Caesar Cipher

This code will encode and decode text.

I was deeply influenced by the book "Tiny Python Projects" by Ken Youens-Clark (ISBN 9781617297519). [1]. I used the examples and structure layed out by Mr. Youens-Clark to create this command-line program. You can find his code on Github and download it using the following command:

```
$ git clone https://github.com/kyclark/tiny_python_projects
```

A Caesar Cipher shifts a letter up or down the alphabet a certain number of places. The default for this code is a right-rotation of 3 letters. As an example, abc12 encodes to def45, making def45 decode to abc12.

Installation

Clone from GitHub.

```
git clone https://github.com/fultonb/caesar_cipher.git
```

Usage

Using text as input:

```
$ ./cc_encode.py 'Hello World!'
Khoor Zruog$
```

Use the -d flag to decode text:

```
./cc_encode.py -d 'Khoor Zruog$'
Hello World!
```

Use the -n flag to shift the letters 5 spaces to the right while encoding:

```
$ ./cc_encode.py -n 5 abc12
fgh67
```

Use the -n flag, with the -d flag, to shift the letters 5 spaces to the left while decoding:

```
./cc_encode.py -d -n 5 fgh67
abc12
```

Use a file as input:

```
$ ./cc_encode.py ./inputs/fox.txt
Wkh txlfn eurzq irA mxpsv ryhu wkh odCB grj;
```

Use the -o flag to use a file as output:

```
$ ./cc_encode.py -o fox_decoded.txt 'Wkh txlfn eurzq irA mxpsv ryhu wkh odCB grj;' -d

$ more fox_decoded.txt
The quick brown fox jumps over the lazy dog.
```

Use the -h flag for help:

```
$ ./cc_encode.py -h
usage: cc_encode.py [-h] [-n int] [-o str] [-d] [-l] text

Encoding and decoding text using the Caesar Cipher

positional arguments:
  text                  Input text or file

optional arguments:
  -h, --help            show this help message and exit
  -n int, --num int     Shift this many spaces (default: 3)
  -o str, --outfile str
                        Output filename (default: )
  -d, --decode          Decode text (default: False)
  -l, --lower_case      Uses only lower case alphabet (default: False)
```

Run all tests using:

```
$ make test
pytest -xv test.py
================================ test session starts ================================
...
collected 16 items

test.py::test_exists PASSED                                                  [  5%]
test.py::test_usage PASSED                                                   [ 11%]
test.py::test_bad_num PASSED                                                 [ 16%]
test.py::test_encode_text1 PASSED                                            [ 22%]
test.py::test_decode_text1 PASSED                                            [ 27%]
test.py::test_decode_fox_text_using_2 PASSED                                 [ 33%]
test.py::test_file_bustle PASSED                                             [ 38%]
test.py::test_decode_file_bustle PASSED                                      [ 44%]
test.py::test_file_fox PASSED                                                [ 50%]
test.py::test_decode_file_fox PASSED                                         [ 55%]
test.py::test_file_fox_lower_case PASSED                                     [ 61%]
test.py::test_decode_file_fox_lower_case PASSED                              [ 66%]
test.py::test_file_spiders PASSED                                            [ 72%]
test.py::test_decode_file_spiders PASSED                                     [ 77%]
test.py::test_text_outfile PASSED                                            [ 83%]
test.py::test_decode_text_outfile PASSED                                     [ 88%]
test.py::test_file PASSED                                                    [ 94%]
test.py::test_decode_file PASSED                                             [100%]

================================ 18 passed in 1.73s =================================
```

Type check using mypy:

```
$ mypy cc_encode.py
Success: no issues found in 1 source file
```

Interleave the input file with the output file (include line numbers):

```
$ paste -d '\n' inputs/preamble.txt test-encode-outs/preamble.txt /dev/null | nl
     1  When, in the course of human events, it becomes necessary for one people to
     2  Zkhq/ lq wkh frxuvh ri kxpdq hyhqwv/ lw ehfrphv qhfhvvduB iru rqh shrsoh wr

     3  dissolve the political bands which have connected them with another, and to
     4  glvvroyh wkh srolwlfdo edqgv zklfk kdyh frqqhfwhg wkhp zlwk dqrwkhu/ dqg wr

     5  assume among the powers of the earth, the separate and equal station to
     6  dvvxph dprqj wkh srzhuv ri wkh hduwk/ wkh vhsdudwh dqg htxdo vwdwlrq wr

     7  which the laws of nature and of nature's God entitle them, a decent respect
     8  zklfk wkh odzv ri qdwxuh dqg ri qdwxuh*v Jrg hqwlwoh wkhp/ d ghfhqw uhvshfw

     9  to the opinions of mankind requires that they should declare the causes
    10  wr wkh rslqlrqv ri pdqnlqg uhtxluhv wkdw wkhB vkrxog ghfoduh wkh fdxvhv

    11  which impel them to the separation.
    12  zklfk lpsho wkhp wr wkh vhsdudwlrq;
```

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[1] Youens-Clark, K. (2020). **Tiny Python Projects.** Manning Publications