UTM

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GROUP 7

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SECD2523-01 PANGKALAN DATA (DATABASE)

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.

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?

   ANSWER: 10 (inventory_list, items, price_history, sales_representatives, sales_rep_address, teams, customers, customers_addresses, orders, orered_items)

2. How many columns are created for the price history table?
   ANSWER: 6 (start_date, start_time, price, end_date, end_time, itm_number)

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

4. What is the name of the foreign key constraint between the customers and customer addresses tables?
   ANSWER: CTR_Number

5. What are the lowest and highest values that can be stored in the commission_rate column for the sales_representatives table?
   ANSWER: Highest would be 99 and lowest would be -99 as the range of numbers is constrained by the (2) precision.

6. What are the lowest and highest values that can be stored in the price column for the price_history table?
   ANSWER: Highest would be 9999999.99 and lowest would be -9999999.99 as the range of numbers is constrained by the (7,2) precision.

7. What are the 3 columns that make up the primary key for the price_history table?
   ANSWER: itm_number, start_date, and 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.

   SQL Command: DESCRIBE orders

   Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ORDERS	ID	VARCHAR2	9	-	-	1	-	-	-
	ODR_DATE	DATE	7	-	-	-	-	-	-
	ODR_TIME	DATE	7	-	-	-	-	-	-
	NUMBER_OF_UNITS	NUMBER	-	2	0	-	-	-	-
	CTR_NUMBER	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.

   SQL COMMAND: ALTER TABLE orders

   MODIFY odr_date DATE DEFAULT SYSDATE;

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

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ORDERS	ID	VARCHAR2	9	-	-	1	-	-	-
	ODR_DATE	DATE	7	-	-	-	-	SYSDATE	-
	ODR_TIME	DATE	7	-	-	-	-	-	-
	NUMBER_OF_UNITS	NUMBER	-	2	0	-	-	-	-
	CTR_NUMBER	VARCHAR2	6	-	-	-	-	-	-

Adding a check constraint

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

   SQL Command: DESCRIBE customers

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-

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

   SQL Command: ALTER TABLE customers

   ADD CONSTRAINT check_positive_balance CHECK (current_balance >= 0);

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

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-

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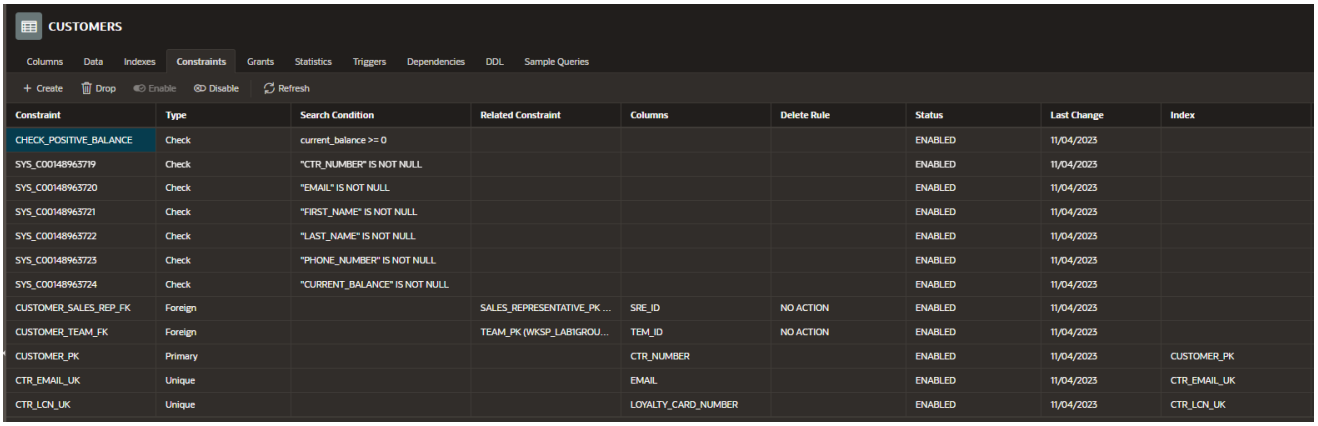
4. A check constraint is not shown in the results of a describe command.
    a. Go to the Object Browser
    b. Select the customers table.
    c. Click on the CONSTRAINTS tab.
    d. You will see your constraint here.



CUSTOMERS

Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

+ Create | Drop | Enable | Disable | Refresh

Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Status	Last Change	Index
CHECK_POSITIVE_BALANCE	Check	current_balance >= 0				ENABLED	11/04/2023	
SYS_C00148963719	Check	"CTR_NUMBER" IS NOT NULL				ENABLED	11/04/2023	
SYS_C00148963720	Check	"EMAIL" IS NOT NULL				ENABLED	11/04/2023	
SYS_C00148963721	Check	"FIRST_NAME" IS NOT NULL				ENABLED	11/04/2023	
SYS_C00148963722	Check	"LAST_NAME" IS NOT NULL				ENABLED	11/04/2023	
SYS_C00148963723	Check	"PHONE_NUMBER" IS NOT NULL				ENABLED	11/04/2023	
SYS_C00148963724	Check	"CURRENT_BALANCE" IS NOT NULL				ENABLED	11/04/2023	
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION	ENABLED	11/04/2023	
CUSTOMER_TEAM_FK	Foreign		TEAM_PK (WKSP_LAB1GROU...	TEM_ID	NO ACTION	ENABLED	11/04/2023	
CUSTOMER_PK	Primary			CTR_NUMBER		ENABLED	11/04/2023	CUSTOMER_PK
CTR_EMAIL_UK	Unique			EMAIL		ENABLED	11/04/2023	CTR_EMAIL_UK
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER		ENABLED	11/04/2023	CTR_LCN_UK

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.

    SQL Command: DESCRIBE customers

    OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-

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

   SQL Command: ALTER TABLE customers

   ADD mobile_phone_number VARCHAR2(11);

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

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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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.

   SQL Command: DESCRIBE customers

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

   SQL Command: ALTER TABLE customers

   DROP COLUMN mobile_phone_number;

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

   OUTPUT:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-

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