



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SECD2523 - 08 Database**

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**LAB 4 - DML 3**

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## SQL4-DML3 PART 1

### Part 1: Creating Natural Joins.

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

SELECT \*

FROM sales\_representatives NATURAL JOIN sales\_rep\_addresses;

ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE
sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01	12 Junction Row	Skinflats	Detroit	DT52564
sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01	87 Blossom Hill	Uptown	Detroit	DT52314
sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01	12 Cherry Lane	Denton	Detroit	DT48211

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.

SELECT id, first\_name, last\_name, address\_line\_1, address\_line\_2, city, email,  
phone\_number

FROM sales\_representatives NATURAL JOIN sales\_rep\_addresses;

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

### Part 2: Creating Joins with the USING Clause

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

SELECT id, first\_name, last\_name, address\_line\_1, address\_line\_2, city, email,  
phone\_number

FROM sales\_representatives JOIN sales\_rep\_addresses

USING (id);

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

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

SELECT \*

FROM items JOIN price\_history

USING (itm\_number);

ITM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID	START_DATE	START_TIME	PRICE	END_DATE	END_TIME
im0101045	under shirt	top worn under the game top	clothing	white	s	ii010230125	11/25/2016	11/25/2016	14.99	01/25/2017	01/25/2017
im0101048	premium bat	high quality baseball bat	equipment	-	-	ii010230128	05/31/2017	05/31/2017	149	12/15/2023	12/15/2023
im0101048	premium bat	high quality baseball bat	equipment	-	-	ii010230128	12/15/2023	12/15/2023	99.99	-	-
im0101046	socks	team socks with emblem	clothing	range	l	ii010230126	02/12/2017	02/12/2017	7.99	-	-
im0101044	game top	team shirt with emblem	clothing	range	m	ii010230127	04/25/2017	04/25/2017	24.99	-	-
im0101044	gloves	catcher mitt	clothing	brown	m	ii010230124	06/17/2017	06/17/2016	4.99	-	-
im0101045	under shirt	top worn under the game top	clothing	white	s	ii010230125	01/25/2017	01/25/2017	8.99	01/25/2017	01/25/2017
im0101045	under shirt	top worn under the game top	clothing	white	s	ii010230125	01/26/2017	01/26/2017	15.99	-	-

### 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 first 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.

```
SELECT c.ctr_number "Customer Number", c.first_name "Customer First Name",  
c.last_name "Customer Last Name", c.phone_number "Customer Phone Number",  
c.email "Customer Email", s.id "Sales Representative ID" , s.first_name "Sales  
Representative First Name",s.last_name "Sales Representative Last Name", s.email  
"Sales Representative Email"  
FROM customers c JOIN sales_representatives s  
ON ( s.id = c.sre_id);
```

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

```
SELECT c.ctr_number "Customer Number", c.first_name "Customer First Name",  
c.last_name "Customer Last Name", c.phone_number "Customer Phone Number",  
c.email "Customer Email", s.id "Sales Representative ID" , s.first_name "Sales  
Representative First Name",s.last_name "Sales Representative Last Name", s.email  
"Sales Representative Email", t.name "Team Name"  
FROM customers c JOIN sales_representatives s  
ON ( s.id = c.sre_id)  
JOIN teams t  
ON ( c.tem_id = t.id);
```

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

## 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.

```
SELECT c.ctr_number "Customer Number", c.first_name "Customer First Name",  
c.last_name "Customer Last Name", c.phone_number "Customer Phone Number",  
c.email "Customer Email", s.id "Sales Representative ID" , s.first_name "Sales  
Representative First Name",s.last_name "Sales Representative Last Name", s.email  
"Sales Representative Email", t.name "Team Name"  
FROM customers c JOIN sales_representatives s  
ON ( s.id = c.sre_id)  
JOIN teams t  
ON ( c.tem_id = t.id);  
WHERE c.ctr_number='c00001';
```

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

## 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

```
SELECT 'The cost of the ' || i.name || ' on this day was ' || p.price AS "Item Details"  
FROM items i JOIN price_history p  
ON (TO_DATE('12-Dec-2016', 'DD-MM-YYYY') BETWEEN p.start_date AND  
p.end_date) AND (i.itm_number ='im01101045');
```

Item Details
The cost of the under shirt on this day was 14.99

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

- 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.

```
SELECT r.first_name||' '||r.last_name AS "Rep", s.first_name||' '||s.last_name AS "Supervisor"
FROM sales_representatives r JOIN sales_representatives s
ON (r.supervisor_id = s.id);
```

Rep	Supervisor
Barry Speed	Charles Raymond
Victoria Wright	Charles Raymond
Charles Raymond	Charles Raymond

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

- 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).

```
SELECT *
FROM teams t LEFT OUTER JOIN customers c
ON (t.id = c.tem_id);
```

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
1001	Rockets	25	10	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	1001	-
1003	Rovers	8	-	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	1003	-
1002	Celtics	42	20	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	1002	-
1004	Jets	10	5	-	-	-	-	-	-	-	-	-

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

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

```
SELECT *
FROM customers CROSS JOIN sales_representatives;
```

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER	ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID
000001	bob.thornberry@heatmail.com	Robert	Thornberry	03216547808	987.5	sr01	1001	-	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
001003	Margal87@delphiview.com	Andrew	Marcia	07712345690	85	-	-	k2345	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
001986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	1003	-	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
002001	braving@hooch.com	Brian	Rogers	06656544898	50	-	-	k14567	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
002002	john@ghere.com	Jennifer	Jones	05052746108	0	-	-	k1015	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
001001	unknown@here.com	John	Doe	03216547808	987.5	sr01	1002	-	sr05	barry@post.com	Barry	Speed	01345678903	5	sr01
000001	bob.thornberry@heatmail.com	Robert	Thornberry	03216547808	987.5	sr01	1001	-	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
001003	Margal87@delphiview.com	Andrew	Marcia	07712345690	85	-	-	k2345	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
001986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	1003	-	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
002001	braving@hooch.com	Brian	Rogers	06656544898	50	-	-	k14567	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
002002	john@ghere.com	Jennifer	Jones	05052746108	0	-	-	k1015	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
001001	unknown@here.com	John	Doe	03216547808	987.5	sr01	1002	-	sr02	vright@post.com	Victoria	Wright	01345678903	5	sr01
000001	bob.thornberry@heatmail.com	Robert	Thornberry	03216547808	987.5	sr01	1001	-	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01
001003	Margal87@delphiview.com	Andrew	Marcia	07712345690	85	-	-	k2345	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01
001986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	1003	-	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01
002001	braving@hooch.com	Brian	Rogers	06656544898	50	-	-	k14567	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01
002002	john@ghere.com	Jennifer	Jones	05052746108	0	-	-	k1015	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01
001001	unknown@here.com	John	Doe	03216547808	987.5	sr01	1002	-	sr01	chray@bol.com	Charles	Raymond	01345678903	10	sr01