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						
name						
date_opened						
address						
city						
zip/postal code						
phone						
email						
manager_id						
Emergency contact						

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

A Constraint is a rule applied to a Column (or) table to enforce data integrity. It ensures that the data entered into the database.

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

Column level → Can only define Constraints that apply to a single Column.
Table level → Can define Constraints involving multiple Columns.

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

* Improves Readability → Makes it easier for developers and DBAs to understand Schema.
* Makes SQL Statements more intuitive and self explanatory.

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.

Id — NUMBER(6,0) — Unique Identifier
date_opened — DATE — Store opening date
name   VARCHAR2(100)   Location name

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

Id   — NOT NULL

date_opened   — NOT NULL

name   —   NOT NULL

city   -   NOT NULL

zip/post Code — NOT NULL

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

Create Table global_locations (id NUMBER(4) PRIMARY KEY, loc_name VARCHAR2(20) NOT NULL, Address VARCHAR2(36) NOT NULL, City VARCHAR2 NOT NULL, Zip_postal VARCHAR2(20) NOT NULL, phone VARCHAR2(20), email VARCHAR2(80), manager_id NUMBER(4), Contact VARCHAR2(40));

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

1. Log into the oracle.
2. Sql Workshop > Sql Commands.
3. Then Create table.
4. Click Run.

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

DESC global_locations;

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	80			X	
manager_id	number	4			X	
contact	varchar2	40			X	

Create global_locations(id NUMBER (4) NOT NULL, loc_name VARCHAR2(20) NOT NULL, address VARCHAR2(30) NOT NULL, City VARCHAR2(20) NOT NULL, Zip_postal VARCHAR2(20) NOT NULL, Phone VARCHAR2(20), email VARCHAR2(80),

Constraint pk_global_locations PRIMARY KEY (id),
Constraint uq_global_email UNIQUE (email),
Constraint uq_global_phone UNIQUE (phone));

PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

1. What is the purpose of a
- PRIMARY KEY — Ensures each row in a table is uniquely identifiable.
- FOREIGN KEY — Establishes a link btw two tables. It enforces referential integrity.
- CHECK CONSTRAINT
  └ validates data based on a Condition. It ensures that values in a Column meet Specific Criteria

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)            — UNIQUE
license_tag_number NUMBER(10) ──→ NOT NULL
admit_date DATE
adoption_id NUMBER(5),        ⇒ NOT NULL
vaccination_date DATE
```

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

Create table animals (animal_id NUMBER(6), name VARCHAR2(25), license_tag_no NUMBER(10), admit_date DATE NOT NULL, adoption_id NUMBER(5) Constraint pk_animal_id PRIMARY KEY);

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

ANIMAL_I D	NAM E	LICENSE_TAG_NUMBE R	ADMIT_DAT E	ADOPTION_I D	VACCINATION_DAT E
101	Spot	35540	10-Oct-2004	205	12-Oct-2004

Insert into animals (animal_id, name, license_tag_number, admit_date, adoption_id, vaccination_date) values (101, 'Spot', 35540, TO_DATE ('10-oct-2004', 'DD-Mon-YYYY'), 205, TO_DATE ('12-oct-2004', 'DD-Mon-YYYY')); 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.

adoption_id NUMBER (5) CONSTRAINT fk_adoption_id REFERENCES adoptions (adoption_id)

6. What is the effect of setting the foreign key in the ANIMAL table as:

a. ON DELETE CASCADE → If a referenced row in the parent table is deleted, all matching rows in the child table will also be automatically deleted.

b. ON DELETE SET NULL
→ If a referenced row in the parent table is deleted, the foreign key column in the child table will set to Null

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

\# Cannot reference other tables - only columns in the same row

* Cannot use subqueries (or) functions that depend on external data.

* Must be logically valid.

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