Database Programming with SQL
14-1: Intro to Constraints; NOT NULL and UNIQUE Constraints
Practice Activities

Objectives

- Define the term "constraint" as it relates to data integrity
- State when it is possible to define a constraint at the column level, and when it is possible at the table level
- State why it is important to give meaningful names to constraints
- State which data integrity rules are enforced by NOT NULL and UNIQUE constraints
- Write a CREATE TABLE statement which includes NOT NULL and UNIQUE constraints at the table and column levels
- Explain how constraints are created at the time of table creation

Vocabulary

Identify the vocabulary word for each definition below.

UNIQUE	Every value in a column or set of columns (a composite key) must be unique
NOT NULL Constraint	For every row entered into the table, there must be a value for that column
PRIMARY KEY	Constraint ensures that the column contains no null values and uniquely identifies each row of the table
CHECK Constraint	Specifies a condition for a column that must be true for each row of data
REFERENCES	Identifies that table and column in the parent table
UNIQUE Constraint	An integrity constraint that requires every value in a column or set of columns be unique
FOREIGN KEY	Designates a column (child table) that establishes a relationship between a primary key in the same table and a different table (parent table)
Table Level Constraint	References one or more columns and is defined separately from the definitions of the columns in the table
Constraint	Database rule.
Column Level Constraint	Database rule that references a single column

Try It / Solve It

Global Fast Foods has been very successful this past year and has opened several new stores. They need to add a table to their database to store information about each of their store's locations. The owners want to make sure that all entries have an identification number, date opened, address, and city and that no other entry in the table can have the same email address. Based on this information, answer the following questions about the global_locations table. Use the table for your answers.

Global Fast Foods global_locations Table						
NAME	TYPE	LENGTH	PRECISION	SCALE	NULLABLE	DEFAULT
Id	pk	NUMBER	6	0	no	No
name		VARCHAR2	50			yes to the rest
date_opened		DATE			no	no
address		VARCHAR2	50		no	no
city		VARCHAR2	30		no	no
zip/postal code		VARCHAR2	12			
phone		VARCHAR2	20			
email	uk	VARCHAR2	75			
manager_id		NUMBER	6	0		
Emergency contact		VARCHAR2	20			

uk- unique key

1. What is a "constraint" as it relates to data integrity?

Database can be as reliable as the data in it, and database rules are implemented as Constraint to maintain data integrity. For example these constraints may prohibit deletion of a table or some row when insertion, updation or deletion is executed. Type of constraints:

2. What are the limitations of constraints that may be applied at the column level and at the table level?

Constraints referring to more than one column are defined at Table Level

- NOT NULL constraint must be defined at column level as per ANSI/ISO SQL standard.
- If word CONSTRAINT is used in a CREATE TABLE statement, I must specify constraint name. Also, that is why, Table level constraint must be user-named.

3. Why is it important to give meaningful names to constraints?

- If a constraint is violated in a SQL statement execution, it is easy to identify the cause with user-named constraints.
- It is easy to alter names/drop constraint.
- Handling production issues may be faster with user-named constraints

4. Based on the information provided by the owners, choose a datatype for each column. Indicate the length, precision, and scale for each NUMBER datatype.

5. Use "nullable" to indicate those columns that can have null values.

6. Write the CREATE TABLE statement for the Global Fast Foods locations table to define the constraints at the column level.

7. Execute the CREATE TABLE statement in Oracle Application Express.

8. Execute a DESCRIBE command to view the Table Summary information.

9. Rewrite the CREATE TABLE statement for the Global Fast Foods locations table to define the UNIQUE constraints at the table level. Do not execute this statement.