Lab Assignment 3 (Fall 2021)

To do this lab, you will need to use **C#** in **Visual Studio Professional 2019**. You can access this program in **Mohawk Apps**, while either on campus or at home. Alternatively, while on campus a local version can be accessed from the **Start Menu**, or, you can download and install it as described by the instructions in the **Student Resources** sub-section located in the **Modules** section of the course page.

To Be Graded – General Details:

- This program will be marked for 6% of your final grade
- Please examine the **Marking Scheme (https://mycanvas.mohawkcollege.ca/courses/92934/pages/lab-assignment-3-fall-2020#jump)** to see the marks breakdown
- This program needs to have appropriate internal comments, as well as **XML comments** for *every class* and *every method*
- This program also needs to have an appropriate comment block at the top of all code files that contains:
  - Your name and student number
  - The file date
  - The program's purpose
  - Your **Statement of Authorship (https://mycanvas.mohawkcollege.ca/courses/92934/pages/statement-of-authorship)**
- Bundle your project into one Zip file, and upload it to the appropriate **Lab Assignment (https://mycanvas.mohawkcollege.ca/courses/92934/assignments/838004)** on MyCanvas
- Please read about **documentation (https://mycanvas.mohawkcollege.ca/courses/92934/pages/program-documentation)** style
- Programs that are late will be penalized 10% per day (includes each day of a weekend)
- Programs that do not compile or do not include a **Statement of Authorship (https://mycanvas.mohawkcollege.ca/courses/92934/pages/statement-of-authorship)** will be penalized 10% for each

Part A: Media is the Message

Project Name: Lab3A Create Class: *Various (one file for each class)*

Write a Console App (.NET Framework) that:

- Makes use of an interface called **IEncryptable (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176715/download)** **(https://mycanvas.mohawkcollege.ca/courses/92934/files/17176715/download?download_frd=1)** that

contains method signatures for **Encrypt( )** and **Decrypt( )** (right-click and save as *IEncryptable.cs*)

- Makes use of an interface called **ISearchable (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176714/download) (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176714/download?download_frd=1)** that contains a method signature for **Search( )** (right-click and save as *ISearchable.cs*)
- Makes use of an abstract class called **Media (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176716/download) (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176716/download?download_frd=1)** which represents one single media object (right-click and save as *Media.cs*)
- Creates additional classes derived from *Media*:
  - **Book** (represents one book and has two string properties, *Author* and *Summary*)
  - **Movie** (represents one movie and has two string properties, *Director* and *Summary*)
  - **Song** (represents one song and has two string properties, *Album* and *Artist*)
- The main class (**Lab3A**) should have the following features:
  - A method called **ReadData( )** that will read the **Data.txt (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176722/download) (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176722/download?download_frd=1)** file (right-click and save as Data.txt) and store up to 100 searchable media objects into an array
    - Examine the data file structure to see how the different media information has been formatted and stored
    - The data file will have the *Summary* information for both *Books* and *Movies* encrypted using a simple Rot13 algorithm (see Wikipedia)
    - Include exception handling for the file I/O
  - Prompts the user via a menu to display your media objects in a variety of ways:
    1. **List All Books** - a neat list of all Book objects (no *Summary* displayed)
    2. **List All Movies** - a neat list of all Movie objects (no *Summary* displayed)
    3. **List All Songs** - a neat list of all Song objects
    4. **List All Media** - a neat list of all derived Media objects (no *Summary* displayed)
    5. **Search All Media by Title** - a neat list of all objects with the search key anywhere in the *Title* (display decrypted *Summary* where available)
    6. **Exit Program**
  - Continues to prompt until the user selects the exit option
  - Error checking for user input
  - The **Main( )** method should be highly modularized
- You may download this **sample program (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176759/download) (https://mycanvas.mohawkcollege.ca/courses/92934/files/17176759/download?download_frd=1)** for a demonstration of program behaviour