



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

DATA BASE (SECD2523-06)
LAB SQL 1

SECTION:	06
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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.

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?
2. How many columns are created for the price history table?
3. What statement is used to enforce the constraint that the category column of the items table must have a value?
4. What is the name of the foreign key constraint between the customers and customer addresses tables?
5. What are the lowest and highest values that can be stored in the commission_rate column for the sales_representatives table?
6. What are the lowest and highest values that can be stored in the price column for the price_history table?
7. What are the 3 columns that make up the primary key for the price_history table?

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.
2. **Task:** Add a default constraint that will use today's date to assign a value to the odr_date column of the orders table if no date is provided.
3. Run the DESCRIBE command again to verify the command was successful.

Adding a check constraint

1. Run the DESCRIBE command on the customers table to view its structure.
2. **Task:** Add a check constraint that will not allow the customers current balance to go below zero.
3. Run the DESCRIBE command again to verify the command was successful.
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.

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.
2. **Task:** Add column that will satisfy the client's requirements
3. Run the DESCRIBE command on the customers table to view its structure.

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.
2. **Task:** Drop the column that was created to store the mobile phone number.
3. Run the DESCRIBE command on the customers table to view its structure.

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?
lowest : -99 , highest : 99
6. What are the lowest and highest values that can be stored in the price column for the price_history table?
lowest : -99999.99 , highest : 99999.99
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

Modifying a column

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

- DESCRIBE orders

```
151 DESCRIBE orders;
152
153
```

Object Type		Object							
TABLE		ORDERS							
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 today's date to assign a value to the odr_date column of the orders table if no date is provided.

- ALTER TABLE orders

MODIFY (odr_date DATE DEFAULT SYSDATE);

```
152 ALTER TABLE orders
153 MODIFY (odr_date DATE DEFAULT SYSDATE);
154
```

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.06 seconds				

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

- DESCRIBE orders

```
154 DESCRIBE orders;
```

Object Type		Object							
TABLE		ORDERS							
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.

- DESCRIBE customers

156 DESCRIBE customers;

ResultsExplainDescribeSaved SQLHistory

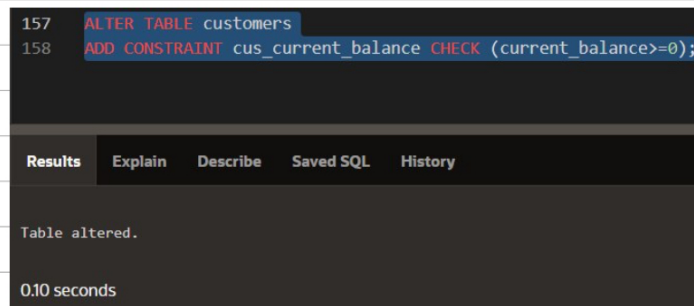
Object typeTABLEObjectCUSTOMERS

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	-	-	-		-	-

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

- ALTER TABLE customers

ADD CONSTRAINT cus_current_balance CHECK (current_balance >= 0);



157 ALTER TABLE customers
158 ADD CONSTRAINT cus_current_balance CHECK (current_balance >= 0);

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.10 seconds				

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

- DESCRIBE customers

159 DESCRIBE customers;

ResultsExplainDescribeSaved SQLHistory

Object TypeTABLEObjectCUSTOMERS

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	-	-	-		-	-

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

- Go to the Object Browser
- Select the customers table.
- Click on the CONSTRAINTS tab.
- You will see your constraint here.

The screenshot shows the APEX Object Browser interface. The left sidebar lists database objects, with 'CUSTOMERS' selected under the 'Tables' category. The main panel displays the 'CONSTRAINTS' tab for the 'CUSTOMERS' table. The table lists the following constraints:

Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Status
CUS_CURRENT_BALANCE	Check	current_balance >= 0				ENABLED
SYS_C00149073735	Check	"CTR_NUMBER" IS NOT NULL				ENABLED
SYS_C00149073736	Check	"EMAIL" IS NOT NULL				ENABLED
SYS_C00149073737	Check	"FIRST_NAME" IS NOT NULL				ENABLED
SYS_C00149073738	Check	"LAST_NAME" IS NOT NULL				ENABLED
SYS_C00149073739	Check	"PHONE_NUMBER" IS NOT NULL				ENABLED
SYS_C00149073740	Check	"CURRENT_BALANCE" IS NOT NULL				ENABLED
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION	ENABLED
CUSTOMER_TEAM_FK	Foreign		TEAM_PK (WKSP_JCKWEKWORKSPAC ...	TEM_ID	NO ACTION	ENABLED
CUSTOMER_PK	Primary			CTR_NUMBER		ENABLED
CTR_EMAIL_UK	Unique			EMAIL		ENABLED
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER		ENABLED

1 cells selected

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.

- DESCRIBE customers

159 DESCRIBE customers;

Results	Explain	Describe	Saved SQL	History					
Object Type: TABLE Object: CUSTOMERS									
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CUSTOMER_ID	NUMBER	5	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SPE_ID	VARCHAR2	4	-	-	-	✓	-	-
	ITEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	NUMBER	6	-	-	-	✓	-	-

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

- ALTER TABLE customers

ADD mobile_phone_number VARCHAR(11);

```
160 ALTER TABLE customers
161 ADD mobile_phone_number VARCHAR(11);
```

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.06 seconds				

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

- DESCRIBE customers

163 DESCRIBE customers;

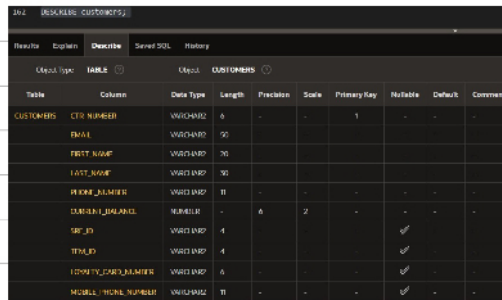
Results	Explain	Describe	Saved SQL	History					
Object Type: TABLE Object: CUSTOMERS									
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CUSTOMER_ID	NUMBER	5	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SPE_ID	VARCHAR2	4	-	-	-	✓	-	-
	ITEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	NUMBER	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.

- DESCRIBE customers

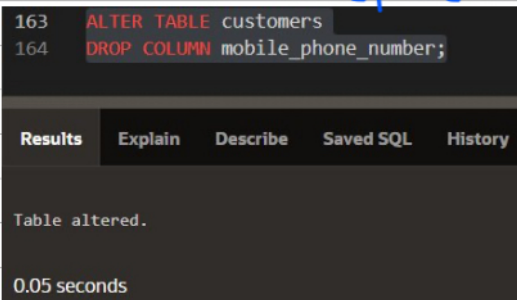


The screenshot shows the output of the DESCRIBE customers command. It displays a table with columns: CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRF_ID, TEN_ID, LOYALTY_CARD_NUMBER, and MOBILE_PHONE_NUMBER. The MOBILE_PHONE_NUMBER column is highlighted in yellow.

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	50	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	8	2	-	-	-	-
	SRF_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEN_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

- ALTER TABLE customers
DROP COLUMN mobile_phone_number ;

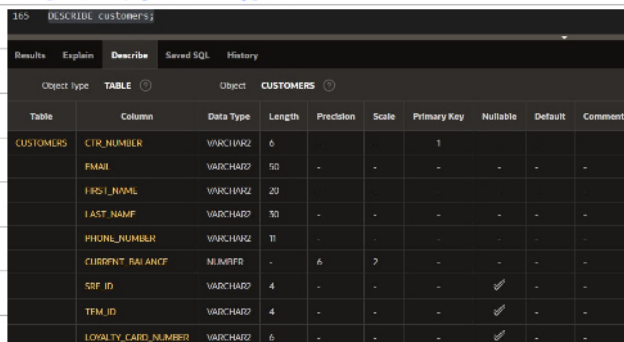


The screenshot shows the output of the ALTER TABLE customers DROP COLUMN mobile_phone_number; command. The results section displays 'Table altered.' and the execution time is 0.05 seconds.

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.05 seconds				

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

- DESCRIBE customers



The screenshot shows the output of the DESCRIBE customers command after dropping the mobile_phone_number column. The table structure is updated, and the MOBILE_PHONE_NUMBER column is no longer present.

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	50	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	8	2	-	-	-	-
	SRF_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEN_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-