

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?

constraint is a rule that restricts the values in table columns to ensure the accuracy and reliability of data.

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

column-level; can always be applied to single column
table level must be used when a constraint applies to two or more columns (composite key).

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

Meaningful names make it easier to identify and troubleshoot errors when a constraint is violated.

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.

create table global_locations (id number(11) not null, name varchar(20), date-opened date NOT NULL, address varchar(20), city varchar(20), email varchar(20), zip/postal code not null, phone varchar(15), email varchar(80) unique, manager-id number(4), "emergency contact" varchar(40));

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

Constraint gloc_email_no unique constraint.

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

same as the above create table

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

DESC 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	80			X	
manager_id	number	4			X	
contact	varchar2	40			X	

PRIMARY KEY, FOREIGN KEY, and CHECK Constraints

1. What is the purpose of a
 • PRIMARY KEY ensures each row in a table is uniquely identified
 • FOREIGN KEY enforces referential integrity between two tables
 • CHECK CONSTRAINT restricts the values that can be placed in a column

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 ani (animal_id number(6) constraint ani_pk primary key, name varchar2(25), license_number(10) constraint animals_pk unique, admit_date date constraint animals_admit_nn not null, adoption_id number(5), vaccination_date constraint animals_vacc_nn not null, constraint ani_pk);

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 (animal_id, name, license_tag_number, admit_date, adoption_id, vaccination_date) values ('101', 'Spot', '35540', '10-Oct-2004', '205', '12-Oct-2004');

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.

a) ~~can't~~
constraint

table animals (adoption_id number(5))
 animals_fk references adoptions (adoption_id)

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

- a. ON DELETE CASCADE deleting a record in the parent table automatically deletes matching rows in the child table.
- b. ON DELETE SET NULL

deleting = parent by sets the foreign key value to the child to null.

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

- * cannot use subqueries inside the check condition
- * cannot reference columns from another table.
- * can only refer to columns in the same row
- * must evaluate to TRUE or FALSE



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

PRACTICE PROBLEM

Managing Constraints

Using Oracle Application Express, click the SQL Workshop tab in the menu bar. Click the Object Browser and verify that you have a table named copy_d_clients and a table named copy_d_events. If you don't have these tables in your schema, create them before completing the exercises below. Here is how the original tables are related. The d_clients table has a primary key client_number. This has a primary-key constraint and it is referenced in the foreign-key constraint on the d_events table.

NOTE: The practice exercises use the d_clients and d_events tables in the DJs on Demand database. Students will work with copies of these two tables named copy_d_clients and copy_d_events. Make sure they have new copies of the tables (without changes made from previous exercises). Remember, tables copied using a subquery do not have the integrity constraints as established in the original tables. When using the SELECT statement to view the constraint name, the tablename must be all capital letters.

- What are four functions that an ALTER statement can perform on constraints?

- * Add a constraint
- * Prop a constraint
- * Enable a constraint
- * Disable a constraint

- Since the tables are copies of the original tables, the integrity rules are not passed onto the new tables; only the column datatype definitions remain. You will need to add a PRIMARY KEY constraint to the copy_d_clients table. Name the primary key copy_d_clients_pk. What is the syntax you used to create the PRIMARY KEY constraint to the copy_d_clients.table?

```
Alter table copy-d add constraint copy-d-pk  
primary key (client-number);
```

- Create a FOREIGN KEY constraint in the copy_d_events table. Name the foreign key copy_d_events_fk. This key references the copy_d_clients table client_number column. What is the syntax you used to create the FOREIGN KEY constraint in the copy_d_events table?

```
alter table copy-d-events add constraint copy-d-f  
-foreign key (client-number) referencing copy-d-clients (clientnum)
```

- Use a SELECT statement to verify the constraint names for each of the tables. Note that the tablenames must be capitalized.

```
Select constraint-name, constraint-type, table-name from  
user-constraints where table-name IN ('copy-d-clients');
```

- The constraint name for the primary key in the copy_d_clients table is _____.

- Drop the PRIMARY KEY constraint on the copy_d_clients table. Explain your results.

```
Alter table copy-d-clients drop constraint  
copy-d-client-pk;
```

6. Add the following event to the copy_d_events table. Explain your results.

ID	NAME	EVENT_DATE	DESCRIPTION	COST	VENUE_ID	PACKAGE_CODE	THEME_CODE	CLIENT_NUMBER
140	Cline Bar Mitzvah	15-Jul-2004	Church and Private Home formal	4500	105	87	77	7125

insert into copy_d_events (ID, NAME, EVENT_DATE,
DESCRIPTION, COST, VENUE_ID, PACKAGE_CODE, THEME_CODE,
CLIENT_NUMBER) VALUES (140, 'cline Bar Mitzvah',
'15-Jul-2004', 'Church and Private Home formal',
4500, 105, 87, 77, 7125);

7. Create an ALTER TABLE query to disable the primary key in the copy_d_clients table. Then add the values from #6 to the copy_d_events table. Explain your results.

alter table copy_d_clients disable constraint
copy_d_clients_pk;

8. Repeat question 6: Insert the new values in the copy_d_events table. Explain your results.

alter table copy_d_clients enable constraint
copy_d_clients_pk;

9. Enable the primary-key constraint in the copy_d_clients table. Explain your results.

alter table copy_d_clients enable constraint copy_d_clients_pk;
alter table copy_d_events enable constraint copy_d_events_pk;

10. If you wanted to enable the foreign-key column and reestablish the referential integrity between these two tables, what must be done?

- * During bulk data import
- * When temporarily violating constraints for bulk insert

11. Why might you want to disable and then re-enable a constraint?

Select table-name, constraint-name, constraint-type from user-constraints where table-name in ('copy-p-classes', 'Copy-p-events');

12. Query the data dictionary for some of the constraints that you have created. How does the data dictionary identify each constraint type?

Code	Meaning
P	primary Key
K	foreign Key
V	unique
C	check
V	view

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