



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

**DATABASE
SECD2523 (SECTION 1)
SEMESTER 1- 2023/2024**

LAB 1

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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?

[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 values :-99](#)

[highest values: 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 and start_time](#)

Part 2 : Updating constraints

Log-in to APEX and go to 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 'SQL Commands' tab is active, and the command 'desc orders;' has been executed. The 'Describe' tab is selected, displaying the structure of the 'ORDERS' table. The table has five columns: ID, ODR_DATE, ODR_TIME, NUMBER_OF_UNITS, and CTR_NUMBER. The 'ID' column is the primary key.

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. The 'SQL Commands' tab is active, and the command 'ALTER TABLE orders MODIFY (odr_date DATE DEFAULT SYSDATE);' has been executed. The 'Results' tab is selected, displaying the message 'Table altered.' and the execution time '0.06 seconds'.

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

Table altered.
0.06 seconds

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

The screenshot shows the Oracle APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the command 'desc orders' has been entered. The 'Run' button has been clicked, and the results are displayed in the 'Describe' tab. The results show the structure of the ORDERS table, including columns, data types, lengths, and constraints.

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 Oracle APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the command 'desc customers' has been entered. The 'Run' button has been clicked, and the results are displayed in the 'Describe' tab. The results show the structure of the CUSTOMERS table, including columns, data types, lengths, and constraints.

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.

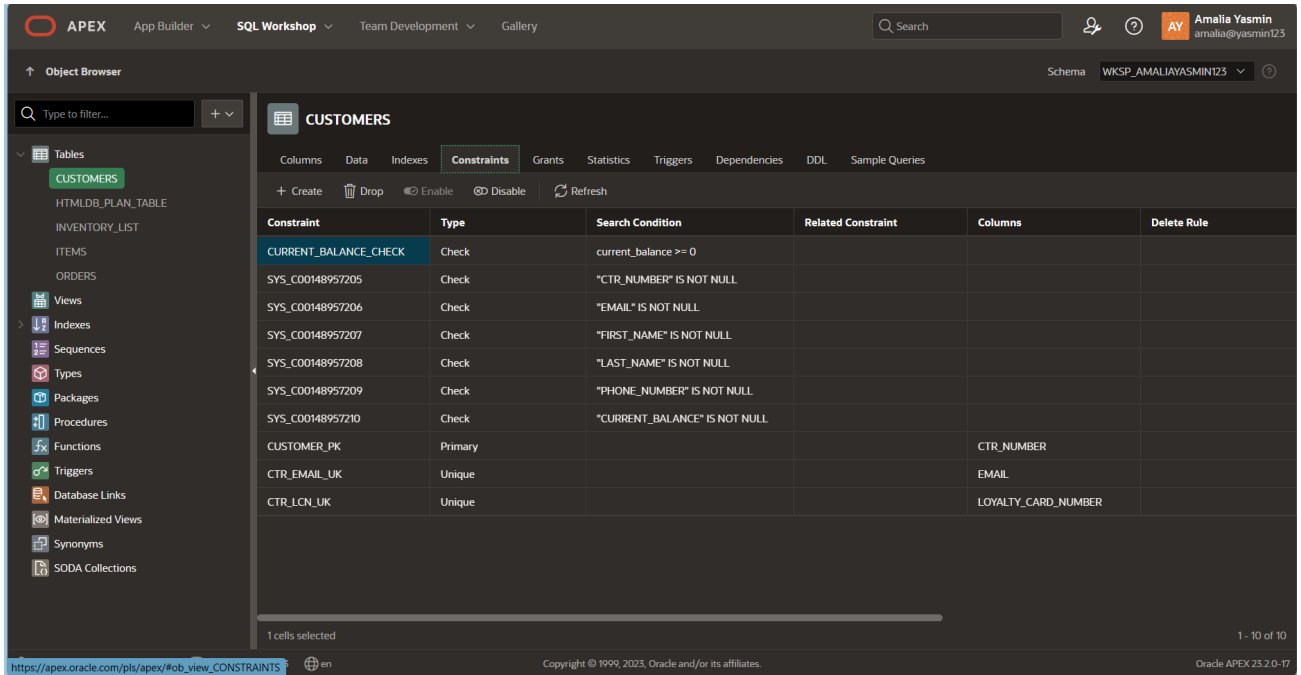
The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Amalia Yasmin' are on the right. The 'SQL Commands' section is active, showing a list of commands: 1. `ALTER TABLE customers` and 2. `ADD CONSTRAINT current_balance_check CHECK (current_balance >= 0);`. The 'Run' button is highlighted. Below the commands, the 'Results' tab is selected, displaying the message 'Table altered.' and the execution time '0.06 seconds'.

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

The screenshot shows the Oracle APEX SQL Workshop interface with the 'Describe' tab selected. The command entered is `desc customers`. The results are displayed in a table format, showing the structure of 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 object browser.
 - b. Select the customers table.
 - c. Click on CONSTRAINTS tab.
 - d. You will see your constraint here.



The screenshot shows the APEX Object Browser interface. On the left, the 'Object Browser' pane is open, showing a tree view of database objects. The 'CUSTOMERS' table is selected. The main pane 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_C00148957205	Check	"CTR_NUMBER" IS NOT NULL			
SYS_C00148957206	Check	"EMAIL" IS NOT NULL			
SYS_C00148957207	Check	"FIRST_NAME" IS NOT NULL			
SYS_C00148957208	Check	"LAST_NAME" IS NOT NULL			
SYS_C00148957209	Check	"PHONE_NUMBER" IS NOT NULL			
SYS_C00148957210	Check	"CURRENT_BALANCE" IS NOT NULL			
CUSTOMER_PK	Primary			CTR_NUMBER	
CTR_EMAIL_UK	Unique			EMAIL	
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER	

At the bottom of the main pane, it says '1 cells selected' and '1 - 10 of 10'. The footer of the browser shows the URL 'https://apex.oracle.com/pls/apex/#ob_view_CONSTRAINTS', the language 'en', the copyright 'Copyright © 1999, 2023, Oracle and/or its affiliates.', and the version 'Oracle APEX 23.2.0-17'.

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.

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP_AMALIAYASMIN123

Language SQL Rows 10 Clear Command Find Tables Save Run

1 desc 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	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.

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP_AMALIAYASMIN123

Language SQL Rows 10 Clear Command Find Tables Save Run

1 ALTER TABLE customers
2 Add mobile_phone_number VARCHAR2(11);

Results Explain Describe Saved SQL History

Table altered.

0.06 seconds

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

APEX App Builder SQL Workshop Team Development Gallery

Search

Amalia Yasmin amalia@yasmin123

SQL Commands Schema WKSP_AMALIAYASMIN123

Language SQL Rows 10 Clear Command Find Tables Save Run

1 desc 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	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 phone number column as most customers only provide a single contact number and that is already catered for the existing phone_number column.

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

APEX App Builder SQL Workshop Team Development Gallery

Search

Amalia Yasmin amalia@yasmin123

SQL Commands Schema WKSP_AMALIAYASMIN123

Language SQL Rows 10 Clear Command Find Tables Save Run

1 desc 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	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.

The screenshot shows the APEX SQL Workshop interface. The 'SQL Commands' tab is active, displaying two lines of SQL code: `1 ALTER TABLE customers` and `2 DROP COLUMN mobile_phone_number;`. The 'Run' button is highlighted in green. Below the code editor, the 'Results' tab is selected, showing the message 'Table altered.' and the execution time '0.08 seconds'.

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```
1 ALTER TABLE customers
2 DROP COLUMN mobile_phone_number;
```

Results Explain Describe Saved SQL History

Table altered.

0.08 seconds

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

The screenshot shows the APEX SQL Workshop interface. The 'SQL Commands' tab is active, displaying the command `1 desc customers`. The 'Run' button is highlighted in green. Below the code editor, the 'Describe' tab is selected, showing the structure of the 'CUSTOMERS' table.

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	-	-	-	✓	-	-

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