CSSE 371: Lab 2-1

Background

Assume that you are given the world's best text editor library (not! ☺). The text editor allows you to supply it an **InputStream**, which is used to read the input and display the content on the screen. It also allows you to supply an **OuputStream**, which is used to store the content before closing the application window. Here is a typical code that a developer would write to work with this text editor:

```
InputStream in = new FileInputStream("./input_output/in.txt");
OutputStream out = new FileOutputStream("./input_output/out.txt");

TextEditor editor = new TextEditor(in, out);
editor.execute();
```

Please explore and run the application to see how it works. There is, however, an issue with the **TextEditor**. It is not open sourced and is only released as a **jar** library (**Lab2-1/lib/coolest-editor.jar**). Your project is already configured to use this library, so no further configuration is required.

Being a super awesome student that you are, you are thinking, "*Coolest Editor, you cannot stop me from extending your functionality even though you hid your internal code from me! I shall extend thou by adding the encryption facility!*" Here is what you decided to implement as an extension to this library:

F1. Ability to store the plain text contents shown on the editor's window to an encrypted output file using the provided simple encryption algorithm (**SubstitutionCipher**).

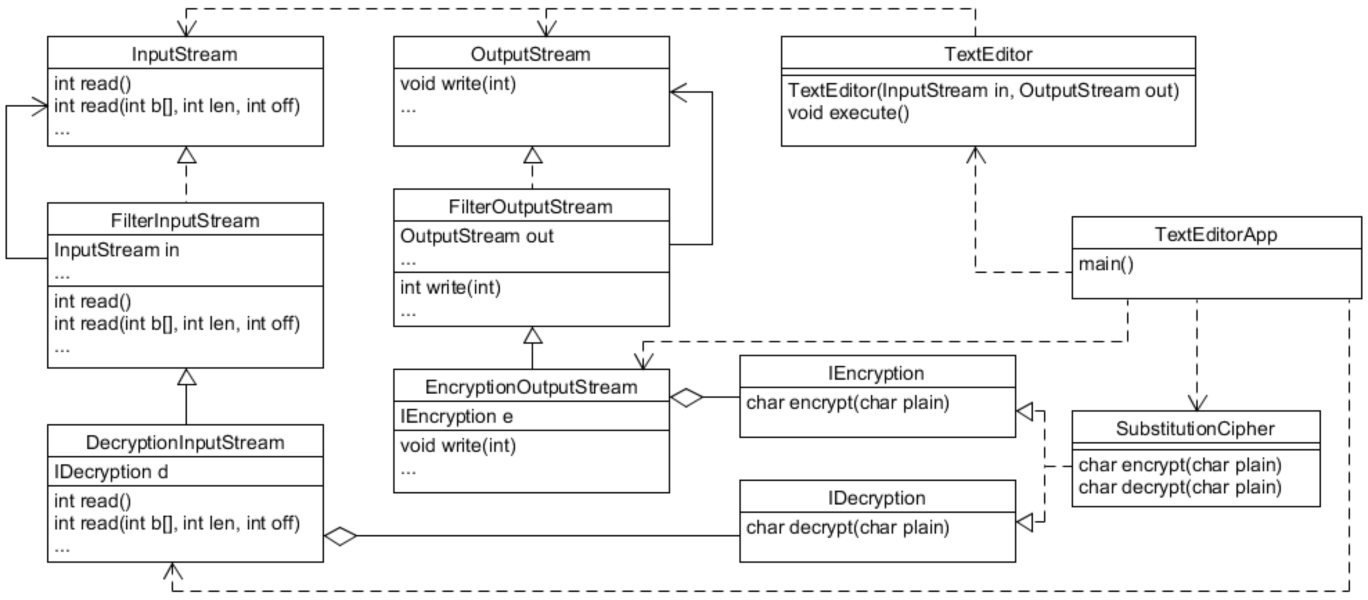
F2. Ability to read from an encrypted input file and decrypt the contents (using **SubstitutionCipher** again) before showing the contents to the user.

As a result, in an ideal world, users with your extension to the text editor can only decipher the contents stored in the encrypted file.

Design

Create **Lab2-1/docs/Answer.pdf** with answers to the following problems:

Q1. Create a UML Class Diagram to present your design idea and explain it in a few lines. [**10 points**]



The **FilterInputStream** and **FilterOutputStream** classes decorate any kind of **InputStream**s and **OutputStream**s, respectively. We extend these classes and override the read and write methods to add the decryption and encryption behavior using the **SubustitutionCipher** algorithm in **DecyptionInputStream** and **EncryptionOutputStream**, respectively. We pass the decorated input and output stream to the **TextEditor** class for the encryption-decryption functionality.

Implementation

Q2. Implement your solution in the **Lab2-1/src/problem** package. [**F1 - 15 points**, **F2 - 15 points**]

Testing

Q3: Implement necessary test cases in the **Lab2-1/test/problem** package that tests both **F1** and **F2**. [**10 points**]

[**Note**: The general unit testing convention is that you have at least one test class per concrete implementation class. A test class may have several unit testing methods that check boundary conditions of the methods in the concrete implementation. Example: If you have classes **A** and **B** that inherit interface **I**, then you should create **TestA** and **TestB** class in your test suite.]

Deliverable

Bundle your project in the **zip** format [**not rar**] and turn it in on Moodle.