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## OA Lab Exercise

*<DFo 6.3 Project>*

SECD2523 - Database

SEMESTER I, SESSION 2023/2024

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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?

The constraint statement is NOT NULL.

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

The name of the foreign key constraint 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?

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?

The columns are itm\_number, start\_date and start\_time.

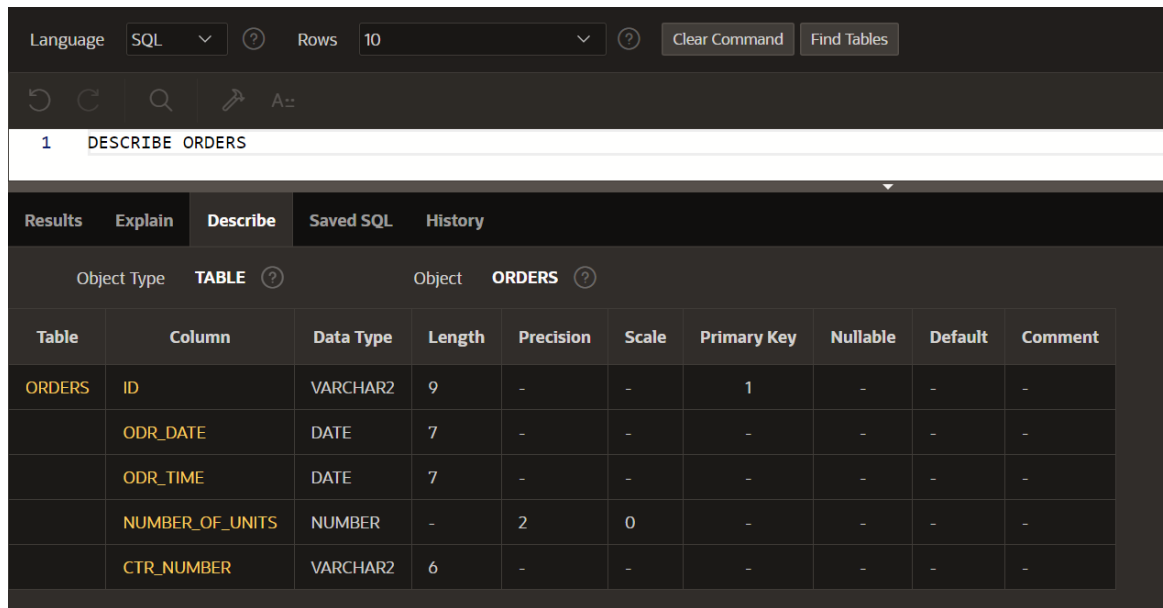
## Part 2 : Updating Constraints

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.

#### DESCRIBE ORDERS



The screenshot shows the APEX SQL environment interface. At the top, there's a header with 'Language' set to 'SQL', 'Rows' set to '10', and buttons for 'Clear Command' and 'Find Tables'. Below this is a command input area where '1 DESCRIBE ORDERS' is entered. The results are displayed in a table with tabs for 'Results', 'Explain', 'Describe' (selected), 'Saved SQL', and 'History'. The table shows the structure of the 'ORDERS' table, including columns like ID, ODR\_DATE, ODR\_TIME, NUMBER\_OF\_UNITS, and CTR\_NUMBER with their respective data types and constraints.

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.

#### ALTER TABLE orders

**MODIFY (odr\_date DATE DEFAULT SYSDATE);**

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

Language: SQL ? Rows: 10 ? Clear Command Find Tables

1 DESCRIBE ORDERS

Results Explain Describe Saved SQL History

Object Type: TABLE ? Object: ORDERS ?

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.

Language: SQL ? Rows: 10 ? Clear Command Find Tables

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	-	-	-	✓	-	-

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

**ALTER TABLE** customers

**ADD CONSTRAINT** customer\_check\_bal

**CHECK** (current\_balance >=0);

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

LanguageSQL ?

Rows10 ?

Clear Command

Find Tables

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1 DESCRIBE CUSTOMERS

Results Explain Describe Saved SQL History

Object TypeTABLE ?

ObjectCUSTOMERS ?

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
<div> <div>+ Create</div> <div>Drop</div> <div>Enable</div> <div>Disable</div> <div>Refresh</div> </div>						
Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Status
CUSTOMER_CHECK_BAL	Check	current_balance >= 0				ENABLED
SYS_C00149348861	Check	"CTR_NUMBER" IS NOT NULL				ENABLED
SYS_C00149348862	Check	"EMAIL" IS NOT NULL				ENABLED
SYS_C00149348863	Check	"FIRST_NAME" IS NOT NULL				ENABLED
SYS_C00149348864	Check	"LAST_NAME" IS NOT NULL				ENABLED
SYS_C00149348865	Check	"PHONE_NUMBER" IS NOT NULL				ENABLED
SYS_C00149348866	Check	"CURRENT_BALANCE" IS NOT NULL				ENABLED
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION	ENABLED
CUSTOMER_TEAM_FK	Foreign		TEAM_PK (WKSP_QIQI TEAMS)	TEM_ID	NO ACTION	ENABLED
CUSTOMER_PK	Primary			CTR_NUMBER		ENABLED
CTR_EMAIL_UK	Unique			EMAIL		ENABLED
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER		ENABLED

## 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 SQL Developer interface. The command window contains the text '1 DESCRIBE CUSTOMERS'. The 'Describe' tab is selected, showing 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\_NUMBER. The MOBILE\_NUMBER column is highlighted in yellow.

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:** Add column that will satisfy the clients requirements

**ALTER TABLE customers**

**ADD mobile\_number VARCHAR2(11);**

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

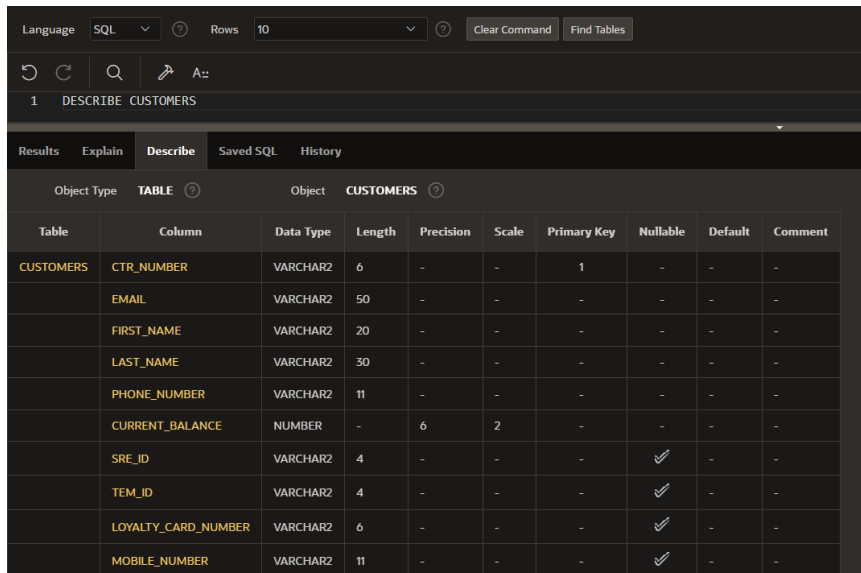
The screenshot shows the SQL Developer interface. The command window contains the text '1 DESCRIBE CUSTOMERS'. The 'Describe' tab is selected, showing the structure of the 'CUSTOMERS' table. The table now has 11 columns, including the newly added 'MOBILE\_NUMBER' column, which is highlighted in yellow.

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 dark theme. At the top, there's a command bar with 'Language SQL', 'Rows 10', and buttons for 'Clear Command' and 'Find Tables'. Below this is a search bar and a command input area containing '1 DESCRIBE CUSTOMERS'. The main area displays the results of the DESCRIBE command in a table format. The table has columns for Table, Column, Data Type, Length, Precision, Scale, Primary Key, Nullable, Default, and Comment. The data shows the structure of the CUSTOMERS table, including columns like CTR\_NUMBER, EMAIL, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, CURRENT\_BALANCE, SRE\_ID, TEM\_ID, LOYALTY\_CARD\_NUMBER, and MOBILE\_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	-	-	-	✓	-	-
	MOBILE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

**ALTER TABLE customers**

**DROP COLUMN mobile\_number;**

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

**DESCRIBE customers**



Language SQL Rows 10 Clear Command Find Tables

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	-	-	-	✓	-	-