UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING, UTMJB

SEMESTER 1, SESSION 2023/2024

LAB 1

SECD2523: DATABASE

SECTION 10

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Database Design Project

Oracle Baseball League Store Database

Project Scenario:

You are a small consulting company specializing in database development. You have just been awarded the contract to develop a data model for a database application system for a small retail store called Oracle Baseball League (OBL).

The Oracle Baseball League store serves the entire surrounding community selling baseball kit. The OBL has two types of customer, there are individuals who purchase items like balls, cleats, gloves, shirts, screen printed t-shirts, and shorts. Additionally customers can represent a team when they purchase uniforms and equipment on behalf of the team.

Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players.   When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

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Section 6 Lesson 3 Exercise : Data Definition Language

Use DDL to build and maintain database tables (S6L3 Objective 3)

Part 1:   Reading information from a script

In this exercise you will use the "obl Sports.ddl" file to consolidate your knowledge of DDL.

Open the "obl Sports.ddl" in a text editor.

1. How many tables have been created using the CREATE TABLE statement?
    - 10 tables

2. How many columns are created for the price history table?
    - 6 columns

3. What statement is used to enforce the constraint that the category column of the items table must have a value?
    - NOT NULL

4. What is the name of the foreign key constraint between the customers and customer addresses tables?
    - CTR_NUMBER

5. What are the lowest and highest values that can be stored in the commission_rate column for the sales_representatives table?

    - The lowest value is 0
    - The highest value 99

6. What are the lowest and highest values that can be stored in the price column for the price_history table?

    - The lowest value is 0
    - The highest value 9999999.99

7. What are the 3 columns that make up the primary key for the price_history table?
    - ITM_NUMBER
    - START_DATE
    - START_TIME

Part 2 : Updating Constraints

Log-in to APEX and go to the SQL commands environment

Modifying a column

1. Run the DESCRIBE command on the orders table to view its structure.

TABLE ORDERS

Column	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ODR_DATE	NOT NULL	DATE
ODR_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2,0)
CTR_NUMBER	NOT NULL	VARCHAR2(6)

2. **Task**: Add a default constraint that will use todays date to assign a value to the odr_date column of the orders table if no date is provided.

```
1   ALTER TABLE orders
2   MODIFY odr_date DATE DEFAULT SYSDATE;
3
```

Table altered.

3. Run the DESCRIBE command again to verify the command was successful.

TABLE ORDERS

Column	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ODR_DATE	NOT NULL	DATE
ODR_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2,0)
CTR_NUMBER	NOT NULL	VARCHAR2(6)

Adding a check constraint

1. Run the DESCRIBE command on the customers table to view its structure.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

2. **Task**: Add a check constraint that will not allow the customers current balance to go below zero.

```
1 v  ALTER TABLE customers
2    ADD CONSTRAINT chk_current_balance CHECK (current_balance >= 0);
3
```

Table altered.

3. Run the DESCRIBE command again to verify the command was successful.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

4. A check constraint is not shown in the results of a describe command.

    a. Go to the Object Browser

    b. Select the customers table.

    c. Click on the CONSTRAINTS tab.

    d. You will see your constraint here.

Constraints

Constraint	Type	Condition	Related Constraint	Related Table	Constraint Columns	On Delete	Status
CHK_CURRENT_BALANCE	Check	current_balance >= 0	-	-	-	-	ENABLED
SYS_C00143716934	Check	"CTR_NUMBER" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00143716935	Check	"EMAIL" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00143716936	Check	"FIRST_NAME" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00143716937	Check	"LAST_NAME" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00143716938	Check	"PHONE_NUMBER" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00143716939	Check	"CURRENT_BALANCE" IS NOT NULL	-	-	-	-	ENABLED
CUSTOMER_SALES_REP_FK	Foreign Key	-	SALES_REPRESENTATIVE_PK	SALES_REPRESENTATIVES	SRE_ID	NO ACTION	ENABLED
CUSTOMER_TEAM_FK	Foreign Key	-	TEAM_PK	TEAMS	TEM_ID	NO ACTION	ENABLED
CUSTOMER_PK	Primary Key	-	-	-	CUSTOMER_ID	-	ENABLED
CTR_EMAIL_UK	Unique Key	-	-	-	EMAIL	-	ENABLED
CTR_LCN_UK	Unique Key	-	-	-	LOYALTY_CARD_NUMBER	-	ENABLED

Adding a column

The client has decided that they would like a separate column for the customer's mobile phone number. This is an optional column that will be required to store 11 digits.

      1.   Run the DESCRIBE command on the customers table to view its structure.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

      2.   **Task**: Add column that will satisfy the clients requirements

```
1   ALTER TABLE customers
2   ADD mobile_phone_number VARCHAR2(11);
3
```

Table altered.

3.   Run the DESCRIBE command on the customers table to view its structure.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)
MOBILE_PHONE_NUMBER	-	VARCHAR2(11)

Dropping a column

The client has decided that they don't need the mobile number column as most customers only provide a single contact number and that is already catered for with the existing phone_number column.

1. Run the DESCRIBE command on the customers table to view its structure.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)
PHONE_NUMBER	-	VARCHAR2(11)

2. **Task**: Drop the column that was created to store the mobile phone number.

```
1  ALTER TABLE customers
2  DROP (Phone_Number);
3
```

Table altered.

3. Run the DESCRIBE command on the customers table to view its structure.

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)