

## Part 1 : Creating Natural Joins

1) SELECT \*

FROM sales\_representatives

NATURAL JOIN sales\_reps\_addresses

ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID
sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01

2) SELECT id, first\_name, last\_name, address\_line\_1, address\_line\_2, city

email, phone\_number

FROM sales\_representatives

NATURAL JOIN sales\_reps\_addresses

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

## Part 2 : Creating Joins using clause

```
1. SELECT id, first_name, last_name , address_line_1, address_line_2, city, email , phone_number
   FROM sales_representatives
  JOIN sales_reps_addresses USING (id)
```

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

```
2. SELECT *
   FROM items
  JOIN price_history USING (item_number)
```

ITEM_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 quality baseball bat	equipment	-	-	il010230128	31-MAY-17	31-MAY-17	149	22-DEC-23	22-DEC-23
im01101048	premium bat	high quality baseball bat	equipment	-	-	il010230128	22-DEC-23	22-DEC-23	99.99	-	-

## Part 3 : Creating joins with ON clause

```
SELECT  
    c.cust_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_REPENTATIVES s ON c.cust_id = s.id
```

CTE_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	03216547888	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 ON clause

```
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",  
    t.name AS "Team Name"  
FROM  
    CUSTOMERS c  
JOIN  
    SALES_REPRESENTATIVES s ON c.sr_id = s.id  
JOIN  
    TEAMS t ON c.team_id = t.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	03216547888	unknown@here.com	sr01	Charles	Raymond	chray@obl.com
c01986	Maria	Galant	01442736589	margal87@delphiview.com	sr03	Barry	Speed	bspeed@obl.com

## Part 6 : Applying Additional Conditions

```
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",  
    t.name AS "Team Name"  
FROM  
    CUSTOMER c  
JOIN  
    SALES_REPRESENTATIVE s ON c.sr_id = s.id  
JOIN  
    TEAMS t ON c.team_id = t.id  
WHERE  
    c.ctr_number = 'C00001'
```

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@hotmail.com	sr01	Charles	Raymond	chray@obl.com

## Part 6: Retrieving Records

```
SELECT  
    i.name,  
    ph.price AS "Cost"  
FROM  
    items i  
JOIN  
    price_history ph ON i.item_number = ph.item_number  
WHERE  
    item_number = 'Impressions'  
    AND ph.date <='2016-12-12', ph.date >='2016-01-01'  
    BETWEEN ph.start_date AND ph.end_date)
```

NAME	Cost
under shirt	14.99

Part 3 : Use a self join to join a table to itself

SELECT

```
s.first_name || ' ' || s.last_name AS "Rep"
sup.first_name || ' ' || sup.last_name AS "Supervisor"
FROM
SALES.representatives s
JOIN
SALES.representatives sup ON s.supervisor_id = sup.id;
```

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

### Part 3: use outer join

```
SELECT
    t.*,
    c.*
FROM
    teams t
LEFT JOIN
    customers c ON t.id = c.team_id;
```

## Part 3 : Generating a Cartesian Product

**SELECT**

C.\* ,

S.\*

**FROM**

customers C

**CROSS JOIN**

sales-representatives S

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TER_ID	LOYALTY_CARD_NUMBER	ID	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	COMMISSION_RATE	SUPERVISOR_ID
CR0001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	ter01	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR0012	Jjones@freemail.com	Jennifer	Jones	01585214598	0	-	-	lc1015	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR0101	unknown@here.com	John	Doe	03216547888	987.5	sr01	ter02	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR0103	Murcia@globaltech.com	Andrew	Murcia	07715246898	85	-	-	lc2341	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR1986	margalit@delphiview.com	Maria	Galant	01442736589	125.65	sr03	ter03	-	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR2001	brianrog@nootech.com	Brian	Rogers	01654564898	50	-	-	lc4587	sr01	chray@obl.com	Charles	Raymond	0134598761	10	sr01
CR0001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	ter01	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR0012	Jjones@freemail.com	Jennifer	Jones	01585214598	0	-	-	lc1015	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR0101	unknown@here.com	John	Doe	03216547888	987.5	sr01	ter02	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR0103	Murcia@globaltech.com	Andrew	Murcia	07715246898	85	-	-	lc2341	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR1986	margalit@delphiview.com	Maria	Galant	01442736589	125.65	sr03	ter03	-	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR2001	brianrog@nootech.com	Brian	Rogers	01654564898	50	-	-	lc4587	sr02	vwright@obl.com	Victoria	Wright	0134598762	5	sr01
CR0001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	ter01	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
CR0012	Jjones@freemail.com	Jennifer	Jones	01585214598	0	-	-	lc1015	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
CR0101	unknown@here.com	John	Doe	03216547888	987.5	sr01	ter02	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
CR0103	Murcia@globaltech.com	Andrew	Murcia	07715246898	85	-	-	lc2341	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
CR1986	margalit@delphiview.com	Maria	Galant	01442736589	125.65	sr03	ter03	-	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01
CR2001	brianrog@nootech.com	Brian	Rogers	01654564898	50	-	-	lc4587	sr03	bspeed@obl.com	Barry	Speed	0134598763	5	sr01