

## 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.

#### LAB 1: DATA DEFINITION LANGUAGE DDL

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SECTION: 8

## 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?
  - The column “category” is defined as “NOT NULL” which means it must have a value for every row.
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?
  - The lowest value is -99.99 whereas the highest is 99.99.
6. What are the lowest and highest values that can be stored in the price column for the price\_history table?
  - The lowest value is -99999.99 whereas the highest is 99999.99.
7. What are the 3 columns that make up the primary key for the price\_history table?
  - The 3 columns that make up the primary key for the “price\_history” table are itm\_number, start\_date and start\_time.

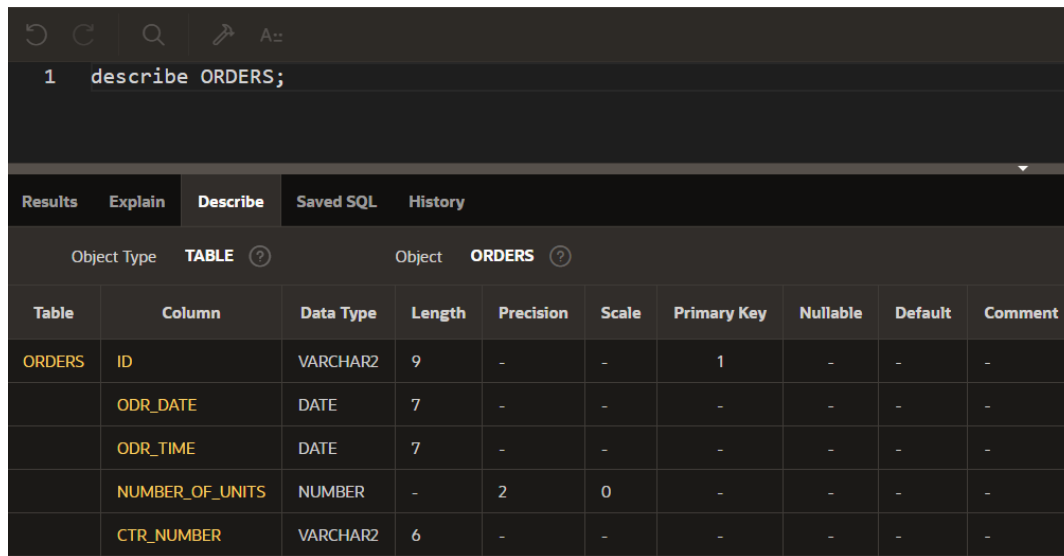
## Part 2 : Updating Constraints

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.

Answer:

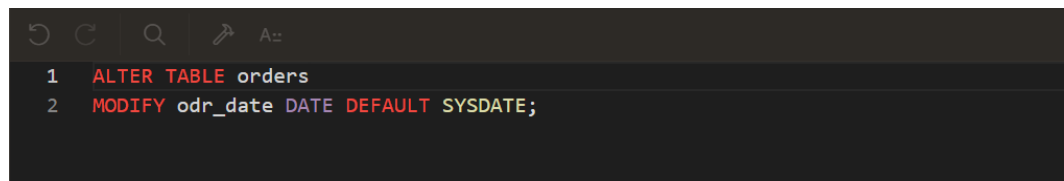


The screenshot shows the APEX SQL environment. The command `1 describe ORDERS;` is entered in the SQL editor. Below the editor, the 'Describe' tab is selected, showing the structure of the `ORDERS` table. The table has five columns: `ID` (VARCHAR2, 9, Primary Key), `ODR_DATE` (DATE, 7), `ODR_TIME` (DATE, 7), `NUMBER_OF_UNITS` (NUMBER, 2, 0), and `CTR_NUMBER` (VARCHAR2, 6).

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.

Answer:

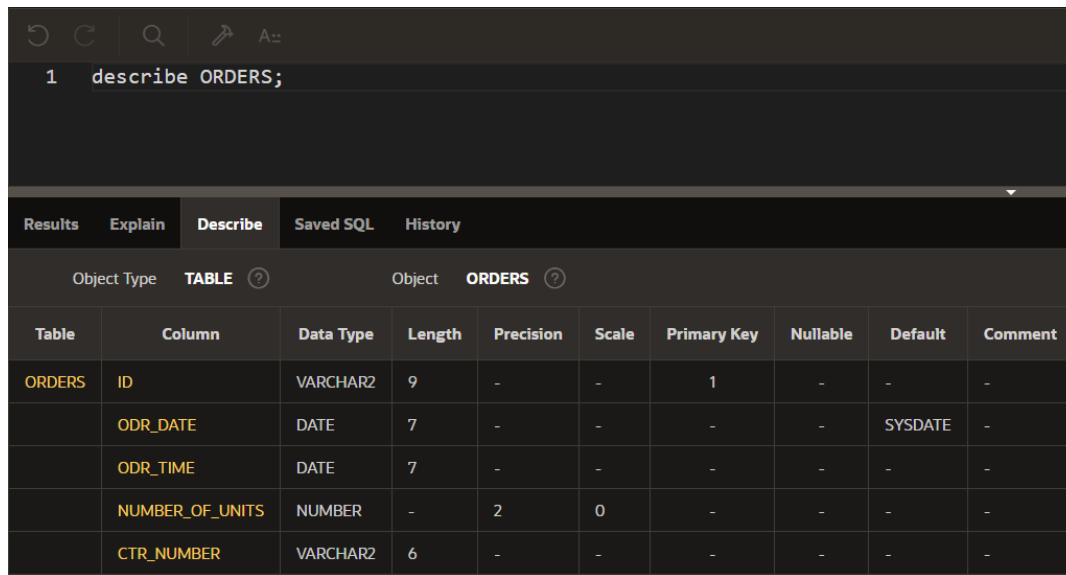


The screenshot shows the APEX SQL environment with the following SQL commands entered:

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

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

Answer:



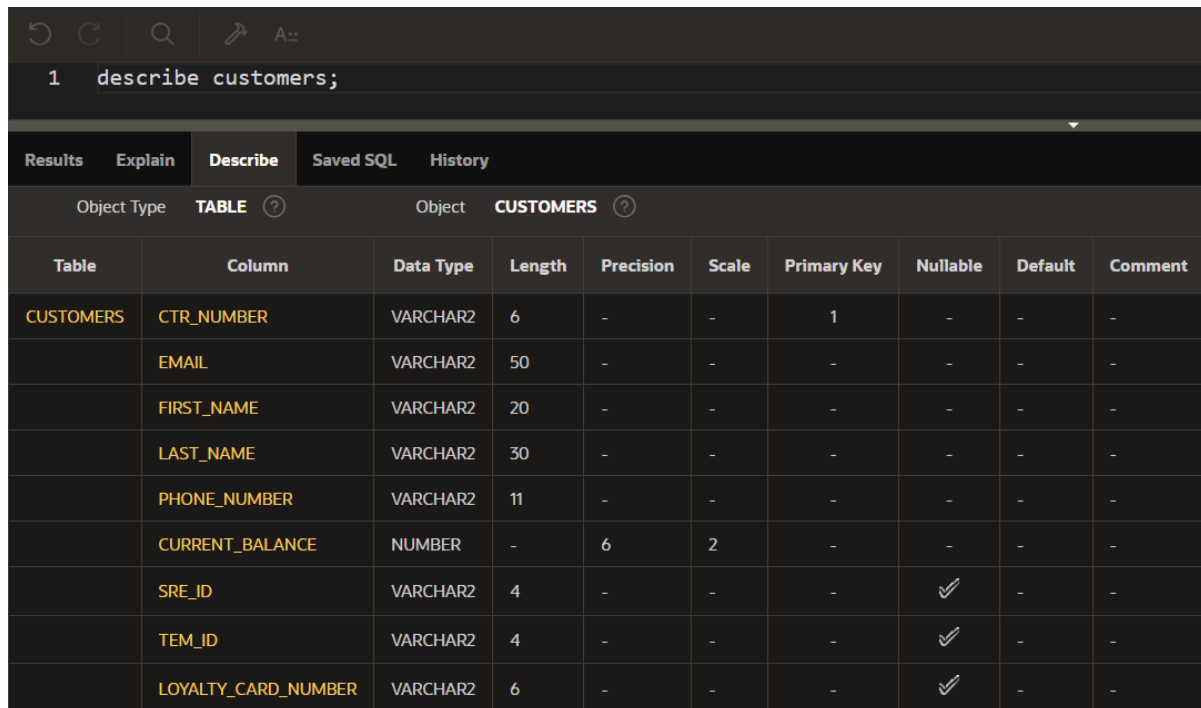
The screenshot shows the SQL Developer interface with the command `1 describe ORDERS;` entered in the SQL Editor. The Results tab is active, displaying the structure of the **ORDERS** table. The table has 10 columns: ID, ODR\_DATE, ODR\_TIME, NUMBER\_OF\_UNITS, and CTR\_NUMBER. The ID column is the primary key.

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ORDERS	ID	VARCHAR2	9	-	-	1	-	-	-
	ODR_DATE	DATE	7	-	-	-	-	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.

Answer:



The screenshot shows the SQL Developer interface with the command `1 describe customers;` entered in the SQL Editor. The Results tab is active, displaying the structure of the **CUSTOMERS** table. The table has 10 columns: CTR\_NUMBER, EMAIL, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, CURRENT\_BALANCE, SRE\_ID, TEM\_ID, and LOYALTY\_CARD\_NUMBER. The CTR\_NUMBER column is the primary key. The SRE\_ID, TEM\_ID, and LOYALTY\_CARD\_NUMBER columns have check 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.

Answer:

```
1 ALTER TABLE customers
2 ADD CONSTRAINT check_balance CHECK (current_balance >= 0);
```

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

Answer:

A..

1DESCRIBE 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	-	-	-	✓	-	-

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.

Answer:

CUSTOMERS

Columns

Data

Indexes

Constraints

Grants

Statistics

Triggers

Dependencies

+ Create

Drop

Enable

Disable

Refresh

Constraint	Type	Search Condition
CHECK_BALANCE	Check	current_balance >= 0

### 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.

Answer:

1 DESCRIBE customers;									
Results	Explain	<b>Describe</b>	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	-	-	-	✓	-	-

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

Answer:

```
1 ALTER TABLE customers
2 ADD mobile_phone_number VARCHAR(11);
3
```

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

Answer:

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A::

1 DESCRIBE customers;

Results

Explain

Describe

Saved SQL

History

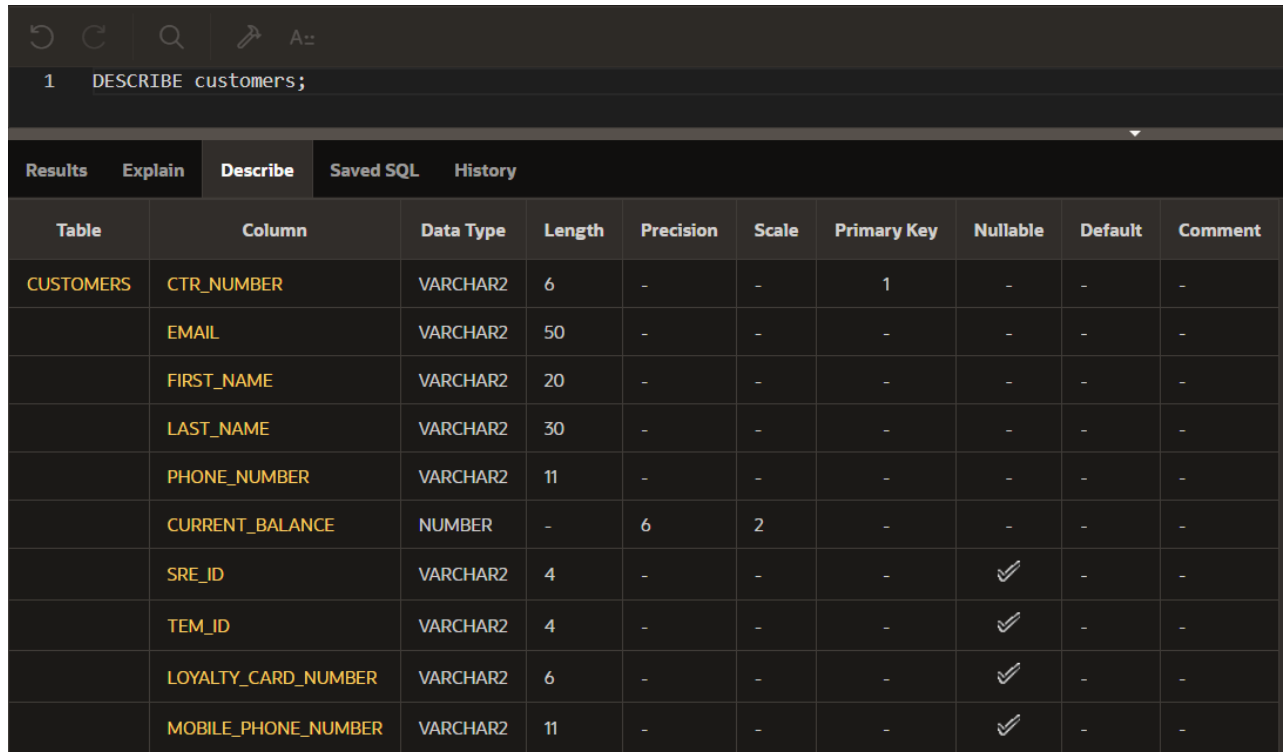
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

## 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.

Answer:

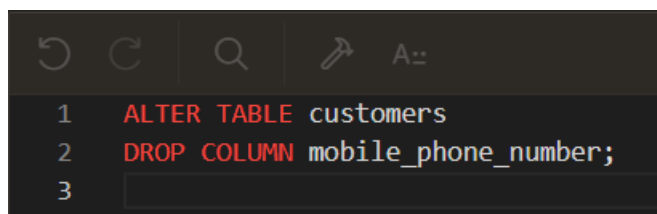


The screenshot shows the SQL Developer interface. At the top, there is a toolbar with icons for undo, redo, search, and edit. Below the toolbar, the command window shows the SQL command: `1 DESCRIBE customers;`. The results pane displays the structure of the CUSTOMERS table. The table has 10 columns: CTR\_NUMBER, EMAIL, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, CURRENT\_BALANCE, SRE\_ID, TEM\_ID, LOYALTY\_CARD\_NUMBER, and MOBILE\_PHONE\_NUMBER. The columns are listed with their data types, lengths, and other attributes.

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	-	-	-	✓	-	-

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

Answer:



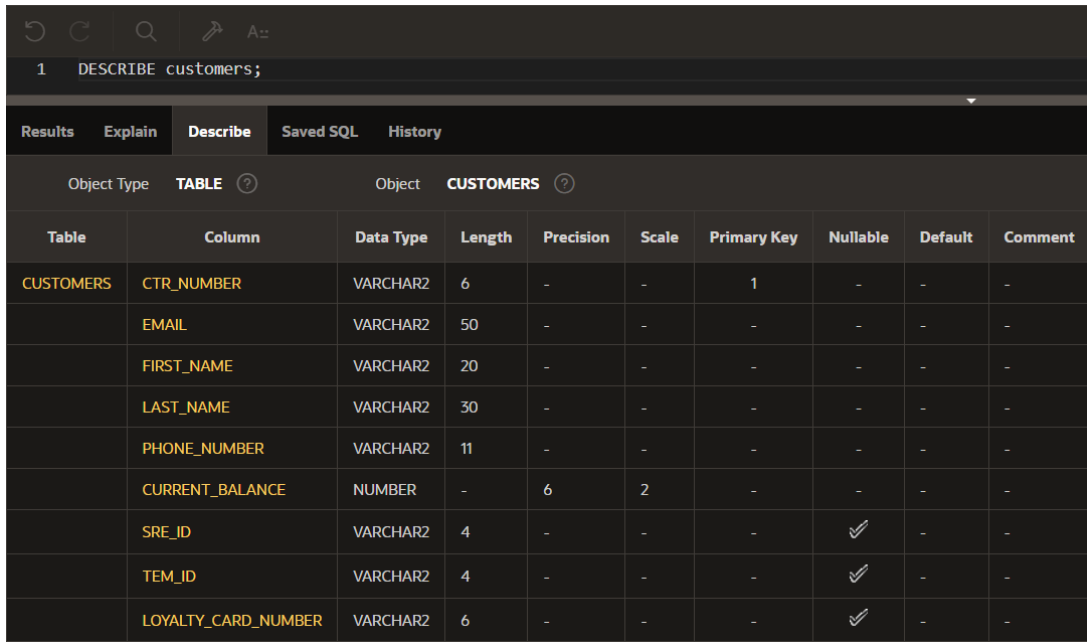
The screenshot shows the SQL Developer command window with the following SQL commands:

```
1 ALTER TABLE customers
2 DROP COLUMN mobile_phone_number;
3
```



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

Answer:



The screenshot shows a database interface with a command prompt at the top containing the text "1 DESCRIBE customers;". Below the prompt is a tabbed interface with "Results", "Explain", "Describe", "Saved SQL", and "History" tabs. The "Describe" tab is active, displaying the structure of the "CUSTOMERS" table. The table has 10 columns: CTR\_NUMBER, EMAIL, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, CURRENT\_BALANCE, SRE\_ID, TEM\_ID, LOYALTY\_CARD\_NUMBER, and an unlabeled column for Primary Key, Nullable, Default, and Comment. The data is as follows:

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	-	-	-	✓	-	-