DBMS LAB 1 :-

```
CREATE TABLE PERSON(  driver_id VARCHAR(10),  name VARCHAR(20),  address VARCHAR(50),
 PRIMARY KEY(driver_id)
);
CREATE TABLE CAR(  regno
VARCHAR(10),  model
VARCHAR(20),  year
VARCHAR(4),
 PRIMARY KEY(regno)
);
CREATE TABLE ACCIDENT(
 report_no INT,  date DATE,
location VARCHAR(50),
 PRIMARY KEY(report_no)
);
CREATE        TABLE        OWNS(
driver_id VARCHAR(10),  regno
VARCHAR(20),
 PRIMARY KEY(driver_id,regno),
 FOREIGN KEY(driver_id) REFERENCES PERSON(driver_id)
 ON delete CASCADE ON update CASCADE,
 FOREIGN KEY(regno) REFERENCES CAR(regno)
 ON delete CASCADE ON update CASCADE);
CREATE TABLE PARTICIPATED(  driver_id
VARCHAR(10),
 regno VARCHAR(20),  report_no INT,
damage_amount INT,
 FOREIGN KEY(driver_id,regno) REFERENCES OWNS(driver_id,regno)
 ON delete SET NULL ON update CASCADE,
```

```
 FOREIGN KEY(report_no) REFERENCES ACCIDENT(report_no)
 ON delete SET NULL ON update CASCADE
);
INSERT INTO PERSON VALUES('A01','Richard','Srinivas nagar');
INSERT INTO PERSON VALUES('A02','Pradeep','Rajaji nagar');
INSERT INTO PERSON VALUES('A03','Smith','Ashok nagar');
INSERT INTO PERSON VALUES('A04','Venu','N R Colony');
INSERT INTO PERSON VALUES('A05','Jhon','Hanumanth nagar');
INSERT INTO CAR VALUES('KA052250','Indica','1990');
INSERT INTO CAR VALUES('KA031181','Lancer','1957');
INSERT INTO CAR VALUES('KA095477','Toyota','1998');
INSERT INTO CAR VALUES('KA053408','Honda','2008');
INSERT INTO CAR VALUES('KA041702','Audi','2005');
INSERT INTO ACCIDENT VALUES(11,'2003-01-01','Mysore Road');
INSERT INTO ACCIDENT VALUES(12,'2004-02-02','South end Circle');
INSERT INTO ACCIDENT VALUES(13,'2003-01-21','Bull temple Road');
INSERT INTO ACCIDENT VALUES(14,'2008-02-17','Mysore Road');
INSERT INTO ACCIDENT VALUES(15,'2005-03-04','Kanakpura Road');
INSERT INTO OWNS VALUES('A01','KA052250');
INSERT INTO OWNS VALUES('A02','KA053408');
INSERT INTO OWNS VALUES('A03','KA031181');INSERT INTO OWNS VALUES('A04','KA095477');
INSERT INTO OWNS VALUES('A05','KA041702');
INSERT INTO PARTICIPATED VALUES('A01','KA052250',11,10000);
INSERT INTO PARTICIPATED VALUES('A02','KA053408',12,50000);
INSERT INTO PARTICIPATED VALUES('A03','KA095477',13,25000);
INSERT INTO PARTICIPATED VALUES('A04','KA031181',14,3000);
INSERT INTO PARTICIPATED VALUES('A05','KA041702',15,5000);

SELECT * FROM PERSON;
```

```
$sqlite3 database.sdb < main.sql
A01|Richard|Srinivas nagar
A02|Pradeep|Rajaji nagar
A03|Smith|Ashok nagar
A04|Venu|N R Colony
A05|Jhon|Hanumanth nagar
```

SELECT * FROM CAR;

```
$sqlite3 database.sdb < main.sql
KA052250|Indica|1990
KA031181|Lancer|1957
KA095477|Toyota|1998
KA053408|Honda|2008
KA041702|Audi|2005
```

SELECT * FROM ACCIDENT;

```
$sqlite3 database.sdb < main.sql
11|2003-01-01|Mysore Road
12|2004-02-02|South end Circle
13|2003-01-21|Bull temple Road
14|2008-02-17|Mysore Road
15|2005-03-04|Kanakpura Road
```

SELECT * FROM OWNS;

```
$sqlite3 database.sdb < main.sql
A01|KA052250
A02|KA053408
A03|KA031181
A04|KA095477
A05|KA041702
```

SELECT * FROM PARTICIPATED;

```
$sqlite3 database.sdb < main.sql
A01|KA052250|11|10000
A02|KA053408|12|50000
A03|KA095477|13|25000
A04|KA031181|14|3000
A05|KA041702|15|5000
```

UPDATE PARTICIPATED SET damage_amount=25000 WHERE REPORT_NO =12 AND REGNO='KA053408';

```
A01|KA052250|11|10000
A02|KA053408|12|25000
A03|KA095477|13|25000
A04|KA031181|14|3000
A05|KA041702|15|5000

[Program exited with exit code 0]
```

INSERT INTO ACCIDENT VALUES(16,'2018-04-08','MYSORE');

```
11|2003-01-01|Mysore Road
12|2004-02-02|South end Circle
13|2003-01-21|Bull temple Road
14|2008-02-17|Mysore Road
15|2005-03-04|Kanakpura Road
16|2018-04-08|MYSORE

[Program exited with exit code 0]
```

SELECT COUNT(*) FROM ACCIDENT WHERE DATE LIKE '2008-__-__';

```
1

[Program exited with exit code 0]
```

SELECT COUNT(*) FROM CAR WHERE model LIKE 'Indica';

```
1

[Program exited with exit code 0]
```

DBMS LAB 2 :-

```
CREATE TABLE branch ( branch_name VARCHAR(20), branch_city VARCHAR(20), assets REAL,
PRIMARY KEY(branch_name)
);
CREATE TABLE accounts
( acc_no INT,
branch_name VARCHAR(50), balance
REAL,
PRIMARY KEY(acc_no),
FOREIGN KEY(branch_name) REFERENCES branch(branch_name)
ON UPDATE CASCADE ON DELETE CASCADE
);
CREATE TABLE customer (
customer_name VARCHAR(20),
customer_street VARCHAR(50),
customer_city VARCHAR(20),
PRIMARY KEY(customer_name)
);
CREATE TABLE depositor (
customer_name VARCHAR(20),
acc_no INT,
PRIMARY KEY(customer_name, acc_no),
FOREIGN KEY(customer_name) REFERENCES customer(customer_name)ON UPDATE CASCADE ON
DELETE CASCADE,
FOREIGN KEY(acc_no) REFERENCES accounts(acc_no)
ON UPDATE CASCADE ON DELETE CASCADE
);
CREATE TABLE loan (
loan_number INT,
```

```
branch_name VARCHAR(50),
amount REAL,
PRIMARY KEY(loan_number),
FOREIGN KEY(branch_name) REFERENCES branch(branch_name)
ON UPDATE CASCADE ON DELETE CASCADE
);
INSERT INTO branch(branch_name,branch_city,assets) VALUES
('SBI_Chamrajpet','Bangalore',50000),('SBI_ResidencyRoad','Bangalore',10000),('SBI_ShivajiR
oad','Bombay',20000),('SBI_ParlimentRoad','Delhi',10000),('SBI_Jantarmantar','Delhi',20000)
;
INSERT INTO accounts(acc_no,branch_name,balance) VALUES
(1,'SBI_Chamrajpet',2000),(2,'SBI_ResidencyRoad',5000),(3,'SBI_ShivajiRoad',6000),(4,'SBI_P
arlimentRoad',9000),(5,'SBI_Jantarmantar',8000),(6,'SBI_ShivajiRoad',4000),(8,'SBI_Residenc
yRoad',4000),(9,'SBI_ParlimentRoad',3000),(10,'SBI_ResidencyRoad',5000),(11,'SBI_Jantarm
antar',2000);
INSERT INTO customer(customer_name,customer_street,customer_city) VALUES
('Avinash','Bull_Temple_Road','Bangalore'),('Dinesh','Bannergatta_Road','Bangalore'),('Moh
an','NationalCollege_Road','Bangalore'),('Nikil','Akbar_Road','Delhi'),('Ravi','Prithviraj_Road', 'Delhi');
INSERT INTO depositor(customer_name,acc_no) VALUES
('Avinash',1),('Dinesh',2),('Nikil',4),('Ravi',5),('Avinash',8),('Nikil',9),('Dinesh',10),('Nikil',11);INSERT
INTO loan(loan_number,branch_name,amount) VALUES
(1,'SBI_Chamrajpet',1000),(2,'SBI_ResidencyRoad',2000),(3,'SBI_ShivajiRoad',3000),(4,'SBI_P
arlimentRoad',4000),(5,'SBI_Jantarmantar',5000);
```

SELECT * FROM branch;

```
$sqlite3 database.sdb < main.sql
SBI_Chamrajpet|Bangalore|50000.0
SBI_ResidencyRoad|Bangalore|10000.0
SBI_ShivajiRoad|Bombay|20000.0
SBI_ParlimentRoad|Delhi|10000.0
SBI_Jantarmantar|Delhi|20000.0
```

SELECT * FROM accounts;

```
$sqlite3 database.sdb < main.sql
1|SBI_Chamrajpet|2000.0
2|SBI_ResidencyRoad|5000.0
3|SBI_ShivajiRoad|6000.0
4|SBI_ParlimentRoad|9000.0
5|SBI_Jantarmantar|8000.0
6|SBI_ShivajiRoad|4000.0
8|SBI_ResidencyRoad|4000.0
9|SBI_ParlimentRoad|3000.0
10|SBI_ResidencyRoad|5000.0
11|SBI_Jantarmantar|2000.0
```

SELECT * FROM customer;

```
$sqlite3 database.sdb < main.sql
Avinash|Bull_Temple_Road|Bangalore
Dinesh|Bannergatta_Road|Bangalore
Mohan|NationalCollege_Road|Bangalore
Nikil|Akbar_Road|Delhi
Ravi|Prithviraj_Road|Delhi
```

SELECT * FROM depositor;

```
$sqlite3 database.sdb < main.sql
Avinash|1
Dinesh|2
Nikil|4
Ravi|5
Avinash|8
Nikil|9
Dinesh|10
Nikil|11
```

SELECT * FROM loan;

```
$sqlite3 database.sdb < main.sql
1|SBI_Chamrajpet|1000.0
2|SBI_ResidencyRoad|2000.0
3|SBI_ShivajiRoad|3000.0
4|SBI_ParlimentRoad|4000.0
5|SBI_Jantarmantar|5000.0
```

SELECT d.customer_name FROM accounts a, depositor d WHERE d.acc_no=a.acc_no AND a.branch_name="SBI_ResidencyRoad" GROUP BY d.customer_name having count(d.customer_name>=2);

```
Avinash
Dinesh

[Program exited with exit code 0]
```

SELECT d.customer_name FROM accounts a, depositor d,branch b WHERE d.acc_no=a.acc_no AND b.branch_name=a.branch_name AND b.branch_city="Delhi" GROUP BY d.customer_name having count(distinct b.branch_name)=(SELECT COUNT(branch_name) FROM branch WHERE branch_city="Delhi");

```
Nikil

[Program exited with exit code 0]
```

DELETE FROM ACCOUNTS WHERE branch_name IN(SELECT branch_name FROM BRANCH WHERE branch_city='Bombay');

```
1|SBI_Chamrajpet|2000.0
2|SBI_ResidencyRoad|5000.0
4|SBI_ParlimentRoad|9000.0
5|SBI_Jantarmantar|8000.0
8|SBI_ResidencyRoad|4000.0
9|SBI_ParlimentRoad|3000.0
10|SBI_ResidencyRoad|5000.0
11|SBI_Jantarmantar|2000.0

[Program exited with exit code 0]
```

DBMS LAB 3 :-

```
CREATE TABLE suppliers(
 sid INT,
 sname VARCHAR(20),
address VARCHAR(50),
 PRIMARY KEY (sid)
);
CREATE TABLE parts(
 pid INT,
 pname VARCHAR(20),
color VARCHAR(10),
 PRIMARY KEY (pid)
);
CREATE TABLE catalog(
 sid INT,
pid INT,
cost REAL,
 PRIMARY KEY(sid,pid),
 FOREIGN KEY(sid) REFERENCES suppliers(sid)
 ON delete CASCADE ON update CASCADE,
 FOREIGN KEY(pid) REFERENCES parts(pid)
 ON delete CASCADE ON update CASCADE
);
insert into suppliers values (10001,'Acme Widget','Bangalore'), (10002,'Johns','Kolkata'),
(10003,'Vimal','Mumbai'),(10004,'Reliance','Delhi'); insert
into parts values
(20001,'Book','Red'),(20002,'Pen','Red'),(20003,'Pencil','Green'),(20004,'Mobile','Green'),(20
005,'Charger','Black');insert into catalog
values(10001,20001,10),(10001,20002,10),(10001,20003,30),(10001,20004,10),(10001,2000
5,10),(10002,20001,10),(10002,20002,20),(10003,20003,30),(10004,20003,40);
```

SELECT * FROM suppliers;

```
10001|Acme Widget|Bangalore
10002|Johns|Kolkata
10003|Vimal|Mumbai
10004|Reliance|Delhi

[Program exited with exit code 0]
```

SELECT * FROM parts;

```
20001|Book|Red
20002|Pen|Red
20003|Pencil|Green
20004|Mobile|Green
20005|Charger|Black

[Program exited with exit code 0]
```

SELECT * FROM catalog;

```
10001|20001|10.0
10001|20002|10.0
10001|20003|30.0
10001|20004|10.0
10001|20005|10.0
10002|20001|10.0
10002|20002|20.0
10003|20003|30.0
10004|20003|40.0

[Program exited with exit code 0]
```

SELECT DISTINCT p.pname FROM parts p, catalog c WHERE p.pid = c.pid;

```
Book
Pen
Pencil
Mobile
Charger

[Program exited with exit code 0]
```

SELECT s.sname FROM suppliers s WHERE NOT EXISTS(SELECT p.pid FROM parts p EXCEPT SELECT c.pid FROM catalog c WHERE c.sid = s.sid);

```
Acme Widget

[Program exited with exit code 0]
```

SELECT s.sname FROM suppliers s WHERE NOT EXISTS (SELECT p.pid FROM parts p WHERE p.color = 'Red' EXCEPT SELECT c.pid FROM catalog c, parts p WHERE c.sid = s.sid AND c.pid = p.pid AND p.color = 'Red');

```
Acme Widget
Johns

[Program exited with exit code 0]
```

SELECT p.pname FROM parts p, catalog c, suppliers s WHERE p.pid = c.pid AND c.sid = s.sid AND s.sname = 'Acme Widget' AND NOT EXISTS (SELECT * FROM catalog c1, suppliers s1 WHERE p.pid = c1.pid AND c1.sid = s1.sid AND s1.sname <> 'Acme Widget');

```
Mobile
Charger

[Program exited with exit code 0]
```

SELECT DISTINCT c.sid FROM catalog c WHERE c.cost > (SELECT AVG(C1.cost) FROM catalog c1 WHERE c1.pid = c.pid) ;

```
10002
10004

[Program exited with exit code 0]
```

SELECT p.pid, s.sname FROM parts p, suppliers s, catalog c WHERE c.pid = p.pid AND c.sid = s.sid AND c.cost = (SELECT MAX(c1.cost) FROM catalog c1 WHERE c1.pid = p.pid);

```
20001|Acme Widget
20004|Acme Widget
20005|Acme Widget
20001|Johns
20002|Johns
20003|Reliance

[Program exited with exit code 0]
```

DBMS LAB 4 :-

```
CREATE TABLE student(  snum INT,  sname VARCHAR(20),  major VARCHAR(10),  lvl VARCHAR(2),  age
INT,
 PRIMARY KEY(snum)
);
CREATE TABLE
class(  cname
VARCHAR(20),
meets_at
TIME(0),  room
VARCHAR(10),
 fid INT,
 PRIMARY KEY(cname),
 FOREIGN KEY(fid) REFERENCES faculty(fid)
 ON UPDATE CASCADE ON DELETE CASCADE
);
CREATE TABLE
enrolled(
snum INT,
cname
VARCHAR(20),
 PRIMARY KEY(snum,cname),
 FOREIGN KEY(snum) REFERENCES student(snum)
 ON UPDATE CASCADE ON DELETE CASCADE,
 FOREIGN KEY(cname) REFERENCES class(cname)
 ON UPDATE CASCADE ON DELETE CASCADE
);CREATE TABLE faculty(
 fid INT,
 fname VARCHAR(20),
 deptid INT,
```

```
 PRIMARY KEY(fid)
);
INSERT INTO student (snum,sname,major,lvl,age) VALUES
(1, 'hari', 'MATH', 'FR', 18),
(2, 'mahantesh', 'MATH', 'SR', 18),
(3, 'shreshtha', 'TFCS', 'SR', 19),
(4, 'subhas', 'TFCS', 'FR', 19),
(5, 'saquib', 'DBMS', 'JR', 20),
(6, 'krishan', 'DBMS', 'JR', 21),
(7, 'jaques', 'ADA', 'SR', 21),
(8, 'ashutosh' , 'MATH', 'FR', 18),
(9, 'divyanshu' , 'MATH', 'JR', 21),
(10, 'derek' , 'MATH', 'SR', 19);
INSERT INTO class (cname,meets_at,room,fid) VALUES
('A', '01:02:00',
'R124', 1), ('B',
'02:02:00', 'R125',
2), ('C', '03:02:00',
'R126', 3),
('D', '03:02:00',
'R125', 4), ('G',
'06:02:00', 'R126', 4),
('H', '01:02:00',
'R127', 4),
('F', '05:02:00', 'R124', 4),
('E', '04:02:00', 'R128', 4);INSERT INTO enrolled (snum,cname) VALUES
(1, 'A'),
(
2
,
'
```

```
B
'
)
,
(
3
,
'
C
'
)
,
(3, 'D'),
(4, 'D'),
(5, 'E'),
(6, 'A'),
(7, 'B');
INSERT INTO faculty (fid,fname,deptid) VALUES
(1, 'RAM', 1),
(2, 'SHYAM', 2),
(3, 'TOM', 3),
(4, 'DOM', 4);

SELECT * FROM student;
```

```
1|hari|MATH|FR|18
2|mahantesh|MATH|SR|18
3|shreshtha|TFCS|SR|19
4|subhas|TFCS|FR|19
5|saquib|DBMS|JR|20
6|krishan|DBMS|JR|21
7|jaques|ADA|SR|21
8|ashutosh|MATH|FR|18
9|divyanshu|MATH|JR|21
10|derek|MATH|SR|19

[Program exited with exit code 0]
```

SELECT * FROM class;

```
A|01:02:00|R124|1
B|02:02:00|R125|2
C|03:02:00|R126|3
D|03:02:00|R125|4
G|06:02:00|R126|4
H|01:02:00|R127|4
F|05:02:00|R124|4
E|04:02:00|R128|4

[Program exited with exit code 0]
```

SELECT * FROM enrolled;

```
1|A
2|B
3|C
3|D
4|D
5|E
6|A
7|B

[Program exited with exit code 0]
```

SELECT * FROM faculty;

```
1|RAM|1
2|SHYAM|2
3|TOM|3
4|DOM|4

[Program exited with exit code 0]
```

i. Find the names of all Juniors (level = JR) who are enrolled in a class taught by RAM. SELECT DISTINCT s.sname FROM student s, class c, enrolled e, faculty f WHERE s.snum = e.snum AND e.cname = c.cname AND c.fid = f.fid AND f.fname = 'RAM' AND s.lvl = 'JR';

```
krishan

[Program exited with exit code 0]
```

ii. Find the names of all classes that either meet in room R128 or have five or more

Students enrolled. SELECT c.cname FROM class c WHERE c.room = 'R128' OR c.cname IN (SELECT e.cname FROM enrolled e GROUP BY e.cname HAVING COUNT (e.snum)>4);

```
E

[Program exited with exit code 0]
```

iii. Find the names of all students who are enrolled in two classes that meet at the same time. SELECT DISTINCT s.sname FROM student s WHERE s.snum IN (SELECT e1.snum FROM enrolled e1, enrolled e2, class c1, class c2 WHERE e1.snum = e2.snum AND e1.cname <> e2.cname AND e1.cname = c1.cname AND e2.cname = c2.cname AND c1.meets_at = c2.meets_at);

```
shreshtha

[Program exited with exit code 0]
```

iv. Find the names of faculty members who teach in every room in which some class is taught. SELECT DISTINCT f.fname FROM faculty f WHERE NOT EXISTS(SELECT c.room FROM class c EXCEPT SELECT c1.room FROM class c1 WHERE c1.fid = f.fid);

```
DOM

[Program exited with exit code 0]
```

v. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five. SELECT DISTINCT f.fname FROM faculty f WHERE 5>(SELECT COUNT(e.snum) FROM Class c, enrolled e WHERE c.cname = e.cname AND c.fid = f.fid);

```
RAM
SHYAM
TOM
DOM

[Program exited with exit code 0]
```

vi. Find the names of students who are not enrolled in any class. SELECT DISTINCT s.sname FROM student s WHERE s.snum NOT IN(SELECT e.snum FROM enrolled e);

```
ashutosh
divyanshu
derek

[Program exited with exit code 0]
```

vii. For each age value that appears in Students, find the level value that appears most
often. For example, if there are more FR level students aged 18 than SR, JR, or SO students aged 18, you should print the pair (18, FR). SELECT s.age, s.lvl FROM student s GROUP BY s.age, s.lvl HAVING s.lvl IN (SELECT s1.lvl FROM student s1 WHERE s1.age=s.age GROUP BY s1.age, s1.lvl HAVING COUNT(*) >= ALL (SELECT COUNT(*)
FROM student s2 WHERE s1.age=s2.age GROUP BY s2.lvl, s2.age)) ORDER BY s.age;

	age	lvl
1	18	FR
2	19	SR
3	20	JR
4	21	JR

DBMS LAB 5 :-

```
CREATE TABLE flight(
'flno' INT,
'from' VARCHAR(20),
'to' VARCHAR(20),
'distance' INT,
'departs' VARCHAR(20),
'arrives' VARCHAR(20),
'price' REAL,
PRIMARY KEY('flno'));
CREATE TABLE aircraft(
'aid' INT,
'aname' VARCHAR(20),
'cruisingrange' INT,
PRIMARY KEY('aid'));
CREATE TABLE employees(
'eid' INT,
'ename' VARCHAR(20),
'salary' INT,
PRIMARY KEY('eid'));
CREATE TABLE certified(
'eid' INT, 'aid'
INT,
PRIMARY KEY('eid','aid'),
FOREIGN KEY ('eid') REFERENCES employees('eid')
ON DELETE CASCADE ON UPDATE CASCADE,
FOREIGN KEY ('aid') REFERENCES aircraft('aid')ON DELETE CASCADE ON UPDATE CASCADE);
INSERT INTO flight VALUES
(1,'Mumbai','Bangaluru',360,'10:45:00','12:00:00',10000),
(2,'Bangaluru','Delhi',1700,'12:15:00','04:30:00',5000),
```

```
(3,'Mumbai','Sydney',3500,'02:15:00','05:25:00',30000),
(4,'Delhi','Mumbai',1300,'10:15:00','12:05:00',4500),
(5,'Delhi','Frankfurt',18000,'07:15:00','05:30:00',90000),
(6,'Bangaluru','Frankfurt',19500,'10:00:00','07:45:00',95000),
(7,'Bengaluru','Frankfurt',17000,'12:00:00','06:30:00',99000),
(8,'Madison','Chicago',236,'12:00:00','13:00:00',5000),
(9,'Chicago','New York',1281,'15:00:00','17:30:00',15000),
(10,'Madison','New York',1514,'13:00:00','16:30:00',25000);
INSERT INTO aircraft VALUES
(111,'Airbus',1000),
(222,'Boeing',5000),
(333,'Jet01',5000),
(444,'Airbus380',8000),
(559,'Boeing747',500),
(880,'AirbusA310',800),
(909,'Concorde',1000);
INSERT INTO employees VALUES
(1,'Santino',30000),
(2,'Ajith',85000),
(3,'Krishan',50000),
(4,'Joseph',45000),
(5,'Abhimanyu',90000),
(6,'Ryan',75000),(7,'Ram',100000);
INSERT INTO certified VALUES
(1,111),
(2,111),
(1,222),
(5,222),
(7,222),
(1,333),
(2,333),
```

(1,444),

(2,444),

(4,444),

(6,559),

(3,559),

(5,880),

(6,880),

(3,909),

(1,909),

(1,880);

SELECT * FROM flight;

```
1|Mumbai|Bangaluru|360|10:45:00|12:00:00|10000.0
2|Bengaluru|Delhi|1700|12:15:00|04:30:00|5000.0
3|Mumbai|Sydney|3500|02:15:00|05:25:00|30000.0
4|Delhi|Mumbai|1300|10:15:00|12:05:00|4500.0
5|Delhi|Frankfurt|18000|07:15:00|05:30:00|90000.0
6|Bangaluru|Frankfurt|19500|10:00:00|07:45:00|95000.0
7|Bengaluru|Frankfurt|17000|12:00:00|06:30:00|99000.0
8|Madison|Chicago|236|12:00:00|13:00:00|5000.0
9|Chicago|New York|1281|15:00:00|17:30:00|15000.0
10|Madison|New York|1514|13:00:00|16:30:00|25000.0

[Program exited with exit code 0]
```

SELECT * FROM aircraft;

```
111|Airbus|1000
222|Boeing|5000
333|Jet01|5000
444|Airbus380|8000
559|Boeing747|500
880|AirbusA310|800
909|Concorde|1000

[Program exited with exit code 0]
```

SELECT * FROM employees;

```
1|Santino|30000
2|Ajith|85000
3|Krishan|50000
4|Joseph|45000
5|Abhimanyu|90000
6|Ryan|75000
7|Ram|100000

[Program exited with exit code 0]
```

SELECT * FROM certified;

```
1|111
1|222
1|333
1|444
1|880
1|909
2|111
2|333
2|444
3|559
3|909
4|444
5|222
5|880
6|559
6|880
7|222

[Program exited with exit code 0]
```

• Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000. SELECT DISTINCT a.aname FROM certified c, employees e, aircraft a WHERE c.eid=e.eid AND c.aid=a.aid AND e.salary>80000;

```
Airbus
Jet01
Airbus380
Boeing
AirbusA310

[Program exited with exit code 0]
```

- For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified. SELECT c.eid, MAX(a.cruisingrange) FROM certified c, aircraft a WHERE c.aid = a.aid GROUP BY c.eid HAVING COUNT(a.aname)>3;

```
1|8000

[Program exited with exit code 0]
```

- Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt. SELECT DISTINCT e.ename FROM employees e WHERE e.salary

```
Santino
Ajith
Krishan
Joseph
Abhimanyu
Ryan

[Program exited with exit code 0]
```

- For all aircraft with cruisingrange over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft. SELECT a.aname,AVG(e.salary) FROM aircraft a,certified c,employees e WHERE a.aid=c.aid AND c.eid=e.eid AND a.cruisingrange>1000 GROUP BY a.aname;

```
Airbus380|53333.3333333333
Boeing|73333.3333333333
Jet01|57500.0

[Program exited with exit code 0]
```

- Find the names of pilots certified for some Boeing aircraft. SELECT DISTINCT e.ename FROM employees e,aircraft a,certified c WHERE e.eid=c.eid AND c.aid=a.aid AND a.aname like 'Boeing%';

```
Santino
Abhimanyu
Ram
Krishan
Ryan

[Program exited with exit code 0]
```

- Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi. SELECT a.aid FROM aircraft a WHERE a.cruisingrange>(SELECT MIN(f.distance) FROM flight f WHERE f.'from'='Bangaluru' AND f.'to'='Delhi');

```
222
333
444

[Program exited with exit code 0]
```

- A customer wants to travel from Madison to New York with no more than two changes of flight. List the choice of departure times from Madison if the customer wants to arrive in New York by 6 p.m.

```
SELECT f.departs FROM flight f WHERE f.'from'= 'Madison' AND f.'to'= 'New York' AND time(f.arrives)<'18:00:00'
UNION SELECT f1.departs FROM flight f1 INNER JOIN flight f2 ON f1.'to' = f2.'from' WHERE f1.'from'= 'Madison' AND f2.'to' = 'New York' AND time(f1.arrives) < time(f2.departs) AND time(f2.arrives) < '18:00:00'
UNION
SELECT f3.departs FROM flight f3 INNER JOIN flight f4 ON f3.'to' = f4.'from' INNER JOIN flight f5 ON f4.'to' = f5.'from' WHERE f3.'from'= 'Madison' AND f5.'to' = 'New York' AND time(f3.arrives) < time(f4.departs) AND time(f4.arrives) < time(f5.departs) AND time(f5.arrives) < '18:00:00';
```