



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

## **SECD2523-DATABASE**

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### **SQL1-DDL**

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**COURSE :** BACHELOR OF COMPUTER SCIENCE (BIOINFORMATICS)

**SECTION :** 01

**GROUP :** 3

**LECTURER :** DR HASLINA HASHIM

**DATE OF SUBMISSION :**

## **PART 1**

1. How many tables have been created using the CREATE TABLE statement?

Ten tables.

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

Six 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?

ctr\_number.

5. What are the lowest and highest values that can be stored in the price column for the commision\_rate column for the sales\_representatives table?

The lowest is zero and the highest is 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 for a NUMBER(7,2) data type is -99999.99 and the highest value is 99999.99.

7. What are the 3 columns that make up the primary key for the price\_history table?

They are itm\_number, start\_date, and start\_time.

## **PART 2**

Modifying a column:

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

The screenshot displays the Oracle APEX SQL Workshop interface. At the top, the navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Khairunnisa Roslan unimaroon' are also visible. The 'SQL Commands' section is active, showing a schema dropdown set to 'WKSP\_UNIMAROON'. Below this, the 'Language' is set to 'SQL' and 'Rows' to '10'. The main editor contains the following SQL command:

```
1 CREATE TABLE orders (  
2     id          VARCHAR2(9) NOT NULL,  
3     odr_date     DATE NOT NULL,  
4     odr_time     DATE NOT NULL,  
5     number_of_units NUMBER(2) NOT NULL,  
6     ctr_number   VARCHAR2(6) NOT NULL,  
7     CONSTRAINT orders_pk PRIMARY KEY ( id )  
8 );
```

At the bottom, the 'Results' tab is selected, displaying the message 'Table created.' The footer shows the user's email 'roslankhairunnisa@gmail.com', the workspace name 'unimaroon', and the Oracle APEX version '23.2.0-17'.

2. **Task:** Add default constraint that will use today's date to assign a value to the odr\_date column of the orders table if no data is provided

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Khairunnisa Roslan' are on the right. The 'SQL Commands' tab is active, showing a schema dropdown set to 'WKSP\_UNIMAROON'. The command editor contains the following SQL code:

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

The 'Run' button is highlighted in green. Below the command editor, the 'Results' tab is selected, displaying the message 'Table altered.'.

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 command editor shows:

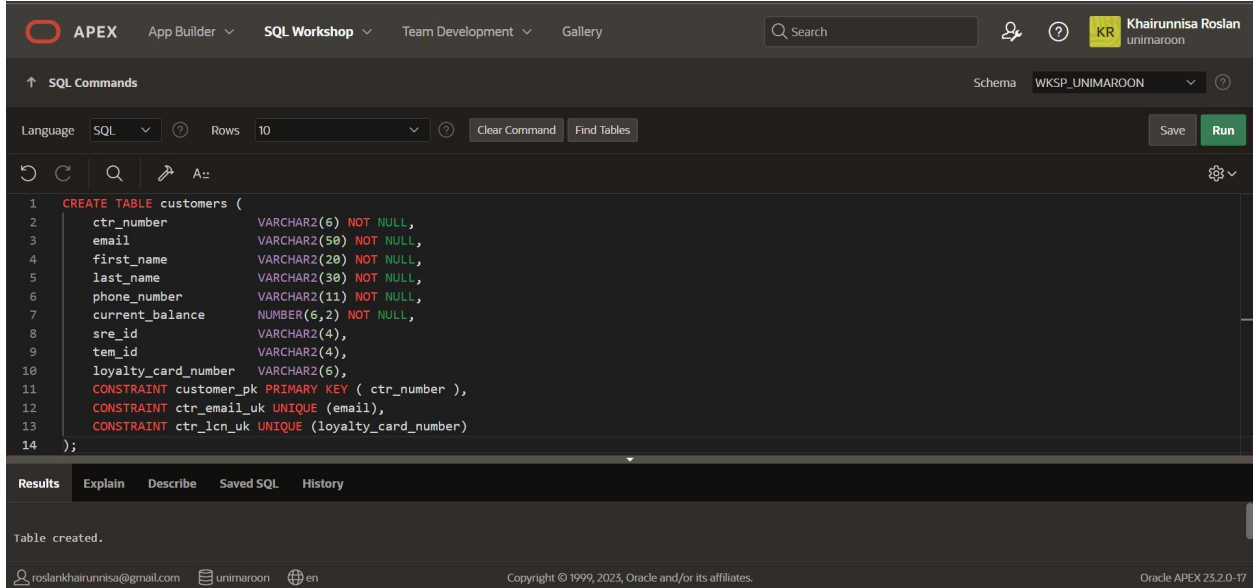
```
1 DESC orders;
```

The 'Describe' tab is selected in the results section, displaying the table structure for the 'ORDERS' table. The table has the following columns:

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 orders 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'. A search bar and user profile 'Khairunnisa Roslan unimaroon' are on the right. The 'SQL Commands' tab is active, showing a schema dropdown set to 'WKSP\_UNIMAROON'. The command area contains the following SQL code:

```
1 CREATE TABLE customers (  
2     ctr_number      VARCHAR2(6) NOT NULL,  
3     email            VARCHAR2(50) NOT NULL,  
4     first_name       VARCHAR2(20) NOT NULL,  
5     last_name        VARCHAR2(30) NOT NULL,  
6     phone_number     VARCHAR2(11) NOT NULL,  
7     current_balance  NUMBER(6,2) NOT NULL,  
8     sre_id           VARCHAR2(4),  
9     tem_id           VARCHAR2(4),  
10    loyalty_card_number VARCHAR2(6),  
11    CONSTRAINT customer_pk PRIMARY KEY ( ctr_number ),  
12    CONSTRAINT ctr_email_uk UNIQUE (email),  
13    CONSTRAINT ctr_lcn_uk UNIQUE (loyalty_card_number)  
14 );
```

The 'Results' tab is selected, displaying the message 'Table created.' The footer shows the user's email 'roslan.khairunnisa@gmail.com', the workspace name 'unimaroon', and the Oracle APEX version '23.2.0-17'.

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

The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Khairunnisa Roslan unimaroon' are on the right. The 'SQL Commands' tab is active, showing a schema dropdown set to 'WKSP\_UNIMAROON'. The command editor contains two lines of SQL: `1 ALTER TABLE customers` and `2 ADD CONSTRAINTS check_current_balance CHECK (current_balance >= 0);`. The 'Run' button is highlighted in green. Below the editor, the 'Results' tab is selected, displaying the message 'Table altered.' and '0.04 seconds'.

### 4. A check constraint is not shown in the results of a describe command

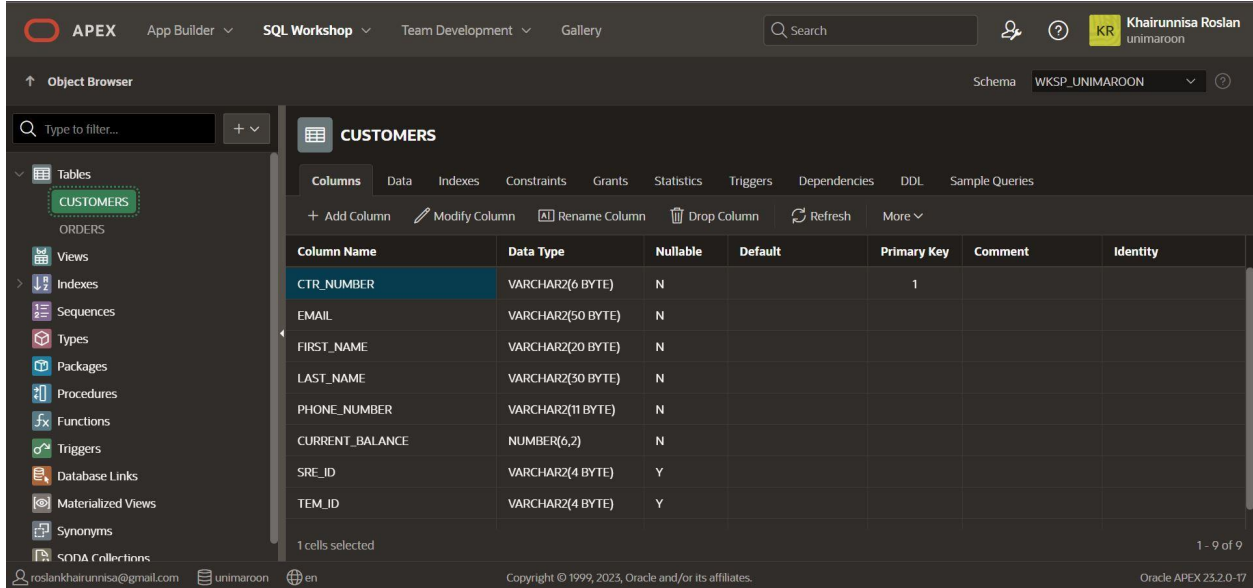
The screenshot shows the Oracle APEX Object Browser interface. The left sidebar lists database objects: Tables, Views, Indexes, Sequences, Types, Packages, Procedures, Functions, Triggers, Database Links, Materialized Views, and Synonyms. The 'CUSTOMERS' table is selected under the 'Tables' category. The main panel shows the 'Columns' tab for the 'CUSTOMERS' table. The table structure is as follows:

Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
CTR_NUMBER	VARCHAR2(6 BYTE)	N		1		
EMAIL	VARCHAR2(50 BYTE)	N				
FIRST_NAME	VARCHAR2(20 BYTE)	N				
LAST_NAME	VARCHAR2(50 BYTE)	N				
PHONE_NUMBER	VARCHAR2(11 BYTE)	N				
CURRENT_BALANCE	NUMBER(6,2)	N				
SRE_ID	VARCHAR2(4 BYTE)	Y				
TEM_ID	VARCHAR2(4 BYTE)	Y				

At the bottom of the table, it says '1 cells selected'. The footer of the interface includes the user profile, copyright information, and the version 'Oracle APEX 23.2.0-17'.

## Adding column

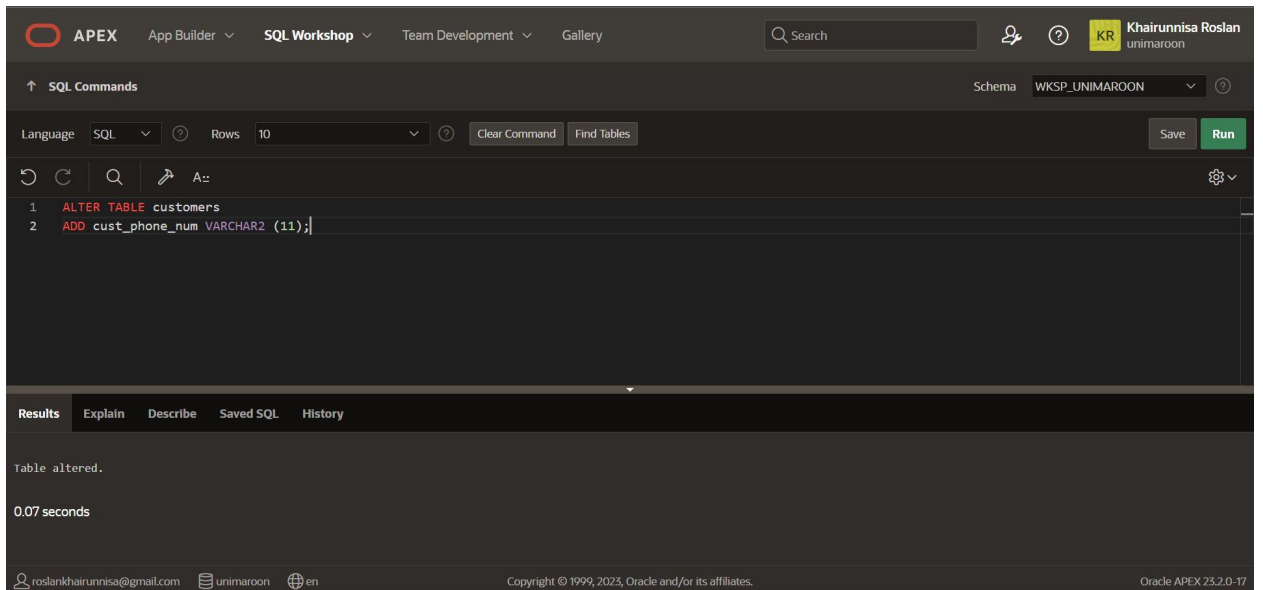
1. Run the DESCRIBE command on the orders table to view its structure



The screenshot shows the Oracle APEX SQL Workshop interface. The 'Object Browser' on the left lists the 'CUSTOMERS' table under the 'Tables' category. The main panel displays the 'Columns' tab for the 'CUSTOMERS' table, showing a list of columns with their data types, nullability, and primary key status.

Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
CTR_NUMBER	VARCHAR2(6 BYTE)	N		1		
EMAIL	VARCHAR2(50 BYTE)	N				
FIRST_NAME	VARCHAR2(20 BYTE)	N				
LAST_NAME	VARCHAR2(50 BYTE)	N				
PHONE_NUMBER	VARCHAR2(11 BYTE)	N				
CURRENT_BALANCE	NUMBER(6,2)	N				
SRE_ID	VARCHAR2(4 BYTE)	Y				
TEM_ID	VARCHAR2(4 BYTE)	Y				

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



The screenshot shows the Oracle APEX SQL Workshop interface with the 'SQL Commands' tab selected. The command editor contains the following SQL code:

```
1 ALTER TABLE customers
2 ADD cust_phone_num VARCHAR2 (11);
```

The 'Run' button is highlighted in green. Below the command editor, the 'Results' tab is selected, showing the output of the command:

```
Table altered.
0.07 seconds
```

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

The screenshot shows the Oracle APEX SQL Workshop interface. The 'Object Browser' on the left lists various database objects, with 'CUSTOMERS' selected under the 'Tables' category. The main panel displays the 'CUSTOMERS' table structure with the following columns:

Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
CTR_NUMBER	VARCHAR2(6 BYTE)	N		1		
EMAIL	VARCHAR2(50 BYTE)	N				
FIRST_NAME	VARCHAR2(20 BYTE)	N				
LAST_NAME	VARCHAR2(30 BYTE)	N				
PHONE_NUMBER	VARCHAR2(11 BYTE)	N				
CURRENT_BALANCE	NUMBER(6,2)	N				
SRE_ID	VARCHAR2(4 BYTE)	Y				
TEM_ID	VARCHAR2(4 BYTE)	Y				

The interface also shows a search bar, a schema dropdown set to 'WKSP\_UNIMAROON', and a footer with copyright information and the Oracle APEX version 23.2.0-17.

## Dropping a column

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

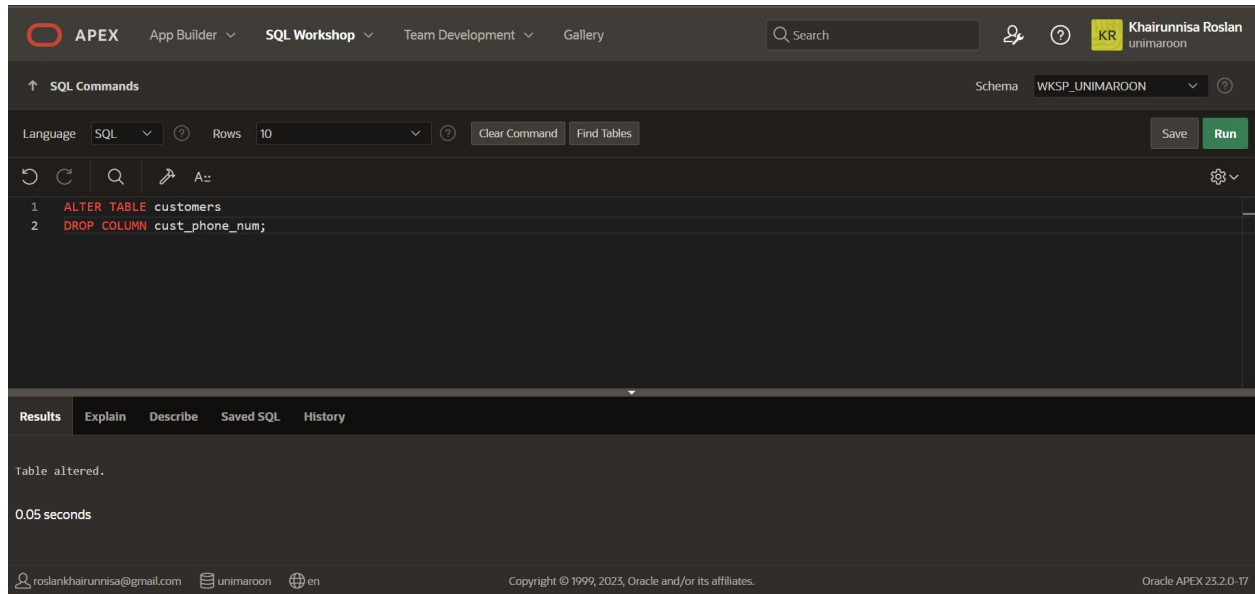
The screenshot shows the Oracle APEX SQL Workshop interface with the 'SQL Commands' tab selected. The 'Language' is set to 'SQL' and the 'Rows' limit is 10. The command area contains the following SQL code:

```
1 CREATE TABLE customers (  
2   ctr_number      VARCHAR2(6) NOT NULL,  
3   email           VARCHAR2(50) NOT NULL,  
4   first_name      VARCHAR2(20) NOT NULL,  
5   last_name       VARCHAR2(30) NOT NULL,  
6   phone_number    VARCHAR2(11) NOT NULL,  
7   current_balance NUMBER(6,2) NOT NULL,  
8   sre_id          VARCHAR2(4),  
9   tem_id          VARCHAR2(4),  
10  loyalty_card_number VARCHAR2(6),  
11  CONSTRAINT customer_pk PRIMARY KEY ( ctr_number ),  
12  CONSTRAINT ctr_email_uk UNIQUE (email),  
13  CONSTRAINT ctr_lcn_uk UNIQUE (loyalty_card_number)  
14 );
```

The 'Results' tab is selected, showing the message 'Table created.' The interface also includes a search bar, a schema dropdown set to 'WKSP\_UNIMAROON', and a footer with copyright information and the Oracle APEX version 23.2.0-17.

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





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

