



DATABASE (SECD 2523-10)

LAB EXERCISE 1 (DDL)

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PART 1

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 statement.

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

The foreign key constraint between the customers and customer_addresses tables is named 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?

The lowest and highest values that can be stored in the commission_rate column for the sales_representatives table are 0 and 99, respectively.

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

The lowest and highest values that can be stored in the commission_rate column for the sales_representatives table are 00000.00 and 99999.99 respectively.

7. What are the 3 columns that make up the primary key for the price_history table?

itm_number

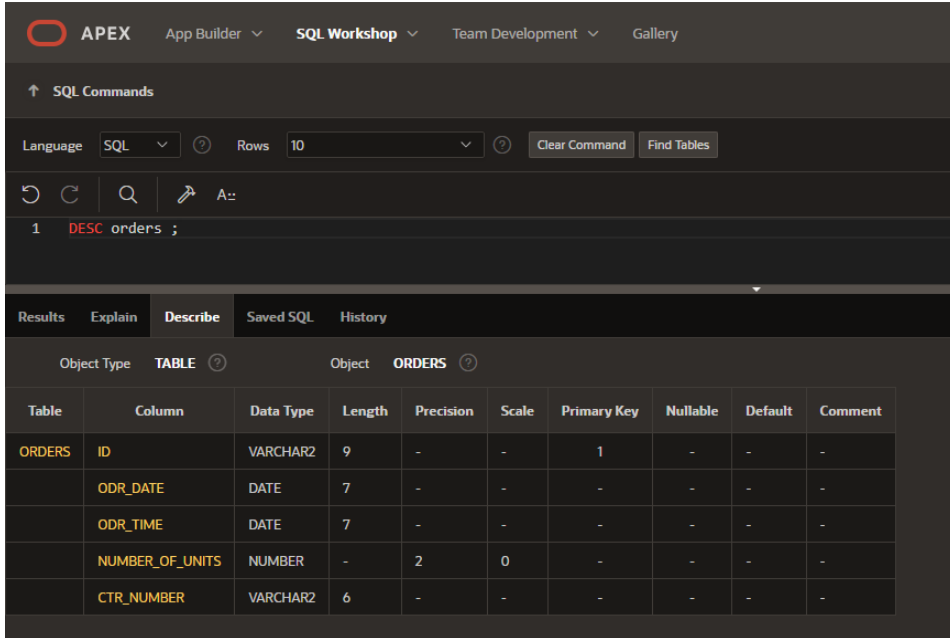
start_date

start_time

PART B

Modifying a column

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



The screenshot shows the APEX SQL Workshop interface. At the top, there are navigation tabs: APEX, App Builder, SQL Workshop (selected), Team Development, and Gallery. Below these is a section for SQL Commands with a 'SQL' language dropdown, a 'Rows' dropdown set to 10, and buttons for 'Clear Command' and 'Find Tables'. The command area contains the text '1 DESC orders ;'. Below the command area is a tabbed interface with 'Results', 'Explain', 'Describe' (selected), 'Saved SQL', and 'History'. The 'Describe' tab displays the structure of the 'ORDERS' table. It shows a table with 10 columns: Table, Column, Data Type, Length, Precision, Scale, Primary Key, Nullable, Default, and Comment. The data rows show the following details:

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 top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. The 'SQL Commands' section is active, showing a list of commands: 1. ALTER TABLE orders, 2. MODIFY odr_date DATE DEFAULT SYSDATE;. The 'Results' tab is selected, displaying the message 'Table altered.' and the execution time '0.06 seconds'.

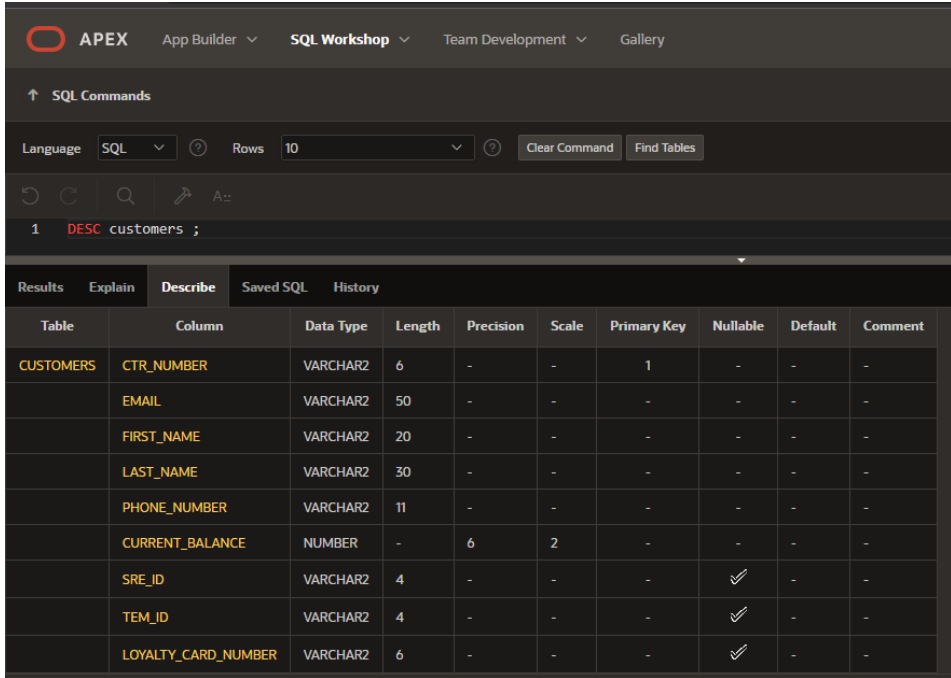
3. Run the DESCRIBE command again to verify the command was successful.

The screenshot shows the APEX SQL Workshop interface with the 'DESCRIBE' command executed. The 'Results' tab is selected, displaying the table structure for the 'ORDERS' table. The table has five columns: ID, ODR_DATE, ODR_TIME, NUMBER_OF_UNITS, and CTR_NUMBER. The 'ODR_DATE' column has a default value of 'SYSDATE'.

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

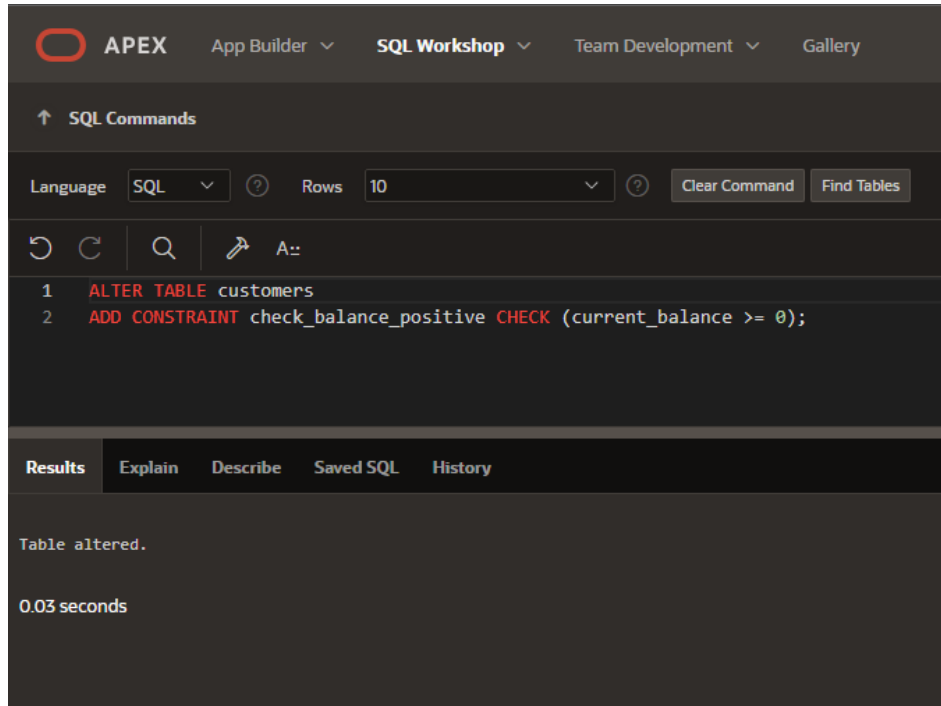
1. Run the DESCRIBE command on the customers table to view its structure.



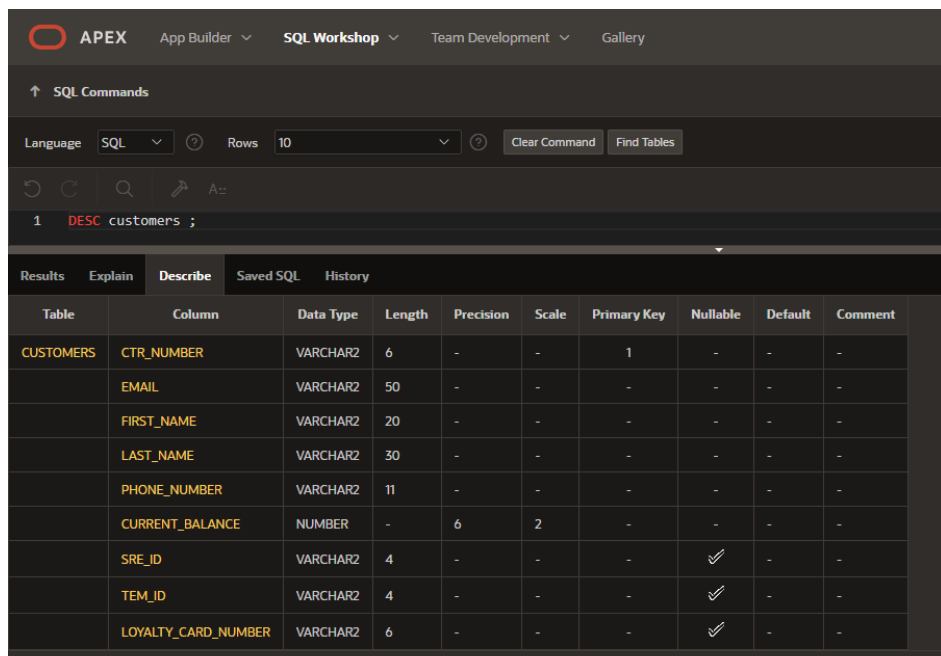
The screenshot shows the APEX SQL Workshop interface. At the top, there are navigation tabs: APEX, App Builder, SQL Workshop (selected), Team Development, and Gallery. Below the tabs, there's a section for SQL Commands with a dropdown for Language (SQL), a Rows limit of 10, and buttons for Clear Command and Find Tables. The command entered is `DESC customers ;`. Below the command, there are tabs for Results, Explain, Describe (selected), Saved SQL, and History. The Describe tab displays a table with the following columns: Table, Column, Data Type, Length, Precision, Scale, Primary Key, Nullable, Default, and Comment. The table lists the structure of the CUSTOMERS table, including columns like CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER. The SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER columns are marked as Not Null with checkmarks.

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	-	-	-	✓	-	-

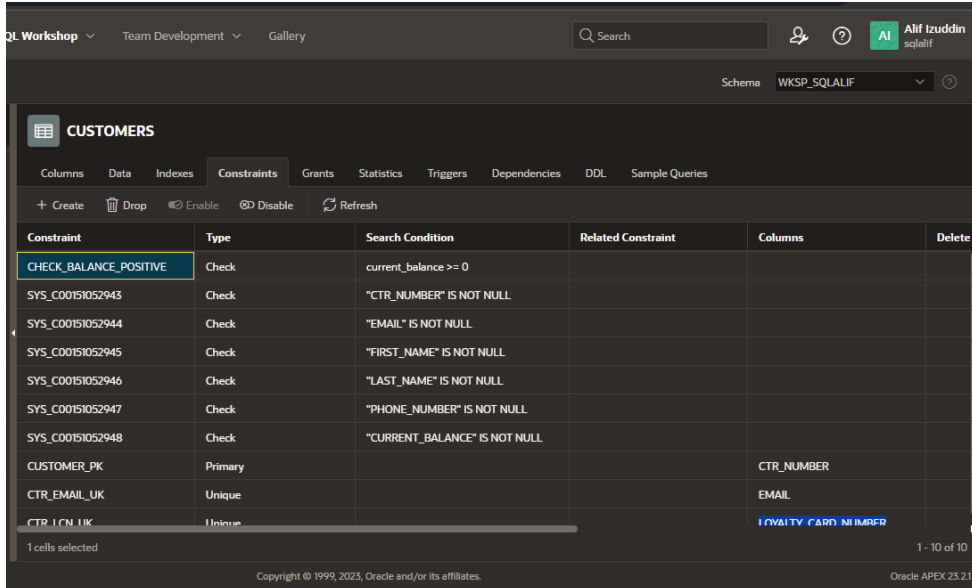
2. Task: Add a check constraint that will not allow the customers current balance to go below zero



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.



The screenshot shows the Oracle SQL Workshop interface. The top navigation bar includes 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Alif Izuddin' are also present. The main area displays the 'CUSTOMERS' table with tabs for 'Columns', 'Data', 'Indexes', 'Constraints', 'Grants', 'Statistics', 'Triggers', 'Dependencies', 'DDL', and 'Sample Queries'. The 'Constraints' tab is active, showing a list of constraints. The constraints are as follows:

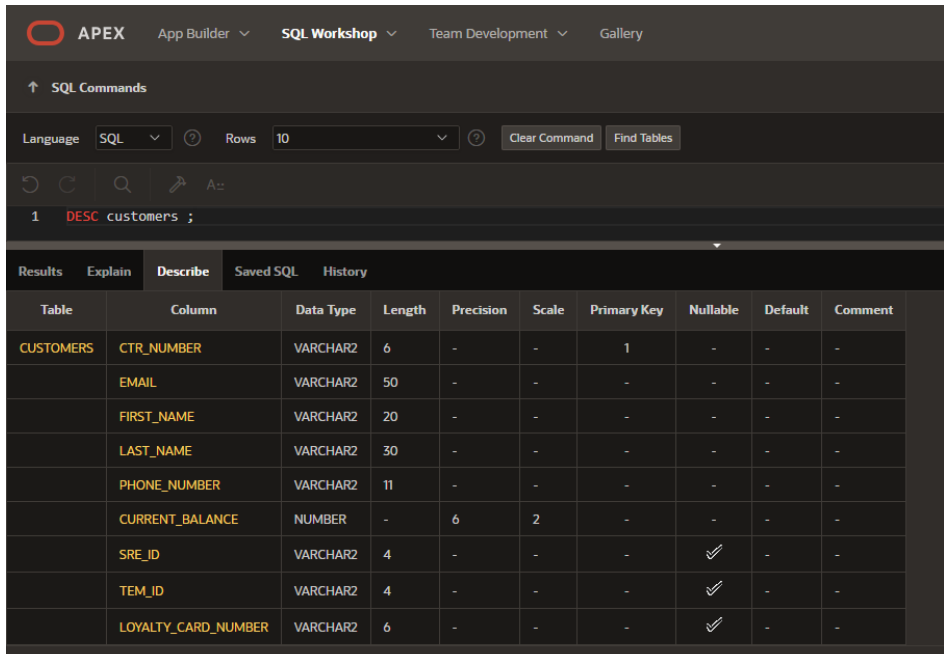
Constraint	Type	Search Condition	Related Constraint	Columns	Delete
CHECK_BALANCE_POSITIVE	Check	current_balance >= 0			
SYS_C00151052943	Check	"CTR_NUMBER" IS NOT NULL			
SYS_C00151052944	Check	"EMAIL" IS NOT NULL			
SYS_C00151052945	Check	"FIRST_NAME" IS NOT NULL			
SYS_C00151052946	Check	"LAST_NAME" IS NOT NULL			
SYS_C00151052947	Check	"PHONE_NUMBER" IS NOT NULL			
SYS_C00151052948	Check	"CURRENT_BALANCE" IS NOT NULL			
CUSTOMER_PK	Primary			CTR_NUMBER	
CTR_EMAIL_UK	Unique			EMAIL	
CTR_IDN_UK	Unique			LOYALTY_CARD_NUMBER	

At the bottom, it indicates '1 cells selected' and '1 - 10 of 10'. The footer contains copyright information: 'Copyright © 1999, 2023, Oracle and/or its affiliates.' and 'Oracle APEX 23.21'.

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.

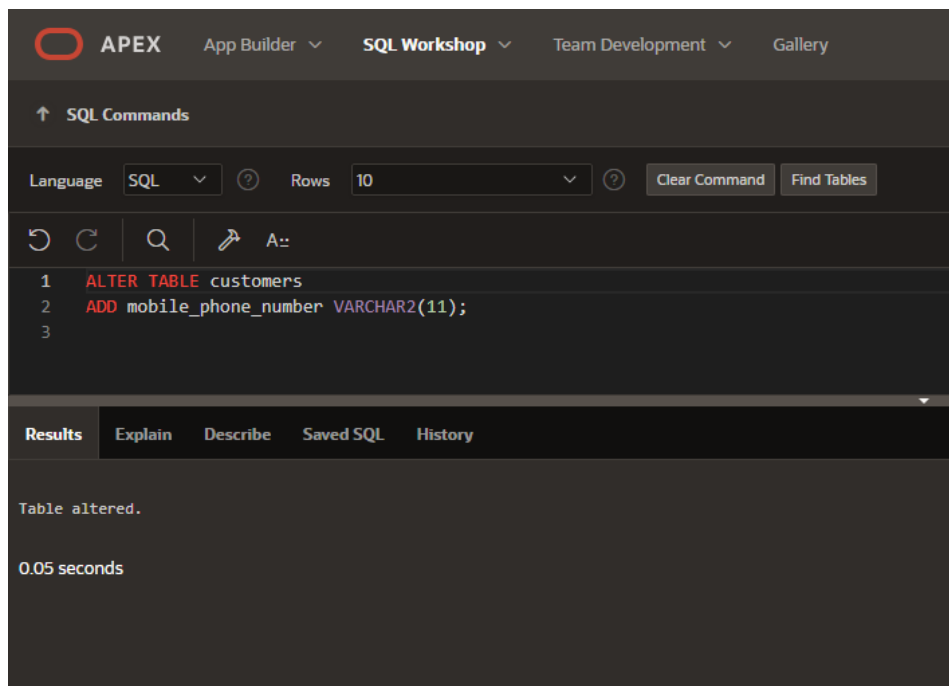
1. Run the DESCRIBE command on the customers table to view its structure.




The screenshot shows the APEX SQL Workshop interface. At the top, there are navigation tabs: APEX, App Builder, SQL Workshop (selected), Team Development, and Gallery. Below the tabs, there's a section for SQL Commands with a language dropdown set to SQL, a rows limit of 10, and buttons for Clear Command and Find Tables. The SQL command entered is `DESC customers ;`. Below the command, there are tabs for Results, Explain, Describe (selected), Saved SQL, and History. The Describe tab displays a table with 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	-	-	-	✓	-	-

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



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


APEX
App Builder
SQL Workshop
Team Development
Gallery

↑ SQL Commands

Language
SQL
Rows
10
Clear Command
Find Tables

```
1 desc customers ;
```

Results
Explain
Describe
Saved SQL
History

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	-	-	-	✓	-	-

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.

App Builder
SQL Workshop
Team Development
Gallery

SQL Commands

Language
SQL
Rows
10
Clear Command
Find Tables

1 desc customers ;

Results
Explain
Describe
Saved SQL
History

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	-	-	-	✓	-	-

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

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. Below the navigation bar, the 'SQL Commands' section is active. The 'Language' is set to 'SQL' and 'Rows' is set to '10'. The command entered is:

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

The 'Results' tab is selected, showing the message 'Table altered.' and the execution time '0.06 seconds'.

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

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. Below the navigation bar, the 'SQL Commands' section is active. The 'Language' is set to 'SQL' and 'Rows' is set to '10'. The command entered is:

```
1 DESC customers ;
```

The 'Describe' tab is selected, showing the table structure for the 'CUSTOMERS' table. The table has the following columns:

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	-	-	-	✓	-	-