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```
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 f0.arrives < f1.departs 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 f0.arrives < f1.departs
and f1.fto <> 'Ballari' AND f2.ffrom = f1.fto and f2.fto = 'Ballari' and f1.arrives <
f2.departs and f2.arrives < '18:00:00'));
```

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