



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
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SECD2523 - DATABASE

SEMESTER I - SESSION 2023/2024

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LAB 3

SECTION : 06

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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 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;`

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	-	-	lc2541
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
c02001	brianroggy@hootech.com	Brian	Rogers	01654564898	50	-	-	lc4587

2. teams.

— `SELECT * FROM teams;`

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

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

3. items

— `SELECT * FROM items;`

Results	Explain	Describe	Saved SQL	History		
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 0.02 seconds [Download](#)

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;`

Results	Explain	Describe	Saved SQL	History
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
c00105	Andrew	Murcia	MurciaA@globaltech.com	07715246890
c01986	Maria	Galant	margal87@delphiview.com	01442736589
c02001	Brian	Rogers	brianroggy@hototech.com	01654564898

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

— `SELECT name, number_of_players
FROM teams;`

Results	Explain	Describe	Saved SQL	History
NAME	NUMBER_OF_PLAYERS			
Rockets	25			
Celtics	42			
Rovers	8			
Jets	10			

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

- SELECT name, description, category

FROM items;

Results	Explain	Describe	Saved SQL	History
	NAME	DESCRIPTION	CATEGORY	
gloves	catcher mitt		clothing	
under shirt	top worn under the game top		clothing	
socks	team socks with emblem		clothing	
game top	team shirt with emblem		clothing	
premium bat	high quality baseball bat		equipment	

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Section 6 Lesson 6 Exercise 2: Retrieving Data Using SELECT

Write and Execute SELECT statements (S6L6 Objective 2)

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

Part 1: Using Arithmetic Operators

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

```
- SELECT first_name, last_name, current_balance, current_balance / 12
      FROM customers;
```

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;

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	50	45

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

- The current balance cannot be zero value.

Part 2 : Using Column Aliases

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

```
- SELECT first_name AS "First Name", last_name AS "Last Name", current_balance AS "Balance",  
      current_balance/12 AS "Monthly Repayments"
```

FROM customers;

Part 3: Using Literal Character Strings

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

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

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

```
- SELECT 'The' || name || 'team has ' || number_of_players || 'players and receives a discount of ' || discount ||  
' percent.' AS "Team information"  
FROM teams;
```

Results	Explain	Describe	Saved SQL	History
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.				
4 rows returned in 0.01 seconds Download				

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

It contains NULL value that is not equal to zero.

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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.

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

- `SELECT * FROM customers`

`WHERE ctr-number = 'c01986';`

Results	Explain	Describe	Saved SQL	History				
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 0.01 seconds [Download](#)

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

- `SELECT first-name AS "First Name", last-name AS "Last Name", ctr-number AS "Customer Number", current-balance AS "Balance"`
`FROM customers`

`WHERE current-balance > 100;`

Results	Explain	Describe	Saved SQL	History
First Name	Last Name		Customer Number	
Robert	Thornberry	c00001		150
John	Doe	c00101		987.5
Maria	Galant	c01986		125.65

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

- `SELECT id AS 'Order ID', odr-date AS 'Date', TO_CHAR(odr-time, 'HH24:MI:SS') AS "Time"`
`FROM orders`

`WHERE odr-date < TO_DATE('28-May-2019', 'DD-MM-YYYY');`

Results	Explain	Describe	Saved SQL	History
Order ID	Date		Time	
or0101250	04/17/2017		08:32:30	
or0101350	05/24/2017		10:50:35	
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

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

- SELECT id AS "Inventory ID", cost AS "Cost", units AS "Number of Units"

FROM inventory_list

WHERE cost between 3.00 AND 15.00;

Results	Explain	Describe	Saved SQL	History
		Inventory ID	Cost	Number of units
		iI01230125	799	250
		iI01230126	5.24	87

Part 3: Membership Conditions: IN Operator

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

- SELECT id AS "Inventory ID", cost AS "Cost", units AS "Number of Units"

FROM inventory_list

WHERE units IN (50, 100, 150, 200);

Results	Explain	Describe	Saved SQL	History
		Inventory ID	Cost	Number of units
		iI010230124	2.5	100
1 rows returned in 0.01 seconds Download				

Part 4: Membership Conditions: NOT IN Operator

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

- `SELECT id AS "Inventory ID", cost AS "Cost", units AS "Number of Units"
FROM inventory_list
WHERE units NOT IN (50, 100, 150, 200);`

Results	Explain	Describe	Saved SQL	History
		Inventory ID	Cost	Number of units
il010230125			7.99	250
il010230126			5.24	87
il010230127			18.95	65
il010230128			97.46	8
il010230111			6.5	700

Part 5: Pattern Matching: LIKE Operator

- 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 item_number AS "Item Number", name AS "Name"
FROM items
WHERE name LIKE 'g%';`

Results	Explain	Describe	Saved SQL	History
		Item Number	Name	
im01101044			gloves	
im01101047			game top	

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

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

- `SELECT item_number AS "Item Number", name AS "Name"
FROM Items
WHERE name LIKE '_o%';`

Results	Explain	Describe	Saved SQL	History
Item Number				Name
im01101046				socks

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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.

- `SELECT 'The' || name || 'team has' || number_of_players || 'players and does not receive a discount.'`

`AS "Team Information"`

`FROM teams`

`WHERE discount IS NULL;`

Results	Explain	Describe	Saved SQL	History
Team Information				
The 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.

- `SELECT 'The' || name || 'team has' || number_of_players || 'players and receive a discount of'`

`|| discount || 'percent.' AS "Team Information"`

`FROM teams`

`WHERE discount IS NOT NULL;`

Results	Explain	Describe	Saved SQL	History
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.				

Part 2: Logical Operators: AND

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

```
- SELECT ctr_number AS "Customer Number", address_line_1 AS "Street Address", zip_code AS "Postal Code"  
FROM customers_addresses  
WHERE city = 'Liverpool' AND address_line_2 = 'Starford';
```

Results	Explain	Describe	Saved SQL	History
Customer Number	Street Address	Postal Code		
c00001	17 Gartsquare Road		LP89JHK	

Part 3: Logical Operators: OR

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

```
- SELECT ctr_number AS "Customer Number", address_line_1 AS "Street Address", zip_code AS "Postal Code"  
FROM customers_addresses  
WHERE city = 'Liverpool' OR address_line_2 = 'Starford';
```

Results	Explain	Describe	Saved SQL	History
Customer Number	Street Address	Postal Code		
c00001	17 Gartsquare Road		LP89JHK	
c00001	63 Acacia Drive		LP83JHR	

Part 4: Logical Operators: NOT Equal To

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

```
- SELECT ctr_number AS "Customer Number", address_line_1 AS "Street Address", zip_code AS "Postal Code"  
FROM customers_addresses  
WHERE city NOT IN ('Liverpool');
```

Results	Explain	Describe	Saved SQL	History
		Customer Number	Street Address	Postal Code
c00101			54 Ropehill Crescent	ST45AGV
c01986			36 Watercress Lane	JP23YTH

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

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

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

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

- `SELECT name AS "Team Name", number_of_players AS "Number of players"
FROM teams
ORDER BY name;`

Results		Explain	Describe	Saved SQL	History
		Team Name		Number of players	
Celtics			42		
Jets			10		
Rockets			25		
Rovers			8		

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

- SELECT name AS "Team Name", number_of_players AS "Number of players"
FROM teams
ORDER BY number_of_players DESC;

Results		Explain	Describe	Saved SQL	History
		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 ORDER BY clause.

- SELECT name AS "Team Name", number_of_players AS "players"
FROM teams
ORDER BY name DESC;

Results		Explain	Describe	Saved SQL	History
		Team Name	Players		
Rovers			8		
Rockets			25		
Jets			10		
Celtics			42		

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

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

- 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 "Customer Number", first_name || ' ' || last_name AS "Customer Name"  
FROM (SELECT first_name, last_name FROM customers)  
WHERE ROWNUM <=3;
```

Results	Explain	Describe	Saved SQL	History
Customer Number				Customer Name
1				Robert Thornberry
2				Jennifer Jones
3				John Doe

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

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

```
- SELECT first_name AS "First Name", last_name AS "Last Name", commission_rate AS "Commission Rate"  
FROM sales_representatives  
WHERE commission_rate = :commission_rate  
ORDER BY last_name;
```

Enter Bind Variables - Google Chrome

apex.oracle.com/pls/apex/f?p=4500:138:16085880765140::

Submit

Bind Variable	Value
:COMMISSION_RATE	5

Results	Explain	Describe	Saved SQL	History
First Name				Last Name
Barry				Speed
Victoria				Wright
2 rows returned in 0.00 seconds Download				