

LAB EXERCISE-4

COLLEGE DATABASE

Consider the schema for College Database:

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

SEMSEC(SSID, Sem, Sec)

CLASS(USN, SSID)

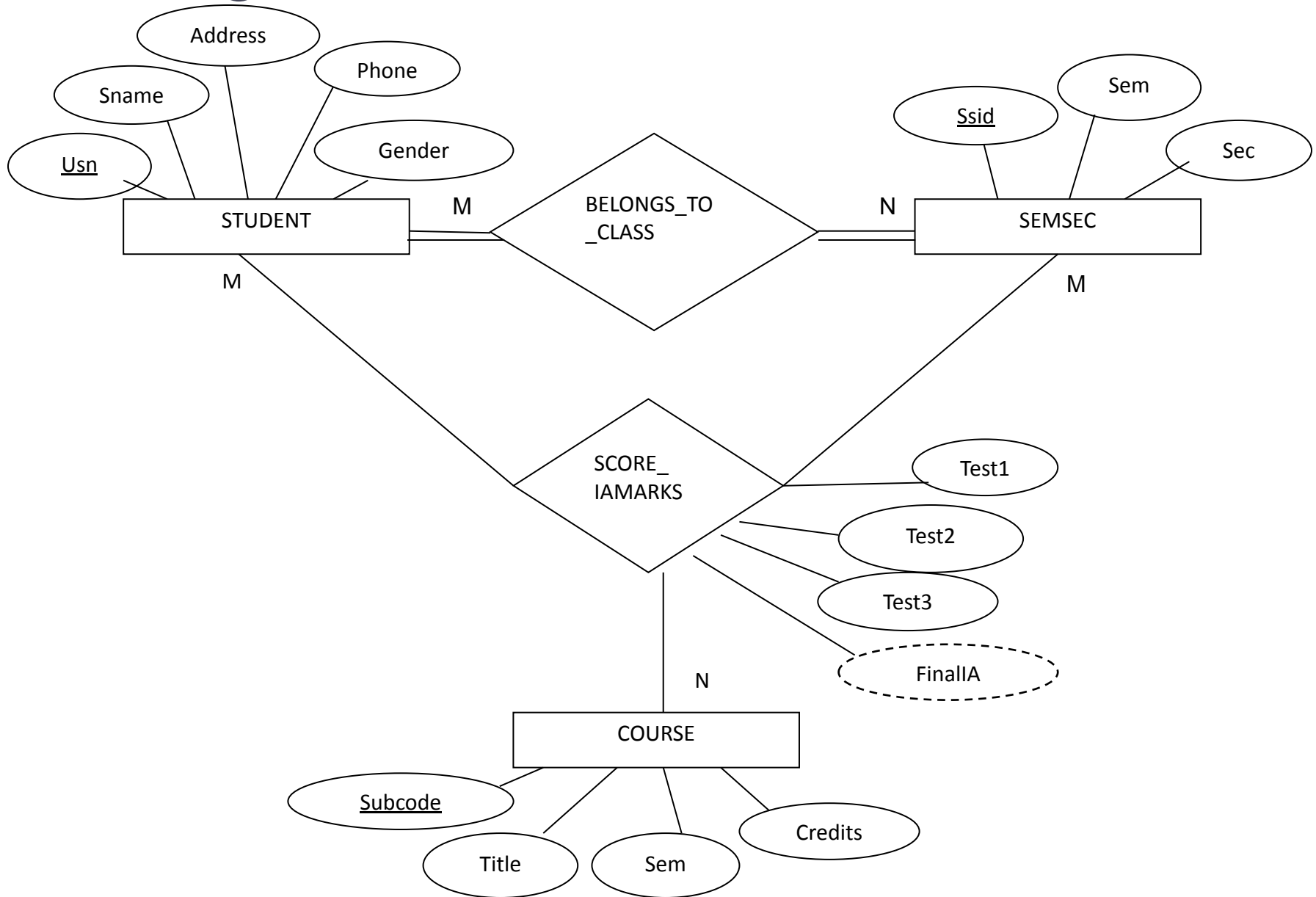
COURSE(Subcode, Title, Sem, Credits)

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

Write SQL queries to

1. List all the student details studying in 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 '1BI17CS101' 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.

ER Diagram



STUDENT

<u>USN</u>	SName	Address	Phone	Gender
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SEMSEC

<u>SSID</u>	Sem	Sec
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CLASS

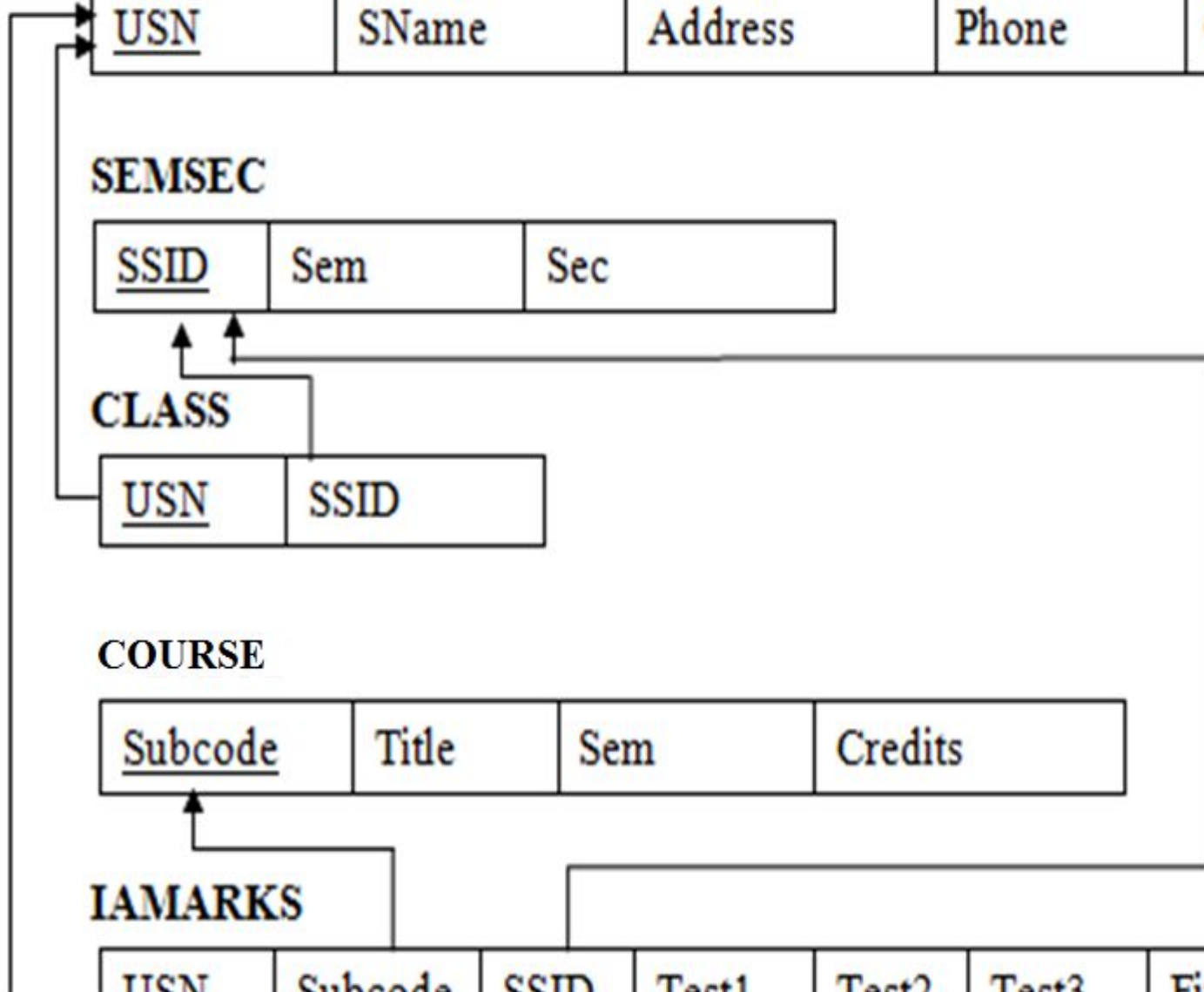
<u>USN</u>	SSID
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COURSE

<u>Subcode</u>	Title	Sem	Credits
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IAMARKS

<u>USN</u>	<u>Subcode</u>	<u>SSID</u>	Test1	Test2	Test3	FinalIA
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STUDENT TABLE

```
CREATE TABLE STUDENT5  
(USN VARCHAR2(10) PRIMARY KEY,  
  SNAME VARCHAR2(20),  
  ADDRESS VARCHAR2(20),  
  PHONE NUMBER(10),  
  GENDER VARCHAR2(10));
```

- INSERT INTO STUDENT5 VALUES ('4SF17CS001', 'RANJITH', 'MANGALORE', 9999454545, 'MALE');
- INSERT INTO STUDENT5 VALUES ('4SF16CS001', 'SURAJ', 'MANGALORE', 9459454542, 'MALE');
- INSERT INTO STUDENT5 VALUES ('4SF15CS101', 'SAANVI', 'MANGALORE', 9945454541, 'FEMALE');
- INSERT INTO STUDENT5 VALUES ('4SF15CS102', 'DEETHVI', 'MANGALORE', 8999454545, 'FEMALE');
- INSERT INTO STUDENT5 VALUES ('1BI15CS101', 'ROHITH', 'MANGALORE', 9888454545, 'MALE');


```
SQL> SELECT *FROM STUDENT5;
```

USN	SNAME	ADDRESS	PHONE	GENDER
4SF17CS001	RANJITH	MANGALORE	9999454545	MALE
4SF16CS001	SURAJ	MANGALORE	9459454542	MALE
4SF15CS101	SAANVI	MANGALORE	9945454541	FEMALE
4SF15CS102	DEETHVI	MANGALORE	8999454545	FEMALE
1BI15CS101	ROHITH	MANGALORE	9888454545	MALE

SEM & SECTION TABLE

```
CREATE TABLE SEMSEC(  
  SSID VARCHAR2(5),  
  SEM NUMBER(2),  
  SECTION VARCHAR2(1),  
  PRIMARY KEY(SSID));
```

- INSERT INTO SEMSEC VALUES (1, 5,'A');
- INSERT INTO SEMSEC VALUES (2, 4,'C');
- INSERT INTO SEMSEC VALUES (3, 8,'C');
- INSERT INTO SEMSEC VALUES (4, 8,'A');
- INSERT INTO SEMSEC VALUES (5, 8,'B');
- INSERT INTO SEMSEC VALUES (6, 8,'C');

```
SQL> SELECT * FROM SEMSEC;
```

SSID	SEM	S
1	5	A
2	4	C
3	8	C
4	8	A
5	8	B
6	8	C

CLASS TABLE

```
CREATE TABLE CLASS(  
  SSID  VARCHAR2(5),  
  USN   VARCHAR2(10) ,  
  PRIMARY KEY(USN,SSID),  
  FOREIGN KEY(SSID)  
  REFERENCES SEMSEC(SSID) ON DELETE  
  CASCADE,  
  FOREIGN KEY(USN)  
  REFERENCES STUDENT5(USN) ON DELETE  
  CASCADE);
```

```
SELECT * FROM CLASS;
```

SSID	USN
------	-----

2	4SF15CS101
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3	4SF15CS102
---	------------

3	1BI15CS101
---	------------

1	4SF15CS103
---	------------

4	4SF15CS001
---	------------

COURSE/SUBJECT TABLE

```
CREATE TABLE COURSE(  
  SUBCODE VARCHAR2(5) PRIMARY KEY,  
  TITLE  VARCHAR2(20),  
  SEM    NUMBER(4),  
  CREDITS NUMBER(2));
```

- INSERT INTO COURSE VALUES ('1551','ME',5, 5);
- INSERT INTO COURSE VALUES ('1552','DBMS',5, 5);
- INSERT INTO COURSE VALUES ('1583','ST',8, 5);
- INSERT INTO COURSE VALUES ('1582','SMS',8, 5);
- INSERT INTO COURSE VALUES ('1542','OOC',4,5);


```
SQL> SELECT * FROM COURSE;
```

SUBCO	TITLE	SEM	CREDITS
1551	ME	5	5
1552	DBMS	5	5
1583	ST	8	5
1582	SMS	8	5
1542	OOC	4	5

```
CREATE TABLE IAMARKS(  
    USN VARCHAR2(10),  
    SSID VARCHAR2(5),  
    SUBCODE VARCHAR2(5),  
    TEST1 NUMBER(3),  
    TEST2 NUMBER(3),  
    TEST3 NUMBER(3),  
    FINALIA NUMBER(3),  
    PRIMARY KEY(USN,SUBCODE,SSID),  
    FOREIGN KEY(USN)  
    REFERENCES STUDENT5(USN),  
    FOREIGN KEY(SSID)  
    REFERENCES SEMSEC(SSID),  
    FOREIGN KEY(SUBCODE)  
    REFERENCES COURSE(SUBCODE));
```

- INSERT INTO IAMARKS VALUES ('4SF15CS101',1,'1551',12,12,15,0);
- INSERT INTO IAMARKS VALUES ('1BI15CS101',1,'1552',12,12,15,0);
- INSERT INTO IAMARKS VALUES ('4SF15CS102',1,'1583',12,12,15,0);
- INSERT INTO IAMARKS VALUES ('4SF15CS103',1,'1582',12,12,15,0);
- INSERT INTO IAMARKS VALUES ('4SF15CS103',4,'1583',12,14,15,0);

```
SQL> SELECT * FROM IAMARKS;
```

USN	SSID	SUBCO	TEST1	TEST2	TEST3	FINALIA
4SF15CS101	1	1551	12	12	15	0
1BI15CS101	1	1552	12	12	15	0
4SF15CS102	1	1583	12	12	15	0
4SF15CS103	1	1582	12	12	15	0
4SF15CS103	4	1583	12	14	15	0

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

```
SELECT * FROM STUDENT5
WHERE USN IN
( SELECT USN FROM CLASS
WHERE SSID IN
( SELECT SSID FROM SEMSEC
WHERE SEM = 4 AND
SECTION = 'C'));
```

OR

```
SELECT S.*, SEM, SECTION
FROM STUDENT5 S, CLASS C, SEMSEC SS
WHERE S.USN = C.USN AND
C.SSID = SS.SSID AND
SEM = 4 AND SECTION = 'C';
```

USN

SNAME

ADDRESS

4SF15CS101

SURAJ

MANGALORE

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

```
SELECT SEM, SECTION, GENDER, COUNT(*)  
FROM SEMSEC SS, CLASS C, STUDENT5 S  
WHERE SS.SSID = C.SSID AND  
C.USN = S.USN  
GROUP BY(SEM, SECTION, GENDER)  
ORDER BY(SEM);
```

SEM	S	GENDER	COUNT(*)
4	C	MALE	1
5	A	FEMALE	1
8	A	MALE	1
8	C	FEMALE	1
8	C	MALE	1

- **Create a view of Test1 marks of student USN '1BI15CS101' in all subjects.**

```
CREATE VIEW CIE2 AS
SELECT USN, C.SUBCODE, TITLE, TEST1
FROM COURSE C, IAMARKS IA
WHERE IA.SUBCODE = C.SUBCODE
AND
USN='1BI15CS101';
```

OR

```
CREATE VIEW CIE2 AS
SELECT SUBCODE, TEST1
FROM IAMARKS
WHERE USN = '1BI15CS101';
```

View created.

USN	SUBCO	TITLE	TEST1
1BI15CS101	1552	DBMS	12

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

UPDATE IAMARKS

SET FINALIA =

GREATEST((TEST1+TEST2),(TEST1+TEST3),(
TEST3+TEST2))/2;

5 rows updated.

```
SQL> SELECT *FROM IAMARKS;
```

USN	SSID	SUBCO	TEST1	TEST2	TEST3	FINALIA
4SF15CS101	1	1551	12	12	15	14
4SF15CS102	1	1583	12	12	15	14
4SF15CS103	1	1582	12	12	15	14
4SF15CS103	4	1583	12	14	15	15
1BI15CS101	1	1552	12	12	15	14

- **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.

The SQL CASE Statement

- The CASE statement goes through conditions and returns a value when the first condition is met (like an IF-THEN-ELSE statement).
- So, once a condition is true, it will stop reading and return the result.
- If no conditions are true, it returns the value in the ELSE clause.
- If there is no ELSE part and no conditions are true, it returns NULL.

CASE

WHEN *condition1* THEN *result1*

WHEN *condition2* THEN *result2*

WHEN *conditionN* THEN *resultN*

ELSE *result*

END;

```
SELECT USN, FINALIA,  
CASE  
    WHEN FINALIA BETWEEN 17 AND 20 THEN  
    'OUTSTANDING'  
    WHEN FINALIA BETWEEN 12 AND 16 THEN  
    'AVERAGE'  
    WHEN FINALIA < 12 THEN 'WEAK'  
END  
AS CATEGORY FROM IAMARKS IA,SEMSEC SS  
WHERE IA.SSID = SS.SSID  
AND SEM = 5  
AND SECTION IN('A','B','C');
```

USN

FINALIA

CATEGORY

4SF15CS101

14

AVERAGE

4SF15CS102

14

AVERAGE

4SF15CS103

14

AVERAGE

1BI15CS101

14

AVERAGE