UNIVERSITI TEKNOLOGI MALAYSIA

SEMESTER 1, SESSION 2023/2024

EXERCISE 3

SECD2523 : DATABASE

SECTION 10

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Section 6 Lesson 6 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 tables:

1) customers.

```
SELECT *FROM customers;
```

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	-

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5 rows selected.

2) Teams.

```
SELECT *FROM teams;
```

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

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3 rows selected.

3) Items

```
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 quaity basball bat	equipment	-	-	il010230128

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5 rows selected.

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;
```

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

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5 rows selected.

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

```
SELECT name, number_of_players
FROM Teams;
```

NAME	NUMBER_OF_PLAYERS
Rockets	25
Celtics	42
Rovers	8

Download CSV

3 rows selected.

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

```
SELECT name, description, category
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 quaity basball bat	equipment

Download CSV

5 rows selected.

Section 6 Lesson 6 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.

```
SELECT first_name,last_name,current_balance,current_balance / 12 AS monthly_payment
FROM customers;
```

FIRST_NAME	LAST_NAME	CURRENT_BALANCE	MONTHLY_PAYMENT
Robert	Thornberry	150	12.5
Jennifer	Jones	0	0
John	Doe	987.5	82.291666666666666666666666666666666666667
Andrew	Murcia	85	7.083333333333333333333333333333333333333
Maria	Galant	125.65	10.470833333333333333333333333333333333333

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5 rows selected.

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 - 5.00 AS adjusted_balance
FROM customers;
```

FIRST_NAME	LAST_NAME	CTR_NUMBER	CURRENT_BALANCE	ADJUSTED_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

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5 rows selected.

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

There may be difficulties in implementing a $5 gift card for every customer. These difficulties could include potential unfairness in gift amounts,different customer perceptions, implementation costs, problems with tracking and redemption, an unclear effect on future purchases, and the requirement to accommodate a range of customer preferences.

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;
```

First Name	Last Name	Balance	Monthly Repayments
Robert	Thornberry	150	12.5
Jennifer	Jones	0	0
John	Doe	987.5	82.291666666666666666666666666666666666667
Andrew	Murcia	85	7.083333333333333333333333333333333333
Maria	Galant	125.65	10.470833333333333333333333333333333333

Download CSV

5 rows selected.

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 10 percent.' AS "Team Information"
 FROM Teams;
```

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

Download CSV

3 rows selected.

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

The last team may not show a discount in the displayed information because the query assumes a fixed 10 percent discount for all teams, and if the last team is not eligible for the discount, additional conditional logic or information is needed to handle such cases.

Section 6 Lesson 7 Exercise 1: 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.

```
SELECT * FROM customers WHERE first_name = 'Maria' AND last_name = 'Galant'
```

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	-

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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",ctr_number AS "Customer Number"
 FROM customers
 WHERE current_balance > 100;

```

First Name	Last Name	Customer Number
Robert	Thornberry	c00001
John	Doe	c00101
Maria	Galant	c01986

Download CSV

3 rows selected.

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.

```
SELECT id AS "Order ID",odr_date AS "Order Date",odr_time AS "Order Time"
 FROM orders
 WHERE TO_DATE(odr_date, 'DD-Mon-YYYY') < TO_DATE('28-May-2019', 'DD-Mon-YYYY');

```

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

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5 rows selected.

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;
```

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

Download CSV

2 rows selected.

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);
```

Inventory ID	Cost	Number of Units
il010230124	2.5	100

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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"
FROM inventory_list
WHERE units NOT IN (50, 100, 150, 200);
```

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

Download CSV

4 rows selected.

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

Item Number	Name
im01101044	gloves
im01101047	game top

Download CSV

2 rows selected.

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 Number", name AS "Name"
FROM items
WHERE name LIKE '%o%';
```

Item Number	Name
im01101044	gloves
im01101046	socks
im01101047	game top

Download CSV

3 rows selected.

Section 6 Lesson 7 Exercise 2: 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: The Rovers team has 25 players and does not receive a discount. Use Team Information as the column alias

```
SELECT name || ' team has ' || number_of_players || ' players and does not receive a discount.' AS "Team Information"
FROM Teams
WHERE discount IS NULL;
```

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

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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 name || ' team has ' || number_of_players || ' players and does not receive a discount.' AS "Team Information"
FROM Teams
WHERE discount IS NOT NULL;
```

Team Information
Rockets team has 25 players and does not receive a discount.
Celtics team has 42 players and does not receive a discount.

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2 rows selected.

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';
```

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK

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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';
```

Customer Number	Street Address	Postal Code
c00001	83 Barrhill Drive	LP79HJK
c00001	17 Gartsquare Road	LP89JHK
c00001	63 Acacia Drive	LP83JHR

Download CSV

3 rows selected.

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 != 'Liverpool';
```

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

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2 rows selected.

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

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.

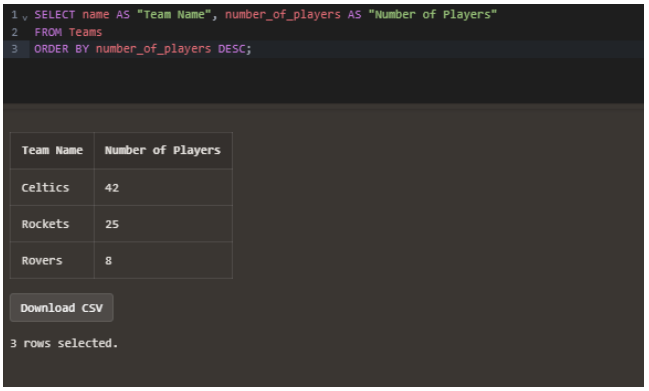
```
SELECT name AS "Team Name", number_of_players AS "Number of Players"
FROM Teams
ORDER BY name;
```

Team Name	Number of Players
Celtics	42
Rockets	25
Rovers	8

Download CSV

3 rows selected.

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



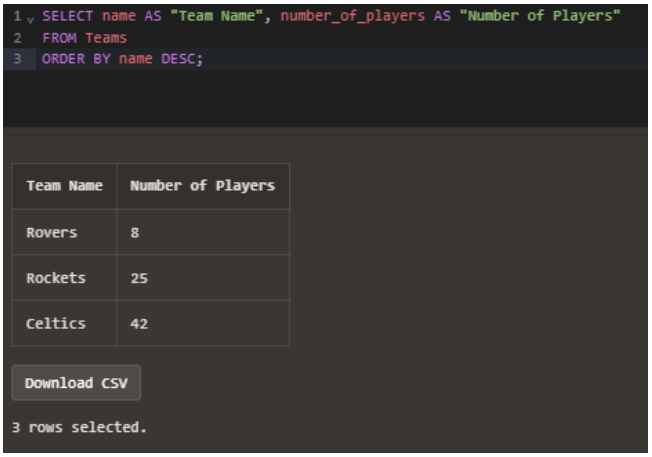
```
SELECT name AS "Team Name", number_of_players AS "Number of Players"
FROM Teams
ORDER BY number_of_players DESC;
```

Team Name	Number of Players
Celtics	42
Rockets	25
Rovers	8

Download CSV

3 rows selected.

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.



```
SELECT name AS "Team Name", number_of_players AS "Number of Players"
FROM Teams
ORDER BY name DESC;
```

Team Name	Number of Players
Rovers	8
Rockets	25
Celtics	42

Download CSV

3 rows selected.

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.

```
1 SELECT first_name || ' ' || last_name AS "Customer Name"
2  FROM customers
3  WHERE ROWNUM <= 3;
4
```

Customer Name
Robert Thornberry
Jennifer Jones
John Doe

Download CSV

3 rows selected.

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.

```
1 SELECT first_name AS "First Name",last_name AS "Last Name"
2  FROM sales_representatives
3  ORDER BY last_name;
4
```

First Name	Last Name
Charles	Raymond
Barry	Speed
Victoria	Wright

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3 rows selected.