

DBMS Lab Record

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Lab 1 - Insurance Database

```
create database insurance;  
use insurance;
```

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

```
desc person;
```

#	Field	Type	Null	Key	Default	Extra
1	driver_id	varchar(10)	NO	PRI	NULL	
2	name	varchar(20)	YES		NULL	
3	address	varchar(30)	YES		NULL	

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

```
desc car;
```

#	Field	Type	Null	Key	Default	Extra
1	reg_num	varchar(10)	NO	PRI	NULL	
2	model	varchar(10)	YES		NULL	
3	year	int	YES		NULL	

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

```
desc accident;
```

#	Field	Type	Null	Key	Default	Extra
1	report_num	int	NO	PRI	NULL	
2	accident_date	date	YES		NULL	
3	location	varchar(20)	YES		NULL	

```

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;

#	Field	Type	Null	Key	Default	Extra
1	driver_id	varchar(10)	NO	PRI	NULL	
2	reg_num	varchar(10)	NO	PRI	NULL	

```

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;

#	Field	Type	Null	Key	Default	Extra
1	driver_id	varchar(10)	NO	PRI	NULL	
2	reg_num	varchar(10)	NO	PRI	NULL	
3	report_num	int	NO	PRI	NULL	
4	damage_amount	int	YES		NULL	

```

insert into person values('A01','Raghu','Electronic City');
insert into person values('A02','Rishab','Orange County');
insert into person values('A03','Rufus','NR Colony');
insert into person values('A04','Jamal','Lawrence Park');
insert into person values('A05','Kevin','Rosedale');

```

commit;

select * from person;

#	driver_id	name	address
1	A01	Raghu	Electronic City
2	A02	Rishab	Orange County
3	A03	Rufus	NR Colony
4	A04	Jamal	Lawrence Park
5	A05	Kevin	Rosedale
*	NULL	NULL	NULL

```

insert into car values('KA031111','Accord',2005);
insert into car values('KA041122','MX-5',2019);
insert into car values('KA051133','Indica',2010);
insert into car values('KA061144','Prius',2015);
insert into car values('KA071155','Camry',2020);
insert into car values('KA01010', 'Accord', 2002);
commit;

```

```
select * from car;
```

#	reg_num	model	year
1	KA01010	Accord	2002
2	KA031111	Accord	2005
3	KA041122	MX-5	2019
4	KA051133	Indica	2010
5	KA061144	Prius	2015
6	KA071155	Camry	2020
*	NULL	NULL	NULL

```

insert into accident values(111,'2020-01-01','NR Road');
insert into accident values(122,'2020-02-02','Dalhousie Road');
insert into accident values(133,'2020-03-03','Henry Road');
insert into accident values(144,'2020-04-04','Beehive Road');
insert into accident values(155,'2020-05-05','Orange Street');
insert into accident values(200, '2008-12-01', 'Pinto Road');
commit;

```

```
select * from accident;
```

#	report_num	accident_date	location
1	111	2020-01-01	NR Road
2	122	2020-02-02	Dalhousie Road
3	133	2020-03-03	Henry Road
4	144	2020-04-04	Beehive Road
5	155	2020-05-05	Orange Street
6	200	2008-12-01	Pinto Road
*	NULL	NULL	NULL

```

insert into owns values ('A01','KA031111');
insert into owns values ('A02','KA041122');
insert into owns values ('A03','KA051133');
insert into owns values ('A04','KA061144');

```

```
insert into owns values ('A05','KA071155');
insert into owns values('A02', 'KA01010');
```

```
commit;
```

```
select * from owns;
```

#	driver_id	reg_num
1	A02	KA01010
2	A01	KA031111
3	A02	KA041122
4	A03	KA051133
5	A04	KA061144
6	A05	KA071155
*	NULL	NULL

```
insert into participated values ('A01','KA031111',111, 10000);
insert into participated values ('A02','KA041122',122, 20000);
insert into participated values ('A03','KA051133',133, 30000);
insert into participated values ('A04','KA061144',144, 40000);
insert into participated values ('A05','KA071155',155, 50000);
```

```
insert into participated values('A02', 'KA01010', 200, 500);
commit;
```

```
select * from participated;
```

#	driver_id	reg_num	report_num	damage_amount
1	A01	KA031111	111	10000
2	A02	KA01010	200	500
3	A02	KA041122	122	20000
4	A03	KA051133	133	30000
5	A04	KA061144	144	40000
6	A05	KA071155	155	50000
*	NULL	NULL	NULL	NULL

participated 21 ❌

```
-- Query 3a
update participated
set damage_amount = 2500
where reg_num='KA031111';
```

```
select * from participated;
```

#	driver_id	reg_num	report_num	damage_amount
1	A01	KA031111	111	2500
2	A02	KA01010	200	500
3	A02	KA041122	122	20000
4	A03	KA051133	133	30000
5	A04	KA061144	144	40000
6	A05	KA071155	155	50000
*	NULL	NULL	NULL	NULL

-- Query 3b

insert into accident values(101,'2020-12-01','Xavier Road');

insert into participated values('A01','KA031111',101, 1001);

commit;

select * from accident;

#	report_num	accident_date	location
1	101	2020-12-01	Xavier Road
2	111	2020-01-01	NR Road
3	122	2020-02-02	Dalhousie Road
4	133	2020-03-03	Henry Road
5	144	2020-04-04	Beehive Road
6	155	2020-05-05	Orange Street
7	200	2008-12-01	Pinto Road
*	NULL	NULL	NULL

select * from participated;

#	driver_id	reg_num	report_num	damage_amount
1	A01	KA031111	101	1001
2	A01	KA031111	111	2500
3	A02	KA01010	200	500
4	A02	KA041122	122	20000
5	A03	KA051133	133	30000
6	A04	KA061144	144	40000
7	A05	KA071155	155	50000
*	NULL	NULL	NULL	NULL

-- Query 4

select count(*) from accident where year(accident_date)=2008;

#	count(*)
1	1

-- Query 5

select count(*) from participated where reg_num in (select reg_num from car where model="Accord");

#	count(*)
1	3

Lab 2 - Bank Database

```
create database bank;
use bank;
```

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

#	Field	Type	Null	Key	Default	Extra
1	branch_name	varchar(25)	NO	PRI	<div>HULL</div>	
2	branch_city	varchar(15)	YES		<div>HULL</div>	
3	assets	int	YES		<div>HULL</div>	

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

#	Field	Type	Null	Key	Default	Extra
1	accno	int	NO	PRI	<div>HULL</div>	
2	branch_name	varchar(25)	YES	MUL	<div>HULL</div>	
3	balance	int	YES		<div>HULL</div>	

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


#	Field	Type	Null	Key	Default	Extra
1	customer_name	varchar(10)	NO	PRI	NULL	
2	customer_street	varchar(25)	YES		NULL	
3	customer_city	varchar(15)	YES		NULL	

```

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)
);
desc depositer;

```

#	Field	Type	Null	Key	Default	Extra
1	customer_name	varchar(10)	NO	PRI	NULL	
2	accno	int	NO	PRI	NULL	

```

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

```

#	Field	Type	Null	Key	Default	Extra
1	loan_number	int	NO	PRI	NULL	
2	branch_name	varchar(25)	YES	MUL	NULL	
3	amount	int	YES		NULL	

```

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_Jantarmanatar', 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_Jantarmanatar', 2000);
commit;

```

```

insert into bank_customer values ('Avinash', 'Bull_Temple_Road', 'Bangalore');
insert into bank_customer values ('Dinesh', 'Bannerghatta_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 depositor values('Avinash', 1);
insert into depositor values('Dinesh', 2);
insert into depositor values('Nikhil', 4);
insert into depositor values('Ravi', 5);
insert into depositor values('Avinash', 8);
insert into depositor values('Nikhil', 9);
insert into depositor values('Dinesh', 10);
insert into depositor 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_Jantarmanatar', 5000);
commit;

```

```

select * from branch;

```

#	branch_name	branch_city	assets
1	SBI_Chamrajpet	Bangalore	50000
2	SBI_Jantarmanatar	Delhi	20000
3	SBI_ParliamentRoad	Delhi	10000
4	SBI_ResidencyRoad	Bangalore	10000
5	SBI_ShivajiRoad	Bombay	20000
*	NULL	NULL	NULL

select * from bank_account;

#	accno	branch_name	balance
1	1	SBI_Chamrajpet	2000
2	2	SBI_ResidencyRoad	5000
3	3	SBI_ShivajiRoad	6000
4	4	SBI_ParliamentRoad	9000
5	5	SBI_Jantarmantar	8000
6	6	SBI_ShivajiRoad	4000
7	8	SBI_ResidencyRoad	4000
8	9	SBI_ParliamentRoad	3000
9	10	SBI_ResidencyRoad	5000
10	11	SBI_Jantarmantar	2000
*	NULL	NULL	NULL

select * from bank_customer;

#	customer_name	customer_street	customer_city
1	Avinash	Bull_Temple_Road	Bangalore
2	Dinesh	Bannergatta_Road	Bangalore
3	Mohan	National_College_Road	Bangalore
4	Nikhil	Akbar_Road	Delhi
5	Ravi	Prithviraj_Road	Delhi
*	NULL	NULL	NULL

select * from depositer;

#	customer_name	accno
1	Avinash	1
2	Dinesh	2
3	Nikhil	4
4	Ravi	5
5	Avinash	8
6	Nikhil	9
7	Dinesh	10
8	Nikhil	11
*	NULL	NULL

select * from loan;

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

-- Query 3

```
select distinct c.customer_name from bank_customer c, bank_account b where exists(select
d.customer_name, count(d.customer_name) from depositor 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);
```

#	customer_name
1	Dinesh

-- Query 4

```
select d.customer_name from depositor 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');
```

#	customer_name
1	Nikhil

-- Query 5

```
delete from bank_account where branch_name in (select branch_name from branch where branch_city = 'Bombay');
```

```
select * from bank_account;
```

#	accno	branch_name	balance
1	1	SBI_Chamrajpet	2000
2	5	SBI_Jantarmantar	8000
3	11	SBI_Jantarmantar	2000
4	4	SBI_ParliamentRoad	9000
5	9	SBI_ParliamentRoad	3000
6	2	SBI_ResidencyRoad	5000
7	8	SBI_ResidencyRoad	4000
8	10	SBI_ResidencyRoad	5000
*	NULL	NULL	NULL

Lab 3 - Supplier Database

```
create database supplierdb;
use supplierdb;
```

```
create table suppliers(
    sid int,
    sname varchar(20),
    city varchar(15),
    primary key (sid)
);
desc suppliers;
```

#	Field	Type	Null	Key	Default	Extra
1	sid	int	NO	PRI	NULL	
2	sname	varchar(20)	YES		NULL	
3	city	varchar(15)	YES		NULL	

```
create table parts (
    pid int,
    pname varchar(15),
    color varchar(10),
    primary key (pid)
);
desc parts;
```

#	Field	Type	Null	Key	Default	Extra
1	pid	int	NO	PRI	NULL	
2	pname	varchar(15)	YES		NULL	
3	color	varchar(10)	YES		NULL	

```
create table catalog(
    sid int,
    pid int,
    cost int,
    primary key(pid, sid),
    foreign key (pid) references parts(pid),
    foreign key (sid) references suppliers(sid)
);
desc catalog;
```

#	Field	Type	Null	Key	Default	Extra
1	sid	int	NO	PRI	NULL	
2	pid	int	NO	PRI	NULL	
3	cost	int	YES		NULL	

```

insert into suppliers values (10001, 'Acme Widget', 'Bangalore');
insert into suppliers values (10002, 'Johns', 'Kolkata');
insert into suppliers values (10003, 'Vimal', 'Mumbai');
insert into suppliers values (10004, 'Reliance', 'Delhi');

```

```

insert into parts value(20001, 'Book', 'Red');
insert into parts value(20002, 'Pen', 'Red');
insert into parts value(20003, 'Pencil', 'Green');
insert into parts value(20004, 'Mobile', 'Green');
insert into parts value(20005, 'Charger', 'Black');

```

```

insert into catalog values(10001,20001,10);
insert into catalog values(10001,20002,10);
insert into catalog values(10001,20003,30);
insert into catalog values(10001,20004,10);
insert into catalog values(10001,20005,10);

```

```

insert into catalog values(10002,20001,10);
insert into catalog values(10002,20002,20);
insert into catalog values(10003,20003,30);
insert into catalog values(10004,20003,40);
commit;

```

select * from parts;

#	pid	pname	color
1	20001	Book	Red
2	20002	Pen	Red
3	20003	Pencil	Green
4	20004	Mobile	Green
5	20005	Charger	Black
*	NULL	NULL	NULL

select * from suppliers;

#	sid	sname	city
1	10001	Acme Widget	Bangalore
2	10002	Johns	Kolkata
3	10003	Vimal	Mumbai
4	10004	Reliance	Delhi
*	NULL	NULL	NULL

```
select * from catalog;
```

#	sid	pid	cost
1	10001	20001	10
2	10002	20001	10
3	10001	20002	10
4	10002	20002	20
5	10001	20003	30
6	10003	20003	30
7	10004	20003	40
8	10001	20004	10
9	10001	20005	10
*	NULL	NULL	NULL

```
-- Query 1
```

```
select distinct p.pname from parts p, catalog c where p.pid = c.pid;
```

#	pname
1	Book
2	Pen
3	Pencil
4	Mobile
5	Charger

```
-- Query 2
```

```
select distinct sname from suppliers where  
sid =  
(select sid from catalog group by sid having  
count(pid) = (select count(distinct pid) from parts));
```

#	sname
1	Acme Widget

```
-- Query 3
```

```
select distinct s.sname from suppliers s, parts p, catalog c where s.sid = c.sid and p.pid = c.pid and  
exists ((select sid from catalog group by sid having  
p.pid = c.pid and p.color='Red'));
```

#	sname
1	Acme Widget
2	Johns

-- Query 4

```
select p.pname from catalog c, suppliers s , parts p where c.pid in(
select pid from catalog group by pid having count(sid) = 1)
and c.sid = s.sid and s.sname = 'Acme Widget'
and p.pid = c.pid;
```

#	pname
1	Mobile
2	Charger

-- Query 5

```
select c.sid from catalog c where c.cost > (
select avg(cost) from catalog where pid = c.pid and pid in
(select pid from catalog) group by pid);
```

#	sid
1	10002
2	10004

-- Query 6

```
select s.sname, p.pname from parts p, suppliers s where exists(
select c.sid, c.pid from catalog c where s.sid = c.sid and p.pid = c.pid and c.cost = (
select max(cost) from catalog where pid = c.pid and pid in
(select pid from catalog) group by pid));
```

#	sname	pname
1	Acme Widget	Book
2	Johns	Book
3	Johns	Pen
4	Reliance	Pencil
5	Acme Widget	Mobile
6	Acme Widget	Charger

Lab 4 - Student Database

```
create database studentdb;  
use studentdb;
```

```
create table student(  
    snum int,  
    sname varchar(10),  
    major varchar(2),  
    lvl varchar(2),  
    age int,  
    primary key(snum)  
);  
desc student;
```

#	Field	Type	Null	Key	Default	Extra
1	snum	int	NO	PRI	NULL	
2	sname	varchar(10)	YES		NULL	
3	major	varchar(2)	YES		NULL	
4	lvl	varchar(2)	YES		NULL	
5	age	int	YES		NULL	

```
create table class(  
    cname varchar(8),  
    meetsat time,  
    room varchar(5),  
    fid int,  
    primary key (cname)  
);  
desc class;
```

#	Field	Type	Null	Key	Default	Extra
1	cname	varchar(8)	NO	PRI	NULL	
2	meetsat	time	YES		NULL	
3	room	varchar(5)	YES		NULL	
4	fid	int	YES		NULL	

```
create table enrolled(  
    snum int,  
    cname varchar(10),  
    primary key (snum, cname),  
    foreign key (snum) references student(snum),  
    foreign key (cname) references class(cname)  
);  
desc enrolled;
```

#	Field	Type	Null	Key	Default	Extra
1	snum	int	NO	PRI	NULL	
2	cname	varchar(10)	NO	PRI	NULL	

```
create table faculty(
    fid int,
    fname varchar(10),
    deptid int,
    primary key (fid)
);
desc faculty;
```

#	Field	Type	Null	Key	Default	Extra
1	fid	int	NO	PRI	NULL	
2	fname	varchar(10)	YES		NULL	
3	deptid	int	YES		NULL	

```
insert into student values(1,'John', 'CS','Jr',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 student values(7,'McGregor', 'CV','Sr',22);
insert into student values(8,'Smilga', 'CS','Jr',19);
insert into student values(9,'Price', 'CV','Sr',22);
commit;
```

```
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);
commit;
```

```
insert into class values('Class1', '10:15:15' , 'R1', 14);
insert into class values('Class10', '10:15:16' , 'R128', 11);
insert into class values('Class11', '10:15:16' , 'R1', 11);
insert into class values('Class3', '10:15:16' , 'R3', 11);
insert into class values('Class13', '10:15:16' , 'R2', 11);
insert into class values('Class12', '10:15:16' , 'R4', 11);
insert into class values('Class2', '10:15:20' , 'R2', 12);
insert into class values('Class3', '10:15:45' , 'R3', 11);
insert into class values('Class4', '10:15:20' , 'R4', 12);
insert into class values('Class5', '20:15:20' , 'R3', 15);
insert into class values('Class6', '13:20:20' , 'R2', 12);
insert into class values('Class7', '10:10:10' , 'R3', 12);
```

commit;

```
insert into enrolled values(1, 'Class1');
insert into enrolled values(2, 'Class1');
insert into enrolled values(6, 'Class1');
insert into enrolled values(7, 'Class1');
insert into enrolled values(8, 'Class1');
insert into enrolled values(3, 'Class3');
insert into enrolled values(4, 'Class2');
insert into enrolled values(5, 'Class4');
```

commit;

select * from student;

#	snum	sname	major	lvl	age
1	1	John	CS	Jr	19
2	2	Smith	CS	Jr	20
3	3	Jacob	CV	Sr	20
4	4	Tom	CS	Jr	20
5	5	Rahul	CS	Jr	20
6	6	Rita	CS	Sr	21
7	7	McGregor	CV	Sr	22
8	8	Smilga	CS	Jr	19
9	9	Price	CV	Sr	22
*	NULL	NULL	NULL	NULL	NULL

select * from faculty;

#	fid	fname	deptid
1	11	Harish	1000
2	12	MV	1000
3	13	Mira	1001
4	14	Shiva	1002
5	15	Nupur	1000
*	NULL	NULL	NULL

select * from class;

#	cname	meetsat	room	fid
1	Class1	10:15:15	R1	14
2	Class10	10:15:16	R128	11
3	Class11	10:15:16	R1	11
4	Class12	10:15:16	R4	11
5	Class13	10:15:16	R2	11
6	Class2	10:15:20	R2	12
7	Class3	10:15:45	R3	11
8	Class4	10:15:20	R4	12
9	Class5	20:15:20	R3	15
10	Class6	13:20:20	R2	12
11	Class7	10:10:10	R3	12
*	NULL	NULL	NULL	NULL

select * from enrolled;

#	snum	cname
1	1	Class1
2	2	Class1
3	6	Class1
4	7	Class1
5	8	Class1
6	4	Class2
7	3	Class3
8	5	Class4
*	NULL	NULL

-- Query 1

```
select sname from student where lvl='Jr' and snum in
  (select snum from enrolled where cname in
    (select cname from class where fid in
      (select fid from faculty where fname='Shiva')
    ));
```

#	sname
1	John
2	Smith
3	Smilga

-- Query 2

```
select cname from class where cname in(
select cname from class where room = 'R128') or cname in
(select cname from enrolled group by cname having count(cname)>=5);
```

#	cname
1	Class1
2	Class10
*	NULL

-- Query 3

```
select sname from student where snum in(
select snum from enrolled where cname in(
select cname from class where meetsat in (select meetsat from class group by meetsat having
count(meetsat)>1)));
```

#	sname
1	Tom
2	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) );
```

#	fname	fid
1	Harish	11
*	NULL	NULL

-- Query 5

```
select distinct fid from class where cname in (select cname from enrolled group by cname having
count(cname)<5) or cname not in (select distinct cname from enrolled);
```

#	fid
1	11
2	12
3	15

-- Query 6

```
select sname from student where snum not in (select distinct snum from enrolled);
```

#	sname
1	Price

-- 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;
```

#	age	lvl
1	19	Jr
2	20	Jr
3	21	Sr
4	22	Sr

Lab 5 - Flights Database

```
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;
```

#	Field	Type	Null	Key	Default	Extra
1	flno	int	NO	PRI	NULL	
2	fromplace	varchar(15)	YES		NULL	
3	toplace	varchar(15)	YES		NULL	
4	distance	int	YES		NULL	
5	departs	datetime	YES		NULL	
6	arrives	datetime	YES		NULL	
7	price	int	YES		NULL	

```
create table aircraft(  
    aid int,  
    aname varchar(15),  
    cruisingrange int,  
    primary key (aid)  
);  
desc aircraft;
```

#	Field	Type	Null	Key	Default	Extra
1	aid	int	NO	PRI	NULL	
2	aname	varchar(15)	YES		NULL	
3	cruisingrange	int	YES		NULL	

```
create table employees (  
    eid int,  
    ename varchar(15),  
    salary int,  
    primary key (eid)  
);
```


desc employees;

#	Field	Type	Null	Key	Default	Extra
1	eid	int	NO	PRI	NULL	
2	ename	varchar(15)	YES		NULL	
3	salary	int	YES		NULL	

```
create table certified (  
    eid int,  
    aid int,  
    foreign key (eid) references employees(eid),  
    foreign key (aid) references aircraft(aid)  
);  
desc certified;
```

#	Field	Type	Null	Key	Default	Extra
1	eid	int	YES	MUL	NULL	
2	aid	int	YES	MUL	NULL	

```
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;

#	flno	fromplace	toplace	distance	departs	arrives	price
1	101	Bangalore	Delhi	2500	2005-05-13 07:15:31	2005-05-13 18:15:31	5000
2	102	Bangalore	Lucknow	3000	2013-05-05 07:15:31	2013-05-05 11:15:31	6000
3	103	Lucknow	Delhi	500	2013-05-05 12:15:31	2013-05-05 17:15:31	3000
4	104	Bangalore	Frankfurt	8500	2013-05-05 07:15:31	2013-05-05 23:15:31	75000
5	105	Kolkata	Delhi	3400	2013-05-05 07:15:31	2013-05-05 09:15:31	7000
6	106	Bangalore	Kolkata	1000	2013-05-05 01:15:30	2013-05-05 09:20:30	10000
7	107	Bangalore	Frankfurt	8000	2013-05-05 07:15:31	2013-05-05 22:15:31	60000
8	108	Lucknow	Kolkata	1000	2013-05-05 11:30:30	2013-05-05 15:20:30	10000
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL

```

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;
```

#	aid	aname	cruisingrange
1	101	747	3000
2	102	Boeing	900
3	103	647	800
4	104	Dreamliner	10000
5	105	Boeing	3500
6	106	707	1500
7	107	Dream	120000
8	108	707	760
9	109	747	1000
*	NULL	NULL	NULL

```

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;
```

#	eid	ename	salary
1	701	A	50000
2	702	B	100000
3	703	C	150000
4	704	D	90000
5	705	E	40000
6	706	F	60000
7	707	G	90000
*	NULL	NULL	NULL

```
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;
```

#	eid	aid
1	701	101
2	701	102
3	701	106
4	701	105
5	702	104
6	703	104
7	704	104
8	702	107
9	703	107
10	704	107
11	702	101
12	702	108
13	701	109

-- 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
    )
);
```

#	aname
1	747
2	Dreamliner
3	Dream
4	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.aid)>3;
```

#	max(a.cruisingrange)	eid
1	3500	701
2	120000	702

-- Query 3

```
select ename from employees where salary <(
select min(price) from flights where fromplace='Bangalore' and toplace='Frankfurt');
```

#	ename
1	A
2	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;

#	avg(e.salary)	aid
1	75000.0000	101
2	113333.3333	104
3	50000.0000	105
4	50000.0000	106
5	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'));

#	ename
1	A

-- Query 6

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

#	aname
1	747
2	Dreamliner
3	Boeing
4	Dream

-- Query 7

```
SELECT F.fno, F.departs
FROM flights F
WHERE F.fno IN ( ( SELECT F0.fno
FROM flights F0
WHERE F0.fromplace = 'Bangalore' AND F0.toplace = 'Kolkata'
AND extract(hour from F0.arrives) < 18 )
UNION
( SELECT F0.fno
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));
```

#	flno	departs
1	102	2013-05-05 07:15:31
2	106	2013-05-05 01:15:30