PROGRAM 5: AIRLINE FLIGHT DATABASE

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)

EMPLOYEE (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.

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

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.

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

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.

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

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

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

CREATE DATABASE AIRLINE;

USE AIRLINE;

CREATE TABLE FLIGHTS(

 FL_ID INT,FROM_PLACE VARCHAR(20),

```sql
    TO_PLACE VARCHAR(20),

    DISTANCE INT,

    DEPARTS TIME,

    ARRIVES TIME,

    PRICE INT,

    PRIMARY KEY(FL_ID));


CREATE TABLE AIRCRAFT(

    A_ID INT,

    A_NAME VARCHAR(10),

    CRUISING_RANGE INT,

    PRIMARY KEY(A_ID));


CREATE TABLE EMPLOYEE(

    E_ID INT,

    E_NAME VARCHAR(10),

    SALARY INT,

    PRIMARY KEY(E_ID));


CREATE TABLE CERTIFIED(

    E_ID INT,

    A_ID INT,

    FOREIGN KEY(E_ID) REFERENCES EMPLOYEE(E_ID),

    FOREIGN KEY(A_ID) REFERENCES AIRCRAFT(A_ID));


INSERT INTO FLIGHTS VALUES(111,'BENGALURU','FRANKFURT',1000,'09:30','16:00',10000);

INSERT INTO FLIGHTS VALUES(222,'MANDISON','BENGALURU',1020,'01:30','7:00',9000);

INSERT INTO FLIGHTS VALUES(333,'BENGALURU','FRANKFURT',1000,'01:40','12:00',9500);

INSERT INTO FLIGHTS VALUES(555,'NEW DELHI','NEW YORK',5000,'13:30','17:00',15000);
```

INSERT INTO FLIGHTS VALUES(444,'BENGALURU','NEW DELHI',550,'08:00','13:00',5000);

INSERT INTO FLIGHTS VALUES(666,'MANDISION','NEW YORK',12000,'16:30','19:00',20000);

←T→				FL_ID	FROM_PLACE	TO_PLACE	DISTANCE	DEPARTS	ARRIVES	PRICE
☐	Edit	Copy	Delete	111	BENGALURU	FRANKFURT	1000	09:30:00	16:00:00	10000
☐	Edit	Copy	Delete	222	MANDISON	BENGALURU	1020	01:30:00	07:00:00	9000
☐	Edit	Copy	Delete	333	BENGALURU	FRANKFURT	1000	01:40:00	12:00:00	9500
☐	Edit	Copy	Delete	444	BENGALURU	NEW DELHI	550	08:00:00	13:00:00	5000
☐	Edit	Copy	Delete	555	NEW DELHI	NEW YORK	5000	13:30:00	17:00:00	15000
☐	Edit	Copy	Delete	666	MANDISION	NEW YORK	12000	16:30:00	19:00:00	20000

SELECT * FROM FLIGHTS;

INSERT INTO AIRCRAFT VALUES(10,'AIR ASIA',12000);

INSERT INTO AIRCRAFT VALUES(20,'GO AIR',2000);

INSERT INTO AIRCRAFT VALUES(30,'AIR ASIA',600);

INSERT INTO AIRCRAFT VALUES(40,'INDIGO',5000);

INSERT INTO AIRCRAFT VALUES(50,'SPICE JET',900);

INSERT INTO AIRCRAFT VALUES(60,'SPICE JET',12500);

←T→				A_ID	A_NAME	CRUISING_RANGE
☐	Edit	Copy	Delete	10	AIR ASIA	12000
☐	Edit	Copy	Delete	20	GO AIR	2000
☐	Edit	Copy	Delete	30	AIR ASIA	600
☐	Edit	Copy	Delete	40	INDIGO	5000
☐	Edit	Copy	Delete	50	SPICE JET	900
☐	Edit	Copy	Delete	60	SPICE JET	12500

SELECT * FROM AIRCRAFT;

INSERT INTO EMPLOYEE VALUES(3,'SHAAN',60000);

INSERT INTO EMPLOYEE VALUES(2,'TANYA',15000);

INSERT INTO EMPLOYEE VALUES(4,'RAJATH',81000);

INSERT INTO EMPLOYEE VALUES(1,'SAM',82000);

INSERT INTO EMPLOYEE VALUES(6,'AYMAN',70000);

INSERT INTO EMPLOYEE VALUES(5,'SAAKSHI',9000);

←T→				E_ID	E_NAME	SALARY
☐	✏ Edit	▄ Copy	⊖ Delete	1	SAM	82000
☐	✏ Edit	▄ Copy	⊖ Delete	2	TANYA	15000
☐	✏ Edit	▄ Copy	⊖ Delete	3	SHAAN	60000
☐	✏ Edit	▄ Copy	⊖ Delete	4	RAJATH	81000
☐	✏ Edit	▄ Copy	⊖ Delete	5	SAAKSHI	9000
☐	✏ Edit	▄ Copy	⊖ Delete	6	AYMAN	70000

SELECT * FROM EMPLOYEE;

INSERT INTO CERTIFIED VALUES(1,10);

INSERT INTO CERTIFIED VALUES(4,10);

INSERT INTO CERTIFIED VALUES(3,40);

INSERT INTO CERTIFIED VALUES(5,30);

INSERT INTO CERTIFIED VALUES(5,50);

INSERT INTO CERTIFIED VALUES(4,50);

INSERT INTO CERTIFIED VALUES(4,20);

INSERT INTO CERTIFIED VALUES(4,30);

E_ID	A_ID
1	10
4	10
3	40
5	30
5	50
4	50
4	20
4	30

SELECT * FROM CERTIFIED;

SELECT DISTINCT A.A_NAME FROM AIRCRAFT A WHERE A.A_ID IN (SELECT C.A_ID FROM CERTIFIED C, EMPLOYEE E WHERE C.E_ID = E.E_ID AND NOT EXISTS (SELECT * FROM EMPLOYEE E1 WHERE E1.E_ID = E.E_ID AND E1.SALARY <80000)); #1

```
SELECT DISTINCT A.A_NAME FROM AIRCRAFT A WHERE A.A_ID IN (SELECT C.A_ID FROM CERTIFIED C, EMPLOYEE E WHERE C.E_ID = E.E_ID AND NOT EXISTS ( SELECT *
FROM EMPLOYEE E1 WHERE E1.E_ID = E.E_ID AND E1.SALARY <80000 ))
```

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←T→	A_NAME
☐ 🖉 Edit 📑 Copy ⊖ Delete	AIR ASIA
☐ 🖉 Edit 📑 Copy ⊖ Delete	GO AIR
☐ 🖉 Edit 📑 Copy ⊖ Delete	SPICE JET

SELECT C.E_ID,MAX(A.CRUISING_RANGE) AS MAX_CRUSING_RANGE FROM CERTIFIED C,AIRCRAFT A WHERE C.A_ID=A.A_ID AND C.E_ID=(SELECT E_ID FROM CERTIFIED GROUP BY E_ID HAVING COUNT(*)>3);   #2

```
SELECT C.E_ID,MAX(A.CRUISING_RANGE) AS MAX_CRUSING_RANGE FROM CERTIFIED C,AIRCRAFT A WHERE C.A_ID=A.A_ID AND C.E_ID=(SELECT E_ID FROM CERTIFIED
GROUP BY E_ID HAVING COUNT(*)>3)
```

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E_ID	MAX_CRUSING_RANGE
4	12000

SELECT E_NAME FROM EMPLOYEE WHERE E_ID IN (SELECT E_ID FROM CERTIFIED) AND SALARY<(SELECT MIN(PRICE) FROM FLIGHTS WHERE FROM_PLACE='BENGALURU' AND TO_PLACE='FRANKFURT'); #3

```
SELECT E_NAME FROM EMPLOYEE WHERE E_ID IN (SELECT E_ID FROM CERTIFIED) AND SALARY<(SELECT MIN(PRICE) FROM FLIGHTS WHERE FROM_PLACE='BENGALURU' AND
TO_PLACE='FRANKFURT')
```

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←T→	E_NAME
☐ 🖉 Edit 📑 Copy ⊖ Delete	SAAKSHI

SELECT C.A_ID,AVG(E.SALARY) AS AVERAGE_SALARY FROM EMPLOYEE E,CERTIFIED C WHERE E.E_ID=C.E_ID AND C.A_ID IN (SELECT A_ID FROM AIRCRAFT WHERE CRUISING_RANGE>1000) GROUP BY C.A_ID; #4

```
SELECT C.A_ID,AVG(E.SALARY) AS AVERAGE_SALARY FROM EMPLOYEE E,CERTIFIED C WHERE E.E_ID=C.E_ID AND C.A_ID IN (SELECT A_ID FROM AIRCRAFT WHERE
CRUISING_RANGE>1000) GROUP BY C.A_ID
```

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A_ID	AVERAGE_SALARY
10	81500.0000
20	81000.0000
40	60000.0000

SELECT A_ID FROM AIRCRAFT WHERE CRUISING_RANGE>(SELECT DISTANCE FROM FLIGHTS WHERE FROM_PLACE='BENGALURU' AND TO_PLACE='NEW DELHI');   #5

```
SELECT A_ID FROM AIRCRAFT WHERE CRUISING_RANGE>(SELECT DISTANCE FROM FLIGHTS WHERE FROM_PLACE='BENGALURU' AND TO_PLACE='NEW DELHI')
```

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	A_ID
Edit Copy Delete	10
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Edit Copy Delete	30
Edit Copy Delete	40
Edit Copy Delete	50
Edit Copy Delete	60

SELECT F.DEPARTS FROM FLIGHTS F WHERE F.FL_ID IN ((SELECT F0.FL_ID FROM FLIGHTS F0 WHERE F0.FROM_PLACE = 'MANDISION' AND F0.TO_PLACE = 'NEW YORK'
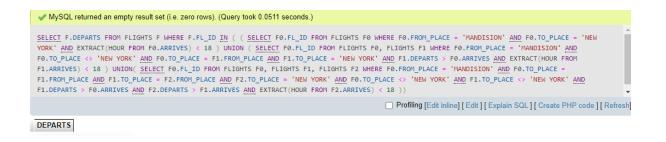
   AND EXTRACT(HOUR FROM F0.ARRIVES) < 18) UNION (SELECT F0.FL_ID FROM FLIGHTS F0, FLIGHTS F1 WHERE F0.FROM_PLACE = 'MANDISION' AND F0.TO_PLACE <> 'NEW YORK'

   AND F0.TO_PLACE = F1.FROM_PLACE AND F1.TO_PLACE = 'NEW YORK' AND F1.DEPARTS > F0.ARRIVES AND EXTRACT(HOUR FROM F1.ARRIVES) < 18)

     UNION(SELECT F0.FL_ID FROM FLIGHTS F0, FLIGHTS F1, FLIGHTS F2 WHERE F0.FROM_PLACE = 'MANDISION' AND F0.TO_PLACE = F1.FROM_PLACE AND F1.TO_PLACE = F2.FROM_PLACE

    AND F2.TO_PLACE = 'NEW YORK' AND F0.TO_PLACE <> 'NEW YORK' AND F1.TO_PLACE <> 'NEW YORK' AND F1.DEPARTS > F0.ARRIVES AND F2.DEPARTS > F1.ARRIVES

    AND EXTRACT(HOUR FROM F2.ARRIVES) < 18));   #6

```
SELECT F.DEPARTS FROM FLIGHTS F WHERE F.FL_ID IN ( ( SELECT F0.FL_ID FROM FLIGHTS F0 WHERE F0.FROM_PLACE = 'MANDISION' AND F0.TO_PLACE = 'NEW
YORK' AND EXTRACT(HOUR FROM F0.ARRIVES) < 18 ) UNION ( SELECT F0.FL_ID FROM FLIGHTS F0, FLIGHTS F1 WHERE F0.FROM_PLACE = 'MANDISION' AND
F0.TO_PLACE <> 'NEW YORK' AND F0.TO_PLACE = F1.FROM_PLACE AND F1.TO_PLACE = 'NEW YORK' AND F1.DEPARTS > F0.ARRIVES AND EXTRACT(HOUR FROM
F1.ARRIVES) < 18 ) UNION( SELECT F0.FL_ID FROM FLIGHTS F0, FLIGHTS F1, FLIGHTS F2 WHERE F0.FROM_PLACE = 'MANDISION' AND F0.TO_PLACE =
F1.FROM_PLACE AND F1.TO_PLACE = F2.FROM_PLACE AND F2.TO_PLACE = 'NEW YORK' AND F0.TO_PLACE <> 'NEW YORK' AND F1.TO_PLACE <> 'NEW YORK' AND
F1.DEPARTS > F0.ARRIVES AND F2.DEPARTS > F1.ARRIVES AND EXTRACT(HOUR FROM F2.ARRIVES) < 18 ))
```

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DEPARTS

SELECT E_NAME,SALARY FROM EMPLOYEE WHERE E_ID NOT IN(SELECT E_ID FROM CERTIFIED) AND SALARY>(SELECT AVG(SALARY) FROM EMPLOYEE WHERE E_ID IN (SELECT E_ID FROM CERTIFIED));   #7

```
SELECT E_NAME,SALARY FROM EMPLOYEE WHERE E_ID NOT IN(SELECT E_ID FROM CERTIFIED) AND SALARY>(SELECT AVG(SALARY) FROM EMPLOYEE WHERE E_ID IN (SELECT
E_ID FROM CERTIFIED))
```

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←T→		E_NAME	SALARY
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