

## Extra Credit – Once More with Feeling

**DUE:** December 3 by 11:59:59 PM

**Assigned:** November 19

### Background

You will re-tool your Caesar shift homework so that the main function takes arguments, and you will read/write to a file.

### Assignment Requirements

- Name your source file `hw_caesar_ec.cpp`
- You must declare a minimum of two functions
  - One to encode
  - One to decode
- The message will be read in from a file
  - The length of the message is arbitrary
  - The message will always be on a single line
- The message must be converted to upper case
  - ONLY letters should be converted
- You will perform a Caesar shift, the size of which is specified when the program is executed
  - The shift can only be a positive integer
  - The highest allowable shift is 25
  - The shift cannot be 0
  - ONLY letters will be shifted
- Options will be provided when the program is executed
  - The order of the options can be assumed to always be the same
  - Option 1 is either `-e` or `-d`, and they will tell you whether you are encrypting or decrypting, respectively

### Sample Run

- File contents:
  - That which is clearly known hath less terror than that which is but hinted at and guessed
- Encryption
  - `./a.out -e 7 message`
- File contents after encryption:
  - AOHA DOPJO PZ JSLHYSF RUVDU OHAO SLZZ ALYYVY AOHU AOHA DOPJO PZ IBA OPUALK HA HUK NBLZZLK.
- Decryption
  - `./a.out -d 7 message`
- File contenttst after decryption:

- THAT WHICH IS CLEARLY KNOWN HATH LESS TERROR THAN THAT WHICH IS BUT HINTED AT AND GUESSED.
- NOTE: quote is by Hugo Baskerville from The Hound of the Baskervilles by Sir Arthur Conan Doyle

### Hints

- Most of your existing homework should still be good, there should not be a wholesale re-write
- You will be writing the same file you read from; make sure not to cross the streams
- Test with simple strings that are easy to verify before moving on to the sample message

### Reminders

- Be sure to include a comment block at the top of every file with the required information
  - Refer to the General Homework Requirements handout on Blackboard
- Provide meaningful comments
  - If you think a comment is redundant, it probably is
  - If you think a comment is helpful, it probably is
  - Remember that you are writing comments for other programmers, not people who know nothing (obligatory Jon Snow) about coding
  - Comments are more helpful when they explain why, not what or how
- There will be no extensions

### Preparing and Submitting

- Your code must be able to compile and run on the EECS lab machines
  - You are responsible for testing your code
  - “But it runs fine on my machine!” will **not** earn you any points
- Submit **ONLY** your source code file
- Homework submission will be handled exclusively through Blackboard