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## SECTION-4A

**Consider the following database that keeps track of airline flight information: FLIGHTS(flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)**
**AIRCRAFT(aid: integer, aname: string, cruisingrange: integer)**
**CERTIFIED(eid: integer, aid: integer)**
**EMPLOYEES(eid: integer, ename: string, salary: integer)**
**Note that the Employees relation describes pilots and other kinds of employees as well; Every pilot is certified for some aircraft, and only pilots are certified to fly.**
**Write each of the following queries in SQL.**

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

2. 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.

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

4. 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.

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

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

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

## FLIGHTS TABLE

| FLNO | FFROM | TTO | DISTANCE | DEPARTS | ARRIVES | PRICE |
|---|---|---|---|---|---|---|
| 101 | Bangalore | Delhi | 2500 | 07:15:31 | 12:15:31 | 5000 |
| 102 | Bangalore | Lucknow | 3000 | 07:15:31 | 11:15:31 | 6000 |
| 103 | Lucknow | Delhi | 500 | 12:15:31 | 17:15:31 | 3000 |
| 104 | Bangalore | Frankfurt | 8500 | 07:15:31 | 23:15:31 | 75000 |
| 105 | Kolkata | Delhi | 3400 | 07:15:31 | 09:15:31 | 7000 |
| 106 | Delhi | Kolkata | 3400 | 12:15:35 | 14:20:00 | 7000 |
| 107 | Bangalore | Frankfurt | 8000 | 07:15:31 | 22:15:31 | 60000 |
| NULL | NULL | NULL | NULL | NULL | NULL | NULL |

## 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 | 12000 |
| 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 |

**CERITFIED TABLE**

| EID | AID |
|---|---|
| 701 | 101 |
| 702 | 101 |
| 701 | 102 |
| 705 | 103 |
| 702 | 104 |
| 703 | 104 |
| 704 | 104 |
| 701 | 105 |
| 703 | 105 |
| 704 | 105 |
| 701 | 106 |
| 702 | 107 |
| 703 | 107 |
| 704 | 107 |
| NULL | NULL |

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 AIRCRAFT A,CERTIFIED C,EMPLOYEES E

WHERE A.AID=C.AID AND C.EID=E.EID AND SALARY>80000;
```

| ANAME |
|---|
| 747 |
| Dreamliner |
| Dream |
| Boeing |

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(*)>3;
```

| EID | MAX(A.CRUISINGRANGE) |
|---|---|
| 701 | 3500 |

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

```
SELECT ENAME
FROM EMPLOYEES
WHERE SALARY <(SELECT MIN(PRICE)
FROM FLIGHTS
WHERE FFROM="Bangalore" AND TTO=“Frankfurt");
```

| ENAME |
|---|
| A |
| E |

## 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 CERTIFIED C,EMPLOYEES E,AIRCRAFT A
WHERE A.CRUISINGRANGE>1000 AND C.AID=A.AID AND C.EID=E.EID
GROUP BY A.ANAME;
```

| ANAME | AVG(E.SALARY) |
|---|---|
| 747 | 75000.0000 |
| Dreamliner | 113333.3333 |
| Boeing | 96666.6667 |
| 707 | 50000.0000 |
| Dream | 113333.3333 |

## 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 A.AID=C.AID AND A.ANAME=“Boeing";
```

| ENAME |
|---|
| A |
| C |
| D |

## 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(DISTANCE) FROM FLIGHTS F WHERE
F.FFROM="Bangalore" AND F.TTO="Delhi");
```

| AID |
|---|
| 101 |
| 104 |
| 105 |
| 107 |
| NULL |

## A customer wants to travel from bangalore to kolkata with no more than two changes of flight -- List the choice of departure times customer wants to arrive by 6 p.m.

```
select f.FFROM, f.TTO, f.ARRIVES from FlIGHTS f where (f.FFROM = "Bangalore" and f.TTO
                                        = (select FFROM from Flights where TTO = "Kolkata"))
                                          or f.TTO = “Kolkata";
```

| FFROM | TTO | ARRIVES |
|---|---|---|
| Bangalore | Delhi | 12:15:31 |
| Delhi | Kolkata | 14:20:00 |