LAB RECORD

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USN : 1BM19CS182 **Course Name**:DBMS LAB

1. LAB PROGRAM 1 (INSURANCE DATABASE):-

Queries:

```
create
database
insurance;
```

```
use insurance;

create table person(
       driver_id varchar(10),
    name varchar(20),
       address varchar(30),
       primary key(driver_id)
);

desc person;

create table car(
       reg_num varchar(10),
       model varchar(10),
       year int,
       primary key(reg_num)
);

desc car;

create table accident(
       report_num int,
       accident_date date,
       location varchar(20),
       primary key(report_num)
);

create table owns(
       driver_id varchar(10),
       reg_num varchar(10),
       primary key(driver_id,reg_num),
```

```
        foreign key(driver_id) references person(driver_id),
        foreign key(reg_num) references car(reg_num)
);

desc owns;

create table participated(
        driver_id varchar(10),
        reg_num varchar(10),
        report_num int,
        damage_amount int,
        primary key(driver_id,reg_num,report_num),
        foreign key(driver_id) references person(driver_id),
        foreign key(reg_num) references car(reg_num),
        foreign key(report_num) references accident(report_num)
);

desc participated;

insert into person values('A01','Richard',' Srinivas Nagar');
insert into person values('A02','Pradeep','Rajajinagar');
insert into person values('A03','Smith','Ashoknagar');
insert into person values('A04','Venu','N.R.Colony');
insert into person values('A05','John','Hanumanth Nagar');

commit;

select * from person;

insert into car values('KA031181','Lancer',1957);
insert into car values('KA041702','Audi',2005);
insert into car values('KA043408','Honda',2008);
insert into car values('KA052250','Indica',1990);
insert into car values('KA095477','Toyota',1998);

commit;

select * from car;


insert into accident values(11,'2001-01-03','Mysore Road');
insert into accident values(12,'2021-01-03','Southend Circle');
insert into accident values(13,'2020-03-03',' Bulltemple Road');
insert into accident values(14,' 2017-02-08',' Mysore Road');
insert into accident values(15,'2004-03-05','Kanakpura Road');
commit;

select * from accident;

insert into owns values ('A01','KA052250');
```

```
insert into owns values ('A02','KA043408');
insert into owns values ('A03','KA031181');
insert into owns values ('A04','KA095477');
insert into owns values ('A05','KA041702');
commit;

select * from owns;

insert into participated values ('A01','KA052250',11, 25000);
insert into participated values ('A02','KA043408',12, 50000);
insert into participated values ('A03','KA031181',13, 25000);
insert into participated values ('A04','KA095477',14, 3000);
insert into participated values ('A05','KA041702',15, 5000);
commit;

select * from participated;

update participated
set damage_amount = 2500
where reg_num='KA031111';

select * from participated;

insert into accident values(101,'2020-12-01','Xavier Road');
insert into participated values('A01','KA031111',101, 1001);
commit;
select * from accident;
select * from participated;

insert into car values('KA01010', 'Accord', 2002);
insert into owns values('A02', 'KA01010');
insert into accident values(200, '2008-12-01', 'Pinto Road');
insert into participated values('A02', 'KA01010', 200, 500);
commit;

select * from car;
select * from owns;
select * from accident;
select * from participated;

select count(*) from accident where year(accident_date)=2008;
select count(*) from participated where reg_num in ( select reg_num
from car where model="Accord");
```

report_num	accident_date	location
11	2001-01-03	Mysore Road
12	2002-02-04	Southend Circle
13	2021-01-03	Bulltemple Road
14	2017-02-08	Mysore Road
15	2004-03-05	Kanakpura Road
NULL	NULL	NULL

Accident Table

report_num	accident_date	location
11	2001-01-03	Mysore Road
12	2002-02-04	Southend Circle
13	2021-01-03	Bulltemple Road
14	2017-02-08	Mysore Road
15	2004-03-05	Kanakpura Road
16	2020-12-01	Xavier Road
200	2008-12-01	Pinto Road
NULL	NULL	NULL

Accident Final Table

reg_num	model	year
KA031181	Lancer	1957
KA041702	Audi	2005
KA043408	Honda	2008
KA052250	Indica	1990
KA095477	Toyota	1998
NULL	NULL	NULL

Car Table

	reg_num	model	year
▶	KA01010	Accord	2002
	KA031181	Lancer	1957
	KA041702	Audi	2005
	KA043408	Honda	2008
	KA052250	Indica	1990
	KA095477	Toyota	1998
*	NULL	NULL	NULL

Car Final Table

	driver_id	reg_num
▶	A03	KA031181
	A05	KA041702
	A02	KA043408
	A01	KA052250
	A04	KA095477
*	NULL	NULL

Owns Table

	driver_id	reg_num
▶	A02	KA01010
	A03	KA031181
	A05	KA041702
	A02	KA043408
	A01	KA052250
	A04	KA095477
*	NULL	NULL

Owns Final Table

	driver_id	reg_num	report_num	damage_amount
▶	A01	KA052250	11	10000
	A02	KA043408	12	50000
	A03	KA031181	13	25000
	A04	KA095477	14	3000
	A05	KA041702	15	5000
*	NULL	NULL	NULL	NULL

Participated Table

	driver_id	reg_num	report_num	damage_amount
▶	A01	KA052250	11	25000
	A01	KA052250	16	1001
	A02	KA01010	200	500
	A02	KA043408	12	50000
	A03	KA031181	13	25000
	A04	KA095477	14	3000
	A05	KA041702	15	5000
*	NULL	NULL	NULL	NULL

Participated Table Final

	driver_id	name	address
▶	A01	Richard	Srinivas Nagar
	A02	Pradeep	Rajajinagar
	A03	Smith	Ashoknagar
	A04	Venu	N.R.Colony
	A05	John	Hanumanth Nagar
*	NULL	NULL	NULL

Person Table

2. LAB PROGRAM 2 (BANK DATABASE):-

Queries:

```
create database bank;
use bank;

create table branch (
       branch_name varchar(25),
    branch_city varchar(15),
    assets int,
    primary key (branch_name)
);

create table bank_account (
       accno int,
    branch_name varchar(25),
    balance int,
    primary key (accno),
    foreign key (branch_name) references branch(branch_name)
);

create table bank_customer (
       customer_name varchar(10),
    customer_street varchar(25),
    customer_city varchar(15),
    primary key (customer_name)
);

create table depositer (
       customer_name varchar(10),
       accno int,
    primary key(customer_name, accno),
    foreign key (customer_name) references bank_customer(customer_name),
    foreign key (accno) references bank_account(accno)
);

create table loan (
       loan_number int,
    branch_name varchar(25),
    amount int,
    primary key (loan_number),
    foreign key (branch_name) references branch(branch_name)
);
```

```
insert into branch values('SBI_Chamrajpet', 'Bangalore', 50000);
insert into branch values('SBI_ResidencyRoad', 'Bangalore', 10000);
insert into branch values('SBI_ShivajiRoad', 'Bombay', 20000);
insert into branch values('SBI_ParliamentRoad', 'Delhi', 10000);
insert into branch values('SBI_Jantarmantar', 'Delhi', 20000);
commit;

insert into bank_account values(1, 'SBI_Chamrajpet', 2000);
insert into bank_account values(2, 'SBI_ResidencyRoad', 5000);
insert into bank_account values(3, 'SBI_ShivajiRoad', 6000);
insert into bank_account values(4, 'SBI_ParliamentRoad', 9000);
insert into bank_account values(5, 'SBI_Jantarmantar', 8000);
insert into bank_account values(6, 'SBI_ShivajiRoad', 4000);
insert into bank_account values(8, 'SBI_ResidencyRoad', 4000);
insert into bank_account values(9, 'SBI_ParliamentRoad', 3000);
insert into bank_account values(10, 'SBI_ResidencyRoad', 5000);
insert into bank_account values(11, 'SBI_Jantarmantar', 2000);
commit;

insert into bank_customer values ('Avinash', 'Bull_Temple_Road',
'Bangalore');
insert into bank_customer values ('Dinesh', 'Bannergatta_Road',
'Bangalore');
insert into bank_customer values ('Mohan', 'National_College_Road',
'Bangalore');
insert into bank_customer values ('Nikhil', 'Akbar_Road', 'Delhi');
insert into bank_customer values ('Ravi', 'Prithviraj_Road', 'Delhi');
commit;

insert into depositer values('Avinash', 1);
insert into depositer values('Dinesh', 2);
insert into depositer values('Nikhil', 4);
insert into depositer values('Ravi', 5);
insert into depositer values('Avinash', 8);
insert into depositer values('Nikhil', 9);
insert into depositer values('Dinesh', 10);
insert into depositer values('Nikhil', 11);
commit;

insert into loan values(1, 'SBI_Chamrajpet', 1000);
insert into loan values(2, 'SBI_ResidencyRoad', 2000);
insert into loan values(3, 'SBI_ShivajiRoad', 3000);
insert into loan values(4, 'SBI_ParliamentRoad', 4000);
insert into loan values(5, 'SBI_Jantarmantar', 5000);
commit;


select * from branch;
select * from bank_account;
```

```
select * from bank_customer;
select * from depositer;
select * from loan;
```

accno	branch_name	balance
1	SBI_Chamrajpet	2000
2	SBI_ResidencyRoad	5000
4	SBI_ParliamentRoad	9000
5	SBI_Jantarmantar	8000
8	SBI_ResidencyRoad	4000
9	SBI_ParliamentRoad	3000
10	SBI_ResidencyRoad	5000
11	SBI_Jantarmantar	2000
NULL	NULL	NULL

Bank Account Table

Result Grid | Filter Rows: | Edit:

customer_name	customer_street	customer_city
Avinash	Bull_Temple_Road	Bangalore
Dinesh	Bannergatta_Road	Bangalore
Mohan	National_College_Road	Bangalore
Nikhil	Akbar_Road	Delhi
Ravi	Prithviraj_Road	Delhi
NULL	NULL	NULL

Bank Customer Table

branch_name	branch_city	assets
SBI_Chamrajpet	Bangalore	50000
SBI_Jantarmantar	Delhi	20000
SBI_ParliamentRoad	Delhi	10000
SBI_ResidencyRoad	Bangalore	10000
SBI_ShivajiRoad	Bombay	20000
NULL	NULL	NULL

Branch Table

customer_name	accno
Avinash	1
Dinesh	2
Nikhil	4
Ravi	5
Avinash	8
Nikhil	9
Dinesh	10
Nikhil	11
NULL	NULL

Depositor Table

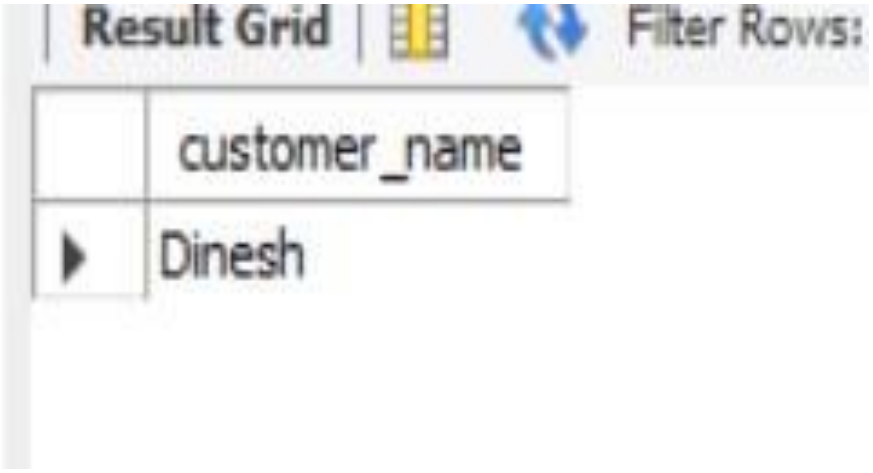
loan_number	branch_name	amount
1	SBI_Chamrajpet	1000
2	SBI_ResidencyRoad	2000
3	SBI_ShivajiRoad	3000
4	SBI_ParliamentRoad	4000
5	SBI_Jantarmantar	5000
NULL	NULL	NULL

Loan Table

Query 3 :

```
use bank;

select distinct c.customer_name

from bank_customer c,bank_account b

where exists(select d.customer_name,count(d.customer_name)

from depositer d,bank_account ba
where ba.accno = d.accno and

c.customer_name = d.customer_name and ba.branch_name = 'SBI_ResidencyRoad'
group by d.customer_name having count(d.customer_name)>=2);
```

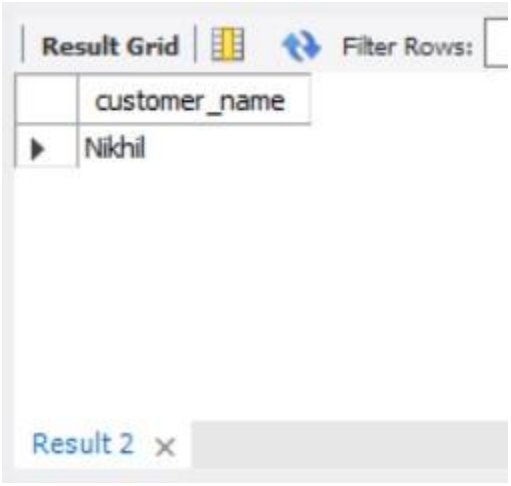
Output:



Query 4:

```
use bank;

select d.customer_name from depositer d,branch b,bank_account a
where b.branch_name=a.branch_name
AND a.accno=d.accno and
branch_city='Delhi' group
by d.customer_name
 HAVING COUNT(distinct b.branch_name)=(
            SELECT COUNT(branch_name)
            FROM branch
            WHERE branch_city='Delhi');
```

Output:



Query 5:

```
delete from bank_account
 where branch_name in
```

(select branch_name from branch where branch_city = 'Bombay');

select * from bank_account;

Output:

	accno	branch_name	balance
▶	1	SBI_Chamrajpet	2000
	2	SBI_ResidencyRoad	5000
	4	SBI_ParliamentRoad	9000
	5	SBI_Jantarmantar	8000
	8	SBI_ResidencyRoad	4000
	9	SBI_ParliamentRoad	3000
	10	SBI_ResidencyRoad	5000
	11	SBI_Jantarmantar	2000
*	NULL	NULL	NULL

3. LAB PROGRAM 3 (SUPPLIER DATABASE):-

QUERIES:

```
create
database
supplier;
```

```
use supplier;
create table suppliers(
       sid int primary key,
    sname varchar(30),
    address varchar(30)
);
create table parts(
       pid int primary key,
    pname varchar(30),
    color varchar(30)
);
create table catalog (
       sid int ,
    pid int ,
```

```
    cost real,
    constraint c_sid foreign key(sid) references suppliers(sid) ,
    constraint c_pid foreign key(pid) references parts(pid)
);
insert into suppliers values(1,'Acme Widget','kolkata') ;
insert into suppliers values(2,'Tata','bengaluru') ;
insert into suppliers values(3,'Reebok','delhi') ;
insert into suppliers values(4,'Nike','delhi') ;
insert into suppliers values(5,'Reliance','delhi') ;


insert into parts values(1,'paint','red') ;
insert into parts values(2,'steel','black') ;
insert into parts values(3,'spray','red') ;
insert into parts values(4,'sheet','green');
insert into parts values(5,'tiles','blue');
delete from parts where pid=5;

insert into catalog values(1,1,100);
insert into catalog values(1,2,200);
insert into catalog values(1,3,200);
insert into catalog values(1,4,100);
insert into catalog values(2,1,300);
insert into catalog values(2,2,100);
insert into catalog values(3,2,90);
insert into catalog values(3,3,110);
insert into catalog values(3,4,110);
insert into catalog values(4,1,100);
insert into catalog values(4,3,120);
insert into catalog values(4,4,130);

select * from catalog;
select * from parts;
```

Catalogue Table:

sid	pid	cost
10001	20001	10
10001	20002	10
10001	20003	30
10001	20004	10
10001	20005	10
10002	20001	10
10002	20002	20
10003	20003	30
10004	20003	40
NULL	NULL	NULL

Parts table :

pid	pname	color
20001	Book	Red
20002	Pen	Red
20003	Pencil	Green
20004	Mobile	Green
20005	Charger	Black
NULL	NULL	NULL

Suppliers Table:

sid	sname	address
10001	Acme Widget	Bangalore
10002	Johns	Kolkata
10003	Vimal	Mumbai
10004	Reliance	Delhi
NULL	NULL	NULL

ADDITIONAL QUERIES

Query 1:

```
SELECT DISTINCT P.pname
FROM Parts P, Catalog C
WHERE P.pid = C.pid;
```

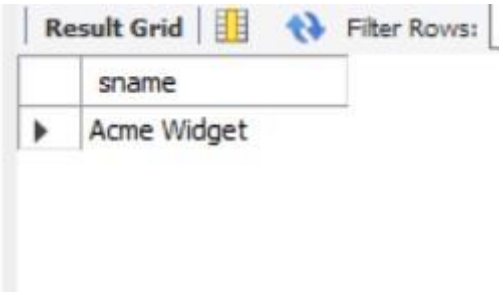
Output:

pname
Book
Pen
Pencil
Mobile
Charger

Query 2:

```
select S.sname from SUPPLIERS S where not exists

(select P.pid from PARTS P where not exists
```

Output:



Query 3:

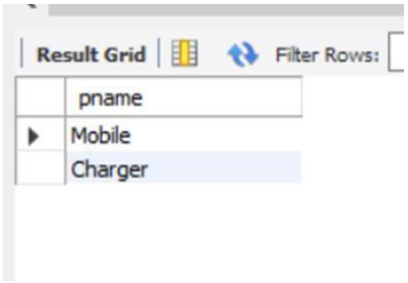
```
select S.sname from SUPPLIERS S where not exists

 (select P.pid from PARTS P where P.color = 'Red' and

 (not exists (select C.sid from CATALOG C where C.sid = S.sid and C.pid = P.pid)));
```

Output:

Query 4:

```
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');
  (select C.sid from CATALOG C where C.sid = S.sid and C.pid = P.pid));
```

Output:



Query 5:

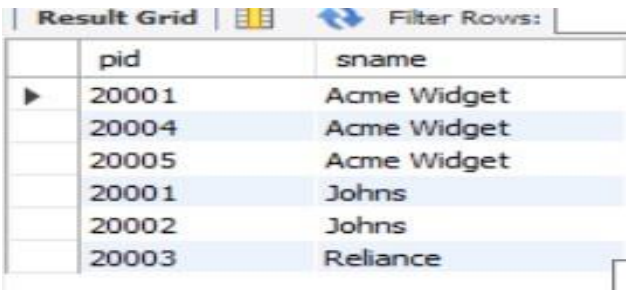
```
SELECT DISTINCT C.sid FROM Catalog C
WHERE C.cost > ( SELECT AVG (C1.cost)
FROM Catalog C1
WHERE C1.pid = C.pid );
```

Output:

sid
10002
10004

Query 6:

```
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);
```



Result Grid | Filter Rows:

pid	sname
20001	Acme Widget
20004	Acme Widget
20005	Acme Widget
20001	Johns
20002	Johns
20003	Reliance

4. LAB PROGRAM 4 (STUDENT FACULTY DATABASE):-

Queries:

```
CREATE DATABASE
student_faculty;
```

```
USE student_faculty;
CREATE TABLE student(
       snum INT,
       sname VARCHAR(10),
       major VARCHAR(2),
       lvl VARCHAR(2),
       age INT, primary key(snum));

CREATE TABLE faculty(
       fid INT,fname VARCHAR(20),
       deptid INT,
    PRIMARY KEY(fid));

CREATE TABLE class(
       cname VARCHAR(20),
       metts_at TIMESTAMP,
       room VARCHAR(10),
    fid INT,
       PRIMARY KEY(cname),
       FOREIGN KEY(fid) REFERENCES faculty(fid));

CREATE TABLE enrolled(
       snum INT,
       cname VARCHAR(20),
       PRIMARY KEY(snum,cname),
       FOREIGN KEY(snum) REFERENCES student(snum),
       FOREIGN KEY(cname) REFERENCES class(cname));

INSERT INTO STUDENT VALUES(1, 'jhon', 'CS', 'Sr', 19);
INSERT INTO STUDENT VALUES(2, 'Smith', 'CS', 'Jr', 20);
INSERT INTO STUDENT VALUES(3 , 'Jacob', 'CV', 'Sr', 20);
INSERT INTO STUDENT VALUES(4, 'Tom ', 'CS', 'Jr', 20);
INSERT INTO STUDENT VALUES(5, 'Rahul', 'CS', 'Jr', 20);
INSERT INTO STUDENT VALUES(6, 'Rita', 'CS', 'Sr', 21);

INSERT INTO FACULTY VALUES(11, 'Harish', 1000);
INSERT INTO FACULTY VALUES(12, 'MV', 1000);
INSERT INTO FACULTY VALUES(13 , 'Mira', 1001);
INSERT INTO FACULTY VALUES(14, 'Shiva', 1002);
INSERT INTO FACULTY VALUES(15, 'Nupur', 1000);
```

```
insert into class values('class1', '12/11/15 10:15:16', 'R1', 14);
insert into class values('class10', '12/11/15 10:15:16', 'R128',
14);
insert into class values('class2', '12/11/15 10:15:20', 'R2', 12);
insert into class values('class3', '12/11/15 10:15:25', 'R3', 11);
insert into class values('class4', '12/11/15 20:15:20', 'R4', 14);
insert into class values('class5', '12/11/15 20:15:20', 'R3', 15);
insert into class values('class6', '12/11/15 13:20:20', 'R2', 14);
insert into class values('class7', '12/11/15 10:10:10', 'R3', 14);

insert into enrolled values(1, 'class1');
insert into enrolled values(2, 'class1');
insert into enrolled values(3, 'class3');
insert into enrolled values(4, 'class3');
insert into enrolled values(5, 'class4');
insert into enrolled values(1, 'class5');
insert into enrolled values(2, 'class5');
insert into enrolled values(3, 'class5');
insert into enrolled values(4, 'class5');
insert into enrolled values(5, 'class5');
```

Class Table:

cname	metts_at	room	fid
class4	2012-11-15 20:15:20	R4	14
class5	2012-11-15 20:15:20	R3	15
class6	2012-11-15 13:20:20	R2	14
class3	2012-11-15 10:15:25	R3	11
class2	2012-11-15 10:15:20	R2	12
class1	2012-11-15 10:15:16	R1	14
class10	2012-11-15 10:15:16	R128	14
class7	2012-11-15 10:10:10	R3	14
NULL	NULL	NULL	NULL

Enrolled Table:

snum	cname
1	class1
2	class1
3	class3
4	class3
5	class4
1	class5
2	class5
3	class5
4	class5
5	class5
NULL	NULL

Faculty Table:

fid	fname	deptid
11	Harish	1000
12	MV	1000
13	Mira	1001
14	Shiva	1002
15	Nupur	1000
NULL	NULL	NULL

Student Table:

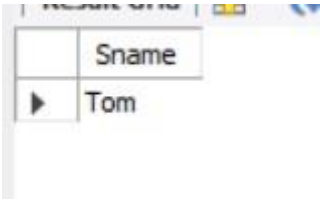
snum	sname	major	lvl	age
1	jhon	CS	Sr	19
2	Smith	CS	Jr	20
3	Jacob	CV	Sr	20
4	Tom	CS	Jr	20
5	Rahul	CS	Jr	20
6	Rita	CS	Sr	21
NULL	NULL	NULL	NULL	NULL

ADDITIONAL QUERIES

Query 1:

```
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 = 'Harish' AND S.lvl = 'Jr';
```

Output:

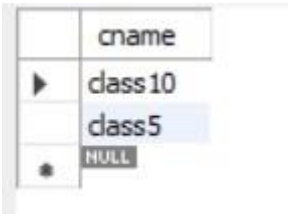


Sname
Tom

Query 2:

```
SELECT DISTINCT cname
FROM class
WHERE room='R128'
OR
cname IN (SELECT e.cname FROM enrolled e GROUP BY e.cname HAVING COUNT(*)>=5);
```

Output:



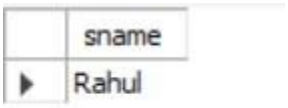
cname
class10
class5
NULL

Query 3:

```
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.metts_at = C2.metts_at);
```

Output:



	sname
▶	Rahul

Query 4:

```
SELECT f.fname,f.fid
FROM faculty f
WHERE f.fid in ( SELECT fid FROM class
GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class) );
```

Output:

	fname	fid
▶	Shiva	14
*	NULL	NULL

Query 5:

```
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);
```

Output:

	fname
▶	Harish
	MV
	Mira
	Shiva

Query 6:

```
SELECT DISTINCT S.sname
FROM Student S
WHERE S.snum NOT IN (SELECT E.snum
FROM Enrolled E );
```

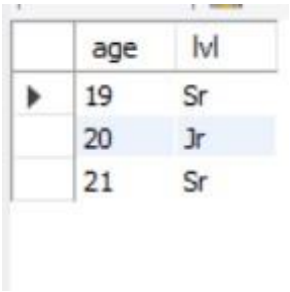
Output:

	sname
▶	Rita

Query 7:

```
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;
```

Output:



	age	lvl
▶	19	Sr
	20	Jr
	21	Sr

5. LAB PROGRAM 5 (FLIGHT DATABASE):-

Queries:

```
create
database
flightdb;
```

```
use flightdb;

create table flights(
       flno int,
    fromplace varchar(15),
    toplace varchar(15),
    distance int,
    departs datetime,
    arrives datetime,
    price int,
    primary key (flno)
);
desc flights;
create table aircraft(
       aid int,
    aname varchar(15),
    cruisingrange int,
    primary key (aid)
);
desc aircraft;
create table employees (
       eid int,
    ename varchar(15),
    salary int,
    primary key (eid)
);
desc employees;
create table certified (
       eid int,
    aid int,
    foreign key (eid) references employees(eid),
    foreign key (aid) references aircraft(aid)
);
desc certified;
insert into flights values(101, 'Bangalore', 'Delhi', 2500, '2005-05-13
07:15:31', '2005-05-13 18:15:31', 5000);
insert into flights values(102, 'Bangalore', 'Lucknow', 3000, '2013-05-05
07:15:31', '2013-05-05 11:15:31', 6000);
insert into flights values(103, 'Lucknow', 'Delhi', 500, '2013-05-05
12:15:31', '2013-05-05 17:15:31', 3000);
```

```
insert into flights values(107, 'Bangalore', 'Frankfurt', 8000, '2013-05-
05 07:15:31', '2013-05-05 22:15:31', 60000);
insert into flights values(104, 'Bangalore', 'Frankfurt', 8500, '2013-05-
05 07:15:31', '2013-05-05 23:15:31', 75000);
insert into flights values(105, 'Kolkata', 'Delhi', 3400, '2013-05-05
07:15:31', '2013-05-05 09:15:31', 7000);
insert into flights values(106, 'Bangalore', 'Kolkata', 1000, '2013-05-05
01:15:30', '2013-05-05 09:20:30', 10000);
insert into flights values(108, 'Lucknow', 'Kolkata', 1000, '2013-05-05
11:30:30', '2013-05-05 15:20:30', 10000);

commit;

select * from flights;

insert into aircraft values(101, '747', 3000);
insert into aircraft values(102, 'Boeing', 900);
insert into aircraft values(103, '647', 800);
insert into aircraft values(104, 'Dreamliner', 10000);
insert into aircraft values(105, 'Boeing', 3500);
insert into aircraft values(106, '707', 1500);
insert into aircraft values(107, 'Dream', 120000);
insert into aircraft values(108, '707', 760);
insert into aircraft values(109, '747', 1000);
commit;

select * from aircraft;

insert into employees values(701, 'A', 50000);
insert into employees values(702, 'B', 100000);
insert into employees values(703, 'C', 150000);
insert into employees values(704, 'D', 90000);
insert into employees values(705, 'E', 40000);
insert into employees values(706, 'F', 60000);
insert into employees values(707, 'G', 90000);
commit;

select * from employees;

insert into certified values(701, 101);
insert into certified values(701, 102);
insert into certified values(701, 106);
insert into certified values(701, 105);

insert into certified values(702, 104);
insert into certified values(703, 104);
insert into certified values(704, 104);

insert into certified values(702, 107);
insert into certified values(703, 107);
```

```
insert into certified values(704, 107);

insert into certified values(702, 101);
insert into certified values(702, 108);
insert into certified values(701, 109);
commit;
select * from certified;
```

Aircraft Table :

aid	aname	cruisingrange
101	747	3000
102	Boeing	900
103	647	800
104	Dreamliner	10000
105	Boeing	3500
106	707	1500
107	Dream	120000
108	707	760
109	747	1000
NULL	NULL	NULL

Employees Table:

eid	ename	salary
701	A	50000
702	B	100000
703	C	150000
704	D	90000
705	E	40000
706	F	60000
707	G	90000
NULL	NULL	NULL

Certified Table;

eid	aid
701	101
701	102
701	106
701	105
702	104
703	104
704	104
702	107
703	107
704	107
702	101
702	108
701	109

Flights Table:

flno	fromplace	toplace	distance	departs	arrives	price
101	Bangalore	Delhi	2500	2005-05-13 07:15:31	2005-05-13 18:15:31	5000
102	Bangalore	Lucknow	3000	2013-05-05 07:15:31	2013-05-05 11:15:31	6000
103	Lucknow	Delhi	500	2013-05-05 12:15:31	2013-05-05 17:15:31	3000
104	Bangalore	Frankfurt	8500	2013-05-05 07:15:31	2013-05-05 23:15:31	75000
105	Kolkata	Delhi	3400	2013-05-05 07:15:31	2013-05-05 09:15:31	7000
106	Bangalore	Kolkata	1000	2013-05-05 01:15:30	2013-05-05 09:20:30	10000
107	Bangalore	Frankfurt	8000	2013-05-05 07:15:31	2013-05-05 22:15:31	60000
108	Lucknow	Kolkata	1000	2013-05-05 11:30:30	2013-05-05 15:20:30	10000
NULL	NULL	NULL	NULL	NULL	NULL	NULL

ADDITIONAL QUERIES

Query 1:

```
select distinct a.aname from aircraft a where a.aid in (

        select c.aid from certified c, employees e where
   c.eid = e.eid and not exists(

                select * from employees e1 where e1.eid=e.eid and e1.salary<80000

   )

);
```

Result:

	aname
▶	747
	Dreamliner
	Dream
	707

Query 2:

select max(a.cruisingrange), c.eid from certified c, aircraft a where c.aid = a.aid group by c.eid having count(c.eid)>3;

Result:

	max(a.cruisingrange)	eid
▶	3500	701
	120000	702

Query 3:

select ename from employees where salary <(

select min(price) from flights where fromplace='Bangalore' and toplace='Frankfurt');

Result:

Result Grid

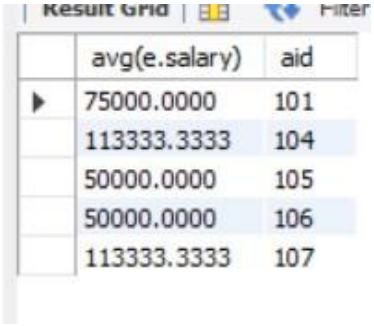
	ename
▶	A
	E

Query 4:

select avg(e.salary), c.aid from certified c, employees e where c.aid in(

select aid from aircraft where cruisingrange>1000) and e.eid = c.eid group by c.aid;

Result:



	avg(e.salary)	aid
▶	75000.0000	101
	113333.3333	104
	50000.0000	105
	50000.0000	106
	113333.3333	107

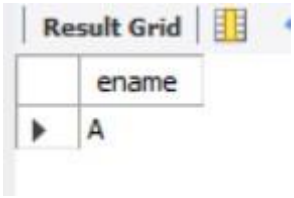
Query 5:

select ename from employees where eid in(

select eid from certified where aid in(

select aid from aircraft where aname = 'Boeing'));

Result:



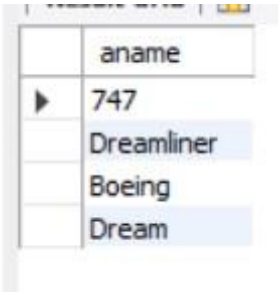
Result Grid

	ename
▶	A

Query 6:

select aname from aircraft where cruisingrange > any (select distance from flights where fromplace='Bangalore' and toplace='Delhi');

Result:



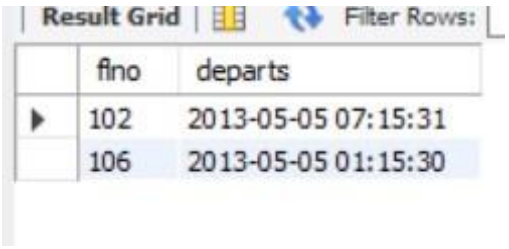
aname
747
Dreamliner
Boeing
Dream

Query 7:

```
SELECT F.flno, F.departs

FROM flights F

WHERE F.flno IN ( ( SELECT F0.flno
 FROM flights F0
WHERE F0.fromplace = 'Bangalore' AND F0.toplace = 'Kolkata'
AND extract(hour from F0.arrives) < 18 )


 UNION
( SELECT F0.flno
 FROM flights F0, flights F1
 WHERE F0.fromplace = 'Bangalore' AND F0.toplace <> 'Kolkata'
 AND F0.toplace = F1.fromplace AND F1.toplace = 'Kolkata'
 AND F1.departs > F0.arrives
 AND extract(hour from F1.arrives) < 18)
 UNION
( SELECT F0.flno
 FROM flights F0, flights F1, flights F2
 WHERE F0.fromplace = 'Bangalore'
 AND F0.toplace = F1.fromplace
```

```
AND F1.toplace = F2.fromplace
AND F2.toplace = 'Kolkata'

AND F0.toplace <> 'Kolkata' AND
F1.toplace <> 'Kolkata' AND
F1.departs > F0.arrives AND
F2.departs > F1.arrives

AND extract(hour from F2.arrives) < 18));
```

Result:



Result Grid | Filter Rows:

fino	departs
102	2013-05-05 07:15:31
106	2013-05-05 01:15:30