**D. 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**

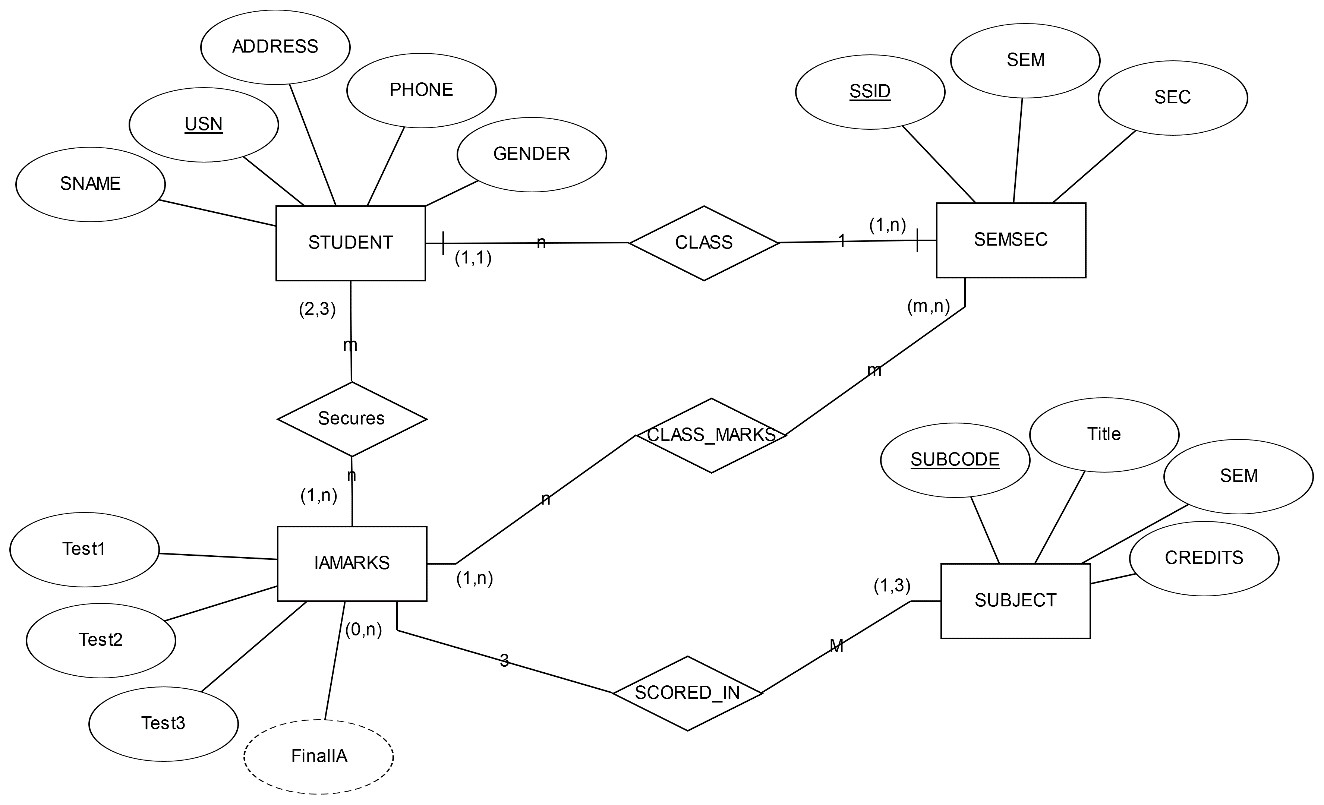
1. **List all the student details studying in fourth semester ‘C’ section.**
2. **Compute the total INT of male and female students in each semester and in each section.**
3. **Create a view of Test1 marks of student USN ‘1BI15CS101’ in all subjects.**
4. **Calculate the FinalIA (average of best two 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’**

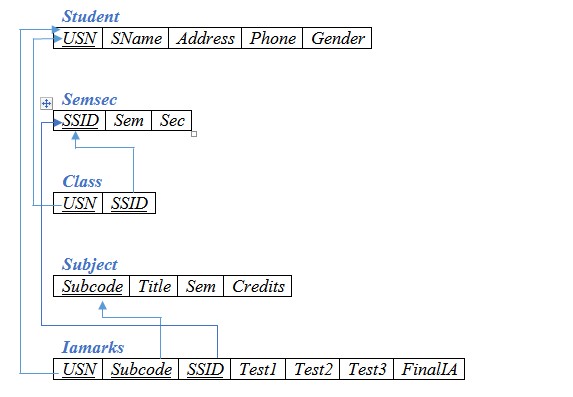
**If FinalIA = 12 to 16 then CAT = ‘Average’ If FinalIA< 12 then CAT = ‘Weak’**

**Give these details only for 8th semester A, B, and C section students. Solution:**

# Entity - Relationship Diagram



# Schema Diagram



# Table Creation

CREATE TABLE STUDENT (

USN VARCHAR (10) PRIMARY KEY,

SNAME VARCHAR (25),

ADDRESS VARCHAR (25),

PHONE INT,

GENDER CHAR (1));

CREATE TABLE SEMSEC (

SSID VARCHAR (5) PRIMARY KEY,

SEM INT (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 SUBJECT (

SUBCODE VARCHAR (8),

TITLE VARCHAR (20),

SEM INT (2),

CREDITS INT (2),

PRIMARY KEY (SUBCODE));

CREATE TABLE IAMARKS (

USN VARCHAR (10),

SUBCODE VARCHAR (8),

SSID VARCHAR (5),

TEST1 INT (2),

TEST2 INT (2),

TEST3 INT (2),

FINALIA INT (2),

PRIMARY KEY (USN, SUBCODE, SSID),

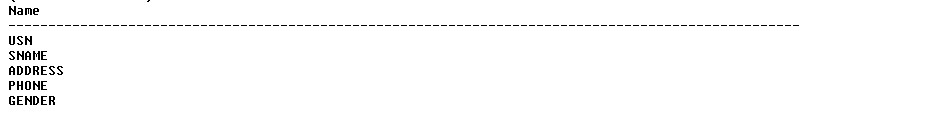
FOREIGN KEY (USN) REFERENCES STUDENT (USN),

FOREIGN KEY (SUBCODE) REFERENCES SUBJECT (SUBCODE),

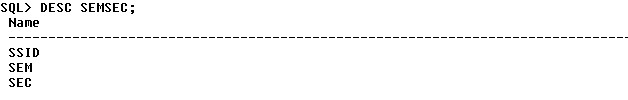
FOREIGN KEY (SSID) REFERENCES SEMSEC (SSID));

# Table Descriptions

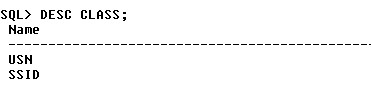
DESC STUDENT;



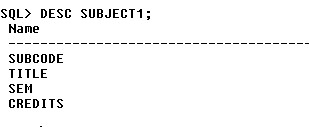
DESC SEMSEC;



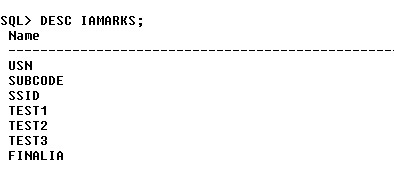
DESC CLASS;



DESC SUBJECT;



DESC IAMARKS;



# Insertion of values to tables

INSERT INTO STUDENT VALUES ('1RN13CS020','AKSHAY','BELAGAVI', 8877881122,'M');

INSERT INTO STUDENT VALUES ('1RN13CS062','SANDHYA','BENGALURU',

7722829912,'F');

INSERT INTO STUDENT VALUES ('1RN13CS091','TEESHA','BENGALURU',

7712312312,'F');

INSERT INTO STUDENT VALUES ('1RN13CS066','SUPRIYA','MANGALURU',

8877881122,'F');

INSERT INTO STUDENTVALUES ('1RN14CS010','ABHAY','BENGALURU',

9900211201,'M');

INSERT INTO STUDENT VALUES ('1RN14CS032','BHASKAR','BENGALURU', 9923211099,'M');

INSERT INTO STUDENTVALUES ('1RN14CS025','ASMI','BENGALURU', 7894737377,'F');

INSERT INTO STUDENT VALUES ('1RN15CS011','AJAY','TUMKUR', 9845091341,'M'); INSERT INTO STUDENT VALUES ('1RN15CS029','CHITRA','DAVANGERE',

7696772121,'F');

INSERT INTO STUDENT VALUES ('1RN15CS045','JEEVA','BELLARY', 9944850121,'M');

INSERT INTO STUDENT VALUES ('1RN15CS091','SANTOSH','MANGALURU',

8812332201,'M');

INSERT INTO STUDENT VALUES ('1RN16CS045','ISMAIL','KALBURGI', 9900232201,'M');

INSERT INTO STUDENT VALUES ('1RN16CS088','SAMEERA','SHIMOGA',

9905542212,'F');

INSERT INTO STUDENT VALUES ('1RN16CS122','VINAYAKA','CHIKAMAGALUR',

8800880011,'M');

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’);

INSERT INTO CLASS VALUES (‘1RN13CS020’,’CSE8A’);

INSERT INTO CLASS VALUES (‘1RN13CS062’,’CSE8A’);

INSERT INTO CLASS VALUES (‘1RN13CS066’,’CSE8B’);

INSERT INTO CLASS VALUES (‘1RN13CS091’,’CSE8C’);

INSERT INTO CLASS VALUES (‘1RN14CS010’,’CSE7A’);

INSERT INTO CLASS VALUES (‘1RN14CS025’,’CSE7A’);

INSERT INTO CLASS VALUES (‘1RN14CS032’,’CSE7A’);

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’);

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);

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

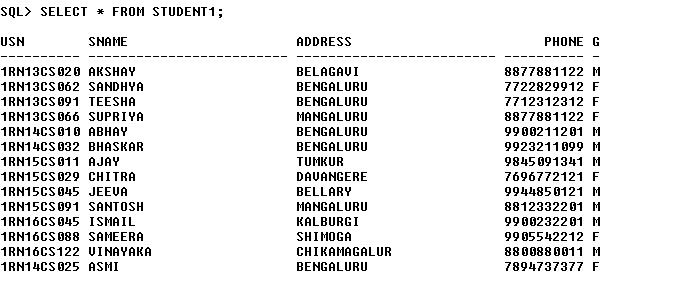
('1RN13CS091','10CS83','CSE8C', 19, 15, 20);

INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3) VALUES

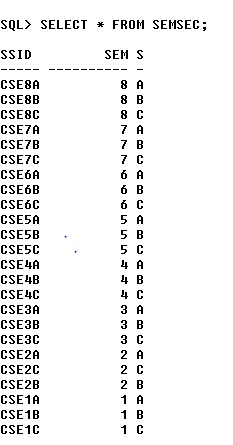
('1RN13CS091','10CS84','CSE8C', 20, 16, 19);

INSERT INTO IAMARKS (USN, SUBCODE, SSID, TEST1, TEST2, TEST3) VALUES ('1RN13CS091','10CS85','CSE8C', 15, 15, 12);

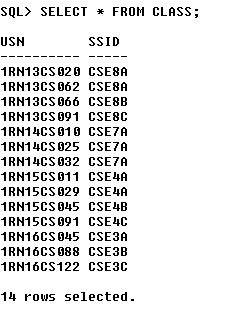
SELECT \* FROM STUDENT;



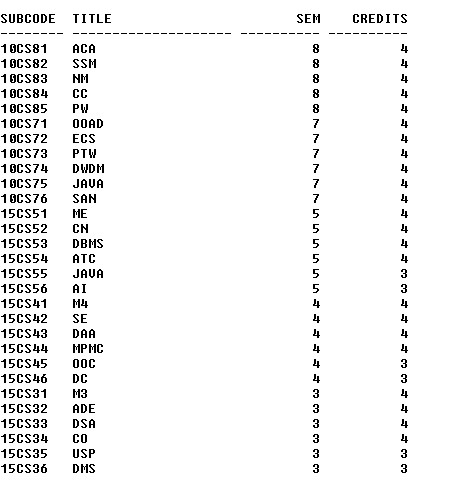
SELECT \* FROM SEMSEC;



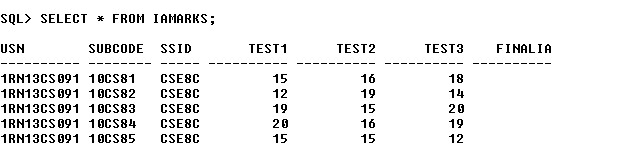
SELECT \* FROM CLASS;



SELECT \* FROM SUBJECT;



SELECT \* FROM IAMARKS;



**Queries:**

1. **List all the student details studying in fourth semester ‘C’ section.**

SELECT S.\*, SS.SEM, SS.SEC

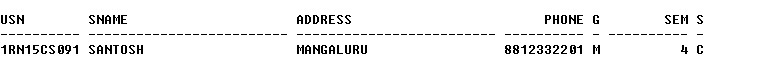
FROM STUDENT S, SEMSEC SS, CLASS C

WHERE S.USN = C.USN AND

SS.SSID = C.SSID AND

SS.SEM = 4 AND

SS.SEc=’C’;



1. **Compute the total INT of male and female students in each semester and in each section.**

SELECT SS.SEM, SS.SEC, S.GENDER, COUNT (S.GENDER) AS COUNT

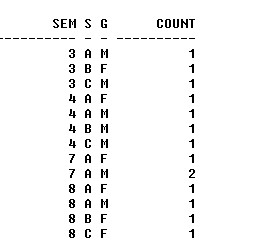
FROM STUDENT S, SEMSEC SS, CLASS C

WHERE S.USN = C.USN AND

SS.SSID = C.SSID

GROUP BY SS.SEM, SS.SEC, S.GENDER

ORDER BY SEM;



1. **Create a view of Test1 marks of student USN ‘1BI15CS101’ in all subjects.**

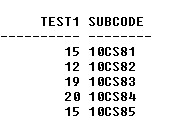
CREATE VIEW STU\_TEST1\_MARKS\_VIEW

AS

SELECT TEST1, SUBCODE

FROM IAMARKS

WHERE USN = '1RN13CS091';



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

DELIMITER //

CREATE PROCEDURE AVGMARKS

IS

CURSOR C\_IAMARKS IS

SELECT GREATEST(TEST1,TEST2) AS A, GREATEST(TEST1,TEST3) AS B,

GREATEST(TEST3,TEST2) AS C

FROM IAMARKS WHERE FINALIA IS NULL FOR UPDATE;

C\_A INT;

C\_B INT;

C\_C INT;

C\_SM INT;

C\_AV INT;

BEGIN

OPEN C\_IAMARKS;

LOOP

FETCH C\_IAMARKS INTO C\_A, C\_B, C\_C;

EXIT WHEN C\_IAMARKS%NOTFOUND;

IF (C\_A != C\_B) THEN

C\_SM:=C\_A+C\_B;

ELSE

C\_SM:=C\_A+C\_C;

END IF;

C\_AV:=C\_SM/2;

UPDATE IAMARKS SET FINALIA=C\_AV WHERE CURRENT OF C\_IAMARKS;

END LOOP;

CLOSE C\_IAMARKS;

END;

//

**Note:** Before execution of PL/SQL procedure, IAMARKS table contents are:

SELECT \* FROM IAMARKS;

**or**

UPDATE IAMARKS

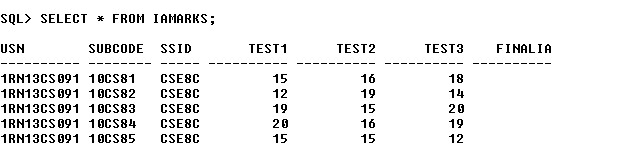
SET FINALIA=GREATEST(TEST1+TEST2,TEST2+TEST3,TEST1+TEST3)/2;

Note: Before execution above SQL statement, IAMARKS table contents are:

SELECT \* FROM IAMARKS;

UPDATE IAMARKS

SET FINALIA=GREATEST(TEST1+TEST2,TEST2+TEST3,TEST1+TEST3)/

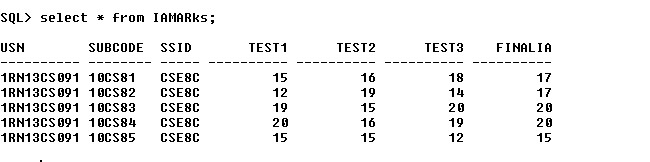


**Below SQL code is to invoke the PL/SQL stored procedure from the command line:**

BEGIN

AVGMARKS;

END;



**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.**

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;

