BACHELOR OF COMPUTER SCIENCE

SECR1213 - DATABASE

SEMESTER 20232024 – 1

SECTION 10

LAB4

DML3

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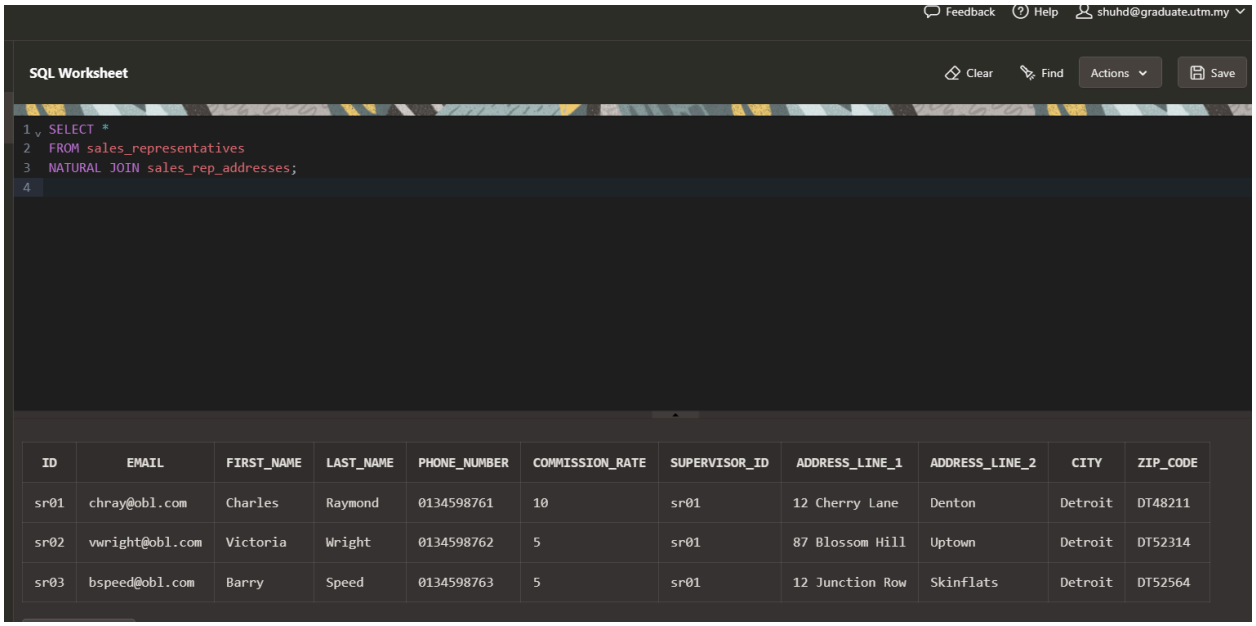
Section 6 Lesson 9 Exercise 1: Joining Tables Using JOIN Write SELECT Statements Using Data From Multiple Tables Using Equijoins and Non-Equijoins (S6L9 Objective 1) In this exercise you will write SELECT statements to access data from more than one table.

Part 1: Creating Natural Joins.

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



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

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.

SQL Worksheet

```
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
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

Part 2: Creating Joins with the USING Clause

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

SQL Worksheet

```
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
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.

SQL Worksheet

Clear Find Actions

```
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
im01101044	gloves	catcher mitt	clothing	brown	m	il010230124	17-JUN-17	17-JUN-16	4.99	-	-
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	25-NOV-16	25-NOV-16	14.99	25-JAN-17	25-JAN-17
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	25-JAN-17	25-JAN-17	8.99	25-JAN-17	25-JAN-17
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	26-JAN-17	26-JAN-17	15.99	-	-
im01101046	socks	team socks with emblem	clothing	range	l	il010230126	12-FEB-17	12-FEB-17	7.99	-	-
im01101047	game top	team shirt with emblem	clothing	range	m	il010230127	25-APR-17	25-APR-17	24.99	-	-
im01101048	premium bat	high quaity basball bat	equipment	-	-	il010230128	31-MAY-17	31-MAY-17	149	-	-

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.

```
SELECT c.ctr_number, c.first_name AS customer_first_name, c.last_name AS customer_last_name, c.phone_number AS customer_phone_number,
    c.email AS customer_email, s.id AS sales_rep_id, s.first_name AS sales_rep_first_name, s.last_name AS sales_rep_last_name, s.email AS sales_rep_email
FROM customers c
JOIN sales_representatives s ON (c.sre_id = s.id);
```

CTR_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

SQL Worksheet

```
SELECT c.ctr_number, c.first_name, c.last_name, c.phone_number, c.email, s.id, s.first_name, s.last_name, s.email, t.name
FROM customers c
JOIN sales_representatives s ON (c.sre_id = s.id)
JOIN teams t ON (t.id = t.id);
```

CTR_NUMBER	FIRST_NAME	LAST_NAME	PHONE_NUMBER	EMAIL	ID	FIRST_NAME	LAST_NAME	EMAIL	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	sr03	Barry	Speed	bspeed@obl.com	Rockets
c01986	Maria	Galant	01442736589	margal87@delphiview.com	sr03	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.

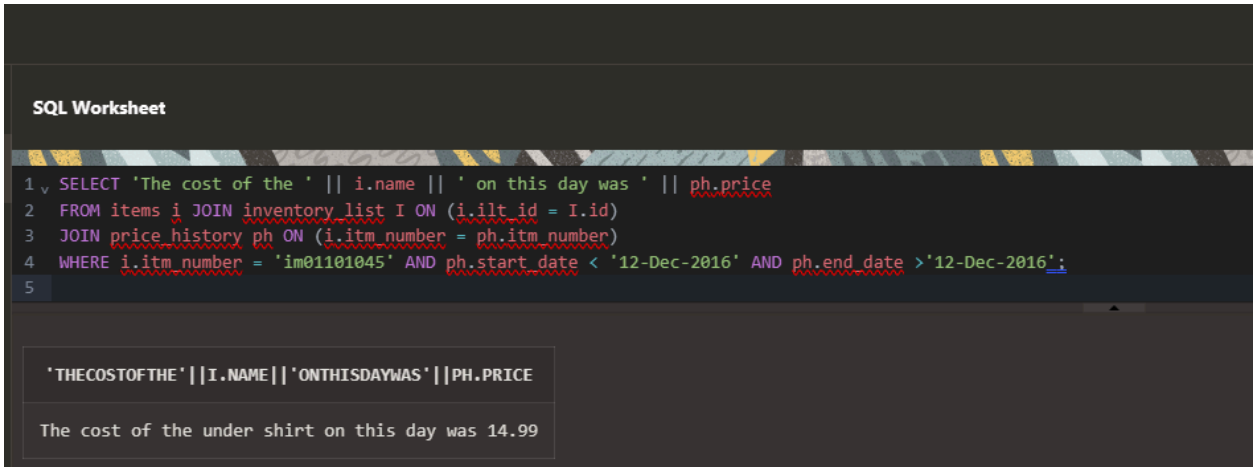
SQL Worksheet

```
SELECT c.ctr_number, c.first_name, c.last_name, c.phone_number, c.email, s.id, s.first_name, s.last_name, s.email, t.name
FROM customers c
JOIN sales_representatives s ON c.sre_id = s.id
JOIN teams t ON t.id = t.id
WHERE c.ctr_number = 'c00001';
```

CTR_NUMBER	FIRST_NAME	LAST_NAME	PHONE_NUMBER	EMAIL	ID	FIRST_NAME	LAST_NAME	EMAIL	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

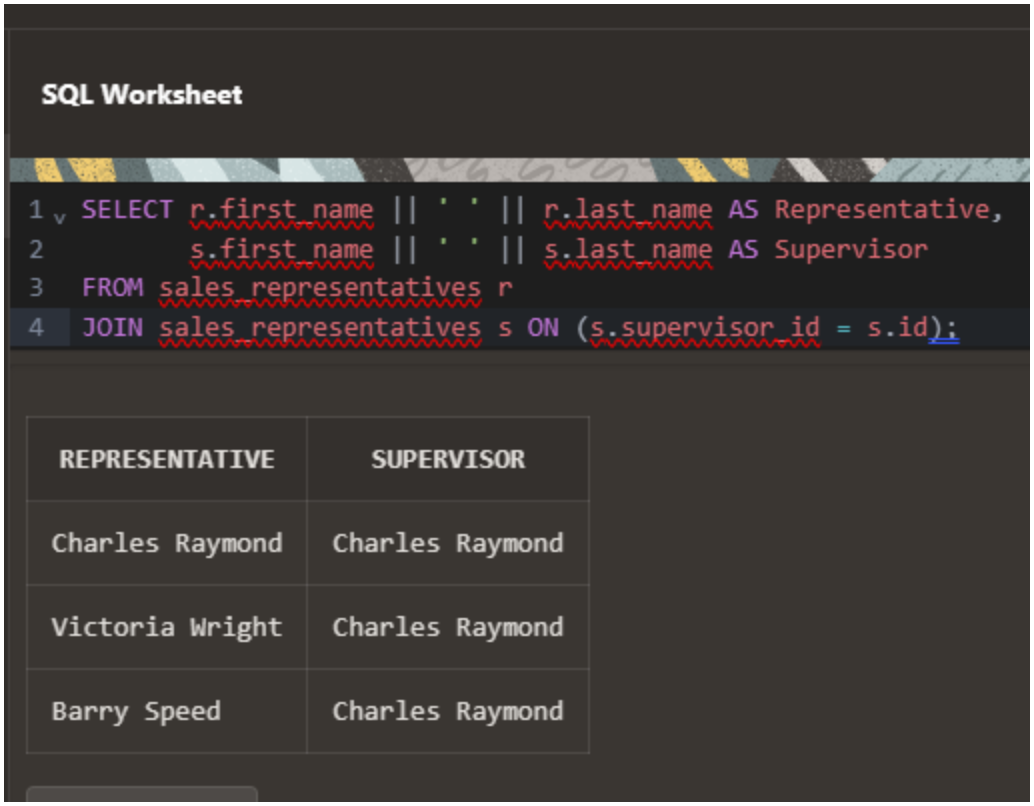
1. Write a query that will display name and cost of the item with the number im01101045 on the 12th of December 2016. The output of the query should look like this: The cost of the under shirt on this day was 14.99.



Section 6 Lesson 9 Exercise 2: Joining Tables Using JOIN Write SELECT Statements Using Data From Multiple Tables Using Equijoins and Non-Equijoins (S6L9 Objective 1)

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.



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).

SQL Worksheet

```
SELECT*
FROM teams t LEFT JOIN customers c ON (t.id = t.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
t001	Rockets	25	10	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
t001	Rockets	25	10	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
t001	Rockets	25	10	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
t001	Rockets	25	10	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
t001	Rockets	25	10	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
t002	Celtics	42	20	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
t002	Celtics	42	20	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
t002	Celtics	42	20	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
t002	Celtics	42	20	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
t002	Celtics	42	20	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
t003	Rovers	8	-	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
t003	Rovers	8	-	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
t003	Rovers	8	-	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
t003	Rovers	8	-	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
t003	Rovers	8	-	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-

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

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

SQL Worksheet

```
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
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01