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1BM19CS219

use airline;

```
create table flights(
    flno integer not null,
    ffrom varchar(20) not null,
    fto varchar(20) not null,
    distance int not null,
    departs time not null,
    arrives time not null,
    price int not null,
    primary key(flno)
);
```

```
create table aircraft(
    aid int not null,
    aname varchar(20) not null,
    cruisingrange int not null,
    primary key(aid)
);
```

```
create table employee(
    eid int not null,
    ename varchar(20) not null,
    salary int not null,
    primary key(eid)
);
```

```
create table certified(
    eid int not null,
    aid int not null,
    foreign key(eid) REFERENCES employee(eid) on delete cascade on update
cascade,
    foreign key(aid) references aircraft(aid) on delete cascade on update cascade);
```

INSERT INTO flights  
VALUES

```
(1,'Bangalore','Mangalore',360,'10:45:00','12:00:00',10000),
(2,'Bangalore','Delhi',5000,'12:15:00','04:30:00',25000),
(3,'Bangalore','Mumbai',3500,'02:15:00','05:25:00',30000),
(4,'Delhi','Mumbai',4500,'10:15:00','12:05:00',35000),
(5,'Delhi','Frankfurt',18000,'07:15:00','05:30:00',90000),
(6,'Bangalore','Frankfurt',19500,'10:00:00','07:45:00',95000),
(7,'Bangalore','Frankfurt',17000,'12:00:00','06:30:00',99000);
```

INSERT INTO aircraft (aid,aname,cruisingrange) values

```
(123,'Airbus',1000),
(302,'Boeing',5000),
(306,'Jet01',5000),
(378,'Airbus380',8000),
(456,'Aircraft',500),
(789,'Aircraft02',800),
(951,'Aircraft03',1000);
```

INSERT INTO employee (eid,ename,salary) VALUES

```
(1,'Ajay',30000),
(2,'Ajith',85000),
(3,'Arnab',50000),
```

```
(4,'Harry',45000),
(5,'Ron',90000),
(6,'Josh',75000),
(7,'Ram',100000);
```

```
INSERT INTO certified (eid,aid) VALUES
```

```
(1,123),
(2,123),
(1,302),
(5,302),
(7,302),
(1,306),
(2,306),
(1,378),
(2,378),
(4,378),
(6,456),
(3,456),
(5,789),
(6,789),
(3,951),
(1,951),
(1,789);
```

use airline

```
select * from flights
```

flno	ffrom	fto	distance	departs	arrives	price
1	Bangalore	Mangalore	360	10:45:00	12:00:00	10000
2	Bangalore	Delhi	5000	12:15:00	04:30:00	25000
3	Bangalore	Mumbai	3500	02:15:00	05:25:00	30000
4	Delhi	Mumbai	4500	10:15:00	12:05:00	35000
5	Delhi	Frankfurt	18000	07:15:00	05:30:00	90000
6	Bangalore	Frankfurt	19500	10:00:00	07:45:00	95000
7	Bangalore	Frankfurt	17000	12:00:00	06:30:00	99000

use airline

```
select * from aircraft
```

aid	aname	cruisingrange
123	Airbus	1000
302	Boeing	5000
306	Jet01	5000
378	Airbus380	8000
456	Aircraft	500
789	Aircraft02	800
951	Aircraft03	1000

use airline

select \* from employee

eid	ename	salary
1	Ajay	30000
2	Ajith	85000
3	Arnab	50000
4	Harry	45000
5	Ron	90000
6	Josh	75000
7	Ram	100000

use airline

select \* from certified

eid	aid
1	123
2	123
1	302
5	302
7	302
1	306
2	306
1	378
2	378
4	378
6	456
3	456
5	789
6	789
3	951
1	951
1	789

**i. Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000.**

Approach1:

use airline

select distinct aname from aircraft where aid in (select aid from certified where eid in (select eid from employee where salary > 80000))

aname  
Airbus  
Boeing  
Jet01  
Airbus380  
Aircraft02

Approach2:

select DISTINCT aname from aircraft where aid in (select c.aid from certified c, employee e where e.eid = c.eid and e.salary > 80000)

aname  
Airbus  
Boeing  
Jet01  
Airbus380  
Aircraft02

Approach 3:

select a.aname from aircraft a where exists (select \* from certified c, employee e where c.aid = a.aid and c.eid = e.eid and e.salary > 80000)

aname  
Airbus  
Boeing  
Jet01  
Airbus380  
Aircraft02

Approach 4:

use airline  
select distinct a.aname from aircraft a, certified c, employee e where a.aid = c.aid and c.eid = e.eid and exists (select \* from employee e1 where e1.eid = e.eid and e1.salary > 80000)

aname  
Airbus  
Boeing  
Jet01  
Airbus380  
Aircraft02

Approach 5:

use airline

select distinct a.aname from aircraft a, certified c, employee e where a.aid = c.aid and c.eid = e.eid and not exists (select \* from employee e1 where e1.eid = e.eid and e1.salary < 80000)

aname  
Airbus  
Boeing  
Jet01  
Airbus380  
Aircraft02

ii. For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruising range of the aircraft for which she or he is certified.

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

```
1    8000
```

iii. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt

Approach1:

```
select e.ename from employee e where exists (select * from certified c where
c.eid = e.eid) and e.salary < (select min(price) from flights where ffrom =
'Bangalore' and fto = 'Frankfurt')
```

```
ename
Ajay
Ajith
Arnab
Harry
Ron
Josh
```

iv. For all aircraft with cruising range over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

Approach1:

```
select a.aname, avg(e.salary) from aircraft a, certified c, employee e where
c.aid = a.aid and c.eid = e.eid and a.cruisingrange > 1000 group by a.aname
```

```
aname avg(e.salary)
Airbus380  53333.3333
Boeing  73333.3333
Jet01  57500.0000
```

Approach2:

```
select a.aid, a.aname, avg(e.salary) from aircraft a, certified c, employee e
where c.aid = a.aid and c.eid = e.eid and a.cruisingrange > 1000 group by a.aid
```

```
aid aname avg(e.salary)
302 Boeing  73333.3333
306 Jet01  57500.0000
378 Airbus380  53333.3333
```

v. Find the names of pilots certified for some Boeing aircraft.

Approach1:

```
select e.ename from employee e, certified c, aircraft a where a.aname like '%Boeing%' and a.aid = c.aid and c.eid = e.eid
```

```
ename
Ajay
Ron
Ram
```

Approach2:

```
select e.ename from employee e where e.eid in(select c.eid from certified c where c.aid in (select aid from aircraft where aname = 'Boeing'))
```

```
ename
Ajay
Ron
Ram
```

Approach3:

```
select e.ename from employee e where exists(select * from certified c where c.eid = e.eid and exists(select * from aircraft a where aname = 'Boeing' and a.aid = c.aid))
```

```
ename
Ajay
Ron
Ram
```

**vi. Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.**

```
localhost/airline/aircraft/
http://localhost/phpmyadmin/index.php?route=/database/sql&db=airline
```

Showing rows 0 - 0 (1 total, Query took 0.0019 seconds.)

```
select aid from aircraft where cruisingrange > (select distance from flights where ffrom = 'Bangalore' and fto = 'Delhi')
```

378

**viii.**

**Print the name and salary of every non-pilot whose salary is more than the average salary for pilots.**

```
insert into employee
VALUES
(10,'VIRAJ',100000),
(11,'APPU',150000);
```

```
select e1.ename, e1.salary from employee e1 where e1.salary > (select
avg(e.salary) from employee e where e.eid in (select eid from certified)) and not
exists(select * from certified c where c.eid = e1.eid)
```

```
ename salary
VIRAJ 100000
APPU 150000
```

**9. A customer wants to travel from Bangalore to Ballari with no more than two changes of flight. List the choice of departure times from Bangalore if the customer wants to arrive in Ballari by 6 p.m.**

```
select f.departs from flights f where f.flno in ((select f0.flno from flights f0 where
f0.ffrom = 'Bangalore' and f0.fto = 'Ballari' and f0.arrives < '18:00:00') UNION
(SELECT f0.flno from flights f0, flights f1 where f0.ffrom = 'Bangalore' and f0.fto <>
'Ballari' and
f1.ffrom = f0.fto and f1.fto = 'Ballari' and f1.arrives < '18:00:00') union (select
f0.flno from flights f0, flights f1, flights f2 where f0.ffrom = 'Bangalore' and f0.fto
<> 'Ballari' and f1.ffrom = f0.fto and f1.fto <> 'Ballari' AND f2.ffrom = f1.fto and
f2.fto = 'Ballari' and f2.arrives < '18:00:00'))
```

```
departs
10:45:00
15:45:00
```