**Programming in C#**

**Question：**

You are a developer for a consulting company named Action IT. You have been asked to create a Tutorial Scheduling application in C# that will perform the following functions:

        Create an MVP C# project in Visual Studio

        Create 2 C# classes that will encapsulate a Teacher and a Subject

        Create another C# class which encapsulates a Tutorial i.e. Year, Semester, Teacher and Subject

o   Each class will have a Constructor method which will create a new object from the method’s parameters

        Create a Teacher, Subject and Tutorial collection to store the Teacher, Subject and Tutorial objects

        Read a list of Teachers, Subjects and Tutorials from flat files

o   Trap exceptions that may occur when reading from the flat files

o   Create a new object for each Teacher, Subject and Tutorial that we read by calling the class constructor

o   Add the object to the appropriate collection

        Use MainWindow.XAML to create a form to display a list of Tutorials. The form will also have the following buttons

o   **Create** - display a new XAML form which will allow new Tutorial to be created. It will have controls to allow the user to select a Year, Semester, Teacher and Subject

* The OK button will

 Call the constructor method of the Tutorial class to create a new Tutorial object. It will then add the Tutorial object to the Tutorial collection

 Append the new Tutorial to the Tutorial flat file

  Trap exceptions that may occur when writing to the flat files

* **Count** - this will
  + Call a method to return a count of the number of Tutorials.
    - The method must return the count using a reference parameter.
    - The method must use LINQ to determine the number of Tutorials
  + Display the count in a message box
* **Search** – this will
  + Use the algorithm found at <http://anh.cs.luc.edu/170/notes/CSharpHtml/binarysearching.html> as a reference
  + The parameters in this case will be the collection of Teachers (parameter 1) and the Teacher ID of the teacher that is being searched for
  + Display a XAML form in which the user selects a Teacher ID from a list and then displays the teacher First Name and Last Name
  + The form must call the Search method asynchronously.

The program will be completed in the following stages

Stage 1 – Design

* The student will need to produce a class diagram to show the design of the Teacher, Subject and Tutorial classes
* The student will need to produce a sequence diagram to show how objects interact with each other and in which order
* These design documents need to be submitted to the instructor, who will then provide feedback

Stage 2 – Implementation

* Code the solution