



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
**SESSION 2023/2024, SEMESTER 3**  
**SECD2523 - DATABASE**  
**SECTION 10**

**SQL LAB 1 - 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.
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.
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?  
0-99
6. What are the lowest and highest values that can be stored in the price column for the price\_history table?  
0000000.00 - 9999999.99
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.

1 DESC orders;

ResultsExplainDescribeSaved SQLHistory

Object TypeTABLE ?

ObjectORDERS ?

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.

1ALTER TABLE orders

2MODIFY odr\_date DATE DEFAULT SYSDATE;

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	-	-	-	-	-	-

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

1

DESC orders;

Results

Explain

Describe

Saved SQL

History

Object Type

TABLE ?

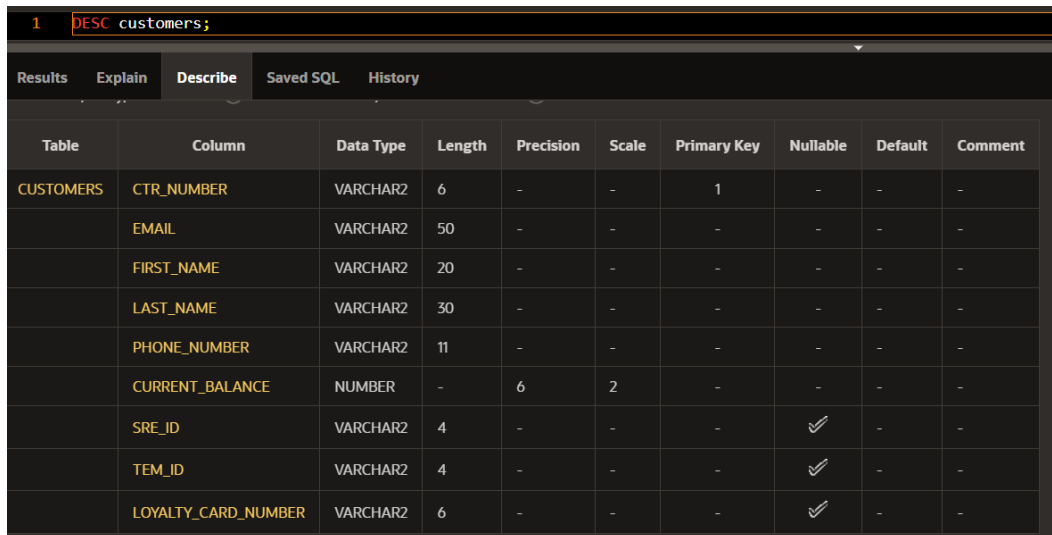
Object

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

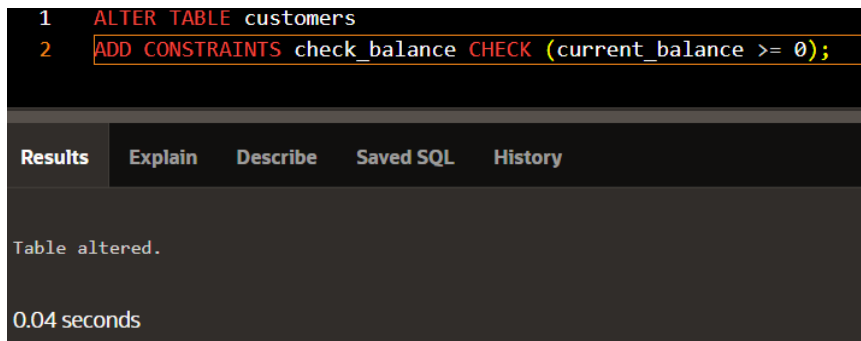
1. Run the DESCRIBE command on the customers table to view its structure.



The screenshot shows the SQL Developer interface with the command `DESC customers;` entered in the SQL window. The 'Describe' tab is selected, displaying a table with 10 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.

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	-	-	-	✓	-	-

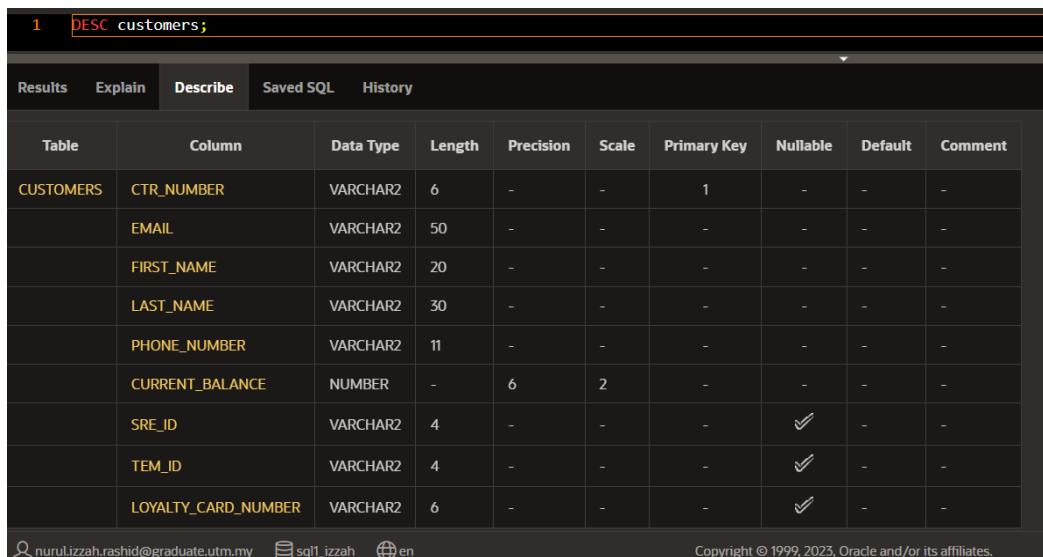
2. Task: Add a check constraint that will not allow the customers current balance to go below zero.



The screenshot shows the SQL Developer interface with the command `ALTER TABLE customers ADD CONSTRAINTS check_balance CHECK (current_balance >= 0);` entered in the SQL window. The 'Results' tab is selected, displaying the message 'Table altered.' and the execution time '0.04 seconds'.

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 the SQL Developer interface with the command `DESC customers;` entered in the SQL window. The 'Describe' tab is selected, displaying a table with 10 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 CURRENT\_BALANCE column is now marked as 'Nullable' with a checkmark, indicating the check constraint has been successfully added.

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.

Object Browser

**CUSTOMERS**

Columns Data Indexes **Constraints** Grants Statistics Triggers Dependencies DDL Sample Queries

+ Create Drop Enable Disable Refresh

Constraint	Type	Search Condition	Related Constraint
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.

1 `DESC 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	-	-	-	✓	-	-

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

1 `ALTER TABLE customers`

2 `ADD mobile_number VARCHAR2(11);`

Results Explain Describe Saved SQL History

Table altered.

0.07 seconds

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

1DESC customers;

ResultsExplainDescribeSaved SQLHistory

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	-	-	-	✓	-	-

https://www.oracle.com/sql/arrow-builder/app?session=101447420910940

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## 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.

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

1DESC customers;

ResultsExplainDescribeSaved SQLHistory

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	-	-	-	✓	-	-

https://www.oracle.com/sql/arrow-builder/app?session=101447420910940

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

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

**Results** Explain Describe Saved SQL History

Table altered.

0.06 seconds

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

```
1 DESC 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	-	-	-	✓	-	-

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