



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

SECD2523 – 08 Database

Semester I , Session 2023/2024

Lab 3 – DML2 Part 1, 2, 3, 4, 5, 6

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DML2 Part 1

Section 6 Lesson 6 Exercise 1: Retrieving Data Using SELECT

Write and Execute SELECT statements (S6L6 Objective 2)

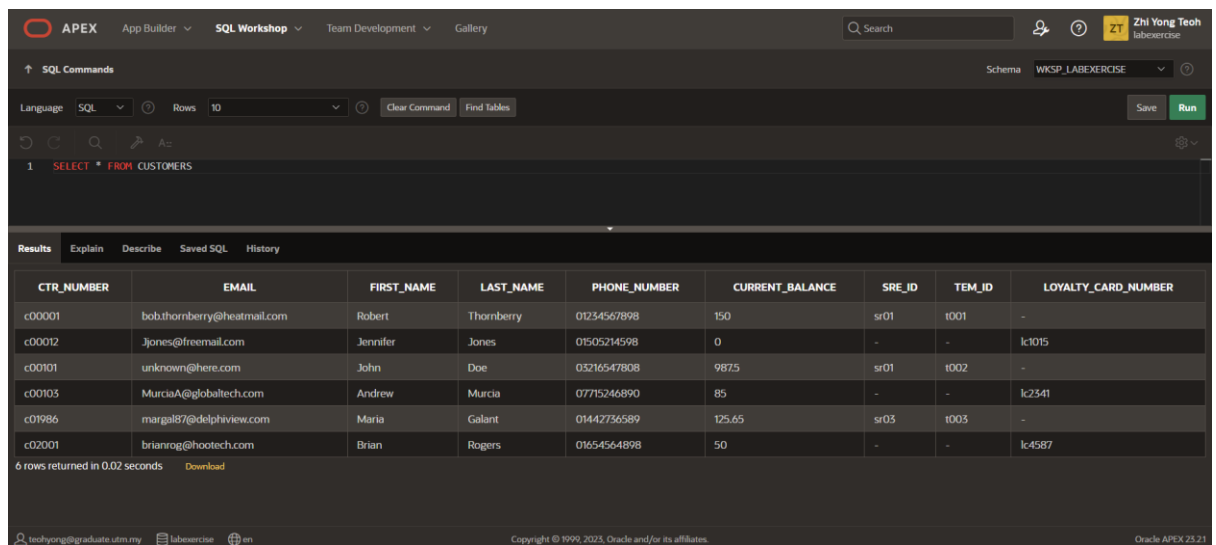
In this exercise you will retrieve data that is stored in the database system by using a SELECT statement.

Part 1: Retrieving all columns from a table.

Using the SELECT * statement show all data stored in the following tables:

1. customers.

SELECT * FROM CUSTOMERS

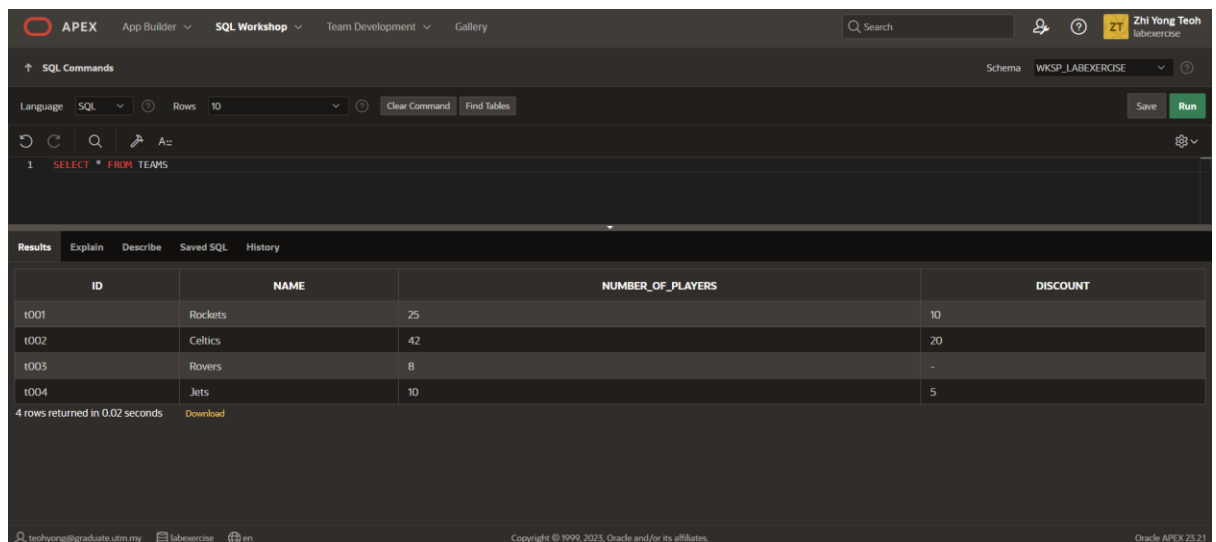


The screenshot shows the APEX SQL Workshop interface. The SQL command 'SELECT * FROM CUSTOMERS' has been executed, and the results are displayed in a table. The table has 9 columns: CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER. There are 6 rows of data.

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
c00012	ljones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
c00101	unknown@here.com	John	Doe	03216547808	9875	sr01	t002	-
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
c02001	brianrog@hooitech.com	Brian	Rogers	01654564898	50	-	-	lc4587

2. teams.

SELECT * FROM TEAMS

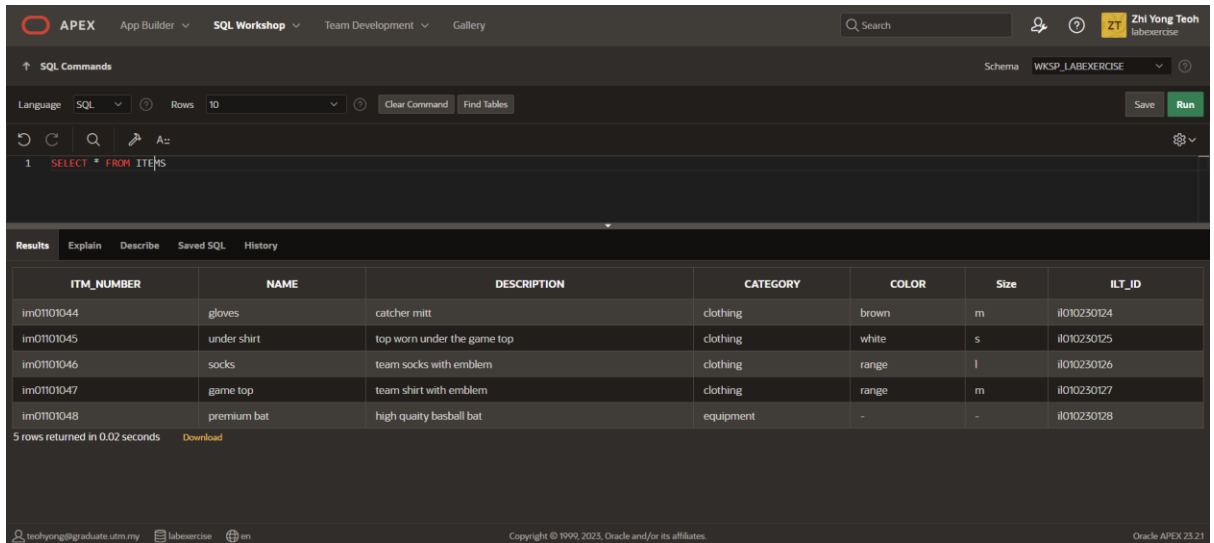


The screenshot shows the APEX SQL Workshop interface. The SQL command 'SELECT * FROM TEAMS' has been executed, and the results are displayed in a table. The table has 4 columns: ID, NAME, NUMBER_OF_PLAYERS, and DISCOUNT. There are 4 rows of data.

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
t001	Rockets	25	10
t002	Celtics	42	20
t003	Rovers	8	-
t004	Jets	10	5

- items.

SELECT * FROM ITEMS



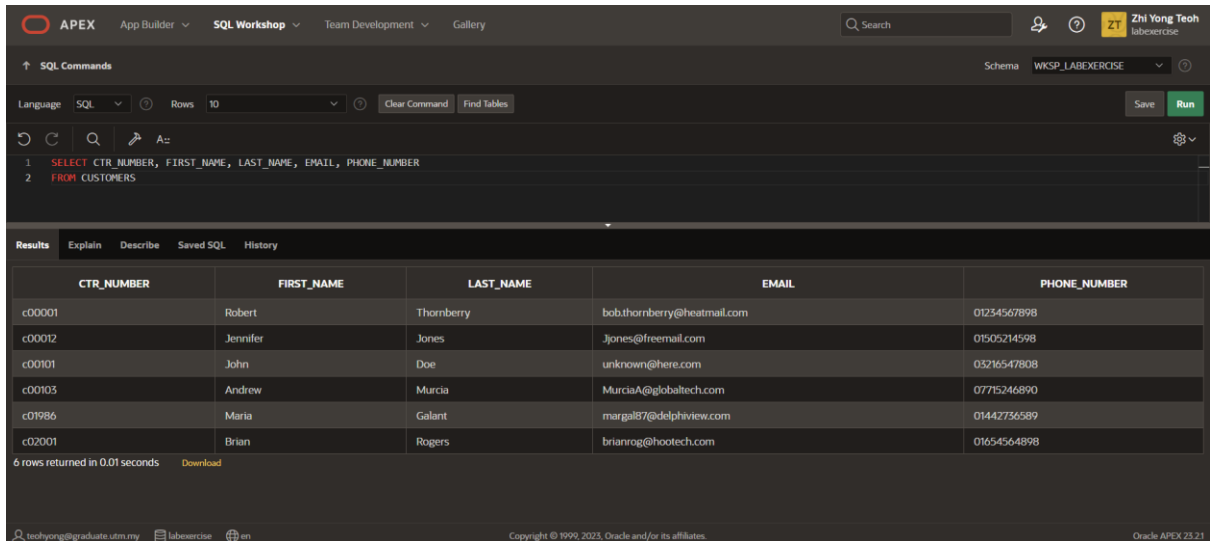
The screenshot shows the APEX SQL Workshop interface. The SQL command entered is `SELECT * FROM ITEMS`. The results are displayed in a table with 7 columns: ITM_NUMBER, NAME, DESCRIPTION, CATEGORY, COLOR, Size, and ILT_ID. There are 5 rows of data returned.

ITM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID
im0101044	gloves	catcher mitt	clothing	brown	m	il010230124
im0101045	under shirt	top worn under the game top	clothing	white	s	il010230125
im0101046	socks	team socks with emblem	clothing	range	l	il010230126
im0101047	game top	team shirt with emblem	clothing	range	m	il010230127
im0101048	premium bat	high quality baseball bat	equipment	-	-	il010230128

Part 2: Selecting Specific Columns

- Display the customer number, first name, last name, email and phone number of the customers.

**SELECT CTR_NUMBER, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER
FROM CUSTOMERS**

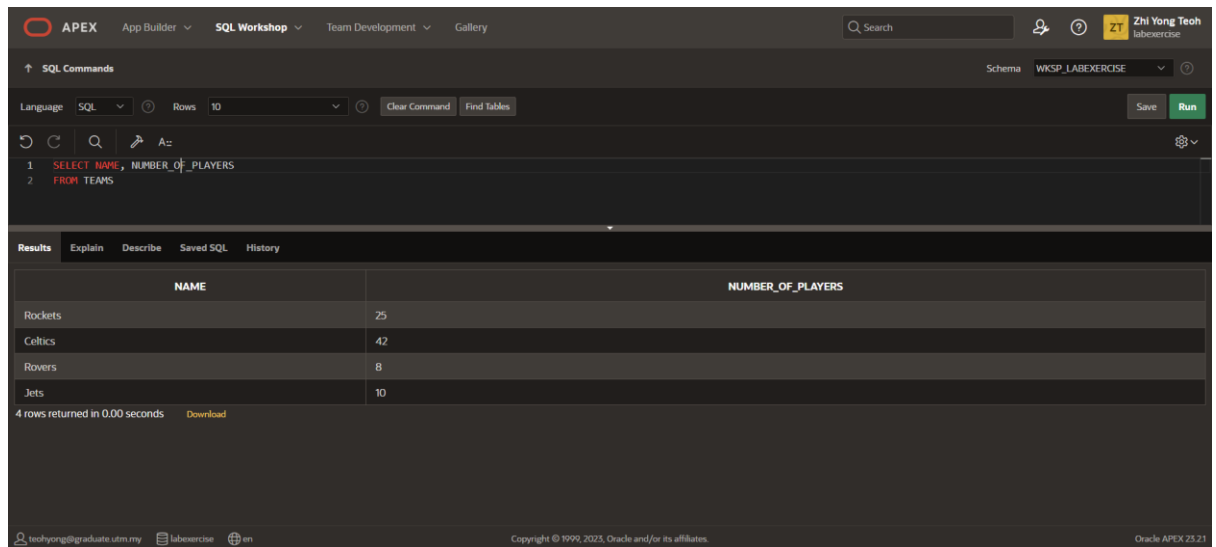


The screenshot shows the APEX SQL Workshop interface. The SQL command entered is `SELECT CTR_NUMBER, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER FROM CUSTOMERS`. The results are displayed in a table with 5 columns: CTR_NUMBER, FIRST_NAME, LAST_NAME, EMAIL, and PHONE_NUMBER. There are 6 rows of data returned.

CTR_NUMBER	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
c00001	Robert	Thornberry	bob.thornberry@heatmail.com	01234567898
c00012	Jennifer	Jones	jones@freemail.com	01505214598
c00101	John	Doe	unknown@here.com	03216547808
c00103	Andrew	Murcia	MurciaA@globaltech.com	07715246890
c01986	Maria	Galan	margal87@delphiview.com	01442736589
c02001	Brian	Rogers	brianrog@hootech.com	01654564898

2. Display the name and number of players for each team.

```
SELECT NAME, NUMBER_OF_PLAYERS  
FROM TEAMS
```

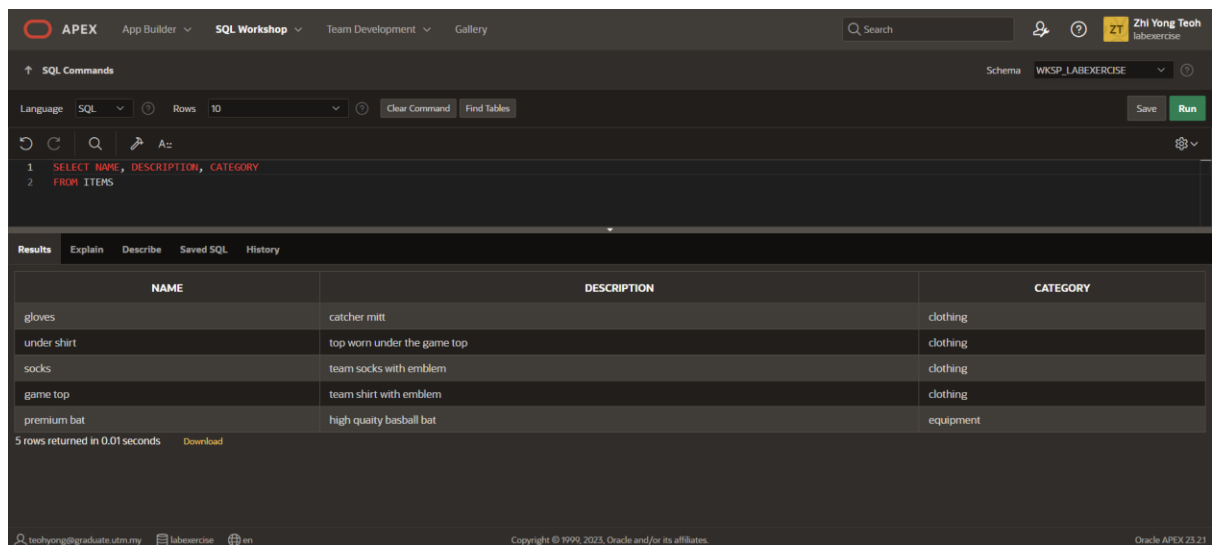


The screenshot shows the APEX SQL Workshop interface. The SQL Commands pane contains the query: `SELECT NAME, NUMBER_OF_PLAYERS FROM TEAMS`. The Results pane displays a table with two columns: NAME and NUMBER_OF_PLAYERS. The table contains four rows of data. Below the table, it states "4 rows returned in 0.00 seconds".

NAME	NUMBER_OF_PLAYERS
Rockets	25
Celtics	42
Rovers	8
Jets	10

3. Display the name, description and category for every item in the table.

```
SELECT NAME, DESCRIPTION, CATEGORY  
FROM ITEMS
```



The screenshot shows the APEX SQL Workshop interface. The SQL Commands pane contains the query: `SELECT NAME, DESCRIPTION, CATEGORY FROM ITEMS`. The Results pane displays a table with three columns: NAME, DESCRIPTION, and CATEGORY. The table contains five rows of data. Below the table, it states "5 rows returned in 0.01 seconds".

NAME	DESCRIPTION	CATEGORY
gloves	catcher mitt	clothing
under shirt	top worn under the game top	clothing
socks	team socks with emblem	clothing
game top	team shirt with emblem	clothing
premium bat	high quality baseball bat	equipment

DML2 Part 2

Section 6 Lesson 6 Exercise 2: Retrieving Data Using SELECT

Write and Execute SELECT statements (S6L6 Objective 2)

In this exercise you will retrieve data that is stored in the database system by using a SELECT statement.

Part 1: Using Arithmetic Operators

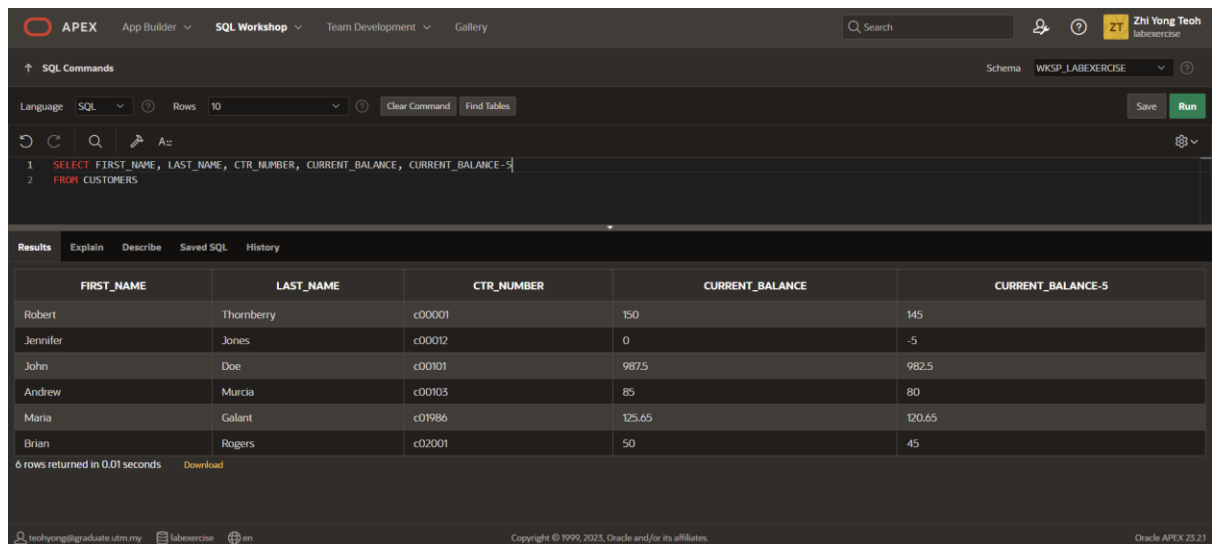
1. Every customer has been told they can pay off their current balance over a 12 month period. Display the customer's first name, last name, current balance and monthly payment.

```
SELECT      FIRST_NAME,      LAST_NAME,      CURRENT_BALANCE,
CURRENT_BALANCE/12
FROM CUSTOMERS
```

[illegible]

2. Obl is considering giving a gift card to all its customers of 5.00 that can be used to reduce their current balance. Write a query that will show the customers first name, last name, customer number, current balance and the value of their balance minus the gift value.

```
SELECT FIRST_NAME, LAST_NAME, CTR_NUMBER, CURRENT_BALANCE,  
CURRENT_BALANCE-5  
FROM CUSTOMERS
```



The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command entered is: `SELECT FIRST_NAME, LAST_NAME, CTR_NUMBER, CURRENT_BALANCE, CURRENT_BALANCE-5 FROM CUSTOMERS`. The results are displayed in a table with 6 rows. The columns are: FIRST_NAME, LAST_NAME, CTR_NUMBER, CURRENT_BALANCE, and CURRENT_BALANCE-5. The data shows that for Jennifer Jones, the current balance is 0, and the calculated value (0 - 5) is -5. The interface also shows a 'Run' button and a 'Download' link for the results.

FIRST_NAME	LAST_NAME	CTR_NUMBER	CURRENT_BALANCE	CURRENT_BALANCE-5
Robert	Thornberry	c00001	150	145
Jennifer	Jones	c00012	0	-5
John	Doe	c00101	987.5	982.5
Andrew	Murcia	c00103	85	80
Maria	Gallant	c01986	125.65	120.65
Brian	Rogers	c02001	50	45

6 rows returned in 0.01 seconds [Download](#)

3. What would be the problem with implementing this scheme?

The current balance should not be below 0, Jennifer's current balance is 0 causes the current balance-5 is -5, which is a negative value.

Part 2: Using Column Aliases

1. You previously wrote a query that display the customer's first name, last name, current balance and monthly payment. Rewrite the query to use First Name, Last Name, Balance and Monthly Repayments as the column aliases. The aliases are to be shown exactly as described (case sensitive).

```
SELECT  FIRST_NAME  AS  "First  Name",  LAST_NAME  AS  "Last  Name",
CURRENT_BALANCE  AS  "Balance",  CURRENT_BALANCE/12  AS  "Monthly
Repayments"
```

FROM CUSTOMERS

[illegible]

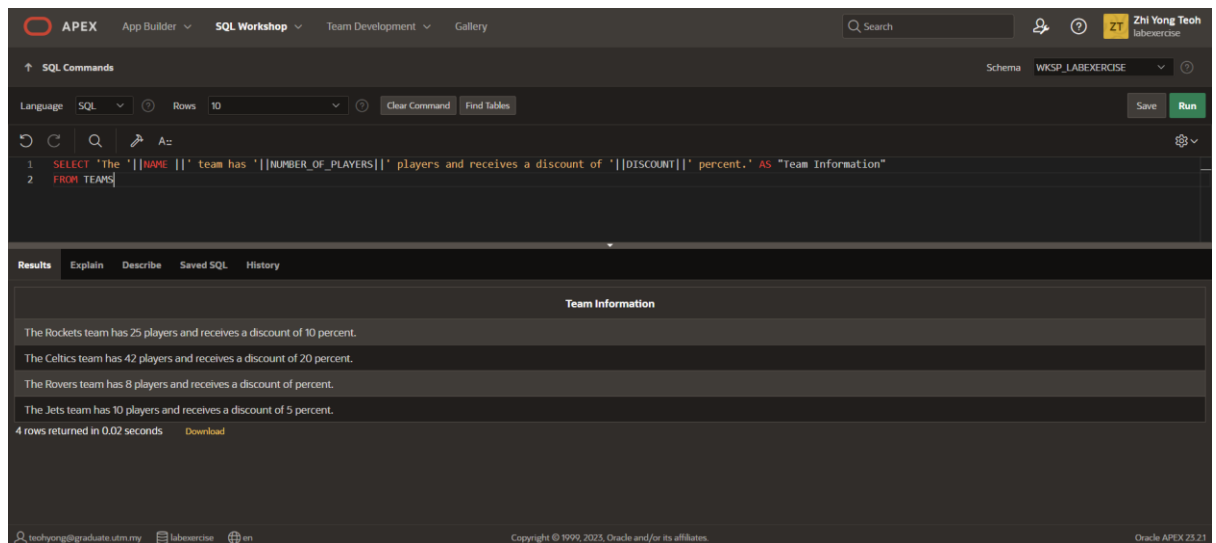
Part 3: Using Literal Character Strings

1. Write a query that will display the team information in the following format:

The Rockets team has 25 players and receives a discount of 10 percent.

Use Team Information as the column alias.

```
SELECT 'The '||NAME ||' team has '||NUMBER_OF_PLAYERS||' players and receives a  
discount of '||DISCOUNT||' percent.' AS "Team Information"  
  
FROM TEAMS
```



2. Why does the last team not show a discount?

The last team does not show a discount as it contains a null value. A null value means that there is no value for the particular column, which is different with zero and blank space.

DML Part 3

Section 6 Lesson 7 Exercise 1: Restricting Data Using WHERE

Limit rows using WHERE (S6L7 Objective 1)

In this exercise you will refine the data that is returned in your query by adding a WHERE clause to your SELECT statement.

Part 1 : Using the WHERE Clause.

1. Using the unique customer number in the where clause display all columns for Maria Galant.

```
SELECT * FROM CUSTOMERS  
WHERE CTR_NUMBER = 'c01986';
```

The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command entered is:

```
1 SELECT * FROM CUSTOMERS  
2 WHERE CTR_NUMBER = 'c01986';
```

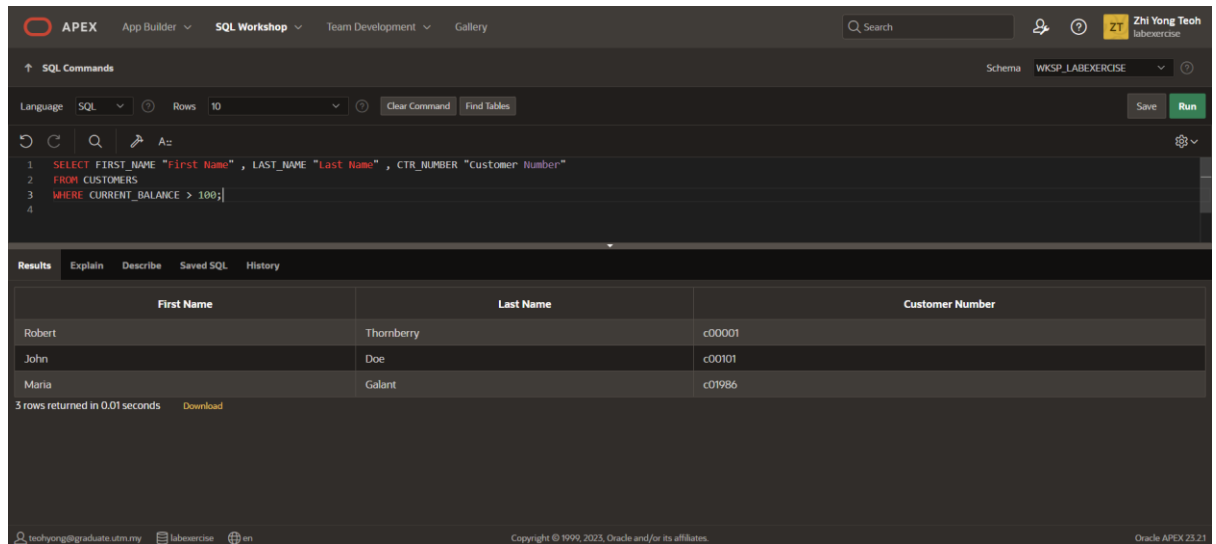
The results are displayed in a table with the following columns: CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER. The results show one row for customer c01986, Maria Galant, with a current balance of 125.65.

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
c01986	margal87@delphview.com	Maria	Galant	01442736589	125.65	sr05	t003	-

1 rows returned in 0.01 seconds

2. Display the first name, last name and customer number for all customers who have a current balance of greater than 100. Use an appropriate alias for your column headings.

```
SELECT FIRST_NAME AS "First Name" , LAST_NAME AS "Last Name" , CTR_NUMBER  
AS "Customer Number"  
FROM CUSTOMERS  
WHERE CURRENT_BALANCE > 100;
```



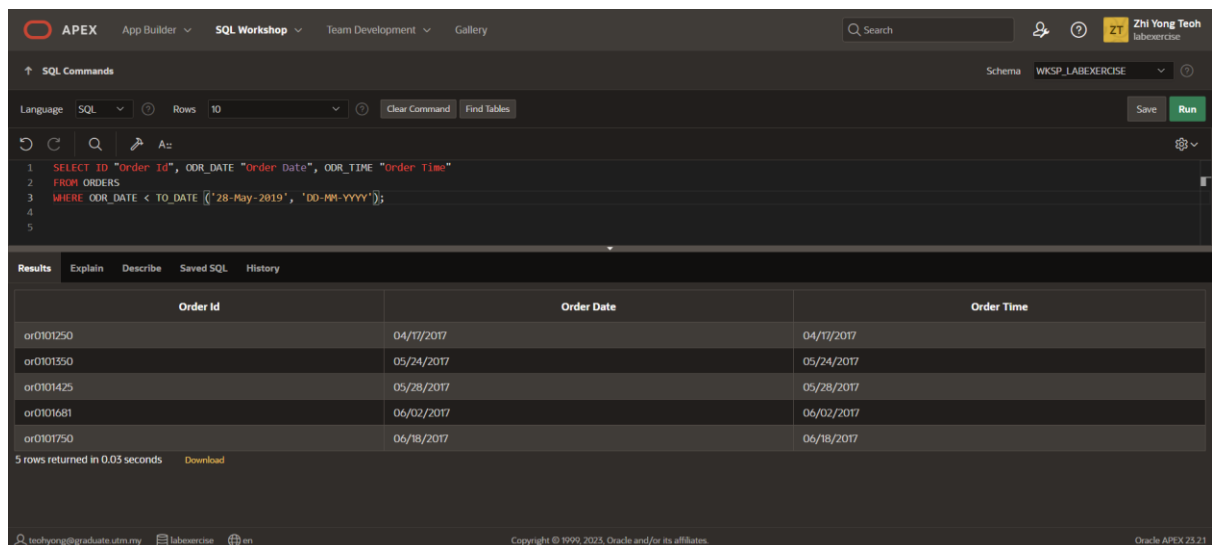
The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with the following data:

First Name	Last Name	Customer Number
Robert	Thornberry	c00001
John	Doe	c00101
Maria	Galant	c01986

3 rows returned in 0.01 seconds

3. Display the order id, date and time of all orders that were placed before the 28th of May 2019. Use an appropriate alias for your column headings.

```
SELECT ID AS "Order Id", ODR_DATE AS "Order Date", ODR_TIME AS "Order Time"  
FROM ORDERS  
WHERE ODR_DATE < TO_DATE ('28-May-2019', 'DD-MM-YYYY');
```



The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with the following data:

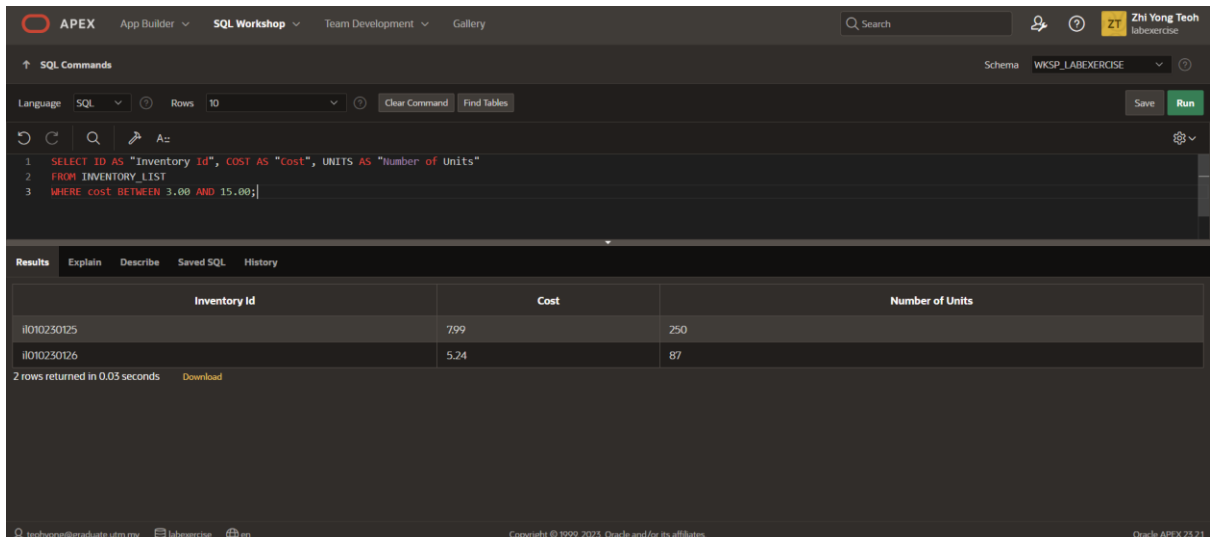
Order Id	Order Date	Order Time
or0101250	04/17/2017	04/17/2017
or0101350	05/24/2017	05/24/2017
or0101425	05/28/2017	05/28/2017
or0101681	06/02/2017	06/02/2017
or0101750	06/18/2017	06/18/2017

5 rows returned in 0.03 seconds

Part 2: Range Conditions: BETWEEN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that have a trade cost of between 3.00 and 15.00.

```
SELECT ID AS "Inventory Id", COST AS "Cost", UNITS AS "Number of Units"  
FROM INVENTORY_LIST  
WHERE cost BETWEEN 3.00 AND 15.00;
```



The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with three columns: Inventory Id, Cost, and Number of Units. Two rows are returned, corresponding to inventory items with costs between 3.00 and 15.00.

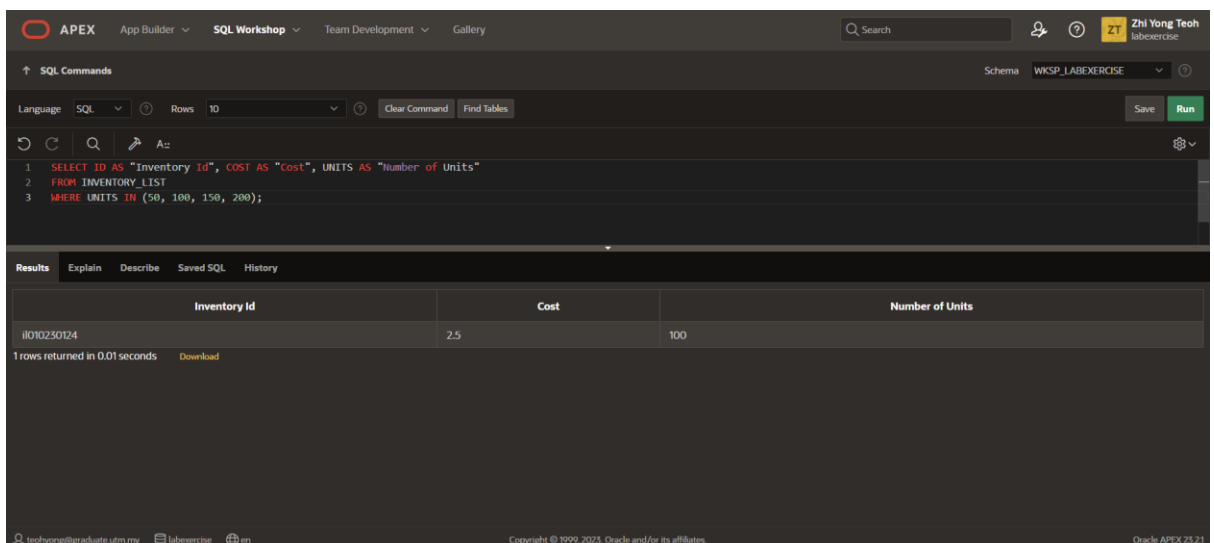
Inventory Id	Cost	Number of Units
il010230125	7.99	250
il010230126	5.24	87

2 rows returned in 0.03 seconds

Part 3: Membership Conditions: IN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that have 50, 100, 150 or 200 units in stock.

```
SELECT ID AS "Inventory Id", COST AS "Cost", UNITS AS "Number of Units"  
FROM INVENTORY_LIST  
WHERE UNITS IN (50, 100, 150, 200);
```



The screenshot shows the Oracle APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with three columns: Inventory Id, Cost, and Number of Units. One row is returned, corresponding to an inventory item with 100 units in stock.

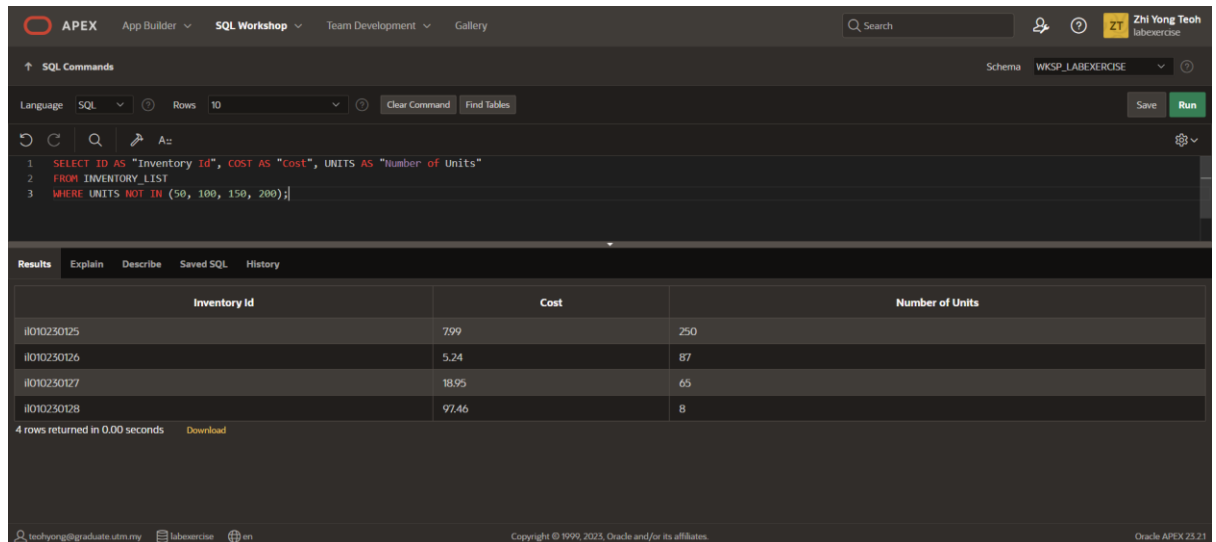
Inventory Id	Cost	Number of Units
il010230124	2.5	100

1 rows returned in 0.01 seconds

Part 4: Membership Conditions: NOT IN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that do not have 50, 100, 150 or 200 units in stock.

```
SELECT ID AS "Inventory Id", COST AS "Cost", UNITS AS "Number of Units"
FROM INVENTORY_LIST
WHERE UNITS NOT IN (50, 100, 150, 200);
```



The screenshot shows the APEX SQL Workshop interface. The SQL Commands tab is active, displaying the following query:

```
1 SELECT ID AS "Inventory Id", COST AS "Cost", UNITS AS "Number of Units"
2 FROM INVENTORY_LIST
3 WHERE UNITS NOT IN (50, 100, 150, 200);
```

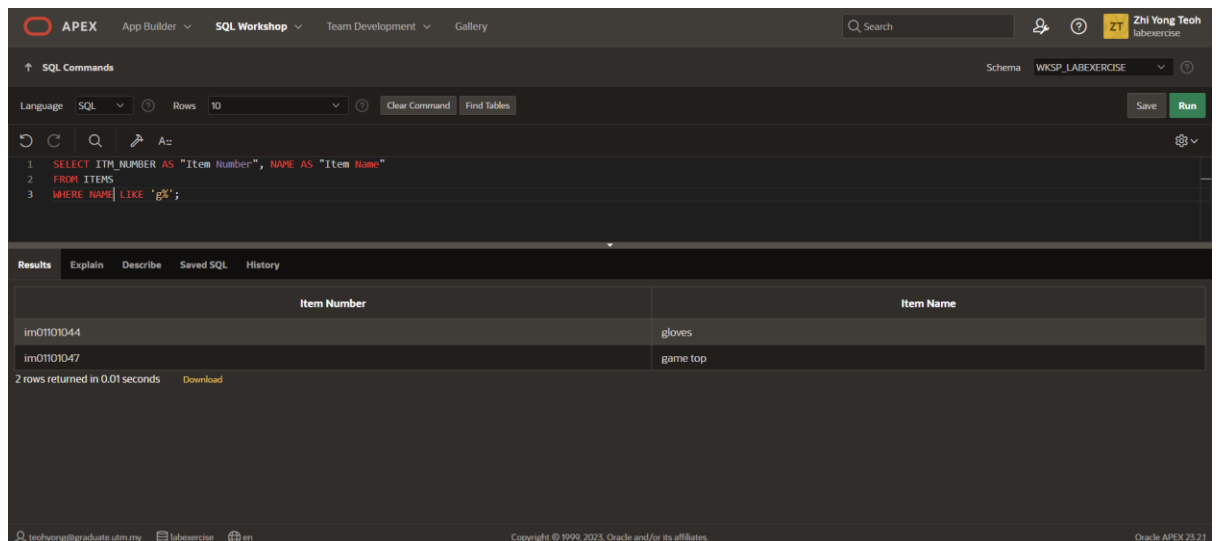
The Results tab is active, showing a table with 4 rows returned in 0.00 seconds. The table has three columns: Inventory Id, Cost, and Number of Units.

Inventory Id	Cost	Number of Units
il010230125	799	250
il010230126	5.24	87
il010230127	18.95	65
il010230128	97.46	8

Part 5: Pattern Matching: LIKE Operator

1. Display item number and name of all items that have a name that begins with g. Use an appropriate alias for your column headings.

```
SELECT ITM_NUMBER AS "Item Number", NAME AS "Item Name"
FROM ITEMS
WHERE NAME LIKE 'g%';
```



The screenshot shows the APEX SQL Workshop interface. The SQL Commands tab is active, displaying the following query:

```
1 SELECT ITM_NUMBER AS "Item Number", NAME AS "Item Name"
2 FROM ITEMS
3 WHERE NAME LIKE 'g%';
```

The Results tab is active, showing a table with 2 rows returned in 0.01 seconds. The table has two columns: Item Number and Item Name.

Item Number	Item Name
im01101044	gloves
im01101047	game top

Part 6 : Pattern Matching: Combining Wildcard Characters with the LIKE Operator

1. Display item number and name of all items that have a name that contain a lowercase o. Use an appropriate alias for your column headings.

```
SELECT ITM_NUMBER AS "Item Number", NAME AS "Item Name"  
FROM ITEMS  
WHERE NAME LIKE '_o%';
```

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 'Zhi Yong Teoh' are also visible. The 'SQL Commands' panel shows the executed query: `SELECT ITM_NUMBER AS "Item Number", NAME AS "Item Name" FROM ITEMS WHERE NAME LIKE '_o%';`. Below the command panel, the 'Results' tab is active, showing a table with two columns: 'Item Number' and 'Item Name'. The table contains one row with the values 'im01101046' and 'socks'. A status message at the bottom of the results area indicates '1 rows returned in 0.00 seconds'. The footer of the interface shows the user's email 'teohyong@graduate.utm.my', the workspace name 'labexercise', and the Oracle APEX version '23.21'.

Item Number	Item Name
im01101046	socks

DML Part 4

Section 6 Lesson 7 Exercise 2: Restricting Data Using WHERE

Limit rows using WHERE (S6L7 Objective 1)

In this exercise you will refine the data that is returned in your query by adding a WHERE clause to your SELECT statement.

Part 1: Using the NULL Conditions

1. Write a query that will display information for teams that don't receive a discount in the following format:

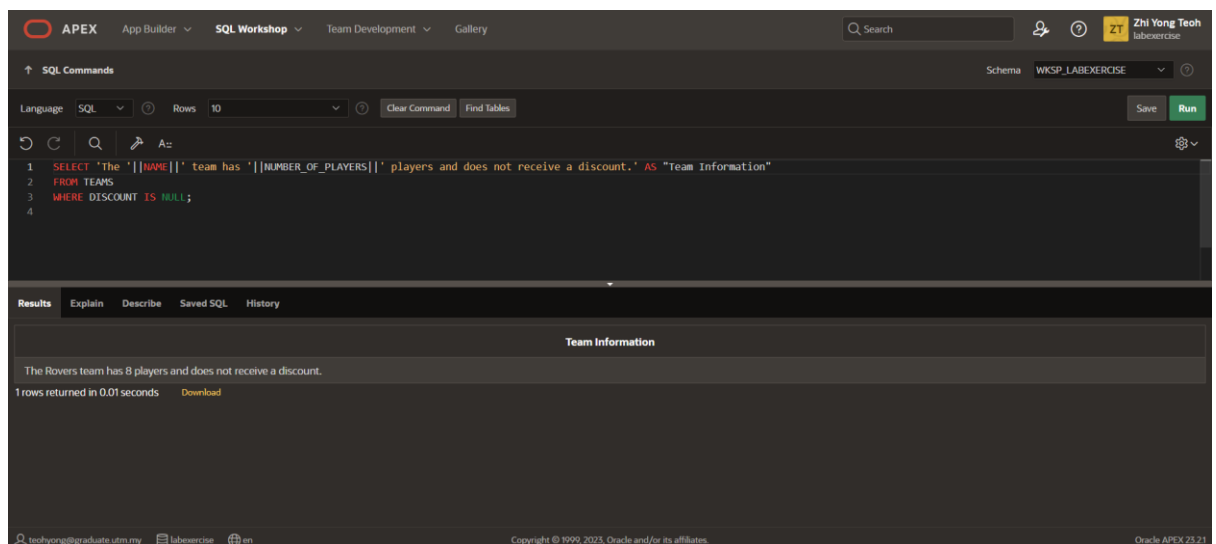
The Rovers team has 25 players and does not receive a discount.

Use Team Information as the column alias.

```
SELECT 'The '||NAME||' team has '||NUMBER_OF_PLAYERS||' players and does not receive  
a discount.' AS "Team Information"
```

```
FROM TEAMS
```

```
WHERE DISCOUNT IS NULL;
```



2. Write a query that will display information for only teams that receive a discount in the following format:

The Rockets team has 25 players and receives a discount of 10 percent.

Use Team Information as the column alias.

```
SELECT 'The '||NAME||' team has '||NUMBER_OF_PLAYERS||' players and receives a discount of '||DISCOUNT||' percent.' AS "Team Information"
```

```
FROM TEAMS
```

```
WHERE DISCOUNT IS NOT NULL;
```

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 'Zhi Yong Teoh' are on the right. The 'SQL Commands' section shows a query with line numbers 1 to 4. Below the query, the 'Results' tab is active, displaying a table titled 'Team Information' with three rows of data. The footer shows the user 'teohyong@graduate.utm.my', the workspace 'labexercise', and the Oracle APEX version '23.21'.

```
1 SELECT 'The '||NAME||' team has '||NUMBER_OF_PLAYERS||' players and receives a discount of '||DISCOUNT||' percent.' AS "Team Information"
2 FROM TEAMS
3 WHERE DISCOUNT IS NOT NULL;
4
```

Team Information
The Rockets team has 25 players and receives a discount of 10 percent.
The Celtics team has 42 players and receives a discount of 20 percent.
The Jets team has 10 players and receives a discount of 5 percent.

3 rows returned in 0.00 seconds [Download](#)

Part 2: Logical Operators: AND

1. Write a query that will display the customer number, address line 1 and postal code for customers that live in the starford area of Liverpool. Use Customer Number, Street Address and Postal Code as the column aliases.

```
SELECT CTR_NUMBER AS "Customer Number", ADDRESS_LINE_1 AS "Street Address",  
ZIP_CODE AS "Postal Code"  
FROM CUSTOMERS_ADDRESSES  
WHERE CITY = 'Liverpool' AND ADDRESS_LINE_2 = 'Starford';
```

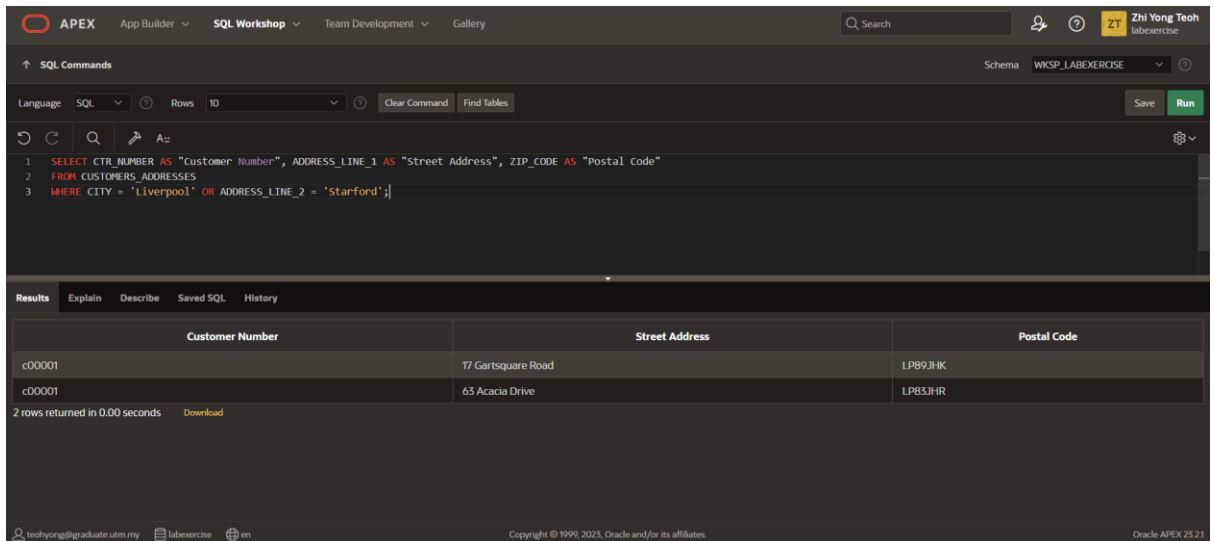
The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Zhi Yong Teoh' are on the right. The 'SQL Commands' section shows the executed query with line numbers 1, 2, and 3. Below the query, the 'Results' tab is active, displaying a table with three columns: 'Customer Number', 'Street Address', and 'Postal Code'. The table contains one row with the values 'c00001', '17 Gartsquare Road', and 'LP89JHK'. Below the table, it states '1 rows returned in 0.02 seconds' and provides a 'Download' link. The footer includes the user's email 'tyehyong@graduate.utm.my', the workspace name 'labexercise', and the Oracle APEX version '23.21'.

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK

Part 3: Logical Operators: OR

1. Write a query that will display the customer number, address line 1 and postal code for customers that live in either starford or Liverpool in general. Use Customer Number, Street Address and Postal Code as the column aliases.

```
SELECT CTR_NUMBER AS "Customer Number", ADDRESS_LINE_1 AS "Street Address",  
ZIP_CODE AS "Postal Code"  
FROM CUSTOMERS_ADDRESSES  
WHERE CITY = 'Liverpool' OR ADDRESS_LINE_2 = 'Starford';
```



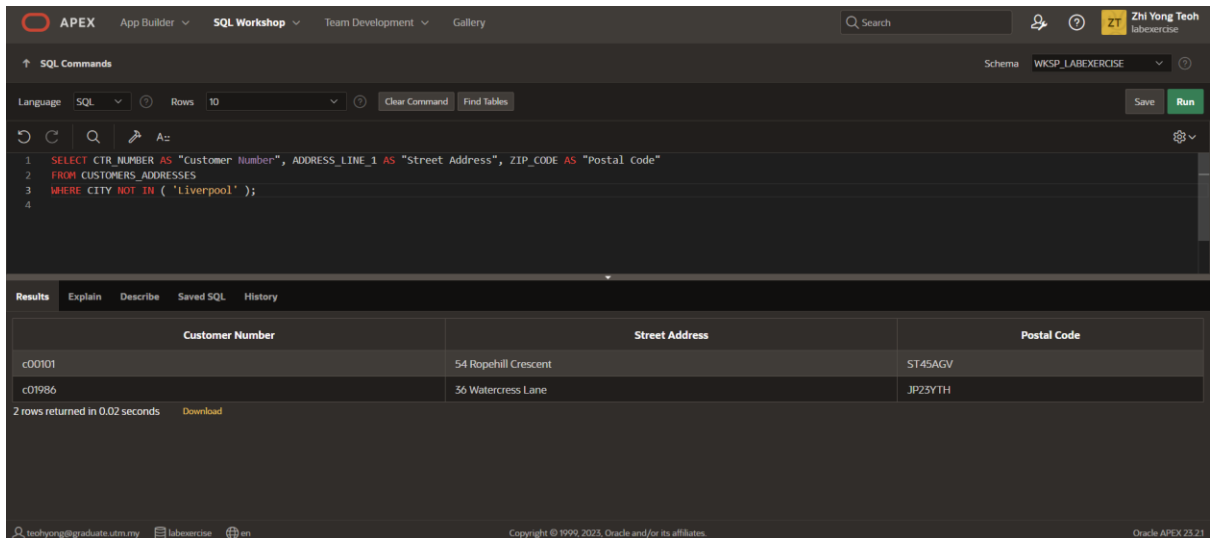
The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar is on the right. Below the navigation bar, the 'SQL Commands' section shows a query with three lines: a SELECT statement with aliases, a FROM clause, and a WHERE clause using the OR operator. The 'Results' tab is active, displaying a table with three columns: 'Customer Number', 'Street Address', and 'Postal Code'. The table contains two rows of data. Below the table, it states '2 rows returned in 0.00 seconds' and provides a 'Download' link. The footer includes the user's email, the workspace name 'labexercise', and the Oracle APEX version '23.21'.

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK
c00001	63 Acacia Drive	LP83JHR

Part 4: Logical Operators: NOT Equal To

1. Write a query that will display the customer number, address line 1 and postal code for customers that do not live in Liverpool. Use Customer Number, Street Address and Postal Code as the column aliases.

```
SELECT CTR_NUMBER AS "Customer Number", ADDRESS_LINE_1 AS "Street Address",  
ZIP_CODE AS "Postal Code"  
FROM CUSTOMERS_ADDRESSES  
WHERE CITY NOT IN ( 'Liverpool' );
```



The screenshot shows the APEX SQL Workshop interface. The SQL Commands tab is active, displaying the following query:

```
1 SELECT CTR_NUMBER AS "Customer Number", ADDRESS_LINE_1 AS "Street Address", ZIP_CODE AS "Postal Code"  
2 FROM CUSTOMERS_ADDRESSES  
3 WHERE CITY NOT IN ( 'Liverpool' );  
4
```

The Results tab is also active, showing a table with 2 rows and 3 columns: Customer Number, Street Address, and Postal Code.

Customer Number	Street Address	Postal Code
c00101	54 Ropehill Crescent	ST4SAGV
c01986	36 Watercress Lane	JP23YTH

2 rows returned in 0.02 seconds [Download](#)

The footer of the interface includes the user email teohyong@graduate.utm.my, the workspace name [labexercise](#), and the Oracle APEX version 23.21.

DML2 Part 5

Section 6 Lesson 8 Exercise 1: Sorting Data Using ORDER BY

Use the ORDER BY Clause to Sort SQL Results (S6L8 Objective 1)

In this exercise you will sort the order of the data that is returned in your query by adding an ORDER BY clause to the end of your SELECT statement.

1. Display the team name and number of players alphabetically in order of team name. Use an appropriate alias for your column headings.

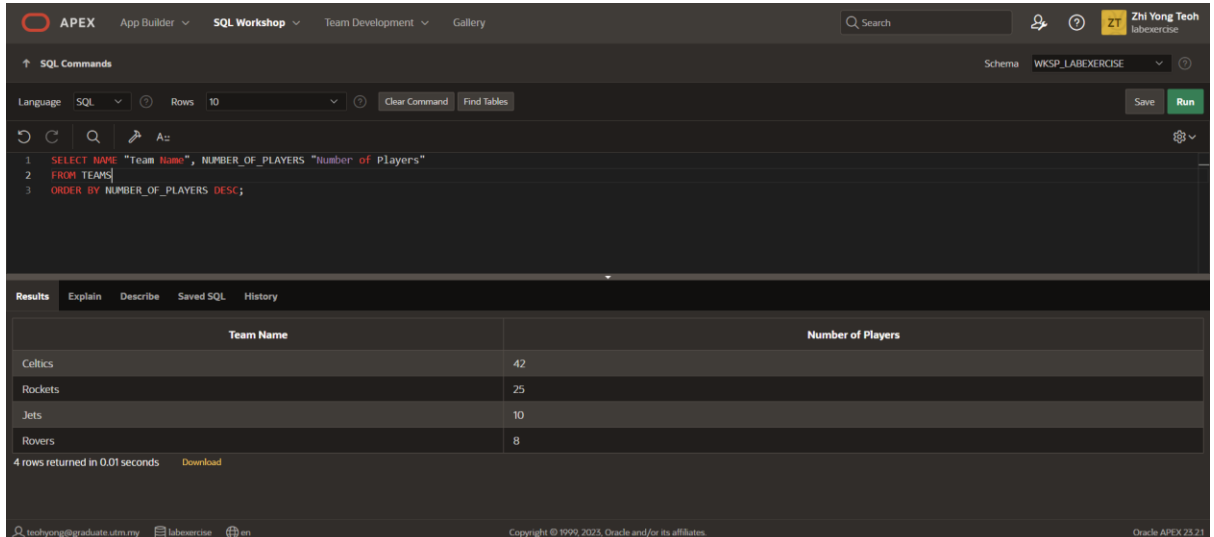
```
SELECT NAME AS "Team Name", NUMBER_OF_PLAYERS AS "Number of Players"  
FROM TEAMS  
ORDER BY NAME;
```

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 'Zhi Yong Teoh' are on the right. The 'SQL Commands' section shows the query: `SELECT NAME AS "Team Name", NUMBER_OF_PLAYERS AS "Number of Players" FROM TEAMS ORDER BY NAME;`. Below the query, the 'Results' tab is active, displaying a table with 4 rows. The table has two columns: 'Team Name' and 'Number of Players'. The rows are: Celtics (42), Jets (10), Rockets (25), and Rovers (8). The status bar at the bottom indicates '4 rows returned in 0.00 seconds' and provides a 'Download' link.

Team Name	Number of Players
Celtics	42
Jets	10
Rockets	25
Rovers	8

2. Display the team name and number of players in descending order of number of players. Use an appropriate alias for your column headings.

```
SELECT NAME "Team Name", NUMBER_OF_PLAYERS "Number of Players"  
FROM TEAMS  
ORDER BY NUMBER_OF_PLAYERS DESC;
```

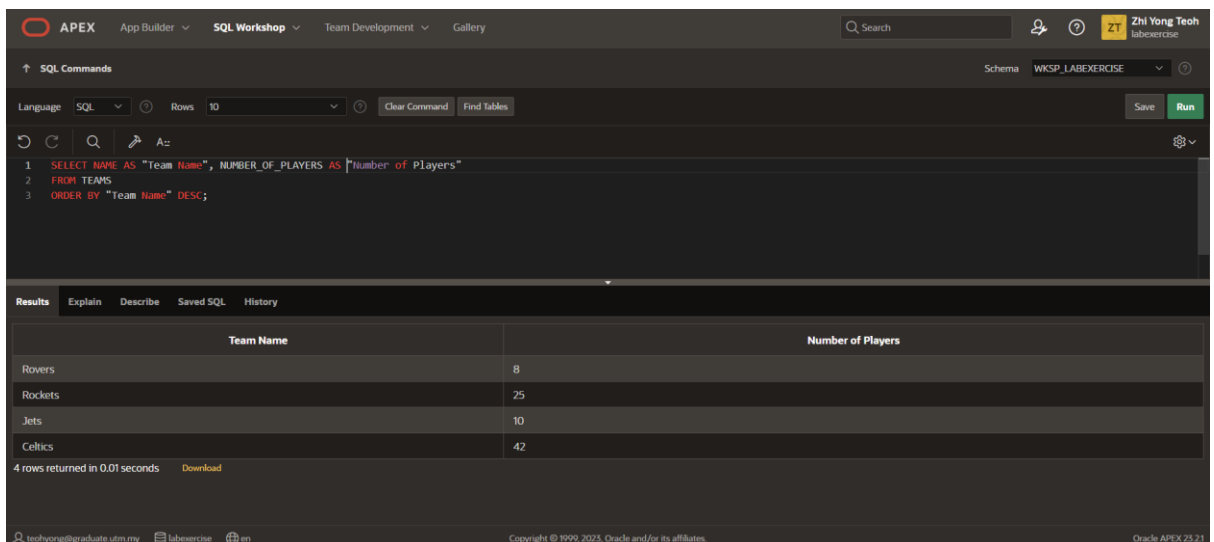


The screenshot shows the APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with two columns: Team Name and Number of Players. The data is sorted in descending order of the number of players.

Team Name	Number of Players
Celtics	42
Rockets	25
Jets	10
Rovers	8

3. Display the team name and number of players alphabetically in order of team name. Use Team Name for the name alias and Players for the number of players. Sort the output in descending order of name using the alias in the ORDER BY clause.

```
SELECT NAME AS "Team Name", NUMBER_OF_PLAYERS AS "Number of Players"  
FROM TEAMS  
ORDER BY "Team Name" DESC;
```



The screenshot shows the APEX SQL Workshop interface. The SQL command is entered in the editor and executed. The results are displayed in a table with two columns: Team Name and Number of Players. The data is sorted in descending order of the team name.

Team Name	Number of Players
Rovers	8
Rockets	25
Jets	10
Celtics	42

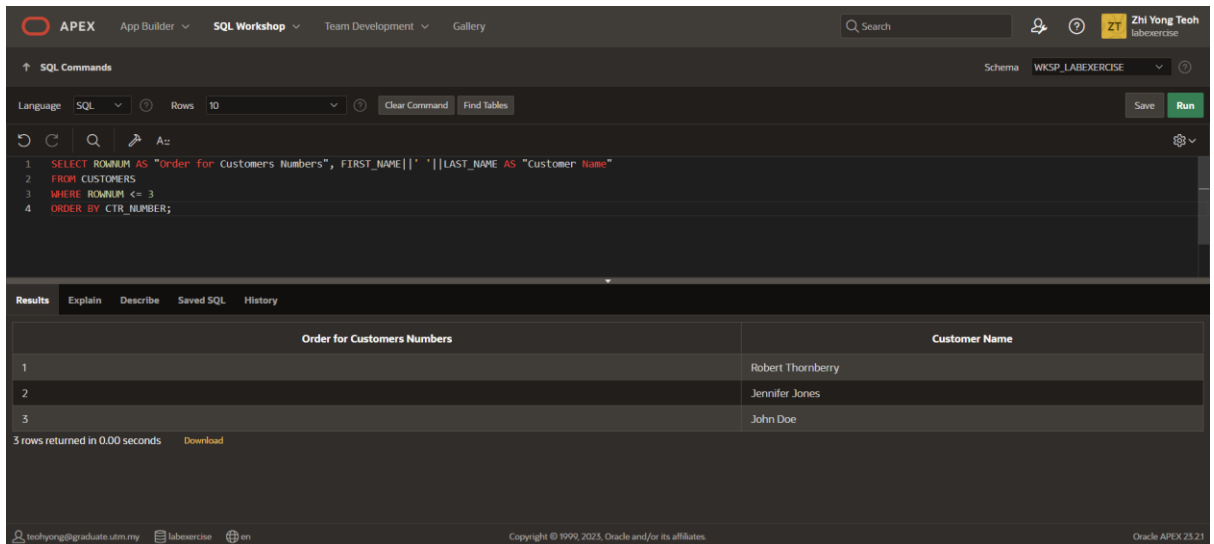
DML2 Part 6

Section 6 Lesson 8 Exercise 2: Sorting Data Using ORDER BY

Part 1 : TOP-N-ANALYSIS (S6L8 Objective 3)

1. The customers are numbered sequentially with each new customer being assigned a higher customer number. Use TOP-N-ANALYSIS to only show the First and last name of the first three customers. Show the customers first and last name in the same column using Customer Name as the column alias.

```
SELECT ROWNUM AS "Order for Customers Numbers", FIRST_NAME||' '||LAST_NAME  
AS "Customer Name"  
FROM CUSTOMERS  
WHERE ROWNUM <= 3  
ORDER BY CTR_NUMBER;
```



The screenshot displays the APEX SQL Workshop interface. The SQL Commands pane shows the following query:

```
1 SELECT ROWNUM AS "Order for Customers Numbers", FIRST_NAME||' '||LAST_NAME AS "Customer Name"  
2 FROM CUSTOMERS  
3 WHERE ROWNUM <= 3  
4 ORDER BY CTR_NUMBER;
```

The Results pane shows the output of the query:

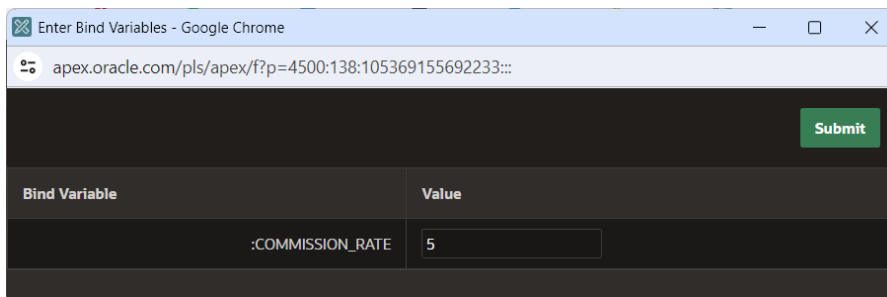
Order for Customers Numbers	Customer Name
1	Robert Thornberry
2	Jennifer Jones
3	John Doe

3 rows returned in 0.00 seconds. [Download](#)

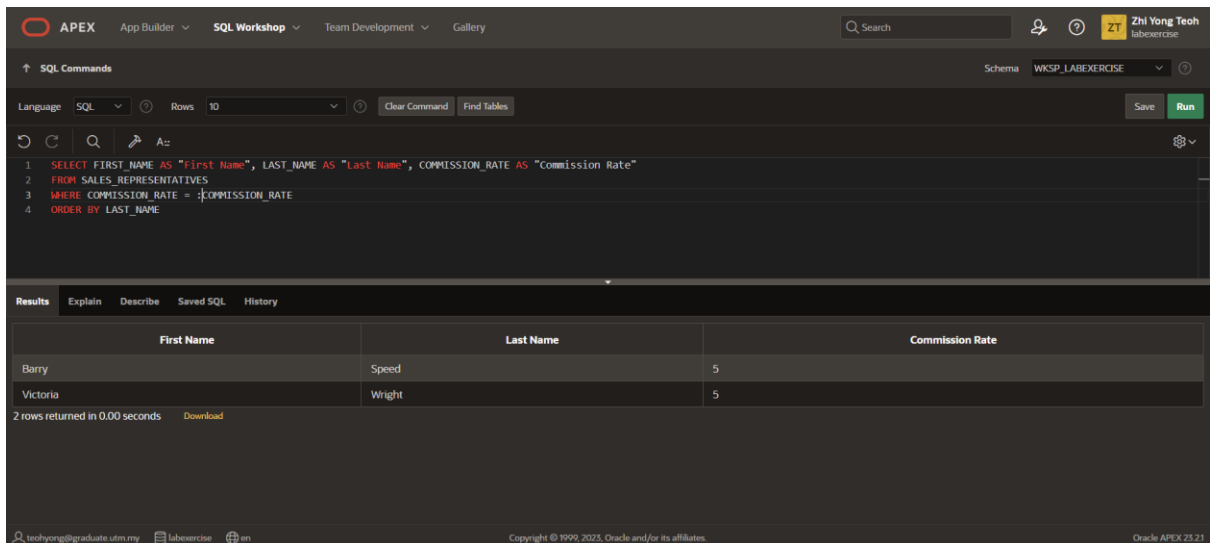
Part 2 : Using a Substitution Variable (S6L8 Objective 4)

1. Use a substitution variable that will allow you to enter the commission rate for the sales representatives. The first and last names should be displayed to screen for any sales representatives that earn that commission rate and the output should be ordered by their last name. Use an appropriate alias for your column headings.

```
SELECT FIRST_NAME AS "First Name", LAST_NAME AS "Last Name",  
COMMISSION_RATE AS "Commission Rate"  
FROM SALES_REPRESENTATIVES  
WHERE COMMISSION_RATE = :COMMISSION_RATE  
ORDER BY LAST_NAME
```



Bind Variable	Value
:COMMISSION_RATE	5



SQL Commands

```
1 SELECT FIRST_NAME AS "First Name", LAST_NAME AS "Last Name", COMMISSION_RATE AS "Commission Rate"  
2 FROM SALES_REPRESENTATIVES  
3 WHERE COMMISSION_RATE = :COMMISSION_RATE  
4 ORDER BY LAST_NAME
```

Results

First Name	Last Name	Commission Rate
Barry	Speed	5
Victoria	Wright	5

2 rows returned in 0.00 seconds [Download](#)