

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	4			Not null	
name	Varchar	20			Not null	
date_opened	Date				Not null	
address	Varchar	30			Not null	
city	Varchar	20			Not null	
zip/postal code	Varchar	20			Nullable	
phone	Varchar	15			Nullable	
email	Varchar	80			Nullable	
manager_id	Number	4			Nullable	
Emergency contact	Varchar	40			Nullable	

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

A constraint is a rule applied to a database column to ensure data integrity. It ensures that the data entered into a table meets specific conditions.

- What are the limitations of constraints that may be applied at the column level and at the table level? (column-level constraints can only apply to a single column.)

Constraint must be logical and not contradict each other.

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

Identify which constraint failed as error. Maintain or modify the database later. Debug & comment database design effectively.

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

Zip, postal, phone, manager_id, contact are varchar

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

Zip, postal code

Phone

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(4) constraint PK_global_locations primary key
    loc_name varchar(20) NOT NULL
    date_opened date NOT NULL
    address varchar2(30) NOT NULL
    city varchar(20) NOT NULL
    zip_postal varchar(20) NOT NULL
    phone varchar2(15) NOT NULL
    email varchar2(80) NOT NULL
```

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

CREATE TABLE global_locations (..)

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) NOT NULL,
 loc_name varchar2(20) NOT NULL,
 date_opened date NOT NULL,
 address varchar2(30) NOT NULL,
 city varchar2(20) NOT NULL
 zip_postal varchar(20)
 phone varchar2(15)
 email varchar2(80) NOT NULL

manager_id number(4)
 contact varchar(4)

constraint PK_global_

primary key (id).

constraint loc-global-locations

email UNIQUE (email)

PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

- What is the purpose of a
• PRIMARY KEY *uniquely identifies each record in a table.*
• FOREIGN KEY Establish a relationship between two tables.
• CHECK CONSTRAINT ensures that values in a column meet specific conditions

- 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
- license-tag-number → unique
- admit-date & vaccination-date → NOT null

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

CREATE TABLE animals

animal_id NUMBER(6) CONSTRAINT PK_animal
name VARCHAR(25) Primary Key
license_tag_number NUMBER(10) CONSTRAINT UG_

admit_date constraint nn_admit_date NOT null,
adoption_id NUMBER(5), vaccination_date NOT null,

- 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',

TO_DATE('12-OCT-2004', 'DD-MON-YYYY'))

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 LK-adoptions
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 a) When a record in a parent table is deleted all related records in child table are automatically deleted.
- b. ON DELETE SET NULL b) When a record in the parent table is deleted, the foreign key value in child table is set to null instead of deleting child record.

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

- The condition must be boolean expression
- Cannot include subqueries
- cannot reference other tables columns
- cannot call non-deterministic function

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