

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 enforced by the database to maintain data integrity and accuracy. It restricts the type of data that can be inserted into table to prevent invalid or inconsistent data.

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

column level constraints cannot reference other columns whereas table level constraints can.

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

It makes debugging easier.

It helps the identify purpose of each constraint.

It improves maintainability.

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, manager_id - NUMBER(5) name, email, emergency-contact - VARCHAR(50)
 date-opened - DATE address - VARCHAR(100) city - VARCHAR2(30)
 manager_id - NUMBER(5) zip-postal-code - VARCHAR2(10) phone - VARCHAR2(15)

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

zip-postal-code, phone, email, manager-id, emergency-contact

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(5) CONSTRAINT gl-id-pk PRIMARY KEY, name
VARCHAR2(50) CONSTRAINT gl-name-nn NOT NULL, date-opened DATE CONSTRAINT gl-date-nn
NOT NULL, address VARCHAR2(100) CONSTRAINT gl-address-nn NOT NULL, zip-postal code
VARCHAR2(10), phone VARCHAR2(15), email VARCHAR2(50) CONSTRAINT gl-email-uk UNIQUE
```

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

TABLE GLOBAL_LOCATIONS created

```
manager-id NUMBER(5),
emergency-contact VARCHAR2(50)
```

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 TABLE global-fast-food-locations(
```

```
id NUMBER(5) CONSTRAINT gl-id-pk PRIMARY KEY,
loc_name VARCHAR2(20) CONSTRAINT gl-name-nn NOT NULL,
date DATE CONSTRAINT gl-date-nn NOT NULL,
address VARCHAR2(30) CONSTRAINT gl-address-nn NOT NULL,
city VARCHAR2(20) CONSTRAINT gl-city-nn NOT NULL,
zip-postal VARCHAR2(20),
phone VARCHAR2(15),
email VARCHAR2(50),
manager-id NUMBER(4),
contact VARCHAR2(10),
```


PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

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

Primary key - Uniquely identifies each record in a table automatically implies NOT NULL

Foreign key - Enforces referential integrity between two tables. Ensures that a value in one table matches a value in another table's primary key.

CHECK - Restricts values in a column based on logical condition

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.

CREATE TABLE animals (animal_id NUMBER(6) CONSTRAINT animals_id_pk PRIMARY KEY, name VARCHAR2(25), license_tag_number NUMBER(10) CONSTRAINT animals_tag_uk UNIQUE, admit_date DATE CONSTRAINT animals_admit_nn NOT NULL, adoption_id NUMBER(5), vaccination_date DATE CONSTRAINT animals_vacc_nn NOT NULL);

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, 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.

**ALTER TABLE animals
ADD CONSTRAINT animals_adopt_fk
FOREIGN KEY (adoption_id)
REFERENCES adoptions(adoption_id)**

**CONSTRAINT animals_adopt_fk
FOREIGN KEY (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
- b. ON DELETE SET NULL

a. Automatically deletes all child rows (in animals) when the parent row (in adoptions) is deleted.

b) Sets the child's foreign key column (adoption_id) to NULL when the parent row is deleted.

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

- * Cannot reference columns from other tables
- * Condition must be boolean
- * Can't include subqueries
- * Can't check rows directly

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