Vigenère

[tl;dr](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#tldr)

Implement a program that encrypts messages using Vigenère’s cipher, per the below.

$ python vigenere.py ABC

plaintext: HELLO

ciphertext: HFNLP

[Specification](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#specification)

Design and implement a program that encrypts messages using Vigenère’s cipher, exactly as you did in [Problem Set 2](https://lab.cs50.io/cs50/labs/2019/x/vigenere/), except that your program this time should be written (a) in Python and (b) in CS50 IDE.

* Implement your program in a file called vigenere.py in your ~/workspace/pset6/vigenere directory (if it doesn’t already exist, create it now!).
* Your program must accept a single command-line argument: a keyword, *k*, composed entirely of alphabetical characters.
* If your program is executed without any command-line arguments, with more than one command-line argument, or with one command-line argument that contains any non-alphabetical character, your program should print an error (of your choice) and [exit](https://docs.python.org/3/library/sys.html" \l "sys.exit)immediately with a status code of 1.
* Otherwise, your program must proceed to prompt the user for a string of plaintext, *p*, (as by a prompt for plaintext:) which it must then encrypt according to Vigenère’s cipher with *k*, ultimately printing the result (prepended with ciphertext: and ending with a newline) and exiting.
* With respect to the characters in *k*, you must treat A and a as 0, B and b as 1, …​ , and Z and z as 25.
* Your program must only apply Vigenère’s cipher to a character in *p* if that character is a letter. All other characters (numbers, symbols, spaces, punctuation marks, etc.) must be outputted unchanged. Moreover, if your code is about to apply the *jth* character of *k* to the *ith*character of *p*, but the latter proves to be a non-alphabetical character, you must wait to apply that *jth* character of *k* to the next alphabetical character in *p*; you must not yet advance to the next character in *k*.
* Your program must preserve the case of each letter in *p*.

[Walkthrough](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#walkthrough)

<https://youtu.be/n4gcWaHKhoU>

[Usage](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#usage)

Your program should behave per the examples below. Assume that the underlined text is what some user has typed.

$ python vigenere.py 13

Usage: python vigenere.py k

$ python vigenere.py

Usage: python vigenere.py k

$ python vigenere.py bacon and eggs

Usage: python vigenere.py k

$ python vigenere.py bacon

plaintext: Meet me at the park at eleven am

ciphertext: Negh zf av huf pcfx bt gzrwep oz

[Testing](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#testing)

To help you test vigenere, we’ve written a program called devigenere for you that also takes one and only one command-line argument (a keyword) but whose job is to take ciphertext as input and produce plaintext as output. To use our program, execute

~cs50/pset2/devigenere k

at your prompt, where k is some keyword. Presumably you’ll want to paste your program’s output as input to our program; be sure, of course, to use the same key. Note that you do not need to implement devigenere yourself, only vigenere.

[Correctness](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#correctness)

check50 cs50/problems/2019/x/sentimental/vigenere

[Style](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#style)

style50 vigenere.py

[Staff’s Solution](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#staffs-solution)

~cs50/2019/x/pset6/vigenere

[How to Submit](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#how-to-submit)

Execute the below, logging in with your GitHub username and password when prompted. For security, you’ll see asterisks (\*) instead of the actual characters in your password.

submit50 cs50/problems/2019/x/sentimental/vigenere

You can then go to <https://cs50.me/cs50x> to view your current scores!

[Hints](https://docs.cs50.net/2019/x/psets/6/sentimental/vigenere/vigenere.html#hints)

Not sure where to begin? As luck would have it, this program’s pretty similar to [caesar](https://docs.cs50.net/2019/x/psets/6/sentimental/caesar/caesar.html)! Only this time, you need to decide which character in *k* to use as you iterate from character to character in *p*.