IST 659: Lab-5

- 1. Problem Description: For this lab, assume we created the ERD model for the SUAirways database.
- SQL statements:

```
CREATE TABLE StatesTable /*creates a Table consisting of State and its abbreviation*/
stateAbbr VARCHAR(2) NOT NULL, /*creates a a variable character which is required*/stateName VARCHAR(20) NOT NULL, /*creates a a variable character which is required*/
CONSTRAINT StatesTable PK PRIMARY KEY (stateAbbr) /*assigns primary key*/
CREATE TABLE StatusTable /*creates a Table which indicates the flight status*/
statusID CHAR(1) NOT NULL CHECK (statusID IN ('O', 'D', 'C')), /*creates a character to
store status of flight*/
description VARCHAR(20) NOT NULL, /*creates a variable character for description*/
CONSTRAINT StatusTable PK PRIMARY KEY (statusID) /*assigns primary key*/
);
CREATE TABLE AircraftSpecsTable /*creates a Table which indicates the specifications of
the aircraft*/
aircraftTypeID CHAR(8) NOT NULL, /*creates a character to store the type ID of the
aircraft*/
aircraftVersion VARCHAR(10) NOT NULL, /*creates a variable character to store the
version of the aircraft*/
cabinNumOfSeats INT, /*creates an integer to store the cabin number of seats in the
aircraft*/
fullCapacity INT NOT NULL, /*creates an integer to store the capacity of seats in the
aircraft*/
CONSTRAINT AircraftSpecsTable_PK PRIMARY KEY (aircraftTypeID) /*assigns primary key*/
CREATE TABLE CityTable /*creates a Table consisting of City attributes*/
cityKey CHAR(8) NOT NULL, /*creates a character indicating a city with a unique key*/
cityName VARCHAR(25) NOT NULL, /*creates a variable character to store the name of the
stateAbbr VARCHAR(2) NOT NULL, /*creates a variable character to store the state
abbreviation which is present in the parent table*/
CONSTRAINT CityTable PK PRIMARY KEY (cityKey), /*assigns primary key*/
CONSTRAINT CityTable_FK FOREIGN KEY (stateAbbr) REFERENCES StatesTable(stateAbbr)
/*assigns foreign key*/
);
CREATE TABLE AirportTable /*creates a Table to store airport details*/
airportID CHAR(3) NOT NULL, /*creates a character indicating an airport ID with a unique
key*/
```

```
airportName VARCHAR(45) NOT NULL UNIQUE, /*creates a variable character to store the
airport name*/
cityKey CHAR(8) NOT NULL, /*creates a character to identify the city using cityID which
is present in the parent table*/
CONSTRAINT AirportTable_PK PRIMARY KEY (airportID), /*assigns primary key*/
CONSTRAINT AirportTable FK FOREIGN KEY (cityKey) REFERENCES CityTable(cityKey) /*assigns
foreign key*/
);
CREATE TABLE FlightRouteTable /*creates a Table to store flight route deails*/
flightNumber VARCHAR(6) NOT NULL, /*creates a variable character to store flight number*/
departAirport CHAR(3) NOT NULL, /*creates a character indicating departing airport*/
arriveAirport CHAR(3) NOT NULL, /*creates a character indicating arrival airport*/
scheduledDepartTime TIME NOT NULL, /*creates a time attribute indicating scheduled
departing time from the airport*/
scheduledArrivalTime TIME NOT NULL, /*creates a time attribute indicating scheduled
arrival time at the airport*/
CONSTRAINT FlightRouteTable_PK PRIMARY KEY (flightNumber), /*assigns primary key*/
CONSTRAINT FlightRouteTable FK departAirport FOREIGN KEY (departAirport) REFERENCES
AirportTable(airportID), /*assigns foreign key*/
CONSTRAINT FlightRouteTable FK arriveAirport FOREIGN KEY (arriveAirport) REFERENCES
AirportTable(airportID) /*assigns foreign key*/
);
CREATE TABLE AirplaneTable /*creates a Table to store airplane details*/
airplaneID CHAR(8) NOT NULL, /*creates a character to uniquely identify th airplane*/
aircraftTypeID CHAR(8) NOT NULL, /*creates a character indicating the type of the
aircraft*/
purchaseDate DATE DEFAULT '01/01/2012', /*creates a date attribute indicating the
purchase date of the airplane*/
CONSTRAINT AirplaneTable_PK PRIMARY KEY (airplaneID), /*assigns primary key*/
CONSTRAINT AirplaneTable_FK FOREIGN KEY (aircraftTypeID) REFERENCES
AircraftSpecsTable(aircraftTypeID) /*assigns foreign key*/
);
CREATE TABLE FlightScheduleTable /*creates a Table to store flight schedules*/
flightNumber VARCHAR(6) NOT NULL, /*creates a variable character indicating scheduled
arriving time at the airport*/
flightDate DATE NOT NULL, /*creates a date attribute to store the flight date*/
statusID CHAR(1) NOT NULL CHECK (statusID IN ('0','D','C')), /*creates a character
indicating status of the flight*/
airplaneID CHAR(8) NOT NULL, /*creates a character to identify the airplane uniquely*/
delayDepartTime TIME, /*creates a time attribute to indicate if any delay for departure*/
delayArrivalTime TIME, /*creates a time attribute to indicate if any delay for arrival*/
CONSTRAINT FlightScheduleTable PK PRIMARY KEY (flightNumber, flightDate), /*assigns
primary key*/
CONSTRAINT FlightScheduleTable FK flightNumber FOREIGN KEY (flightNumber) REFERENCES
FlightRouteTable(flightNumber), /*assigns foreign key*/
CONSTRAINT FlightScheduleTable FK statusID FOREIGN KEY (statusID) REFERENCES
StatusTable(statusID), /*assigns foreign key*/
CONSTRAINT FlightScheduleTable FK airplaneID FOREIGN KEY (airplaneID) REFERENCES
AirplaneTable(airplaneID), /*assigns foreign key*/
);
/*Inserting data*(instances) into the States Table*/
```

```
INSERT INTO StatesTable VALUES('CA','California');
INSERT INTO StatesTable VALUES('DC', 'Washington, D.C.')
INSERT INTO StatesTable VALUES('FL', 'Florida')
INSERT INTO StatesTable VALUES('IL', 'Illinois');
INSERT INTO StatesTable VALUES('MA', 'Massachusetts');
INSERT INTO StatesTable VALUES('NY','New York');
INSERT INTO StatesTable VALUES('TX', 'Texas');
SELECT * from StatesTable; /*Viewing data*(instances) in the States Table*/
/*Inserting data*(instances) into the City Table*/
INSERT INTO CityTable VALUES('C001','Los Angeles','CA');
INSERT INTO CityTable VALUES('C002', 'San Francisco', 'CA');
INSERT INTO CityTable VALUES('C003', 'Washington, D.C.', 'DC');
INSERT INTO CityTable VALUES('C004', 'Miami', 'FL');
INSERT INTO CityTable VALUES('C005','Orlando','FL');
INSERT INTO CityTable VALUES('C006','Chicago','IL');
INSERT INTO CityTable VALUES('C007', 'Boston', 'MA');
INSERT INTO CityTable VALUES('C008','New York','NY');
INSERT INTO CityTable VALUES('C009','Syracuse','NY');
SELECT * from CityTable; /*Viewing data*(instances) in the City Table*/
/*Inserting data*(instances) into the Airport Table*/
INSERT INTO AirportTable VALUES('BOS','Patel Edward Logan International Airport','C007');
INSERT INTO AirportTable VALUES('DCA','Patel Ronald Reagan National Airport','C003');
INSERT INTO AirportTable VALUES('IAD', 'Patel Washington Dulles International
Airport', 'C003');
INSERT INTO AirportTable VALUES('JFK', 'Patel John F. Kennedy International
Airport', 'C008');
INSERT INTO AirportTable VALUES('LAX','Patel Los Angeles International Airport','C001');
INSERT INTO AirportTable VALUES('LGA','Patel LaGuardia Airport','C008');
INSERT INTO AirportTable VALUES('MCO','Patel Orlando International Airport','C005');
INSERT INTO AirportTable VALUES('MDW','Patel Chicago Midway International
Airport', 'C006');
INSERT INTO AirportTable VALUES('MIA','Patel Miami International Airport','C004');
INSERT INTO AirportTable VALUES('ORD', 'Patel Chicago OHare International
Airport', 'C006');
INSERT INTO AirportTable VALUES('SFO', 'Patel San Francisco International
Airport', 'C002');
INSERT INTO AirportTable VALUES('SYR', 'Patel Syracuse Hancock International
Airport', 'C009');
SELECT * from AirportTable; /*Viewing data*(instances) in the States Table*/
/*Inserting data*(instances) into the Flight Route Table*/
INSERT INTO FlightRouteTable
VALUES('3310','SYR','JFK','08:00:00.0000000','09:02:00.0000000');
INSERT INTO FlightRouteTable
VALUES('3312','JFK','SYR','12:20:00.0000000','13:30:00.0000000');
INSERT INTO FlightRouteTable
VALUES('3426','LAX','ORD','11:15:00.0000000','15:05:00.0000000');
INSERT INTO FlightRouteTable
VALUES('5063','BOS','MCO','14:30:00.0000000','18:45:00.0000000');
SELECT * from FlightRouteTable; /*Viewing data*(instances) in the Flight Route Table*/
/*Inserting data*(instances) into the Status Table*/
```

```
INSERT INTO StatusTable VALUES('C', 'Canceled');
INSERT INTO StatusTable VALUES('D','Delay');
INSERT INTO StatusTable VALUES('O','On Time');
SELECT * from StatusTable; /*Viewing data*(instances) in the Status Table*/
/*Inserting data*(instances) into the Aircraft Specs Table*/
INSERT INTO AircraftSpecsTable VALUES('AIR1','A321-200','200','7930');
INSERT INTO AircraftSpecsTable VALUES('AIR2','737-600ER','132','6875');
INSERT INTO AircraftSpecsTable VALUES('B0E1','747-400ER','416','63705');
INSERT INTO AircraftSpecsTable VALUES('B0E2','767-300ER','350','23980');
INSERT INTO AircraftSpecsTable VALUES('B0E3','737-600ER','132','6875');
SELECT * from AircraftSpecsTable; /*Viewing data*(instances) from the Aircraft Specs
Table*/
/*Inserting data*(instances) into the Airplane Table*/
INSERT INTO AirplaneTable VALUES('AP098640', 'AIR2', '2013-03-01');
INSERT INTO AirplaneTable VALUES('AP239471','AIR1','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP309814','B0E2','2012-05-22');
INSERT INTO AirplaneTable VALUES('AP629342','B0E1','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP872139','B0E3','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP998911', 'B0E2', '1900-01-01');
SELECT * from AirplaneTable; /*Viewing data*(instances) from the Airplane Table*/
/*Inserting data*(instances) into the Flight Schedule Table*/
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID)
VALUES('3310','2014-02-10','0','AP629342');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID)
VALUES('3310','2014-02-11','0','AP629342');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID)
VALUES('3312','2014-02-10','0','AP872139');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID)
VALUES('3426','2014-02-12','0','AP239471');
INSERT INTO FlightScheduleTable VALUES('5063','2014-02-
13', 'D', 'AP309814', '15:40:00.0000000', '20:05:00.0000000');
SELECT * from FlightScheduleTable; /*Viewing data*(instances) from the Flight Schedule
Table*/
```

Results

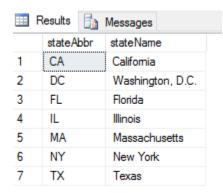
Create StatesTable:

```
CREATE TABLE StatesTable /*creates a Table consisting of State and its abbreviation*/

(
stateAbbr VARCHAR(2) NOT NULL, /*creates a a variable character which is required*/
stateName VARCHAR(20) NOT NULL, /*creates a a variable character which is required*/
CONSTRAINT StatesTable_PK PRIMARY KEY (stateAbbr) /*assigns primary key*/
);
```

Insert and display StatesTable:

```
/*Inserting data*(instances) into the States Table*/
INSERT INTO StatesTable VALUES('CA','California');
INSERT INTO StatesTable VALUES('DC','Washington, D.C.')
INSERT INTO StatesTable VALUES('FL','Florida')
INSERT INTO StatesTable VALUES('IL','Illinois');
INSERT INTO StatesTable VALUES('MA','Massachusetts');
INSERT INTO StatesTable VALUES('NY','New York');
INSERT INTO StatesTable VALUES('TX','Texas');
SELECT * from StatesTable; /*Viewing data*(instances) in the States Table*/
```



2. Create StatusTable

```
CREATE TABLE StatusTable /*creates a Table which indicates the flight status*/

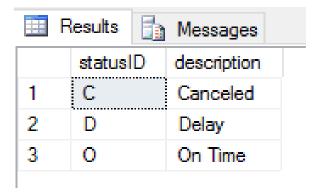
(
statusID CHAR(1) NOT NULL CHECK (statusID IN ('0','D','C')), /*creates a character to store status of flight*/
description VARCHAR(20) NOT NULL, /*creates a variable character for description*/

CONSTRAINT StatusTable_PK PRIMARY KEY (statusID) /*assigns primary key*/
);
```

Insert and display StatusTable

```
/*Inserting data*(instances) into the Status Table*/
INSERT INTO StatusTable VALUES('C','Canceled');
INSERT INTO StatusTable VALUES('D','Delay');
INSERT INTO StatusTable VALUES('O','On Time');

SELECT * from StatusTable; /*Viewing data*(instances) in the Status Table*/
```



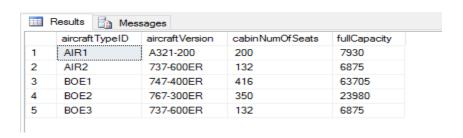
3. Create AircraftSpecsTable:

```
CREATE TABLE AircraftSpecsTable /*creates a Table which indicates the specifications of the aircraft*/
(
aircraftTypeID CHAR(8) NOT NULL, /*creates a character to store the type ID of the aircraft*/
aircraftVersion VARCHAR(10) NOT NULL, /*creates a variable character to store the version of the aircraft*/
cabinNumOfSeats INT, /*creates an integer to store the cabin number of seats in the aircraft*/
fullCapacity INT NOT NULL, /*creates an integer to store the capacity of seats in the aircraft*/
CONSTRAINT AircraftSpecsTable_PK PRIMARY KEY (aircraftTypeID) /*assigns primary key*/
);
```

Insert and Display AircraftSpecsTable

```
/*Inserting data*(instances) into the Aircraft Specs Table*/
INSERT INTO AircraftSpecsTable VALUES('AIR1','A321-200','200','7930');
INSERT INTO AircraftSpecsTable VALUES('AIR2','737-600ER','132','6875');
INSERT INTO AircraftSpecsTable VALUES('B0E1','747-400ER','416','63705');
INSERT INTO AircraftSpecsTable VALUES('B0E2','767-300ER','350','23980');
INSERT INTO AircraftSpecsTable VALUES('B0E3','737-600ER','132','6875');

SELECT * from AircraftSpecsTable; /*Viewing data*(instances) from the Aircraft Specs Table*/
```



4. Create CityTable

```
CREATE TABLE CityTable /*creates a Table consisting of City attributes*/

(

cityKey CHAR(8) NOT NULL, /*creates a character indicating a city with a unique key*/

cityName VARCHAR(25) NOT NULL, /*creates a variable character to store the name of the city*/

stateAbbr VARCHAR(2) NOT NULL, /*creates a variable character to store the state abbreviation which is present in the parer

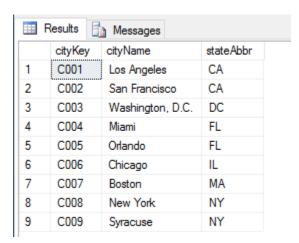
CONSTRAINT CityTable_PK PRIMARY KEY (cityKey), /*assigns primary key*/

CONSTRAINT CityTable_FK FOREIGN KEY (stateAbbr) REFERENCES StatesTable(stateAbbr) /*assigns foreign key*/

);
```

Insert and Display CityTable

```
/*Inserting data*(instances) into the City Table*/
INSERT INTO CityTable VALUES('C001','Los Angeles','CA');
INSERT INTO CityTable VALUES('C002','San Francisco','CA');
INSERT INTO CityTable VALUES('C003','Washington, D.C.','DC');
INSERT INTO CityTable VALUES('C004','Miami','FL');
INSERT INTO CityTable VALUES('C005','Orlando','FL');
INSERT INTO CityTable VALUES('C006','Chicago','IL');
INSERT INTO CityTable VALUES('C007','Boston','MA');
INSERT INTO CityTable VALUES('C008','New York','NY');
INSERT INTO CityTable VALUES('C009','Syracuse','NY');
SELECT * from CityTable; /*Viewing data*(instances) in the City Table*/
```



5. Insert AirportTable

```
CREATE TABLE AirportTable /*creates a Table to store airport details*/
(
airportID CHAR(3) NOT NULL, /*creates a character indicating an airport ID with a unique key*/
airportName VARCHAR(45) NOT NULL UNIQUE, /*creates a variable character to store the airport name*/
cityKey CHAR(8) NOT NULL, /*creates a character to identify the city using cityID which is present in the parent table*/
CONSTRAINT AirportTable_PK PRIMARY KEY (airportID), /*assigns primary key*/
CONSTRAINT AirportTable_FK FOREIGN KEY (cityKey) REFERENCES CityTable(cityKey) /*assigns foreign key*/
);
```

Insert and Display AirportTable

```
/*Inserting data*(instances) into the Airport Table*/
INSERT INTO AirportTable VALUES('BOS','Patel Edward Logan International Airport','C007');
INSERT INTO AirportTable VALUES('DCA','Patel Ronald Reagan National Airport','C003');
INSERT INTO AirportTable VALUES('IAD','Patel Washington Dulles International Airport','C003');
INSERT INTO AirportTable VALUES('JFK','Patel John F. Kennedy International Airport','C008');
INSERT INTO AirportTable VALUES('LAX','Patel Los Angeles International Airport','C001');
INSERT INTO AirportTable VALUES('LGA','Patel LaGuardia Airport','C008');
INSERT INTO AirportTable VALUES('MCO','Patel Orlando International Airport','C005');
INSERT INTO AirportTable VALUES('MDW','Patel Chicago Midway International Airport','C006');
INSERT INTO AirportTable VALUES('MIA','Patel Miami International Airport','C004');
INSERT INTO AirportTable VALUES('SFO','Patel San Francisco International Airport','C002');
INSERT INTO AirportTable VALUES('SYR','Patel Syracuse Hancock International Airport','C009');

SELECT * from AirportTable;
```

Results Messages			
	airportID	airportName	cityKey
1	BOS	Patel Edward Logan International Airport	C007
2	DCA	Patel Ronald Reagan National Airport	C003
3	IAD	Patel Washington Dulles International Airport	C003
4	JFK	Patel John F. Kennedy International Airport	C008
5	LAX	Patel Los Angeles International Airport	C001
6	LGA	Patel LaGuardia Airport	C008
7	MCO	Patel Orlando International Airport	C005
8	MDW	Patel Chicago Midway International Airport	C006
9	MIA	Patel Miami International Airport	C004
10	ORD	Patel Chicago OHare International Airport	C006
11	SFO	Patel San Francisco International Airport	C002
12	SYR	Patel Syracuse Hancock International Airp	C009

6. Create FlightRouteTable

```
CREATE TABLE FlightRouteTable /*creates a Table to store flight route deails*/

(
flightNumber VARCHAR(6) NOT NULL, /*creates a variable character to store flight number*/

departAirport CHAR(3) NOT NULL, /*creates a character indicating departing airport*/

arriveAirport CHAR(3) NOT NULL, /*creates a character indicating arrival airport*/

scheduledDepartTime TIME NOT NULL, /*creates a time attribute indicating scheduled departing time from the airport*/

scheduledArrivalTime TIME NOT NULL, /*creates a time attribute indicating scheduled arrival time at the airport*/

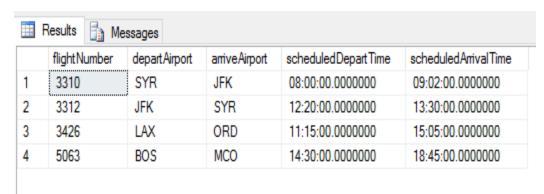
CONSTRAINT FlightRouteTable_PK PRIMARY KEY (flightNumber), /*assigns primary key*/

CONSTRAINT FlightRouteTable_FK_departAirport FOREIGN KEY (departAirport) REFERENCES AirportTable(airportID), /*assigns forei

CONSTRAINT FlightRouteTable_FK_arriveAirport FOREIGN KEY (arriveAirport) REFERENCES AirportTable(airportID) /*assigns forei
);
```

Insert and Display FlightRouteTable

```
/*Inserting data*(instances) into the Flight Route Table*/
INSERT INTO FlightRouteTable VALUES('3310','SYR','JFK','08:00:00.0000000','09:02:00.0000000');
INSERT INTO FlightRouteTable VALUES('3312','JFK','SYR','12:20:00.0000000','13:30:00.0000000');
INSERT INTO FlightRouteTable VALUES('3426','LAX','ORD','11:15:00.00000000','15:05:00.0000000');
INSERT INTO FlightRouteTable VALUES('5063','BOS','MCO','14:30:00.0000000','18:45:00.0000000');
INSERT INTO FlightRouteTable; /*Viewing data*(instances) in the Flight Route Table*/
```



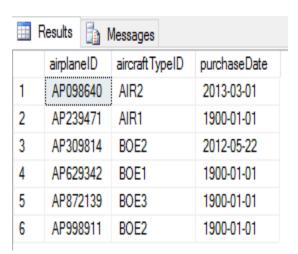
7. Create AirplaneTable

```
CREATE TABLE AirplaneTable /*creates a Table to store airplane details*/

(
airplaneID CHAR(8) NOT NULL, /*creates a character to uniquely identify th airplane*/
aircraftTypeID CHAR(8) NOT NULL, /*creates a character indicating the type of the aircraft*/
purchaseDate DATE DEFAULT '01/01/2012', /*creates a date attribute indicating the purchase date of the airplane*/
CONSTRAINT AirplaneTable_PK PRIMARY KEY (airplaneID), /*assigns primary key*/
CONSTRAINT AirplaneTable_FK FOREIGN KEY (aircraftTypeID) REFERENCES AircraftSpecsTable(aircraftTypeID) /*assigns foreign kate);
```

Insert and Display AirplaneTable

```
/*Inserting data*(instances) into the Airplane Table*/
INSERT INTO AirplaneTable VALUES('AP098640','AIR2','2013-03-01');
INSERT INTO AirplaneTable VALUES('AP239471','AIR1','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP309814','B0E2','2012-05-22');
INSERT INTO AirplaneTable VALUES('AP629342','B0E1','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP872139','B0E3','1900-01-01');
INSERT INTO AirplaneTable VALUES('AP998911','B0E2','1900-01-01');
SELECT * from AirplaneTable; /*Viewing data*(instances) from the Airplane Table*/
```



8. Create FlightScheduleTable

```
CREATE TABLE FlightScheduleTable /*creates a Table to store flight schedules*/
(
flightNumber VARCHAR(6) NOT NULL, /*creates a variable character indicating scheduled arriving time at the airport*/
flightDate DATE NOT NULL, /*creates a date attribute to store the flight date*/
statusID CHAR(1) NOT NULL CHECK (statusID IN ('O','D','C')), /*creates a character indicating status of the flight*/
airplaneID CHAR(8) NOT NULL, /*creates a character to identify the airplane uniquely*/
delayDepartTime TIME, /*creates a time attribute to indicate if any delay for departure*/
delayArrivalTime TIME, /*creates a time attribute to indicate if any delay for arrival*/
CONSTRAINT FlightScheduleTable_PK PRIMARY KEY (flightNumber, flightDate), /*assigns primary key*/
CONSTRAINT FlightScheduleTable_FK_flightNumber FOREIGN KEY (flightNumber) REFERENCES FlightRouteTable(flightNumber), /*assigns
CONSTRAINT FlightScheduleTable_FK_statusID FOREIGN KEY (statusID) REFERENCES StatusTable(statusID), /*assigns foreign key*/
CONSTRAINT FlightScheduleTable_FK_airplaneID FOREIGN KEY (airplaneID) REFERENCES AirplaneTable(airplaneID), /*assigns foreign key*/
CONSTRAINT FlightScheduleTable_FK_airplaneID FOREIGN KEY (airplaneID) REFERENCES AirplaneTable(airplaneID), /*assigns foreign key*/
```

Insert and display FlightScheduleTable

```
/*Inserting data*(instances) into the Flight Schedule Table*/
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID) VALUES('3310','2014-02-10','0','AP629342');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID) VALUES('3310','2014-02-11','0','AP629342');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID) VALUES('3312','2014-02-10','0','AP872139');
INSERT INTO FlightScheduleTable(flightNumber,flightDate,statusID,airplaneID) VALUES('3426','2014-02-12','0','AP239471');
INSERT INTO FlightScheduleTable VALUES('5063','2014-02-13','D','AP309814','15:40:00.0000000','20:05:00.0000000');

SELECT * from FlightScheduleTable; /*Viewing data*(instances) from the Flight Schedule Table*/
```

