FlightSchedulerLib Component

Use the *Calculating Flight Times* exercise as a starting point for this exercise. Create a component (class library) named *FlightSchedulerLib*. In this library, define a class named *Airport* that contains two properties:

an airport code (such as *MIA* or *LAX*) and a UTC offset. (A UTC offset is a signed integer that represents the difference between the airport's local time zone, and Universal Coordinated Time zone.)

Create a class named *Flight* that contains properties that hold a departure airport (an Airport object), arrival airport (an Airport object), the flight's departure date and time, and the flight's duration (in hours). The class must contain a method named *GetArrival* that returns the date and time of the flight's arrival, expressed in the local time zone of the arrival airport. This is its declaration:

```
Function GetArrival() as type DateTime
```

Create a text file containing the following information. The Flight class should read this text file and save the information in variables inside the Flight class.

```
MIA    JFK    HNL    LAX    DFW
-5     -5     -10    -8     -6
0      3      12     8      2.5
3      0      14     8.5    3.5
12     12     0      4.5    8.5
8      8.5    4.5    0      3.5
2.5    3.5    8.5    3.5    0
```

The first line of the file contains the five airport codes; the second line contains the UTC offset of each airport; the next five rows contain a two-dimensional array of flight durations.

For example, the duration of a flight from MIA to LAX is 8 hours. The durations of all flights leaving MIA are in the first row of the array. The flight duration from MIA to LAX is given in column 3 of the same row. (Column numbers start at 0.) Similarly, the duration of a flight from HNL to MIA is 12 hours (row 2, column 0).

Add a Windows Forms project named *Flight Scheduler UI* to the same Visual Studio solution.
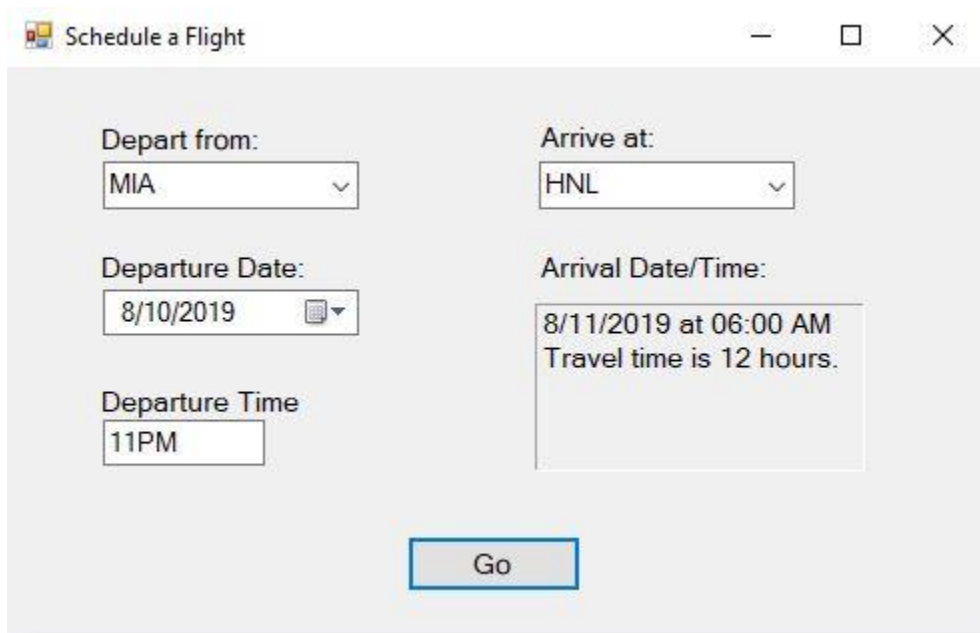
Using the same interface as in exercise *Calculating Flight Times*, let the user select the departure and arrival airports and enter the departure date and time.

When the user clicks a button, call the GetArrival method and display the flight duration and flight arrival time at the destination airport.

Testing the FlightSchedulerLib Component

Create a test project that tests the GetArrival method of the Flight class in the FlightSchedulerLib component.

Create five unit tests that validate flights between different sets of airports. Be sure to include flights that begin before midnight and arrive the following day.