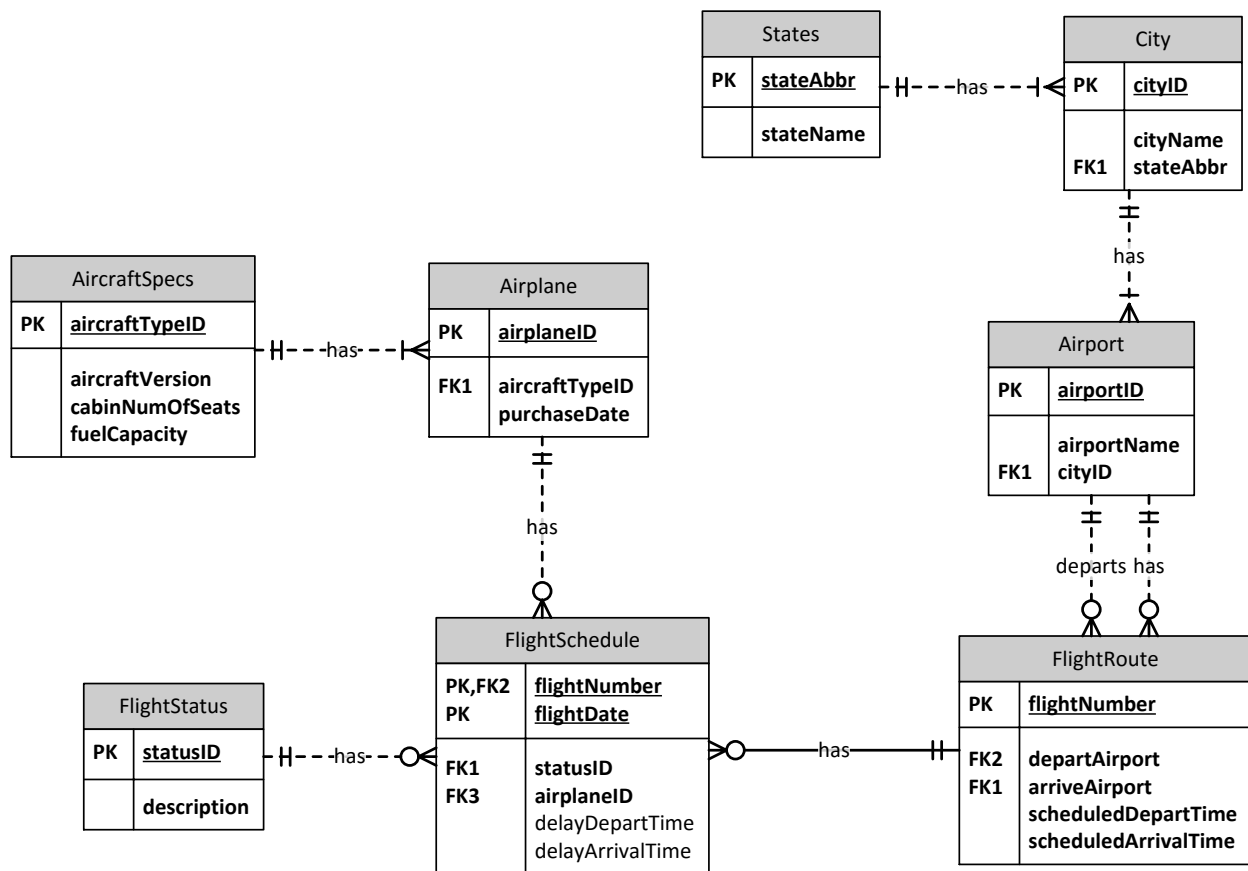


Name: Pan Chen_____

Lab 7 Exercise DUE ON SUNDAY NOON

Problem Description (the same as lab 4 and 5 & 6)

In lab 2, we have modeled a database for SUAirways to track planes and flights. In this lab, assume we created the following ERD model for the Airways database (see below).



As the model shows: the company has many airplanes which are of different specifications (e.g. Boeing 777, Airbus A320, and so on). Each aircraft specification has the same attributes, such as aircraftVersion, cabin number of seats and fuel capacity. The airplanes are assigned to diverse flight routes. Each flight route has a unique flight number, departs and arrives at particular airports at different cities in scheduled time. Every day the airplanes work according to their flight routes, but the flight schedule may be affected by flight statuses (on time, delay, or cancelled).

Instruction

Imagine you are hired to design a new database to support this platform. In lab 4 you have created and populated the tables. In lab 5 you have revised the tables and written queries to answer easy data questions. In this lab you are going to write complex queries which pull data out of multiple tables. Please write SQL statements to finish the following tasks.

Before starting the lab, please use the following SQL commands to add new data to your tables.

```
INSERT INTO Airplane VALUES ('AP324423', 'AIR1', '2012-02-21'), ('AP422379', 'AIR1', '2012-03-22'),
('AP240173', 'BOE3', '2012-04-20'), ('AP139783', 'AIR1', '2012-04-20'), ('AP103752', 'AIR2', '2012-06-07'),
('AP130221', 'AIR2', '2012-07-04'), ('AP108297', 'BOE1', '2012-07-29'), ('AP461923', 'BOE1', '2012-07-31'),
('AP913857', 'BOE2', '2012-08-12'), ('AP123471', 'BOE2', '2012-09-22'), ('AP813701', 'AIR1', '2013-01-03'),
('AP429421', 'BOE3', '2013-01-13'), ('AP132984', 'AIR2', '2013-11-28');
```

```
INSERT INTO FlightRoute VALUES ('4376', 'JFK', 'IAD', '06:00', '07:03'),
('1397', 'SFO', 'LGA', '00:20', '07:40'), ('3019', 'LAX', 'ORD', '14:40', '18:15'),
('0436', 'DCA', 'MIA', '10:05', '15:33'), ('7192', 'SYR', 'BOS', '11:30', '12:45'),
('2531', 'JFK', 'LAX', '07:20', '13:30');
```

```
INSERT INTO FlightSchedule VALUES ('4376', '2014-02-14', 'D', 'AP132984', '06:30', '07:40'),
('1397', '2014-02-15', 'O', 'AP123471', NULL, NULL), ('1397', '2014-02-16', 'O', 'AP139783', NULL, NULL),
('3019', '2014-02-16', 'O', 'AP422379', NULL, NULL), ('0436', '2014-02-16', 'O', 'AP123471', NULL, NULL),
('4376', '2014-02-16', 'D', 'AP130221', '06:30', '07:40'), ('7192', '2014-02-17', 'O', 'AP103752', NULL, NULL),
('7192', '2014-02-18', 'C', 'AP108297', NULL, NULL);
```

1. REQUIRED QUESTIONS: Join Table Queries

- a) Find all airplanes which did not fly in the first half of March 2014 and the flight status was “on time”. Show airplane ID, purchase date, and flight number.

```
SELECT fs.airplaneID, purchaseDate, flightNumber
FROM FlightSchedule AS fs, Airplane AS a
Where fs.airplaneID = a.AirplaneID and statusID='O' and
flightDATE < Convert(datetime, '2014-03-01') or
flightDATE > Convert(datetime, '2014-03-15');
```

```

/*a) Find all airplanes which did not fly in the first half of March 2014 and
the flight status was "on time". Show airplane ID, purchase date, and flight number.*/
SELECT fs.airplaneID, purchaseDate, flightNumber
FROM FlightSchedule AS fs, Airplane AS a
Where fs.airplaneID = a.AirplaneID and statusID='O' and
flightDATE < Convert(datetime, '2014-03-01') or
flightDATE > Convert(datetime, '2014-03-15');

```

Results Messages

	airplaneID	purchaseDate	flightNumber
1	AP123471	2012-09-22	0436
2	AP123471	2012-09-22	1397
3	AP139783	2012-04-20	1397
4	AP422379	2012-03-22	3019
5	AP629342	1900-01-01	3310
6	AP629342	1900-01-01	3310
7	AP872139	1900-01-01	3312
8	AP239471	1900-01-01	3426
9	AP103752	2012-06-07	7192

- b) Find all flights which depart from "LAX" in the morning. Show flight number, flight date, depart airport and scheduled depart time

```

SELECT fs.flightNumber, flightDate, departAirport, scheduledDepartTime
FROM FlightSchedule AS fs, FlightRoute as fr
Where fs.flightNumber = fr.flightNumber and
departAirport='LAX' and scheduledDepartTime < '12:00:00';

```

```

/*b) Find all flights which depart from "LAX" in the morning. Show flight number,
flight date, depart airport and scheduled depart time.*/
SELECT fs.flightNumber, flightDate, departAirport, scheduledDepartTime
FROM FlightSchedule AS fs, FlightRoute as fr
Where fs.flightNumber = fr.flightNumber and
departAirport='LAX' and scheduledDepartTime < '12:00:00';

/*c) Find all airplanes which once delayed or were cancelled.
Show only airplane ID, flight date and status description. */

```

Results Messages

	flightNumber	flightDate	departAirport	scheduledDepartTime
1	3426	2014-02-12	LAX	11:15:00.0000000

- c) Find all airplanes which once delayed or were cancelled. Show only airplane ID, flight date and status description.

```

SELECT airplaneID, flightDate, Description
FROM FlightSchedule AS fs, Status as s
Where fs.statusID = s.statusID and
fs.statusID != 'O';

```

```

/*c) Find all airplanes which once delayed or were cancelled.
Show only airplane ID, flight date and status description. */
SELECT airplaneID, flightDate, Description
FROM FlightSchedule AS fs, Status as s
Where fs.statusID = s.statusID and
fs.statusID != 'O';

/*d) Find all the airplanes that have not been scheduled to fly.

```

100 % <

Results Messages

	airplaneID	flightDate	Description
1	AP132984	2014-02-14	Delay
2	AP130221	2014-02-16	Delay
3	AP309814	2014-02-13	Delay
4	AP108297	2014-02-18	Cancelled

d) Find all the airplanes that have not been scheduled to fly. You can use Left Join

SELECT t1.*, t2.*

FROM Airplane t1

LEFT JOIN FlightSchedule t2 ON t1.airplaneID=t2.AirplaneID

WHERE t2.airplaneID IS NULL;

```

/*d) Find all the airplanes that have not been scheduled to fly. You can use Left Join*/
SELECT t1.*, t2.*
FROM Airplane t1
LEFT JOIN FlightSchedule t2 ON t1.airplaneID=t2.AirplaneID
WHERE t2.airplaneID IS NULL;

/*e) Find the flight(s) which are "on time", display the Flight number and scheduled depart time*/

```

100 % <

Results Messages

	airplaneID	aircraftTypeID	purchaseDate	flightNumber	flightDATE	statusID	airplaneID	delayDepartTime	delayArrivalTime
1	AP098640	AIR2	2013-03-01	NULL	NULL	NULL	NULL	NULL	NULL
2	AP240173	BOE3	2012-04-20	NULL	NULL	NULL	NULL	NULL	NULL
3	AP324423	AIR1	2012-02-21	NULL	NULL	NULL	NULL	NULL	NULL
4	AP429421	BOE3	2013-01-13	NULL	NULL	NULL	NULL	NULL	NULL
5	AP461923	BOE1	2012-07-31	NULL	NULL	NULL	NULL	NULL	NULL
6	AP813701	AIR1	2013-01-03	NULL	NULL	NULL	NULL	NULL	NULL
7	AP913857	BOE2	2012-08-12	NULL	NULL	NULL	NULL	NULL	NULL
8	AP998911	BOE2	1900-01-01	NULL	NULL	NULL	NULL	NULL	NULL

e) Find the flight(s) which are "on time", display the Flight number and scheduled depart time

SELECT fs.flightNumber, scheduledDepartTime

FROM FlightSchedule AS fs, FlightRoute as fr

Where fs.flightNumber = fr.flightNumber and

fs.statusID = 'O';

```

/*e) Find the flight(s) which are "on time", display the Flight number and scheduled depart time*/
SELECT fs.flightNumber, scheduledDepartTime
FROM FlightSchedule AS fs, FlightRoute as fr
Where fs.flightNumber = fr.flightNumber and
fs.statusID = 'O';

/*f)Find all only airplanes that have been scheduled to fly and delayed.
Display Airplane ID of the flight (Use Right Join)*/
SELECT t1.AirplaneID
FROM Airplane t1
RIGHT JOIN FlightSchedule t2 ON t1.airplaneID=t2.AirplaneID
WHERE t2.statusID = 'D';

```

100 % <

Results Messages

	flightNumber	scheduledDepartTime
1	0436	10:05:00.0000000
2	1397	00:20:00.0000000
3	1397	00:20:00.0000000
4	3019	14:40:00.0000000
5	3310	08:00:00.0000000
6	3310	08:00:00.0000000
7	3312	12:20:00.0000000
8	3426	11:15:00.0000000
9	7192	11:30:00.0000000

- f) Find all only airplanes that have been scheduled to fly and delayed. Display Airplane ID of the flight (Use Right Join)

```

SELECT t1.AirplaneID
FROM Airplane t1
RIGHT JOIN FlightSchedule t2 ON t1.airplaneID=t2.AirplaneID
WHERE t2.statusID = 'D';

```

```

/*f)Find all only airplanes that have been scheduled to fly and delayed.
Display Airplane ID of the flight (Use Right Join)*/
SELECT t1.AirplaneID
FROM Airplane t1
RIGHT JOIN FlightSchedule t2 ON t1.airplaneID=t2.AirplaneID
WHERE t2.statusID = 'D';

```

100 % <

Results Messages

	AirplaneID
1	AP132984
2	AP130221
3	AP309814

Submission instruction

Please submit your lab report in **one PDF** file to Blackboard. Name your file in this format "IST659-Lab7-Lastname-Firstname.pdf".

After each question, copy and paste your SQL statement, followed by the screenshot to show that your SQL statement has been successfully executed. Remember to add comments to your SQL statements to explain the purpose of the code blocks.