

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 *  
FROM SALES_REPRESENTATIVES NATURAL JOIN SALES_REP_ADDRESSES;
```

Query Output x Query Result x

SQL | All Rows Fetched: 3 in 0.227 seconds

ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE
1 sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01	12 Cherry Lane	Denton	Detroit	DT48211
2 sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01	87 Blossom Hill	Uptown	Detroit	DT52314
3 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.

```
SELECT ID, FIRST_NAME, LAST_NAME, ADDRESS_LINE_1, ADDRESS_LINE_2, CITY, EMAIL, PHONE_NUMBER  
FROM SALES_REPRESENTATIVES NATURAL JOIN SALES_REP_ADDRESSES;
```

Query Output x Query Result x

SQL | All Rows Fetched: 3 in 0.192 seconds

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	EMAIL	PHONE_NUMBER
1 sr01	Charles	Raymond	12 Cherry Lane	Denton	Detroit	chray@obl.com	0134598761
2 sr02	Victoria	Wright	87 Blossom Hill	Uptown	Detroit	vwright@obl.com	0134598762
3 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.

```
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);
```

Query Output x Query Result x

SQL | All Rows Fetched: 3 in 0.381 seconds

ID	FIRST_NAME	LAST_NAME	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	EMAIL	PHONE_NUMBER
1 sr01	Charles	Raymond	12 Cherry Lane	Denton	Detroit	chray@obl.com	0134598761
2 sr02	Victoria	Wright	87 Blossom Hill	Uptown	Detroit	vwright@obl.com	0134598762
3 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.

```
SELECT *
FROM ITEMS JOIN PRICE_HISTORY
USING (ITEM_NUMBER);
```

Query Result x

SQL | All Rows Fetched: 14 in 0.176 seconds

ITEM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID	START_DATE	START_TIME	PRICE	END_DATE	END_TIME
1 im01101044	gloves	catcher mitt	clothing	brown	m	i1010230124	17/06/2017	17/06/2016	4.99	(null)	(null)
2 im01101045	under shirt	top worn under the game top	clothing	white	s	i1010230125	25/11/2016	25/11/2016	14.99	25/01/2017	25/01/2017
3 im01101045	under shirt	top worn under the game top	clothing	white	s	i1010230125	25/01/2017	25/01/2017	8.99	25/01/2017	25/01/2017
4 im01101045	under shirt	top worn under the game top	clothing	white	s	i1010230125	26/01/2017	26/01/2017	15.99	10/11/2023	10/11/2023
5 im01101046	socks	team socks with emblem	clothing	range	l	i1010230126	12/02/2017	12/02/2017	7.99	(null)	(null)
6 im01101047	game top	team shirt with emblem	clothing	range	m	i1010230127	25/04/2017	25/04/2017	24.99	(null)	(null)
7 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	31/05/2017	31/05/2017	149	(null)	(null)
8 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	10/11/2023	10/11/2023	99.99	(null)	(null)
9 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	10/11/2023	10/11/2023	99.99	(null)	(null)
10 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	10/11/2023	10/11/2023	99.99	(null)	(null)
11 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	10/11/2023	10/11/2023	99.99	(null)	(null)
12 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	10/11/2023	10/11/2023	99.99	(null)	(null)
13 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	08/01/2024	08/01/2024	99.99	(null)	(null)
14 im01101048	premium bat	high quaity baseball bat	equipment	(null)	(null)	i1010230128	08/01/2024	08/01/2024	99.99	(null)	(null)

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, C.LAST_NAME, C.PHONE_NUMBER, C.EMAIL, S.ID, S.FIRST_NAME, S.LAST_NAME, S.EMAIL
FROM CUSTOMERS C JOIN SALES_REPRESENTATIVES S
ON C.SRE_ID=S.ID;
```

Query Result x

SQL | All Rows Fetched: 3 in 0.183 seconds

CTR_NUMBER	FIRST_NAME	LAST_NAME	PHONE_NUMBER	EMAIL	ID	FIRST_NAME_1	LAST_NAME_1	EMAIL_1
1 c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com
2 c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com
3 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.

```
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 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;
```

Query Result x

SQL | All Rows Fetched: 3 in 0.035 seconds

CTR_NUMBER	FIRST_NAME	LAST_NAME	PHONE_NUMBER	EMAIL	ID	FIRST_NAME_1	LAST_NAME_1	EMAIL_1	TEAM NAME
1 c00001	Robert	Thornberry	01234567898	bob.thornberry@heatmail.com	sr01	Charles	Raymond	chray@obl.com	Rockets
2 c00101	John	Doe	03216547808	unknown@here.com	sr01	Charles	Raymond	chray@obl.com	Celtics
3 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.

```
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 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 CTR_NUMBER = 'c00001';
```

Script Output x Query Result x

SQL | All Rows Fetched: 1 in 0.568 seconds

CTR_NUMBER	FIRST_NAME	LAST_NAME	PHONE_NUMBER	EMAIL	ID	FIRST_NAME_1	LAST_NAME_1	EMAIL_1	TEAM NAME
1 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 ('12-Dec-2016' BETWEEN P.START_DATE AND P.END_DATE)
AND I.ITM_NUMBER='im01101045';
```

Script Output x Query Result x

SQL | All Rows Fetched: 1 in 0.571 seconds

ITEM DETAILS
1 The cost of the under shirt on this day was 14.99

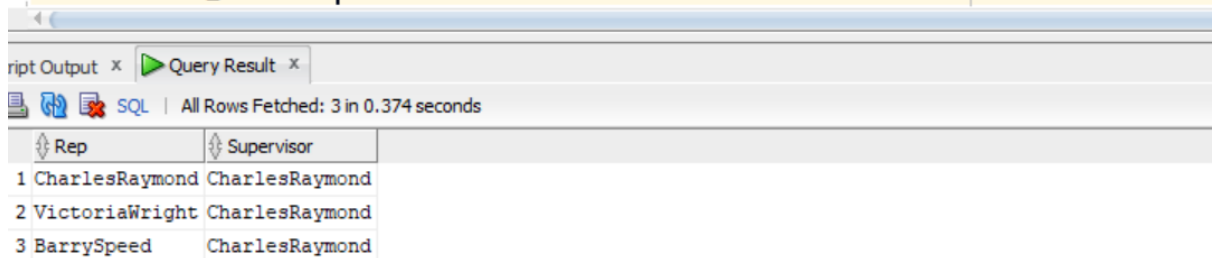
Section 6 Lesson 9 Exercise 2: Joining Tables Using JOIN

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)

- 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;
```

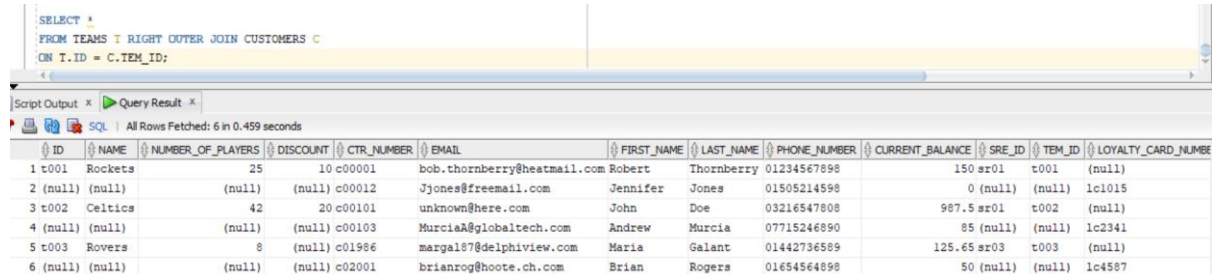


The screenshot shows the SQL Developer interface with the query result displayed in a table. The table has two columns: 'Rep' and 'Supervisor'. The results are as follows:

	Rep	Supervisor
1	CharlesRaymond	CharlesRaymond
2	VictoriaWright	CharlesRaymond
3	BarrySpeed	CharlesRaymond

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).



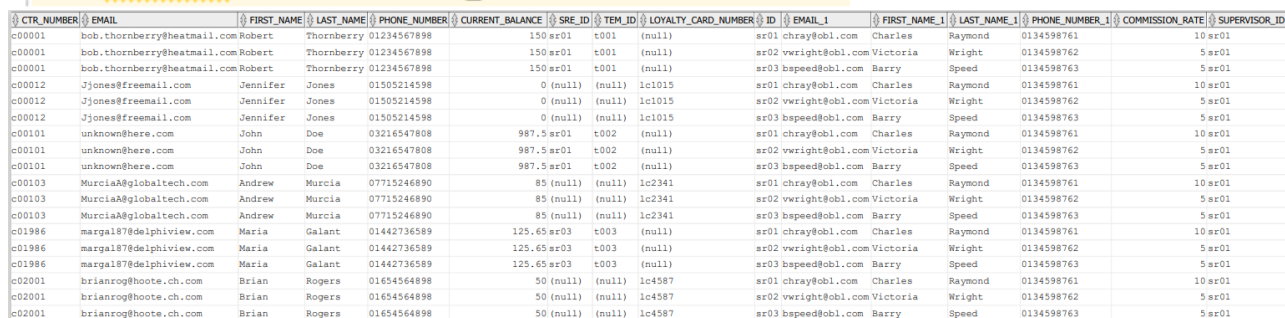
The screenshot shows the SQL Developer interface with the query result displayed in a table. The table has columns: ID, NAME, NUMBER_OF_PLAYERS, DISCOUNT, CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, and LOYALTY_CARD_NUMBER. The results are as follows:

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
1 t001	Rockets	25	10 c00001	bob.thornberry@heatmail.com	Robert Thornberry	01234567898	150 sr01	t001	(null)			
2 (null)	(null)	(null)	(null) c00012	Jjones@freemail.com	Jennifer Jones	01505214598	0 (null)	(null)	lc1015			
3 t002	Celtics	42	20 c00101	unknown@here.com	John Doe	03216547808	987.5 sr01	t002	(null)			
4 (null)	(null)	(null)	(null) c00103	MurciaA@globaltech.com	Andrew Murcia	07715246890	85 (null)	(null)	lc2341			
5 t003	Rovers	8	(null) c01986	margal87@delphiview.com	Maria Galant	01442736589	125.65 sr03	t003	(null)			
6 (null)	(null)	(null)	(null) c02001	brianrog@hoote.ch.com	Brian Rogers	01654564898	50 (null)	(null)	lc4587			

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;
```



The screenshot shows the SQL Developer interface with the query result displayed in a table. The table has columns: CTR_NUMBER, EMAIL, FIRST_NAME, LAST_NAME, PHONE_NUMBER, CURRENT_BALANCE, SRE_ID, TEM_ID, LOYALTY_CARD_NUMBER, ID, EMAIL_1, FIRST_NAME_1, LAST_NAME_1, PHONE_NUMBER_1, COMMISSION_RATE, and SUPERVISOR_ID. The results are as follows:

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER	ID	EMAIL_1	FIRST_NAME_1	LAST_NAME_1	PHONE_NUMBER_1	COMMISSION_RATE	SUPERVISOR_ID
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150 sr01	t001	(null)		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150 sr01	t001	(null)		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150 sr01	t001	(null)		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0 (null)	(null)	lc1015		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0 (null)	(null)	lc1015		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0 (null)	(null)	lc1015		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	
c00101	unknown@here.com	John	Doe	03216547808	987.5 sr01	t002	(null)		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c00101	unknown@here.com	John	Doe	03216547808	987.5 sr01	t002	(null)		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c00101	unknown@here.com	John	Doe	03216547808	987.5 sr01	t002	(null)		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85 (null)	(null)	lc2341		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85 (null)	(null)	lc2341		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85 (null)	(null)	lc2341		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65 sr03	t003	(null)		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65 sr03	t003	(null)		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65 sr03	t003	(null)		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	
c02001	brianrog@hoote.ch.com	Brian	Rogers	01654564898	50 (null)	(null)	lc4587		sr01	chray@obl.com	Charles	Raymond	0134598761	10 sr01	
c02001	brianrog@hoote.ch.com	Brian	Rogers	01654564898	50 (null)	(null)	lc4587		sr02	vwright@obl.com	Victoria	Wright	0134598762	5 sr01	
c02001	brianrog@hoote.ch.com	Brian	Rogers	01654564898	50 (null)	(null)	lc4587		sr03	bspeed@obl.com	Barry	Speed	0134598763	5 sr01	