Sql-1

```
create database book;
use book;

CREATE TABLE PUBLISHER (
    NAME VARCHAR(20) PRIMARY KEY,
    PHONE VARCHAR(20), -- Changed data type to VARCHAR for phone
numbers
    ADDRESS VARCHAR(100)
);

CREATE TABLE BOOK (
    BOOK_ID INT(10) PRIMARY KEY,
    TITLE VARCHAR(20),
    PUB_YEAR DATE, -- Changed data type to DATE for publication year
    PUBLISHER_NAME VARCHAR(20),
    FOREIGN KEY (PUBLISHER_NAME) REFERENCES PUBLISHER(NAME)
ON DELETE CASCADE
);

CREATE TABLE BOOK_AUTHORS (
    AUTHOR_NAME VARCHAR(20),
    BOOK_ID INT(10),
    PRIMARY KEY (BOOK_ID, AUTHOR_NAME),
    FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE
CASCADE
);

CREATE TABLE LIBRARY_PROGRAMME (
    PROGRAMME_ID INT(10) PRIMARY KEY,
    PROGRAMME_NAME VARCHAR(50),
    ADDRESS VARCHAR(100)
);

CREATE TABLE CARD (
    CARD_NO INT(10) PRIMARY KEY
);
CREATE TABLE BOOK_LENDING (
    DATE_OUT DATE,
    DUE_DATE DATE,
    BOOK_ID INT(10),
    PROGRAMME_ID INT(10),
    CARD_NO INT(10),
    PRIMARY KEY (BOOK_ID, PROGRAMME_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,
    FOREIGN KEY (CARD_NO) REFERENCES CARD(CARD_NO) ON DELETE
CASCADE
);

CREATE TABLE BOOK_COPIES (
    NO_OF_COPIES INT(5),
    BOOK_ID INT(10),
    PROGRAMME_ID INT(10),
    PRIMARY KEY (BOOK_ID, PROGRAMME_ID),
    FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE
CASCADE,
    FOREIGN KEY (PROGRAMME_ID) REFERENCES
LIBRARY_PROGRAMME(PROGRAMME_ID) ON DELETE CASCADE
);

-- Inserting data
INSERT INTO PUBLISHER VALUES ('MCGRAW-HILL', '989076587',
'BANGALORE');
INSERT INTO PUBLISHER VALUES ('PEARSON', '9889076565',
'NEWDELHI');
INSERT INTO PUBLISHER VALUES ('PRENTICE HALL', '455679345',
'HYDERABAD');
INSERT INTO PUBLISHER VALUES ('WILEY', '8970862340', 'CHENNAI');
INSERT INTO PUBLISHER VALUES ('MIT', '7756120238', 'BANGALORE');

INSERT INTO BOOK VALUES (1, 'DBMS', '2017-01-01', 'MCGRAW-HILL');
INSERT INTO BOOK VALUES (2, 'ADBMS', '2016-06-01', 'MCGRAW-HILL');
INSERT INTO BOOK VALUES (3, 'CD', '2016-09-01', 'PEARSON');
INSERT INTO BOOK VALUES (4, 'ALGORITHMS', '2015-09-01', 'MIT');
INSERT INTO BOOK VALUES (5, 'OS', '2016-05-01', 'PEARSON');

INSERT INTO BOOK_AUTHORS VALUES ('NAVATHE', 1);
INSERT INTO BOOK_AUTHORS VALUES ('NAVATHE', 2);
INSERT INTO BOOK_AUTHORS VALUES ('ULLMAN', 3);
INSERT INTO BOOK_AUTHORS VALUES ('CHARLES', 4);
INSERT INTO BOOK_AUTHORS VALUES ('GALVIN', 5);

INSERT INTO LIBRARY_PROGRAMME VALUES (10, 'VIJAY NAGAR',
'MYSURU');
INSERT INTO LIBRARY_PROGRAMME VALUES (11, 'VIDYANAGAR',
```

```
'HUBLI');
INSERT INTO LIBRARY_PROGRAMME VALUES (12, 'KUVEMPUNAGAR',
'MYSURU');
INSERT INTO LIBRARY_PROGRAMME VALUES (13, 'RAJAJINAGAR',
'BANGALORE');
INSERT INTO LIBRARY_PROGRAMME VALUES (14, 'MANIPAL', 'UDUPI');

INSERT INTO BOOK_COPIES VALUES (10, 1, 10);
INSERT INTO BOOK_COPIES VALUES (5, 1, 11);
INSERT INTO BOOK_COPIES VALUES (2, 2, 12);
INSERT INTO BOOK_COPIES VALUES (5, 2, 13);
INSERT INTO BOOK_COPIES VALUES (7, 3, 14);
INSERT INTO BOOK_COPIES VALUES (1, 5, 10);
INSERT INTO BOOK_COPIES VALUES (3, 4, 11);

INSERT INTO CARD VALUES (100);
INSERT INTO CARD VALUES (101);
INSERT INTO CARD VALUES (102);
INSERT INTO CARD VALUES (103);
INSERT INTO CARD VALUES (104);

INSERT INTO BOOK_LENDING VALUES ('2017-01-01', '2017-06-01', 1, 10,
101);
INSERT INTO BOOK_LENDING VALUES ('2017-01-11', '2017-03-11', 3, 14,
101);
INSERT INTO BOOK_LENDING VALUES ('2017-02-21', '2017-04-21', 2, 13,
101);
INSERT INTO BOOK_LENDING VALUES ('2017-03-15', '2017-07-15', 4, 11,
101);
INSERT INTO BOOK_LENDING VALUES ('2017-04-12', '2017-05-12', 1, 11,
104);
```

Queries:

1.

```
SELECT B.BOOK_ID, B.TITLE, B.PUBLISHER_NAME, A.AUTHOR_NAME,
C.NO_OF_COPIES, L.PROGRAMME_ID FROM BOOK B, BOOK_AUTHORS
A, BOOK_COPIES
C, LIBRARY_PROGRAMME L WHERE B.BOOK_ID=A.BOOK_ID AND
B.BOOK_ID=C.BOOK_ID AND L.PROGRAMME_ID=C.PROGRAMME_ID;
```

2.

```
SELECT CARD_NO FROM BOOK_LENDING WHERE DATE_OUT
```

```
BETWEEN '2017-01-01'AND '2017-07-01' GROUP BY CARD_NO
HAVING COUNT(*)>3;

3.
DELETE FROM BOOK WHERE BOOK_ID=3;
Select * from book;

4.
CREATE VIEW VW_PUBLICATION AS SELECT PUB_YEAR FROM BOOK;
SELECT * FROM VW_PUBLICATION;

5.
CREATE VIEW VW_BOOKS AS SELECT B.BOOK_ID, B.TITLE,
C.NO_OF_COPIES
FROM BOOK B, BOOK_COPIES C, LIBRARY_PROGRAMME L WHERE
B.BOOK_ID=C.BOOK_ID AND C.PROGRAMME_ID=L.PROGRAMME_ID;
SELECT * FROM VW_BOOKS;
```

Sql-2

```
CREATE TABLE SALESMAN (
    SALESMAN_ID INT(4) PRIMARY KEY,
    NAME VARCHAR(20),
    CITY VARCHAR(20),
    COMMISSION VARCHAR(20)
);

CREATE TABLE CUSTOMER (
    CUSTOMER_ID INT(5) PRIMARY KEY,
    CUST_NAME VARCHAR(20),
    CITY VARCHAR(20),
    GRADE INT(4),
    SALESMAN_ID INT(4),
    FOREIGN KEY (SALESMAN_ID) REFERENCES
SALESMAN(SALESMAN_ID) ON DELETE SET NULL
);

CREATE TABLE ORDERS (
    ORD_NO INT(5) PRIMARY KEY,
    PURCHASE_AMT DECIMAL(10, 2),
    ORD_DATE DATE,
    CUSTOMER_ID INT(5),
    SALESMAN_ID INT(4),
```

```
    FOREIGN KEY (CUSTOMER_ID) REFERENCES
CUSTOMER(CUSTOMER_ID) ON DELETE CASCADE,
    FOREIGN KEY (SALESMAN_ID) REFERENCES
SALESMAN(SALESMAN_ID) ON DELETE CASCADE
);

-- Insert data into SALESMAN table first
INSERT INTO SALESMAN VALUES(1000, 'RICHARD', 'LOS ANGELES',
'18%');
INSERT INTO SALESMAN VALUES(103, 'GEORGE', 'NEWYORK', '32%');
INSERT INTO SALESMAN VALUES(110, 'CHARLES', 'BANGALORE', '54%');
INSERT INTO SALESMAN VALUES(122, 'ROWLING', 'PHILADELPHIA',
'46%');
INSERT INTO SALESMAN VALUES(126, 'KURT', 'CHICAGO', '52%');
INSERT INTO SALESMAN VALUES(132, 'EDWIN', 'PHOENIX', '41%');

-- Then insert data into CUSTOMER table
INSERT INTO CUSTOMER VALUES(501, 'SMITH', 'LOS ANGELES', 10, 103);
INSERT INTO CUSTOMER VALUES(510, 'BROWN', 'ATLANTA', 14, 122);
INSERT INTO CUSTOMER VALUES(522, 'LEWIS', 'BANGALORE', 10, 132);
INSERT INTO CUSTOMER VALUES(534, 'PHILIPS', 'BOSTON', 17, 103);
INSERT INTO CUSTOMER VALUES(543, 'EDWARD', 'BANGALORE', 14,
110);
INSERT INTO CUSTOMER VALUES(550, 'PARKER', 'ATLANTA', 19, 126);

-- Finally, insert data into ORDERS table
INSERT INTO ORDERS VALUES(1, 1000, '2017-05-04', 501, 103);
INSERT INTO ORDERS VALUES(3, 2500, '2017-02-24', 550, 126);
INSERT INTO ORDERS VALUES(5, 6000, '2017-04-13', 522, 103);
INSERT INTO ORDERS VALUES(6, 7000, '2017-03-09', 550, 126);
INSERT INTO ORDERS VALUES(7, 3400, '2017-01-20', 501, 122);
INSERT INTO ORDERS VALUES(2, 4000, '2017-01-10', 522, 132);
```

Queries;

1.

```
SELECT GRADE, COUNT(CUSTOMER_ID) FROM CUSTOMER GROUP BY
GRADE
HAVING GRADE > (SELECT AVG (GRADE) FROM CUSTOMER WHERE
CITY='BANGALORE');
```

2.

```
SELECT SALESMAN_ID,NAME FROM SALESMAN A
```

```
WHERE 1 <(SELECT COUNT(*) FROM CUSTOMER WHERE
SALESMAN_ID=A.SALESMAN_ID);

3.
SELECT S.SALESMAN_ID,NAME,CUST_NAME,COMMISSION FROM
SALESMAN
S,CUSTOMER C WHERE S.CITY = C.CITY UNION SELECT SALESMAN_ID,
NAME,
'NO MATCH',COMMISSION FROM SALESMAN WHERE NOT CITY = ANY
(SELECT
CITY FROM CUSTOMER) ORDER BY 2 DESC;

4.
CREATE VIEW VW_ELITSALESMAN AS SELECT
B.ORD_DATE,A.SALESMAN_ID,A.NAME FROM SALESMAN A, ORDERS B
WHERE
A.SALESMAN_ID = B.SALESMAN_ID AND B.PURCHASE_AMT=(SELECT
MAX(PURCHASE_AMT) FROM ORDERS C
WHERE C.ORD_DATE = B.ORD_DATE);
SELECT * FROM VW_ELITSALESMAN;

5.
DELETE FROM SALESMAN WHERE SALESMAN_ID=101;
```

Sql-3

```
CREATE TABLE ACTOR (
    ACT_ID INT(5) PRIMARY KEY,
    ACT_NAME VARCHAR(20),
    ACT_GENDER CHAR(1)
);

CREATE TABLE DIRECTOR (
    DIR_ID INT(5) PRIMARY KEY,
    DIR_NAME VARCHAR(20),
    DIR_PHONE BIGINT
);

CREATE TABLE MOVIES (
    MOV_ID INT(4) PRIMARY KEY,
    MOV_TITLE VARCHAR(50),
    MOV_YEAR INT(4),
    MOV_LANG VARCHAR(20),
```

```
    DIR_ID INT(5),
    FOREIGN KEY (DIR_ID) REFERENCES DIRECTOR(DIR_ID)
);

CREATE TABLE MOVIES_CAST (
    ACT_ID INT(5),
    MOV_ID INT(5),
    ROLE VARCHAR(20),
    PRIMARY KEY (ACT_ID, MOV_ID),
    FOREIGN KEY (ACT_ID) REFERENCES ACTOR(ACT_ID),
    FOREIGN KEY (MOV_ID) REFERENCES MOVIES(MOV_ID)
);

CREATE TABLE RATING (
    MOV_ID INT(5) PRIMARY KEY,
    REV_STARS VARCHAR(25),
    FOREIGN KEY (MOV_ID) REFERENCES MOVIES(MOV_ID)
);

-- Insert data into ACTOR table first
INSERT INTO ACTOR VALUES (1, 'MADHURI DIXIT', 'F');
INSERT INTO ACTOR VALUES (2, 'AMIRKHAN', 'M');
INSERT INTO ACTOR VALUES (3, 'JUHI', 'F');
INSERT INTO ACTOR VALUES (4, 'SHREEDEVI', 'F');

-- Then insert data into DIRECTOR table
INSERT INTO DIRECTOR VALUES (105, 'HITCHCOCK', 7766138911);
INSERT INTO DIRECTOR VALUES (102, 'ALAN TAYLOR', 9971960035);
INSERT INTO DIRECTOR VALUES (100, 'SUBHASH KAPOOR', 9971960035);
INSERT INTO DIRECTOR VALUES (103, 'SANTOOSH ANAND RAM',
993511123);
INSERT INTO DIRECTOR VALUES (104, 'IMTIAZ ALI', 9976666035);
INSERT INTO DIRECTOR VALUES (106, 'STEVEN SPIELBERG',
9966138934);

-- Then insert data into MOVIES table
INSERT INTO MOVIES VALUES (501, 'JAB HARRY MET SEJAL', 2017,
'HINDI', 104);
INSERT INTO MOVIES VALUES (502, 'RAJAKUMARA', 2017, 'KANNADA',
103);
INSERT INTO MOVIES VALUES (503, 'JOLLY LLB 2', 2013, 'HINDI', 100);
INSERT INTO MOVIES VALUES (504, 'TERMINATOR GENESYS', 2015,
'ENGLISH', 102);
INSERT INTO MOVIES VALUES (505, 'JAWS', 1975, 'ENGLISH', 106);
```

```
INSERT INTO MOVIES VALUES (506, 'BRIDGE OF SPIES', 2015, 'ENGLISH',
106);
INSERT INTO MOVIES VALUES (507, 'VERTIGO', 1943, 'ENGLISH', 105);
INSERT INTO MOVIES VALUES (508, 'SHADOW OF A DOUBT', 1943,
'ENGLISH', 105);

-- Then insert data into MOVIES_CAST table
INSERT INTO MOVIES_CAST VALUES (1, 501, 'HEROINE');
INSERT INTO MOVIES_CAST VALUES (1, 502, 'HEROINE');
INSERT INTO MOVIES_CAST VALUES (3, 503, 'COMEDIAN');
INSERT INTO MOVIES_CAST VALUES (4, 504, 'GUEST');
INSERT INTO MOVIES_CAST VALUES (4, 501, 'HERO');

-- Finally, insert data into RATING table
INSERT INTO RATING VALUES (501, '4');
INSERT INTO RATING VALUES (502, '2');
INSERT INTO RATING VALUES (503, '5');
INSERT INTO RATING VALUES (504, '4');
INSERT INTO RATING VALUES (505, '3');
INSERT INTO RATING VALUES (506, '2');
```

Queries :

1.

```
SELECT MOV_TITLE FROM MOVIES M, DIRECTOR D WHERE
M.DIR_ID=D.DIR_ID
AND DIR_NAME='HITCHCOCK';
```

2.

```
SELECT MOV_TITLE FROM MOVIES M,MOVIES_CAST MV
WHERE M.MOV_ID=MV.MOV_ID AND ACT_ID IN(SELECT ACT_ID FROM
MOVIES_CAST GROUP BY ACT_ID HAVING COUNT(ACT_ID)>1) GROUP BY
MOV_TITLE HAVING COUNT(*)>1;
```

3.

```
SELECT ACT_NAME, MOV_TITLE, MOV_YEAR FROM ACTOR A JOIN
MOVIES_CAST C ON
A.ACT_ID=C.ACT_ID INNER JOIN MOVIES M ON C.MOV_ID=M.MOV_ID
WHERE
M.MOV_YEAR NOT BETWEEN 2000 AND 2015;
```

4.

```
SELECT MOV_TITLE,MAX(REV_STARS) FROM MOVIES M ,RATING R
```

```
WHERE
M.MOV_ID=R.MOV_ID GROUP BY MOV_TITLE HAVING
MAX(REV_STARS)>0 ORDER BY
MOV_TITLE;

5.
UPDATE RATING R, MOVIES M, DIRECTOR D SET REV_STARS=5 WHERE
R.MOV_ID=M.MOV_ID AND
    M.DIR_ID=D.DIR_ID AND DIR_NAME='STEVEN SPIELBER';
```

Sql-4

```
CREATE TABLE STUDENT (
   USN VARCHAR(10) PRIMARY KEY,
   SNAME VARCHAR(25),
   ADDRESS VARCHAR(25),
   PHONE BIGINT(10),
   GENDER CHAR(1));
CREATE TABLE SEMSEC (
   SSID VARCHAR(5) PRIMARY KEY,
   SEM INT(5),
   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(10) PRIMARY KEY,
   TITLE VARCHAR(20),
   SEM INT,
   CREDITS INT);
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));
INSERT INTO STUDENT VALUES ('4AD13CS020', 'AKSHAY', 'BELAGAVI',
8877881122, 'M');
INSERT INTO STUDENT VALUES ('4AD13CS062', 'SANDHYA',
'BENGALURU', 7722829912, 'F');
INSERT INTO STUDENT VALUES ('4AD13CS091', 'TEESHA', 'BENGALURU',
7712312312, 'F');
INSERT INTO STUDENT VALUES ('4AD13CS066', 'SUPRIYA',
'MANGALURU', 8877881122, 'F');
INSERT INTO STUDENT VALUES ('4AD14CS010', 'ABHAY', 'BENGALURU',
9900211201, 'M');
INSERT INTO STUDENT VALUES ('4AD14CS032', 'BHASKAR',
'BENGALURU', 9923211099, '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 CLASS VALUES ('4AD13CS020', 'CSE8A');
INSERT INTO CLASS VALUES ('4AD13CS062', 'CSE8A');
INSERT INTO CLASS VALUES ('4AD13CS066', 'CSE8B');
INSERT INTO CLASS VALUES ('4AD13CS091', 'CSE8C');
INSERT INTO CLASS VALUES ('4AD14CS010', 'CSE7A');
INSERT INTO CLASS VALUES ('4AD14CS025', 'CSE7A');
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 IAMARKS VALUES ('4AD13CS091', '10CS81', 'CSE8C', 15, 16,
18, 0);
INSERT INTO IAMARKS VALUES ('4AD13CS091', '10CS82', 'CSE8C', 12, 19,
14, 0);
INSERT INTO IAMARKS VALUES ('4AD13CS091', '10CS83', 'CSE8C', 19, 15,
```

20, 0);
INSERT INTO IAMARKS VALUES ('4AD13CS091', '10CS84', 'CSE8C', 20, 16, 19, 0);
INSERT INTO IAMARKS VALUES ('4AD13CS091', '10CS85', 'CSE8C', 15, 15, 12, 0);

Queries:

1.
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';

2.
SELECT SS.SEM, SS.SEC, S.GENDER, COUNT(S.GENDER) AS COUNT
FROM STUDENT S
JOIN CLASS C ON S.USN = C.USN
JOIN SEMSEC SS ON SS.SSID = C.SSID
GROUP BY SS.SEM, SS.SEC, S.GENDER
ORDER BY SS.SEM;

3.
CREATE VIEW VW_STUDENT_TEST AS SELECT TEST1,SUBCODE FROM IAMARKS WHERE USN= '4AD13CS091';
SELECT * FROM VW_STUDENT_TEST;

4.
UPDATE IAMARKS
SET FINALIA=GREATEST(TEST1+TEST2,TEST2+TEST3,TEST1+TEST3)/2;
SELECT * FROM IAMARKS;

5.
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;

Sql-5

CREATE TABLE DEPARTMENT (DNO VARCHAR (20) PRIMARY KEY, DNAME VARCHAR (20), MGRSTARTDATE DATE,

```
    MGRSSN VARCHAR (20));
CREATE TABLE EMPLOYEE (
    SSN VARCHAR (20) PRIMARY KEY,
    FNAME VARCHAR (20),
    LNAME VARCHAR (20),
    ADDRESS VARCHAR (100),
    SEX CHAR (1),
    SALARY INT (10),
    SUPERSSN VARCHAR (20),
    DNO VARCHAR (20),
    FOREIGN KEY (SUPERSSN) REFERENCES EMPLOYEE (SSN), FOREIGN
KEY (DNO) REFERENCES DEPARTMENT (DNO));
ALTER TABLE DEPARTMENT ADD FOREIGN KEY(MGRSSN) REFERENCES
EMPLOYEE(SSN);
CREATE TABLE DLOCATION (
    DLOC VARCHAR (20),
    DNO VARCHAR (20),
    PRIMARY KEY (DNO, DLOC),
    FOREIGN KEY (DNO) REFERENCES DEPARTMENT (DNO));
CREATE TABLE PROJECT (
    PNO INT (10) PRIMARY KEY,
    PNAME VARCHAR (20),
    PLOCATION VARCHAR (20),
    DNO VARCHAR (20),
    FOREIGN KEY (DNO) REFERENCES DEPARTMENT (DNO));
CREATE TABLE WORKS_ON ( HOURS INT (4),
    SSN VARCHAR (20),
    PNO INT (10),
    PRIMARY KEY (SSN, PNO),
    FOREIGN KEY (SSN) REFERENCES EMPLOYEE (SSN), FOREIGN KEY
(PNO) REFERENCES PROJECT (PNO));
insert into employee values('cs01','sourav','budke','hubli','m',4500,null,null);
 insert into employee
values('ec01','siddu','daddi','bangalore','f',6500,null,null);
 insert into employee
values('ci02','sanketh','elalli','mysoore','m',7500,null,null);
insert into employee
values('me03','taju','nadaf','mangalore','m',8500,null,null);
 insert into employee
values('me04','shashank','chakki','dharwad','f',9500,null,null);
INSERT INTO EMPLOYEE (SSN, FNAME, LNAME, ADDRESS, SEX, SALARY)
  VALUES ('acs01', 'EmployeeFirstName', 'EmployeeLastName',
'EmployeeAddress', 'M', 0);
INSERT INTO DEPARTMENT VALUES ('1', 'IT', '2001-01-01', 'acs01');
```

```
INSERT INTO DEPARTMENT VALUES ('2', 'civ', '2008-06-07', 'ci02');
 INSERT INTO DEPARTMENT VALUES ('3', 'electric', '2016-06-07', 'ec01');
 INSERT INTO DEPARTMENT VALUES ('4', 'mech', '2006-05-09', 'me03');
update employee set superssn='acs01',dno='4' where ssn='cs01';
update employee set superssn='ci02',dno='3' where ssn='ec01';
update employee set superssn='me03',dno='3' where ssn='me04';
insert into dlocation values ('bangalore','1');
 insert into dlocation values ('bangalore','2');
insert into dlocation values ('mangalore','3');
 insert into dlocation values ('mysore','4');
insert into project values(100,'IOT','bangalore','1');
 insert into project values(103,'IOT','dubai','1');
insert into project values(101,'cloud_computing','canada','1');
insert into project values(105,'infrastructure','mangalore','2');
insert into project values(106,'elctricity','hubli','3');
insert into project values(107,'vehicle','dharwad','4');
 insert into works_on values (9,'cs01',100);
 insert into works_on values (2,'ci02',105);
insert into works_on values (7,'ec01',106);
insert into works_on values (5,'me03',107);
```

Queries:

1.

```
(SELECT DISTINCT P.PNO
    FROM PROJECT P, DEPARTMENT D, EMPLOYEE E
    WHERE E.DNO = D.DNO
    AND D.MGRSSN = E.SSN
    AND E.LNAME = 'budke')
    UNION
    (SELECT DISTINCT P1.PNO
    FROM PROJECT P1, WORKS_ON W, EMPLOYEE E1
    WHERE P1.PNO = W.PNO
    AND E1.SSN = W.SSN
    AND E1.LNAME = 'budke');
```

2.

```
SELECT E.FNAME, E.LNAME, 1.1 * E.SALARY AS INCR_SAL
    FROM EMPLOYEE E
    JOIN WORKS_ON W ON E.SSN = W.SSN
    JOIN PROJECT P ON W.PNO = P.PNO
    WHERE P.PNAME = 'infrastructure';
```

3.

```
SELECT SUM(E.SALARY) AS TOTAL_SALARY,  MAX(E.SALARY) AS
MAX_SALARY,        MIN(E.SALARY) AS MIN_SALARY,   AVG(E.SALARY) AS
AVG_SALARY FROM DEPARTMENT D LEFT JOIN EMPLOYEE E ON D.DNO
=
E.DNO WHERE D.DNAME = 'IT';
```

4.

```
SELECT E.FNAME,E.LNAME FROM EMPLOYEE E WHERE NOT EXISTS
(SELECT PNO FROM PROJECT P WHERE DNO=5 AND PNO NOT IN
(SELECT PNO FROM WORKS_ON W WHERE E.SSN=SSN));
```

5.

```
SELECT D.DNO, COUNT(*) FROM DEPARTMENT D, EMPLOYEE E WHERE
D.DNO=E.DNO AND E.SALARY>6000 AND D.DNO IN (SELECT E1.DNO
FROM EMPLOYEE E1  GROUP BY E1.DNO   HAVING COUNT(*)>1) GROUP
BY D.DNO;
```