



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Faculty of Computing

SECD2523 : Database

LAB 3

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SECTION : 08

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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

```
1 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	9875	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

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

2. Teams

```
1 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 0.01 seconds [Download](#)

3. Items

```
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 basball 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.

```
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

6 rows returned in 0.01 seconds [Download](#)

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

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

NAME	NUMBER_OF_PLAYERS
Rockets	25
Celtics	42
Rovers	8
Jets	10

4 rows returned in 0.01 seconds [Download](#)

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

```
1 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 quaiaty baseball bat	equipment

5 rows returned in 0.01 seconds [Download](#)

Part 1: Using Arithmetic Operators

- ```
1 SELECT first_name,last_name,current_balance/12 AS monthly_payment
```
- ```
2 FROM customers
```
- | FIRST_NAME | LAST_NAME | MONTHLY_PAYMENT |
|------------|------------|---|
| Robert | Thornberry | 12.5 |
| Jennifer | Jones | 0 |
| John | Doe | 82.291666666666666666666666666666666666666667 |
| Andrew | Murcia | 7.08333 |
| Maria | Galant | 10.470833333333333333333333333333333333333333 |
| Brian | Rogers | 4.1667 |
- 6 rows returned in 0.01 seconds Download

- ```
1 SELECT first_name,last_name,ctr_number,current_balance,current_balance - 5.00 AS discount_price
2 FROM customers
```

**Results** Explain Describe Saved SQL History

| FIRST_NAME | LAST_NAME  | CTR_NUMBER | CURRENT_BALANCE | DISCOUNT_PRICE |
|------------|------------|------------|-----------------|----------------|
| 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             |

6 rows returned in 0.01 seconds [Download](#)

3. What would be the problem with implementing this scheme?  
The row with first\_name Jennifer will violate to the constraints because the current\_balance will become negative after deduction.

## 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:  
The Rockets team has 25 players and receives a discount of 10 percent  
Use **Team Information** as the column alias.

```
1 SELECT 'The ' || name || 'team has ' || number_of_players || ' players and receives a sidcount of ' || discount || 'percent.' AS "Team Information"
2 FROM teams;
```

**Results** Explain Describe Saved SQL History

| Team Information                                                     |
|----------------------------------------------------------------------|
| The Rocketsteam has 25 players and receives a sidcount of 10percent. |
| The Celticsteam has 42 players and receives a sidcount of 20percent. |
| The Roversteam has 8 players and receives a sidcount of percent.     |
| The Jetsteam has 10 players and receives a sidcount of 5percent.     |

4 rows returned in 0.01 seconds [Download](#)

2. Why does the last team not show a discount?  
Because it is null value for the discount of last team.

## 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.

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

| CTR_NUMBER | EMAIL                    | FIRST_NAME | LAST_NAME | PHONE_NUMBER | CURRENT_BALANCE | SRE_ID | TEM_ID | LOYALTY_CARD_NUMBER |
|------------|--------------------------|------------|-----------|--------------|-----------------|--------|--------|---------------------|
| c01986     | margal87@dolphinview.com | Maria      | Galant    | 01442736589  | 125.65          | sr03   | tt03   | -                   |

1 rows returned in 0.00 seconds [Download](#)

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.

```
1 SELECT first_name, last_name, ctr_number FROM customers
2 WHERE current_balance>100;
```

| FIRST_NAME | LAST_NAME  | CTR_NUMBER |
|------------|------------|------------|
| Robert     | Thornberry | c00001     |
| John       | Doe        | c00101     |
| Maria      | Galant     | c01986     |

3 rows returned in 0.01 seconds [Download](#)

3. 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.

```
1 SELECT id,odr_date,odr_time FROM orders
2 WHERE odr_date < TO_DATE ('28-May-2019','DD-MON-YYYY');
```

| ID        | ODR_DATE   | ODR_TIME   |
|-----------|------------|------------|
| or0101250 | 04/17/2017 | 04/17/2017 |
| or0101350 | 05/24/2017 | 05/24/2017 |
| or0101425 | 05/28/2017 | 05/28/2017 |
| or0101681 | 06/02/2017 | 06/02/2017 |
| or0101750 | 06/18/2017 | 06/18/2017 |

5 rows returned in 0.03 seconds [Download](#)

## 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.

```
1 SELECT id as "Inventory ID",cost as "Cost",units as "Num of Units"
2 FROM inventory_list
3 WHERE cost BETWEEN 3.00 AND 15.00;
```

| Inventory ID | Cost | Num of Units |
|--------------|------|--------------|
| il010230126  | 5.24 | 87           |
| il010230125  | 7.99 | 250          |

2 rows returned in 0.01 seconds [Download](#)

## 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.

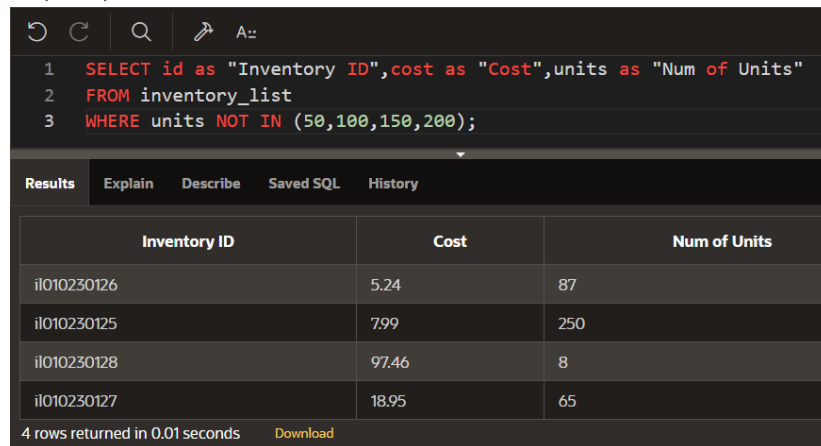
```
1 SELECT id as "Inventory ID",cost as "Cost",units as "Num of Units"
2 FROM inventory_list
3 WHERE units IN (50,100,150,200);
```

| Inventory ID | Cost | Num of Units |
|--------------|------|--------------|
| il010230124  | 2.5  | 100          |

1 rows returned in 0.01 seconds [Download](#)

#### 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.



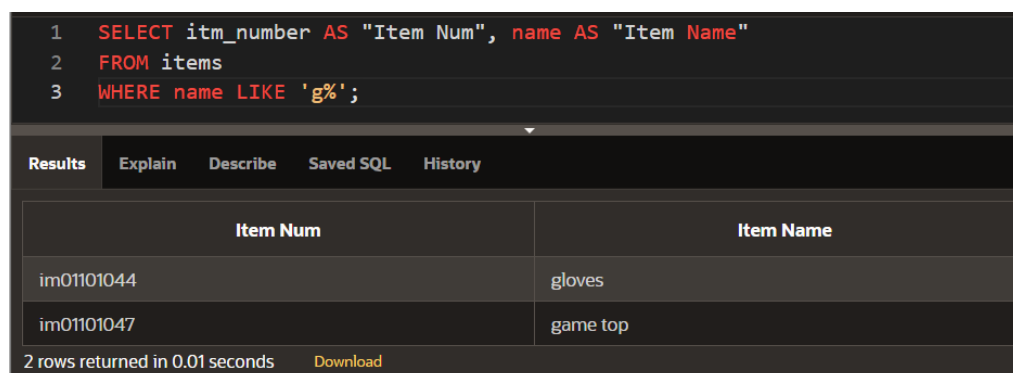
```
1 SELECT id as "Inventory ID", cost as "Cost", units as "Num of Units"
2 FROM inventory_list
3 WHERE units NOT IN (50,100,150,200);
```

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

4 rows returned in 0.01 seconds [Download](#)

#### 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.



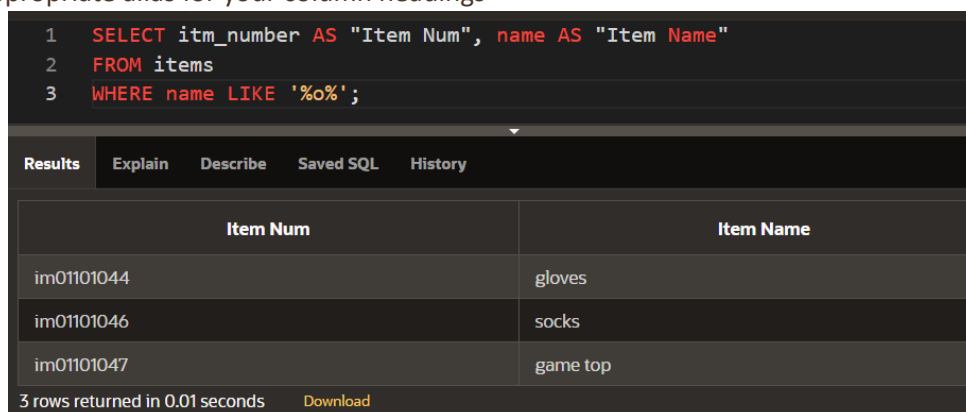
```
1 SELECT itm_number AS "Item Num", name AS "Item Name"
2 FROM items
3 WHERE name LIKE 'g%';
```

| Item Num   | Item Name |
|------------|-----------|
| im01101044 | gloves    |
| im01101047 | game top  |

2 rows returned in 0.01 seconds [Download](#)

#### 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



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

| Item Num   | Item Name |
|------------|-----------|
| im01101044 | gloves    |
| im01101046 | socks     |
| im01101047 | game top  |

3 rows returned in 0.01 seconds [Download](#)



## 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.

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

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

1 rows returned in 0.01 seconds [Download](#)

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.

```
1 SELECT 'The ' || name || ' team has ' || number_of_players || ' players and receives a discount of 10 percent.'
2 AS "Team Information"
3 FROM teams
4 WHERE discount IS NOT NULL;
```

| 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 Jets team has 10 players and receives a discount of 10 percent.    |

3 rows returned in 0.01 seconds [Download](#)

### 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.

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

| Customer Number | Street Address     | Postal Code |
|-----------------|--------------------|-------------|
| c00001          | 17 Gartsquare Road | LP89JHK     |

1 rows returned in 0.03 seconds [Download](#)

### 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.

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

| Customer Number | Street Address     | Postal Code |
|-----------------|--------------------|-------------|
| c00001          | 17 Gartsquare Road | LP89JH-K    |
| c00001          | 65 Acacia Drive    | LP85JH-R    |

2 rows returned in 0.01 seconds [Download](#)

### 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.

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

| Customer Number | Street Address       | Postal Code |
|-----------------|----------------------|-------------|
| c00101          | 54 Ropehill Crescent | ST45AG-V    |
| c01986          | 36 Watercress Lane   | JP25YTH     |

2 rows returned in 0.01 seconds [Download](#)

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

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

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

| Team Name | Number of players |
|-----------|-------------------|
| Celtics   | 42                |
| Jets      | 10                |
| Rockets   | 25                |
| Rovers    | 8                 |

4 rows returned in 0.01 seconds [Download](#)

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

```
1 SELECT name AS "Team Name", number_of_players AS "Number of players"
2 FROM teams
3 ORDER BY number_of_players DESC;
```

| Team Name | Number of players |
|-----------|-------------------|
| Celtics   | 42                |
| Rockets   | 25                |
| Jets      | 10                |
| Rovers    | 8                 |

4 rows returned in 0.01 seconds [Download](#)

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.

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

| Team Name | Players |
|-----------|---------|
| Rovers    | 8       |
| Rockets   | 25      |
| Jets      | 10      |
| Celtics   | 42      |

4 rows returned in 0.01 seconds [Download](#)

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

### Part 1 : TOP-N-ANALYSIS (\$6L8 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 (
3 SELECT first_name,last_name
4 FROM customers
5 ORDER BY ctr_number)
6 WHERE ROWNUM <= 3;
```

| Customer Name     |
|-------------------|
| Robert Thornberry |
| Jennifer Jones    |
| John Doe          |

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

### Part 2 : Using a Substitution Variable (\$6L8 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.

| Bind Variable    | Value |
|------------------|-------|
| :COMMISSION_RATE | 5     |

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

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

2 rows returned in 0.04 seconds [Download](#)