

## Database Design Project

### Oracle Baseball League Store Database

#### Project Scenario:

You are a small consulting company specializing in database development. You have just been awarded the contract to develop a data model for a database application system for a small retail store called Oracle Baseball League (OBL).

The Oracle Baseball League store serves the entire surrounding community selling baseball kit. The OBL has two types of customer, there are individuals who purchase items like balls, cleats, gloves, shirts, screen printed t-shirts, and shorts. Additionally customers can represent a team when they purchase uniforms and equipment on behalf of the team.

Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players. When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

## 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;**

↑ SQL Commands

Schema: WKSP\_NDAYAH15

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

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

Results Explain Describe Saved SQL History

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	Jjones@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	-5	-	-	lc4587

6 rows returned in 0.04 seconds Download

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2. teams.

**SELECT\***

**FROM teams;**

APEX

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Team Development

Gallery

Search

NH

Nur Hidayah

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SQL Commands

SchemaWKSP\_NDAYAH15

LanguageSQL

Rows10

Clear Command

Find Tables

Save

Run

SQL

1SELECT\*

2FROM teams;

Results

Explain

Describe

Saved SQL

History

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

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3. Items

**SELECT\***

**FROM items;**

APEX

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NH

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SQL Commands

SchemaWKSP\_NDAYAH15

LanguageSQL

Rows10

Clear Command

Find Tables

Save

Run

SQL

1SELECT\*

2FROM customers;

Results

Explain

Describe

Saved SQL

History

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	JJones@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	-5	-	-	lc4587

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2

## Part 2: Selecting Specific Columns

1. 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 Oracle APEX SQL Workshop interface. The SQL command entered is:

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

The results are displayed in a table with 6 rows:

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

6 rows returned in 0.01 seconds. Download

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

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

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

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

The results are displayed in a table with 4 rows:

NAME	NUMBER_OF_PLAYERS
Jets	10
Rockets	25
Celtics	42
Rovers	8

4 rows returned in 0.03 seconds. Download

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

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

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there's a navigation bar with 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Nur Hidayah ndayah15' are on the right. Below this, the 'SQL Commands' section shows the executed query: `SELECT name, description, category FROM items;`. The 'Results' tab is active, displaying a table with 5 rows. The table has columns: NAME, DESCRIPTION, and CATEGORY. The data rows are: 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), and premium bat (high quaity baseball bat, equipment). Below the table, it states '5 rows returned in 0.01 seconds' with a 'Download' link. The footer contains user information, copyright notice, and version 'Oracle APEX 23.21'.

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 quaity baseball bat	equipment

## Database Design Project

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Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players. When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.



APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT first_name, last_name, current_balance, ROUND(current_balance/12,2)
2 FROM customers;

```

Results Explain Describe Saved SQL History

FIRST_NAME	LAST_NAME	CURRENT_BALANCE	ROUND(CURRENT_BALANCE/12,2)
Robert	Thornberry	150	12.5
Jennifer	Jones	0	0
John	Doe	987.5	82.29
Andrew	Murcia	85	7.08
Maria	Galant	125.65	10.47
Brian	Rogers	-5	-42

6 rows returned in 0.01 seconds Download

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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;

```

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT first_name, last_name, ctr_number, current_balance, current_balance-5
2 FROM customers;

```

Results Explain Describe Saved SQL History

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	Galant	c01986	125.65	120.65
Brian	Rogers	c02001	-5	-10

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3. What would be the problem with implementing this scheme?  
A negative number would be obtained by removing 5 if the current balance is already less than 5. Perhaps we could include a tick to make sure the current balance never drops below zero.



## 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;
```

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 'Nur Hidayah ndayah15' are on the right. Below the navigation bar, the 'SQL Commands' section shows a query with four columns aliased: 'FIRST NAME', 'LAST NAME', 'Balance', and 'MONTHLY REPAYMENTS'. The 'Results' tab is active, displaying a table with 6 rows. The table headers are 'FIRST NAME', 'LAST NAME', 'Balance', and 'MONTHLY REPAYMENTS'. The data rows are: Robert Thornberry (Balance: 150, Monthly Repayments: 12.5), Jennifer Jones (Balance: 0, Monthly Repayments: 0), John Doe (Balance: 987.5, Monthly Repayments: 82.291666666666666666666666666667), Andrew Murcia (Balance: 85, Monthly Repayments: 7.08333333333333333333333333333333), Maria Galant (Balance: 125.65, Monthly Repayments: 10.47083333333333333333333333333333), and Brian Rogers (Balance: -5, Monthly Repayments: -41.666666666666666666666666666667). The status bar at the bottom indicates '6 rows returned in 0.01 seconds' and includes a 'Download' button.

FIRST NAME	LAST NAME	Balance	MONTHLY REPAYMENTS
Robert	Thornberry	150	12.5
Jennifer	Jones	0	0
John	Doe	987.5	82.291666666666666666666666666667
Andrew	Murcia	85	7.08333333333333333333333333333333
Maria	Galant	125.65	10.47083333333333333333333333333333
Brian	Rogers	-5	-41.666666666666666666666666666667

## 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"
```

APEX App Builder SQL Workshop Team Development Gallery

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SQL Commands Schema WKSP\_NDAYAH15

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 ' || discount || 'percent.' AS "Team Information"
2 FROM teams;
```

Results Explain Describe Saved SQL History

Team Information
TheJetsteam has 10 players and receives a discount of 5percent.
TheRocketsteam has 25 players and receives a discount of 10percent.
TheCelticsteam has 42 players and receives a discount of 20percent.
TheRoversteam has 8 players and receives a discount of percent.

4 rows returned in 0.01 seconds Download

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2. Why does the last team not show a discount?  
The value is null and not equal to zero.

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OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

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

The results tab is active, 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	125.65	sr03	t003	-

1 rows returned in 0.03 seconds. A Download link is available.

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", current_balance AS "Balance"
FROM customers
WHERE current_balance > 100;
```

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

```
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 is active, displaying a table with the following data:

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

3 rows returned in 0.01 seconds. A Download link is available.

- Display the order id, date and time of all orders that were placed before the 28<sup>th</sup> of May 2019. Use an appropriate alias for your column headings.  
 SELECT id AS "Order ID", odr\_date AS "Order Date", TO\_CHAR(odr\_time, 'HH24:MI:SS') AS "Order Time"  
 FROM orders  
 WHERE odr\_date < '28-May-2017';

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 'Nur Hidayah ndayah15' are on the right. The 'SQL Commands' section shows a query with three lines: 'SELECT ID AS "ORDER ID", ODR\_DATE AS "ORDER DATE", TO\_CHAR(ODR\_TIME, 'HH24:MI:SS') AS "ORDER TIME"', 'FROM ORDERS', and 'WHERE ODR\_DATE < TO\_DATE ('28-MAY-2019', 'DD-MON-YYYY');'. The 'Results' tab is active, displaying a table with three columns: 'ORDER ID', 'ORDER DATE', and 'ORDER TIME'. The table contains five rows of data. Below the table, it states '5 rows returned in 0.03 seconds' and provides a 'Download' link. The footer shows the user's email 'nrhidayh2003@gmail.com', the username 'ndayah15', the language 'en', and the copyright notice 'Copyright © 1999, 2023, Oracle and/or its affiliates. Oracle APEX 23.21'.

ORDER ID	ORDER 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

## 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.  
 SELECT id AS "Inventory ID", cost AS "Cost", units AS "Number of Units in Stock"  
 FROM inventory\_list  
 WHERE cost BETWEEN 3 AND 15;

APEX

App Builder

SQL Workshop

Team Development

Gallery

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ndayah15

SQL Commands

SchemaWKSP\_NDAYAH15

LanguageSQLRows10Clear CommandFind TablesSaveRun

A:

```
1 SELECT id AS "Inventory ID", cost AS "Cost" , units AS "Number of Units in Stock"
2 FROM inventory_list
3 WHERE cost BETWEEN 3 AND 15;
```

Results

ExplainDescribeSaved SQLHistory

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

2 rows returned in 0.04 secondsDownload

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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 in Stock"
- FROM inventory\_list
- WHERE units IN (50,100,150,200,250);

APEX

App Builder

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SQL Commands

SchemaWKSP\_NDAYAH15

LanguageSQLRows10Clear CommandFind TablesSaveRun

A:

```
1 SELECT id AS "Inventory ID", cost AS "Cost" , units AS "Number of Units in Stock"
2 FROM inventory_list
3 WHERE units IN (50,100,150,200,250)
```

Results

ExplainDescribeSaved SQLHistory

Inventory ID	Cost	Number of Units in Stock
il010230124	2.5	100
il010230125	7.99	250

2 rows returned in 0.01 secondsDownload

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ndayah15

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## 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 in Stock"

FROM inventory\_list

WHERE units NOT IN (50,100,150,200,250);

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 'Nur Hidayah ndayah15' are on the right. Below the navigation bar, the 'SQL Commands' tab is active, showing a SQL query in the editor. The query is:   
1 SELECT id AS "Inventory ID", cost AS "Cost", units AS "Number of Units in Stock"  
2 FROM inventory\_list  
3 WHERE units NOT IN (50,100,150,200,250);  
The 'Results' tab is selected, displaying a table with 3 rows. The table has three columns: 'Inventory ID', 'Cost', and 'Number of Units in Stock'. The data rows are:   
1. Inventory ID: il010230126, Cost: 5.24, Number of Units in Stock: 87  
2. Inventory ID: il010230127, Cost: 18.95, Number of Units in Stock: 65  
3. Inventory ID: il010230128, Cost: 97.46, Number of Units in Stock: 8  
Below the table, it says '3 rows returned in 0.00 seconds' and 'Download'. The footer shows the user 'nrhdayh2003@gmail.com', 'ndayah15', 'en', and 'Oracle APEX 23.2.1'.

Inventory ID	Cost	Number of Units in Stock
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 ID", name AS "Item Name"

FROM items

WHERE name LIKE 'g%';

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT itm_number AS "Item ID", name AS "Item Name"
2 FROM items
3 WHERE name LIKE 'g%';

```

Results Explain Describe Saved SQL History

Item ID	Item Name
im01101044	gloves
im01101047	game top

2 rows returned in 0.01 seconds Download

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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.

```

SELECT itm_number AS "Item ID", name AS "Item Name"
FROM items
WHERE name LIKE '%o%';

```

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 SELECT itm_number AS "Item ID", name AS "Item Name"
2 FROM items
3 WHERE name LIKE '%o%';

```

Results Explain Describe Saved SQL History

Item ID	Item Name
im01101044	gloves
im01101046	socks
im01101047	game top

3 rows returned in 0.01 seconds Download

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## Section 6 Lesson 7 Exercise 2: Restricting Data Using WHERE

### Limit rows using WHERE (S6L7 Objective 1)

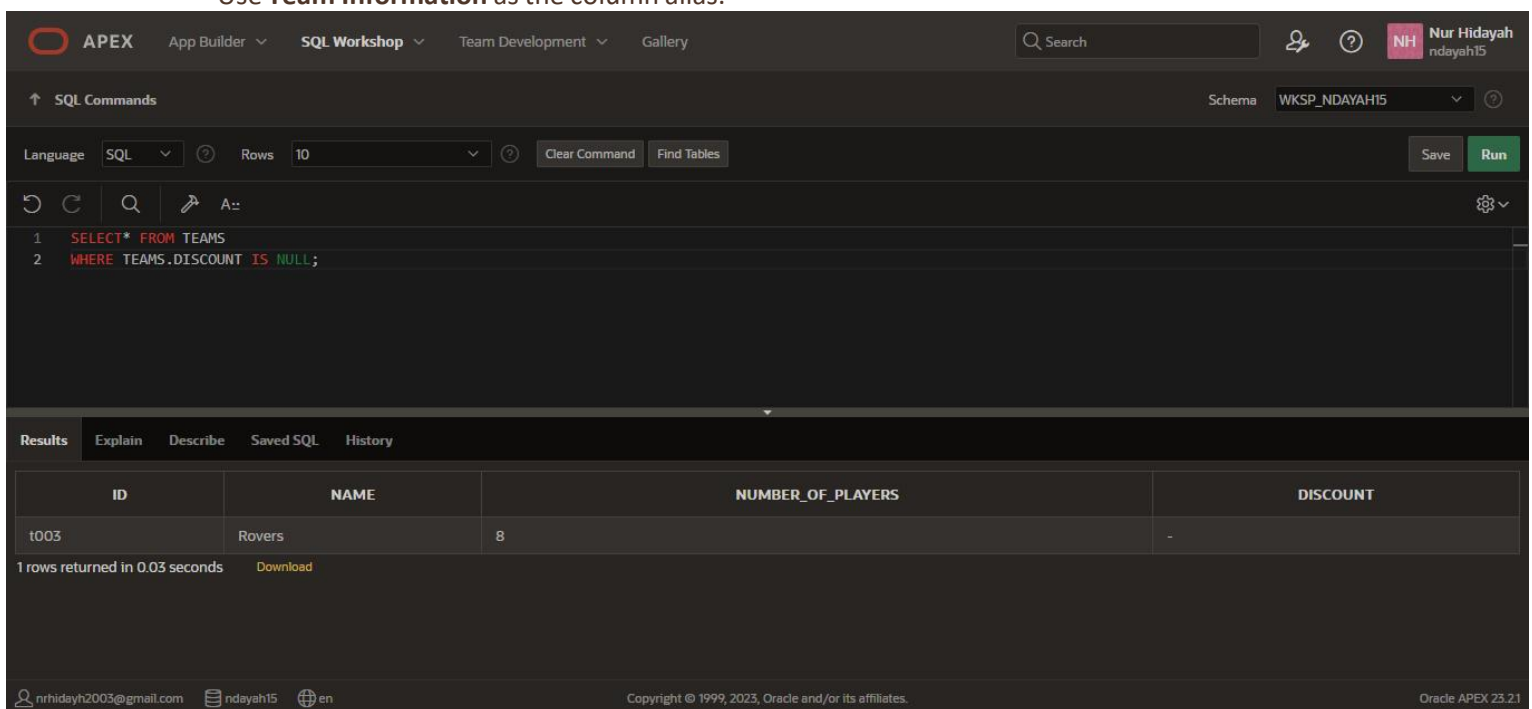
In this exercise you will refine the data that is returned in your query by adding a WHERE clause to your SELECT statement.

#### 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 APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Nur Hidayah ndayah15' are on the right. The 'SQL Commands' panel shows a query: `SELECT * FROM TEAMS WHERE TEAMS.DISCOUNT IS NULL;`. The 'Results' panel displays a table with 1 row: 

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
t003	Rovers	8	-

. The footer shows the user email 'nrhidayah2003@gmail.com', schema 'ndayah15', and Oracle APEX 23.21 version.

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.

**APEX** App Builder SQL Workshop Team Development Gallery

Search

Schema: WKSP\_NDAYAH15

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

```

1 SELECT * FROM TEAMS
2 WHERE TEAMS.DISCOUNT IS NOT NULL;

```

Results Explain Describe Saved SQL History

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
t004	Jets	10	5
t001	Rockets	25	10
t002	Celtics	42	20

3 rows returned in 0.00 seconds Download

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## 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.

**APEX** App Builder SQL Workshop Team Development Gallery

Search

Schema: WKSP\_NDAYAH15

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

```

1 SELECT ctr_number, ADDRESS_LINE_1, ZIP_CODE
2 FROM customers_addresses
3 WHERE CUSTOMERS_ADDRESSES.ADDRESS_LINE_2 = 'Starford'
4 AND CUSTOMERS_ADDRESSES.CITY = 'Liverpool';

```

Results Explain Describe Saved SQL History

CTR_NUMBER	ADDRESS_LINE_1	ZIP_CODE
c00001	17 Gartsquare Road	LP89JHK

1 rows returned in 0.04 seconds Download

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## 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.

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CTR_NUMBER	ADDRESS_LINE_1	ZIP_CODE
c00001	17 Gartsquare Road	LP89JHK
c00001	63 Acacia Drive	LP83JHR

. The footer shows the user email 'nrhidayah2003@gmail.com', workspace 'ndayah15', and copyright information.

#### 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 Oracle APEX SQL Workshop interface. The top navigation bar is the same as the previous screenshot. The 'SQL Commands' tab shows a query: `SELECT ctr_number, ADDRESS_LINE_1, ZIP_CODE FROM customers_addresses WHERE CUSTOMERS_ADDRESSES.CITY != 'Liverpool';`. The 'Results' tab shows a table with 2 rows: 

CTR_NUMBER	ADDRESS_LINE_1	ZIP_CODE
c00101	54 Ropehill Crescent	ST45AGV
c01986	36 Watercress Lane	JP23YTH

. The footer shows the user email 'nrhidayah2003@gmail.com', workspace 'ndayah15', and copyright information.

## Database Design Project

### Oracle Baseball League Store Database

#### Project Scenario:

You are a small consulting company specializing in database development. You have just been awarded the contract to develop a data model for a database application system for a small retail store called Oracle Baseball League (OBL).

The Oracle Baseball League store serves the entire surrounding community selling baseball kit. The OBL has two types of customer, there are individuals who purchase items like balls, cleats, gloves, shirts, screen printed t-shirts, and shorts. Additionally customers can represent a team when they purchase uniforms and equipment on behalf of the team.

Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players. When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

#### 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 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 'Nur Hidayah' are on the right. The 'SQL Commands' tab is active, showing a query: 

```
1 SELECT NAME, NUMBER_OF_PLAYERS
2 FROM TEAMS
3 ORDER BY NAME ASC;
```

 The 'Results' tab is selected, displaying 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 0.01 seconds' and provides a 'Download' link. The footer shows the user's email 'nrhidayah2003@gmail.com', the username 'ndayah15', and the Oracle APEX version '23.2.1'.

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 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 'Nur Hidayah ndayah15' are on the right. Below the navigation bar, the 'SQL Commands' section shows a query: 

```
1 SELECT NAME, NUMBER_OF_PLAYERS
2 FROM TEAMS
3 ORDER BY NUMBER_OF_PLAYERS DESC;
```

 The 'Results' tab is active, displaying a table with two columns: 'NAME' and 'NUMBER\_OF\_PLAYERS'. The table contains four rows: 'Celtics' (42), 'Rockets' (25), 'Jets' (10), and 'Rovers' (8). Below the table, it states '4 rows returned in 0.01 seconds' and provides a 'Download' link. The footer shows the user's email 'nrhidayh2003@gmail.com', the workspace 'ndayah15', and the Oracle APEX version '23.2.1'.

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 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 'Nur Hidayah ndayah15' are on the right. Below the navigation bar, the 'SQL Commands' section shows a query: 

```
1 SELECT NAME AS Team_Name, NUMBER_OF_PLAYERS AS Players
2 FROM TEAMS
3 ORDER BY NAME DESC;
```

 The 'Results' tab is active, displaying a table with two columns: 'TEAM\_NAME' and 'PLAYERS'. The table contains four rows: 'Rovers' (8), 'Rockets' (25), 'Jets' (10), and 'Celtics' (42). Below the table, it states '4 rows returned in 0.01 seconds' and provides a 'Download' link. The footer shows the user's email 'nrhidayh2003@gmail.com', the workspace 'ndayah15', and the Oracle APEX version '23.2.1'.

TEAM_NAME	PLAYERS
Rovers	8
Rockets	25
Jets	10
Celtics	42

## Database Design Project

### Oracle Baseball League Store Database

#### Project Scenario:

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Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players. When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

#### 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 of Membership", first_name || ' ' || last_name AS "Customer Name"
FROM
(SELECT first_name, last_name
FROM customers
ORDER BY ctr_number)
WHERE ROWNUM <= 3;
```

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

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

Results Explain Describe Saved SQL History

Order of Membership	Customer Name
1	RobertThornberry
2	JenniferJones
3	JohnDoe

3 rows returned in 0.02 seconds Download

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## 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 || ' ' || last\_name AS "Sales Representative Details"  
FROM sales\_representatives  
WHERE commision\_rate = :commission\_rate  
ORDER BY last\_name;

APEX App Builder SQL Workshop Team Development Gallery

Search

Schema WKSP\_NDAYAH15

Language SQL Rows 10 Clear Command Find Tables Save Run

```
1 SELECT first_name || ' ' || last_name AS "Sales Representative Details"
2 FROM sales_representatives
3 WHERE commision_rate = :commission_rate
4 ORDER BY last_name;
```

Results Explain Describe Saved SQL History

Enter Bind Variables - Google Chrome

apex.oracle.com/pls/apex/f?p=4500:138:100973398613092:::

Submit

Bind Variable	Value
:COMMISSION_RATE	9

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LanguageSQLRows10Clear CommandFind TablesSaveRun

A:

1SELECT

2FIRST\_NAME||' '||LAST\_NAME AS "SALE REPRESENTATIVES" FROM SALES\_REPRESENTATIVES

3WHERE COMMISSION\_RATE=:COMMISSION\_RATE

4ORDER BY LAST\_NAME

Results

ExplainDescribeSaved SQLHistory

SALE REPRESENTATIVES

Barry Speed

Victoria Wright

2 rows returned in 0.01 secondsDownload