Endterm

Variant 2

Part 1 (10 points)

Please answer the following questions:

1. Consider table R(A) containing {(1),(2),(3)}. Suppose transaction T1 is "update T set A=A-1; insert into R values (6)" and transaction T2 is "select avg(A) from R; select avg(A) from R". If transaction T2 executes using "repeatable read", what are the possible values returned by its SECOND statement?

2. Consider a relation R(A) containing {(5),(6)} and two transactions: T1: Update R set A = A*2; T2: insert into R values (13). Suppose both transactions are submitted under the isolation and atomicity properties. What is the possible final states of R?

3. Suppose a table T(A,B,C) has the following tuples: (1,4,3), (2,2,3), (2,1,4), (2,3,5), (2,4,1), (3,2,4), and (3,3,6). Consider the following view definition:

```
Create View V as
   Select A+B as D, C
   From T
```

Consider the following query over view V:

```
Select D, sum(C)
 From V
 Group By D
 Having Count(*) <> 1
```

What will be the query result?

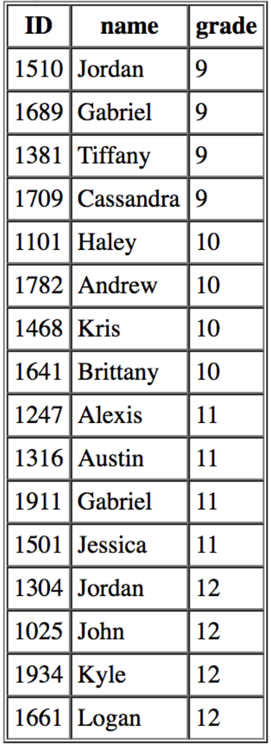
4. Consider tables R(A) and S(B), both containing {(1),(2)}. Suppose transaction T1 is "update R set A = A+1; update S set B = B-1« and transaction T2 is "select avg(A) from R; select avg(B) from S". If transaction T2 executes using «read committed», what is the possible results for T2 queries.

5. For the task 4, show all possible results with each of other isolation levels.

Part 2 (5 points)

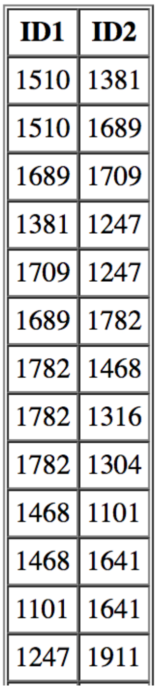
Please write SQL queries for following tasks. Consider following schemas:

Highschooler



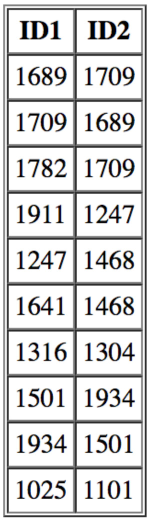
ID	name	grade
1510	Jordan	9
1689	Gabriel	9
1381	Tiffany	9
1709	Cassandra	9
1101	Haley	10
1782	Andrew	10
1468	Kris	10
1641	Brittany	10
1247	Alexis	11
1316	Austin	11
1911	Gabriel	11
1501	Jessica	11
1304	Jordan	12
1025	John	12
1934	Kyle	12
1661	Logan	12

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

Likes



ID1	ID2
1689	1709
1709	1689
1782	1709
1911	1247
1247	1468
1641	1468
1316	1304
1501	1934
1934	1501
1025	1101

6. Find the names of all students who are friends with someone named Gabriel.

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

8. Find the name and grade of all students who are liked by more than one other student.

9. 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.

10. 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.