Database Programming with SQL
14-3: Managing Constraints
Practice Solutions
Vocabulary

Directions: Identify the vocabulary word for each definition below.

DISABLE CONSTRAINT	To deactivate an integrity constraint
CASCADE clause	Disables dependent integrity constraints
ALTER TABLE	To add, modify, or drop columns from a table
ENABLE CONSTRAINT	To activate an integrity constraint currently disabled
DROP CONSTRAINT	Removes a constraint from a table
DROP COLUMN	Allows user to delete a column from a table
CASCADE CONSTRAINT clause	Defines the actions the database server takes when a user attempts to delete or update a key to which existing foreign keys point

Try It / Solve It

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 tablenames must be all capital letters.

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

   Solution:
   Add, drop enable, and disable a constraint.
2. 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?

Solution:

```
ALTER TABLE copy_d_clients
ADD CONSTRAINT copy_d_clients_pk PRIMARY KEY(client_number);
```

3. 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?

   Solution:

   ```
   ALTER TABLE copy_d_events
   ADD CONSTRAINT copy_d_events_fk FOREIGN KEY(client_number) REFERENCES
   copy_d_clients(client_number);
   ```

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

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

   Solution:

```
SELECT constraint_name, constraint_type
FROM USER_CONSTRAINTS
WHERE table_name = 'COPY_D_CLIENTS';
```

CONSTRAINT_NAME	CONSTRAINT_TYPE
COPY_D_CLIENTS_PK	P
SYS_C00583282	C
SYS_C00583283	C
SYS_C00583284	C

   b. The constraint name for the foreign key in the copy_d_events table is _____.

   Solution:

```
SELECT constraint_name, constraint_type
FROM USER_CONSTRAINTS
WHERE table_name = 'COPY_D_EVENTS';
```

CONSTRAINT_NAME	CONSTRAINT_TYPE
COPY_D_EVENTS_FK	R
SYS_C00583275	C
SYS_C00583276	C
SYS_C00583277	C
SYS_C00583278	C
SYS_C00583279	C
SYS_C00583280	C
SYS_C00583281	C

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

   Solution:
   Answers will vary. The attempt to drop was unsuccessful.

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 Bas Mitzvah	15-JUL-2004	Church and Private Home formal	4500	105	87	77	7125

Solution:
INSERT INTO copy_d_events (id,
name,event_date,description,cost,venue_id,package_code,theme_code,client_number)
VALUES(140,'Cline Bas Mitzvah','15-JUL-2004','Church and Private Home,
formal',4500,105,87,77,7125);
ORA-02291: integrity constraint (USTA_SDHS_SQL01_S01.COPY_D_EVENTS_FK)
violated - parent key not found

**The attempt to drop the primary-key column in the copy_d_clients table was not successful in step 5. Therefore, the attempt to insert a row that has a value in a foreign-key child column that does not have a corresponding value in a parent column will also fail.

7. Create an ALTER TABLE query to disable the primary key in the copy_d_clients table. Then add the values from #5 to the copy_d_events table. Explain your results.

Solution:
ALTER TABLE copy_d_clients
DISABLE CONSTRAINT copy_d_clients_pk;
ORA-02297: cannot disable constraint
(USTA_SDHS_SQL01_S01.COPY_D_CLIENTS_PK) - dependencies exist
ALTER TABLE copy_d_clients
DISABLE CONSTRAINT copy_d_clients_pk CASCADE;

If the ALTER TABLE query did not have the CASCADE option, the FOREIGN KEY constraint was not disabled, so the ALTER TABLE DISABLE failed. If the CASCADE option was added to the ALTER TABLE query, the INSERT will be successful.

8. Repeat question 5: Insert the new values in the copy_d_events table. Explain your results.

Solution:
INSERT INTO copy_d_events (id,
name,event_date,description,cost,venue_id,package_code,theme_code,client_number)
VALUES(140,'Cline Bas Mitzvah','15-JUL-2004','Church and Private Home,
formal',4500,105,87,77,7125);

The primary key has been disabled, allowing values to be inserted into the copy_d_events table even though there is no corresponding client_number in the parent table copy_d_clients.

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

Solution:
ALTER TABLE copy_d_clients;
ENABLE CONSTRAINT copy_d_clients_pk;
The ENABLE was successful even though the new addition in the copy_d_events table has a client number not found in the parent table. When enabling a primary key that was disabled with the CASCADE option, the foreign keys are not enabled.

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

Solution:
The copy_d_clients table would need to have the client number and information added to it before the copy_d_events table could re-enable the foreign-key constraint on the client_number column.

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

Solution:
In certain situations, however, it is desirable to temporarily disable the integrity constraints of a table for performance reasons, such as:

- When loading large amounts of data into a table
- When performing batch operations that make massive changes to a table (such as changing everyone's employee number by adding 1,000 to the existing number)

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

Solution:
C stands for CHECK, P for PRIMARY KEY, R for REFERENTIAL INTEGRITY, and U for UNIQUE. NOT NULL is shown as a C because it is implemented as a CHECK CONSTRAINT.