Lab 3: DML 3 Part 1

SECD2523 - 08 Database

SEMESTER I, SESSION 2023/2024

Lecturer: Dr. Noor Hidayah Zakaria

TAN YUN XI	A22EC0282

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)

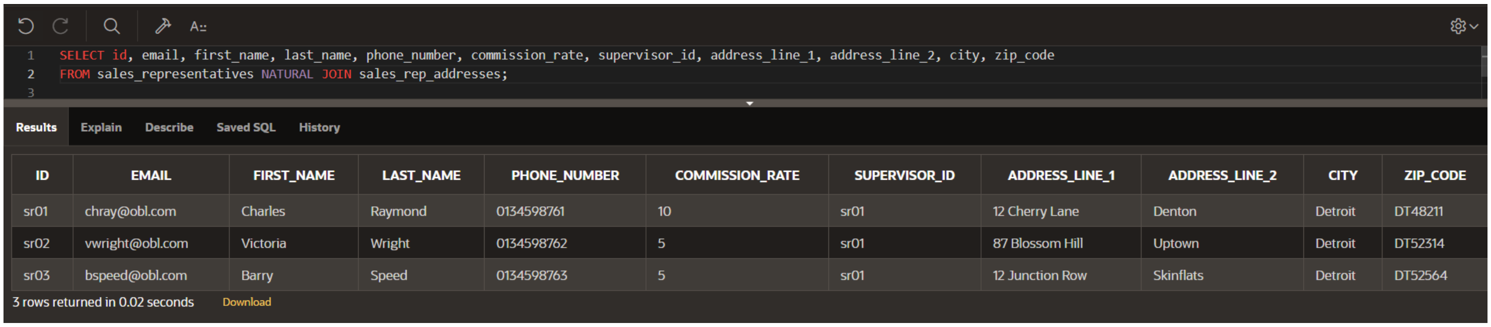
In this exercise you will write SELECT statements to access data from more than one table.

Part 1: Creating Natural Joins.

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

   SELECT id, email, first_name, last_name, phone_number, commission_rate, supervisor_id, address_line_1, address_line_2, city, zip_code

   FROM sales_representatives NATURAL JOIN sales_rep_addresses;



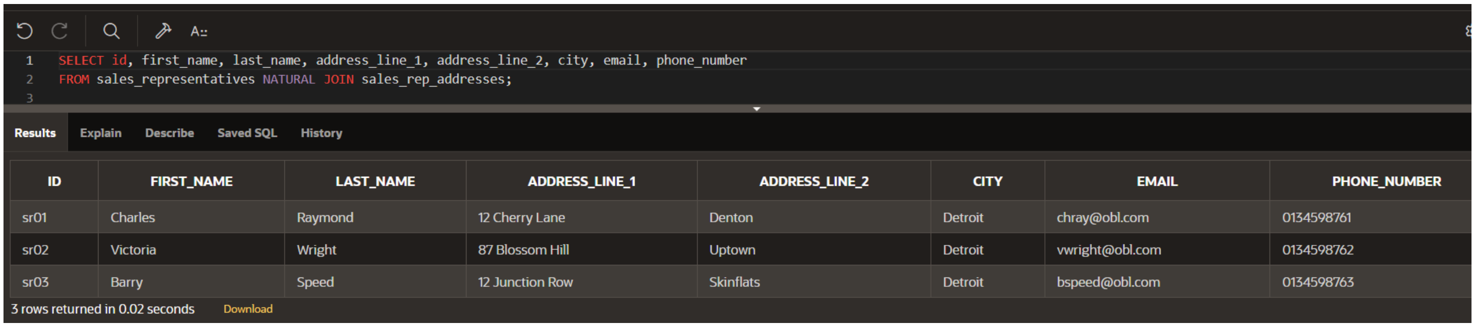
```
SELECT id, email, first_name, last_name, phone_number, commission_rate, supervisor_id, address_line_1, address_line_2, city, zip_code
FROM sales_representatives NATURAL JOIN sales_rep_addresses;
```

ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE
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

3 rows returned in 0.02 seconds

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;



```
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

3 rows returned in 0.02 seconds

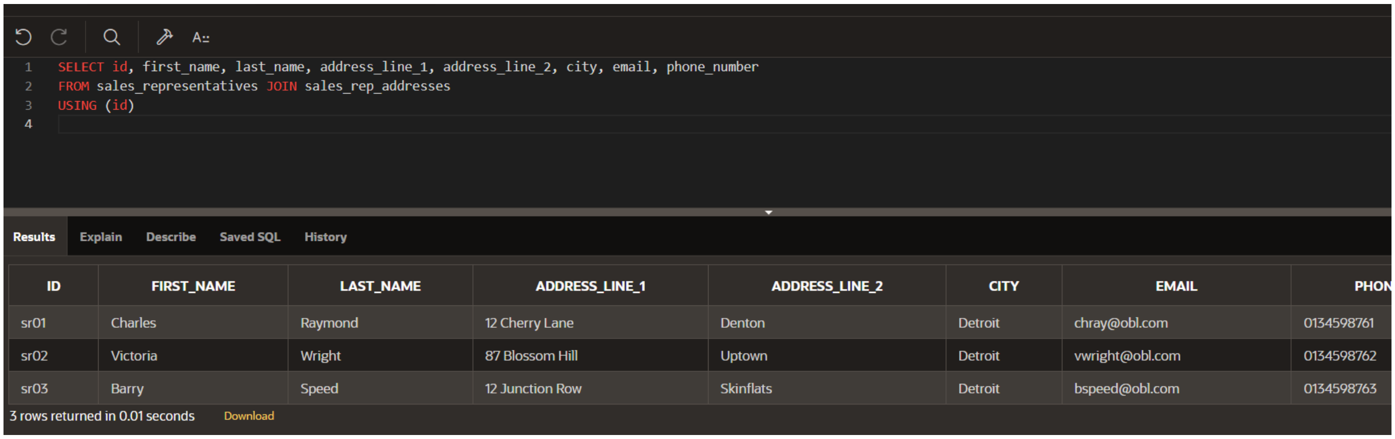
Part 2: Creating Joins with the USING Clause

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);



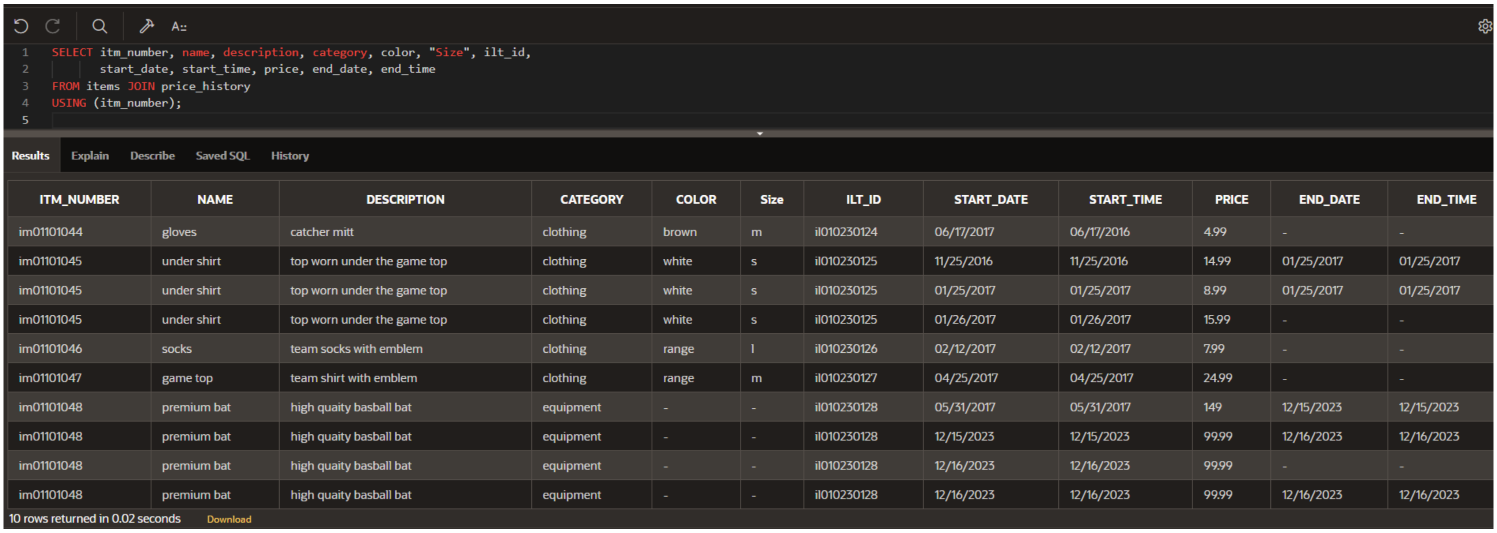
```sql
SELECT id, first_name, last_name, address_line_1, address_line_2, city, email, phone_number
FROM sales_representatives JOIN sales_rep_addresses
USING (id)
```

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	EMAIL	PHON
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

3 rows returned in 0.01 seconds

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

   SELECT itm_number, name, description, category, color, "Size", ilt_id,
   start_date, start_time, price, end_date, end_time
   FROM items JOIN price_history
   USING (itm_number);



```sql
SELECT itm_number, name, description, category, color, "Size", ilt_id,
       start_date, start_time, price, end_date, end_time
FROM items JOIN price_history
USING (itm_number);
```

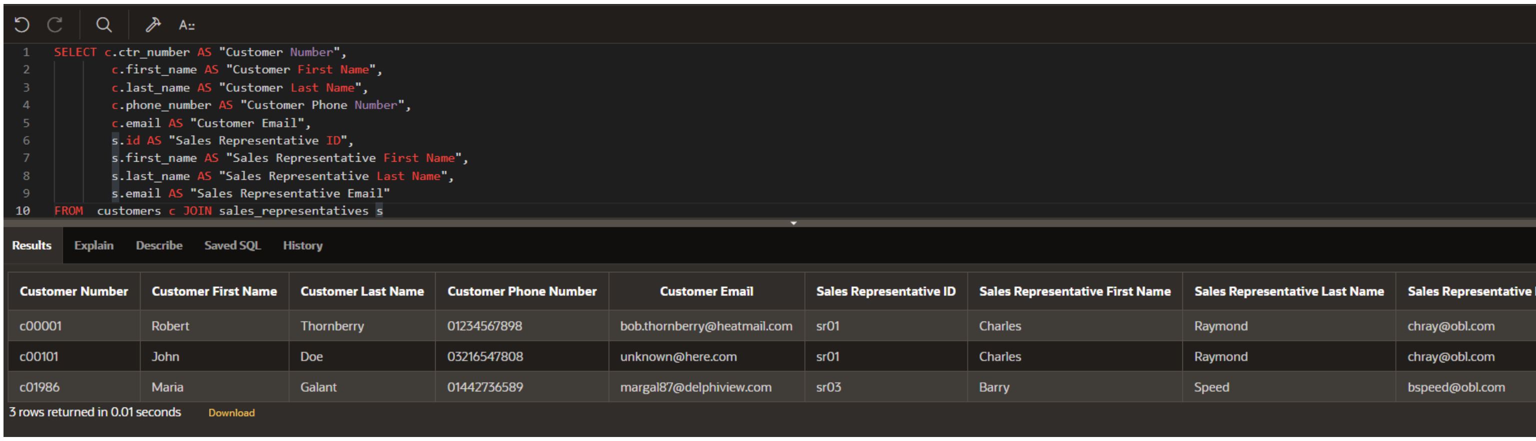
ITM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID	START_DATE	START_TIME	PRICE	END_DATE	END_TIME
im01101044	gloves	catcher mitt	clothing	brown	m	il010230124	06/17/2017	06/17/2016	4.99	-	-
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	11/25/2016	11/25/2016	14.99	01/25/2017	01/25/2017
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	01/25/2017	01/25/2017	8.99	01/25/2017	01/25/2017
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125	01/26/2017	01/26/2017	15.99	-	-
im01101046	socks	team socks with emblem	clothing	range	l	il010230126	02/12/2017	02/12/2017	7.99	-	-
im01101047	game top	team shirt with emblem	clothing	range	m	il010230127	04/25/2017	04/25/2017	24.99	-	-
im01101048	premium bat	high quaity basball bat	equipment	-	-	il010230128	05/31/2017	05/31/2017	149	12/15/2023	12/15/2023
im01101048	premium bat	high quaity basball bat	equipment	-	-	il010230128	12/15/2023	12/15/2023	99.99	12/16/2023	12/16/2023
im01101048	premium bat	high quaity basball bat	equipment	-	-	il010230128	12/16/2023	12/16/2023	99.99	-	-
im01101048	premium bat	high quaity basball bat	equipment	-	-	il010230128	12/16/2023	12/16/2023	99.99	12/16/2023	12/16/2023

10 rows returned in 0.02 seconds

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 AS "Customer 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 Representative ID",
       s.first_name AS "Sales Representative First Name",
       s.last_name AS "Sales Representative Last Name",
       s.email AS "Sales Representative Email"
FROM  customers c JOIN sales_representatives s
ON s.id = c.sre_id;
```



```
SELECT c.ctr_number AS "Customer 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 Representative ID",
       s.first_name AS "Sales Representative First Name",
       s.last_name AS "Sales Representative Last Name",
       s.email AS "Sales Representative Email"
FROM  customers c JOIN sales_representatives s
```

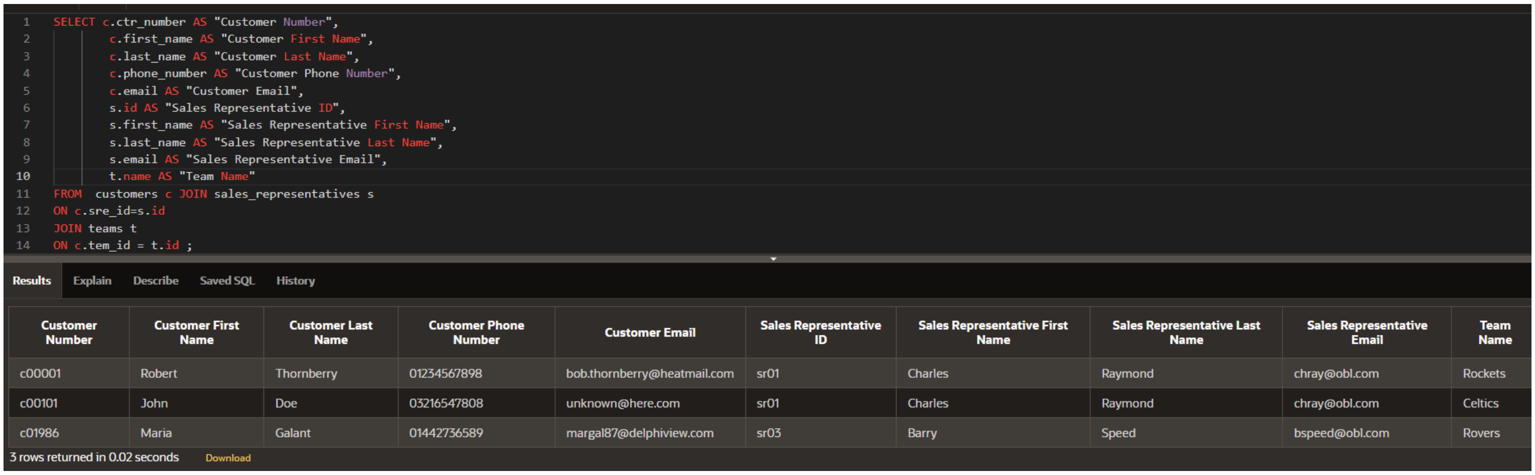
Customer Number	Customer First Name	Customer Last Name	Customer Phone Number	Customer Email	Sales Representative ID	Sales Representative First Name	Sales Representative Last Name	Sales Representative
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com
c00101	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

3 rows returned in 0.01 seconds

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 AS "Customer 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 Representative ID",
       s.first_name AS "Sales Representative First Name",
       s.last_name AS "Sales Representative Last Name",
       s.email AS "Sales Representative Email",
       t.name AS "Team Name"
FROM  customers c JOIN sales_representatives s
ON c.sre_id=s.id
JOIN teams t
ON c.tem_id = t.id ;
```



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

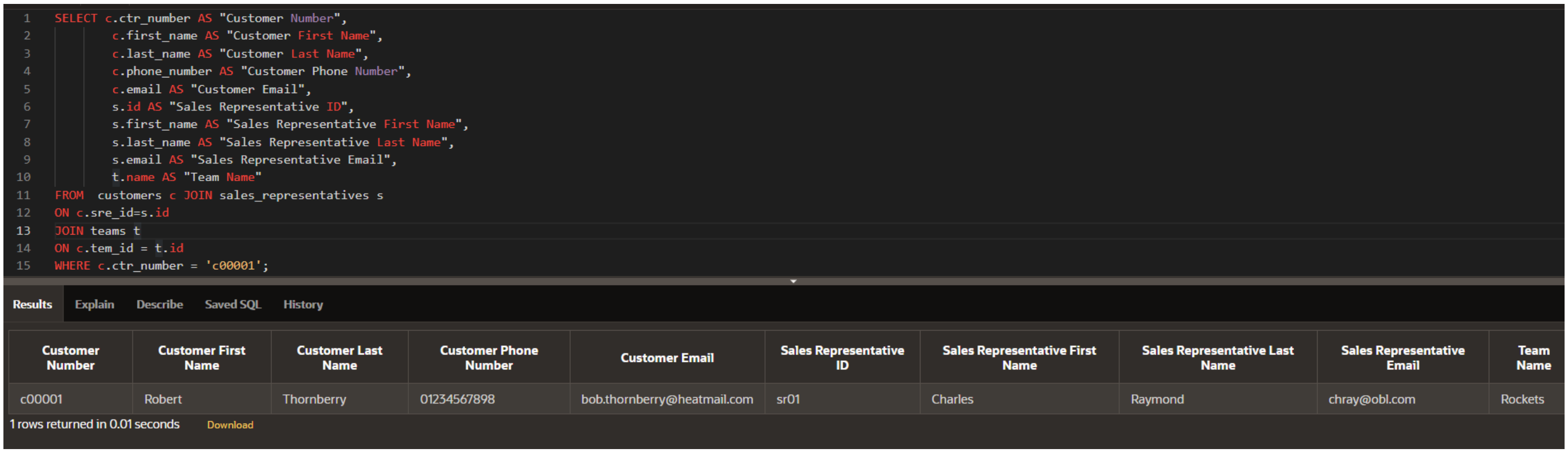
Customer Number	Customer First Name	Customer Last Name	Customer Phone Number	Customer Email	Sales Representative ID	Sales Representative First Name	Sales Representative Last Name	Sales Representative Email	Team Name
c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond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

3 rows returned in 0.02 seconds

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



```
SELECT c.ctr_number AS "Customer 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 Representative ID",
        s.first_name AS "Sales Representative First Name",
        s.last_name AS "Sales Representative Last Name",
        s.email AS "Sales Representative Email",
        t.name AS "Team Name"
FROM  customers c JOIN sales_representatives s
ON c.sre_id=s.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

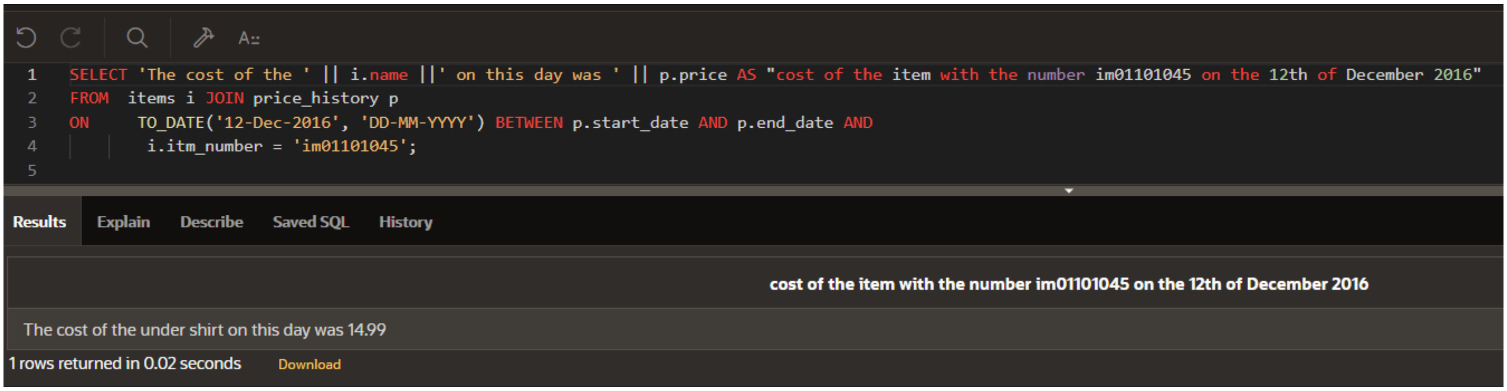
1 rows returned in 0.01 seconds

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 "cost of the item with the number im01101045
on the 12th of December 2016"
    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';
```



```
SELECT 'The cost of the ' || i.name ||' on this day was ' || p.price AS "cost of the item with the number im01101045 on the 12th of December 2016"
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';
```

cost of the item with the number im01101045 on the 12th of December 2016
The cost of the under shirt on this day was 14.99

1 rows returned in 0.02 seconds

Lab 3: DML 3 Part 2

SECD2523 - 08 Database

SEMESTER I, SESSION 2023/2024

Lecturer: Dr. Noor Hidayah Zakaria

TAN YUN XI	A22EC0282

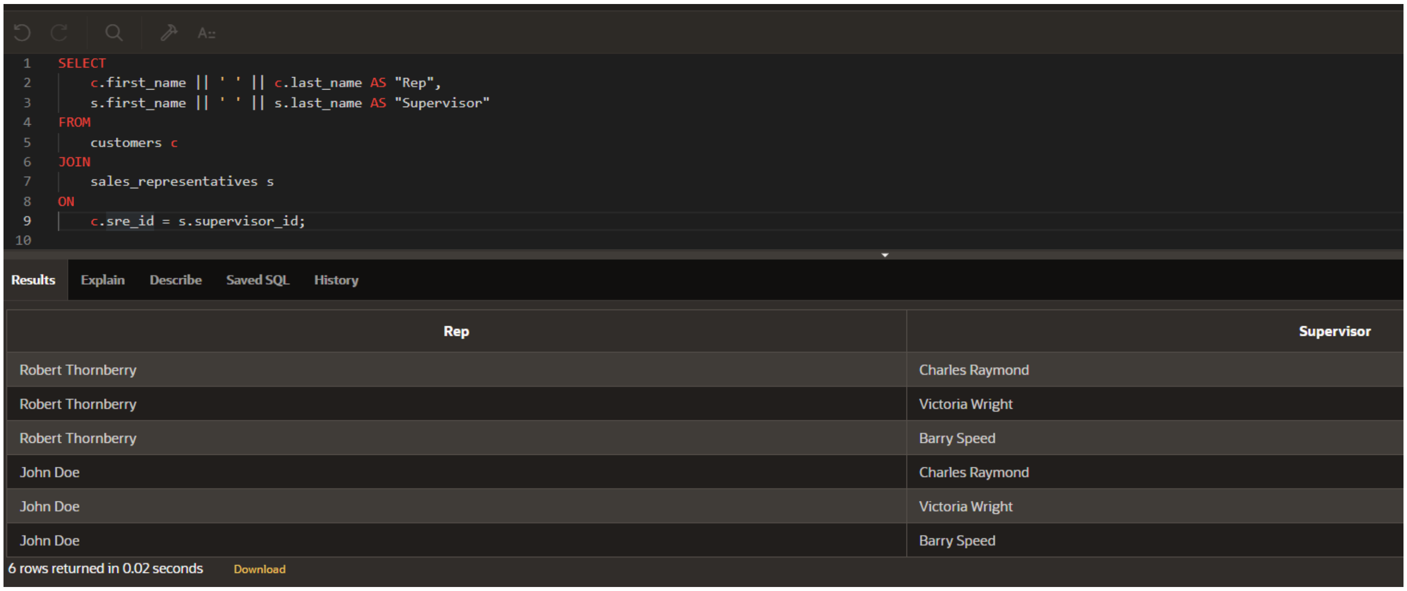
Section 6 Lesson 9 Exercise 2: Joining Tables Using JOIN

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.

```
SELECT
   c.first_name || ' ' || c.last_name AS "Rep",
   s.first_name || ' ' || s.last_name AS "Supervisor"
FROM
   customers c
JOIN
   sales_representatives s
ON
   c.sre_id = s.supervisor_id;
```



```
SELECT
    c.first_name || ' ' || c.last_name AS "Rep",
    s.first_name || ' ' || s.last_name AS "Supervisor"
FROM
    customers c
JOIN
    sales_representatives s
ON
    c.sre_id = s.supervisor_id;
```

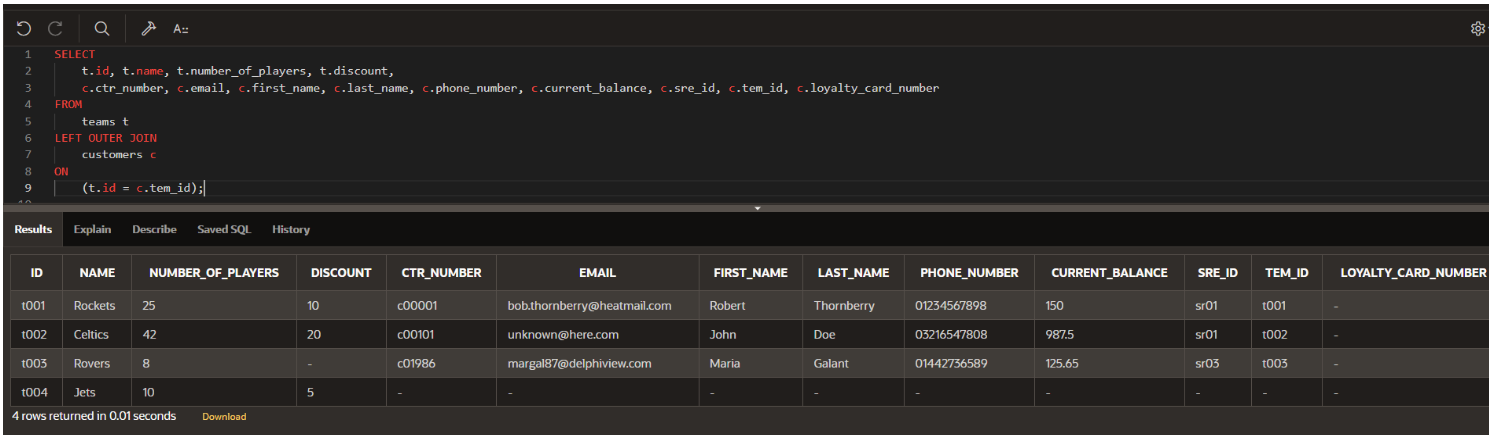
Rep	Supervisor
Robert Thornberry	Charles Raymond
Robert Thornberry	Victoria Wright
Robert Thornberry	Barry Speed
John Doe	Charles Raymond
John Doe	Victoria Wright
John Doe	Barry Speed

6 rows returned in 0.02 seconds Download

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).

```
SELECT
   t.id, t.name, t.number_of_players, t.discount,
   c.ctr_number, c.email, c.first_name, c.last_name, c.phone_number, c.current_balance, c.sre_id, c.tem_id,
     c.loyalty_card_number
FROM
   teams t
LEFT OUTER JOIN
   customers c
ON
   (t.id = c.tem_id);
```



```
SELECT
    t.id, t.name, t.number_of_players, t.discount,
    c.ctr_number, c.email, c.first_name, c.last_name, c.phone_number, c.current_balance, c.sre_id, c.tem_id, c.loyalty_card_number
FROM
    teams t
LEFT OUTER JOIN
    customers c
ON
    (t.id = c.tem_id);
```

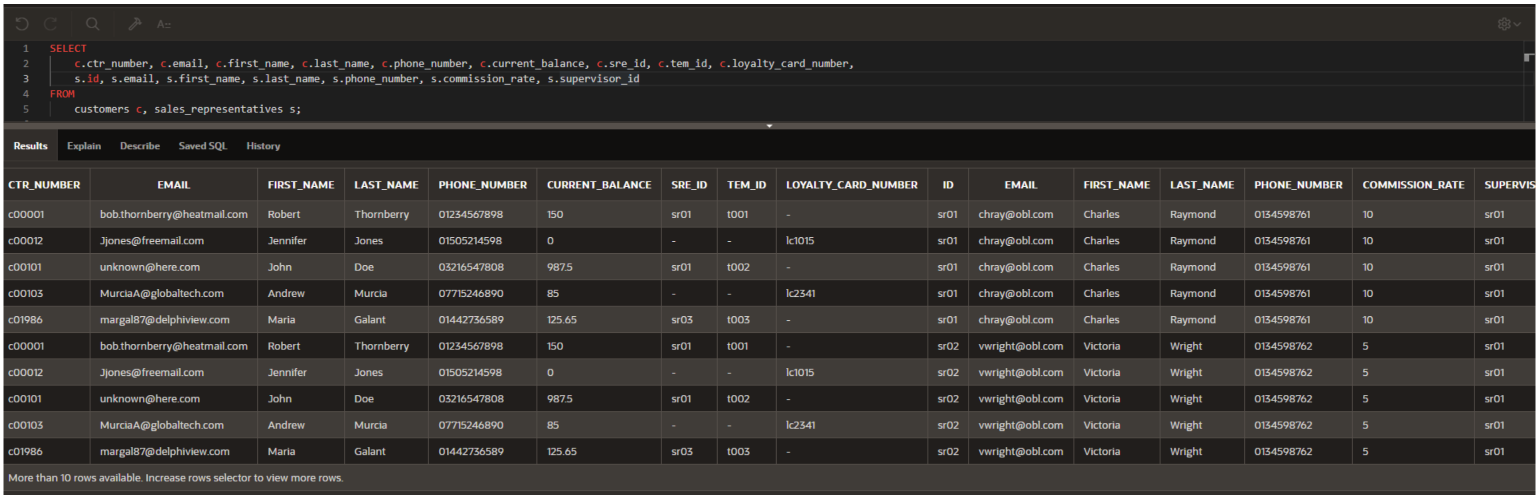
ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
t001	Rockets	25	10	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
t002	Celtics	42	20	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
t003	Rovers	8	-	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
t004	Jets	10	5	-	-	-	-	-	-	-	-	-

4 rows returned in 0.01 seconds

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

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

```
SELECT
   c.ctr_number, c.email, c.first_name, c.last_name, c.phone_number, c.current_balance, c.sre_id,
c.tem_id, c.loyalty_card_number,
   s.id, s.email, s.first_name, s.last_name, s.phone_number, s.commission_rate, s.supervisor_id
FROM
   customers c, sales_representatives s;
```



```
SELECT
    c.ctr_number, c.email, c.first_name, c.last_name, c.phone_number, c.current_balance, c.sre_id, c.tem_id, c.loyalty_card_number,
    s.id, s.email, s.first_name, s.last_name, s.phone_number, s.commission_rate, s.supervisor_id
FROM
    customers c, sales_representatives s;
```

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	SUPERVIS
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

More than 10 rows available. Increase rows selector to view more rows.