



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

**SECD2523-01 PANGKALAN DATA
(DATABASE)
LAB 1 DATA DEFINITION LANGUAGE
(DDL)
SEMESTER 1 (2023/2024)**

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

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.

The screenshot shows the APEX SQL Workshop interface. The command entered is `DESC orders;`. The results pane displays the structure of the `ORDERS` table:

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.

The screenshot shows the APEX SQL Workshop interface with the command `ALTER TABLE orders modify (odr_date DATE DEFAULT SYSDATE);` entered. The results pane shows the message "Table altered." and the execution time "0.04 seconds".

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

The screenshot shows the APEX SQL Workshop interface. The command entered is `DESC orders;`. The results are displayed in a table format.

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

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

The screenshot shows the APEX SQL Workshop interface. The command entered is `DESC customers;`. The results are displayed in a table format.

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.

The screenshot shows the APEX SQL Workshop interface. The SQL Commands pane contains the following command:

```
1 ALTER TABLE customers
2 ADD CONSTRAINTS current_balance_check CHECK (current_balance >=0);
```

The Results pane shows the message "Table altered." and the execution time "0.07 seconds".

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

The screenshot shows the APEX SQL Workshop interface. The SQL Commands pane contains the following command:

```
1 DESC customers
```

The Results pane shows the table structure for the CUSTOMERS table:

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

The screenshot shows the Oracle 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
CURRENT_BALANCE_CHECK	Check	current_balance >= 0			
SYS_C00148986069	Check	"CTR_NUMBER" IS NOT NULL			
SYS_C00148986070	Check	"EMAIL" IS NOT NULL			
SYS_C00148986071	Check	"FIRST_NAME" IS NOT NULL			
SYS_C00148986072	Check	"LAST_NAME" IS NOT NULL			
SYS_C00148986073	Check	"PHONE_NUMBER" IS NOT NULL			
SYS_C00148986074	Check	"CURRENT_BALANCE" IS NOT NULL			
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION
CUSTOMER_TEAM_FK	Foreign		TEAM_PK (WKSP_UTM1234.T...	TEM_ID	NO ACTION
CUSTOMER_PK	Primary			CTR_NUMBER	
CTR_EMAIL_UK	Unique			EMAIL	
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER	

The screenshot shows the Oracle 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	Columns	Delete Rule	Status	Last Change	Index	Invalid
CURRENT_BALANCE_CHECK			ENABLED	11/05/2023		
SYS_C00148986069			ENABLED	11/05/2023		
SYS_C00148986070			ENABLED	11/05/2023		
SYS_C00148986071			ENABLED	11/05/2023		
SYS_C00148986072			ENABLED	11/05/2023		
SYS_C00148986073			ENABLED	11/05/2023		
SYS_C00148986074			ENABLED	11/05/2023		
_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION	ENABLED	11/05/2023		
PK (WKSP_UTM1234.T...	TEM_ID	NO ACTION	ENABLED	11/05/2023		
	CTR_NUMBER		ENABLED	11/05/2023	CUSTOMER_PK	
	EMAIL		ENABLED	11/05/2023	CTR_EMAIL_UK	
	LOYALTY_CARD_NUMBER		ENABLED	11/05/2023	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.

The screenshot shows the Oracle APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the 'DESCRIBE' command has been executed on the 'CUSTOMERS' table. The results are displayed in a table format.

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 column that will satisfy the clients requirements

The screenshot shows the Oracle APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the 'ALTER TABLE' command has been executed to add a new column to the 'CUSTOMERS' table. The results are displayed in a table format.

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	-	-	-	✓	-	-

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

SQL Commands

apex.oracle.com/pls/apex/f/apex/sql-workshop/sqlcommandprocessor?session=103840810835585

Update

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SQL Workshop

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#utm1234

SQL Commands

Schema

WKSP_UTM1234

Language

SQL

Rows

10

Clear Command

Find Tables

Save

Run

1

DESC customers

Results

Explain

Describe

Saved SQL

History

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	-	-	-	✓	-	-

afghmsrni@gmail.com

#utm1234

en

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Oracle APEX 23.2.0-17

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 Commands

apex.oracle.com/pls/apex/f/apex/sql-workshop/sqlcommandprocessor?session=103840810835585

Update

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SQL Commands

Schema

WKSP_UTM1234

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SQL

Rows

10

Clear Command

Find Tables

Save

Run

1

DESC customers

Results

Explain

Describe

Saved SQL

History

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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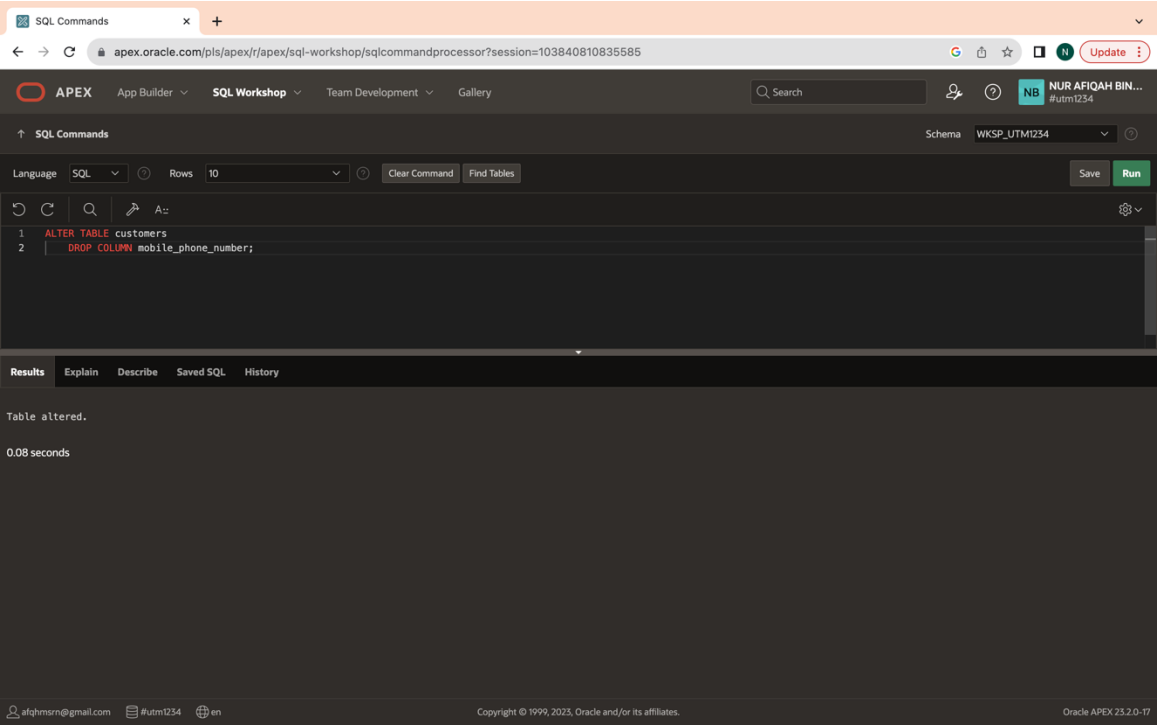
#utm1234

en

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Oracle APEX 23.2.0-17

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.

