# LABPROGRAM 1

```
SQL> CREATE TABLE BRANCH(
  2  BRANCH_ID VARCHAR(10),
  3  BANK_NAME VARCHAR(15),
  4  BRANCH_NAME VARCHAR(20),
  5  ASSETS INT NOT NULL,
  6  PRIMARY KEY(BRANCH_ID)
  7  );
Table created.

SQL> DESC BRANCH;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 BRANCH_ID                                 NOT NULL VARCHAR2(10)
 BANK_NAME                                          VARCHAR2(15)
 BRANCH_NAME                                        VARCHAR2(20)
 ASSETS                                    NOT NULL NUMBER(38)

SQL> CREATE TABLE CUSTOMER(
  2  CUSTOMER_ID VARCHAR(10),
  3  CUSTOMER_NAME VARCHAR(20),
  4  CUSTOMER_AGE INT,
  5  CUSTOMER_ADDRESS VARCHAR(20),
  6  CUSTOMER_PHONE INT,
  7  PRIMARY KEY(CUSTOMER_ID)
  8  );

Table created.

SQL> DESC CUSTOMER;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                               NOT NULL VARCHAR2(10)
 CUSTOMER_NAME                                      VARCHAR2(20)
 CUSTOMER_AGE                                       NUMBER(38)
 CUSTOMER_ADDRESS                                   VARCHAR2(20)
 CUSTOMER_PHONE                                     NUMBER(38)

SQL> CREATE TABLE ACCOUNT(
  2  ACC_NO INT,
  3  BRANCH_ID VARCHAR(10),
  4  ACCOUNT_TYPE VARCHAR(10),
  5  ACCOUNT_BALANCE INT,
  6  CUSTOMER_ID VARCHAR(10),
  7  PRIMARY KEY(ACC_NO),
  8  FOREIGN KEY (BRANCH_ID) REFERENCES BRANCH(BRANCH_ID) ON DELETE CASCADE,
  9  FOREIGN KEY(CUSTOMER_ID) REFERENCES CUSTOMER(CUSTOMER_ID) ON DELETE CASCADE
 10  );
Table created.

SQL> DESC ACCOUNT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ACC_NO                                    NOT NULL NUMBER(38)
 BRANCH_ID                                          VARCHAR2(10)
 ACCOUNT_TYPE                                       VARCHAR2(10)
 ACCOUNT_BALANCE                                    NUMBER(38)
 CUSTOMER_ID                                        VARCHAR2(10)

SQL> CREATE TABLE LOAN(
  2  LOAN_NUMBER VARCHAR2(5),
  3  BRANCH_ID VARCHAR(10),
  4  AMOUNT INT,
  5  CUSTOMER_ID VARCHAR(10),
  6  PRIMARY KEY(LOAN_NUMBER),
  7  FOREIGN KEY (BRANCH_ID) REFERENCES BRANCH(BRANCH_ID) ON DELETE CASCADE,
  8  FOREIGN KEY(CUSTOMER_ID) REFERENCES CUSTOMER(CUSTOMER_ID) ON DELETE
CASCADE);

Table created.
SQL> DESC LOAN;
 SQL> desc loan
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 LOAN_NUMBER                               NOT NULL VARCHAR2(5)
 BRANCH_ID                                          VARCHAR2(10)
 AMOUNT                                             NUMBER(38)
 CUSTOMER_ID                                        VARCHAR2(10)
```

```
 INSERT INTO BRANCH VALUES('B1',' CANARA','MANGALURU',60000000)

SQL> SELECT * FROM BRANCH;

BRANCH_ID  BANK_NAME       BRANCH_NAME              ASSETS
---------- --------------- -------------------- ----------
B1          CANARA         MANGALURU              60000000
B2         BANK OF BARODA  MANGALURU              70000000
B3         CANARA          KASARAGOD              50000000
B4         SBI             BENGALURU              30000000
B5         UNION BANK      DELHI                  20000000
```

```
INSERT INTO CUSTOMER VALUES('C1','RAVI',22,'MANGALURU',8745263);

CUSTOMER_I CUSTOMER_NAME        CUSTOMER_AGE CUSTOMER_ADDRESS     CUSTOMER_PHONE
---------- -------------------- ------------ -------------------- --------------
C1         RAVI                           22 MANGALURU                   8745263
C2         ASHA                           26 DELHI                      98745641
C3         VARUN                          23 KASARGOD                   78954623
C4         ARPITHA                        22 MANGALURU                   9856325
C5         SACHIN                         23 BENGALORE                  78541365

INSERT INTO ACCOUNT VALUES(123,'B1','SAVINGS',10000,'C1')

SQL> SELECT * FROM ACCOUNT;

    ACC_NO BRANCH_ID  ACCOUNT_TY ACCOUNT_BALANCE CUSTOMER_I
---------- ---------- ---------- --------------- ----------
       123 B1         SAVINGS              10000 C1
       456 B5         RECURRING            20000 C2
       789 B1         SAVINGS              30000 C1
      1122 B2         FD                    5000 C3
      1334 B1         SAVINGS              10000 C4
      1234 B3         FD                   90000 C5
      5876 B4         RECURRING            80000 C3
```

```
  INSERT INTO LOAN VALUES('L1','B1',500000,'C1');

LOAN_ BRANCH_ID      AMOUNT CUSTOMER_I
----- ---------- ---------- ----------
L1    B1             500000 C1
L2    B2              50000 C2
L3    B3              40000 C3
```

```
L4    B2             565000 C4
L5    B4             955000 C5
L6    B5              20000 C2
```

QUERY 1
Find all the customers who have at least one account at the â œMangaluruâ branch.

```
SELECT C.CUSTOMER_ID,C.CUSTOMER_NAME FROM CUSTOMER C,ACCOUNT A,BRANCH B
WHERE B.BRANCH_NAME='MANGALURU'AND B.BRANCH_ID=A.BRANCH_ID
AND A.CUSTOMER_ID=C.CUSTOMER_ID;

CUSTOMER_I CUSTOMER_NAME
---------- --------------------
C1         RAVI
C1         RAVI
C3         VARUN
C4         ARPITHA
```

QUERY 2
Find all the customers who have an account at all the branches located in a specific city.

```
SQL>  SELECT C.CUSTOMER_ID,C.CUSTOMER_NAME,A.ACCOUNT_BALANCE FROM
      CUSTOMER C,ACCOUNT A
      WHERE C.CUSTOMER_ID=A.CUSTOMER_ID AND
      ACCOUNT_BALANCE=(SELECT MAX(ACCOUNT_BALANCE)FROM ACCOUNT);

CUSTOMER_I CUSTOMER_NAME        ACCOUNT_BALANCE
---------- -------------------- ---------------
C5         SACHIN                         90000
```

QUERY 3

Retrieve the Customer name and loan amount of a customer who borrowed a loan more than 5,00,000.

```
SQL> SELECT C.CUSTOMER_NAME C,L.AMOUNT FROM CUSTOMER C,LOAN L
     WHERE C.CUSTOMER_ID=L.CUSTOMER_ID AND AMOUNT>500000;

C                        AMOUNT
-------------------- ----------
ARPITHA                  565000
SACHIN                   955000
```

QUERY 4

Retrieve the details of bank branch with maximum and minimum assets among the various branches.

```
SQL> SELECT BANK_NAME,BRANCH_NAME,ASSETS FROM BRANCH
  2  WHERE ASSETS=(SELECT MAX(ASSETS)FROM BRANCH)
  3  UNION
  4  SELECT BANK_NAME,BRANCH_NAME,ASSETS FROM BRANCH
  5  WHERE ASSETS=(SELECT MIN(ASSETS)FROM BRANCH)
  6  ;

BANK_NAME       BRANCH_NAME              ASSETS
--------------- -------------------- ----------
BANK OF BARODA  MANGALURU              70000000
UNION BANK      DELHI                  20000000
```

QUERY 5

Demonstrate how you delete all account tuples at every branch located in a specific city.

```
DELETE FROM BRANCH WHERE BRANCH_NAME='DELHI';
--------------------------------------------------

# lab 2

CREATE TABLE PUBLISHER(
            NAME VARCHAR2(20) PRIMARY KEY,
            ADDRESS VARCHAR2(20),
            PHONE NUMBER(10));

INSERT INTO PUBLISHER VALUES('Pearson','London',9874522224);
INSERT INTO PUBLISHER VALUES('TataMcGraw','NewYork',9858523565);
INSERT INTO PUBLISHER VALUES('Oxford','UK',9885121112);
INSERT INTO PUBLISHER VALUES('Cambridge','UK',9785634615);
INSERT INTO PUBLISHER VALUES('OReilly','California',9994125455);

CREATE TABLE BOOK (
            BOOK_ID VARCHAR2(20) PRIMARY KEY,
            TITLE VARCHAR2(40),
            PUBLISHER_NAME VARCHAR2(20) references
            PUBLISHER(NAME) on delete cascade,
            PUB_YEAR INT);

INSERT INTO BOOK VALUES ('B101','DBMS','Pearson',2017);
INSERT INTO BOOK VALUES ('B102','AIML','TataMcGraw',2009);
INSERT INTO BOOK VALUES ('B103','DCN','Pearson',2017);
INSERT INTO BOOK VALUES ('B104','ATC','Oxford',2017);
INSERT INTO BOOK VALUES ('B105','Python','OReilly',2014);
INSERT INTO BOOK VALUES ('B106','Hadoop','Pearson',2000);

CREATE  TABLE  BOOK_AUTHORS(
            BOOK_ID varchar(20),
            AUTHOR_NAME VARCHAR2(20),
            PRIMARY KEY(BOOK_ID, AUTHOR_NAME),
            FOREIGN KEY(BOOK_ID) REFERENCES BOOK
                ON DELETE CASCADE);


INSERT INTO BOOK_AUTHORS VALUES('B101', 'Elmarsi');
INSERT INTO BOOK_AUTHORS VALUES('B101', 'Navathe');
INSERT INTO BOOK_AUTHORS VALUES('B101', 'Ramakrishnan');
INSERT INTO BOOK_AUTHORS VALUES('B106', 'Douglas');
INSERT INTO BOOK_AUTHORS VALUES('B102', 'Elaine');
INSERT INTO BOOK_AUTHORS VALUES('B105', 'Srinivasan');

CREATE TABLE LIBRARY_PROGRAMME(
            PROGRAMME_ID VARCHAR(20) PRIMARY KEY,
            PROGRAMME_NAME VARCHAR(10),
            ADDRESS VARCHAR(20));

INSERT INTO LIBRARY_PROGRAMME VALUES ('L1','SAHYADRI','Mangalore');
INSERT INTO LIBRARY_PROGRAMME VALUES ('L2','SAPNA','Mangalore');
INSERT INTO LIBRARY_PROGRAMME VALUES ('L3','SANKALP','Bangalore');
INSERT INTO LIBRARY_PROGRAMME VALUES ('L4','PENGUIN','Chennai');
INSERT INTO LIBRARY_PROGRAMME VALUES ('L5','AGNES','Chennai');

CREATE TABLE BOOK_COPIES(
            BOOK_ID VARCHAR(20)
            REFERENCES BOOK(BOOK_ID)
            ON DELETE CASCADE,
            PROGRAMME_ID VARCHAR(20)
            REFERENCES
            LIBRARY_PROGRAMME(PROGRAMME_ID) ON DELETE CASCADE,
            NO_OF_COPIES NUMBER(3),
            primary key(BOOK_ID, PROGRAMME_ID));

INSERT INTO BOOK_COPIES VALUES ('B101','L1',99);
INSERT INTO BOOK_COPIES VALUES ('B101','L2',100);
INSERT INTO BOOK_COPIES VALUES ('B102','L1',99);
INSERT INTO BOOK_COPIES VALUES ('B102','L2',100);
INSERT INTO BOOK_COPIES VALUES ('B103','L2',10);
INSERT INTO BOOK_COPIES VALUES ('B103','L1',9);

CREATE TABLE  BOOK_LENDING(
            BOOK_ID VARCHAR(20),
            PROGRAMME_ID VARCHAR(20),
            CARD_NO VARCHAR(20),
            DATE_OUT DATE,
            DUE_DATE DATE,
            PRIMARY KEY(PROGRAMME_ID, BOOK_ID, CARD_NO),
            FOREIGN KEY(BOOK_ID)
            REFERENCES book(BOOK_ID) ON DELETE CASCADE,
            FOREIGN KEY(PROGRAMME_ID)
            REFERENCES LIBRARY_PROGRAMME(PROGRAMME_ID) ON DELETE CASCADE,
            CONSTRAINT CK1 CHECK (DUE_DATE > DATE_OUT));

INSERT INTO BOOK_LENDING VALUES('B101','L1','FA101','02-JAN-21','09-JAN-21');
INSERT INTO BOOK_LENDING VALUES('B101','L1','FA102','02-MAR-23','09-MAR-23');
INSERT INTO BOOK_LENDING VALUES('B102','L1','FA102','02-MAR-23','09-MAR-23');
INSERT INTO BOOK_LENDING VALUES('B101','L2','FA102','02-MAR-23','09-MAR-23');
INSERT INTO BOOK_LENDING VALUES('B101','L1','S103','04-APR-22','30-JUN-22');

 SELECT * FROM PUBLISHER;

NAME                 ADDRESS                   PHONE
-------------------- -------------------- ----------
Pearson              London               9874522224
TataMcGraw           NewYork              9858523565
Oxford               UK                   9885121112
Cambridge            UK                   9785634615
OReilly              California           9994125455

SELECT * FROM BOOK;

BOOK_ID              TITLE                                    PUBLISHER_NAME
PUB_YEAR
-------------------- ----------------------------------------
-------------------- ----------
B101                 DBMS                                     Pearson
2017
B102                 AIML                                     TataMcGraw
2009
B103                 DCN                                      Pearson
2017
B104                 ATC                                      Oxford
2017
B105                 Python                                   OReilly
2014
B106                 Hadoop                                   Pearson
2000

SQL> SELECT * FROM BOOK_AUTHORS;

BOOK_ID              AUTHOR_NAME
```

```
-------------------- --------------------
B101                 Elmarsi
B101                 Navathe
B101                 Ramakrishnan
B102                 Elaine
B105                 Srinivasan
B106                 Douglas

SQL> SELECT * FROM LIBRARY_PROGRAMME;

PROGRAMME_ID         PROGRAMME_ ADDRESS
-------------------- ---------- --------------------
L1                   SAHYADRI   Mangalore
L2                   SAPNA      Mangalore
L3                   SANKALP    Bangalore
L4                   PENGUIN    Chennai
L5                   AGNES      Chennai

SQL>  SELECT * FROM BOOK_COPIES;

BOOK_ID              PROGRAMME_ID         NO_OF_COPIES
-------------------- -------------------- ------------
B101                 L1                             99
B101                 L2                            100
B102                 L1                             99
B102                 L2                            100
B103                 L2                             10
B103                 L1                              9
SQL> SELECT * FROM BOOK_LENDING;

BOOK_ID              PROGRAMME_ID         CARD_NO              DATE_OUT
DUE_DATE
-------------------- -------------------- -------------------- ---------
---------
B101                 L1                   FA101                02-JAN-21 09-
JAN-21
B101                 L1                   FA102                02-MAR-23 09-
MAR-23
B102                 L1                   FA102                02-MAR-23 09-
MAR-23
B101                 L2                   FA102                02-MAR-23 09-
MAR-23
B101                 L1                   S103                 04-APR-22 30-
JUN-22
```

QUERY 1:

```
SELECT b.book_id, lp.programme_id,
 b.title, b.publisher_name, bc.no_of_copies,
 a.author_name
 FROM book b, book_authors a, book_copies bc,
 library_programme lp
 WHERE b.book_id = a.book_id AND
 b.book_id = bc.book_id AND
 bc.programme_id = lp.programme_id;
```

OR

```
select b.book_id, title, publisher_name,author_name, no_of_copies
 from book b, book_authors a, book_copies bc
 where b.book_id = bc.book_id AND
 b.book_id = a.book_id;

BOOK_ID       PROGRAMME_ID     TITLE       PUBLISHER_NAME       NO_OF_COPIES
AUTHOR_NAME
```

```
------------ --------------- ----------------------
----------------
B101         L1               DBMS       Pearson                 99
Ramakrishnan
B101         L1               DBMS       Pearson                 99
Navathe
B101         L1               DBMS       Pearson                 99
Elmarsi
B101         L2               DBMS       Pearson                 100
Ramakrishnan
B101         L2               DBMS       Pearson                 100
Navathe
B101         L2               DBMS       Pearson                 100
Elmarsi
B102         L1               AIML       TataMcGraw               99
Elaine
B102         L2               AIML       TataMcGraw               100
Elaine
```

QUERY 2:

```
SQL> SELECT card_no  FROM book_lending
  2   WHERE date_out
  3   BETWEEN '01-JAN-2023'
  4   AND '30-JUN-2023'
  5   GROUP BY card_no
  6   HAVING COUNT(*) >= 3 ;

CARD_NO
--------------------
FA102
```

QUERY 3:

Delete a book in BOOK table. Update the contents
of other tables to reflect this data manipulation operation.

```
DELETE FROM book WHERE book_id = &bid;

Enter : 'B103';
```

QUERY 4:

```
CREATE TABLE BOOK1 (
 BOOK_ID VARCHAR2(20) PRIMARY KEY,
 TITLE VARCHAR2(40),
 PUBLISHER_NAME VARCHAR2(20) references
 PUBLISHER(NAME) on delete cascade,
 PUB_YEAR INT)
 PARTITION BY RANGE(pub_year)
 (PARTITION p1 VALUES LESS THAN(2001),
  PARTITION p2 VALUES LESS THAN(2005),
  PARTITION P3 VALUES LESS THAN (2010),
   PARTITION P4 VALUES LESS THAN(MAXVALUE));


INSERT INTO BOOK1 VALUES ('B101','DBMS','Pearson',2017);
INSERT INTO BOOK1 VALUES ('B102','AIML','TataMcGraw',2009);
INSERT INTO BOOK1 VALUES ('B103','DCN','Pearson',2017);
INSERT INTO BOOK1 VALUES ('B104','ATC','Oxford',2017);
INSERT INTO BOOK1 VALUES ('B105','Python','OReilly',2014);
INSERT INTO BOOK1 VALUES ('B106','Hadoop','Pearson',2000);
```

```
SQL> SELECT * FROM BOOK1 PARTITION(P1);

BOOK_ID              TITLE                                    PUBLISHER_NAME
PUB_YEAR
-------------------- ----------------------------------------
-------------------- ----------
B106                 Hadoop                                   Pearson
2000


QUERY 5:

SQL> Create view available_book
     As
     Select b.book_id, b.title,
     sum(bc.no_of_copies) - (select count(*) from book_lending
     bl where bl.book_id= b. book_id  group by bl.book_id)
     as books_available  from book b, book_copies  bc where
     b.book_id=bc.book_id group by b.book_id,b.title;

SQL>  SELECT * FROM AVAILABLE_BOOK;

BOOK_ID              TITLE                                    BOOKS_AVAILABLE
-------------------- ---------------------------------------- ---------------
B101                 DBMS                                                 195
B102                 AIML                                                 198

------------------------------------------------------

# lab 3

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

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

CREATE TABLE CLASS
( SSID NUMBER(5),
  USN  VARCHAR2(20),
  PRIMARY KEY(USN),
  FOREIGN KEY(ssid) REFERENCES semsec(ssid),
  FOREIGN KEY(USN) REFERENCES student(USN));

CREATE TABLE SUBJECT
( SUBCODE VARCHAR2(7) PRIMARY KEY,
  TITLE VARCHAR2(20),
  SEM NUMBER(4),
  credit NUMBER(2));

CREATE TABLE IAMARKS
(  USN  VARCHAR2(20),
   SSID NUMBER(5),
                        SSID number(5),
   SUBCODE VARCHAR2(7),
   TEST1 NUMBER(3),
   TEST2 NUMBER(3),
   TEST3 NUMBER(3),
   FINALIA NUMBER(3),
   PRIMARY KEY(USN,SUBCODE,SSID),
   FOREIGN KEY(USN) REFERENCES STUDENT(USN),
   FOREIGN KEY(SUBCODE) REFERENCES SUBJECT(SUBCODE),
   FOREIGN KEY(SSID) REFERENCES SEMSEC(SSID));
```

```
SQL> DESC STUDENT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USN                                       NOT NULL VARCHAR2(20)
 SNAME                                              VARCHAR2(10)
 ADRESS                                             VARCHAR2(10)
 PHONE                                              NUMBER(10)
 GENDER                                             VARCHAR2(10)

SQL> DESC SEMSEC;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SSID                                      NOT NULL NUMBER(5)
 SEM                                                NUMBER(2)
 SECTION                                            VARCHAR2(1)

SQL> DESC CLASS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SSID                                               NUMBER(5)
 USN                                       NOT NULL VARCHAR2(20)

SQL> DESC SUBJECT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SUBCODE                                   NOT NULL VARCHAR2(10)
 TITLE                                              VARCHAR2(20)
 SEM                                                NUMBER(4)
 CREDIT                                             NUMBER(2)

SQL> DESC IAMARKS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USN                                       NOT NULL VARCHAR2(20)
 SSID                                      NOT NULL NUMBER(5)
 SUBCODE                                   NOT NULL VARCHAR2(10)
 TEST1                                             NUMBER(3)
 TEST2                                              NUMBER(3)
 TEST3                                              NUMBER(3)
 FINALIA                                            NUMBER(3)
```

```
INSERT INTO STUDENT VALUES('4SF20CS089','AJAY','MANGALORE',733825,'MALE');
INSERT INTO STUDENT VALUES('4SF20IS109 ','VARSHINI','BANTWAL',896523,'FEMALE');
INSERT INTO STUDENT VALUES('4SF20CS098 ','NAVISH','UDUPI',9956258,'MALE');
INSERT INTO STUDENT VALUES('4SF20CD001','SAHANA','SURATHKAL',8752683,'FEMALE');
INSERT INTO STUDENT VALUES('4SF20CS088','KAVYA','MANGALORE',78965231,'FEMALE');
```

```
5 row created.

SQL> SELECT * FROM STUDENT;

SQL> SELECT * FROM STUDENT;

USN                  SNAME      ADRESS          PHONE GENDER
-------------------- ---------- ---------- ---------- ----------
4SF20CS089           AJAY       MANGALORE      733825 MALE
4SF20IS109           VARSHINI   BANTWAL        896523 FEMALE
4SF20CS098           NAVISH     UDUPI         9956258 MALE
4SF20CD001           SAHANA     SURATHKAL     8752683 FEMALE
4SF20CS088           KAVYA      MANGALORE    78965231 FEMALE

INSERT INTO SEMSEC VALUES(1,4,'A');

SQL> SELECT * FROM SEMSEC;

      SSID        SEM S
---------- ---------- -
         1          4 A
         2          4 C
         3          8 A
         4          8 B
         5          8 C
         6          5 A
INSERT INTO CLASS VALUES(1,'4SF20CD001')
SQL> SELECT * FROM CLASS;

      SSID USN
---------- --------------------
         1 4SF20CD001
         2 4SF20CS088
         3 4SF20CS089
         4 4SF20IS109
         5 4SF20CS098


INSERT INTO SUBJECT VALUES('20CS31','DATA STRUCTURE',4,4)

1 row created.

SQL> SELECT * FROM SUBJECT;

SUBCODE    TITLE                       SEM     CREDIT
---------- -------------------- ---------- ----------
20CS31     DATA STRUCTURE                4          4
20CS32     UNIX                          4          3
20CS33     DBMS                          5          4
20CS34     DCN                           5          3
20CS35     AIML                          8          4


INSERT INTO IAMARKS VALUES('4SF20CD001',1,'20CS31',38,35,32,0)

1 row created.

SQL> SELECT * FROM IAMARKS;

USN                        SSID SUBCODE        TESTT1      TEST2      TEST3
FINALIA
-------------------- ---------- ---------- ---------- ---------- ----------
----------
```

```
4SF20CD001                    1 20CS31             38         35         32
0
4SF20CD001                    1 20CS32             28         26         29
0
4SF20CS088                    2 20CS31             38         42         32
0
4SF20CS089                    3 20CS33             42         46         41
0
4SF20IS109                    4 20CS34             28         26         29
0
4SF20CS098                    5 20CS35             48         46         50
0
```

QUERY 1:

```
SQL> SELECT A.*,B.SEM,B.SECTION FROM STUDENT A,SEMSEC B,CLASS C WHERE
A.USN=C.USN AND B.SSID=C.SSID
  2  AND B.SEM=4 AND B.SECTION='C';

USN                  SNAME      ADRESS          PHONE GENDER            SEM S
-------------------- ---------- ---------- ---------- ---------- ---------- -
4SF20CS088           KAVYA      MANGALORE    78965231 FEMALE              4 C
```

QUERY 2:

```
SQL> SELECT sem,section,gender,count(*) FROM student s, semsec s1,class c WHERE
s.usn=c.usn AND s1.s
sid=c.ssid GROUP BY (gender,sem,section) ORDER BY(sem);

       SEM S GENDER       COUNT(*)
---------- - ---------- ----------
         4 A FEMALE              1
         4 C FEMALE              1
         8 B FEMALE              1
         8 A MALE                1
         8 C MALE                1
```

QUERY 3:

```
 SQL> CREATE VIEW internal2 AS SELECT
 usn,s.subcode,title,TESTT1 FROM subject s,
 iamarks i WHERE i.subcode=s.subcode
 and i.usn='4SF20CD001';

View created.
```

OR

```
SQL>  CREATE VIEW TEST_MARKS
AS SELECT SUBCODE ,TESTT1 FROM IAMARKS
WHERE USN='4SF20CD001';

View created.

SQL> SELECT  * FROM TEST_MARKS;

SUBCODE        TESTT1
---------- ----------
20CS31             38
20CS32             28
```

QUERY 4:

```
SQL> UPDATE iamarks SET
finalia=GREATEST((testT1+test2),
(testT1+test3),(test3+test2))/2;
```

```
6 rows updated.

SQL> SELECT * FROM IAMARKS;

USN                        SSID SUBCODE        TESTT1      TEST2      TEST3
FINALIA
-------------------- ---------- ---------- ---------- ---------- ----------
----------
4SF20CD001                    1 20CS31             38         35         32
37
4SF20CD001                    1 20CS32             28         26         29
29
4SF20CS088                    2 20CS31             38         42         32
40
4SF20CS089                    3 20CS33             42         46         41
44
4SF20IS109                    4 20CS34             28         26         29
29
4SF20CS098                    5 20CS35             48         46         50
49

6 rows selected.

     Query 5:
SQL> SELECT usn,finalia,
  2   CASE
  3  WHEN finalia BETWEEN 45 AND 50 THEN 'outstanding'
  4  WHEN finalia BETWEEN 40 AND 45 THEN 'GOOD'
  5  WHEN finalia BETWEEN 30 AND 40 THEN 'AVERAGE'
  6  WHEN finalia <30  THEN 'weak'
  7  END
  8   AS CATEGORY FROM iamarks i,
      semsec s WHERE i.ssid=s.ssid
      AND sem=8 AND section IN('A','B','C');


USN                     FINALIA CATEGORY
-------------------- ---------- -----------
4SF20CS089                   44 GOOD
4SF20IS109                   29 weak
4SF20CS098                   49 outstanding

----------------------------------------------------

# lab 4

SQL> CREATE TABLE employee(
  2  Eid INT PRIMARY KEY,
  3  name VARCHAR2(20),
  4  address VARCHAR2(20),
  5  Gender CHAR(1) CHECK(Gender ='M' OR Gender ='F'),
  6  salary NUMBER(6),
  7  SuperEid REFERENCES EMPLOYEE(Eid),
  8  dno NUMBER);

Table created.
SQL> INSERT INTO employee VALUES(1, 'Rahul' , 'Mangaluru', 'M',35000,1,NULL);

1 row created.

SQL> INSERT INTO employee VALUES(2, 'Sahana', 'Mangaluru', 'F',35000,1,NULL);

1 row created.
```

```
SQL> INSERT INTO employee VALUES(3, 'Sagar', 'Bengaluru', 'M',35000,1,NULL);

1 row created.

SQL> INSERT INTO employee VALUES(4, 'Sagarik', 'Mangaluru', 'M',35000,1,NULL);

1 row created.

SQL> INSERT INTO employee VALUES(5, 'Sajaan', 'Mysore', 'M',600000,1,NULL);

SQL> CREATE TABLE department (
  2  Dnum NUMBER(5) PRIMARY KEY,
  3  dname VARCHAR2(10) ,
  4  Dmgr_id REFERENCES employee(Eid),
  5  Mgr_start_date date);

Table created.

SQL> INSERT INTO department VALUES(1,'CSE',1,'2-Nov-2007');

1 row created.

SQL> INSERT INTO department VALUES(2,'IOT',2,'2-Nov-2007');

1 row created.

SQL> INSERT INTO department VALUES(3,'Account',2,'2-Nov-2017');

1 row created.

SQL> INSERT INTO department VALUES(4,'ISE',1,'2-Nov-2000');

1 row created.

SQL> INSERT INTO department VALUES(5,'Finance',1,'3-Nov-2001');

1 row created.

ALTER TABLE employee ADD CONSTRAINT fk FOREIGN KEY(dno) REFERENCES
department(Dnum);

Table altered.

UPDATE employee
    SET dno=4
  where eid=1;

UPDATE employee
    SET dno=1
  where eid=2;

UPDATE employee
    SET dno=3
  where eid=3;

UPDATE employee
    SET dno=3
  where eid=4;

UPDATE employee
    SET dno=3
  where eid=5;
```

```
SQL> SELECT * FROM EMPLOYEE;

       EID NAME                 ADDRESS              G     SALARY   SUPEREID
DNO
---------- -------------------- -------------------- - ---------- ----------
----------
         1 Rahul                Mangaluru            M      35000          1
4
         2 Sahana               Mangaluru            F      35000          1
1
         3 Sagar                Bengaluru            M      35000          1
3
         4 Sagarik              Mangaluru            M      35000          1
3
         5 Sajaan               Mysore               M     600000          1
3

SQL> SELECT * FROM DEPARTMENT;

      DNUM DNAME        DMGR_ID MGR_START
---------- ---------- ---------- ---------
         1 CSE                 1 02-NOV-07
         2 IOT                 2 02-NOV-07
         3 Account             2 02-NOV-17
         4 ISE                 1 02-NOV-00
         5 Finance             1 03-NOV-01
```

```
SQL> CREATE TABLE dlocation
  2  (dno REFERENCES department(dnum),
  3  location  VARCHAR2(10),
  4  PRIMARY KEY(dno,location));

SQL> INSERT INTO dlocation VALUES(1,'Mangaluru');
SQL> SELECT * FROM DLOCATION;

       DNO LOCATION
---------- ----------
         1 Mangaluru
         1 Mysore
         2 Mangaluru
         3 Bengaluru
         4 Mangaluru
         5 Mangaluru

SQL> CREATE TABLE project(
  2  Pnum NUMBER(2) PRIMARY KEY,
  3  Pname VARCHAR2(20),
  4  Plocation VARCHAR2(20),
  5  dno NUMBER  REFERENCES    department(dnum)
  6  );
```

```
SQL> INSERT INTO project VALUES(2,'Data Mining','Managluru',1);
SQL> SELECT * FROM PROJECT;

      PNUM PNAME                PLOCATION                   DNO
---------- -------------------- -------------------- ----------
         1 IOT                  Managluru                     1
         2 Data Mining          Managluru                     1
         3 CC                   Hubli                         3
         4 Image processing     Managluru                     4
         5 Research             Managluru                     5

SQL> CREATE TABLE  workson (
  2  Eid  NUMBER(5) REFERENCES employee(eid),
  3  Pno  NUMBER(2) REFERENCES   project(Pnum),
  4  hours NUMBER(5,2),
  5  primary key(Eid,Pno));

SQL> INSERT INTO workson VALUES(1,1,4);

SQL> SELECT * FROM WORKSON;

       EID        PNO      HOURS
---------- ---------- ----------
         1          1          4
         2          1          5
         3          2          4
         4          3          4
         5          5          4

CREATE TABLE DEPENDENT(
EMP_ID INT CONSTRAINT DEP_EMPID_PK PRIMARY KEY,
DEPENDENT_NAME VARCHAR2(12),
GENDER VARCHAR2(5),
BDATE DATE,
RELATIONSHIP VARCHAR2(12),
FOREIGN KEY(EMP_ID)REFERENCES EMPLOYEE(EID) ON DELETE CASCADE
);
```

Query 1:Make a list of all project numbers for projects that involve an employee whose name is â œRahulâ ,either as a worker or as a manager of the department that controls the project.

```
SQL> SELECT pno
  2  FROM workson
  3  WHERE Eid IN
  4   (SELECT Eid FROM employee WHERE name='Rahul')
  5  UNION
  6  SELECT Pnum
  7  FROM project
  8  WHERE dno IN
  9   (SELECT Dnum FROM department WHERE DMgr_id IN
     (SELECT Eid FROM employee WHERE name='Rahul'));

       PNO
      ------
         1
         2
         4
         5
```

Query 2:Show the resulting salaries if every employee working on the â œIoTâ project is given a 10 percent raise.

```
SQL> SELECT Eid,name, salary,salary+0.1*salary as updated_salary
  2  FROM employee
  3  WHERE Eid IN
  4   (SELECT Eid FROM workson WHERE pno IN(
  5    SELECT pnum FROM project WHERE Pname='IOT'));

       EID NAME                     SALARY UPDATED_SALARY
---------- -------------------- ---------- --------------
         1 Rahul                     35000          38500
         2 Sahana                    35000          38500
```

Query3:Find the sum of the salaries of all employees of the â œAccountsâ department, as well as the maximum salary, the minimum salary, and the average salary in this department.

```
SQL> SELECT SUM(salary), AVG(salary), MAX(salary), MIN(salary)
  2  FROM employee e,department d
  3  WHERE d.dnum=e.dno AND dname='Account';

SUM(SALARY) AVG(SALARY) MAX(SALARY) MIN(SALARY)
----------- ----------- ----------- -----------
     670000  223333.333      600000       35000
```

Query 4:Retrieve the name of each employee who works on all the projects controlled by department number 5 (use NOT EXISTS operator).

```
SQL> SELECT Eid,name
  2  FROM employee e
  3  WHERE NOT EXISTS(
  4  (SELECT pnum FROM project WHERE dno=5) MINUS
  5  (SELECT pno FROM workson w WHERE w.Eid=e.Eid)
  6  );

       EID NAME
---------- -------------------
         5 Sajaan
```

QUERY 5:Create a view Dept_info that gives details of department name, Number of employees and total salary of each department.

```
SQL> Create view dept_info(name,count_emp,sum_sal) as
  2  Select d.dname, count(*), sum(salary)
  3  From department d inner join employee e
  4  ON e.Dno = d.Dnum
  5  Group by d.Dname;

View created.

SQL> SELECT * FROM DEPT_INFO;

NAME        COUNT_EMP    SUM_SAL
---------- ---------- ----------
ISE                 1      35000
Account             3     670000
CSE                 1      35000
```

# lab 5

```
CREATE TABLE FLIGHT(
      FLIGHT_NUM INT,
      SOURCE VARCHAR(20),
      DESTINATION VARCHAR(20),
      DISTANCE INT,
      DEPARTS VARCHAR(10),
      ARRIVES VARCHAR(10),
      PRICE INT,
      PRIMARY KEY (FLIGHT_NUM) );
```

```
CREATE TABLE EMPLOYEES(
            EID INT,
            ENAME VARCHAR(20),
            SALARY INT,
            PRIMARY KEY (EID) );
CREATE TABLE AIRCRAFT(
      AID INT,
      ANAME VARCHAR(20),
      CRUISINGRANGE INT,
      PRIMARY KEY (AID) );

CREATE TABLE CERTIFIED(
            EID INT,
             AID INT,
             PRIMARY KEY (EID,AID),
            FOREIGN KEY (EID) REFERENCES EMPLOYEES (EID),
            FOREIGN KEY (AID) REFERENCES AIRCRAFT (AID) );


INSERT INTO FLIGHT VALUES(1,'BANGALORE','MANGALORE',300,'10:45','12:00',10000);
INSERT INTO FLIGHT VALUES(2,'BANGALORE','DELHI',5000,'12:15','4:30',25000);
INSERT INTO FLIGHT VALUES(3,'BANGALORE','MUMBAI',3500,'2:15','5:25',30000);
INSERT INTO FLIGHT VALUES(4,'DELHI','MUMBAI',4500,'10:15','12:05',35000);
INSERT INTO FLIGHT VALUES(5,'DELHI','FRANKFURT',18000,'7:15','5:30',90000);
INSERT INTO FLIGHT VALUES(6,'BANGALORE','FRANKFURT',19500,'10:00','7:45',95000);
INSERT INTO FLIGHT VALUES(7,'BANGALORE','FRANKFURT',17000,'12:00','6:30',99000);

SQL> SELECT * FROM FLIGHT;
FLIGHT_NUM SOURCE               DESTINATION            DISTANCE DEPARTS
ARRIVES         PRICE
---------- -------------------- -------------------- ---------- ----------
---------- ----------
         1 BANGALORE            MANGALORE                   300 10:45      12:00
10000
         2 BANGALORE            DELHI                      5000 12:15      4:30
25000
         3 BANGALORE            MUMBAI                     3500 2:15       5:25
30000
         4 DELHI                MUMBAI                     4500 10:15      12:05
35000
         5 DELHI                FRANKFURT                 18000 7:15       5:30
90000
         6 BANGALORE            FRANKFURT                 19500 10:00      7:45
95000
         7 BANGALORE            FRANKFURT                 17000 12:00      6:30
99000

INSERT INTO AIRCRAFT VALUES(123,'AIRBUS',1000);
INSERT INTO AIRCRAFT VALUES(302,'BOEING',5000);
INSERT INTO AIRCRAFT VALUES(306,'JET01',5000);
INSERT INTO AIRCRAFT VALUES(378,'AIRBUS380',8000);
INSERT INTO AIRCRAFT VALUES(456,'AIRCRAFT',500);
INSERT INTO AIRCRAFT VALUES(789,'AIRCRAFT02',800);
INSERT INTO AIRCRAFT VALUES(951,'AIRCRAFT03',1000);

SQL> SELECT * FROM AIRCRAFT;

       AID ANAME                CRUISINGRANGE
---------- -------------------- -------------
       123 AIRBUS                        1000
       302 BOEING                        5000
       306 JET01                         5000
       378 AIRBUS380                     8000
       456 AIRCRAFT                       500
       789 AIRCRAFT02                     800
       951 AIRCRAFT03                    1000

INSERT INTO EMPLOYEES VALUES(1,'AJAY',30000);
INSERT INTO EMPLOYEES VALUES(2,'AJITH',85000);
INSERT INTO EMPLOYEES VALUES(3,'ARNAB',50000);
INSERT INTO EMPLOYEES VALUES(4,'HARRY',45000);
INSERT INTO EMPLOYEES VALUES(5,'ARUN',90000);
INSERT INTO EMPLOYEES VALUES(6,'JOSH',75000);
INSERT INTO EMPLOYEES VALUES(7,'RAM',100000);
SQL> SELECT * FROM EMPLOYEES;

       EID ENAME                    SALARY
---------- -------------------- ----------
         1 AJAY                      30000
         2 AJITH                     85000
         3 ARNAB                     50000
         4 HARRY                     45000
         5 ARUN                      90000
         6 JOSH                      75000
         7 RAM                      100000

INSERT INTO CERTIFIED VALUES(1,123);
INSERT INTO CERTIFIED VALUES(2,123);
INSERT INTO CERTIFIED VALUES(1,302);
INSERT INTO CERTIFIED VALUES(5,302);
INSERT INTO CERTIFIED VALUES(7,302);
INSERT INTO CERTIFIED VALUES(1,306);
INSERT INTO CERTIFIED VALUES(2,306);
INSERT INTO CERTIFIED VALUES(1,378);
INSERT INTO CERTIFIED VALUES(2,378);
INSERT INTO CERTIFIED VALUES(4,378);
INSERT INTO CERTIFIED VALUES(3,456);
INSERT INTO CERTIFIED VALUES(6,456);
INSERT INTO CERTIFIED VALUES(1,789);
INSERT INTO CERTIFIED VALUES(5,789);
INSERT INTO CERTIFIED VALUES(6,789);
INSERT INTO CERTIFIED VALUES(1,951);
INSERT INTO CERTIFIED VALUES(3,951);


SQL> SELECT * FROM CERTIFIED;

       EID        AID
---------- ----------
         1        123
         1        302
         1        306
         1        378
         1        789
         1        951
         2        123
         2        306
         2        378
         3        456
         3        951
         4        378
         5        302
         5        789
         6        456
         6        789
         7        302
```

QUERY 1:

```
SQL> SELECT DISTINCT a.aname
          FROM aircraft a, certified c, employees e
          WHERE a.aid=c.aid
          AND c.eid=e.eid
          AND NOT EXISTS
         (SELECT *
         FROM employees e1
          WHERE e1.eid=e.eid
          AND e1.salary<80000);
ANAME
--------------------
AIRBUS
AIRCRAFT02
BOEING
JET01
AIRBUS380
```

QUERY 2:

```
SQL> SELECT c.eid,MAX(cruisingrange)
          FROM certified c,aircraft a
          WHERE c.aid=a.aid
         GROUP BY c.eid
         HAVING COUNT(*)>3;

       EID MAX(CRUISINGRANGE)
---------- ------------------
         1               8000
```

QUERY 3:

```
SQL> SELECT DISTINCT e.ename
      FROM employees e
      WHERE e.salary<=
      (SELECT MIN(f.price)
      FROM flight f
      WHERE f.Source='BANGALORE'
       AND f.Destination='MUMBAI');
ENAME
--------------------
AJAY
```

QUERY 4:

```
SQL> SELECT a.aid
     FROM aircraft a
     WHERE a.cruisingrange>
     (SELECT MIN(f.distance)
     FROM flight f
     WHERE f.Source='BANGALORE'
     AND f.Destination='DELHI');

      AID
---------
      378
```

query 5:

```
SELECT ename,salary from employees where salary=(select MAX(salary)
FROM employees
WHERE salary <(select max(salary)from employees));

ENAME                    SALARY
-------------------- ----------
ARUN                      90000
```