



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
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Database-SECD 2523

Lab 3:DML 2 -Part 1

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Section 6 Lesson 6 Exercise 1: Retrieving Data Using SELECT

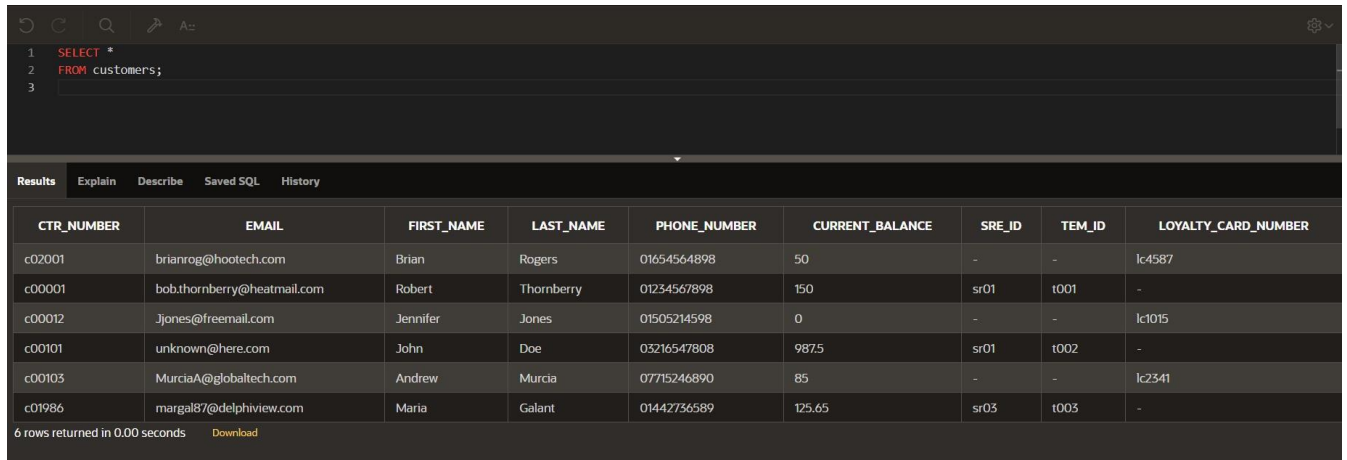
Write and Execute SELECT statements (S6L6 Objective 2)

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.



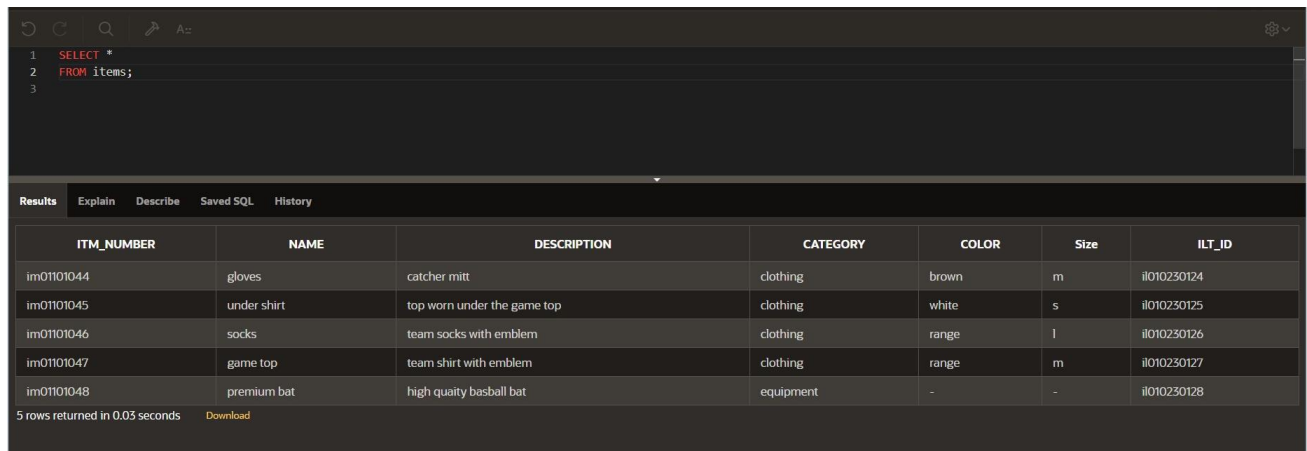
```
1 SELECT *
2 FROM customers;
3
```

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
c02001	brianrog@hootech.com	Brian	Rogers	01654564898	50	-	-	lc4587
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	987.5	sr01	t002	-
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-

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

2. teams.

3. items



The screenshot shows a SQL query editor with the following query:

```
1 SELECT *  
2 FROM items;  
3
```

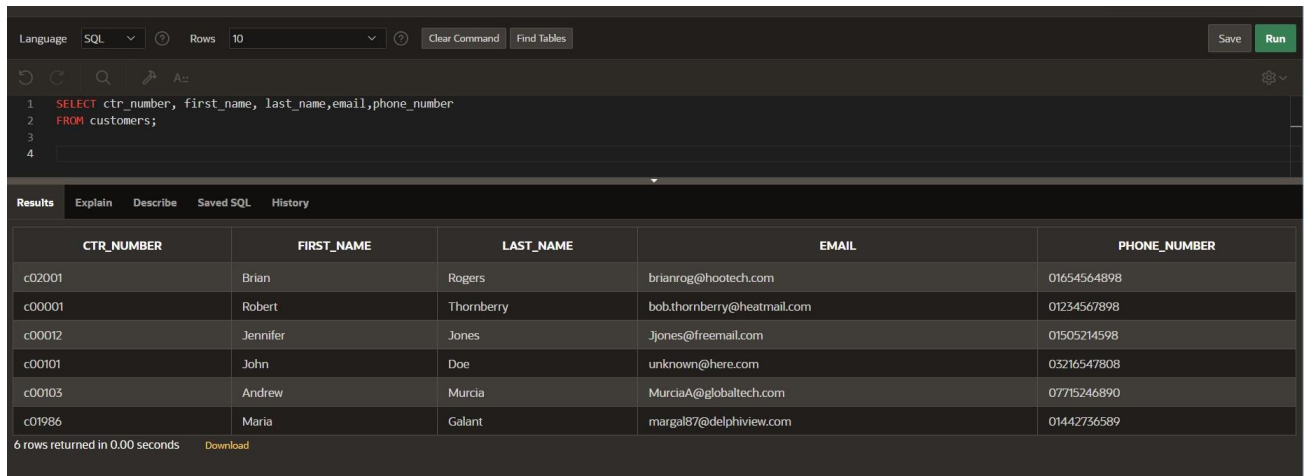
Below the query editor, the 'Results' tab is active, displaying a table with 7 columns: ITM_NUMBER, NAME, DESCRIPTION, CATEGORY, COLOR, Size, and ILT_ID. The table contains 5 rows of data. At the bottom left, it states '5 rows returned in 0.03 seconds' and includes a 'Download' link.

ITM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID
im01101044	gloves	catcher mitt	clothing	brown	m	il010230124
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125
im01101046	socks	team socks with emblem	clothing	range	l	il010230126
im01101047	game top	team shirt with emblem	clothing	range	m	il010230127
im01101048	premium bat	high quality baseball bat	equipment	-	-	il010230128

5 rows returned in 0.03 seconds [Download](#)

Part 2: Selecting Specific Columns

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



The screenshot shows a SQL IDE interface. The command window contains the following SQL query:

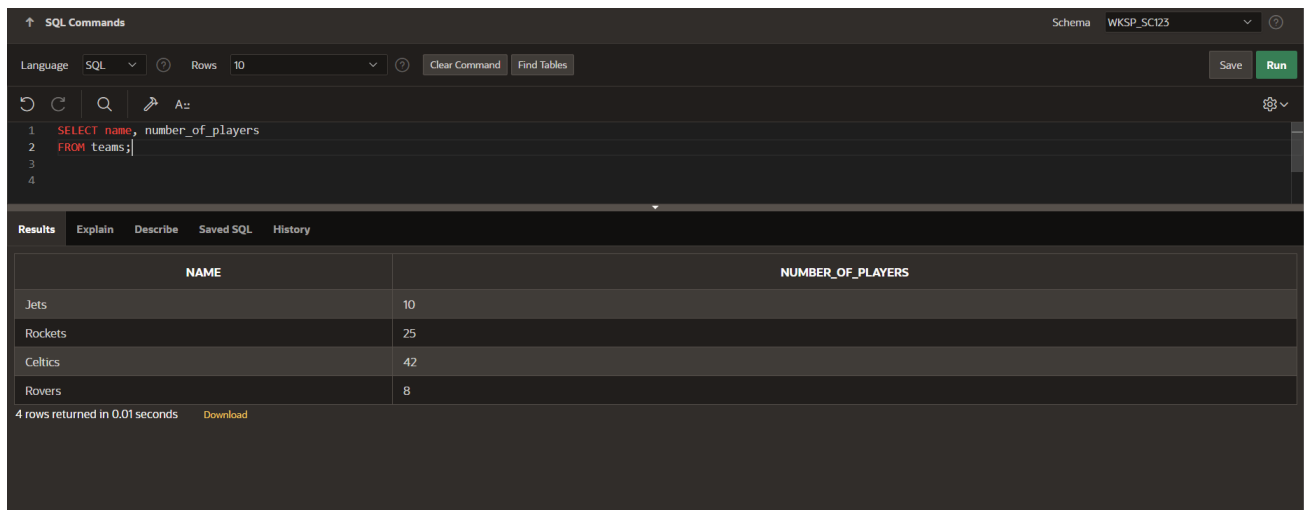
```
1 SELECT ctr_number, first_name, last_name, email, phone_number
2 FROM customers;
3
4
```

The results pane displays a table with 6 rows and 5 columns:

CTR_NUMBER	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
c02001	Brian	Rogers	brianrog@hooitech.com	01654564898
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	Galant	margal87@delphiview.com	01442736589

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

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



The screenshot shows a SQL IDE interface. The command window contains the following SQL query:

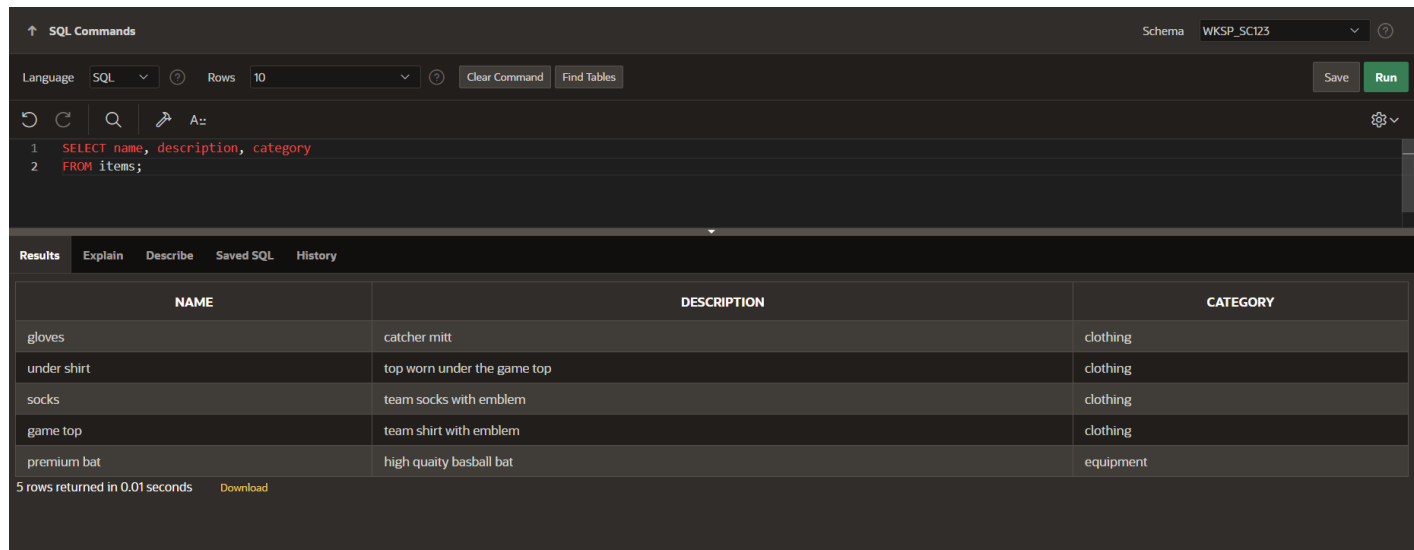
```
1 SELECT name, number_of_players
2 FROM teams;
3
4
```

The results pane displays a table with 4 rows and 2 columns:

NAME	NUMBER_OF_PLAYERS
Jets	10
Rockets	25
Celtics	42
Rovers	8

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

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



The screenshot shows an SQL IDE interface. At the top, there's a 'SQL Commands' section with a 'Schema' dropdown set to 'WKSP_SC123'. Below this, there's a 'Language' dropdown set to 'SQL', a 'Rows' limit of '10', and buttons for 'Clear Command', 'Find Tables', 'Save', and 'Run'. The main area contains a SQL query:

```
1 SELECT name, description, category
2 FROM items;
```

Below the query, there's a 'Results' tab with sub-tabs for 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab is active, showing a table with 5 rows. The table has three columns: 'NAME', 'DESCRIPTION', and 'CATEGORY'.

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 quaiity baseball bat	equipment

At the bottom of the results, it says '5 rows returned in 0.01 seconds' and there's a 'Download' link.

Database-SECD 2523

Lab 3:DML 2 -Part 2

NAME :YASEEN MOHAMED

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Write and Execute SELECT statements (S6L6 Objective 2)

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.
2. Obl is considering giving a gift card to all its customers of 5.00 that can be used to

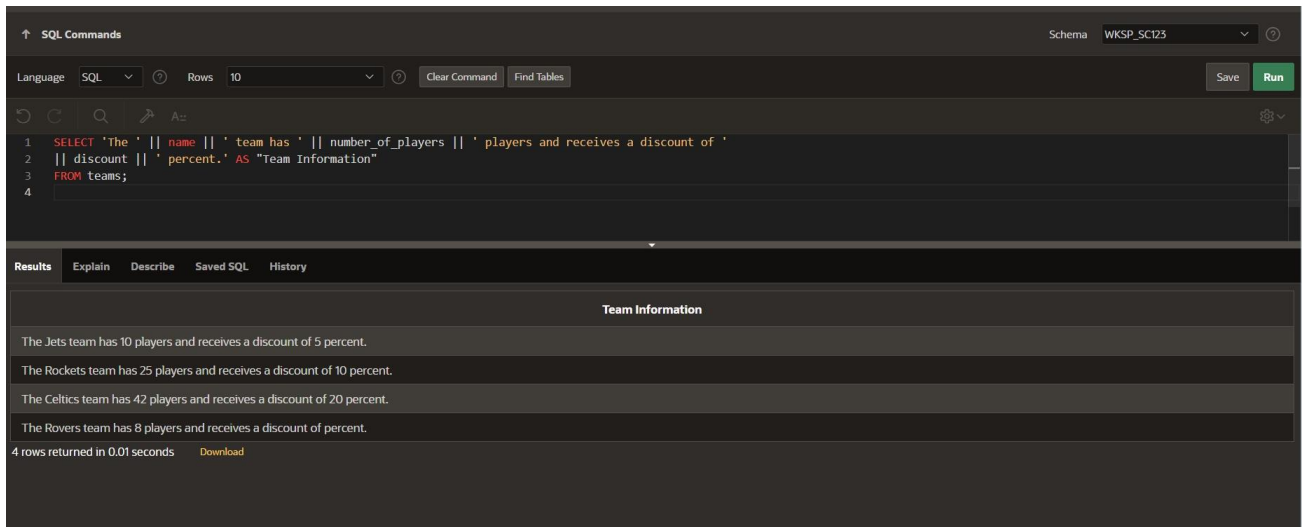
reduce their current balance. Write a query that will show the customers first name, last name, customer number, current balance and the value of their balance minus the gift value.

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.



The screenshot shows a SQL IDE interface. The top bar indicates the schema is 'WKSP_SC123'. The SQL editor contains the following query:

```
1 SELECT 'The ' || name || ' team has ' || number_of_players || ' players and receives a discount of '
2 || discount || ' percent.' AS "Team Information"
3 FROM teams;
4
```

The results pane shows the output of the query, titled 'Team Information'. It displays four rows of text, each representing a team's information. The last row, 'The Rovers team has 8 players and receives a discount of percent.', does not show a discount value.

Team Information
The Jets team has 10 players and receives a discount of 5 percent.
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 Rovers team has 8 players and receives a discount of percent.

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

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

Because it contains zero value, so it does not get any discount

Database-SECD 2523

Lab 3:DML 2 -Part 1

NAME :YASEEN MOHAMED

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Part 1: Using the WHERE Clause.

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

The screenshot shows the SQL Workshop interface with the following SQL command:

```
1 SELECT*
2 FROM customers
3 WHERE ctr_number = 'c01986';
```

The results tab displays the following data:

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-

1 rows returned in 0.03 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.

The screenshot shows the SQL Workshop interface with the following SQL command:

```
1 SELECT first_name AS "First Name", last_name AS "Last Name", current_balance AS "Balance"
2 FROM customers
3 WHERE current_balance > 100;
```

The results tab displays the following data:

First Name	Last Name	Balance
Robert	Thornberry	150
John	Doe	987.5
Maria	Galant	125.65

3 rows returned in 0.00 seconds

- 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.

The screenshot shows a SQL interface with the following query:

```
1 SELECT id AS "Order ID",
2 odr_date AS "Date",
3 TO_CHAR(odr_time, 'HH24:MI:SS') AS "Order Time"
4 FROM orders
5 WHERE odr_date < TO_DATE('2019-05-28', 'YYYY-MM-DD');
```

The results table displays 5 rows of order data:

Order ID	Date	Order Time
or0101250	04/17/2017	08:32:30
or0101350	05/24/2017	10:30:35
or0101425	05/28/2017	12:30:00
or0101681	06/02/2017	14:55:30
or0101750	06/18/2017	09:05:00

5 rows returned in 0.03 seconds

Part 2: Range Conditions: BETWEEN Operator

- 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.

The screenshot shows a SQL interface with the following query:

```
1 SELECT id AS "Inventory ID",
2 cost,
3 units AS "Number of units"
4 FROM inventory_list
5 WHERE cost BETWEEN 3.00 AND 15.00;
```

The results table displays 2 rows of inventory data:

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.

The screenshot shows a SQL IDE interface with the following components:

- SQL Commands Panel:** Contains the query:

```
1 SELECT id AS "Inventory ID",  
2 cost,  
3 units AS "Number of units"  
4 FROM inventory_list  
5 WHERE units IN (50,100,150,200)
```
- Results Panel:** Displays a table with the following data:

Inventory ID	COST	Number of units
il010230124	2.5	100
- Footer:** Indicates "1 rows returned in 0.01 seconds" and provides a "Download" link.

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.

The screenshot shows a SQL IDE interface with the following components:

- SQL Commands Panel:** Contains the query:

```
1 SELECT id AS "Inventory ID", cost, units AS "Number of units"  
2 FROM inventory_list  
3 WHERE units NOT IN (50,100,150,200)
```
- Results Panel:** Displays a table with the following data:

Inventory ID	COST	Number of units
il010230125	7.99	250
il010230126	5.24	87
il010230127	18.95	65
il010230128	97.46	8
- Footer:** Indicates "4 rows returned in 0.03 seconds" and provides a "Download" link.

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.

The screenshot shows the SQL Developer interface. The top bar indicates the schema is WKSP_SC123. The SQL Commands window contains the following query:

```
1 SELECT item_number AS "Item Number", name
2 FROM items
3 WHERE name LIKE 'g%';
```

The Results window shows the output of the query:

Item Number	NAME
im01101044	gloves
im01101047	game top

2 rows returned in 0.03 seconds

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.

The screenshot shows the SQL Developer interface. The top bar indicates the schema is WKSP_SC123. The SQL Commands window contains the following query:

```
1 SELECT item_number AS "Item Number", name
2 FROM items
3 WHERE name LIKE '%o%';
```

The Results window shows the output of the query:

Item Number	NAME
im01101046	socks

1 rows returned in 0.03 seconds

Database-SECD 2523

Lab 3:DML 2 -Part 4

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LECTURER: DR NOOR HIDAYAH ZAKARIA

Section 6 Lesson 7 Exercise 2: Restricting Data Using WHERE

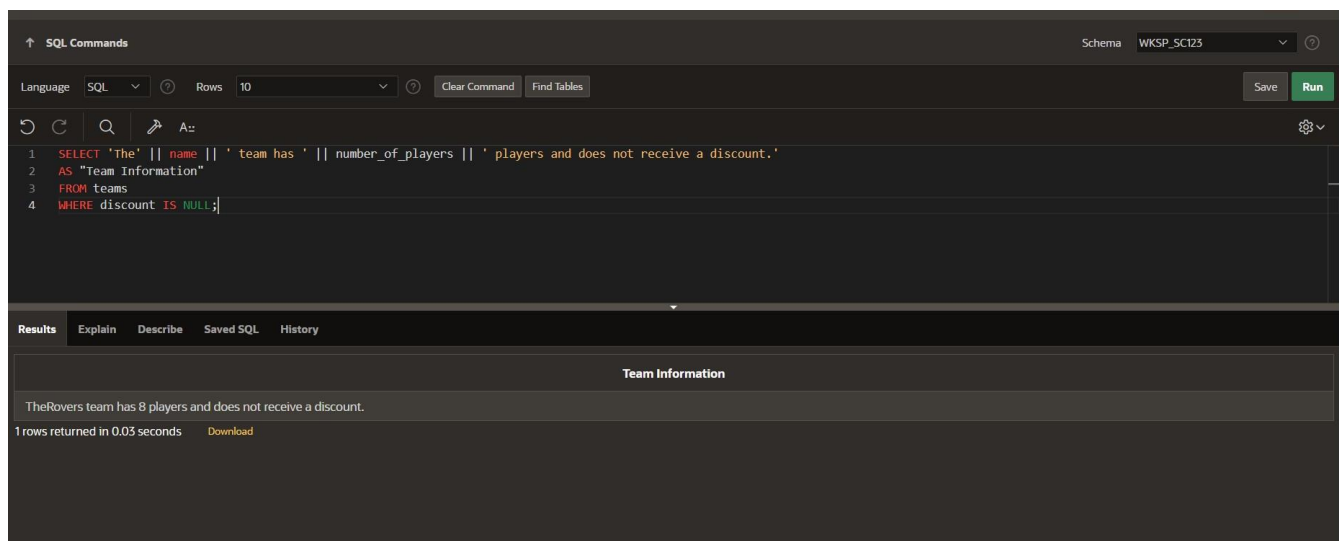
Limit rows using WHERE (S6L7 Objective 1)

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.



The screenshot shows a SQL IDE interface. At the top, there's a 'SQL Commands' tab. Below it, a toolbar includes 'Language' (set to SQL), 'Rows' (set to 10), 'Clear Command', and 'Find Tables'. The main editor area contains the following SQL query:

```
1 SELECT 'The' || name || ' team has ' || number_of_players || ' players and does not receive a discount.'
2 AS "Team Information"
3 FROM teams
4 WHERE discount IS NULL;
```

Below the editor, there's a 'Results' tab. The results are displayed in a table with the alias 'Team Information'. The table contains one row: 'TheRovers team has 8 players and does not receive a discount.' Below the table, it says '1 rows returned in 0.03 seconds' and there is a 'Download' link.

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.

SQL Commands

Schema: WKSP_SC123

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```

1 SELECT 'The ' || name || ' team has ' || number_of_players || ' players and receives a discount of 10
2 percent.' AS "Team Information"
3 FROM teams
4 WHERE discount IS NOT NULL;

```

Results Explain Describe Saved SQL History

Team Information

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

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

The Celtics team has 42 players and receives a discount of 10 percent.

3 rows returned in 0.01 seconds Download

Part 2: Logical Operators: AND

- 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.

SQL Commands

Schema: WKSP_SC123

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```

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 = 'Liverpool' AND address_line_2 = 'Starford';

```

Results Explain Describe Saved SQL History

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK

1 rows returned in 0.04 seconds Download

Part 3: Logical Operators: OR

- 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.

SQL Commands

Schema: WKSP_SC123

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```

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 = 'Liverpool' OR address_line_2 = 'Starford';

```

Results Explain Describe Saved SQL History

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

2 rows returned in 0.03 seconds Download

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.

SQL Commands

Schema: WKSP_SC123

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```

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');

```

Results Explain Describe Saved SQL History

Customer Number	Street Address	Postal Code
c00101	54 Ropehill Crescent	ST45AGV
c01986	36 Watercress Lane	JP23YTH

2 rows returned in 0.01 seconds Download

Database-SECD 2523

Lab 3:DML 2 -Part 5

NAME :YASEEN MOHAMED

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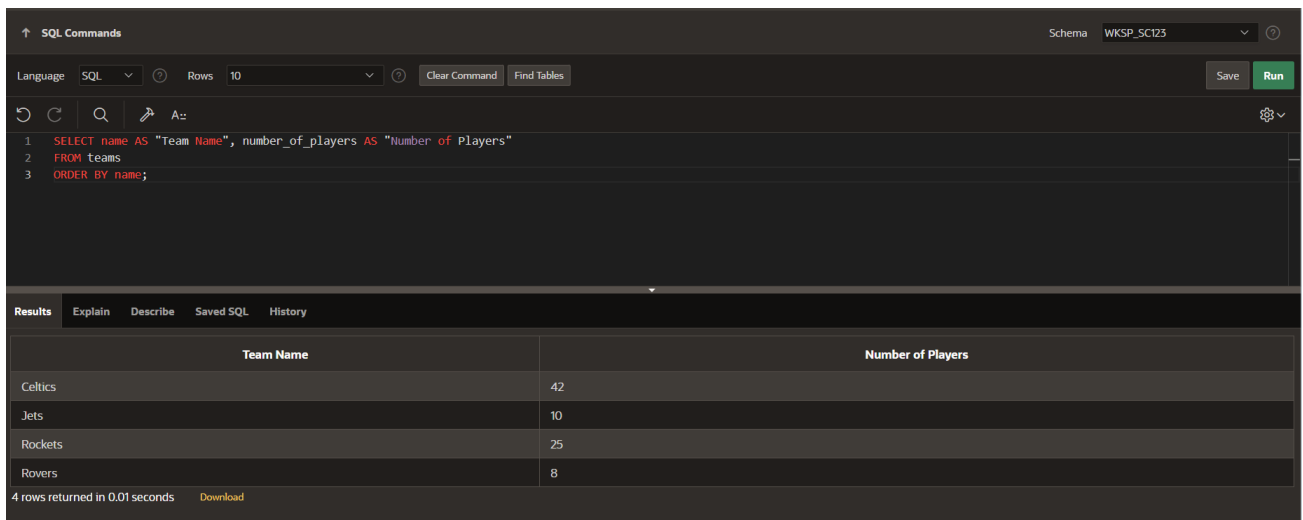
LECTURER: DR NOOR HIDAYAH ZAKARIA

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.



The screenshot shows a SQL interface with the following SQL command:

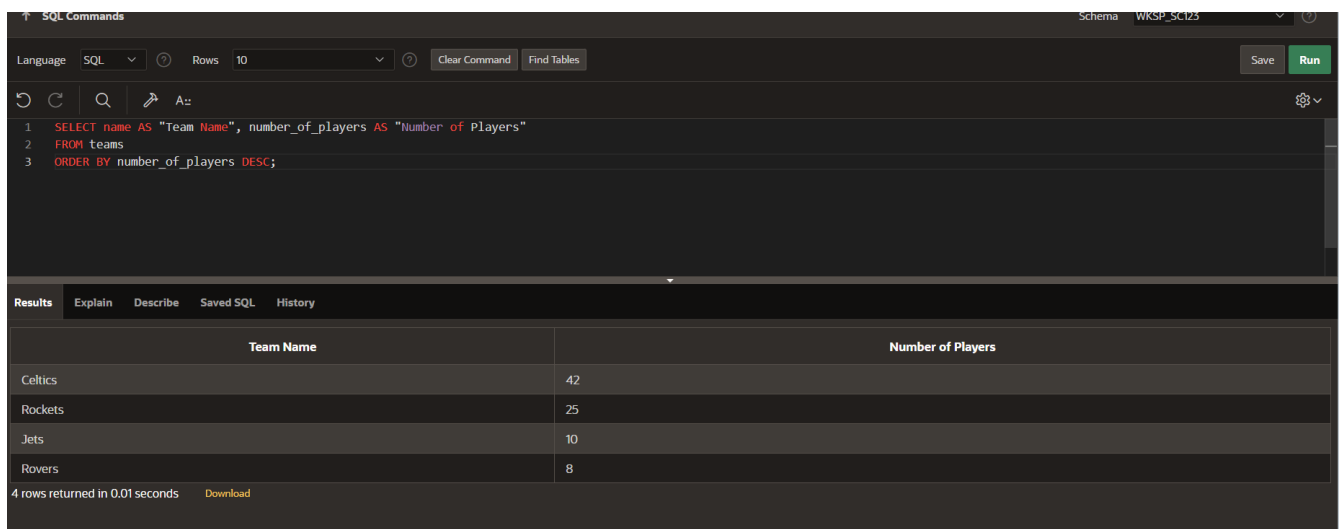
```
1 SELECT name AS "Team Name", number_of_players AS "Number of Players"
2 FROM teams
3 ORDER BY name;
```

The results are displayed in a table with the following data:

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

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

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



The screenshot shows a SQL interface with the following SQL command:

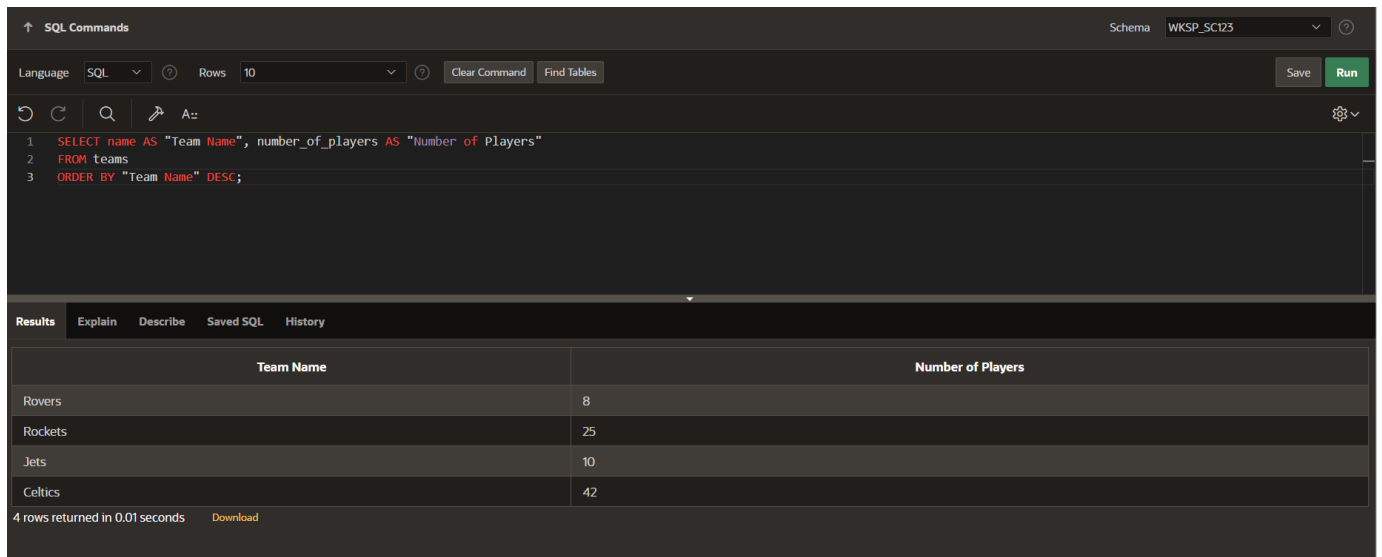
```
1 SELECT name AS "Team Name", number_of_players AS "Number of Players"
2 FROM teams
3 ORDER BY number_of_players DESC;
```

The results are displayed in a table with the following data:

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

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

- 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.



The screenshot shows an SQL IDE interface. At the top, there's a 'SQL Commands' tab. Below it, a 'Schema' dropdown is set to 'WKSP_SC123'. The 'Language' is set to 'SQL' and 'Rows' is set to '10'. There are buttons for 'Clear Command' and 'Find Tables'. A 'Save' button and a green 'Run' button are on the right. The main area contains a SQL query:

```
1 SELECT name AS "Team Name", number_of_players AS "Number of Players"
2 FROM teams
3 ORDER BY "Team Name" DESC;
```

Below the query, there's a 'Results' tab. The results are displayed in a table with two columns: 'Team Name' and 'Number of Players'. The data is sorted in descending order of 'Team Name'.

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

At the bottom of the results, it says '4 rows returned in 0.01 seconds' and there is a 'Download' link.

Database-SECD 2523

Lab 3:DML 2 -Part 6

NAME :YASEEN MOHAMED

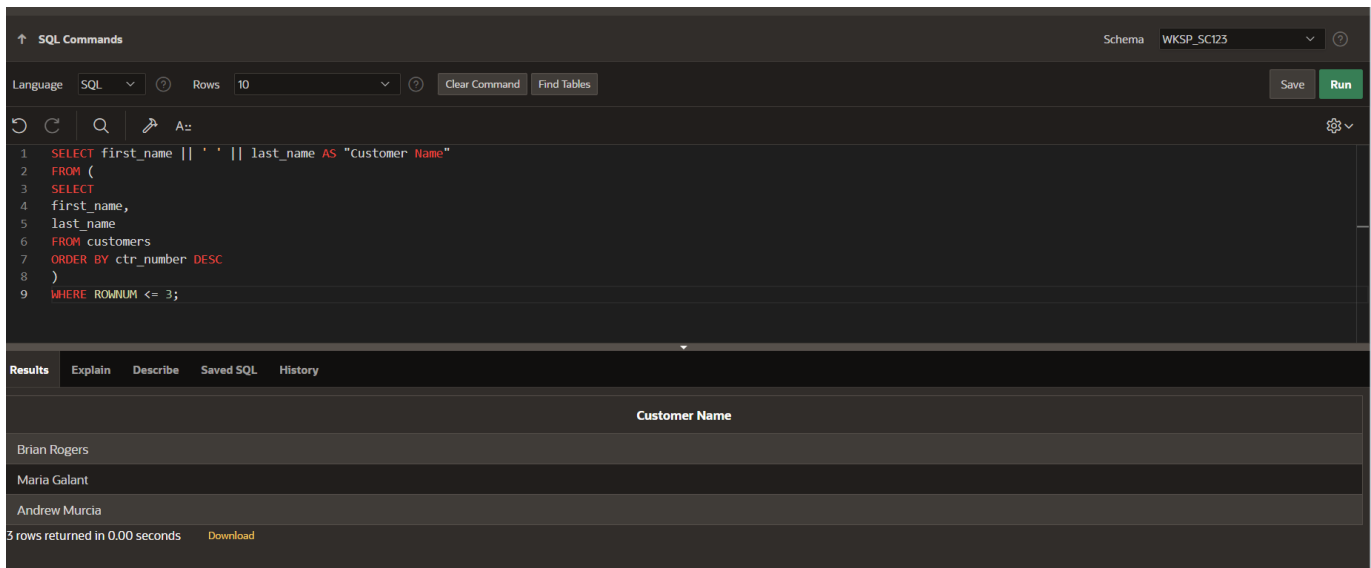
MATRIC :A22EC4016

LECTURER: DR NOOR HIDAYAH ZAKARIA

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.



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

```
1 SELECT first_name || ' ' || last_name AS "Customer Name"
2 FROM (
3 SELECT
4 first_name,
5 last_name
6 FROM customers
7 ORDER BY ctr_number DESC
8 )
9 WHERE ROWNUM <= 3;
```

The 'Results' tab is also visible, showing the output of the query:

Customer Name
Brian Rogers
Maria Galant
Andrew Murcia

3 rows returned in 0.00 seconds

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.

Bind Variable	Value
:COMMISSION_RATE	10

↑ SQL Commands

Schema WKSP_SC123

Language SQL Rows 10 Clear Command Find Tables Save Run

↺ ↻ 🔍 ↵ A:: ⚙️

```
1 SELECT first_name AS "First Name", last_name AS "Last Name", commission_rate AS "Commision Rate"
2 FROM sales_representatives
3 WHERE commission_rate= :commission_rate
4 ORDER BY last_name;
```

Results Explain Describe Saved SQL History

First Name	Last Name	Commision Rate
Charles	Raymond	10

1 rows returned in 0.02 seconds Download