

Vigenère Cipher

Write a Python¹ program that **mathematically** implements the Vigenère cipher. This is a group programming assignment (i.e. **only one submission per team is needed**)

Notes and Requirements:

- Submit your source code only (I will provide my own key and plaintext/ciphertext to test with);
- Accept both the mode (i.e., encryption, via `-e`, or decryption, via `-d`) and the key at the command line;
- Read the plaintext/ciphertext from `stdin`; and
- Send generated output (either plaintext or ciphertext) to `stdout`.

Please, no GUIs. Make this a command line application without frills that I can execute at the command line as illustrated below. Here are several runs of my program on various inputs that provide hints about how your program should handle upper/lowercase letters, digits, spaces, symbols, etc:

```
prof@latech:~$ python vigenere.py -e mykey
hello <-- I typed this
tcvpm <-- my code generated this
HELLO <-- I typed this
TCVPM <-- my code generated this
^C    <-- I pressed Ctrl+C (On some systems Ctrl+D is the terminate shortcut)
```

```
prof@latech:~$ python vigenere.py -e MyKeY
hello
tcvpm
HELLO
TCVPM
^C
```

```
prof@latech:~$ python vigenere.py -d MYKEY
tcvpm
hello
TCVPM
HELLO
^C
```

¹Seek prof permission if you want to use an alternate programming/scripting language

```
prof@latech:~$ python vigenere.py -e "This is my key" > ciphertext.txt
Get ready for Cyber Storm! We're going to turn your world upside down on
November 8!
^C
```

```
ciphertext.txt
Zlb jmspw psp Vfjwz Kfmbq! Ux'ym ywaze ds rnyv qwmd uyvjw bxkqvq byal hu Vgdwyzov 8!
```

```
prof@latech:~$ python vigenere.py -d "This is my key" < ciphertext.txt
Get ready for Cyber Storm! We're going to turn your world upside down on November 8!
```

```
prof@latech:~$ python vigenere.py -d "This is my wrong key" < ciphertext.txt
Get ready tbb Izzsb Ryeji! Cl'aq hintu zu ygqd ieaf yhhwq rtmxoi jqiz jy Esqqovqc 8!
```

Basically, the alphabet only includes the letters A through Z. Any other symbols in the plaintext/ciphertext are retained (including spaces). Letter case is also maintained. Finally, spaces in the key are ignored/skipped.