29/8/25

EXERCISE 12

Intro to Constraints: NOT NULL and UNIQUE Constraints

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	NUMBER	10			NOT NULL	
name	VARCHAR2	20			NOT NULL	
date_opened	DATE	10			NOT NULL	
address	VARCHAR2	50			NOT NULL	
city	VARCHAR2	20			NOT NULL	
zip/postal code	VARCHAR2	10			NULL	
phone	VARCHAR2	10			NULL	
email	VARCHAR2	15			NULL	
manager_id	NUMBER	5			NULL	
Emergency contact	VARCHAR2	10			NULL	

1. What is a "constraint" as it relates to data integrity?
A constraint is a rule used to limit the type of data that can be entered into a table. This ensures the accuracy and reliability of the data in the database.
2. What are the limitations of constraints that may be applied at the column level and at the table level?
Column-level constraints apply to a single column, while table-level constraint can apply to multiple columns in the table.
3. Why is it important to give meaningful names to constraints?
Giving meaningful names to constraints makes them easier to identify and manage, especially when dealing with errors or modifications. A well-named constraint can quickly convey its purpose.
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.

CREATE TABLE locations (id NUMBER(4) CONSTRAINT loc_id_pk PRIMARY KEY, loc_name VARCHAR2(20) NOTNULL, address VARCHAR2(30), city VARCHAR2(30), zip_postal VARCHAR(20), phone VARCHAR2(15), email VARCHAR2(30), manager_id NUMBER(4), contact VARCHAR2(40));

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

You would run the above SQL code in SQL commands or SQL Workshop inside ORACLE APEX. Just type the CREATE TABLE statement and click run

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

DESC global_locations;
This command displays the column names, datatypes and nullability of the table.

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.

NAME	TYPE	LENGTH	PRECISION	SCALE	NULLABLE	DEFAULT
id	number	4				
loc_name	varchar2	20			x	
	date					
address	varchar2	30				
city	varchar2	20				
zip_postal	varchar2	20			x	
phone	varchar2	15			x	
email	varchar2	30			x	
manager_id	number	4			x	
contact	varchar2	40			x	

CREATE TABLE locations (id NUMBER(4) CONSTRAINT loc_id_pk PRIMARY KEY, loc_name VARCHAR2(20) NOT NULL, address VARCHAR2(30), city VARCHAR2(20), zip_postal VARCHAR2(20), phone VARCHAR2(15), email VARCHAR2(30), manager_id NUMBER(4), contact VARCHAR2(40), CONSTRAINT loc_nam_uq UNIQUE (loc_name), CONSTRAINT phone_uq UNIQUE (phone), CONSTRAINT email_uq (email));

PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

1. What is the purpose of a
   - PRIMARY KEY a) A primary key uniquely identifies record in table
   - FOREIGN KEY b) A foreign key is used to link two tables together
   - CHECK CONSTRAINT c) A check constraint is used to limit the input from users

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) -> primary key
name VARCHAR2(25)
license_tag_number NUMBER(10) -> unique
admit_date DATE -> NOT NULL
adoption_id NUMBER(5),
vaccination_date DATE -> NOT NULL

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

CREATE TABLE animals (animal_id NUMBER(6), NAME VARCHAR2(20), license_tag_number NUMBER(10) NOT NULL UNIQUE, VACCINATION_date DATE);

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

INSERT INTO animals VALUES (101, 'Spot', 35540, '10-Oct-2004', 205, '12-Oct-2004');
Select * FROM animals

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

a) If an adoption record is deleted all animals linked to that adoption will also be deleted automatically

b) If an adoption record is deleted the adoption_id field in the animal table for those animals become NULL.

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

1) CHECK CONSTRAINT can only refer its columns within the same table. It cannot reference columns in other tables

2) It cannot include subqueries

3) It must be boolean expression that evaluates to TRUE or FALSE

4) It cannot be use functions that return non-deterministic values (like SYSDATE USER);

Evaluation Procedure	Marks awarded
Query(5)	5
Execution (5)	5
Viva(5)	5
Total (15)	15
Faculty Signature	