

Airopport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

1. The cities with airport for which the number of runways is not known.
2. The arrival and the departure countries of flight AZ274
3. The types of aircraft used for flights leaving Boston
4. The types of aircrafts and the corresponding number of passengers for the types of aircraft used for flights leaving Boston. If the description of the aircraft is not available, give only the type.
5. The cities from which international flight leave.
6. The cities from which direction flight to Sidney leave, in alphabetical order.
7. The number of international flights that leave Boston on Thursday
8. The number of flights that leave Canadian cities each week (to be done in two ways, one showing the airports without international flight and one not)
9. The French cities from which more than twenty direct flights to Germany leave each week
10. The Belgian airport that have only domestic flights. Show this query in three ways: (i) with a nested query with the **not in** operator, (ii) with a nested query with the **not exist** operator, (iii) with the outer join.
11. The cities served by the type of aircraft able to carry the maximum number of passengers.
12. The maximum number of passengers who could arrive in a Greek airport form Norway on Thursday. If there are several flights, the total number of of passengers must be found.

Airopport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

1. The cities with airport for which the number of runways is not known.

```
SELECT City
FROM Airport
WHERE NumberOfRunWays is Null
```

Airopport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

2. The arrival and the departure countries of flight AZ274

```
SELECT A1.Country AS Arrival, A2.Country AS Departure
FROM (Airport AS A1 INNER JOIN Flight ON
      Flight.ArrCity=A1.City)
      INNER JOIN Airport AS A2 ON Flight.DepartCity=A2.City
WHERE Flight.FlightID='AZ274'
```

Airopport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

3. The types of aircraft used for flights leaving Boston

```
SELECT PlaneType AS Aircraft
FROM Flight
WHERE DepartCity='Boston'
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

4. The types of aircrafts and the corresponding number of passengers for the types of aircraft used for flights leaving Boston. If the description of the aircraft is not available, give only the type.

```
SELECT Flight.PlaneType, Plane.NumberOfPassengers
FROM Flight LEFT JOIN Plane ON
        Plane.PlaneType=Flight.PlaneType
WHERE Flight.DepartCity='Boston'
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

5. The cities from which international flight leave.

```
SELECT DepartCity
FROM (Airport AS A1 INNER JOIN Flight ON
        A1.City=Flight.DepartCity) INNER JOIN
        Airport AS A2 ON Flight.ArrCity=A2.City
WHERE A1.Country<>A2.Country
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

6. The cities from which direction flight to Sidney leave, in alphabetical order.

```
SELECT DepartCity
FROM Flight
WHERE ArrCity="Sidney"
ORDER BY DepartCity
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

7. The number of international flights that leave Boston on Thursday

```
SELECT count(*) AS Numbers
FROM Flight INNER JOIN Airport ON
      Airport.City=Flight.ArrCity
WHERE DepartCity='Boston' And Day='Thursday' and
      Country<>'USA'
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

8. The number of flights that leave Canadian cities each week (to be done in two ways, one showing the airports without international flight and one not)

```
SELECT count(*) AS NumberOf
FROM Flight INNER JOIN Airport ON
      Airport.City=Flight.DepartCity
WHERE Country='Canada'
```

```
SELECT count(*) AS NumberOf
FROM (Airport AS A1 INNER JOIN Flight ON
      Flight.DepartCity=A1.City) INNER JOIN Airport AS A2 ON
      A2.City=Flight.ArrCity
WHERE A1.Country='Canada' and A2.Country<>'Canada'
```

Airoport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

9. The French cities from which more than twenty direct flights to Germany leave each week

```
SELECT DepartCity
FROM (Airport AS A1 INNER JOIN Flight ON
      A1.City=Flight.DepartCity) INNER JOIN Airport AS
      A2 ON Flight.ArrCity=A2.City
WHERE A1.Country='France' And A2.Country='Germany'
GROUP BY DepartCity
HAVING count(*) >20
```

Airoport(City,Country,NumberOfRunways)
 Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
 Plane(PlaneType,NumberOfPassengers)

10. The Belgian airport that have only domestic flights. Show this query in three ways: (i) with a nested query with the **not in** operator, (ii) with a nested query with the not exist operator, (iii) with the outer join.

```
SELECT DepartCity
FROM Flight INNER JOIN Airport ON
    Flight.DepartCity=Airport.City
WHERE Airport.Country='Belgium' AND
    Flight.DepartCity NOT IN
    (SELECT DepartCity
    FROM (Airport as A1 INNER JOIN Flight on
        A1.City=Flight.DepartCity) INNER JOIN
        Airport as A2 on Flight.ArrCity=A2.City
    WHERE A1.Country='Belgium' AND
        A2.Country<> 'Belgium'))
```

Airoport(City,Country,NumberOfRunways)
 Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
 Plane(PlaneType,NumberOfPassengers)

10. The Belgian airport that have only domestic flights. Show this query in three ways: (i) with a nested query with the **not in** operator, (ii) with a nested query with the **not exist** operator, (iii) with the outer join.

```
SELECT DepartCity
FROM Flight INNER JOIN Airport AS A1 ON
    Flight.DepartCity=A1.City
WHERE A1.Country='Belgium' AND NOT EXISTS
    (SELECT *
    FROM (Flight INNER JOIN Airport as A2 on
        A2.City=Flight.ArrCity)
    WHERE A1.City=Flight.DepartCity AND
        A2.Country<> 'Belgium'))
```

Airoport(City,Country,NumberOfRunways)
 Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
 Plane(PlaneType,NumberOfPassengers)

10. The Belgian airport that have only domestic flights. Show this query in three ways: (i) with a nested query with the ***not in*** operator, (ii) with a nested query with the not exist operator, (iii) with the outer join.

```
SELECT DepartCity
FROM (Airport AS A1 INNER JOIN Flight ON
      Flight.DepartCity=A1.City) LEFT JOIN Airport AS A2
      ON Flight.ArrCity=A2.City and A2.Country='Belgium'
WHERE A1.Country='Belgium'
GROUP BY Flight.DepartCity
```

Airoport(City,Country,NumberOfRunways)
 Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
 Plane(PlaneType,NumberOfPassengers)

11. The cities served by the type of aircraft able to carry the maximum number of passengers.

```
SELECT DepartCity as City
FROM Flight INNER JOIN Plane ON
      Flight.PlaneType=Plane.PlaneType
WHERE NumberOfPassengers=
      (SELECT max(NumberOfPassengers) FROM Plane)
UNION
SELECT ArrCity
FROM Flight INNER JOIN Plane ON
      Flight.PlaneType=Plane.PlaneType
WHERE NumberOfPassengers=
      (SELECT max(NumberOfPassengers) FROM Plane);
```

Airopport(City,Country,NumberOfRunways)
Flight(FlightID,Day,DepartCity,DepartTime,ArrCity,ArrTime,PlaneType)
Plane(PlaneType,NumberOfPassengers)

12. The maximum number of passengers who could arrive in a Greek airport from Norway on Thursday. If there are several flights, the total number of passengers must be found.

```
SELECT Sum(NumberOfPassengers)
FROM ((Flight INNER JOIN Airport AS A1 ON
      Flight.DepartCity=A1.City) INNER JOIN Airport AS A2
      ON Flight.ArrCity=A2.City) INNER JOIN Plane ON
      Plane.PlaneType=Flight.PlaneType
WHERE A1.Country='Greece' and A2.Country='Norway' and
      Day='Thursday' ;
```