

Q.SQL commands/outputs involving subqueries with inner, self, natural, cross joins and outer joins (left and right) with more than 2 joins in one single command. Also use the clauses having, group by, order by, union, intersect, except, union all, distinct, and unique. Use any tables which are appropriate.

```
1)mysql> select a.account_id, c.cust_id,t.txn_id from bank_account a
inner join customer c on a.cust_id = c.cust_id inner join
bank_transaction t on a.account_id= t.acco
```

```
+-----+-----+-----+
| account_id | cust_id | txn_id |
+-----+-----+-----+
|          109 |          12 |          999 |
+-----+-----+-----+
```

1 row in set (0.00 sec)

```
2)mysql> select a.account_id, c.cust_id,t.txn_id,t.date from
bank_account a inner join customer c on a.cust_id = c.cust_id inner
join bank_transaction t on a.account_id= t.account_id where
t.txn_type_cd = 'CDP' or amount>200;
```

```
+-----+-----+-----+-----+
| account_id | cust_id | txn_id | date          |
+-----+-----+-----+-----+
|          104 |          1 |          980 | 2004-03-09 |
|          105 |          2 |          981 | 2003-03-25 |
|          106 |          2 |          984 | 2004-03-27 |
|          107 |          2 |          991 | 2004-09-20 |
|          109 |          12 |          999 | 2004-04-19 |
+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

```
3)mysql> select
c.fname,c.lname,a.account_id,a.cust_id,p.product_cd,p.name from
customer c right outer join bank_account a on a.cust_id = c.cust_id
left outer join product p on a.cust_id = p.cust_id;
```

```
+-----+-----+-----+-----+-----+-----+
| fname   | lname  | account_id | cust_id | product_cd | name          |
+-----+-----+-----+-----+-----+-----+
| George  | Blake  |          103 |          1 | CHK        | Checking      |
| George  | Blake  |          104 |          1 | CHK        | Checking      |
| Sue     | Smith  |          105 |          2 | MM         | Money market  |
| Sue     | Smith  |          106 |          2 | MM         | Money market  |
| Sue     | Smith  |          107 |          2 | MM         | Money market  |
| Tom     | Boss   |          108 |          10 | NULL       | NULL          |
| Jenifer | Den    |          109 |          12 | NULL       | NULL          |
+-----+-----+-----+-----+-----+-----+
```

7 rows in set (0.00 sec)

```
4)mysql> select c.fname,c.lname, a.account_id, a.cust_id,
p.product_cd, p.name from customer c right outer join bank_account a
on a.cust_id = c.cust_id left outer join product p on a.cust_id =
p.cust_id;
```

fname	lname	account_id	cust_id	product_cd	name
George	Blake	103	1	CHK	Checking
George	Blake	104	1	CHK	Checking
Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market
Tom	Boss	108	10	NULL	NULL
Jenifer	Den	109	12	NULL	NULL

7 rows in set (0.01 sec)

```
5)mysql> select c.fname,c.lname, a.account_id, a.cust_id,
p.product_cd, p.name from customer c right outer join bank_account a
on a.cust_id = c.cust_id right outer join product p on a.cust_id =
p.cust_id;
```

fname	lname	account_id	cust_id	product_cd	name
George	Blake	103	1	CHK	Checking
George	Blake	104	1	CHK	Checking
NULL	NULL	NULL	NULL	LOC	Line of credit
Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market
NULL	NULL	NULL	NULL	MOR	Mortgage
NULL	NULL	NULL	NULL	RD	Recurring deposit
NULL	NULL	NULL	NULL	SAV	Saving

9 rows in set (0.00 sec)

```
6)mysql> select c.fname,c.lname, a.account_id, a.cust_id,
p.product_cd, p.name from customer c left outer join bank_account a on
a.cust_id = c.cust_id right join product p on a.cust_id = p.cust_id;
```

fname	lname	account_id	cust_id	product_cd	name
George	Blake	103	1	CHK	Checking
George	Blake	104	1	CHK	Checking

NULL	NULL	NULL	NULL	LOC	Line of credit
Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market
NULL	NULL	NULL	NULL	MOR	Mortgage
NULL	NULL	NULL	NULL	RD	Recurring deposit
NULL	NULL	NULL	NULL	SAV	Saving

```

+-----+-----+-----+-----+-----+
+-----+
9 rows in set (0.00 sec)

```

```

7)mysql> select c.fname, a.account_id, a.cust_id, p.product_cd,
p.name from customer c join bank_account a on a.cust_id = c.cust_id
left join product p on a.cust_id = p.cust_id;

```

fname	account_id	cust_id	product_cd	name
George	103	1	CHK	Checking
George	104	1	CHK	Checking
Sue	105	2	MM	Money market
Sue	106	2	MM	Money market
Sue	107	2	MM	Money market
Tom	108	10	NULL	NULL
Jenifer	109	12	NULL	NULL

```

+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

```

```

8)mysql> select s.Student_number,g.Grade from student as s INNER JOIN
grade_report as g ON s.Student_number = g.Student_number LEFT JOIN
scores as sc ON sc.Student_number=s.Student_number;

```

Student_number	Grade
8	A
8	A
8	B
8	A
7	A
7	A
7	A

```

+-----+-----+
7 rows in set (0.00 sec)

```

```
9)mysql> select s.Student_number,s.name,g.Grade from student as s LEFT
OUTER JOIN grade_report as g ON s.Student_number = g.Student_number
LEFT JOIN scores as sc ON sc.Student_number=s.Student_number;
```

Student_number	name	Grade
8	Brown	A
8	Brown	A
8	Brown	B
8	Brown	A
7	Tom	A
7	Tom	A
7	Tom	A
25	Johnson	NULL

8 rows in set (0.00 sec)

```
10)mysql> select s.Student_number,s.name,g.Grade from student as s
LEFT OUTER JOIN grade_report as g ON s.Student_number =
g.Student_number LEFT JOIN scores as sc ON
sc.Student_number=s.Student_number where g.grade = 'B';
```

Student_number	name	Grade
8	Brown	B

1 row in set (0.00 sec)

```
11) mysql> select * from course c INNER JOIN prerequisite as p
ON c.course_number = p.course_number
LEFT JOIN student s
ON c.course_number = p.course_number;
```

course_name	course_number	Credit_hours	Department	Course_number	P_number	Name	Student_number	Class	Major
Data Structure	CS3320	4	CS	CS3320	CS1310	Tom	7	1	CS
Database	CS3380	3	CS	CS3380	CS3320	Tom	7	1	CS
Database	CS3380	3	CS	CS3380	MATH2410	Tom	7	1	CS
Data Structure	CS3320	4	CS	CS3320	CS1310	Tom	7	1	CS
Data Structure	CS3320	4	CS	CS3320	CS1310	Brown	8	2	CS
Database	CS3380	3	CS	CS3380	CS3320	Brown	8	2	CS
Database	CS3380	3	CS	CS3380	MATH2410	Brown	8	2	CS
Data Structure	CS3320	4	CS	CS3320	CS1310	Brown	8	2	CS
Data Structure	CS3320	4	CS	CS3320	CS1310	Johnson	25	1	MATH
Database	CS3380	3	CS	CS3380	CS3320	Johnson	25	1	MATH
Database	CS3380	3	CS	CS3380	MATH2410	Johnson	25	1	MATH
Data Structure	CS3320	4	CS	CS3320	CS1310	Johnson	25	1	MATH

12 rows in set (0.00 sec)

12)

```
MariaDB [19551wn]> select * from schools_left cross join schools_right
on schools_left.id = schools_right.id;
```

id	school_name	id	school_name
1	Oak Street School	1	Oak Street School
2	Roosevelt High School	2	Roosevelt High School

```
| 6 | Jefferson High School | 6 | Jefferson High School |
+---+-----+-----+---+-----+-----+
```

3 rows in set (0.000 sec)

```
13)select a.account_id,a.cust_id,c.fname,c.lname,p.product_cd,p.name
from bank_account a LEFT OUTER JOIN customer c on a.cust_id =
c.cust_id LEFT OUTER JOIN product p on a.cust_id = p.cust_id;
```

```
+-----+-----+-----+-----+-----+-----+
| account_id | cust_id | fname | lname | product_cd | name |
+-----+-----+-----+-----+-----+-----+
| 103 | 1 | George | Blake | CHK | Checking |
| 104 | 1 | George | Blake | CHK | Checking |
| 105 | 2 | Sue | Smith | MM | Money market |
| 106 | 2 | Sue | Smith | MM | Money market |
| 107 | 2 | Sue | Smith | MM | Money market |
| 108 | 10 | Tom | Boss | NULL | NULL |
| 109 | 12 | Jenifer | Den | NULL | NULL |
+-----+-----+-----+-----+-----+-----+
```

7 rows in set (0.01 sec)

14)

```
select rt.id, rt.school_name, en.enrollment, gr.grades from
schools_right as rt left join schools_enrollment as en on rt.id =en.id
left join schools_grades as gr on rt.id = gr.id;
```

```
+---+-----+-----+-----+
| id | school_name | enrollment | grades |
+---+-----+-----+-----+
| 1 | Oak Street School | 360 | K-3 |
| 2 | Roosevelt High School | 1001 | 9-12 |
| 6 | Jefferson High School | 927 | 9-12 |
| 3 | Morrison Elementary School | NULL | NULL |
| 4 | Chase Magnet School | NULL | NULL |
+---+-----+-----+-----+
```

5 rows in set (0.000 sec)

15)

```
MariaDB [19551wn]> select p.pno,p.pname,p.budget from projects as p
INNER JOIN works_on as ws ON p.pno=ws.pno
```

UNION

```
select d.dname,d.dnumber,d.Mgr_ssn from department as d Left JOIN emp
e ON d.dnumber= e.deptno;
```

```
+-----+-----+-----+
| pno | pname | budget |
+-----+-----+-----+
| Production | 2 | 943775543 |
| Administration | 4 | 987654321 |
| Research | 5 | 333444555 |
+-----+-----+-----+
```

3 rows in set (0.001 sec)

```
16)MariaDB [19551wn]> select p.pno,p.pname,p.budget from projects as p
Left JOIN works_on as ws ON p.pno=ws.pno UNION select
d.dname,d.dnumber,d.Mgr_ssn from department as d Left JOIN emp e ON
d.dnumber= e.deptno;
```

pno	pname	budget
313	dba	1500.42
314	dba	3000.34
Production	2	943775543
Administration	4	987654321
Research	5	333444555

5 rows in set (0.001 sec)

17)

```
MariaDB [19551wn]> select p.pno,p.pname,p.budget from projects as p
Left JOIN works_on as ws ON p.pno=ws.pno order by p.pname;
```

pno	pname	budget
313	dba	1500.42
314	dba	3000.34

2 rows in set (0.001 sec)

17)

```
MariaDB [19551wn]> SELECT c.courseno, o.courseno, o.location,
e.courseno, e.emp_no FROM offerings as o
FULL OUTER JOIN enrollment as e
ON o.courseno = e.courseno
RIGHT OUTER JOIN courses
ON c.courseno = o.courseno;
```

c.courseno	e.courseno	e.emp_no
C100	C100	200
C100	C100	600
C200	NULL	NULL

18)

```
mysql> select a.account_id,a.cust_id,c.fname from bank_account a RIGHT
OUTER JOIN customer c on a.cust_id = c.cust_id;
```

account_id	cust_id	fname
103	1	George
104	1	George
105	2	Sue

106	2	Sue
107	2	Sue
NULL	NULL	Sneha
NULL	NULL	Namrata
NULL	NULL	Chris
NULL	NULL	Namrata
108	10	Tom
109	12	Jenifer
NULL	NULL	Alex
NULL	NULL	Leela

```
19)mysql> select a.account_id,a.cust_id,c.fname from bank_account a
RIGHT OUTER JOIN customer c on a.cust_id = c.cust_id order by cust_id
desc;
```

account_id	cust_id	fname
109	12	Jenifer
108	10	Tom
105	2	Sue
106	2	Sue
107	2	Sue
103	1	George
104	1	George
NULL	NULL	Sneha
NULL	NULL	Namrata
NULL	NULL	Chris
NULL	NULL	Namrata
NULL	NULL	Alex
NULL	NULL	Leela

13 rows in set (0.00 sec)

```
20)mysql> select a.account_id,c.fname from bank_account a RIGHT OUTER
JOIN customer c on a.cust_id = c.cust_id having c.fname='Sue';
```

account_id	fname
105	Sue
106	Sue
107	Sue

3 rows in set (0.00 sec)

21)

```
mysql> select c.fname,c.lname, concat(c.fname,',',c.lname) cust_name,
a.account_id, a.cust_id, p.product_cd, p.name from customer c right
```

```
outer join bank_account a on a.cust_id = c.cust_id right outer join
product p on a.cust_id = p.cust_id where a.cust_id < 3;
```

fname	lname	cust_name	account_id	cust_id	product_cd	name
George	Blake	GeorgeBlake	103	1	CHK	Checking
George	Blake	GeorgeBlake	104	1	CHK	Checking
Sue	Smith	SueSmith	105	2	MM	Money market
Sue	Smith	SueSmith	106	2	MM	Money market
Sue	Smith	SueSmith	107	2	MM	Money market

```
22) mysql> select c.fname,c.lname, a.account_id, a.cust_id,
p.product_cd, p.name from customer c right outer join bank_account a
on a.cust_id = c.cust_id right outer join product p on a.cust_id =
p.cust_id order by c.fname desc;
```

fname	lname	account_id	cust_id	product_cd	name
Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market
George	Blake	103	1	CHK	Checking
George	Blake	104	1	CHK	Checking
NULL	NULL	NULL	NULL	LOC	Line of credit
NULL	NULL	NULL	NULL	MOR	Mortgage
NULL	NULL	NULL	NULL	RD	Recurring deposit
NULL	NULL	NULL	NULL	SAV	Saving

9 rows in set (0.00 sec)

```
23)mysql> select c.fname,c.lname, a.account_id, a.cust_id,
p.product_cd, p.name from customer c right outer join bank_account a
on a.cust_id = c.cust_id cross join product p on a.cust_id =
p.cust_id;
```

fname	lname	account_id	cust_id	product_cd	name
George	Blake	103	1	CHK	Checking
George	Blake	104	1	CHK	Checking
Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market

24)

```
mysql> select c.fname,c.lname, a.account_id, a.cust_id, p.product_cd,
p.name from customer c right outer join bank_account a on a.cust_id =
c.cust_id left outer join product p on a.cust_id = p.cust_id having
p.name = 'Money market';
```

fname	lname	account_id	cust_id	product_cd	name
-------	-------	------------	---------	------------	------

Sue	Smith	105	2	MM	Money market
Sue	Smith	106	2	MM	Money market
Sue	Smith	107	2	MM	Money market

3 rows in set (0.00 sec)