



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

SECD2523 – Database

Lab 1: DDL

SECTION: 08-SECJH

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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?

Answer: 10 tables

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

Answer: 6 columns

3. What statement is used to enforce the constraint that the category column of the items table must have a value?

Answer: NOT NULL statement

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

Answer: The foreign key is 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?

Answer: Lowest Values: 0

Highest Values: 99

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

Answer: Lowest Values: -99999,99

Highest Values: 99999,99

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

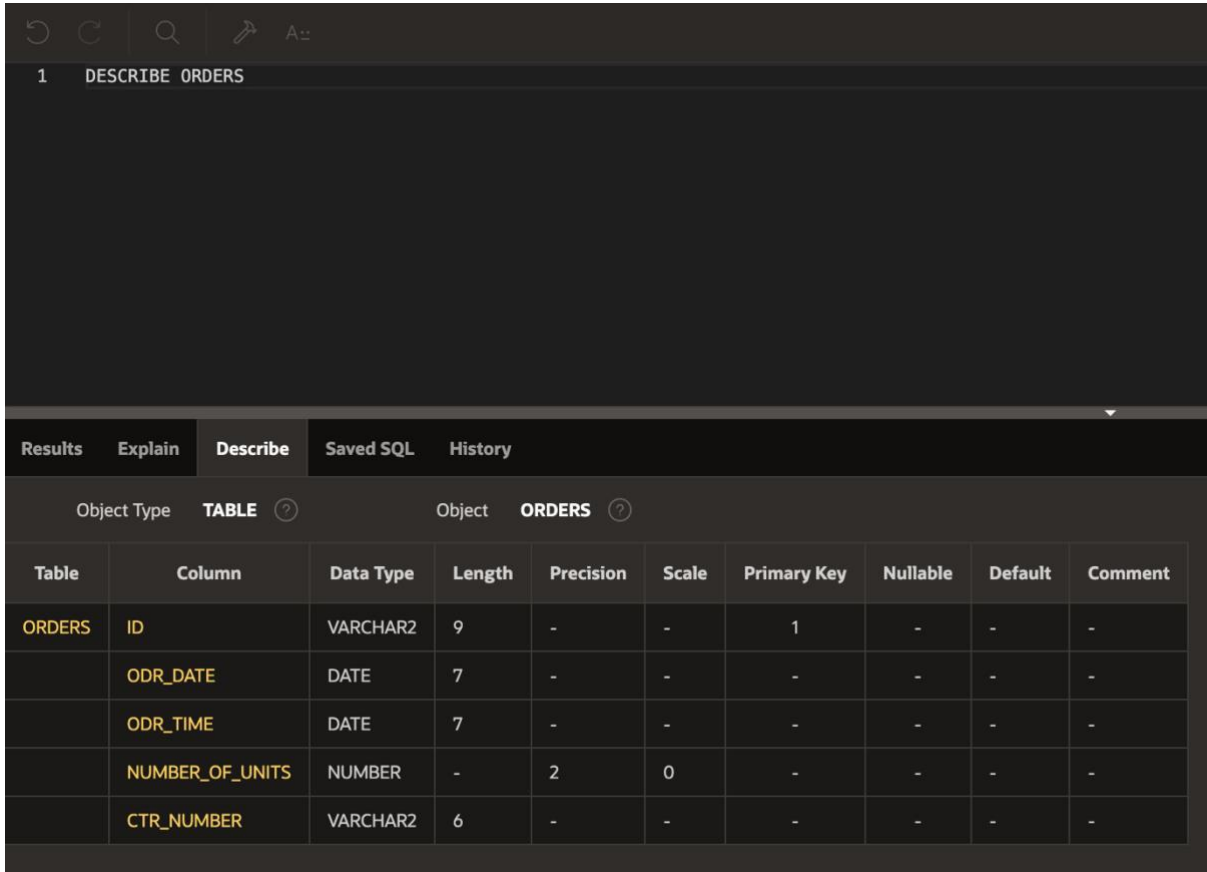
Answer: ITM_NUMBER, START_DATE, START_TIME

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.



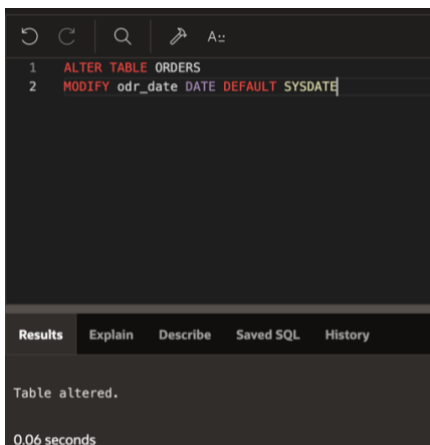
The screenshot shows the APEX SQL environment. The command bar contains the text "1 DESCRIBE ORDERS". Below the command bar, there are tabs for "Results", "Explain", "Describe", "Saved SQL", and "History". The "Describe" tab is selected, showing the table structure for the "ORDERS" table. The table has five columns: ID, ODR_DATE, ODR_TIME, NUMBER_OF_UNITS, and CTR_NUMBER. The data types, lengths, and other attributes are listed in the table below.

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:

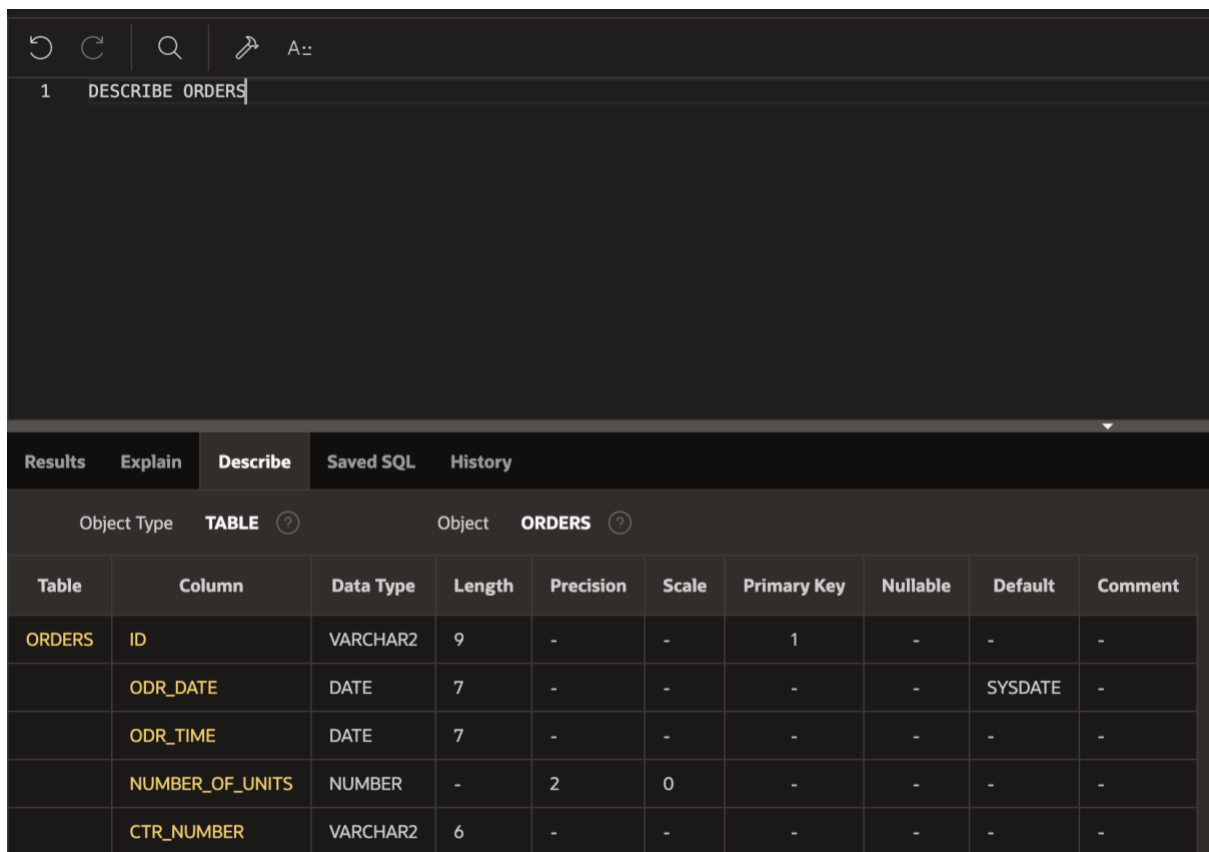
```
ALTER TABLE ORDERS  
MODIFY odr_date DATE DEFAULT SYSDATE
```



The screenshot shows the APEX SQL environment. The command bar contains the text "1 ALTER TABLE ORDERS" and "2 MODIFY odr_date DATE DEFAULT SYSDATE". Below the command bar, there are tabs for "Results", "Explain", "Describe", "Saved SQL", and "History". The "Results" tab is selected, showing the message "Table altered." and the execution time "0.06 seconds".

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.06 seconds				

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

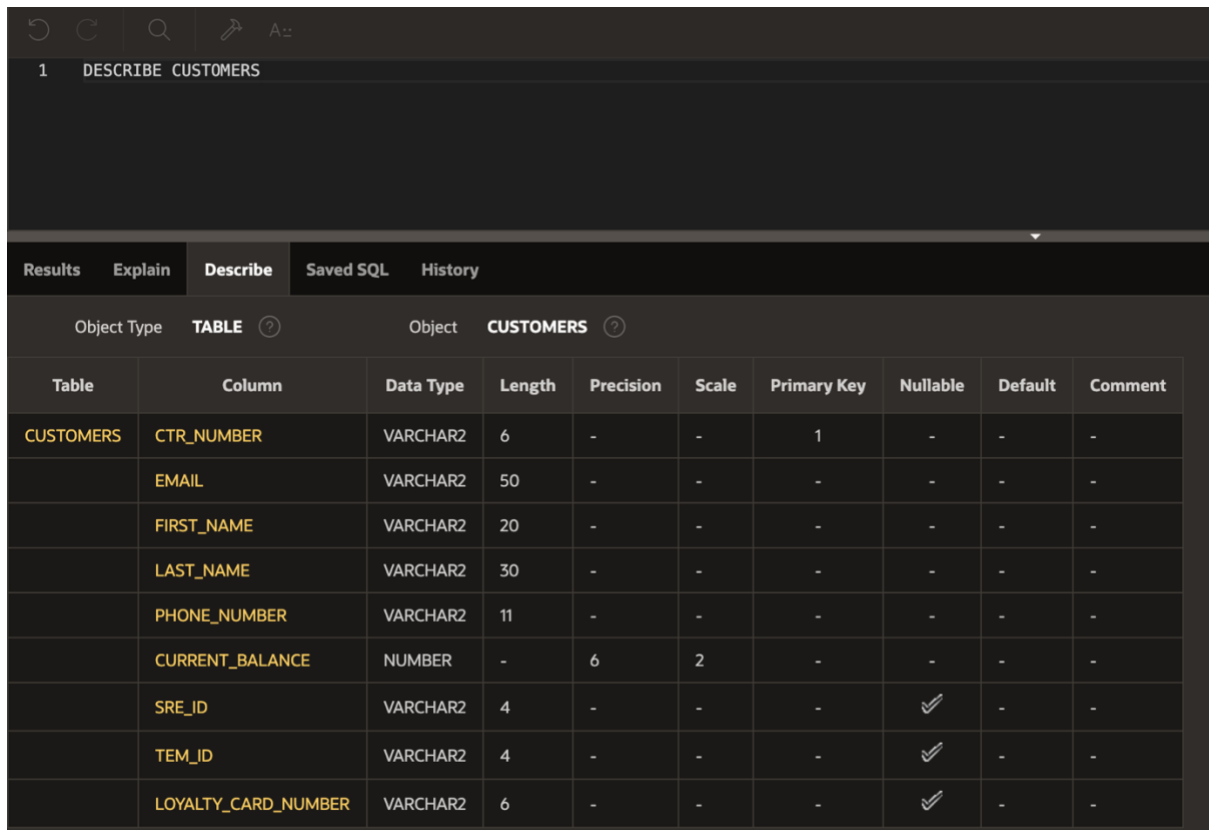


The screenshot shows a SQL IDE interface. At the top, there is a toolbar with icons for undo, redo, search, and a keyboard shortcut 'A:'. Below the toolbar, a text area contains the command '1 DESCRIBE ORDERS'. The results pane below shows a table with columns: Table, Column, Data Type, Length, Precision, Scale, Primary Key, Nullable, Default, and Comment. The table contains five rows of data for the 'ORDERS' table.

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.
- 2.



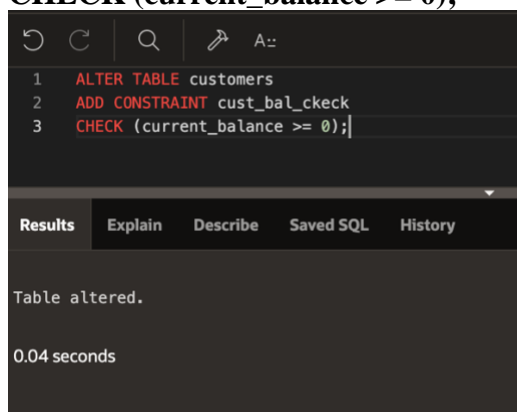
The screenshot shows the SQL Developer interface with the command `DESCRIBE CUSTOMERS` entered in the SQL Editor. The interface displays the structure of the `CUSTOMERS` table, including columns, data types, lengths, and constraints.

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.

Answer:

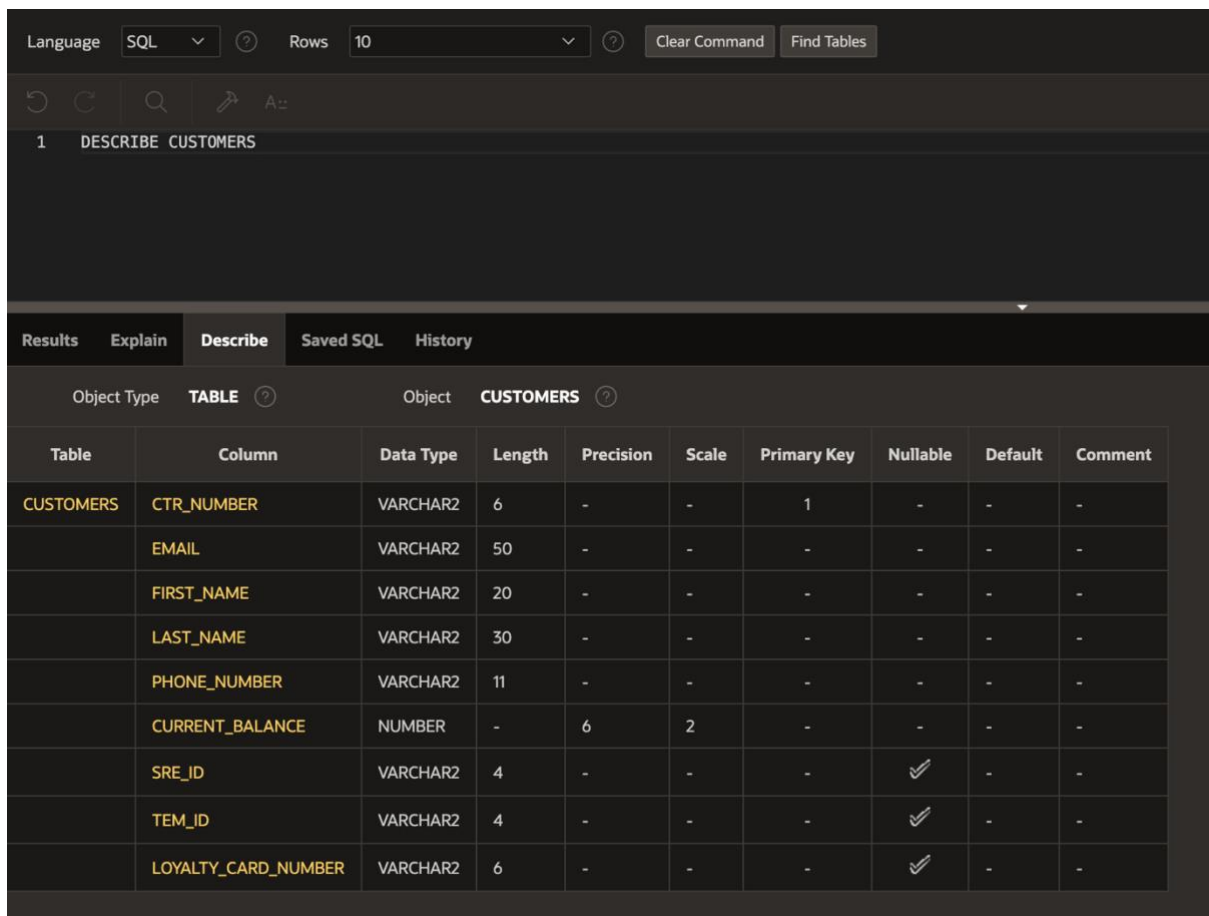
```
ALTER TABLE customers
ADD CONSTRAINT cust_bal_ckeck
CHECK (current_balance >= 0);
```



The screenshot shows the SQL Developer interface with the command `ALTER TABLE customers ADD CONSTRAINT cust_bal_ckeck CHECK (current_balance >= 0);` entered in the SQL Editor. The interface displays the results of the command, indicating that the table was altered successfully.

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.04 seconds				

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



The screenshot shows a database interface with a command bar at the top containing 'Language SQL', 'Rows 10', and buttons for 'Clear Command' and 'Find Tables'. Below the command bar is a text area with the command '1 DESCRIBE CUSTOMERS'. The interface has tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History', with 'Describe' currently selected. The results are displayed in a table with columns: Table, Column, Data Type, Length, Precision, Scale, Primary Key, Nullable, Default, and Comment. The table lists the columns of the CUSTOMERS table: CTR_NUMBER (VARCHAR2, 6, primary key), EMAIL (VARCHAR2, 50), FIRST_NAME (VARCHAR2, 20), LAST_NAME (VARCHAR2, 30), PHONE_NUMBER (VARCHAR2, 11), CURRENT_BALANCE (NUMBER, 6, 2), SRE_ID (VARCHAR2, 4, nullable), TEM_ID (VARCHAR2, 4, nullable), and LOYALTY_CARD_NUMBER (VARCHAR2, 6, nullable).

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.

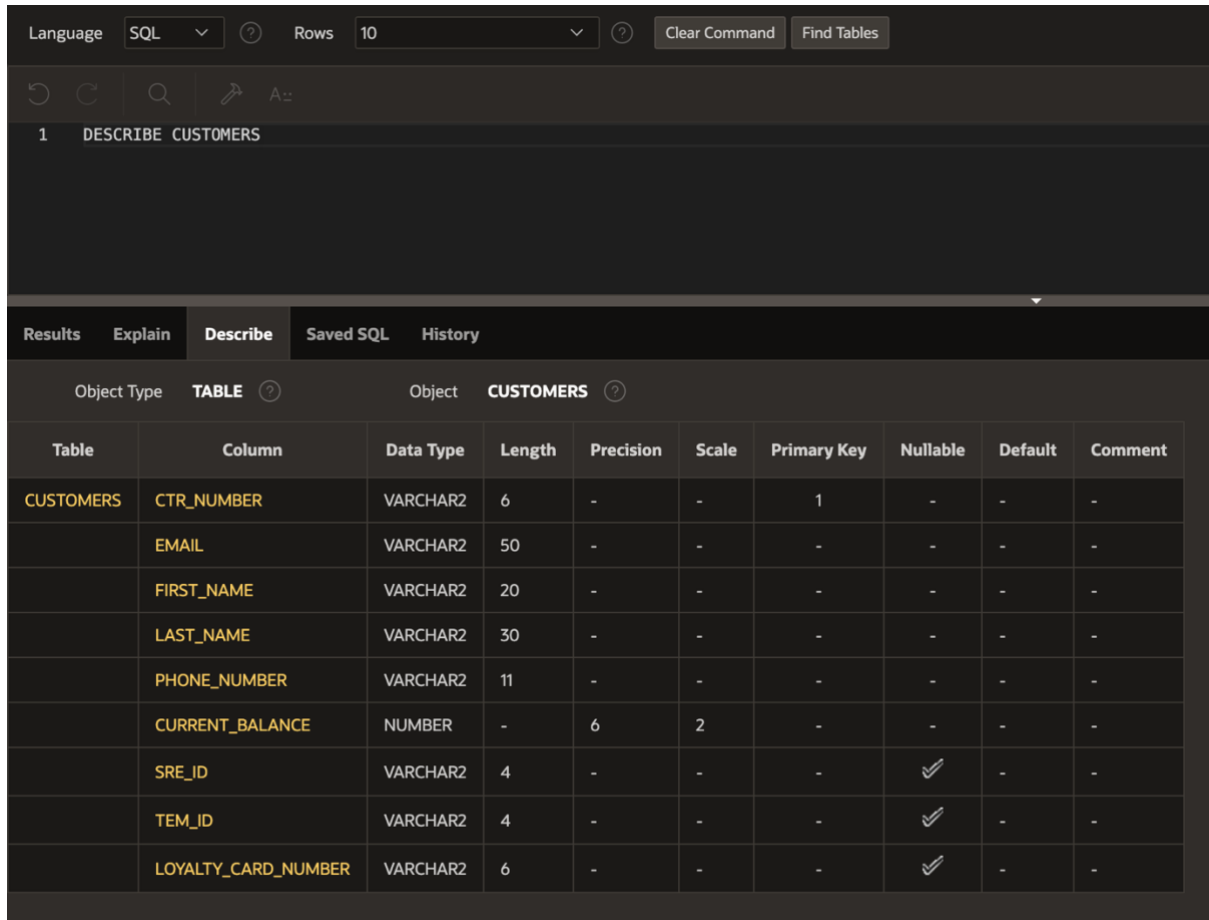
CUSTOMERS									
Columns	Data	Indexes	Constraints	Grants	Statistics	Triggers	Dependencies	DOL	Sample Queries
+ Create Drop Enable Disable Refresh									
Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Status	Last Change	Index	Invalid
CUST_BAL_CHECK	Check	current_balance >= 0				ENABLED	12/10/2023		
SYS_C00151064560	Check	"CTR_NUMBER" IS NOT NULL				ENABLED	12/10/2023		
SYS_C00151064561	Check	"EMAIL" IS NOT NULL				ENABLED	12/10/2023		
SYS_C00151064562	Check	"FIRST_NAME" IS NOT NULL				ENABLED	12/10/2023		
SYS_C00151064563	Check	"LAST_NAME" IS NOT NULL				ENABLED	12/10/2023		
SYS_C00151064564	Check	"PHONE_NUMBER" IS NOT NULL				ENABLED	12/10/2023		
SYS_C00151064565	Check	"CURRENT_BALANCE" IS NOT NULL				ENABLED	12/10/2023		
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK (...)	SRE_ID	NO ACTION	ENABLED	12/10/2023		
CUSTOMER_TEAM_FK	Foreign		TEAM_PK (WKSP_LEWSHUBEL...)	TEM_ID	NO ACTION	ENABLED	12/10/2023		
CUSTOMER_PK	Primary			CTR_NUMBER		ENABLED	12/10/2023	CUSTOMER_PK	
CTR_EMAIL_UK	Unique			EMAIL		ENABLED	12/10/2023	CTR_EMAIL_UK	
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER		ENABLED	12/10/2023	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.



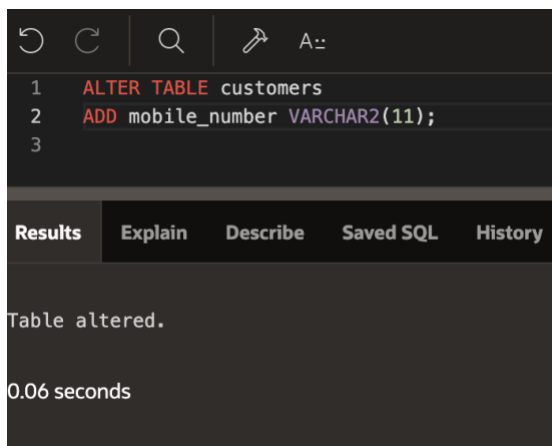
The screenshot shows a database interface with a command bar at the top containing 'Language SQL', 'Rows 10', and buttons for 'Clear Command' and 'Find Tables'. Below the command bar is a list of commands, with '1 DESCRIBE CUSTOMERS' selected. The main area displays the 'Describe' tab for the 'CUSTOMERS' 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 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.

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

Answers:

```
ALTER TABLE customers  
ADD mobile_number VARCHAR2(11);
```



The screenshot shows a database interface with a command bar at the top containing 'Language SQL', 'Rows 10', and buttons for 'Clear Command' and 'Find Tables'. Below the command bar is a list of commands, with '1 ALTER TABLE customers' and '2 ADD mobile_number VARCHAR2(11);' selected. The main area displays the 'Results' tab, showing the message 'Table altered.' and the execution time '0.06 seconds'.

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.06 seconds				

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

Language SQL ? Rows 10 ? Clear Command Find Tables

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1 DESCRIBE CUSTOMERS

Results Explain Describe Saved SQL History

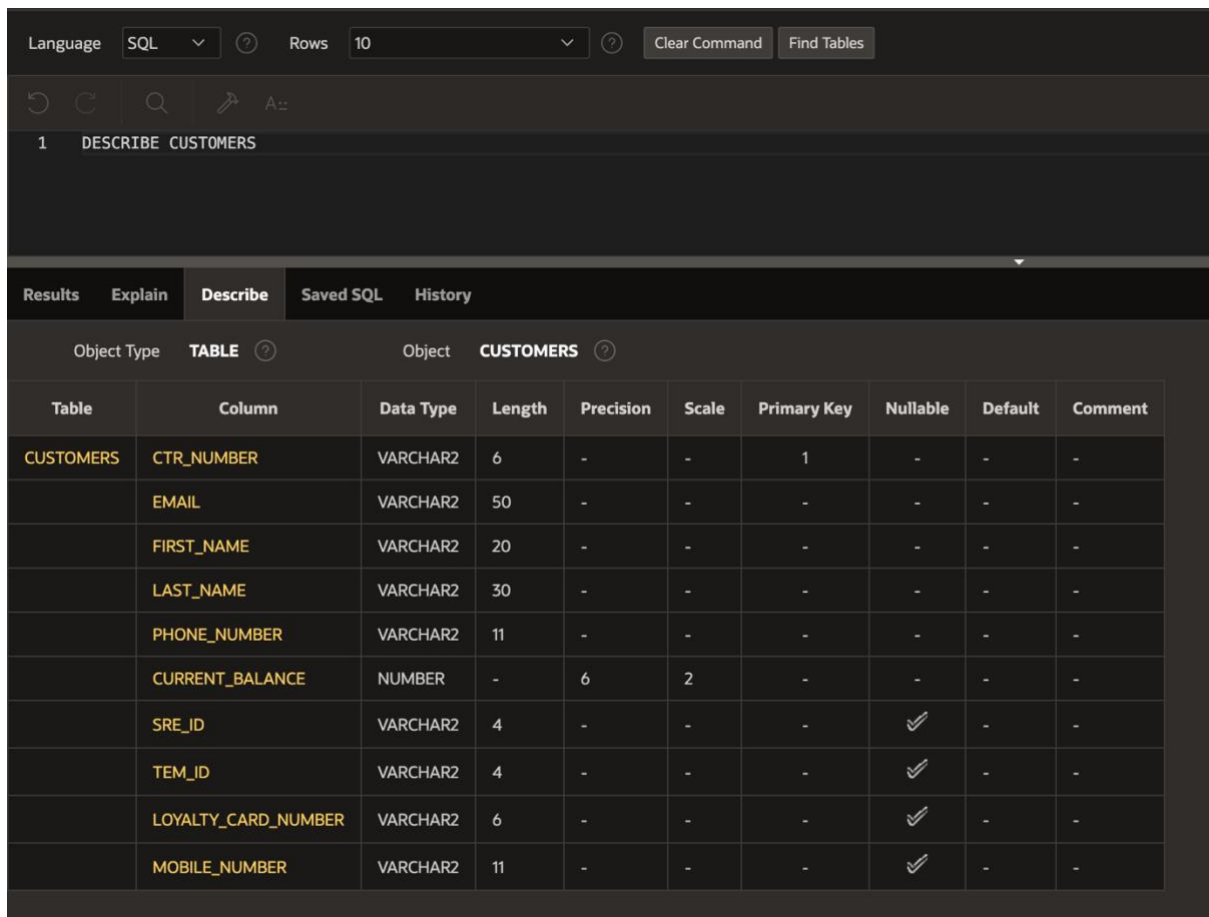
Object Type TABLE ? Object CUSTOMERS ?

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_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.



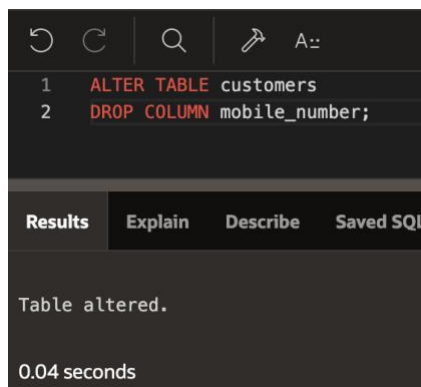
The screenshot shows a database client interface with a command bar at the top containing 'Language SQL', 'Rows 10', and buttons for 'Clear Command' and 'Find Tables'. Below the command bar, the command 'DESCRIBE CUSTOMERS' is entered. The interface then displays a table with the following structure:

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_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

Answer:

```
ALTER TABLE customers  
DROP COLUMN mobile_number;
```



The screenshot shows a database client interface with a command bar at the top containing 'ALTER TABLE customers' and 'DROP COLUMN mobile_number;'. Below the command bar, the command is executed, and the result is displayed as 'Table altered.' with a execution time of '0.04 seconds'.

Results	Explain	Describe	Saved SQL
Table altered.			
0.04 seconds			

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

Language SQL ? Rows 10 ? Clear Command Find Tables

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1 DESCRIBE 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	-	-	-	✓	-	-