COP 4814 Assignments

Each team member must upload a separate copy of each assignment, to avoid receiving a grade of zero.
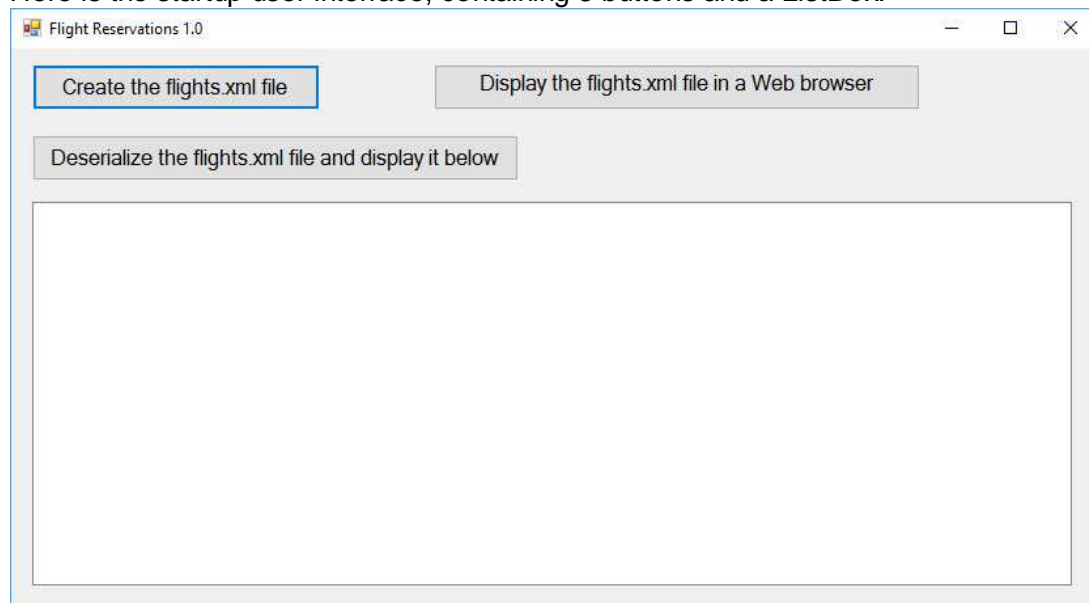
Assignment 1

Creating the flights.xml File

Write a C# program that uses serialization to create your own flights.xml file. Your C# program must create this file so your later assignments can regenerate this file when you test your flight reservations. Watch my Serialization videos to learn how to create XML files. Create a component (class library) to hold all code not directly used to display data on a form. In your component, you will need to create a Flight class and a FlightFactory class (to handle serialization). Link to your component from the GUI program, using the "References" item in the Solution Explorer window.

From the "Flight Reservation System Documents" page in Moodle, download my starting version of the application, which has code to display a short sample xml file in a Web browser window. Here are some details to keep in mind regarding the flights.xml file:

Your flights.xml file must be created in the same folder as your CreateFilesForm. Each aircraft holds 10 passengers. The file must contain four flights in each direction on all the possible routes involving these four airports: MIA, SEA, DEN, and LAX, for dates 6/1/2017 through 7/1/2017, inclusive. You will probably want to use a loop when creating this file, possibly with some random numbers.

The flight number and time schedule must be the same each day. Flights between different cities have different fares. Flights between the same two cities (MIA-DEN, for example) must have different fares at each time of the day. (Some times are more desirable than others.) Fares for flights will never be less than $500 and never more than $3,000. Flights in the middle of the day tend to be more expensive that early morning and late evening flights.

Here is the startup user interface, containing 3 buttons and a ListBox:

This is partial sample output in the browser form after clicking the second button on the top:

file://D:\Dropbox\Classes\Spr_2017\cop 4814\assignments\Solution - Asg 1\Flight Reservations\Flight Reservations\bin\Debug...   —   □   ×

```xml
<?xml version="1.0" encoding="utf-8" ?>
- <ArrayOfFlight xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  - <Flight>
      <FlightNumber>102</FlightNumber>
      <DateAndTime>2017-06-01T06:10:00</DateAndTime>
      <OrigAirport>MIA</OrigAirport>
      <DestAirport>SEA</DestAirport>
      <Fare>1750</Fare>
      <Seats>10</Seats>
    </Flight>
  - <Flight>
      <FlightNumber>104</FlightNumber>
      <DateAndTime>2017-06-01T11:30:00</DateAndTime>
      <OrigAirport>MIA</OrigAirport>
      <DestAirport>SEA</DestAirport>
      <Fare>2350</Fare>
      <Seats>10</Seats>
    </Flight>
  - <Flight>
      <FlightNumber>104</FlightNumber>
      <DateAndTime>2017-06-01T14:30:00</DateAndTime>
      <OrigAirport>MIA</OrigAirport>
      <DestAirport>SEA</DestAirport>
      <Fare>2450</Fare>
      <Seats>10</Seats>
    </Flight>
  - <Flight>
      <FlightNumber>106</FlightNumber>
      <DateAndTime>2017-06-01T20:40:00</DateAndTime>
```

This is partial sample output in the ListBox after clicking the third button

```
Flight Reservations 1.0                                         ─   □   ✕

   ┌──────────────────────────┐   ┌────────────────────────────────────────────┐
   │   Create the flights.xml file   │   │  Display the flights.xml file in a Web browser  │
   └──────────────────────────┘   └────────────────────────────────────────────┘

   ┌────────────────────────────────────────────────┐
   │  Deserialize the flights.xml file and display it below  │
   └────────────────────────────────────────────────┘

  102, 06/01/2017 at 06:06, MIA to SEA, Cost: 1750.0, Seats: 10
  104, 06/01/2017 at 11:06, MIA to SEA, Cost: 2350.0, Seats: 10
  106, 06/01/2017 at 14:06, MIA to SEA, Cost: 2450.0, Seats: 10
  108, 06/01/2017 at 20:06, MIA to SEA, Cost: 2000.0, Seats: 10
  122, 06/01/2017 at 08:06, SEA to MIA, Cost: 2250.0, Seats: 10
  124, 06/01/2017 at 10:06, SEA to MIA, Cost: 2350.0, Seats: 10
  126, 06/01/2017 at 17:06, SEA to MIA, Cost: 2450.0, Seats: 10
  128, 06/01/2017 at 22:06, SEA to MIA, Cost: 1850.0, Seats: 10
  132, 06/01/2017 at 08:06, SEA to DEN, Cost: 1250.0, Seats: 10
  134, 06/01/2017 at 10:06, SEA to DEN, Cost: 1350.0, Seats: 10
  136, 06/01/2017 at 17:06, SEA to DEN, Cost: 1450.0, Seats: 10
  138, 06/01/2017 at 22:06, SEA to DEN, Cost:  850.0, Seats: 10
  142, 06/01/2017 at 06:06, DEN to SEA, Cost: 1200.0, Seats: 10
  144, 06/01/2017 at 12:06, DEN to SEA, Cost: 1450.0, Seats: 10
  146, 06/01/2017 at 15:06, DEN to SEA, Cost:  850.0, Seats: 10
  148, 06/01/2017 at 21:06, DEN to SEA, Cost:  750.0, Seats: 10
  162, 06/01/2017 at 07:06, MIA to DEN, Cost: 1150.0, Seats: 10
  164, 06/01/2017 at 12:06, MIA to DEN, Cost: 1550.0, Seats: 10
  166, 06/01/2017 at 18:06, MIA to DEN, Cost:  950.0, Seats: 10
  168, 06/01/2017 at 22:06, MIA to DEN, Cost:  750.0, Seats: 10
  172, 06/01/2017 at 06:06, DEN to MIA, Cost: 1200.0, Seats: 10
  174, 06/01/2017 at 12:06, DEN to MIA, Cost: 1450.0, Seats: 10
  176, 06/01/2017 at 15:06, DEN to MIA, Cost:  850.0, Seats: 10
  178, 06/01/2017 at 21:06, DEN to MIA, Cost:  750.0, Seats: 10
  182, 06/01/2017 at 06:06, DEN to LAX, Cost: 1200.0, Seats: 10
  184, 06/01/2017 at 12:06, DEN to LAX, Cost: 1450.0, Seats: 10
  186, 06/01/2017 at 15:06, DEN to LAX, Cost:  850.0, Seats: 10
  188, 06/01/2017 at 21:06, DEN to LAX, Cost:  750.0, Seats: 10
  202, 06/01/2017 at 07:06, LAX to DEN, Cost:  750.0, Seats: 10
  204, 06/01/2017 at 12:06, LAX to DEN, Cost:  550.0, Seats: 10
  206, 06/01/2017 at 18:06, LAX to DEN, Cost:  450.0, Seats: 10
  208, 06/01/2017 at 22:06, LAX to DEN, Cost:  350.0, Seats: 10
  212, 06/01/2017 at 07:06, MIA to LAX, Cost: 2150.0, Seats: 10
  214, 06/01/2017 at 12:06, MIA to LAX, Cost: 2525.0, Seats: 10
  216, 06/01/2017 at 18:06, MIA to LAX, Cost: 1950.0, Seats: 10
  218, 06/01/2017 at 22:06, MIA to LAX, Cost: 1750.0, Seats: 10
  222, 06/01/2017 at 06:06, LAX to MIA, Cost: 2200.0, Seats: 10
  224, 06/01/2017 at 12:06, LAX to MIA, Cost: 2450.0, Seats: 10
  226, 06/01/2017 at 15:06, LAX to MIA, Cost: 1825.0, Seats: 10
  228, 06/01/2017 at 21:06, LAX to MIA, Cost: 1750.0, Seats: 10
  232, 06/01/2017 at 07:06, SEA to LAX, Cost:  650.0, Seats: 10
  234, 06/01/2017 at 12:06, SEA to LAX, Cost:  820.0, Seats: 10
  236, 06/01/2017 at 18:06, SEA to LAX, Cost:  750.0, Seats: 10
  238, 06/01/2017 at 22:06, SEA to LAX, Cost:  620.0, Seats: 10
  242, 06/01/2017 at 06:06, LAX to SEA, Cost:  599.0, Seats: 10
  244, 06/01/2017 at 12:06, LAX to SEA, Cost:  815.0, Seats: 10
  246, 06/01/2017 at 15:06, LAX to SEA, Cost:  799.0, Seats: 10
```

Use the ListBox's Anchor property to allow the ListBox to expand and contract when the user modifies the form size at runtime (by grabbing the window's corner with the mouse). To get full credit for this assignment, you must use a fixed font (Courier New, 11 pt) in the ListBox, and use custom .NET string formatting to align all the columns. Notice that the fare field uses zero-suppression. Here's where to read about custom numeric formats, and here is where to read about Custom Date and Time formats.

Any other details will be discussed in class. You are responsible for attending class and participating in these discussions.