Lab Program 4

Consider the schema for College Database:

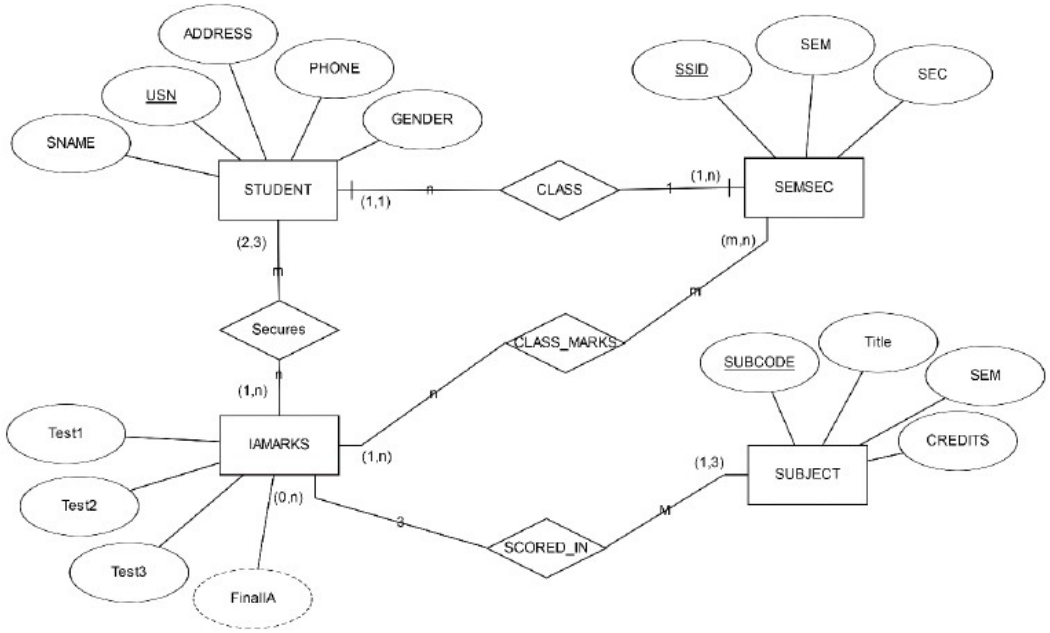
STUDENT(USN, SName, Address, Phone, Gender)
SEMSEC(SSID, Sem, Sec)
CLASS(USN, SSID)
SUBJECT(Subcode, Title, Sem, Credits)
IAMARKS(USN, Subcode, SSID, Test1, Test2, Test3, FinalIA)

Write SQL queries to

1. List all the student details studying in fourth semester 'C' section.
2. Compute the total number of male and female students in each semester and in each section.
3. Create a view of Test1 marks of student USN '1BI15CS101' in all subjects.
4. Calculate the FinalIA (average of best two test marks) and update the corresponding table for all students.
5. Categorize students based on the following criterion:
   If FinalIA = 17 to 20 then CAT = 'Outstanding'
   If FinalIA = 12 to 16 then CAT = 'Average'
   If FinalIA< 12 then CAT = 'Weak'
   Give these details only for 8th semester A, B, and C section students.

AIM: Create table, querying the College database and perform all the operations using sql.

ER DIAGRAM



SCHEMA DIAGRAM

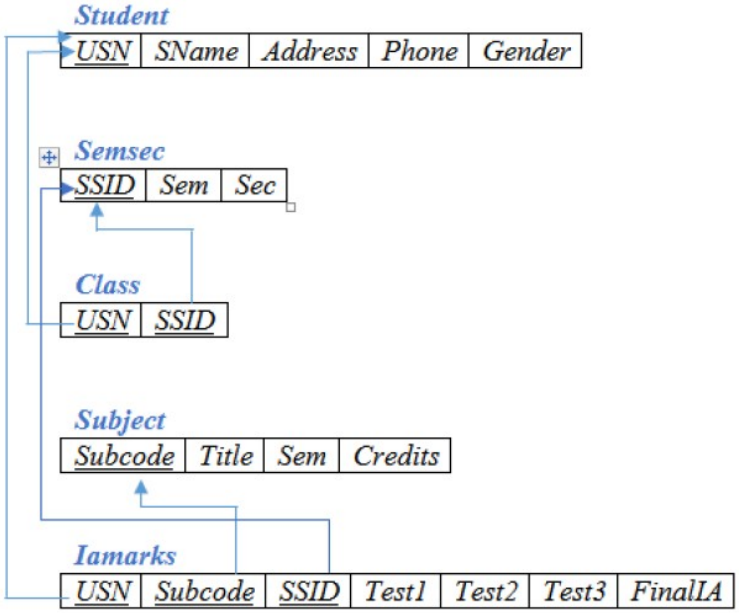


TABLE CREATION:

mysql> create table student(usn varchar(10) primary key,name varchar(20),address varchar(20),phone double,gender varchar(5));
Query OK, 0 rows affected (0.25 sec)

mysql> create table semsec(ssid int(5) primary key,sem int(5),sec varchar(5));
Query OK, 0 rows affected (0.07 sec)

mysql> create table class(usn varchar(10) primary key,ssid int(5),foreign key(usn) references student(usn) on delete cascade,foreign key(ssid) references semsec(ssid));
Query OK, 0 rows affected (0.17 sec)

mysql> create table subject(sub_code varchar(10) primary key,title varchar(10),sem int(5),credits int(5));Query OK, 0 rows affected (0.11 sec)

mysql> create table IA_marks1(usn varchar(10),sub_code varchar(10),ssid int(5),test1 int,test2 int,test3 int,final_IA int,primary key(usn,sub_code,ssid),foreign key(usn) references student(usn),foreign key(sub_code) references subject(sub_code),foreign key(ssid) references semsec(ssid));Query OK, 0 rows affected (0.15 sec)

mysql> insert into student values('1GD16CS001','akanksha','bangalore',9090786756,'F');
Query OK, 1 row affected (0.08 sec)

mysql> insert into student values('1GD16CS002','rohit','pune',9090786766,'M');
Query OK, 1 row affected (0.03 sec)

mysql> insert into student values('1GD16CS003','kirti','delhi',8890786766,'F');
Query OK, 1 row affected (0.03 sec)

mysql> insert into student values('1GD16CS004','tarun','bangalore',8890786796,'M');
Query OK, 1 row affected (0.07 sec)

```
mysql> insert into semsec values(01,4,'C');
Query OK, 1 row affected (0.07 sec)

mysql> insert into semsec values(02,7,'A');
Query OK, 1 row affected (0.04 sec)

mysql> insert into semsec values(03,1,'B');
Query OK, 1 row affected (0.06 sec)

mysql> insert into semsec values(04,4,'C');
Query OK, 1 row affected (0.05 sec)

mysql> insert into class values('1GD16CS001',04);
Query OK, 1 row affected (0.08 sec)

mysql> insert into class values('1GD16CS002',01);
Query OK, 1 row affected (0.04 sec)

mysql> insert into class values('1GD16CS003',02);
Query OK, 1 row affected (0.03 sec)

mysql> insert into class values('1GD16CS004',03);
Query OK, 1 row affected (0.04 sec)

mysql> insert into subject values('15CS32','DS',3,4);
Query OK, 1 row affected (0.07 sec)

mysql> insert into subject values('15CS33','DBMS',5,4);
Query OK, 1 row affected (0.04 sec)

mysql> insert into subject values('15CS34','CO',7,3);
Query OK, 1 row affected (0.05 sec)

mysql> insert into subject values('15CS13','PCD',1,5);
Query OK, 1 row affected (0.06 sec)

mysql> insert into IA_marks1 values('1GD16CS001','15CS13',01,25,15,20,22);
Query OK, 1 row affected (0.09 sec)

mysql> insert into IA_marks1 values('1GD16CS002','15CS34',02,12,14,16,15);
Query OK, 1 row affected (0.06 sec)

mysql> insert into IA_marks1 values('1GD16CS003','15CS33',03,18,19,14,16);
Query OK, 1 row affected (0.04 sec)

mysql> insert into IA_marks1 values('1GD16CS004','15CS32',04,10,9,8,9);
Query OK, 1 row affected (0.03 sec)

mysql> insert into IA_marks1 values('1GD16CS001','15CS33',01,30,18,10,25);
Query OK, 1 row affected (0.03 sec)

mysql> insert into IA_marks1 values('1GD16CS001','15CS34',01,30,18,10,30);
Query OK, 1 row affected (0.04 sec)

mysql> select * from student;
```

```
+------------+----------+-----------+------------+--------+
| usn        | name     | address   | phone      | gender |
+------------+----------+-----------+------------+--------+
| 1GD16CS001 | akanksha | bangalore | 9090786756 | F      |
| 1GD16CS002 | rohit    | pune      | 9090786766 | M      |
| 1GD16CS003 | kirti    | delhi     | 8890786766 | F      |
| 1GD16CS004 | tarun    | bangalore | 8890786796 | M      |
+------------+----------+-----------+------------+--------+
4 rows in set (0.00 sec)

mysql> select * from semsec;
+------+------+------+
| ssid | sem  | sec  |
+------+------+------+
|    1 |    4 | C    |
|    2 |    7 | A    |
|    3 |    1 | B    |
|    4 |    4 | C    |
+------+------+------+
4 rows in set (0.00 sec)

mysql> select * from class;
+------------+------+
| usn        | ssid |
+------------+------+
| 1GD16CS002 |    1 |
| 1GD16CS003 |    2 |
| 1GD16CS004 |    3 |
| 1GD16CS001 |    4 |
+------------+------+
4 rows in set (0.00 sec)

mysql> select * from subject;
+----------+-------+------+---------+
| sub_code | title | sem  | credits |
+----------+-------+------+---------+
| 15CS13   | PCD   |    1 |       5 |
| 15CS32   | DS    |    3 |       4 |
| 15CS33   | DBMS  |    5 |       4 |
| 15CS34   | CO    |    7 |       3 |
+----------+-------+------+---------+
4 rows in set (0.00 sec)

mysql> select * from IA_marks1;
+------------+----------+------+-------+-------+-------+----------+
| usn        | sub_code | ssid | test1 | test2 | test3 | final_IA |
+------------+----------+------+-------+-------+-------+----------+
| 1GD16CS001 | 15CS13   |    1 |    25 |    15 |    20 |       22 |
| 1GD16CS001 | 15CS33   |    1 |    30 |    18 |    10 |       25 |
| 1GD16CS001 | 15CS34   |    1 |    30 |    18 |    10 |       30 |
| 1GD16CS002 | 15CS34   |    2 |    12 |    14 |    16 |       15 |
| 1GD16CS003 | 15CS33   |    3 |    18 |    19 |    14 |       16 |
| 1GD16CS004 | 15CS32   |    4 |    10 |     9 |     8 |        9 |
+------------+----------+------+-------+-------+-------+----------+
6 rows in set (0.00 sec)
```

QUERY1: List all the student details studying in fourth semester ‘C’ section.

```
mysql> select s.* from student s,semsec ss,class c where s.usn=c.usn and ss.ssid=c.ssid and
ss.sem=4 and ss.sec='C';
+------------+----------+-----------+------------+--------+
| usn        | name     | address   | phone      | gender |
+------------+----------+-----------+------------+--------+
| 1GD16CS002 | rohit    | pune      | 9090786766 | M      |
| 1GD16CS001 | akanksha | bangalore | 9090786756 | F      |
+------------+----------+-----------+------------+--------+
2 rows in set (0.02 sec)
```

QUERY 2: Compute the total number of male and female students in each semester and each section.

```
mysql> select sem,sec,gender ,count(gender) from student natural join class natural join semsec
group by sem,sec,gender;
+------+------+--------+---------------+
| sem  | sec  | gender | count(gender) |
+------+------+--------+---------------+
|    1 | B    | M      |             1 |
|    4 | C    | F      |             1 |
|    4 | C    | M      |             1 |
|    7 | A    | F      |             1 |
+------+------+--------+---------------+
4 rows in set (0.03 sec)

mysql> insert into student values('1GD16CS005','akash','bangalore',9870786756,'M');
Query OK, 1 row affected (0.06 sec)

mysql>  insert into class values('1GD16CS005',01);
Query OK, 1 row affected (0.05 sec)

mysql> select sem,sec,gender ,count(gender) from student natural join class natural join semsec
group by sem,sec,gender;
+------+------+--------+---------------+
| sem  | sec  | gender | count(gender) |
+------+------+--------+---------------+
|    1 | B    | M      |             1 |
|    4 | C    | F      |             1 |
|    4 | C    | M      |             2 |
|    7 | A    | F      |             1 |
+------+------+--------+---------------+ 4 rows in set (0.03 sec)
```

QUERY 3: Create a view of Test1 marks of student USN ‘1GD16CS001’ in all subjects

```
mysql>  create view testmrk as select usn,sub_code,test1 from IA_marks1 where
usn='1GD16CS001';
Query OK, 0 rows affected (0.04 sec)

mysql> select * from testmrk;
+------------+----------+-------+
| usn        | sub_code | test1 |
+------------+----------+-------+
| 1GD16CS001 | 15CS13   |    25 |
```

```
| 1GD16CS001 | 15CS33   |    30 |
| 1GD16CS001 | 15CS34   |    30 |
+------------+----------+-------+
3 rows in set (0.00 sec)
```

QUERY4: Calculate the FinalIA (average of best two test marks) and update the corresponding table for all students.

```
mysql> update IA_marks1 set final_IA =(test1+test2+test3-least(test1,test2,test3))/2;
Query OK, 5 rows affected (0.04 sec)
Rows matched: 6  Changed: 5  Warnings: 0

mysql> select * from IA_marks1;
+------------+----------+------+-------+-------+-------+----------+
| usn        | sub_code | ssid | test1 | test2 | test3 | final_IA |
+------------+----------+------+-------+-------+-------+----------+
| 1GD16CS001 | 15CS13   |    1 |    25 |    15 |    20 |       23 |
| 1GD16CS001 | 15CS33   |    1 |    30 |    18 |    10 |       24 |
| 1GD16CS001 | 15CS34   |    1 |    30 |    18 |    10 |       24 |
| 1GD16CS002 | 15CS34   |    2 |    12 |    14 |    16 |       15 |
| 1GD16CS003 | 15CS33   |    3 |    18 |    19 |    14 |       19 |
| 1GD16CS004 | 15CS32   |    4 |    10 |     9 |     8 |       10 |
+------------+----------+------+-------+-------+-------+----------+
6 rows in set (0.00 sec)
```

QUERY5: Categorize students based on the following criterion:
If FinalIA = 17 to 20 then CAT = ‘Outstanding’
If FinalIA = 12 to 16 then CAT = ‘Average’
If FinalIA< 12 then CAT = ‘Weak’
Give these details only for 8th semester A, B, and C section students.

```
mysql> select s.usn,s.name,i.final_IA,(case when i.final_IA between 17 and 30 then 'outstanding'
when  i.final_IA between 12 and 16 then 'average' else 'weak' end) as cat from student s,semsec
ss,IA_marks1 i,subject b where s.usn=i.usn and ss.ssid=i.ssid and b.sub_code = i.sub_code and
ss.sem=7;
+------------+-------+----------+---------+
| usn        | name  | final_IA | cat     |
+------------+-------+----------+---------+
| 1GD16CS002 | rohit |       15 | average |
+------------+-------+----------+---------+
1 row in set (0.00 sec)
```

(P.S : put any row with semester 8 and maximum marks should be 20)

CONCLUSION: Tables are created and the values have been inserted accordingly and all the mentioned queries have been executed.