

## UNIVERSITI TEKNOLOGI MALAYSIA FACULTY OF COMPUTING, UTM JOHOR BAHRU SEMESTER 1, SESSION 2023/2024

# LAB 4

SECD2523: DATABASE SECTION 10

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SECTION NO. : 10

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Marks:

## LAB 4: SQL 4 – DML 3 (ANSWER)

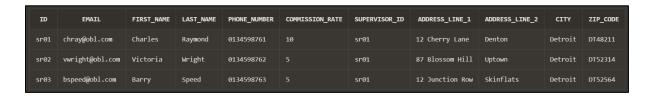
## **EXERCISE 1: JOINING TABLES USING JOIN**

## Part 1: Creating Natural Joins.

1. Display all of the information about sales representatives and their addresses using a natural join.

#### **Answer:**





2. Adapt the query from the previous question to only show the id, first name, last name, address line 1, address line 2, city, email and phone\_number for the sales representatives.

#### **Answer:**

1 v SELECT id, first\_name, last\_name, address\_line\_1, address\_line\_2, city, email, phone\_number
2 FROM sales\_representatives NATURAL JOIN sales\_rep\_addresses;



## Part 2: Creating Joins with the USING Clause

1. Adapt the previous query answer to use the USING clause instead of a natural join.

#### **Answer:**

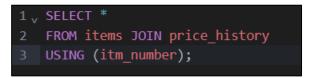
```
1     SELECT *
2     FROM sales_representatives JOIN sales_rep_addresses
3     USING (id);
```

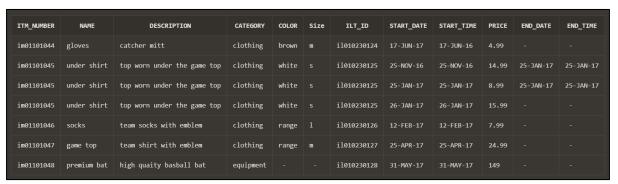
ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID	ADDRESS_LINE_1	ADDRESS_LINE_2	СІТУ	ZIP_CODE
sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01	12 Cherry Lane	Denton	Detroit	DT48211
sr02	vwright@obl.com	Victoria	Wright	0134598762		sr01	87 Blossom Hill	Uptown	Detroit	DT52314
sr03	bspeed@obl.com	Barry	Speed	0134598763		sr01	12 Junction Row	Skinflats	Detroit	DT52564

```
1    SELECT id, first_name, last_name, address_line_1, address_line_2, city, email, phone_number
2    FROM sales_representatives JOIN sales_rep_addresses
3    USING (id);
```

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	СІТҮ	EMAIL	PHONE_NUMBER
sr01	Charles	Raymond	12 Cherry Lane	Denton	Detroit	chray@obl.com	0134598761
sr02	Victoria	Wright	87 Blossom Hill	Uptown	Detroit	vwright@obl.com	0134598762
sr03	Barry	Speed	12 Junction Row	Skinflats	Detroit	bspeed@obl.com	0134598763

2. Display all of the information about items and their price history by joining the items and price history tables.





#### Part 3: Creating Joins with the ON Clause

1. Use an ON clause to join the customer and sales representative table so that you display the customer number, customer fist name, customer last name, customer phone number, customer email, sales representative id, sales representative first name, sales representative last name and sales representative email. You will need to use a table alias in your answer as both tables have columns with the same name.

#### **Answer:**

1,	SELECT c.ctr_number "Customer Number", c.first_name "Customer First Name",
2	<pre>c.last_name "Customer Last Name", c.phone_number "Customer Phone Number",</pre>
3	<pre>c.email "Customer Email", s.id "Sales Rep ID", s.first_name "Sales Rep First Name",</pre>
4	s.last_name "Sales Rep Last Name", s.email "Sales Rep Email"
5	FROM customers c JOIN sales_representatives s
6	ON (c.sre_id = s.id);

Customer Number	Customer First Name	Customer Last Name	Customer Phone Number	Customer Email	Sales Rep ID	Sales Rep First Name	Sales Rep Last Name	Sales Rep Email
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com
c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com
c01986	Maria	Galant	01442736589	margal87@delphiview.com	sr03	Barry	Speed	bspeed@obl.com

#### Part 4: Creating Three-Way Joins with the ON Clause

1. Using the answer to Task 3 add a join that will allow the team name that the customer represents to be included in the results.

Customer Number	Customer First Name	Customer Last Name	Customer Phone Number	Customer Email	Sales Rep ID	Sales Rep First Name	Sales Rep Last Name	Sales Rep Email	Team Name
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rockets
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Celtics
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rovers
c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com	Rockets
c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com	Celtics
c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com	Rovers
c01986	Maria	Galant	01442736589	margal87@delphiview.com	srø3	Barry	Speed	bspeed@obl.com	Rockets
c01986	Maria	Galant	01442736589	margal87@delphiview.com	srø3	Barry	Speed	bspeed@obl.com	Celtics
c01986	Maria	Galant	01442736589	margal87@delphiview.com	sr03	Barry	Speed	bspeed@obl.com	Rovers

## Part 5: Applying Additional Conditions to a Join

1. Using the answer to Task 4 add an additional condition to only show the results for the customer that has the number - c00001.

Customer Number	Customer First Name	Customer Last Name	Customer Phone Number	Customer Email	Sales Rep ID	Sales Rep First Name	Sales Rep Last Name	Sales Rep Email	Team Name
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rockets
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Celtics
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rovers

## Part 6: Retrieving Records with Nonequijoins

1. Write a query that will display name and cost of the item with the number im01101045 on the 12th of December 2016. The output of the query should look like this:

The cost of the under shirt on this day was 14.99

```
1    SELECT 'The cost of the ' || i.name || ' on this day was ' || h.price
2    FROM items i JOIN inventory_list l
3    ON (i.ilt_id = l.id)
4    JOIN price_history h
5    ON (i.itm_number = h.itm_number)
6    WHERE i.itm_number = 'im01101045'
7    AND h.start_date < '12-Dec-2016' AND h.end_date > '12-Dec-2016';
```

```
'THECOSTOFTHE'||I.NAME||'ONTHISDAYWAS'||H.PRICE

The cost of the under shirt on this day was 14.99
```

## **EXERCISE 2: JOINING TABLES USING JOIN**

## Part 1: Use a Self-Join to Join a Table to Itself (S6L9 Objective 2)

1. Write a query that will display who the supervisor is for each of the sales representatives. The information should be displayed in two columns, the first column will be the first name and last name of the sales representative and the second will be the first name and last name of the supervisor. The column aliases should be Rep and Supervisor.

#### **Answer:**

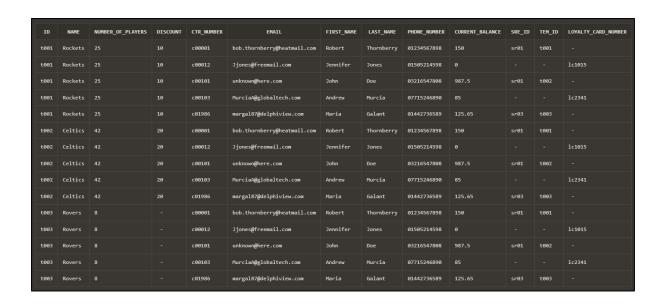
```
1   SELECT r.first_name || ' ' || r.last_name "Representatives",
2   s.first_name || ' ' || s.last_name "Supervisor"
3   FROM sales_representatives r JOIN sales_representatives s
4   ON (r.supervisor_id = s.id);
```

Representatives	Supervisor
Charles Raymond	Charles Raymond
Victoria Wright	Charles Raymond
Barry Speed	Charles Raymond

#### Part 2: Use OUTER Joins (S6L9 Objective 3)

1. Write a query that will display all of the team and customer information even if there is no match with the table on the left (team).

```
1 v SELECT *
2 FROM teams t LEFT OUTER JOIN customers c
3 ON (t.id = t.id);
```



## Part 3: Generating a Cartesian Product (S6L9 Objective 4)

1. Create a Cartesian product between the customer and sales representative tables.

