PROGRAM - 2

Consider the schema for College Database:

STUDENT (USN, SName, Address, Phone, Gender)

SEMSEC (SSID, Sem, Sec)

CLASS (USN, SSID)

COURSE (Subcode, Title, Sem, Credits)

IAMARKS (USN, Subcode, SSID, Test1, Test2, Test3, FinalIA)

Write SQL queries to:

1) List all the student details studying in the 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 '1DS22IS101' in all Courses.
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.

Solution Queries:

Query to create tables:

- Student Table –

```
CREATE TABLE STUDENT(
USN VARCHAR(20) PRIMARY KEY,
SNAME CHAR(20),
ADDRESS VARCHAR(50),
PHONE DECIMAL(10,0),
GENDER CHAR(10));
```

- SEMSEC Table –

```
CREATE TABLE SEMSEC(
SSID VARCHAR(20) PRIMARY KEY,
SEM INT,
SEC CHAR(2));
```

- Class Table –

```
CREATE TABLE CLASS(
USN VARCHAR(20),
SSID VARCHAR(20),
PRIMARY KEY (USN,SSID),
FOREIGN KEY (USN) REFERENCES STUDENT (USN) ON DELETE
CASCADE,
FOREIGN KEY (SSID) REFERENCES SEMSEC (SSID) ON DELETE
CASCADE);
```

- Course Table –

```
CREATE TABLE COURSE(
SUBCODE VARCHAR(20) PRIMARY KEY,
TITLE VARCHAR(20),
SEM INT,
CREDITS INT);
```

- IAMarks Table –

```
CREATE TABLE IAMARKS(
USN VARCHAR(20),
SUBCODE VARCHAR(20),
SSID VARCHAR(20),
PRIMARY KEY(USN,SUBCODE,SSID),
FOREIGN KEY(USN) REFERENCES STUDENT(USN) ON DELETE
CASCADE,
FOREIGN KEY(SUBCODE) REFERENCES COURSE(SUBCODE) ON
DELETE CASCADE,
FOREIGN KEY(SSID) REFERENCES SEMSEC(SSID) ON DELETE
CASCADE,
TEST1 INT,
TEST2 INT,
TEST3 INT,
FINALIA DECIMAL(5,2));
```

Query to insert values into the table:

- Student Table –

```
INSERT INTO STUDENT VALUES ('1DS19IS049','ARJUN','BANGALORE',
9535616756,'MALE');
INSERT INTO STUDENT VALUES ('1DS19IS022','ADITYA','BANGALORE',
7896716657,'MALE');
```

INSERT INTO STUDENT VALUES ('1DS19IS017','ANEESH','MATTUR', 7898676647,'MALE');
INSERT INTO STUDENT VALUES ('1DS19IS058','VARSHA','PUNE', 8978916756,'FEMALE');
INSERT INTO STUDENT VALUES ('1DS19IS007','RUPA','MANGALORE', 9535616756,'FEMALE');

USN	SNAME	ADDRESS	PHONE	GENDER
1DS19IS049	ARJUN	BANGALORE	9535616756	MALE
1DS19IS022	ADITYA	BANGALORE	7896716657	MALE
1DS19IS017	ANEESH	MATTUR	7898676647	MALE
1DS19IS058	VARSHA	PUNE	8978916756	FEMALE
1DS19IS007	RUPA	MANGALORE	9535616756	FEMALE

- SEMSEC Table –

INSERT INTO SEMSEC VALUES('4A01',4,'A');
INSERT INTO SEMSEC VALUES('4C02',4,'C');
INSERT INTO SEMSEC VALUES('8A01',8,'A');
INSERT INTO SEMSEC VALUES('8C03',8,'C');
INSERT INTO SEMSEC VALUES('5A01',5,'A');

SSID	SEM	SEC
4A01	4	A
4C02	4	C
8A01	8	A
8C03	8	C
5A01	5	A

- Class Table –

INSERT INTO CLASS VALUES('1DS19IS049','8A01');
INSERT INTO CLASS VALUES('1DS19IS022','8A01');
INSERT INTO CLASS VALUES('1DS19IS017','4C02');
INSERT INTO CLASS VALUES('1DS19IS058','4C02');
INSERT INTO CLASS VALUES('1DS19IS007','5A01');

USN	SSID
1DS19IS049	8A01
1DS19IS022	8A01
1DS19IS017	4C02
1DS19IS058	4C02
1DS19IS007	5A01

- Course Table –

```
INSERT INTO COURSE VALUES(1,'DBMS',5,4);
INSERT INTO COURSE VALUES(2,'PHYSICS',8,3);
INSERT INTO COURSE VALUES(3,'CHEMISTRY',8,4);
INSERT INTO COURSE VALUES(4,'CNCS',4,2);
INSERT INTO COURSE VALUES(5,'PP',5,3);
```

SUBCODE	TITLE	SEM	CREDITS
1	DBMS	5	4
2	PHYSICS	8	3
3	CHEMISTRY	8	4
4	CNCS	4	2
5	PP	5	3

- IAMarks Table –

```
INSERT INTO IAMARKS VALUES('1DS19IS049',2,'8A01',19,18,20,0);
INSERT INTO IAMARKS VALUES('1DS19IS058',4,'4C02',18,12,13,0);
INSERT INTO IAMARKS VALUES('1DS19IS022',2,'8A01',14,16,18,0);
INSERT INTO IAMARKS VALUES('1DS19IS007',1,'5A01',18,16,7,0);
INSERT INTO IAMARKS VALUES('1DS19IS017',4,'4C02',2,4,3,0);
```

USN	SUBCODE	SSID	TEST1	TEST2	TEST3	FINALIA
1DS19IS049	2	8A01	19	18	20	0.00
1DS19IS058	4	4C02	18	12	13	0.00
1DS19IS022	2	8A01	14	16	18	0.00
1DS19IS007	1	5A01	18	16	7	0.00
1DS19IS017	4	4C02	2	4	3	0.00

Query for given questions:

1)
```
SELECT S1.* FROM STUDENT S1, SEMSEC S2, CLASS C
WHERE S1.USN = C.USN AND C.SSID = S2.SSID
AND S2.SEM = 4 AND S2.SEC = 'C';
```

USN	SNAME	ADDRESS	PHONE	GENDER
1DS19IS017	ANEESH	MATTUR	7898676647	MALE
1DS19IS058	VARSHA	PUNE	8978916756	FEMALE

2)
```
SELECT S.GENDER, SS.SEM,SS.SEC ,COUNT(GENDER)
FROM STUDENT S, SEMSEC SS,CLASS C
WHERE S.USN = C.USN AND C.SSID = SS.SSID
GROUP BY S.GENDER, SS.SEM,SS.SEC;
```

GENDER	SEM	SEC	COUNT(GENDER)
FEMALE	4	C	1
MALE	8	A	2
MALE	4	C	1
FEMALE	5	A	1

3) CREATE VIEW IAMARKS_1 AS
SELECT SUBCODE , TEST1
FROM IAMARKS WHERE USN = '1DS19IS049';

SELECT * FROM IAMARKS_1;

SUBCODE	TEST1
2	19

4) UPDATE IAMARKS
SET FINALIA = (GREATEST(TEST1, TEST2, TEST3) +
((TEST1+TEST2+TEST3) - GREATEST(TEST1, TEST2, TEST3) -
LEAST(TEST1, TEST2, TEST3)))/2;

SELECT * FROM IAMARKS;

USN	SUBCODE	SSID	TEST1	TEST2	TEST3	FINALIA
1DS19IS049	2	8A01	19	18	20	19.5
1DS19IS058	4	4C02	18	12	13	15.5
1DS19IS022	2	8A01	14	16	18	17
1DS19IS007	1	5A01	18	16	7	17
1DS19IS017	4	4C02	2	4	3	3.5

5) SELECT SS.SEC,S.*,
(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, COURSE SUB
WHERE S.USN = IA.USN AND SS.SSID = IA.SSID AND
SUB.SUBCODE = IA.SUBCODE AND SUB.SEM = 8;

SEC	USN	SNAME	ADDRESS	PHONE	GENDER	CAT
A	1DS19IS049	ARJUN	BANGALORE	9535616756	MALE	OUTSTANDING
A	1DS19IS022	ADITYA	BANGALORE	7896716657	MALE	OUTSTANDING