



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

SECD2523
SECTION 10

LECTURER: ROZILAWATI BINTI DOLLAH @ MD ZAIN

LAB EXERCISE 3

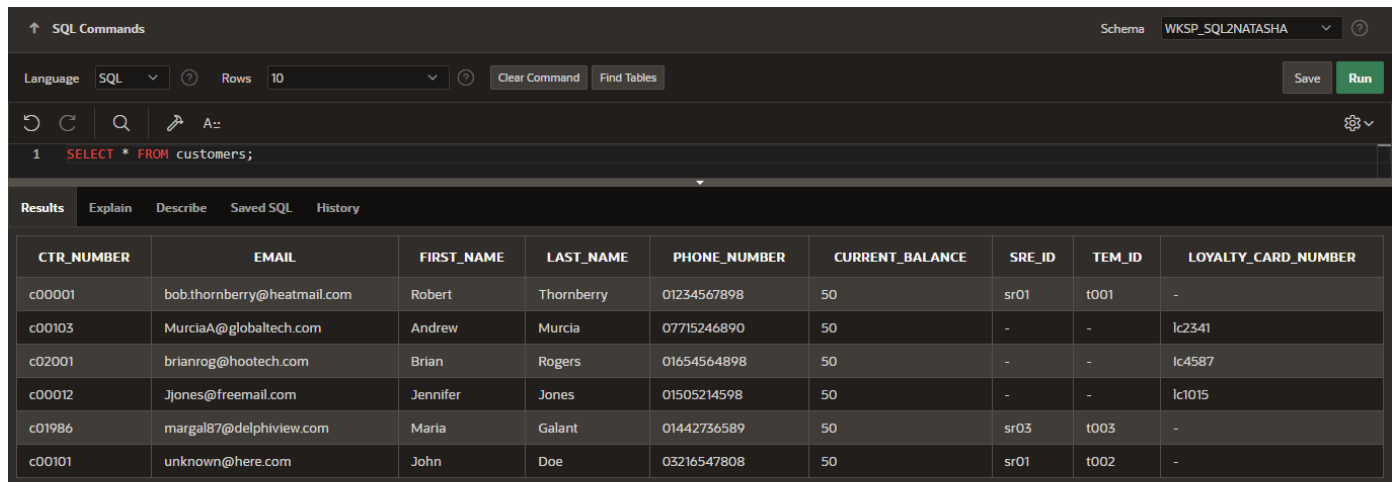
NAME: NUR AQILA NATASHA BINTI HAZIDI
MATRIC NUMBERS : A22EC0243

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:

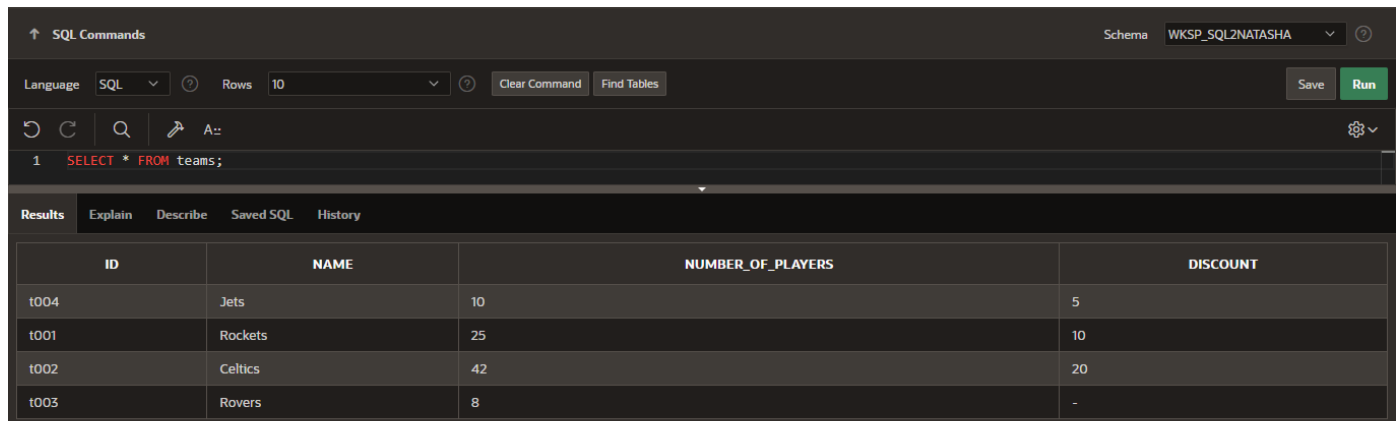
1. customers.



The screenshot shows a SQL interface with the command `SELECT * FROM customers;` entered. The results are displayed in a table with 9 columns: CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER. There are 7 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	50	sr01	t001	-
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	50	-	-	lc2341
c02001	brianrog@hootech.com	Brian	Rogers	01654564898	50	-	-	lc4587
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	50	-	-	lc1015
c01986	margal87@delphiview.com	Maria	Galant	01442736589	50	sr03	t003	-
c00101	unknown@here.com	John	Doe	03216547808	50	sr01	t002	-

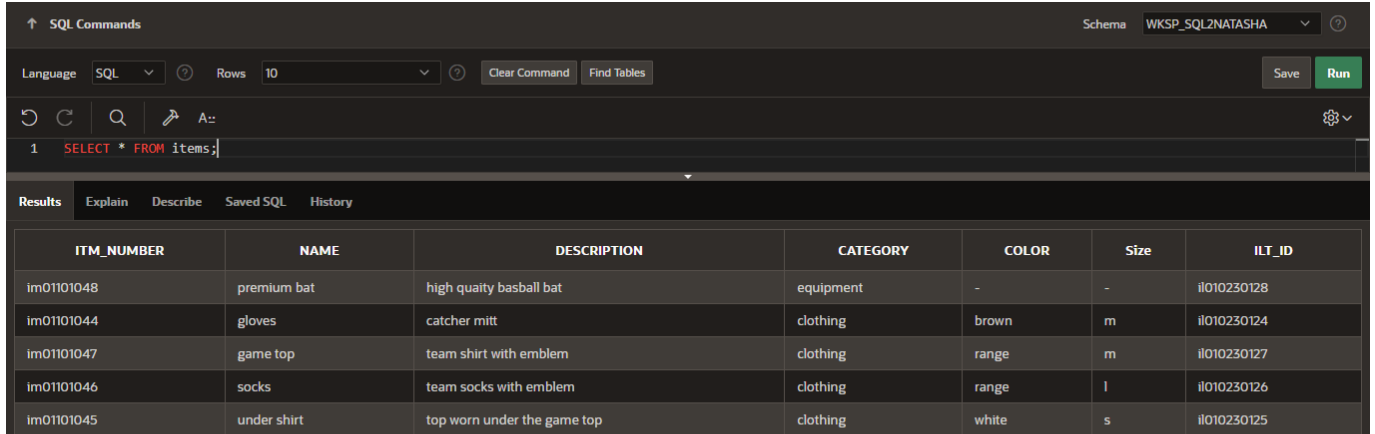
2. teams.



The screenshot shows a SQL interface with the command `SELECT * FROM teams;` entered. The results are displayed in a table with 4 columns: ID, NAME, NUMBER_OF_PLAYERS, and DISCOUNT. There are 5 rows of data.

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

3. items.

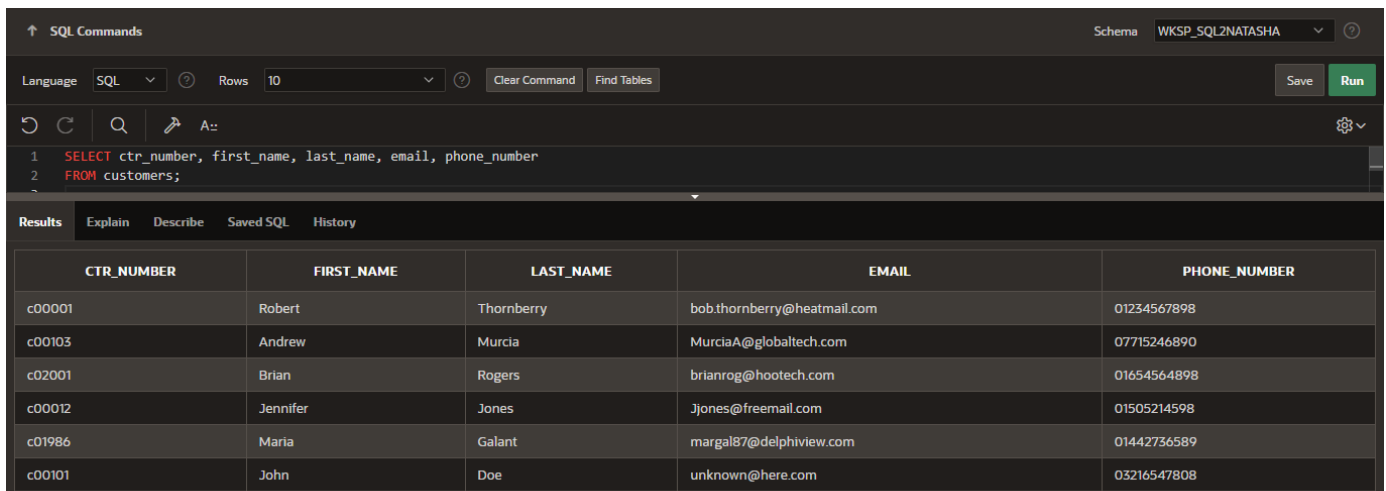


The screenshot shows the SQL Developer interface. The 'SQL Commands' window at the top contains the query: `1 SELECT * FROM items;`. The 'Results' window below shows a table with 7 columns: **ITM_NUMBER**, **NAME**, **DESCRIPTION**, **CATEGORY**, **COLOR**, **Size**, and **ILT_ID**. The table contains 5 rows of data.

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

Part 2: Selecting Specific Columns

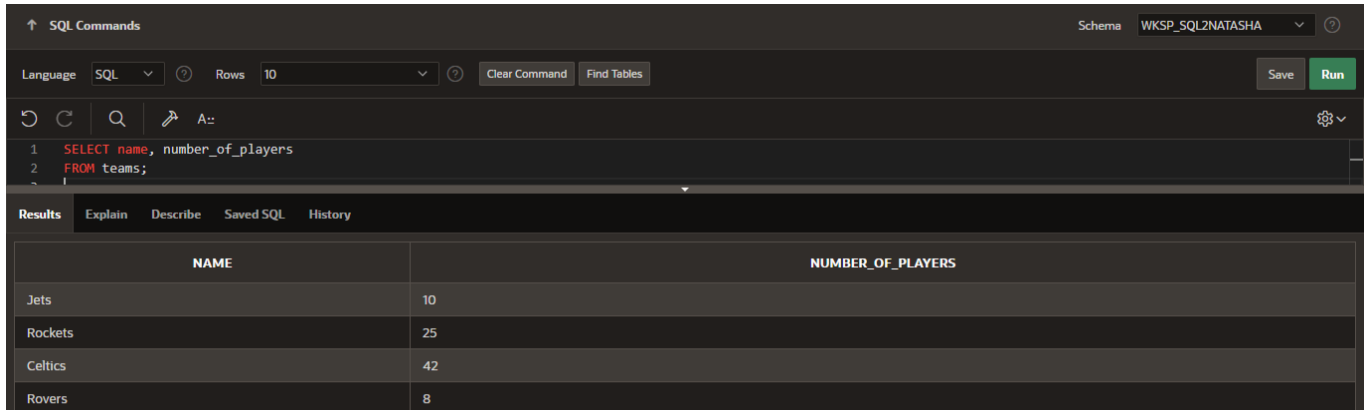
1. Display the customer number, first name, last name, email and phone number of the customers.



The screenshot shows the SQL Developer interface. The 'SQL Commands' window at the top contains the query: `1 SELECT ctr_number, first_name, last_name, email, phone_number`
`2 FROM customers;`. The 'Results' window below shows a table with 5 columns: **CTR_NUMBER**, **FIRST_NAME**, **LAST_NAME**, **EMAIL**, and **PHONE_NUMBER**. The table contains 6 rows of data.

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

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



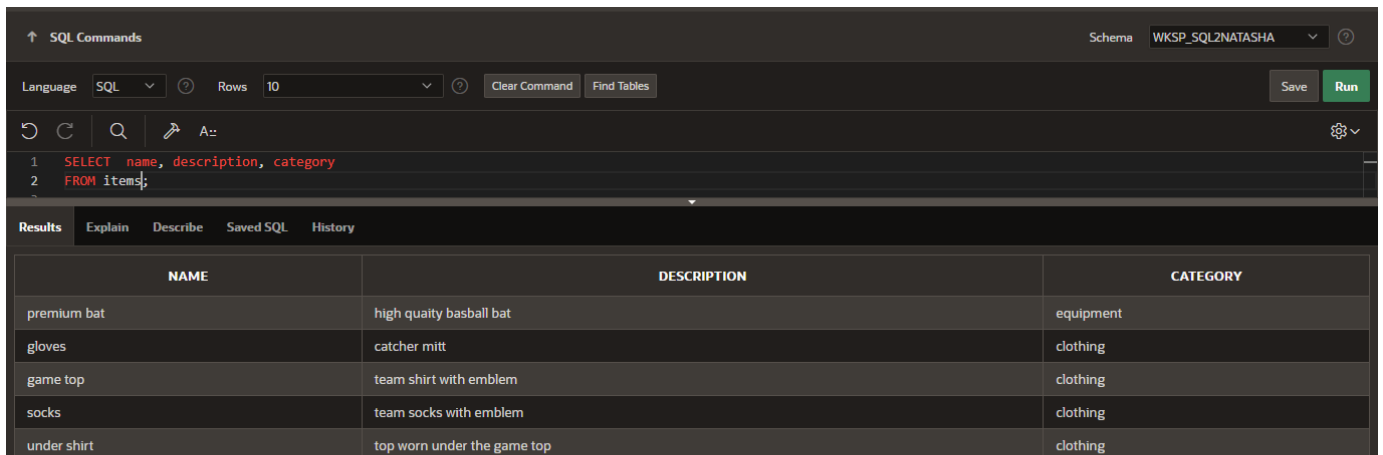
The screenshot shows a SQL IDE interface. At the top, the 'SQL Commands' tab is active. The 'Language' is set to 'SQL' and 'Rows' is set to '10'. The query entered is:

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

The 'Results' tab is selected, displaying a table with two columns: 'NAME' and 'NUMBER_OF_PLAYERS'. The data is as follows:

NAME	NUMBER_OF_PLAYERS
Jets	10
Rockets	25
Celtics	42
Rovers	8

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



The screenshot shows the same SQL IDE interface. The query entered is:

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

The 'Results' tab is selected, displaying a table with three columns: 'NAME', 'DESCRIPTION', and 'CATEGORY'. The data is as follows:

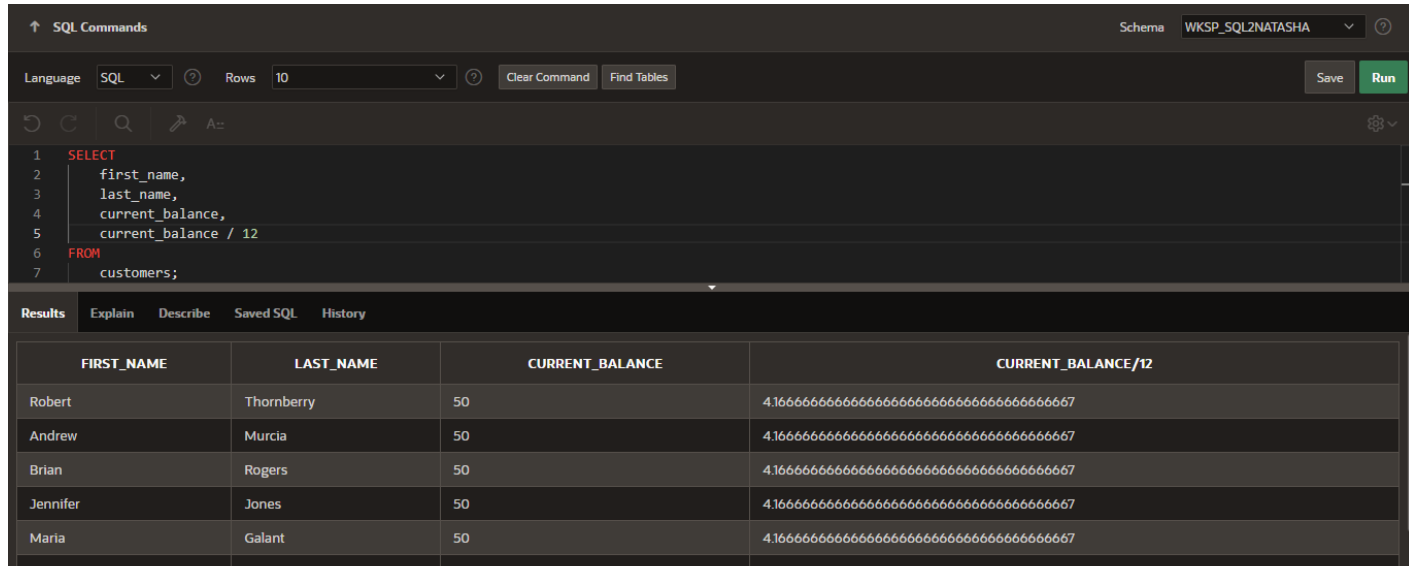
NAME	DESCRIPTION	CATEGORY
premium bat	high quality baseball bat	equipment
gloves	catcher mitt	clothing
game top	team shirt with emblem	clothing
socks	team socks with emblem	clothing
under shirt	top worn under the game top	clothing

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

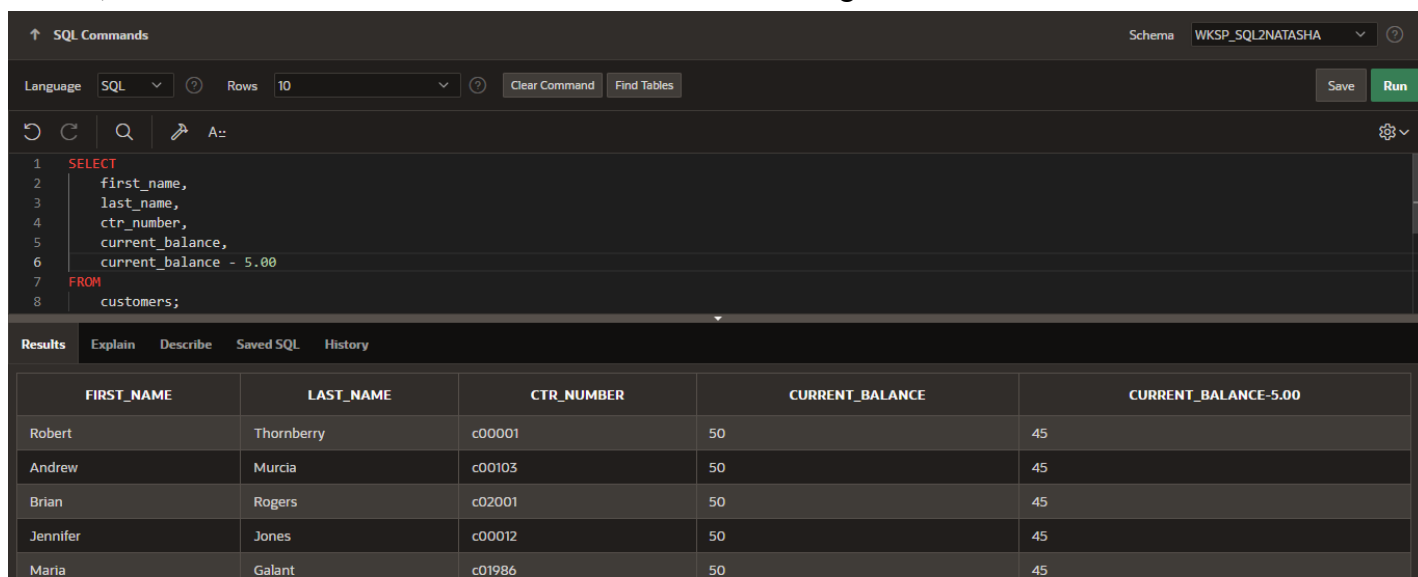
1. Every customer has been told they can pay off their current balance over a 12 month period. Display the customer's first name, last name, current balance and monthly payment.



The screenshot shows the SQL Developer interface. The 'SQL Commands' tab is active, displaying a query: `SELECT first_name, last_name, current_balance, current_balance / 12 FROM customers;`. The 'Results' tab shows the output of the query, which includes columns for first name, last name, current balance, and the current balance divided by 12. The data is as follows:

FIRST_NAME	LAST_NAME	CURRENT_BALANCE	CURRENT_BALANCE/12
Robert	Thornberry	50	4.16666666666666666666666666666667
Andrew	Murcia	50	4.16666666666666666666666666666667
Brian	Rogers	50	4.16666666666666666666666666666667
Jennifer	Jones	50	4.16666666666666666666666666666667
Maria	Galant	50	4.16666666666666666666666666666667
John	Deo	50	4.16666666666666666666666666666667

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 SQL Developer interface. The 'SQL Commands' tab is active, displaying a query: `SELECT first_name, last_name, ctr_number, current_balance, current_balance - 5.00 FROM customers;`. The 'Results' tab shows the output of the query, which includes columns for first name, last name, customer number, current balance, and the current balance minus 5.00. The data is as follows:

FIRST_NAME	LAST_NAME	CTR_NUMBER	CURRENT_BALANCE	CURRENT_BALANCE-5.00
Robert	Thornberry	c00001	50	45
Andrew	Murcia	c00103	50	45
Brian	Rogers	c02001	50	45
Jennifer	Jones	c00012	50	45
Maria	Galant	c01986	50	45

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

Part 2 : Using Column Aliases

1. You previously wrote a query that displayed 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: The Rockets team has 25 players and receives a discount of 10 percent. Use Team Information as the column alias.

APEX

App Builder

SQL Workshop

Team Development

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NH

Natasha Hazidi

sql2natasha

↑ SQL Commands

Schema WKSP_SQL2NATASHA

Language SQL

Rows 10

Clear Command

Find Tables

Save

Run

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```
1 SELECT
2   'The ' || name || ' team has ' || number_of_players || ' players and receives a discount of ' || NVL(TO_CHAR(discount), '0') || ' percent.' AS "Team Information"
3 FROM
4   teams;
5
```

Results

Explain

Describe

Saved SQL

History

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 0 percent.

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

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.

The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

```
1 SELECT *
2 FROM customers
3 WHERE ctr_number = 'c01986';
4
```

The Results tab is selected, displaying a table with 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	50	sr03	t003	-

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.

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 APEX SQL Workshop interface. The SQL command area contains the following query:

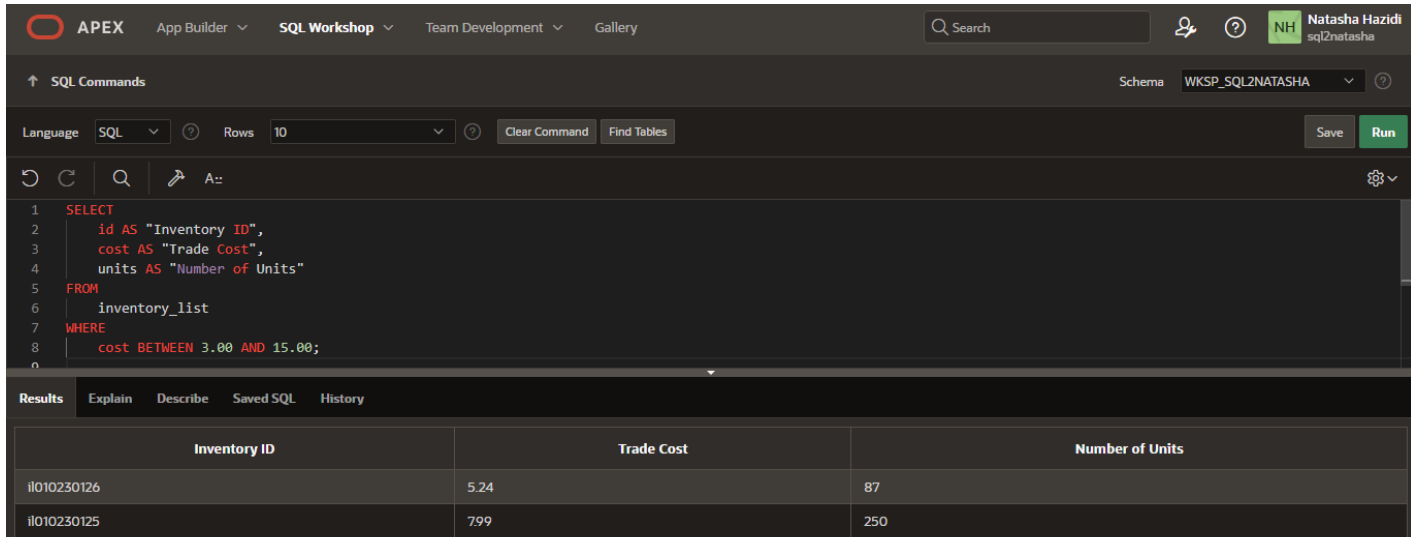
```
1 SELECT
2     id AS "Order ID",
3     odr_date AS "Order Date",
4     odr_time AS "Order Time"
5 FROM
6     orders
7 WHERE
8     odr_date < TO_DATE('2019-05-28', 'YYYY-MM-DD');
9
```

The Results tab is selected, displaying a table with the following data:

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

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 APEX SQL Workshop interface. The SQL command area contains the following query:

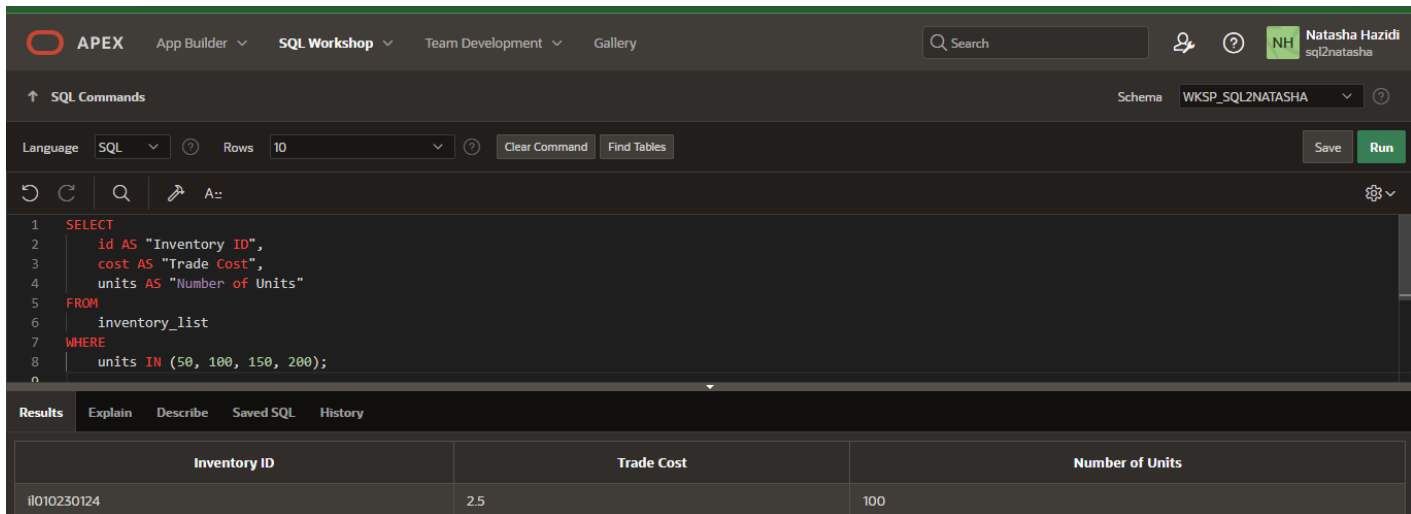
```
1 SELECT
2     id AS "Inventory ID",
3     cost AS "Trade Cost",
4     units AS "Number of Units"
5 FROM
6     inventory_list
7 WHERE
8     cost BETWEEN 3.00 AND 15.00;
```

The Results tab displays the following data:

Inventory ID	Trade Cost	Number of Units
il010230126	5.24	87
il010230125	7.99	250

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 APEX SQL Workshop interface. The SQL command area contains the following query:

```
1 SELECT
2     id AS "Inventory ID",
3     cost AS "Trade Cost",
4     units AS "Number of Units"
5 FROM
6     inventory_list
7 WHERE
8     units IN (50, 100, 150, 200);
```

The Results tab displays the following data:

Inventory ID	Trade Cost	Number of Units
il010230124	2.5	100

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.

APEX App Builder SQL Workshop Team Development Gallery

Search

Natasha Hazidi sql2natasha

SQL Commands Schema WKSP_SQL2NATASHA

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT
2     id AS "Inventory ID",
3     cost AS "Trade Cost",
4     units AS "Number of Units"
5 FROM
6     inventory_list
7 WHERE
8     units NOT IN (50, 100, 150, 200);

```

Results Explain Describe Saved SQL History

Inventory ID	Trade Cost	Number of Units
il010230126	5.24	87
il010230125	7.99	250
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.

SQL Commands Schema WKSP_SQL2NATASHA

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT
2     itm_number AS "Item Number",
3     name AS "Item Name"
4 FROM
5     items
6 WHERE
7     name LIKE 'g%';
8

```

Results Explain Describe Saved SQL History

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.

APEX

App Builder

SQL Workshop

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SQL Commands

Schema WKSP_SQL2NATASHA

Language SQLRows 10Clear CommandFind TablesSaveRun

Az

1SELECT

2 item_number AS "Item Number",

3 name AS "Item Name"

4FROM

5 items

6WHERE

7 name LIKE '%o%';

8

Results

ExplainDescribeSaved SQLHistory

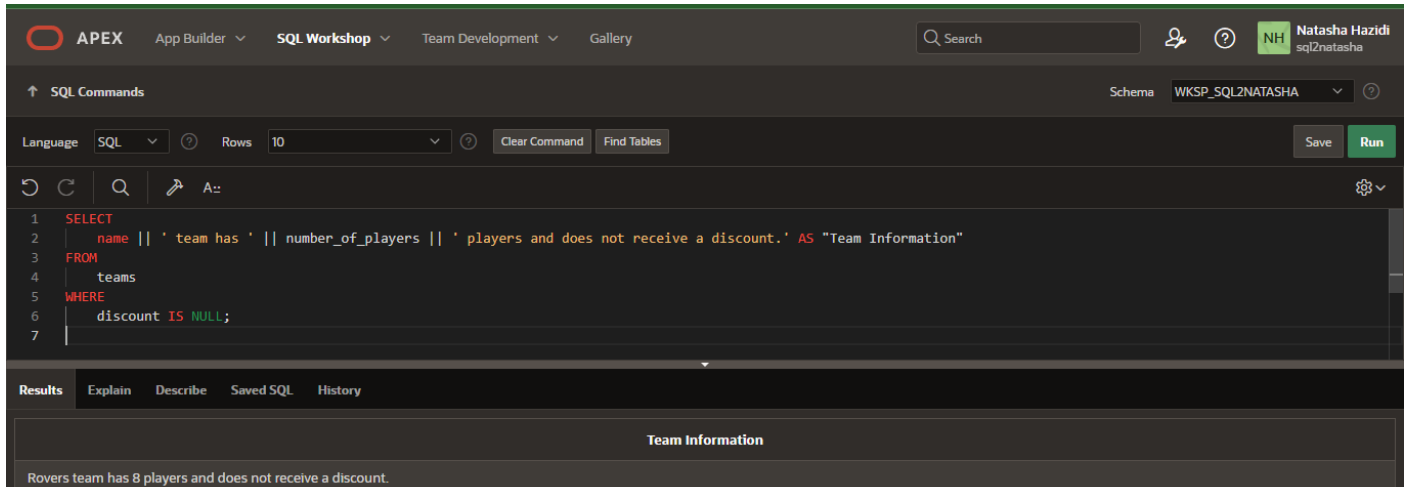
Item Number	Item Name
im01101044	gloves
im01101047	game top
im01101046	socks

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.



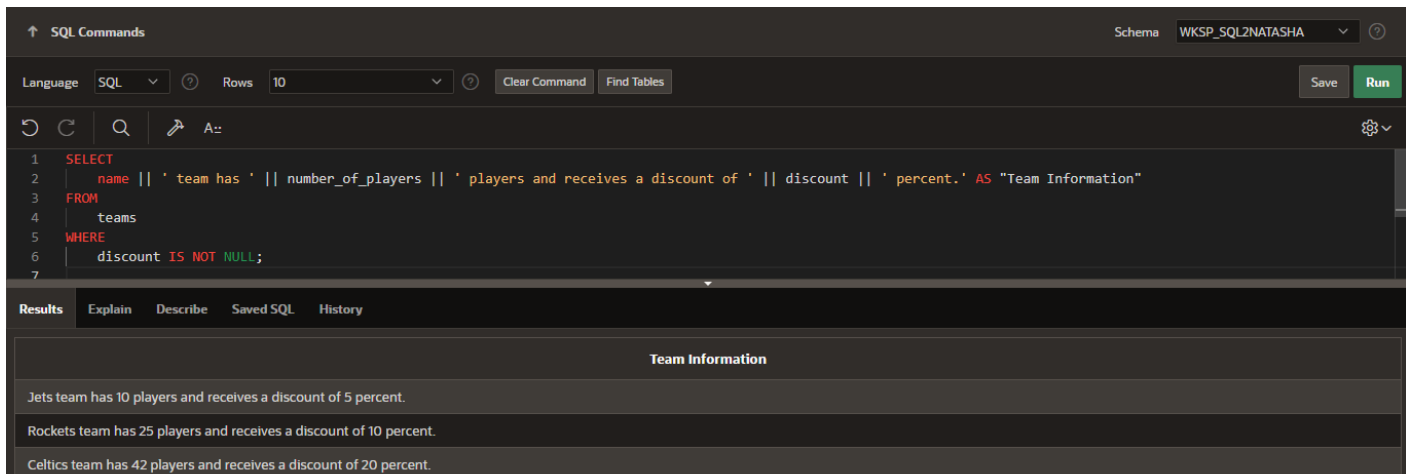
The screenshot shows the Oracle SQL Workshop interface. The SQL command window contains the following query:

```
1 SELECT
2   name || ' team has ' || number_of_players || ' players and does not receive a discount.' AS "Team Information"
3 FROM
4   teams
5 WHERE
6   discount IS NULL;
7
```

The Results tab is selected, showing a single row of data:

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

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 SQL Workshop interface. The SQL command window contains the following query:

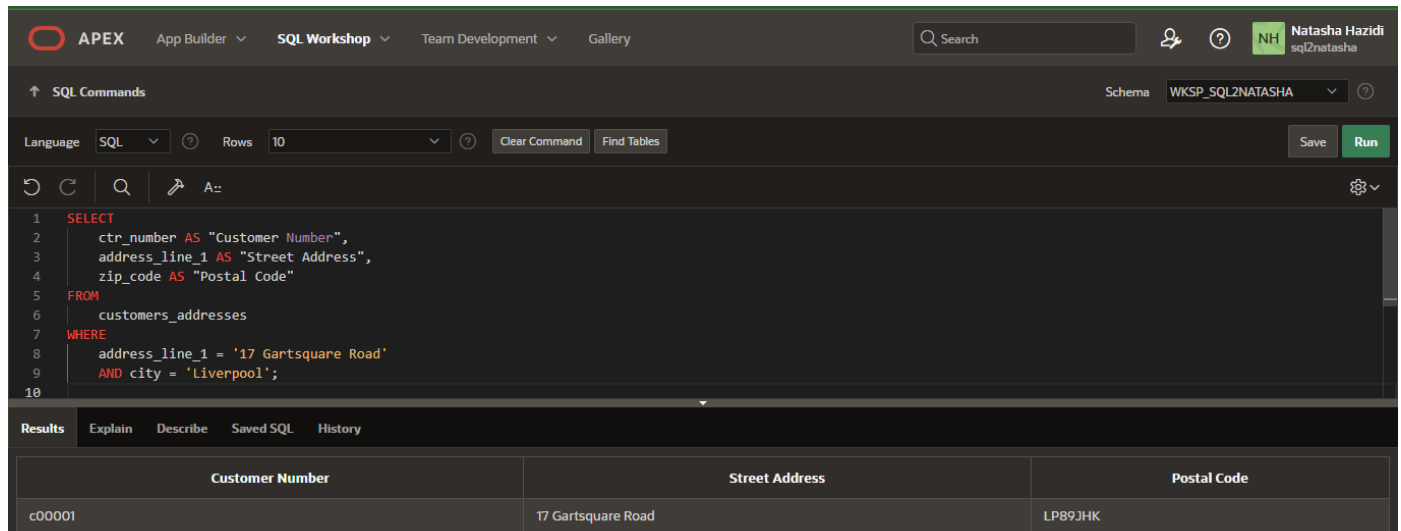
```
1 SELECT
2   name || ' team has ' || number_of_players || ' players and receives a discount of ' || discount || ' percent.' AS "Team Information"
3 FROM
4   teams
5 WHERE
6   discount IS NOT NULL;
7
```

The Results tab is selected, showing three rows of data:

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

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 stratford area of Liverpool. Use Customer Number, Street Address and Postal Code as the column aliases.



The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

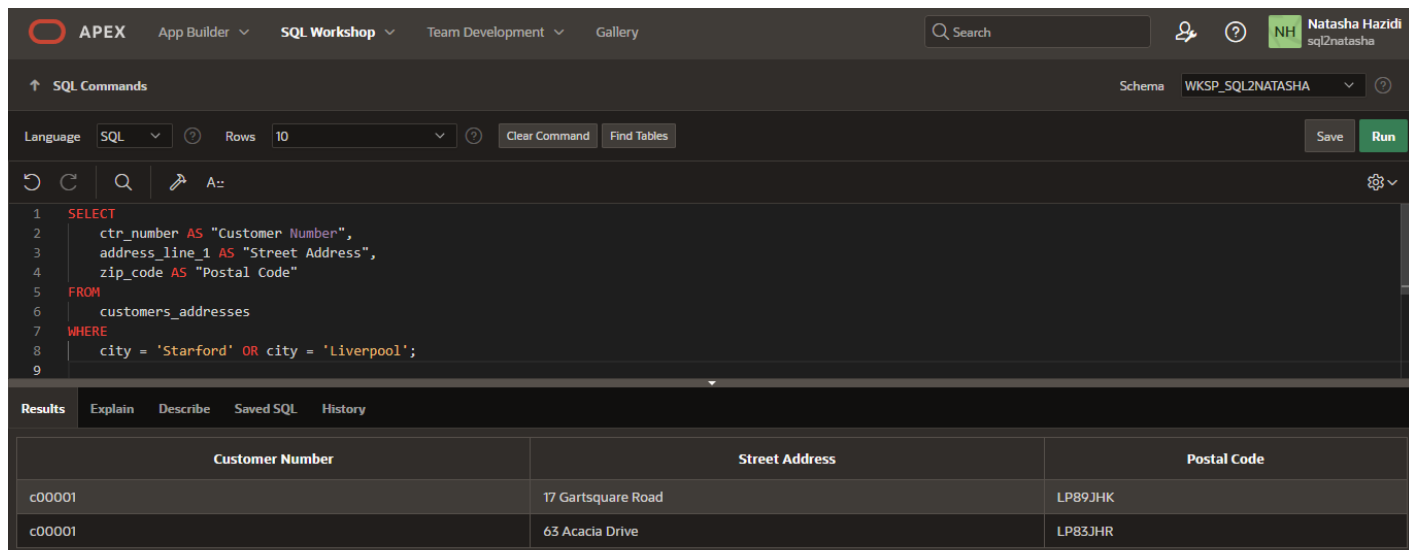
```
1 SELECT
2   ctr_number AS "Customer Number",
3   address_line_1 AS "Street Address",
4   zip_code AS "Postal Code"
5 FROM
6   customers_addresses
7 WHERE
8   address_line_1 = '17 Gartsquare Road'
9   AND city = 'Liverpool';
10
```

The Results tab shows the following data:

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.



The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

```
1 SELECT
2   ctr_number AS "Customer Number",
3   address_line_1 AS "Street Address",
4   zip_code AS "Postal Code"
5 FROM
6   customers_addresses
7 WHERE
8   city = 'Starford' OR city = 'Liverpool';
9
```

The Results tab shows the following data:

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.

APLXApp BuilderSQL WorkshopTeam DevelopmentGallery

Search

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SQL Commands

SchemaWKSP_SQL2NATASHA

LanguageSQLRows10Clear CommandFind TablesSaveRun

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1SELECT

2ctr_number AS "Customer Number",

3address_line_1 AS "Street Address",

4zip_code AS "Postal Code"

5FROM

6customers_addresses

7WHERE

8city NOT IN ('Liverpool');

9

ResultsExplainDescribeSaved SQLHistory

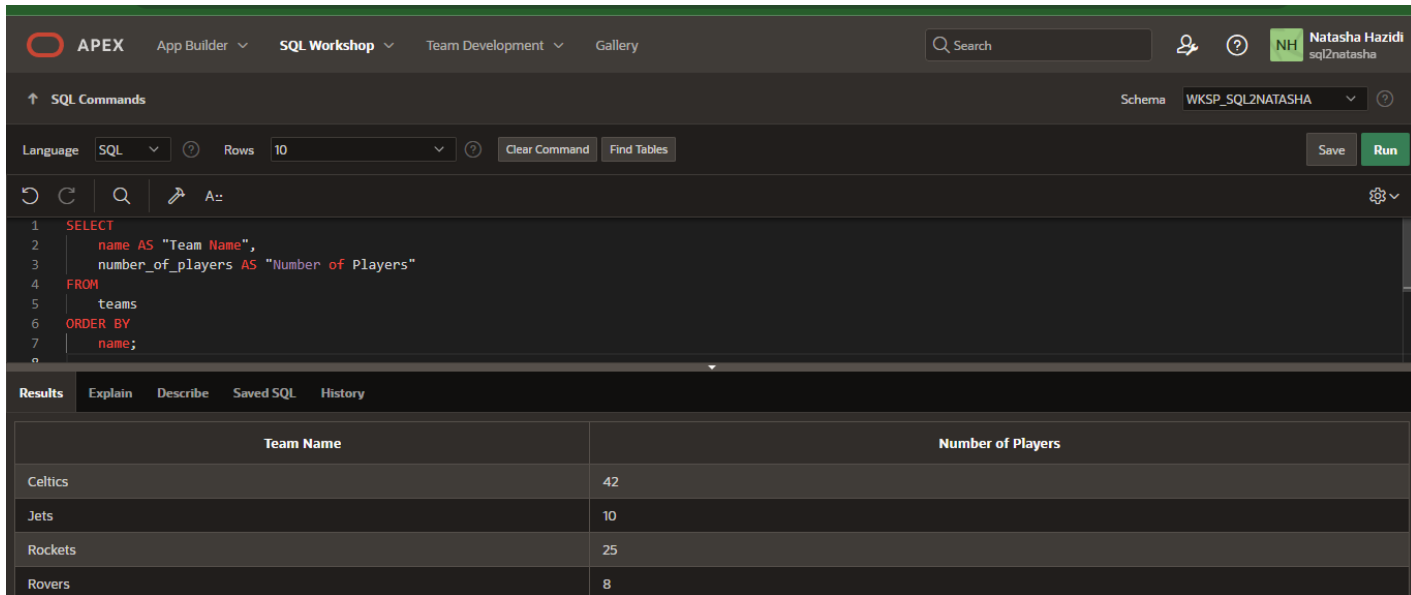
Customer Number	Street Address	Postal Code
c01986	36 Watercress Lane	JP23YTH
c00101	54 Ropehill Crescent	ST45AGV



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



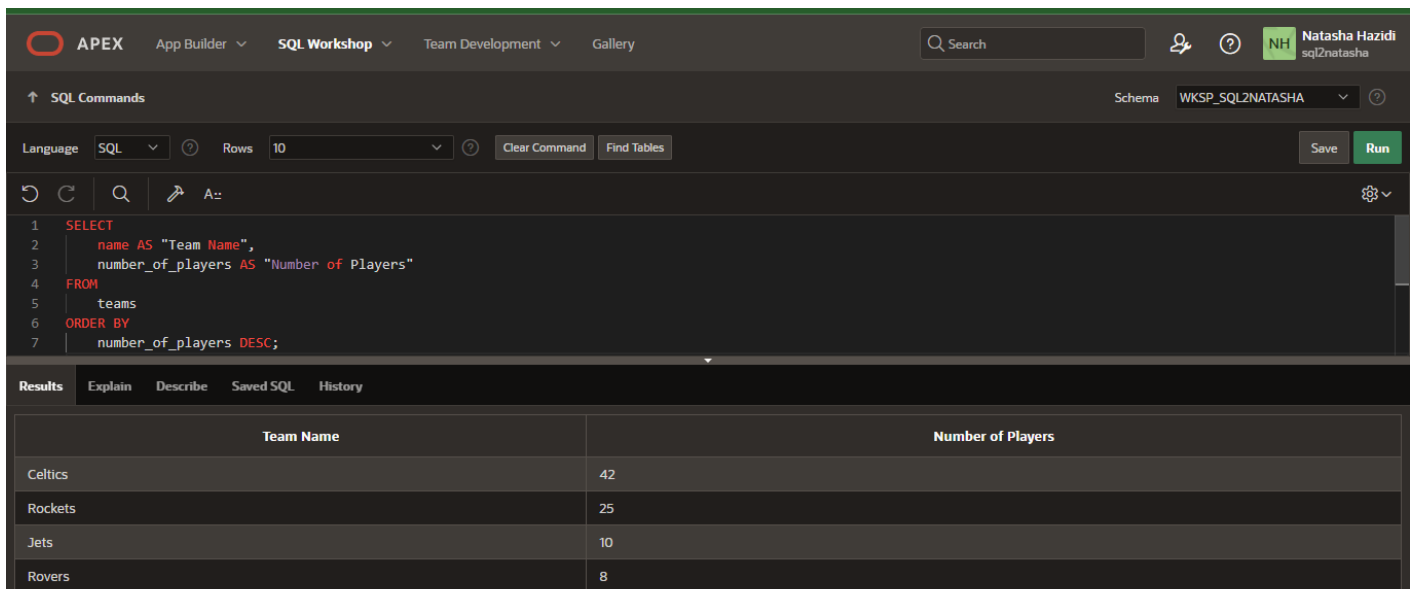
The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

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

The Results tab is selected, displaying a table with the following data:

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.



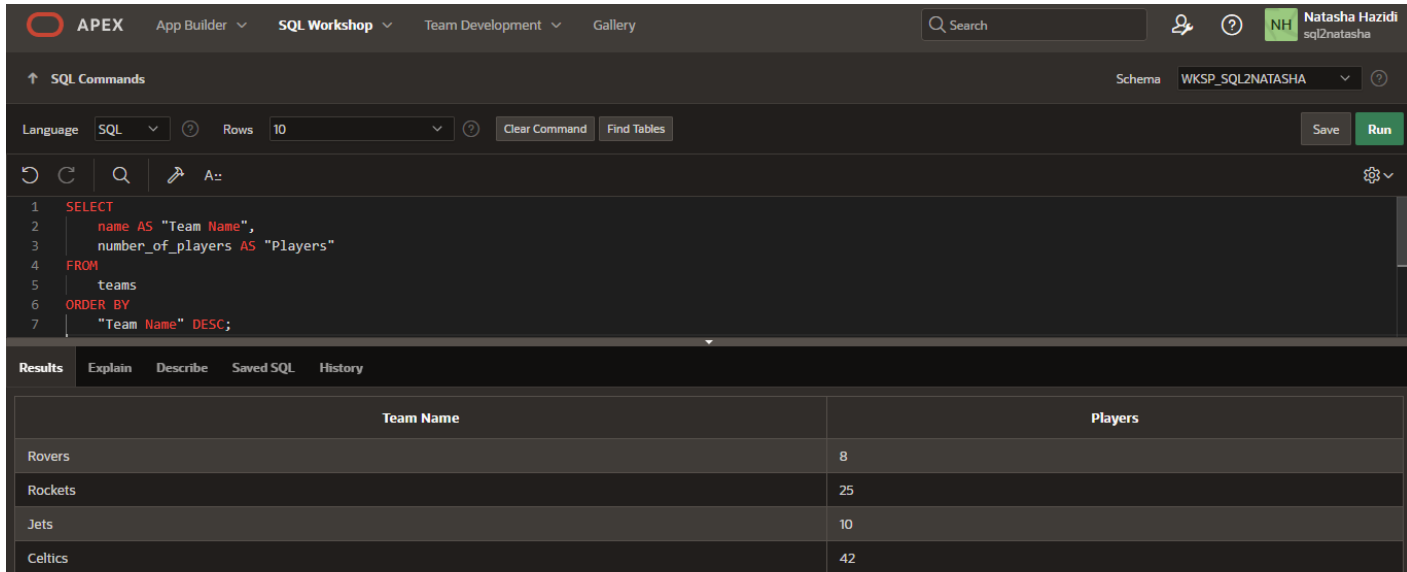
The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

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

The Results tab is selected, displaying a table with the following data:

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.



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 'Natasha Hazidi' are on the right. The 'SQL Commands' panel is active, showing a query in the 'SQL' language with 10 rows. The query is:

```
1 SELECT
2     name AS "Team Name",
3     number_of_players AS "Players"
4 FROM
5     teams
6 ORDER BY
7     "Team Name" DESC;
```

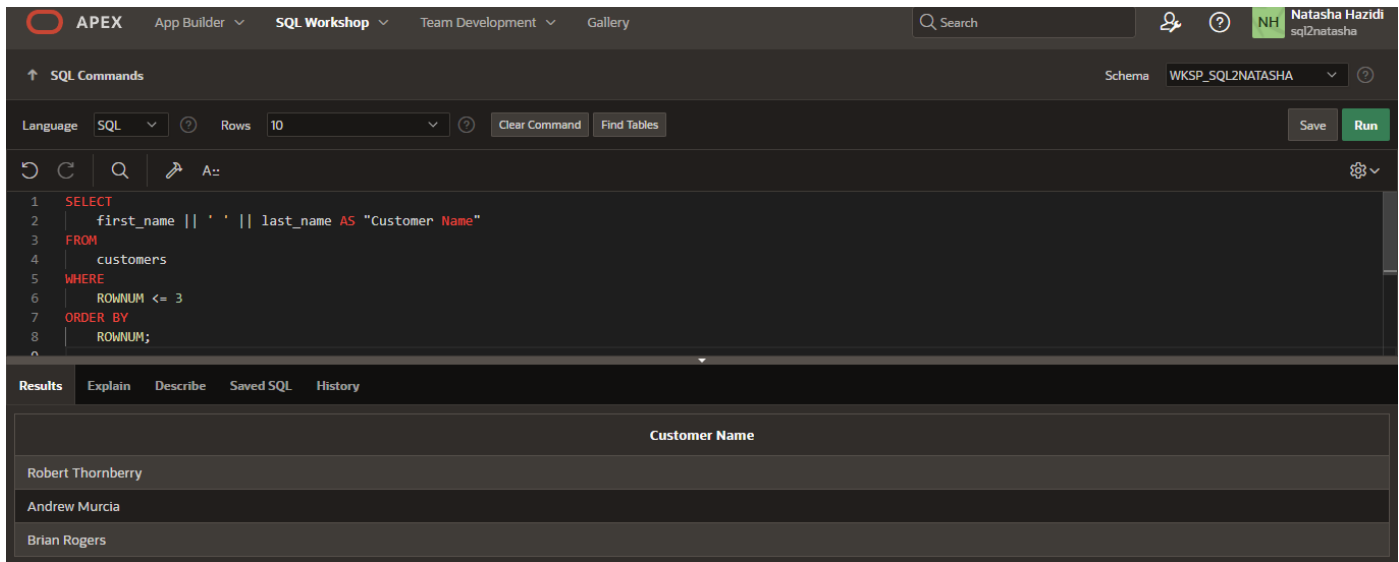
Below the query editor, the 'Results' tab is selected, displaying a table with two columns: 'Team Name' and 'Players'. The results are sorted in descending order of 'Team Name'.

Team Name	Players
Rovers	8
Rockets	25
Jets	10
Celtics	42

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 APEX SQL Workshop interface. The SQL command area contains the following query:

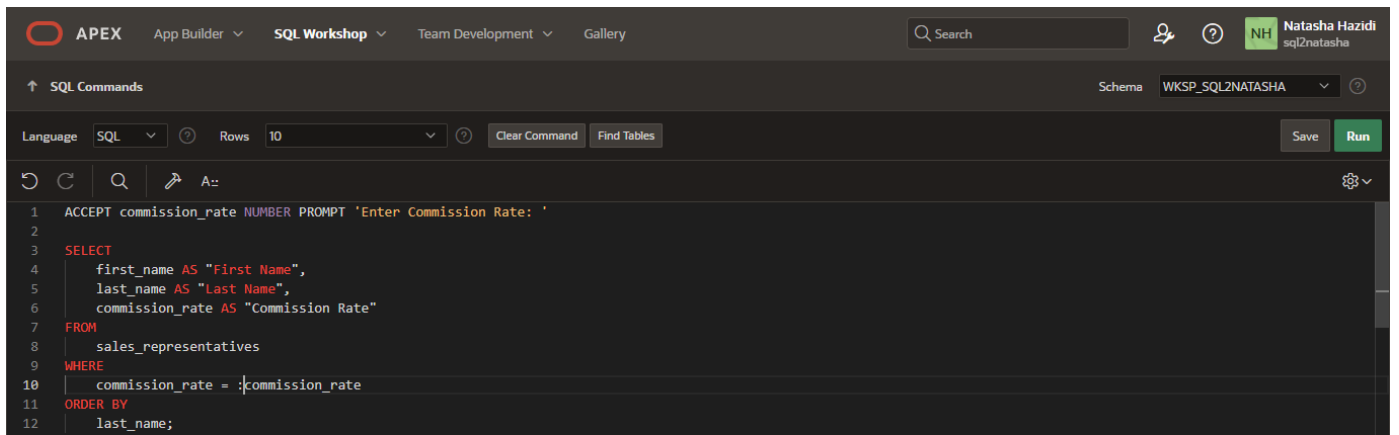
```
1 SELECT
2   first_name || ' ' || last_name AS "Customer Name"
3 FROM
4   customers
5 WHERE
6   ROWNUM <= 3
7 ORDER BY
8   ROWNUM;
```

The Results tab is selected, showing a table with one column, "Customer Name", and three rows of data:

Customer Name
Robert Thornberry
Andrew Murcia
Brian Rogers

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.



The screenshot shows the APEX SQL Workshop interface. The SQL command area contains the following query:

```
1 ACCEPT commission_rate NUMBER PROMPT 'Enter Commission Rate: '
2
3 SELECT
4   first_name AS "First Name",
5   last_name AS "Last Name",
6   commission_rate AS "Commission Rate"
7 FROM
8   sales_representatives
9 WHERE
10  commission_rate = :commission_rate
11 ORDER BY
12  last_name;
```


Enter Bind Variables - Google Chrome

apex.oracle.com/pls/apex/f?p=4500:138:20480558276486::

Submit

Bind Variable	Value
:COMMISSION_RATE	10

6486

Search

NH Natasha Hazidi sq12natasha

Schema WKSP_SQL2NATASHA

Save Run