

DATABASE CREATION -

```
mysql> create database problemset04;  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> use problemset04;  
Database changed
```

TABLE CREATION -

```
mysql> create table highschooler (id int, name varchar(15) , grade  
int);  
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> insert into highschooler values(1510,'Jordan',9);  
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into highschooler values(1689,'Gabriel',9);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1381,'Tiffany',9);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1709,'Cassandra',9);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1101,'Haley',10);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1782,'Andrew',10);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1468,'Kris',10);  
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into highschooler values(1641,'Brittany',10);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1247,'Alexis',11);  
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into highschooler values(1316,'Austin',11);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1911,'Gabriel',11);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1501,'Jessica',11);  
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into highschooler values(1304,'Jordan',12);
```

```
Query OK, 1 row affected (0.01 sec)

mysql> insert into highschooler values(1025,'John',12);
Query OK, 1 row affected (0.01 sec)

mysql> insert into highschooler values(1934,'Kyle',12);
Query OK, 1 row affected (0.01 sec)

mysql> insert into highschooler values(1661,'Logan',12);
Query OK, 1 row affected (0.01 sec)

mysql> create table friend (id1 int, id2 int);
Query OK, 0 rows affected (0.01 sec)

mysql> insert into friend values(1510,1381);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1510,1689);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1689,1709);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1381,1247);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1709,1247);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1689,1782);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1782,1468);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1782,1316);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1782,1304);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1468,1101);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1468,1641);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1101,1641);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1247,1911);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1247,1501);
```

```
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1911,1501);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1501,1934);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1316,1934);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1934,1304);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1304,1661);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1661,1025);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1381,1510);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1689,1510);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1709,1689);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1247,1381);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1247,1709);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1782,1689);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1468,1782);
Query OK, 1 row affected (0.01 sec)

mysql> insert into friend values(1316,1782);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1304,1782);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1101,1468);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1641,1468);
Query OK, 1 row affected (0.00 sec)

mysql> insert into friend values(1911,1247);
```

Query OK, 1 row affected (0.00 sec)

```
mysql> insert into friend values(1501,1247);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into friend values(1501,1911);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into friend values(1934,1501);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into friend values(1934,1316);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into friend values(1304,1934);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into friend values(1661,1304);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into friend values(1025,1661);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> select * from friend;
```

id1	id2
1510	1381
1510	1689
1689	1709
1381	1247
1709	1247
1689	1782
1782	1468
1782	1316
1782	1304
1468	1101
1468	1641
1101	1641
1247	1911
1247	1501
1911	1501
1501	1934
1316	1934
1934	1304
1304	1661
1661	1025
1381	1510
1689	1510
1709	1689
1247	1381
1247	1709
1782	1689
1468	1782

	1316		1782	
	1304		1782	
	1101		1468	
	1641		1468	
	1911		1247	
	1501		1247	
	1501		1911	
	1934		1501	
	1934		1316	
	1304		1934	
	1661		1304	
	1025		1661	
+-----+-----+				

39 rows in set (0.00 sec)

```
mysql> create table likes(id1 int,id2 int);
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> insert into likes values(1689,1709);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1709,1689);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1782,1709);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1911,1247);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1247,1468);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1641,1468);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1316,1304);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into likes values(1501,1934);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into likes values(1934,1501);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into likes values(1025,1101);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> select * from likes;
```

+-----+-----+				
	id1		id2	
+-----+-----+				
	1689		1709	
	1709		1689	

1782	1709
1911	1247
1247	1468
1641	1468
1316	1304
1501	1934
1934	1501
1025	1101

10 rows in set (0.00 sec)

QUERIES –

1. Find names of all students who are friends with someone named GABRIEL.

```
mysql> SELECT name from highschooler where id in (SELECT id2 FROM
friend WHERE id1= ANY(SELECT id from highschooler WHERE
name='Gabriel'));
```

name
Jordan
Cassandra
Andrew
Alexis
Jessica

5 rows in set (0.01 sec)

2. For every student who likes someone 2 or more grades younger than themselves, return that students name and grade, and the name and grade of the student they like.

3. For every pair of students who both like each other, return the name and grade of both students. Include each pair only once , with the two names in alphabetical order.

```
mysql> select name,grade from highschooler where id in ( select
a.id1 from likes a join likes b on a.id1=b.id2 and a.id2=b.id1)
group by name,grade order by name,grade;
```

name	grade
Cassandra	9
Gabriel	9
Jessica	11
Kyle	12

4 rows in set (0.00 sec)

4. Find all students who do not appear in the likes table (as student who likes or is liked) and return their names and grades.

Sort by grade , then by name within each grade .

```
mysql> select name, grade from highschooler where id not in ( select
id1 from likes) or id in ( select id2 from likes) order by
grade,name;
```

name	grade
Cassandra	9
Gabriel	9
Jordan	9
Tiffany	9
Haley	10
Kris	10
Alexis	11
Jessica	11
Jordan	12
Kyle	12
Logan	12

11 rows in set (0.00 sec)

5. For every situation where student a likes student b , but we have no. information about whom b likes (that is , B does not appear as an ID1 in the likes table) , return a and b's names and grades.

```
mysql> select name,grade from highschooler where id in (select id2
from likes where id2 not in (select id1 from likes));
```

name	grade
Haley	10
Kris	10
Jordan	12

3 rows in set (0.00 sec)

6. Find names and grades of students who only have friends in the same grade. Return the result sorted by grade , then by name within each grade.

7. Find name and grade of all students who are listed by more than one other student.

```
select a-b as difference from ((select count(*) a from highschooler)
a1,(select count(distinct name) b from highschooler) a2) ;
```

difference
2

1 row in set (0.00 sec)

8. For every situation where student a likes student b , but student

b likes a different student c , return the names and grades of a ,b and c.

```
mysql> select name,grade from highschooler where id in(select id2
from likes group by id2 having count(id1)>1);
```

```
+-----+-----+
| name      | grade |
+-----+-----+
| Kris      | 10    |
| Cassandra | 9     |
+-----+-----+
2 rows in set (0.05 sec)
```

9. Find those students for whom all of their friends are in different grades from themselves . Return the students name and grades.

10. Find the number of students who are either friends with Cassandra or are friends of friends of Cassandra . Do not count Cassandra , even though technically she is a friend of a friend.

```
mysql> select avg(a) from (select count(id1) a from friend group by
id2) b;
```

```
+-----+
| avg(a) |
+-----+
| 2.4375 |
+-----+
1 row in set (0.00 sec)
```

11. Find the name and grade of the students with the greatest number of friends.

```
mysql> select max(c) from (select count(id1) c from friend group by
id2) a;
```

```
+-----+
| max(c) |
+-----+
| 4      |
+-----+
1 row in set (0.00 sec)
```