LAB WORK: GROUP 3

MEMBERS:

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QUESTION

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 allstudents.

5. Categorize students based on the followingcriterion:

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.

SOLUTION:

```
create database stud;

use stud;

CREATE TABLE student(

USN VARCHAR(10) PRIMARY KEY,
SNAME VARCHAR(25),
ADDRESS VARCHAR(25),
PHONE NUMERIC(10),
GENDER CHAR(1)

);

create table semsec(

SSID VARCHAR(5) PRIMARY KEY,
SEM NUMERIC(2),
SEC CHAR(1)

);

CREATE TABLE CLASS (
USN VARCHAR (10),
SSID VARCHAR (5), PRIMARY
KEY (USN, SSID),
FOREIGN KEY (USN) REFERENCES STUDENT (USN),
FOREIGN KEY (SSID) REFERENCES SEMSEC (SSID));

CREATE TABLE SUBJECTS (
SUBCODE VARCHAR (8),
TITLE VARCHAR (20),
SEM NUMERIC (2),
CREDITS NUMERIC (2),
PRIMARY KEY (SUBCODE));

CREATE TABLE IAMARKS (
USN VARCHAR (10),
SUBCODE VARCHAR (8),
SSID VARCHAR(5),
TEST1 NUMERIC(2),
TEST2 NUMERIC(2),
TEST3 NUMERIC(2),
FINALIA NUMERIC (2),
PRIMARY KEY (USN, SUBCODE, SSID),
FOREIGN KEY (USN) REFERENCES STUDENT (USN),
FOREIGN KEY (SUBCODE) REFERENCES SUBJECTS (SUBCODE),
FOREIGN KEY (SSID) REFERENCES SEMSEC (SSID));
```

```
mysql> DESC STUDENT;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| USN     | varchar(10) | NO   | PRI | NULL    |       |
| SNAME   | varchar(25) | YES  |     | NULL    |       |
| ADDRESS | varchar(25) | YES  |     | NULL    |       |
| PHONE   | int         | YES  |     | NULL    |       |
| GENDER  | char(1)     | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)

mysql> DESC SEMSEC;
+-------+------------+------+-----+---------+-------+
| Field | Type       | Null | Key | Default | Extra |
+-------+------------+------+-----+---------+-------+
| SSID  | varchar(5) | NO   | PRI | NULL    |       |
| SEM   | int        | YES  |     | NULL    |       |
| SEC   | char(1)    | YES  |     | NULL    |       |
+-------+------------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql> DESC SUBJECT;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| SUBCODE | varchar(8)  | NO   | PRI | NULL    |       |
| TITLE   | varchar(20) | YES  |     | NULL    |       |
| SEM     | int         | YES  |     | NULL    |       |
| CREDITS | int         | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> DESC IAMARKS;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| USN     | varchar(10) | NO   | PRI | NULL    |       |
| SUBCODE | varchar(8)  | NO   | PRI | NULL    |       |
| SSID    | varchar(5)  | NO   | PRI | NULL    |       |
| TEST1   | int         | YES  |     | NULL    |       |
| TEST2   | int         | YES  |     | NULL    |       |
| TEST3   | int         | YES  |     | NULL    |       |
| FINALIA | int         | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

INSERTION

```
INSERT INTO STUDENT VALUES
('1RN13CS020','AKSHAY','BELAGAVI',88778812,'M');
INSERT INTO STUDENT
VALUES('1RN13CS062','SANDHYA','BENGALURU',7722912,'F');
INSERT INTO STUDENT
VALUES('1RN13CS091','TEESHA','BENGALURU',7712312,'F');
INSERT INTO STUDENT
VALUES('1RN13CS066','SUPRIYA','MANGALURU',8878122,'F');
INSERT INTO STUDENT VALUES ('1RN15CS011','AJAY','TUMKUR', 98091341,'M');
INSERT INTO STUDENT VALUES
('1RN15CS029','CHITRA','DAVANGERE',76962121,'F');
INSERT INTO STUDENT VALUES ('1RN15CS045','JEEVA','BELLARY',
99448501,'M');
INSERT INTO STUDENT VALUES
('1RN15CS091','SANTOSH','MANGALURU',8812201,'M');
INSERT INTO STUDENT
VALUES('1RN16CS045','ISMAIL','KALBURGI',990032201,'M');
INSERT INTO STUDENT VALUES
('1RN16CS088','SAMEERA','SHIMOGA',9905512,'F');
INSERT INTO STUDENT VALUES
('1RN16CS122','VINAYAKA','CHIKAMAGALUR',88008011,'M');

SELECT * FROM STUDENT
    -> ;
+------------+----------+--------------+-----------+--------+
| USN        | SNAME    | ADDRESS      | PHONE     | GENDER |
+------------+----------+--------------+-----------+--------+
| 1RN13CS020 | AKSHAY   | BELAGAVI     |  88778812 | M      |
| 1RN13CS062 | SANDHYA  | BENGALURU    |   7722912 | F      |
| 1RN13CS066 | SUPRIYA  | MANGALURU    |   8878122 | F      |
| 1RN13CS091 | TEESHA   | BENGALURU    |   7712312 | F      |
| 1RN15CS011 | AJAY     | TUMKUR       |  98091341 | M      |
| 1RN15CS029 | CHITRA   | DAVANGERE    |  76962121 | F      |
| 1RN15CS045 | JEEVA    | BELLARY      |  99448501 | M      |
| 1RN15CS091 | SANTOSH  | MANGALURU    |   8812201 | M      |
| 1RN16CS045 | ISMAIL   | KALBURGI     | 990032201 | M      |
| 1RN16CS088 | SAMEERA  | SHIMOGA      |   9905512 | F      |
| 1RN16CS122 | VINAYAKA | CHIKAMAGALUR |  88008011 | M      |
+------------+----------+--------------+-----------+--------+
11 rows in set (0.01 sec)


INSERT INTO SEMSEC VALUES ('CSE8A', 8,'A');
INSERT INTO SEMSEC VALUES ('CSE8B', 8,'B');
INSERT INTO SEMSEC VALUES('CSE8C',8,'C');
INSERT INTO SEMSEC VALUES ('CSE7A', 7,'A');
INSERT INTO SEMSEC VALUES('CSE7B',7,'B');
INSERT INTO SEMSEC VALUES ('CSE7C',7,'C');
INSERT INTO SEMSEC VALUES ('CSE6A', 6,'A');
INSERT INTO SEMSEC VALUES ('CSE6B', 6,'B');
 INSERT INTO SEMSEC VALUES ('CSE6C', 6,'C');
INSERT INTO SEMSEC VALUES ('CSE5A', 5,'A');
INSERT INTO SEMSEC VALUES ('CSE5B', 5,'B');
INSERT INTO SEMSEC VALUES ('CSE5C', 5,'C');
INSERT INTO SEMSEC VALUES('CSE4A',4,'A');
```

```
INSERT INTO SEMSEC VALUES ('CSE4B', 4,'B');
INSERT INTO SEMSEC VALUES('CSE4C',4,'C');
INSERT INTO SEMSEC VALUES ('CSE3A', 3,'A');
INSERT INTO SEMSEC VALUES ('CSE3B', 3,'B');
INSERT INTO SEMSEC VALUES('CSE3C',3,'C');
INSERT INTO SEMSEC VALUES ('CSE2A', 2,'A');
INSERT INTO SEMSEC VALUES ('CSE2B', 2,'B');
INSERT INTO SEMSEC VALUES ('CSE2C', 2,'C');
INSERT INTO SEMSEC VALUES ('CSE1A', 1,'A');
INSERT INTO SEMSEC VALUES ('CSE1B', 1,'B');
INSERT INTO SEMSEC VALUES ('CSE1C', 1,'C');

mysql> SELECT * FROM SEMSEC;
+-------+------+------+
| SSID  | SEM  | SEC  |
+-------+------+------+
| CSE1A |    1 | A    |
| CSE1B |    1 | B    |
| CSE1C |    1 | C    |
| CSE2A |    2 | A    |
| CSE2B |    2 | B    |
| CSE2C |    2 | C    |
| CSE3A |    3 | A    |
| CSE3B |    3 | B    |
| CSE3C |    3 | C    |
| CSE4A |    4 | A    |
| CSE4B |    4 | B    |
| CSE4C |    4 | C    |
| CSE5A |    5 | A    |
| CSE5B |    5 | B    |
| CSE5C |    5 | C    |
| CSE6A |    6 | A    |
| CSE6B |    6 | B    |
| CSE6C |    6 | C    |
| CSE7A |    7 | A    |
| CSE7B |    7 | B    |
| CSE7C |    7 | C    |
| CSE8A |    8 | A    |
| CSE8B |    8 | B    |
| CSE8C |    8 | C    |
+-------+------+------+
24 rows in set (0.00 sec)

INSERT INTO CLASS VALUES('1RN13CS020','CSE8A');
INSERT INTO CLASS VALUES('1RN13CS066','CSE8B');
INSERT INTO CLASS VALUES('1RN13CS091','CSE8C');
INSERT INTO CLASS VALUES('1RN15CS011','CSE4A');
INSERT INTO CLASS VALUES('1RN15CS029','CSE4A');
INSERT INTO CLASS VALUES('1RN15CS045','CSE4B');
INSERT INTO CLASS VALUES('1RN15CS091','CSE4C');
INSERT INTO CLASS VALUES('1RN16CS045','CSE3A');
INSERT INTO CLASS VALUES('1RN16CS088','CSE3B');
INSERT INTO CLASS VALUES('1RN16CS122','CSE3C');
```

```
mysql> SELECT * FROM CLASS;
+------------+-------+
| USN        | SSID  |
+------------+-------+
| 1RN16CS045 | CSE3A |
| 1RN16CS088 | CSE3B |
| 1RN16CS122 | CSE3C |
| 1RN15CS011 | CSE4A |
| 1RN15CS029 | CSE4A |
| 1RN15CS045 | CSE4B |
| 1RN15CS091 | CSE4C |
| 1RN13CS066 | CSE8B |
| 1RN13CS091 | CSE8C |
+------------+-------+
9 rows in set (0.00 sec)
```

```
INSERT INTO SUBJECT VALUES ('10CS81','ACA', 8, 4);
INSERT INTO SUBJECT VALUES ('10CS82','SSM', 8, 4);
INSERT INTO SUBJECT VALUES ('10CS83','NM', 8, 4);
INSERT INTO SUBJECT VALUES ('10CS84','CC', 8, 4);
INSERT INTO SUBJECT VALUES ('10CS85','PW', 8, 4);
INSERT INTO SUBJECT VALUES ('10CS71','OOAD', 7, 4);
INSERT INTO SUBJECT VALUES ('10CS72','ECS', 7, 4);
INSERT INTO SUBJECT VALUES ('10CS73','PTW', 7, 4);
INSERT INTO SUBJECT VALUES ('10CS74','DWDM', 7, 4);
INSERT INTO SUBJECT VALUES ('10CS75','JAVA', 7, 4);
INSERT INTO SUBJECT VALUES ('10CS76','SAN', 7, 4);
INSERT INTO SUBJECT VALUES ('15CS51', 'ME', 5, 4);
INSERT INTO SUBJECT VALUES ('15CS52','CN', 5, 4);
INSERT INTO SUBJECT VALUES ('15CS53','DBMS', 5, 4);
INSERT INTO SUBJECT VALUES ('15CS54','ATC', 5, 4);
INSERT INTO SUBJECT VALUES ('15CS55','JAVA', 5, 3);
INSERT INTO SUBJECT VALUES ('15CS56','AI', 5, 3);
INSERT INTO SUBJECT VALUES ('15CS41','M4', 4, 4);
INSERT INTO SUBJECT VALUES ('15CS42','SE', 4, 4);
INSERT INTO SUBJECT VALUES ('15CS43','DAA', 4, 4);
INSERT INTO SUBJECT VALUES ('15CS44','MPMC', 4, 4);
INSERT INTO SUBJECT VALUES ('15CS45','OOC', 4, 3);
INSERT INTO SUBJECT VALUES ('15CS46','DC', 4, 3);
INSERT INTO SUBJECT VALUES ('15CS31','M3', 3, 4);
INSERT INTO SUBJECT VALUES ('15CS32','ADE', 3, 4);
INSERT INTO SUBJECT VALUES ('15CS33','DSA', 3, 4);
INSERT INTO SUBJECT VALUES ('15CS34','CO', 3, 4);
INSERT INTO SUBJECT VALUES ('15CS35','USP', 3, 3);
INSERT INTO SUBJECT VALUES ('15CS36','DMS', 3, 3);
```

```
mysql> SELECT * FROM SUBJECT;
+---------+-------+------+---------+
| SUBCODE | TITLE | SEM  | CREDITS |
+---------+-------+------+---------+
| 10CS71  | OOAD  |    7 |       4 |
| 10CS72  | ECS   |    7 |       4 |
| 10CS73  | PTW   |    7 |       4 |
| 10CS74  | DWDM  |    7 |       4 |
| 10CS75  | JAVA  |    7 |       4 |
| 10CS76  | SAN   |    7 |       4 |
| 10CS81  | ACA   |    8 |       4 |
| 10CS82  | SSM   |    8 |       4 |
| 10CS83  | NM    |    8 |       4 |
| 10CS84  | CC    |    8 |       4 |
| 10CS85  | PW    |    8 |       4 |
| 15CS31  | M3    |    3 |       4 |
| 15CS32  | ADE   |    3 |       4 |
| 15CS33  | DSA   |    3 |       4 |
| 15CS34  | CO    |    3 |       4 |
| 15CS35  | USP   |    3 |       3 |
| 15CS36  | DMS   |    3 |       3 |
| 15CS41  | M4    |    4 |       4 |
| 15CS42  | SE    |    4 |       4 |
| 15CS43  | DAA   |    4 |       4 |
| 15CS44  | MPMC  |    4 |       4 |
| 15CS45  | OOC   |    4 |       3 |
| 15CS46  | DC    |    4 |       3 |
| 15CS51  | ME    |    5 |       4 |
| 15CS52  | CN    |    5 |       4 |
| 15CS53  | DBMS  |    5 |       4 |
| 15CS54  | ATC   |    5 |       4 |
| 15CS55  | JAVA  |    5 |       3 |
| 15CS56  | AI    |    5 |       3 |
+---------+-------+------+---------+
```

```
INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3)VALUES
('1RN13CS091','10CS81','CSE8C', 15, 16,18);
INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3)VALUES
('1RN13CS091','10CS82','CSE8C', 12, 19,14);
INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3)VALUES
('1RN13CS091','10CS83','CSE8C', 19, 15,20);
INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3)VALUES
('1RN13CS091','10CS84','CSE8C', 20, 16,19);
INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3)VALUES
('1RN13CS091','10CS85','CSE8C', 15, 15,12);

mysql> SELECT * FROM IAMARKS;
+------------+---------+-------+-------+-------+-------+---------+
| USN        | SUBCODE | SSID  | TEST1 | TEST2 | TEST3 | FINALIA |
+------------+---------+-------+-------+-------+-------+---------+
| 1RN13CS091 | 10CS81  | CSE8C |    15 |    16 |    18 |    NULL |
| 1RN13CS091 | 10CS82  | CSE8C |    12 |    19 |    14 |    NULL |
| 1RN13CS091 | 10CS83  | CSE8C |    19 |    15 |    20 |    NULL |
| 1RN13CS091 | 10CS84  | CSE8C |    20 |    16 |    19 |    NULL |
| 1RN13CS091 | 10CS85  | CSE8C |    15 |    15 |    12 |    NULL |
+------------+---------+-------+-------+-------+-------+---------+
```

-- 1. List all the student details studying in fourth semester 'C' section.

```
SELECT S.*, SS.SEM, SS.SEC
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        | SNAME   | ADDRESS   | PHONE   | GENDER | SEM  | SEC  |
+------------+---------+-----------+---------+--------+------+------+
| 1RN15CS091 | SANTOSH | MANGALURU | 8812201 | M      |    4 | C    |
+------------+---------+-----------+---------+--------+------+------+
1 row in set (0.00 sec)
```

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

```
SELECT SS.SEM, SS.SEC, S.GENDER, COUNT(S.GENDER) AS COUNT FROM
STUDENT S, SEMSEC SS, CLASS C
WHERE S.USN = C.USN AND
SS.SSID = C.SSID
GROUP BY SS.SEM, SS.SEC, S.GENDER
ORDER BY SEM;
```

```
+------+------+--------+-------+
| SEM  | SEC  | GENDER | COUNT |
+------+------+--------+-------+
|    3 | A    | M      |     1 |
|    3 | B    | F      |     1 |
|    3 | C    | M      |     1 |
|    4 | A    | F      |     1 |
|    4 | A    | M      |     1 |
|    4 | B    | M      |     1 |
|    4 | C    | M      |     1 |
|    8 | B    | F      |     1 |
|    8 | C    | F      |     1 |
+------+------+--------+-------+
9 rows in set (0.02 sec)
```

3. Create a view of Test1 marks of student USN '1BI15CS101' in allsubjects.

```
CREATE VIEW STU_TEST1_MARKS_VIEW AS
SELECT TEST1, SUBCODE
FROM IAMARKS
WHERE USN = '1RN13CS091';
```

```
SELECT * FROM STU_TEST1_MARKS_VIEW;


+-------+---------+
| TEST1 | SUBCODE |
+-------+---------+
|    15 | 10CS81  |
|    12 | 10CS82  |
|    19 | 10CS83  |
|    20 | 10CS84  |
|    15 | 10CS85  |
+-------+---------+
5 rows in set (0.00 sec)
```

4. Calculate the FinalIA (average of best two test marks) and update the corresponding table for allstudents.

```
DELIMITER //

CREATE PROCEDURE AVG_MARKS()
BEGIN
DECLARE C_A INTEGER;
DECLARE C_B INTEGER;
DECLARE C_C INTEGER;
DECLARE C_SUM INTEGER;
DECLARE C_AVG INTEGER;
DECLARE C_USN VARCHAR(10);
DECLARE C_SUBCODE VARCHAR(8);
DECLARE C_SSID VARCHAR(5);
DECLARE C_IAMARKS CURSOR FOR
SELECT GREATEST(TEST1,TEST2) AS A, GREATEST(TEST1,TEST3) AS B,
GREATEST(TEST3,TEST2) AS C, USN, SUBCODE, SSID
FROM IAMARKS
WHERE FINALIA IS NULL
FOR UPDATE;
OPEN C_IAMARKS;
LOOP
FETCH C_IAMARKS INTO C_A, C_B, C_C, C_USN, C_SUBCODE, C_SSID;
IF (C_A != C_B) THEN
 SET C_SUM=C_A+C_B;
ELSE
 SET C_SUM=C_A+C_C;
END IF;
SET C_AVG=C_SUM/2;
UPDATE IAMARKS SET FINALIA = C_AVG
WHERE USN = C_USN AND SUBCODE = C_SUBCODE AND SSID = C_SSID;
END LOOP;
CLOSE C_IAMARKS;
END;
//
DELIMITER  ;

CALL AVG_MARKS();

SELECT * FROM IAMARKS;
```

```
+------------+---------+-------+-------+-------+-------+---------+
| USN        | SUBCODE | SSID  | TEST1 | TEST2 | TEST3 | FINALIA |
+------------+---------+-------+-------+-------+-------+---------+
| 1RN13CS091 | 10CS81  | CSE8C |    15 |    16 |    18 |      17 |
| 1RN13CS091 | 10CS82  | CSE8C |    12 |    19 |    14 |      17 |
| 1RN13CS091 | 10CS83  | CSE8C |    19 |    15 |    20 |      20 |
| 1RN13CS091 | 10CS84  | CSE8C |    20 |    16 |    19 |      20 |
| 1RN13CS091 | 10CS85  | CSE8C |    15 |    15 |    12 |      15 |
+------------+---------+-------+-------+-------+-------+---------+
5 rows in set (0.00 sec)
```

5)Categorize students based on the followingcriterion: 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.

```
SELECT S.USN,S.SNAME,S.ADDRESS,S.PHONE,S.GENDER,
(CASE
WHEN IA.FINALIA BETWEEN 17 AND 20 THEN'OUTSTANDING' WHEN
IA.FINALIA BETWEEN 12 AND 16 THEN 'AVERAGE' ELSE 'WEAK'
END) AS CAT
FROM STUDENT S, SEMSEC SS, IAMARKS IA, SUBJECT SUB
WHERE S.USN = IA.USN AND
SS.SSID = IA.SSID AND
SUB.SUBCODE = IA.SUBCODE AND
SUB.SEM = 8;
------------+--------+-----------+---------+--------+-------------+
| USN        | SNAME  | ADDRESS   | PHONE   | GENDER | CAT         |
+------------+--------+-----------+---------+--------+-------------+
| 1RN13CS091 | TEESHA | BENGALURU | 7712312 | F      | OUTSTANDING |
| 1RN13CS091 | TEESHA | BENGALURU | 7712312 | F      | OUTSTANDING |
| 1RN13CS091 | TEESHA | BENGALURU | 7712312 | F      | OUTSTANDING |
| 1RN13CS091 | TEESHA | BENGALURU | 7712312 | F      | OUTSTANDING |
| 1RN13CS091 | TEESHA | BENGALURU | 7712312 | F      | AVERAGE     |
+------------+--------+-----------+---------+--------+-------------+
5 rows in set (0.00 sec)
```