

## 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						

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

A constraint is a rule that enforces data integrity in a table  
Ex: NOT NULL, UNIQUE, CHECK, etc

- What are the limitations of constraints that may be applied at the column level and at the table level? Column-level applies to one column only. Table-level can apply to multiple columns.

- Why is it important to give meaningful names to constraints?

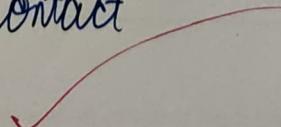
Meaningful names make constraints easy to identify, debug, and maintain

- 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), name - VARCHAR2(50), date\_opened - DATE, address - VARCHAR2(100), city - VARCHAR2(50), zip\_postal\_code - VARCHAR2(15), phone - VARCHAR2(20), email - VARCHAR2(100), manager\_id - NUMBER(6), emergency\_contact - VARCHAR2(100)

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

Nullable - 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(6) PRIMARY KEY,  
name VARCHAR2(50) NOT NULL, date_opened DATE NOT NULL, address  
NOT NULL, city VARCHAR2(50) NOT NULL, zip_postal_code VARCHAR2(15),  
phone VARCHAR2(20), email VARCHAR2(100) UNIQUE, manager_id NUMBER(6),  
emergency_contact VARCHAR2(100));
```

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

To execute CREATE TABLE statement click SQL → Commands → 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 TABLE global_locations (id NUMBER(4) PRIMARY KEY,  
loc_name VARCHAR2(20) NOTNULL, date_opened DATE, address  
VARCHAR2(30), city VARCHAR2(20), zip_postal VARCHAR2(20) NOT NULL,  
phone VARCHAR2(15) NOT NULL, email VARCHAR2(80) NOT NULL,  
manager_id NUMBER(4) NOT NULL, contact VARCHAR2(40) NOT NULL,  
(CONSTRAINT u_email UNIQUE (email), (CONSTRAINT u_phone  
UNIQUE (phone));
```

### PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

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

PRIMARY KEY - Uniquely identifies each row in table

FOREIGN KEY - links a column to a primary key in another table

CHECK - Ensures column values meet a specified condition

- 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

animal\_id - PRIMARY KEY, Column-level

license\_tag\_number - UNIQUE, Table-level

admit\_date - NOT NULL, Column-level vaccination\_date - NOT NULL, Column-level

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

CREATE TABLE animals (animal\_id NUMBER(6) PRIMARY KEY, name VARCHAR2(25), license\_tag\_number NUMBER(10), admit\_date DATE NOT NULL, adoption\_id NUMBER(5), vaccination\_date DATE NOT NULL, CONSTRAINT una\_license UNIQUE (license\_tag\_number));

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

ANIMAL_ID	NAM E	LICENSE_TAG_NUMBE R	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;

- 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.

Column-level: adoption\_id NUMBER(5) REFERENCES adoptions(adoption\_id)

Table-level: CONSTRAINT fk\_adopt 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

ON DELETE CASCADE - If parent row in adoptions table is deleted, all related rows in animal table are automatically deleted.

ON DELETE SET NULL - If parent row is deleted, all related rows in animals table, adoption\_id is set to NULL

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

- \* Must refer to columns in same table
- \* cannot use subqueries or references to other tables
- \* condition must be logical expression

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