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Problem 3 - CiphertextMessage

Problem Set due Jul 23, 2020 20:30 -03

Problem 3 - CiphertextMessage

15/15 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 punctuatio

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)
        '''
        # print('ENTRANDO EM INIT Cipher/Message')
        Message.__init__(self, text)

    def decrypt_message(self):
        '''
```

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

Correta

Test results

Hide output

CORRECT

Test: 10 decrypt message

Testing decrypt_message for message

Output:

```
Message is Nonsense words: handle world sight better space
lipstick somehow whole dot under pack concern guilt record part
```

Test: 11 decrypt message

Testing decrypt_message for message

Output:

```
Message is Nonsense words: handle world sight better space
lipstick somehow whole dot under pack concern guilt record part
```

Test: 12 decrypt message

Testing decrypt_message for message

Output:

```
Message is Nonsense words: both empty young coal entrance bound
ever before tribe stop disrespect out wine speed fame stupid
fun destructive wherever remind it plow cheap female loosen
grammatical subject beyond sound please trust pad thirst guide
rice
```

Test: 13 decrypt message

Testing decrypt_message for message

Output:

```
Message is Nonsense words: both empty young coal entrance bound
ever before tribe stop disrespect out wine speed fame stupid
fun destructive wherever remind it plow cheap female loosen
grammatical subject beyond sound please trust pad thirst guide
rice
```

Test: 1 init

Testing init

Output:

```
Should not set a shift.
```

Test: 2 init

Testing init

Output:

```
Should not set an encrypting_dict.
```

Test: 3 init

Testing init

Output:

```
Should not set message_text_encrypted.
```

Test: 4 decrypt message

Testing decrypt_message for correct shift

Output:

```
Best shift found 22
```

Test: 5 decrypt message

Testing decrypt_message for correct shift

Output:

```
Best shift found 13
```

Test: 6 decrypt message

Testing decrypt_message for correct shift

Output:

```
Best shift found 0
```

Test: 7 decrypt message

Testing decrypt_message for correct shift

Output:

```
Best shift found 0
```

Test: 8 decrypt message

Testing decrypt_message for message

Output:

```
Message is Nonsense words: sometime winter march empty rivalry
```

Test: 9 decrypt message

```
Testing decrypt_message for message
```

Output:

```
Message is Nonsense words: sometime winter march empty rivalry
```

Hide output

Enviar You have used 2 of 30 attempts

✔ Correct (15/15 points)

Problem 3 - CiphertextMessage

Ocultar discussão

Topic: Problem Set 5 / Topic-Level Student-Visible Label

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? Error message: Staff debug 1
When I'm running my code in Spyder, it works perfectly. But running it here results in an error mess...

The shift for the encrytion can also be 0. 3
The possible values for s also include 0, that is, the encrypted message being the same as the decryp...

Post Mortem? 3
When this is all over, I'd love for someone to go over the proper solution, explaining it step by step. I'...

Cases partly incorrect 2
I have trouble with cases 4-7, all others are correct. Do you know why this might be happening? Test ...

Using word_list in the CiphertextMessage class (Spoiler) 3
Can anyone tell me how to access the variable word_list to use in the CiphertextMessage class? I've t...

? A problem with the grader 5

? apply_shift 2
What type does apply_shift work on? Doesn't seem to work on list or string... Thanks for your help in ...

For those wondering about the test cases not showing 1
If you've solved the last two parts (knowing how to encrypt them) you have a way to create the test c...

?	Output Why is my output not including 'Nonsense words' when this seems to fixed in a print statement in th...	1
💬	Great story! The test story is a nice touch. Almost like being on campus!	1
💬	Issues with Rating In general code work well, still getting about 10.38/15. Test scenarios is not well described (((Look lik...	2
💬	IndexError: tuple index out of range I'm getting an "IndexError: tuple index out of range" for tests 8-10. Does anyone have an idea on wh...	2
?	Can the TAs post the testing scenarios? My code works perfectly when I test it myself, reversing the encrypted texts that the problems list. H...	2