

Introduction to Computer Science

Homework Five

Due Sunday February 6, 2011

General Instructions

- Please email me the programs as a .py attachment.
- Name your programs with a helpful name. Include your name somewhere in the file name.
- Your program should be fully commented. Be sure to include your name and the date and an overall description of what the program does, in addition to any other comments that are needed.

This is likely a more annoying assignment than the ones we've done thus far. Give yourself some time to work on it, and if you have questions or need help, be sure to ask.

Your task is to write two programs. One program will encrypt a plaintext file. The other program will read in the encrypted file and decode it. There is a third text file that you should use as a key.

The encryption program should:

- Read in a plaintext file. The user should be able to specify this file.
- Encrypt it using another file as a key. The user should enter the name of the key file.
- The encrypted file—i.e. the ciphertext—should be written to a third file. Again, the user should specify the name for the ciphertext file.

The decryption program should do the opposite. It should read in the cipher text, decode it using the key, and then print out a plaintext file.

For the encryption scheme I would recommend the following. Convert both the plain text and the key to unicode. Add these together, character by character. Then take these numbers and convert back to characters. (The characters will look odd, since the unicode numbers will be mostly beyond the regular alphabet. But they'll still be readable in a plain text file.)

Alternative Assignment. I am certainly open to other assignments if this one doesn't sound exciting to you. The main thing I want you to practice is reading in information from a file that may not be in the exact format that you want, doing something with that information, and then writing that info to another file. There are lots of statistics/data analysis things you could do. You could also have some fun transforming text. If you want to do an alternative assignment, please clear it with me first.

Optional Problems. I recommend doing these if you have time.

- Exercise 4, page 162 of Zelle
- Exercise 10, page 163 of Zelle