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UNIVERSITI TEKNOLOGI MALAYSIA

Faculty of
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UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU

FACULTY OF COMPUTING

SECD2523-08 DATABASE

Lab 1: Data Definition Language (DDL)

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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 were created.

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

6 columns were created.

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

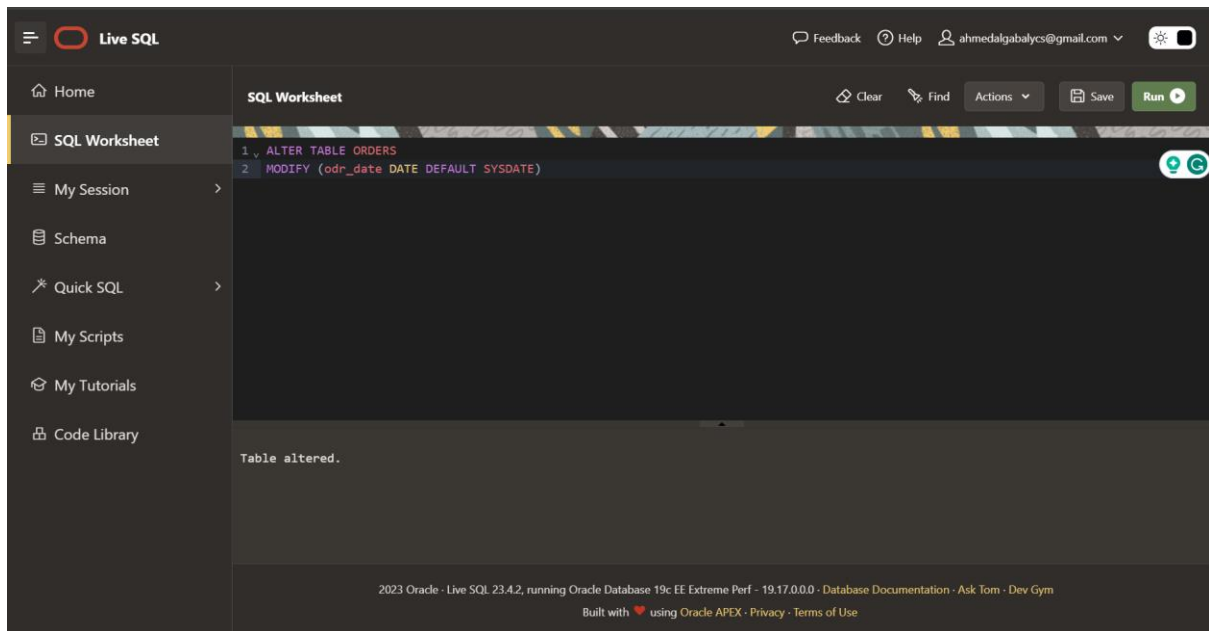
1. Run the DESCRIBE command on the orders table to view its structure.

The screenshot shows the Oracle Live SQL interface. The left sidebar contains navigation links: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area is titled 'SQL Worksheet' and shows the command `1 desc orders` entered in the SQL editor. Below the editor, the results of the command are displayed as a table structure for the ORDERS table.

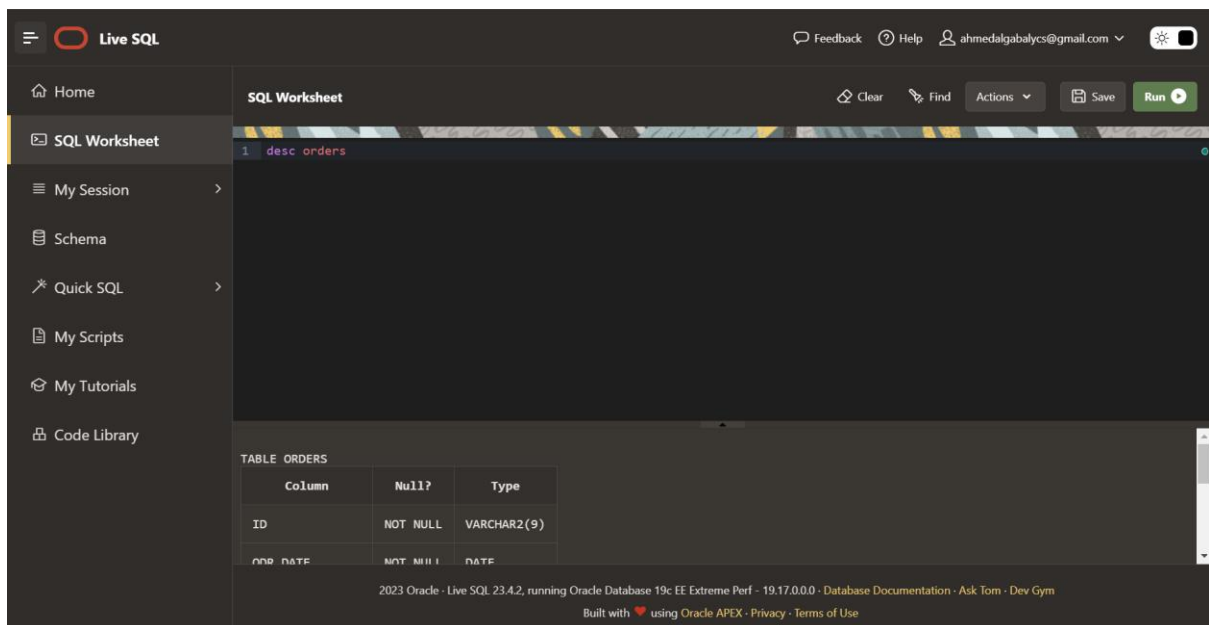
Column	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ORD_DATE	NOT NULL	DATE
ORD_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2,0)
CTR_NUMBER	NOT NULL	VARCHAR2(6)

Below the table structure, there is a 'Download CSV' button and the text '5 rows selected.' The footer of the interface indicates it is running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 and is built with Oracle APEX.

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.



The screenshot shows the Oracle Live SQL web application. The left sidebar contains navigation links: Home, SQL Worksheet (active), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area displays the results of a query against the ORDERS table. A table header shows columns: Column, Null?, and Type. The data rows are:

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

Below the table, there is a "Download CSV" button and a status message "5 rows selected.". At the bottom, a footer indicates the version: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym". It also mentions it was built with ❤️ using Oracle APEX and includes links for Privacy and Terms of Use.

Adding a check constraint

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

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Live SQL

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```
1 desc customers
```

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
FMATI	NOT NULL	VARCHAR2(50)

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The screenshot shows the 'SQL Worksheet' tab in the Live SQL application. On the left is a sidebar with navigation options: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area displays the table structure for '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)

At the bottom of the interface, it states: '2023 Oracle - Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym' and 'Built with using Oracle APEX - Privacy - Terms of Use'.

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

The screenshot shows the 'SQL Worksheet' tab with three lines of SQL code entered:

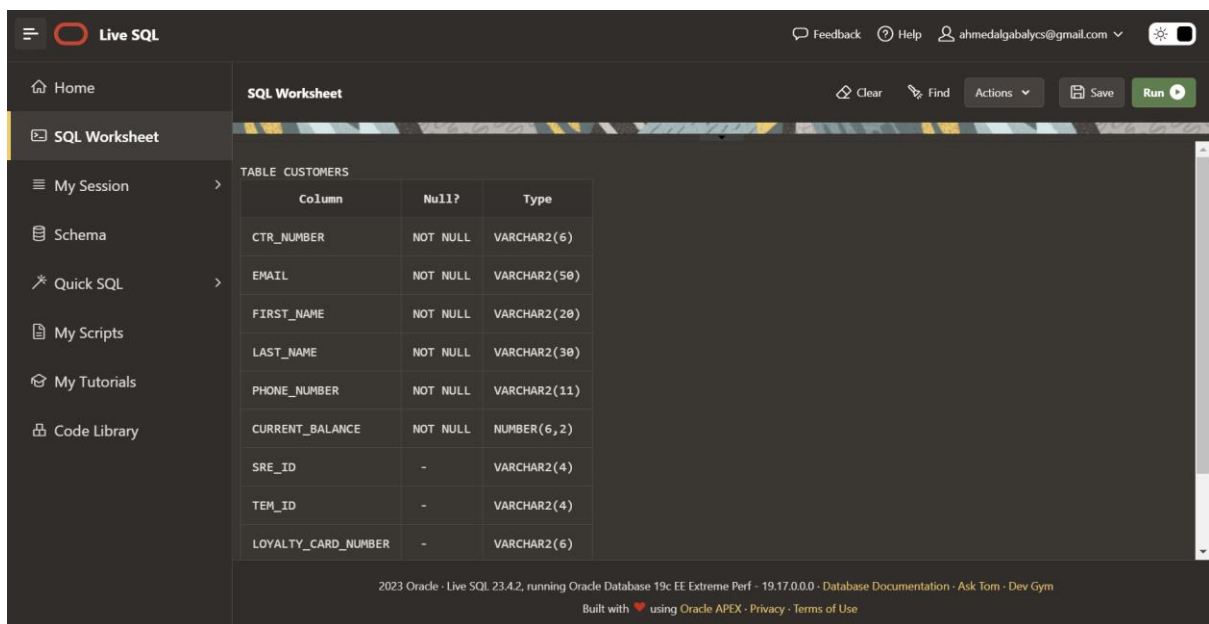
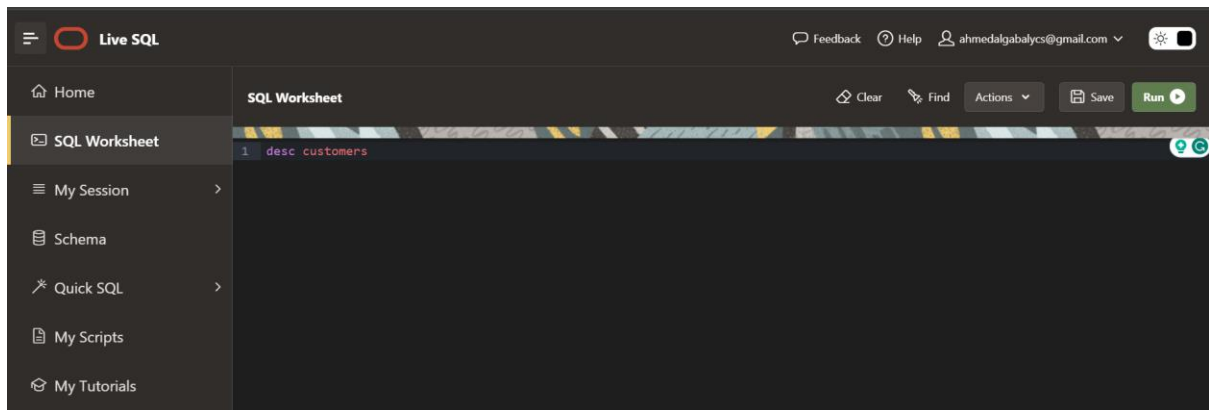
```

1 ALTER TABLE CUSTOMERS
2 ADD CONSTRAINT cust_bal_check
3 CHECK (current_balance >= 0);

```

Below the code editor, a message states: 'Table altered.' The bottom of the interface shows the same version and build information as the first screenshot.

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.

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

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CUSTOMERS

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Constraints

Constraint	Type	Condition	Related Constraint	Related Table	Constraint Columns	On Delete	Status	Last Change	Invalid?
CUST_BAL_CHECK	Check	current_balance >= 0	-	-	-	-	ENABLED	76 seconds ago	-
SYS_C00143711196	Check	"CTR_NUMBER" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
SYS_C00143711197	Check	"EMAIL" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
SYS_C00143711198	Check	"FIRST_NAME" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
SYS_C00143711199	Check	"LAST_NAME" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
SYS_C00143711200	Check	"PHONE_NUMBER" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
SYS_C00143711201	Check	"CURRENT_BALANCE" IS NOT NULL	-	-	-	-	ENABLED	30 minutes ago	-
CUSTOMER_SALES_REP_FK	Foreign Key	-	SALES_REPRESENTATIVE_PK	SALES_REPRESENTATIVES	SRE_ID	NO ACTION	ENABLED	30 minutes ago	-
CUSTOMER_TEAM_FK	Foreign Key	-	TEAM_PK	TEAMS	TEM_ID	NO ACTION	ENABLED	30 minutes ago	-
CUSTOMER_PK	Primary Key	-	-	-	CUSTOMER_ID	-	ENABLED	30 minutes ago	-
CTR_EMAIL_UK	Unique Key	-	-	-	EMAIL	-	ENABLED	30 minutes ago	-
CTR_LCN_UK	Unique Key	-	-	-	LOYALTY_CARD_NUMBER	-	ENABLED	30 minutes ago	-

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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.

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SQL Worksheet

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)

Download CSV

9 rows selected.

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

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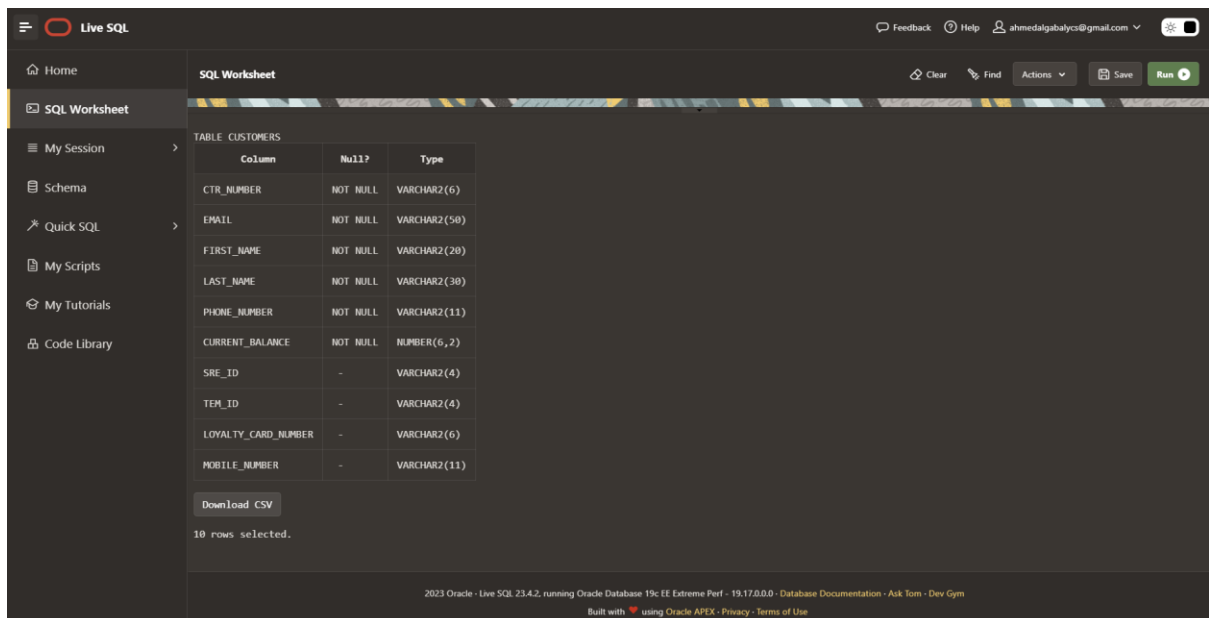
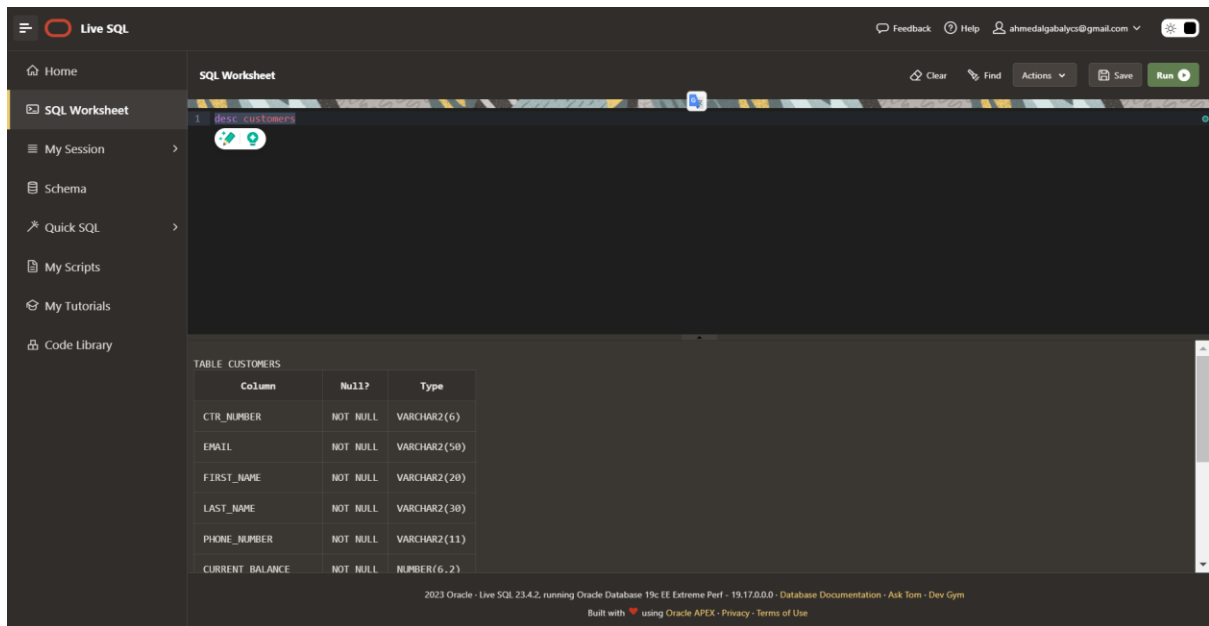
SQL Worksheet

```
1 ALTER TABLE CUSTOMERS
2 ADD mobile_number VARCHAR2(11);
```

Table altered.

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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.

Live SQL

SQL Worksheet

1 desc 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)

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SQL Worksheet

TABLE CUSTOMERS

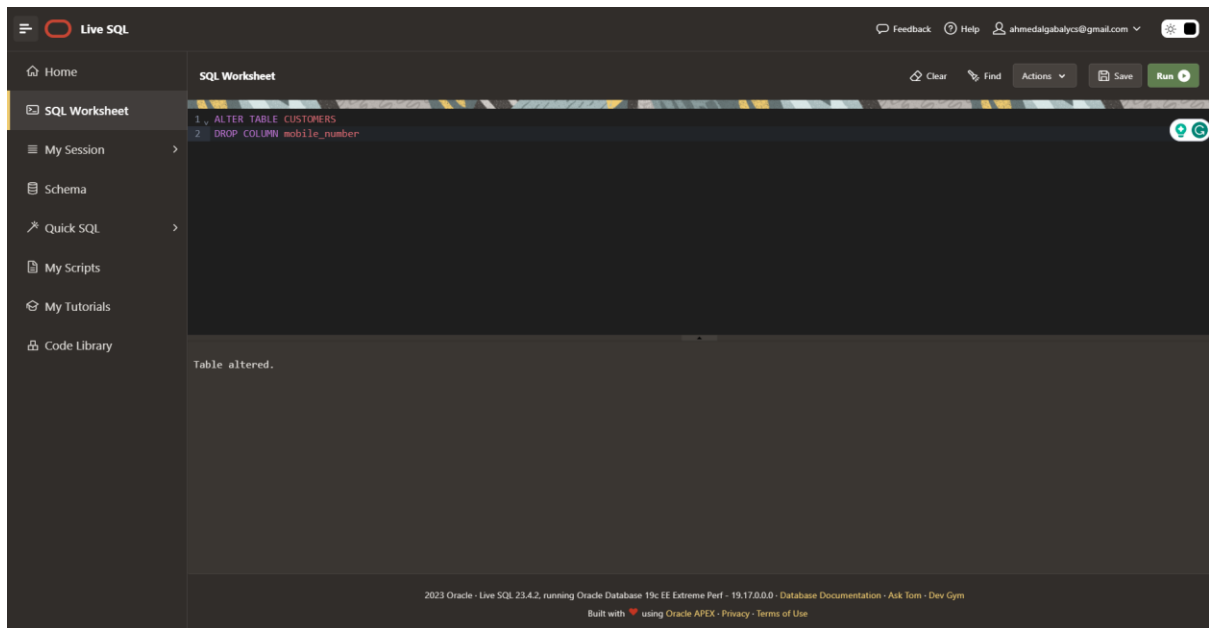
Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)
MOBILE_NUMBER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

Download CSV

10 rows selected.

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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.

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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)

Download CSV

9 rows selected.

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