

Lab 3: SQL 3 – Data Manipulation Language 2

SECD2523 - Database

Universiti Teknologi Malaysia

Objective:

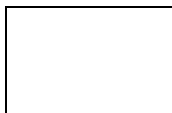
1. To retrieve data that is stored in the database system by using a SELECT method
2. To refine the data that is returned to query by adding a WHERE clause to the SELECT statement.
3. To sort the order of the data that is returned to the query by adding an ORDER BY clause to the end of the SELECT statement.

Reference material: Computer Networking: A Top-Down Approach, 7th ed., J.F. Kurose and K.W. Ross.

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Metric No : A22EC0097

Section : 06



Mark

EXERCISE 1: Retrieving Data Using SELECT

Part 1: Retrieving all columns from a table

Using the SELECT * statement show all data stored in the following table

1. customers.

SQL Worksheet									
1 SELECT * FROM CUSTOMERS									
2									
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	jones@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	-	
c02001	brianrog@hootech.com	Brian	Rogers	01654564898	50	-	-	lc4587	

2. teams.

SQL Worksheet			
1 SELECT * FROM TEAMS			
2			
ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
t001	Rockets	25	10
t002	Celtics	42	20
t003	Rovers	8	-
t004	Jets	10	5

3. Items.

SQL Worksheet

1 `SELECT * FROM ITEMS`

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 quaiity baseball bat	equipment	-	-	il010230128

Download CSV

5 rows selected.

Part 2: Selecting Specific Columns

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

SQL Worksheet

1 `SELECT CTR_NUMBER, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER`
2 `FROM CUSTOMERS;`

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

Download CSV

6 rows selected.

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

SQL Worksheet

```
1 v SELECT NAME, NUMBER_OF_PLAYERS
2 FROM TEAMS;
```

NAME	NUMBER_OF_PLAYERS
Rockets	25
Celtics	42
Rovers	8
Jets	10

[Download CSV](#)

4 rows selected.

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

SECD2523-06/lab/Lab x SQL Worksheet x +

← → ↻ livesql.oracle.com/apex/f?p=5... ⌵ 🔍 ☆ 📄 N Paused ⋮

≡ **Live SQL** Feedback ⓘ Help nurhanisahizzati@graduate.utm.my 🌙

SQL Worksheet Clear 🔍 Find Actions ⌵ Save 📄 Run ▶

```
1 v SELECT NAME, DESCRIPTION, CATEGORY
2 FROM ITEMS;
```

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

[Download CSV](#)

5 rows selected.

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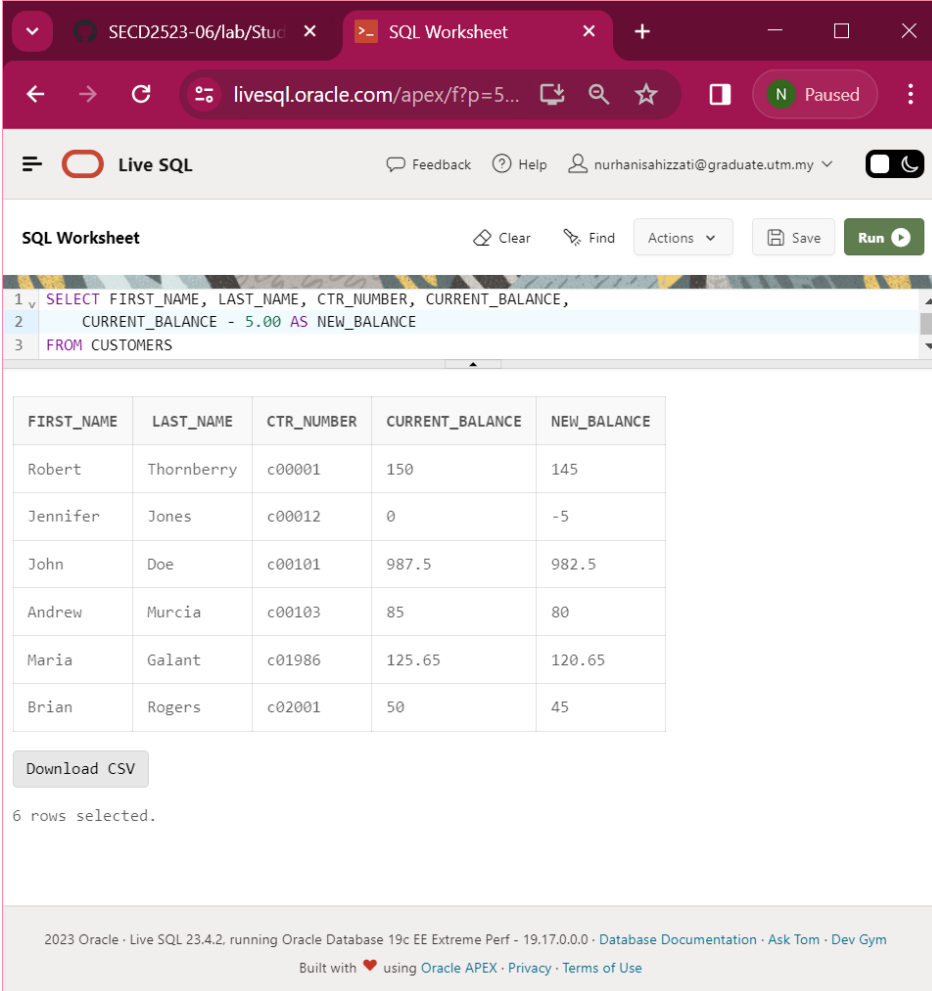
EXERCISE 2: Retrieving Data Using SELECT

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.

[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.



The screenshot shows the Oracle Live SQL interface. The SQL query entered is:

```
1 SELECT FIRST_NAME, LAST_NAME, CTR_NUMBER, CURRENT_BALANCE,  
2    CURRENT_BALANCE - 5.00 AS NEW_BALANCE  
3 FROM CUSTOMERS
```

The results are displayed in a table with 5 columns: FIRST_NAME, LAST_NAME, CTR_NUMBER, CURRENT_BALANCE, and NEW_BALANCE. There are 6 rows of data.

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

Below the table, there is a "Download CSV" button and the text "6 rows selected." At the bottom, there is a footer with the text: "2023 Oracle - Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym Built with ❤️ using Oracle APEX - Privacy - Terms of Use".

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

There will be negative value especially with current balance that valued less than 5.00. The query does not consider for cases in which subtracting the gift card value might leads to a negative balances.

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).

[illegible]

Part 3: Using Literal Character Strings

1. Write a query that will display the team information in the following format:
 - a. The Rockets team has 25 players and receives a discount of 10 percent.

Use **Team Information** as the column alias.

The screenshot shows the Live SQL web interface. The SQL query entered is:

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

The results are displayed in a table with the alias "Team Information". The table contains four rows of data:

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

Below the table, there is a "Download CSV" button and a message "4 rows selected." At the bottom of the interface, it says "2023 Oracle - Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym" and "Built with using Oracle APEX - Privacy - Terms of Use".

2. Why does the last team not show a discount?
The Rovers team does not show a discount because the DISCOUNT attribute is nullable, which, in this case, their discount value is NULL.

EXERCISE 3: Restricting Data Using WHERE

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 Live SQL web application interface. The browser tabs include 'SECD2523-06/lab/Stu...' and 'SQL Worksheet'. The address bar shows 'livesql.oracle.com/apex/f?p=5...'. The page title is 'Live SQL'. The SQL Worksheet section shows a query:

```
1 SELECT CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER,
2     CURRENT_BALANCE, SRE_ID, TEM_ID, LOYALTY_CARD_NUMBER
3 FROM CUSTOMERS
4 WHERE CTR_NUMBER = 'c01986';
```

Below the query, the results are displayed in a table:

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sre

Below the table, there is a 'Download CSV' button. At the bottom of the page, the footer text reads: '2023 Oracle · Live SQL 23.4.2. running Oracle Database 19c EE Extreme Perf · 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym' and 'Built with ❤️ using Oracle APEX · Privacy · Terms of Use'.

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 Live SQL web application interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "SQL Worksheet". The query editor contains the following SQL code:

```
1 SELECT FIRST_NAME "First Name", LAST_NAME "Last Name", CTR_NUMBER "Customer Number"
2 FROM CUSTOMERS
3 WHERE CURRENT_BALANCE > '100';
```

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

Below the table, there is a "Download CSV" button and the text "3 rows selected.".

At the bottom of the page, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#) Built with ❤️ using [Oracle APEX](#) · [Privacy](#) · [Terms of Use](#)"

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.

The screenshot shows the Oracle Live SQL web interface. The browser tabs include 'SECD2523', 'SQL Works', and 'Download'. The address bar shows 'livesql.oracle.com/apex/f?p=5...'. The page title is 'Live SQL'. The user is logged in as 'nurhanisahizzati@graduate.utm.my'. The 'SQL Worksheet' section contains the following SQL query:

```
1 SELECT ID "order ID", ODR_DATE "order date", ODR_TIME "order time"
2 FROM ORDERS
3 WHERE ODR_DATE < '28-May-2019'
4
```

The results are displayed in a table with 5 rows selected:

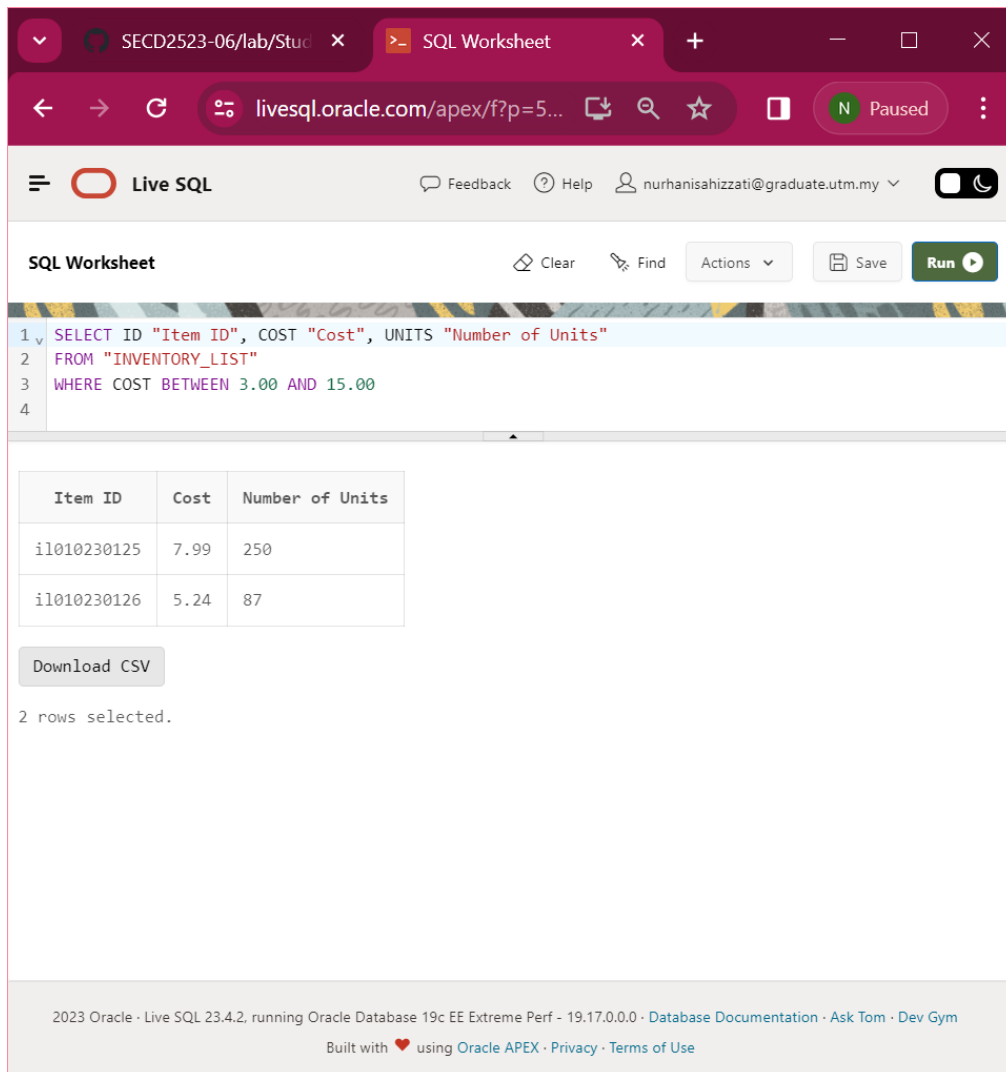
order ID	order date	order time
or0101250	17-APR-17	17-APR-17
or0101350	24-MAY-17	24-MAY-17
or0101425	28-MAY-17	28-MAY-17
or0101681	02-JUN-17	02-JUN-17
or0101750	18-JUN-17	18-JUN-17

Below the table, there is a 'Download CSV' button and the text '5 rows selected.'.

At the bottom, the footer text reads: '2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym' and 'Built with ❤️ using Oracle APEX · Privacy · Terms of Use'.

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.



The screenshot shows the Live SQL web interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT ID "Item ID", COST "Cost", UNITS "Number of Units"
2 FROM "INVENTORY_LIST"
3 WHERE COST BETWEEN 3.00 AND 15.00
4
```

The results are displayed in a table with 3 columns: Item ID, Cost, and Number of Units. Two rows are selected.

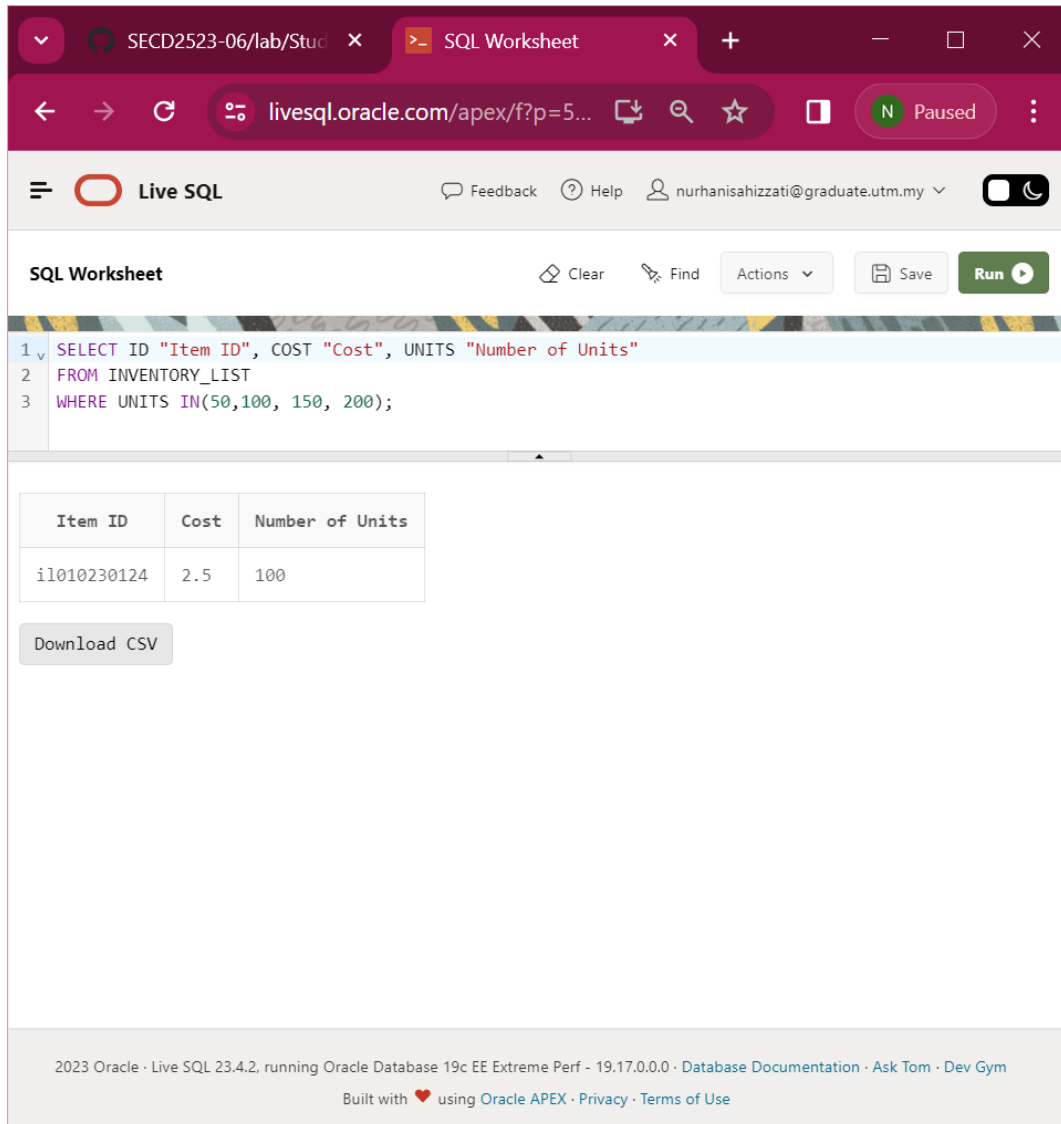
Item ID	Cost	Number of Units
il010230125	7.99	250
il010230126	5.24	87

Below the table, there is a "Download CSV" button and the text "2 rows selected.".

At the bottom of the interface, it states: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym". Below this, it says "Built with ❤️ using Oracle APEX · Privacy · Terms of Use".

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 the Live SQL interface in a web browser. The browser's address bar displays the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The "SQL Worksheet" section contains the following SQL query:

```
1 SELECT ID "Item ID", COST "Cost", UNITS "Number of Units"
2 FROM INVENTORY_LIST
3 WHERE UNITS IN(50,100, 150, 200);
```

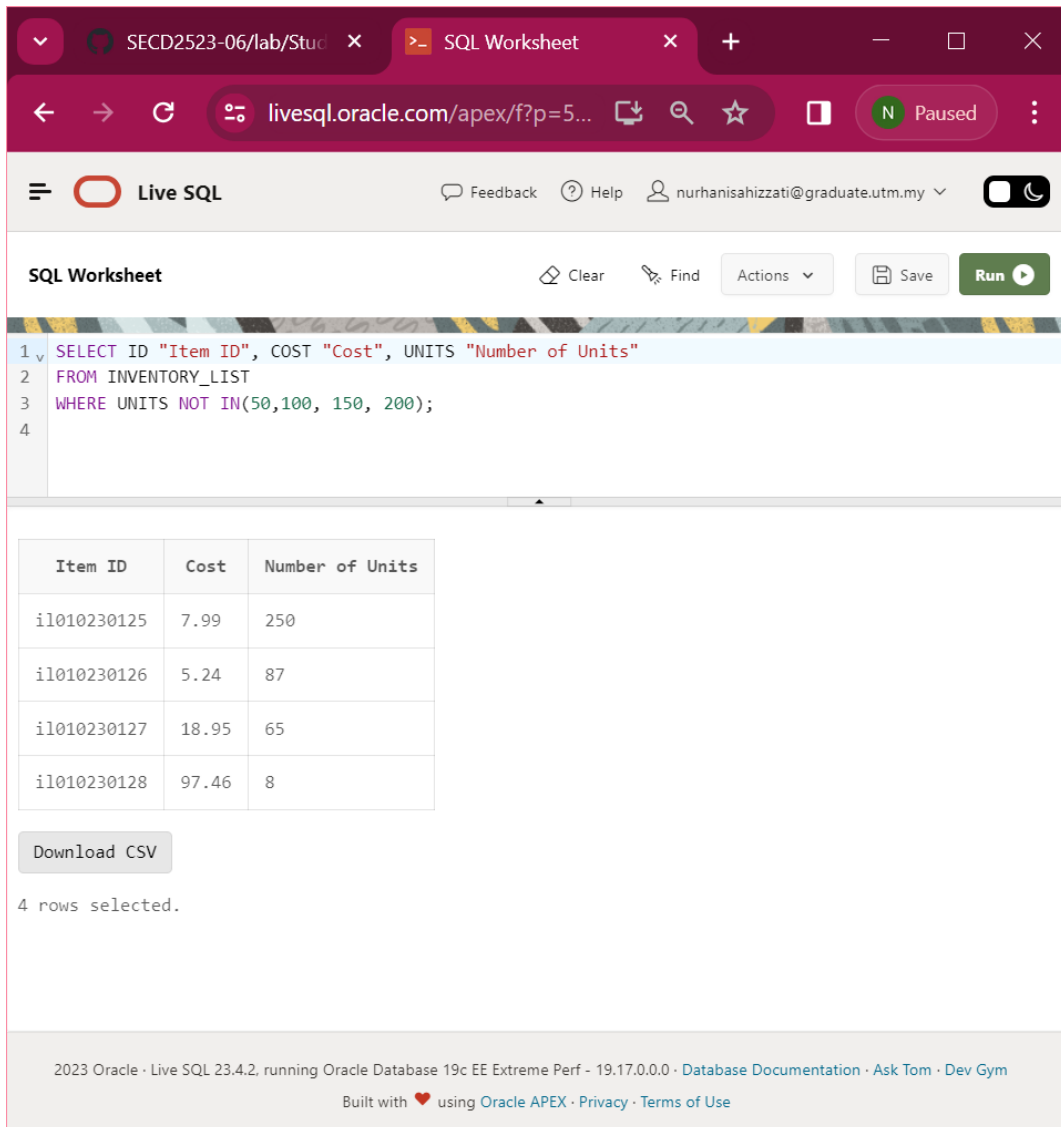
Below the query, the results are displayed in a table with three columns: "Item ID", "Cost", and "Number of Units". The table contains one row of data:

Item ID	Cost	Number of Units
il010230124	2.5	100

Below the table, there is a "Download CSV" button. At the bottom of the interface, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#) Built with ❤️ using [Oracle APEX](#) · [Privacy](#) · [Terms of Use](#)".

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 the Live SQL interface in a web browser. The browser tabs include 'SECD2523-06/lab/Stud' and 'SQL Worksheet'. The address bar shows 'livesql.oracle.com/apex/f?p=5...'. The Live SQL header includes a 'Live SQL' logo, 'Feedback', 'Help', and a user profile 'nurhanisahizzati@graduate.utm.my'. Below the header, the 'SQL Worksheet' section has buttons for 'Clear', 'Find', 'Actions', 'Save', and 'Run'. The SQL query is as follows:

```
1 SELECT ID "Item ID", COST "Cost", UNITS "Number of Units"
2 FROM INVENTORY_LIST
3 WHERE UNITS NOT IN(50,100, 150, 200);
4
```

The results are displayed in a table with 4 rows selected:

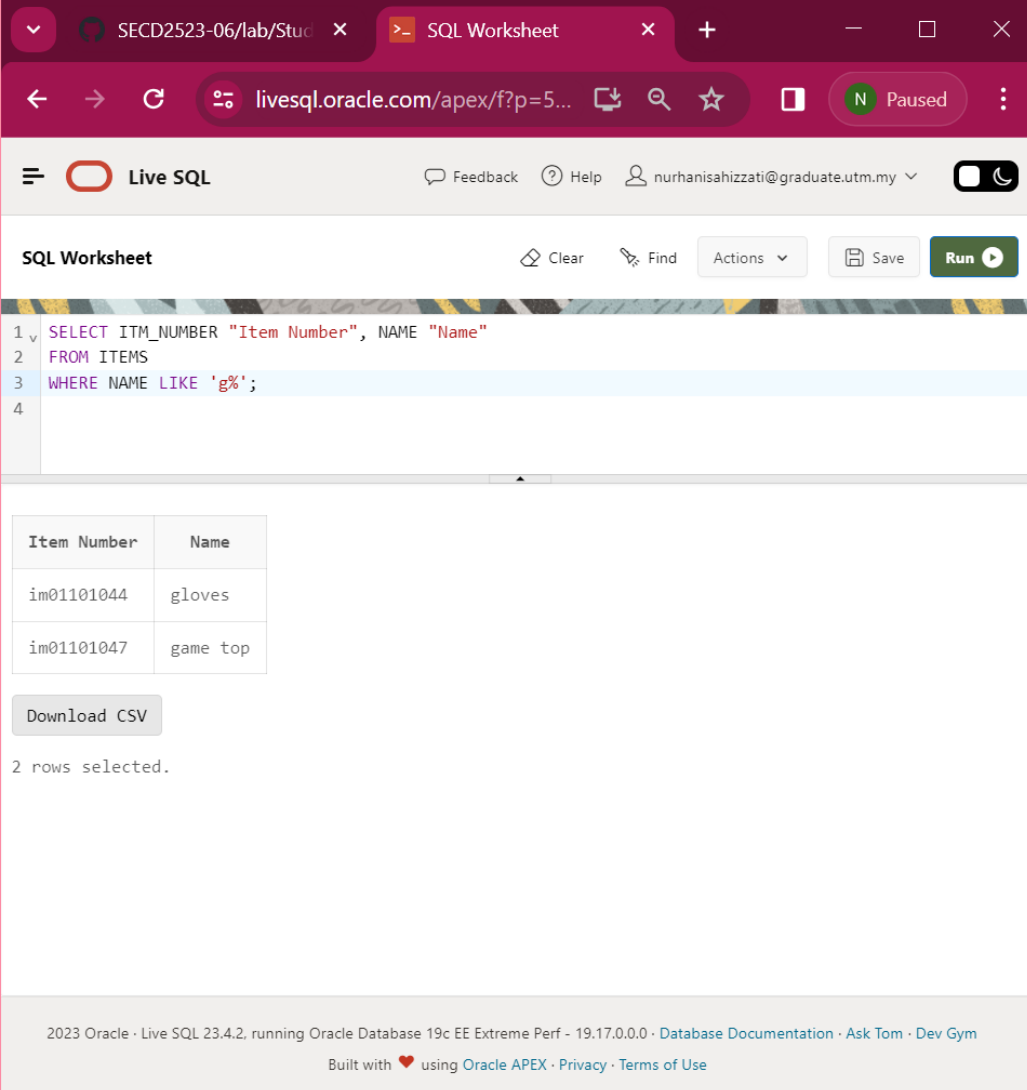
Item ID	Cost	Number of Units
il010230125	7.99	250
il010230126	5.24	87
il010230127	18.95	65
il010230128	97.46	8

Below the table, there is a 'Download CSV' button and the text '4 rows selected.'.

At the bottom, the footer text reads: '2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#)
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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 a web browser window with the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "SQL Worksheet". The SQL query entered is:

```
1 SELECT ITM_NUMBER "Item Number", NAME "Name"
2 FROM ITEMS
3 WHERE NAME LIKE 'g%';
4
```

The results are displayed in a table with two columns: "Item Number" and "Name".

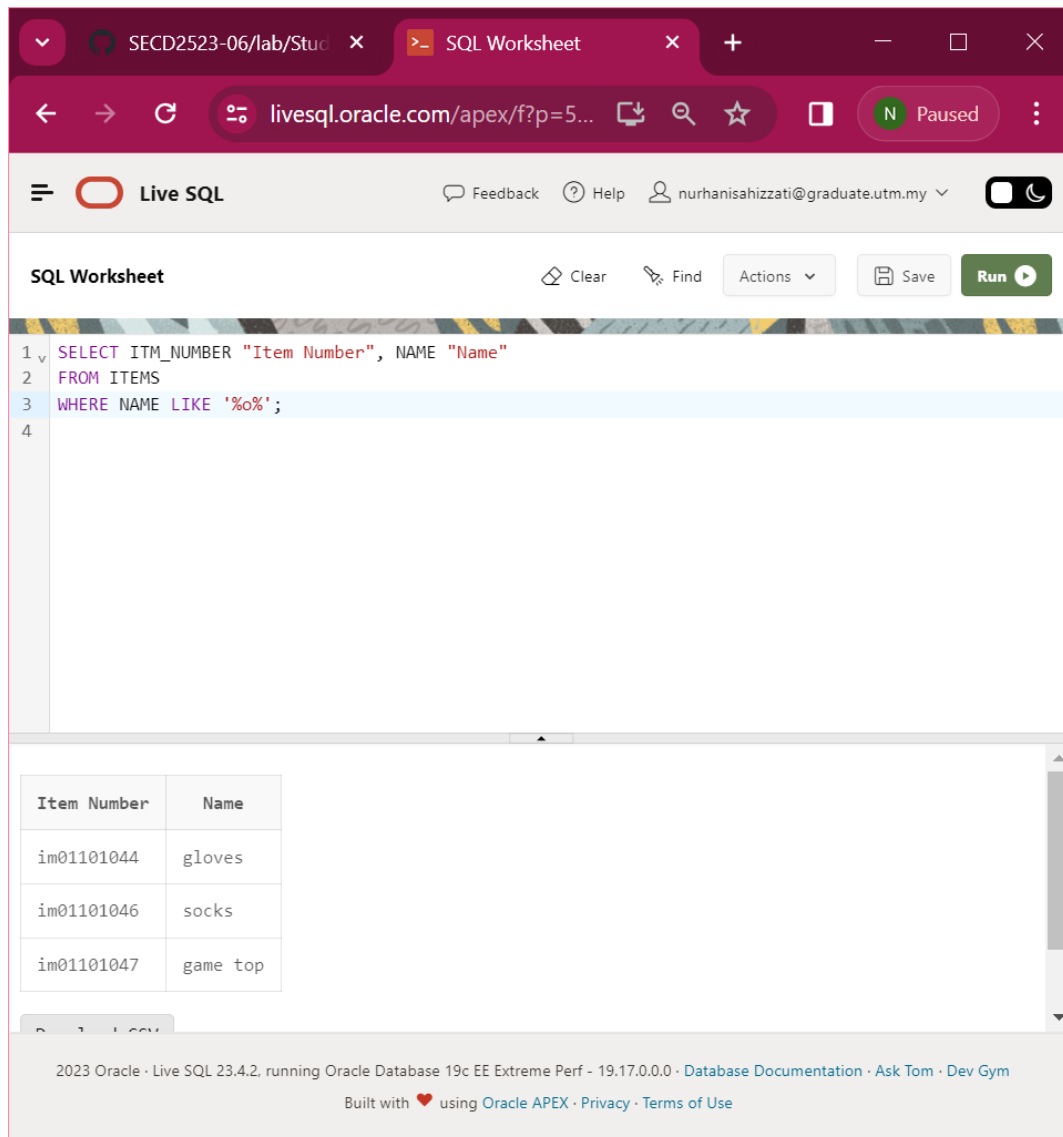
Item Number	Name
im01101044	gloves
im01101047	game top

Below the table, there is a "Download CSV" button and the text "2 rows selected.".

At the bottom of the page, it says: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#)
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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 Live SQL web application interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT ITM_NUMBER "Item Number", NAME "Name"
2 FROM ITEMS
3 WHERE NAME LIKE '%o%';
4
```

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

Item Number	Name
im01101044	gloves
im01101046	socks
im01101047	game top

The footer of the application indicates it is running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 and was built using Oracle APEX.

EXERCISE 4: Restricting Data Using WHERE

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

Use **Team Information** as the column alias.

The screenshot shows the Oracle Live SQL interface. The browser address bar shows the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The user is logged in as `nurhanisahizzati@graduate.utm.my`. The "SQL Worksheet" tab is active. The query entered is:

```
1 SELECT 'The ' || NAME || ' team has ' || NUMBER_OF_PLAYERS
2      || ' players and does not receive a discount. '
3 AS "Team Information"
4 FROM TEAMS
5 WHERE DISCOUNT IS NULL;
6
```

The result is displayed in a table with the column header "Team Information". The result row is:

Team Information
The Rovers team has 8 players and does not receive a discount.

Below the table is a "Download CSV" button. The footer of the interface shows: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym" and "Built with ❤️ using Oracle APEX · Privacy · Terms of Use".

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.

The screenshot shows the Oracle Live SQL web interface. The browser address bar shows the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The user is logged in as `nurhanisahizzati@graduate.utm.my`. The SQL Worksheet area contains the following query:

```
1 SELECT 'The ' || NAME || ' team has ' || NUMBER_OF_PLAYERS ||  
2 ' players and receive a discount of ' || DISCOUNT || ' percent.'  
3 AS "Team Information"  
4 FROM TEAMS  
5 WHERE DISCOUNT IS NOT NULL;  
6
```

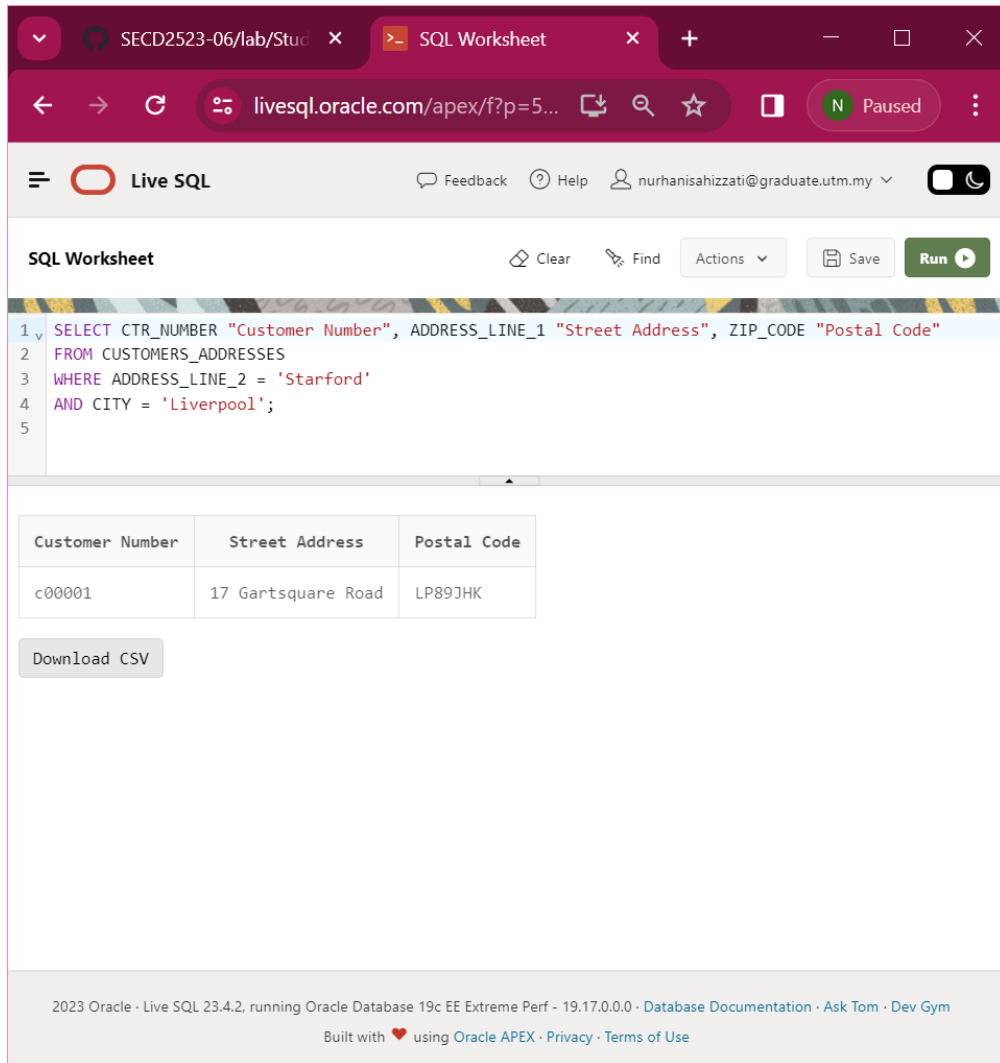
The results are displayed in a table titled "Team Information":

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

Below the table, there is a "Download CSV" button and the text "3 rows selected." At the bottom of the page, it says "2023 Oracle · Live SQL 23.4.2. running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#) Built with ❤️ using [Oracle APEX](#) · [Privacy](#) · [Terms of Use](#)".

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.



The screenshot shows the Live SQL web interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT CTR_NUMBER "Customer Number", ADDRESS_LINE_1 "Street Address", ZIP_CODE "Postal Code"
2 FROM CUSTOMERS_ADDRESSES
3 WHERE ADDRESS_LINE_2 = 'Starford'
4 AND CITY = 'Liverpool';
5
```

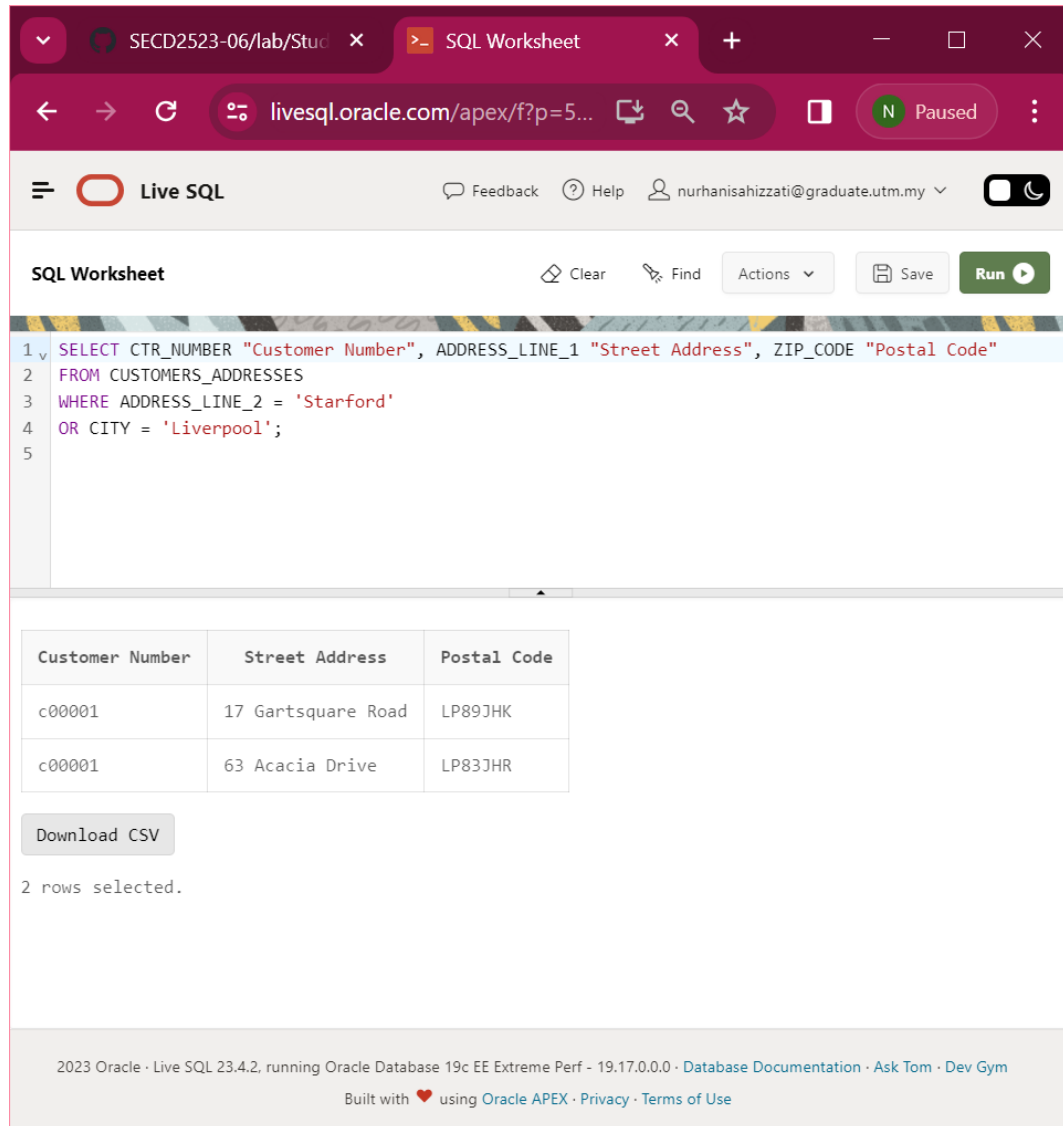
The results are displayed in a table with the following data:

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK

Below the table is a "Download CSV" button. The footer of the interface includes the text: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#) Built with ❤️ using [Oracle APEX](#) · [Privacy](#) · [Terms of Use](#)".

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.



The screenshot shows the Live SQL web interface. The browser tabs include 'SECD2523-06/lab/Stud' and 'SQL Worksheet'. The address bar shows 'livesql.oracle.com/apex/f?p=5...'. The page title is 'Live SQL'. The SQL Worksheet section contains the following query:

```
1 SELECT CTR_NUMBER "Customer Number", ADDRESS_LINE_1 "Street Address", ZIP_CODE "Postal Code"
2 FROM CUSTOMERS_ADDRESSES
3 WHERE ADDRESS_LINE_2 = 'Starford'
4 OR CITY = 'Liverpool';
5
```

The results are displayed in a table with 3 columns: Customer Number, Street Address, and Postal Code. There are 2 rows selected.

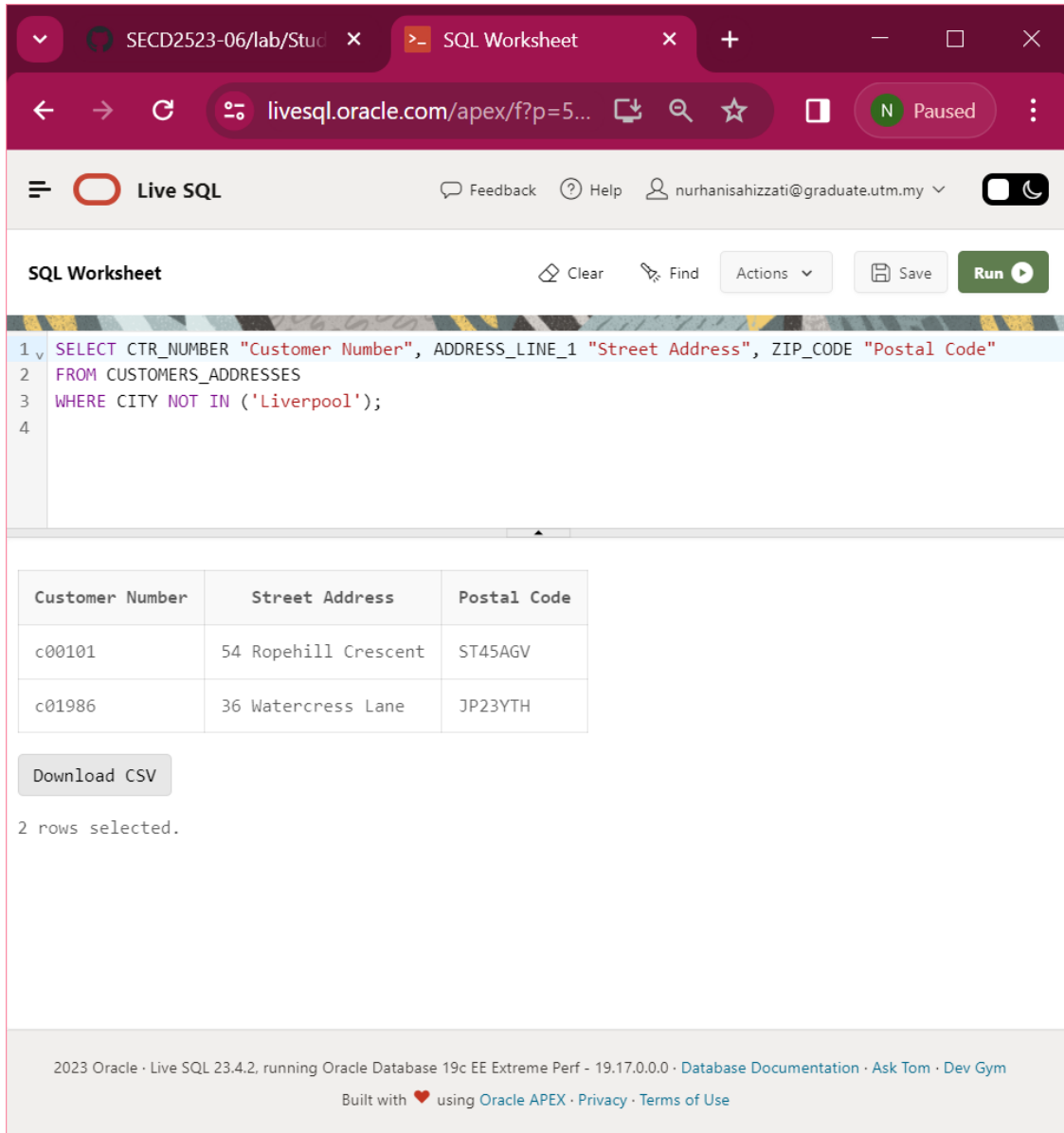
Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK
c00001	63 Acacia Drive	LP83JHR

Below the table, there is a 'Download CSV' button and the text '2 rows selected.'.

At the bottom, the footer text reads: '2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym' and 'Built with ❤️ using Oracle APEX · Privacy · Terms of Use'.

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.



The screenshot shows the Live SQL web interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

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

Below the query, the results are displayed in a table:

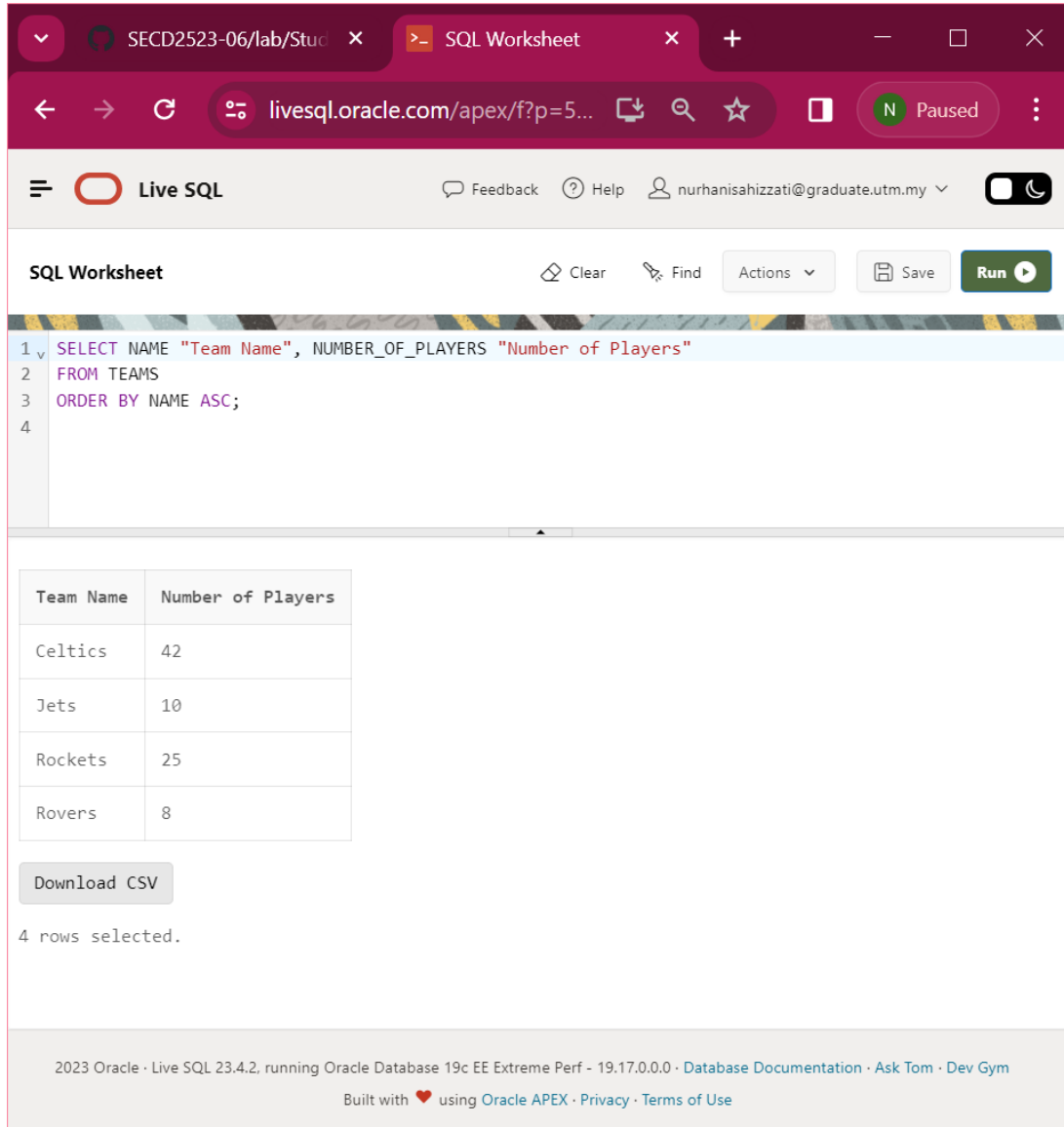
Customer Number	Street Address	Postal Code
c00101	54 Ropehill Crescent	ST45AGV
c01986	36 Watercress Lane	JP23YTH

Below the table, there is a "Download CSV" button and the text "2 rows selected.".

At the bottom of the interface, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#) Built with ❤️ using [Oracle APEX](#) · [Privacy](#) · [Terms of Use](#)".

EXERCISE 5: Sorting Data Using ORDER BY

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



The screenshot shows the Live SQL web interface. The browser address bar displays the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT NAME "Team Name", NUMBER_OF_PLAYERS "Number of Players"
2 FROM TEAMS
3 ORDER BY NAME ASC;
4
```

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

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

Below the table, there is a "Download CSV" button and the text "4 rows selected.".

At the bottom of the page, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#)
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2. Display the team's name and number of players in descending order of number of players. Use an appropriate alias for your column headings.

The screenshot shows the Live SQL web interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT NAME "Team Name", NUMBER_OF_PLAYERS "Number of Players"
2 FROM TEAMS
3 ORDER BY NUMBER_OF_PLAYERS DESC;
4
```

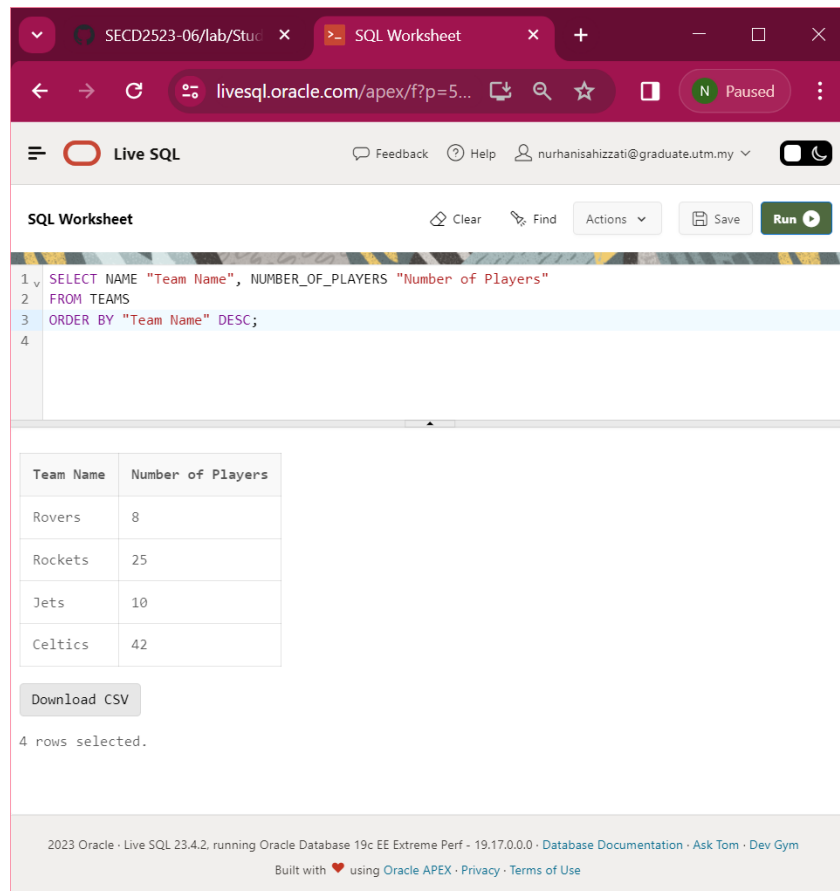
Below the query editor, the results are displayed in a table:

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

Below the table, there is a "Download CSV" button and the text "4 rows selected.".

At the bottom of the interface, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · [Database Documentation](#) · [Ask Tom](#) · [Dev Gym](#)
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3. Display the team's 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 the Live SQL web application interface. The browser address bar shows the URL `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT NAME "Team Name", NUMBER_OF_PLAYERS "Number of Players"
2 FROM TEAMS
3 ORDER BY "Team Name" DESC;
4
```

The results are displayed in a table with 4 rows selected:

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

Below the table is a "Download CSV" button and the text "4 rows selected.".

At the bottom, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym Built with ❤️ using Oracle APEX · Privacy · Terms of Use"

EXERCISE 6: Sorting Data Using ORDER BY

Part 1 : TOP-N-ANALYSIS

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 Live SQL web interface. The browser address bar displays `livesql.oracle.com/apex/f?p=5...`. The page title is "Live SQL". The SQL Worksheet section contains the following query:

```
1 SELECT ROWNUM AS "Customer Number", FIRST_NAME || ' ' || LAST_NAME AS "Customer Name"
2 FROM (
3     SELECT CTR_NUMBER, FIRST_NAME, LAST_NAME
4     FROM CUSTOMERS
5     ORDER BY CTR_NUMBER
6 )
7 WHERE ROWNUM <= 3;
```

Below the query editor, the results are displayed in a table:

Customer Number	Customer Name
1	Robert Thornberry
2	Jennifer Jones
3	John Doe

Below the table, there is a "Download CSV" button and the text "3 rows selected.".

At the bottom of the interface, the footer text reads: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym" and "Built with ❤️ using Oracle APEX · Privacy · Terms of Use".

Part 2 : Using a Substitution Variable

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.

(SQL ACCEPT statement is an unsupported command, need to manually input commission rate into the coding)

The screenshot shows the Oracle Live SQL web interface. The browser tab is titled "SQL Worksheet" and the URL is "livesql.oracle.com/apex/f?p=5...". The interface includes a "Live SQL" header with a "Feedback" link, a "Help" link, and a user profile "nurhanisahizzati@graduate.utm.my". Below the header, there is a "SQL Worksheet" section with a "Clear" button, a "Find" button, an "Actions" dropdown, a "Save" button, and a "Run" button. The SQL query is as follows:

```
1 v SELECT FIRST_NAME "First Name", LAST_NAME "Last Name", COMMISSION_RATE "Commission Rate"
2 FROM SALES_REPRESENTATIVES
3 WHERE COMMISSION_RATE = (SELECT value FROM commission_config WHERE key = 'default_rate')
4 ORDER BY LAST_NAME;
5
6
```

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

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

Below the table, there is a "Download CSV" button and a message "2 rows selected.".

At the bottom of the interface, there is a footer with the text: "2023 Oracle · Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 · Database Documentation · Ask Tom · Dev Gym". Below this, it says "Built with ❤️ using Oracle APEX · Privacy · Terms of Use".