

AP COMPUTER SCIENCE A – HOMEWORK #5

The goal of this assignment is to write a program `Encryptor` which can encrypt and decrypt text using the so-called substitution cipher.

- 1) Your program should use class `Keyboard`, as is, which class you used in the Caesar Cipher assignment.
- 2) Write a class `Key` which
 - a) has a constructor with signature `public Key (Keyboard kb, String password)`. The constructor should initialize two private fields, *i.e.*, `private Keyboard kb` and `private int [] values`. The array `values` should consist of all the integers 0 through `numChars-1`, inclusive, in random order, where `numChars` is the length of the array `kbChar` in class `Keyboard`. Seed the random number generator with `password`, as was done in the Random Integers assignment. You can use the program `RandomArray` as a starting point.
 - b) contains a method `public char encrypt (char c)` which encrypts a character, and `public char decrypt (char c)` which decrypts a character. To encrypt a character whose index in `kbChar` is `index`, use `values[index]` as the index of the encrypted character. To decrypt a character, work backwards.
- 3) Write a class `Encryptor` containing a `main` method which
 - a) reads in text from an input file
 - b) modifies the text, *i.e.*, by encrypting or decrypting, as appropriate
 - c) prints the modified text to an output file.
 - d) When running your program, the console should look something like

```
input file ? passage.txt
output file ? enc.txt
password ? DrHarren

Option:
1 = encrypt
2 = decrypt
option ? 1
```

Note that the bold print corresponds to user input.

- e) When reading in the option, your program should verify that `option` is 1 or 2.

Test your program by encrypting and then decrypting the file `passage.txt`, which file you used in the Caesar Cipher assignment. Once you are satisfied with your program, email the files `Key.java` and `Encryptor.java` to me at sharren@d131.org.