Problem 3 - CiphertextMessage

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Problem Set due Oct 14, 2022 07:30 +08 Completed

Problem 3 - CiphertextMessage

15.0/15.0 points (graded)

For this problem, the graders will use our implementation of the `Message` and `PlaintextMessage` classes, so don't worry if you did not get the previous parts correct.

Given an encrypted message, if you know the shift used to encode the message, decoding it is trivial. If `message` is the encrypted message, and `s` is the shift used to encrypt the message, then `apply_shift(message, 26-s)` gives you the original plaintext message. Do you see why?

The problem, of course, is that you don't know the shift. But our encryption method only has 26 distinct possible values for the shift! We know English is the main language of these emails, so if we can write a program that tries each shift and maximizes the number of English words in the decoded message, we can decrypt their cipher! A simple indication of whether or not the correct shift has been found is if most of the words obtained after a shift are valid words. Note that this only means that most of the words obtained are actual words. It is possible to have a message that can be decoded by two separate shifts into different sets of words. While there are various strategies for deciding between ambiguous decryptions, for this problem we are only looking for a simple solution.

Fill in the methods in the class `CiphertextMessage` acording to the specifications in ps6.py. The methods you should fill in are:

- `__init__(self, text)`: Use the parent class constructor to make your code more concise.
- `decrypt_message(self)`: You may find the helper function `is_word(wordlist, word)` and the string method `split()` useful. Note that `is_word` will ignore punctuation and other special characters when considering whether a word is valid.

Hints

Using string.split

You may find the function `string.split` useful for dividing the text up into words.

```
>>> 'Hello world!'.split('o')
['Hell', ' w', 'rld!']
>>> '6.00.1x is pretty fun'.split(' ')
['6.00.1x', 'is', 'pretty', 'fun']
```

Paste your implementation of the entire `CiphertextMessage` class in the box below.

```
class CiphertextMessage(Message):
    def __init__(self, text):
        '''
        Initializes a CiphertextMessage object

        text (string): the message's text
        a CiphertextMessage object has two attributes:
            self.message_text (string, determined by input text)
            self.valid_words (list, determined using helper function load_words)
        '''
        self.message_text = text
        self.valid_words = load_words(WORDLIST_FILENAME)


    def decrypt_message(self):
```

Press ESC then TAB or click outside of the code editor to exit

Correct

Test results

CORRECT

See full output

Submit You have used 2 of 30 attempts

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?	Grader Error Messages I've gotten the code running in my IDE and it's getting the correct answers, but in the grader, I'm getting error messages that say...	4
?	Attribute Error Hi, I am getting this error and I am not able to get passed it AttributeError: type object 'Message' has no attribute 'valid_words' ev...	4
?	PLEASE HELP! It seems like whenever i removed "self.valid_words = load_words(WORDLIST_FILENAME)" from the initialisation i would get close ...	2
	testing is_word() and it's failing? I am having trouble with the code identifying when a word is a legal word. I wrote a little line outside of all the classes to test: cip...	4
?	All the failing cases for me are the same: I lack "Nonsense words:". Except that, other outputs are the same as the answer. Please take the following as an example. All the other wrong output have the exactly same pattern. Thanks! > Test: 10 decrypt m...	4
	PLEASE HELP! Hi, Once i initialise PlaintextMessage i guess shift and text attributes are assigned as shift is taken from plaintextmessage where ...	2
?	is the returned tuple.. supposed to have several elements or just 2? one with the number and the other with 1 element containing all the text?	2
?	Test cases missed crucial error? My solution for this part of the problem involved finding the number of valid words for each shift consecutively, checking if the c...	2
?	Shift of 0 (or 26) When the grader is looking for a shift of 0, it doesn't accept 26, which to my mind is equivalent as the specification states, > Not...	3
?	NameError: name 'word_list' is not defined Is the list called 'word_list' as in the ps6.py file or 'wordlist' as in the instructions above? Or is the problem with this line in my cod...	4
?	Why such an error? So, part of my code: self.message_text = self....(shifted) shift += 1 for i in str(self....).split(): if not is_word(self...., i): break else: ret...	1
?	Got it, but I wrote code I don't fully understand To complete this I knew I had to find the maximum value in a dictionary, which I looked up and found some code for, but I don't r...	2

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