

Computer Security Project 1 (Due Wed 10/21/20)

Directions: You can work alone or with one partner.

Included in the file `bad_ciphers.py` are 10 ciphers. Both the encryption and decryption functions are given. Each encryption/decryption function takes two arguments: a plaintext string of ASCII characters and a key (which could be a string, integer, or list).

There is a file `ciphertext.txt` containing text encoded with each of these ciphers. These are also in variables `c1` through `c10` in the Python file. Ciphertext #1 was encoded with function `encrypt1`, ciphertext #2 was encoded with `encrypt2`, etc. Your job is to try to decipher the ciphertexts. When you decrypt one of them, it will be clear that you have the right answer, as the plaintexts are English prose taken mostly from works of literature.

Your grade is based on how many you decipher, according to the table below.

#	Grade
8+	A + extra credit
7	A
6	A-
5	B+
4	B
3	B-
2	C
1	D
0	F

For each one that you manage to solve, please include the following:

- The plaintext that you get after decrypting
- The decryption key
- A brief description of how you figured it out

You can try to solve these by hand, by feeding data into the ciphers, by messing with my Python code, by writing your own programs, and by using online tools, but you must not ask anyone except me for help. Some hints:

- Since you have the code for each cipher, try to read it to understand how the cipher works. Many of the ciphers are ones we covered in class.
- Try plugging in sample plaintexts and keys, like `encrypt("abcdef", 1)` to get a clue for how the ciphers work. Error messages can give you helpful info.
- A brute-force search through the key space will work for some of them.
- Frequency analysis will work for some of these. There are online tools that can do this for you.