

Flights: flno: integer (pkey), from: string, to: string, distance: integer;
departs: time; arrives: time

Aircraft: aid: integer; aname: string; cruisingrange:integer

Certified: eid: integer (key), aid: integer(key)

Employees: eid: integer (pkey), ename: string, salary: integer

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

(Boeing aircraft are usually named Boeing XXX – otherwise, one would use %Boeing%)

```
SELECT E.ename FROM Employees E, Certified C, Aircraft A
WHERE E.eid = C.eid AND C.aid = A.aid AND aname LIKE 'Boeing%'
```

2. Find all aircraft that can be used on non-stop flights from Bonn to Madras.

```
SELECT A.aid FROM Aircraft A
WHERE A.cruisingrange >=
(SELECT DISTINCT F.distance FROM Flights F
WHERE F.from = 'Bonn' AND F.to = 'Madras')
```

3. Identify the flights that can be piloted by every pilot whose salary is more than \$100,000.

```
SELECT DISTINCT F.from, F.to
FROM Flights F
WHERE NOT EXISTS ( SELECT *
FROM Employees E
WHERE E.salary > 100000
AND
NOT EXISTS (SELECT *
FROM Aircraft A, Certified C
WHERE A.cruisingrange > F.distance
AND E.eid = C.eid
AND A.aid = C.aid) )
```

4. Find the names of pilots who can operate some plane with a range greater than 3,000 miles, but are not certified on any Boeing aircraft.

```
SELECT DISTINCT E.ename
FROM Employees E, Aircraft A, Certified C
WHERE C.eid = E.eid
AND A.aid = C.aid
AND A.cruisingrange > 3000
AND E.eid NOT IN ( SELECT C1.eid
FROM Certified C1, Aircraft A1
WHERE C1.aid = A1.aid
AND A1.aname LIKE 'Boeing%' )
```

5. Find the employees who make the highest salary.

```
SELECT E.name FROM Employees E
WHERE E.salary >= ALL (SELECT salary FROM Employees)
```

6. Find the pilots who are certified for the largest number of aircraft.

```
SELECT E.name, COUNT(C.aid) FROM Employees E JOIN Certified C ON E.eid = C.eid
HAVING COUNT(C.aid) >=
ALL (
SELECT COUNT(C1.aid) FROM Employees E1 JOIN Certified C1 ON E1.eid = C1.eid
GROUP BY E1.name)
```

7. Find the employees who are certified for exactly three aircraft.

```
SELECT E.name COUNT(C.aid) FROM Employees E JOIN Certified C ON E.eid = C.eid
GROUP BY E.name WHERE COUNT(C.aid) = 3
```

8. Find the total amount paid to employees in salaries.

```
SELECT SUM(E.salary) FROM Employees E
```

9. Compute the difference between the average salary of a pilot and the average salary of all employees (including pilots).

```
SELECT Temp1.avg - Temp2.avg FROM
(SELECT AVG(E.salary) AS avg FROM Employees E WHERE E.eid IN
(SELECT DISTINCT C.eid FROM Certified C)) AS Temp1,
(SELECT AVG(E1.salary) AS avg FROM Employees E1) AS Temp2
```

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

```
SELECT E.ename, E.salary
FROM Employees E
WHERE E.eid NOT IN (SELECT DISTINCT C.eid FROM Certified C)
AND E.salary > (SELECT AVG (E1.salary) FROM Employees E1
WHERE E1.eid IN
(SELECT DISTINCT C1.eid FROM Certified C1))
```