FOREIGN KEY, and CHECK Constraints Practice Activities

Objectives

- Define and give an example of PRIMARY KEY, FOREIGN KEY, and CHECK constraints
- Explain the purpose of defining PRIMARY KEY, FOREIGN KEY, and CHECK constraints on a table
- Demonstrate the creation of constraints at the column level and table level in a CREATE TABLE statement
- Evaluate a business problem requiring the addition of a PRIMARY KEY and FOREIGN KEY constraint and write the code to execute the change

Vocabulary

Identify the vocabulary word for each definition below.

	Allows a foreign key row that is referenced to a primary key row to be deleted
	Explicitly defines a condition that must be met
	A column or set of columns that uniquely identifies each row in a table
	Constraint ensures that the column contains no null values
	Allows a child row to remain in a table with null values when a parent record has been deleted
	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-2004	205	12-Oct-2004

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?