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## Problem 1 - Build the Shift Dictionary and Apply Shift

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## Problem 1 - Build the Shift Dictionary and Apply Shift

20.0/20.0 points (graded)

The `Message` class contains methods that could be used to apply a cipher to a string, either to encrypt or to decrypt a message (since for Caesar codes this is the same action).

In the next two questions, you will fill in the methods of the `Message` class found in `ps6.py` according to the specifications in the docstrings. The methods in the `Message` class already filled in are:

- `__init__(self, text)`

- The getter method `get_message_text(self)`

- The getter method `get_valid_words(self)`, notice that this one returns a copy of `self.valid_words` to prevent someone from mutating the original list.

In this problem, you will fill in two methods:

1. Fill in the `build_shift_dict(self, shift)` method of the `Message` class. Be sure that your dictionary includes both lower and upper case letters, but that the shifted character for a lower case letter and its uppercase version are lower and upper case instances of the same letter. What this means is that if the original letter is "a" and its shifted value is "c", the letter "A" should shift to the letter "C".

   If you are unfamiliar with the ordering or characters of the English alphabet, we will be following the letter ordering displayed by `string.ascii_lowercase` and `string.ascii_uppercase`:

   ```
   >>> import string
   >>> print(string.ascii_lowercase)
   abcdefghijklmnopqrstuvwxyz
   >>> print(string.ascii_uppercase)
   ABCDEFGHIJKLMNOPQRSTUVWXYZ
   ```

   A reminder from the introduction page - characters such as the space character, commas, periods, exclamation points, etc will *not* be encrypted by this cipher - basically, all the characters within `string.punctuation`, plus the space (`' '`) and all numerical characters (0 - 9) found in `string.digits`.

2. Fill in the `apply_shift(self, shift)` method of the `Message` class. You may find it easier to use `build_shift_dict(self, shift)`. Remember that spaces and punctuation should not be changed by the cipher.
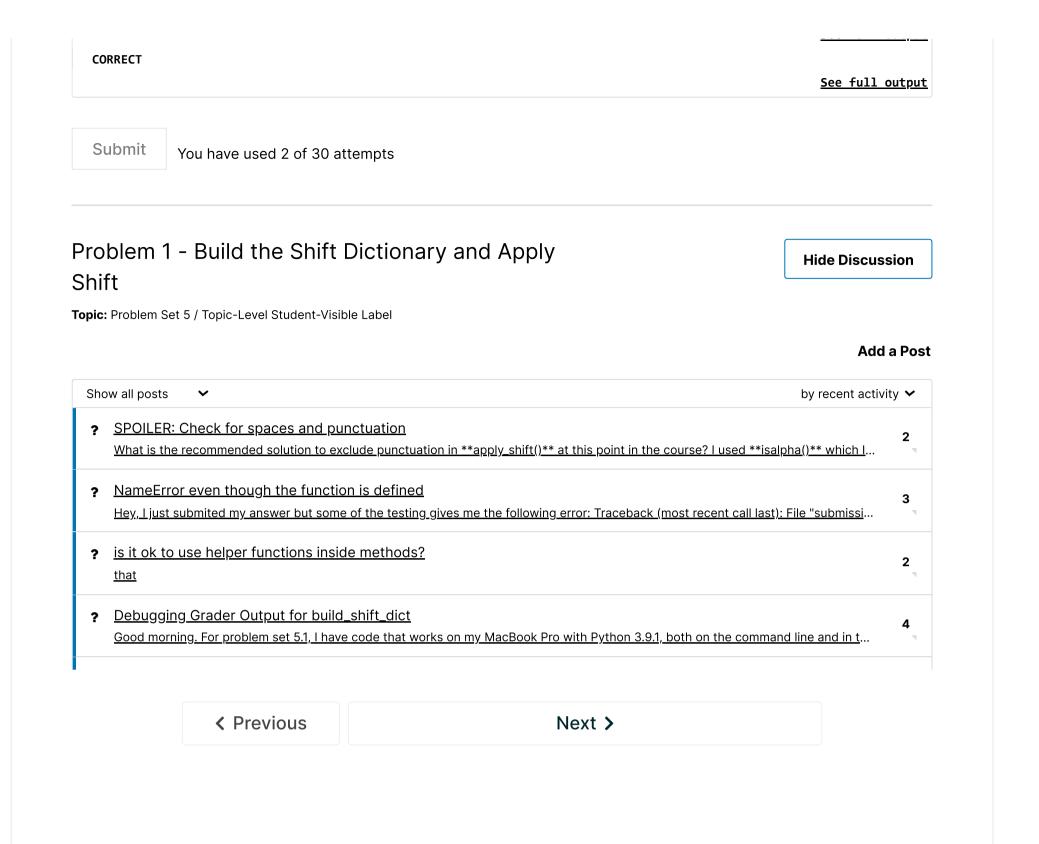
Paste your implementation of the `Message` class in the box below.

```
 1  class Message(object):
 2      ### DO NOT MODIFY THIS METHOD ###
 3      def __init__(self, text):
 4          '''
 5          Initializes a Message object
 6
 7          text (string): the message's text
 8
 9          a Message object has two attributes:
10              self.message_text (string, determined by input text)
11              self.valid_words (list, determined using helper function load_words
12          '''
13          self.message_text = text
14          self.valid_words = load_words(WORDLIST_FILENAME)
15
```

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

Correct

## Test results

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**CORRECT**

<span style="text-decoration: underline;">See full output</span>

Submit    You have used 2 of 30 attempts

## Problem 1 - Build the Shift Dictionary and Apply Shift

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| ? | **SPOILER: Check for spaces and punctuation** <br> What is the recommended solution to exclude punctuation in **apply_shift()** at this point in the course? I used **isalpha()** which I... | 2 |
| ? | **NameError even though the function is defined** <br> Hey, I just submited my answer but some of the testing gives me the following error: Traceback (most recent call last): File "submissi... | 3 |
| ? | **is it ok to use helper functions inside methods?** <br> that | 2 |
| ? | **Debugging Grader Output for build_shift_dict** <br> Good morning. For problem set 5.1, I have code that works on my MacBook Pro with Python 3.9.1, both on the command line and in t... | 4 |

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