

Jasmine Dumas
CSC 401: Introduction to Programming
Section: 910 (Online) - Spring 2015
Due: Friday, June 5th at 11:59PM
Contact: jasmine.dumas@gmail.com // jdumas@mail.depaul.edu

Homework 8

Problem 1a, 1b

Code:

```
def vowels(charString):
    A = charString.count("a")
    E = charString.count("e")
    I = charString.count("i")
    O = charString.count("o")
    U = charString.count("u")
    return [A, E, I, O, U]

string = 'this is a test to see if my program can accurately count the vowels'

print(vowels(string))

def rvowels(charString):
    if not charString:
        return 0
    return (1 if charString[0] in 'aeiouAEIOU' else 0) + rvowels(charString[1:])

print(rvowels(string))
```

Output:

```
>>>
[5, 6, 3, 4, 2]
20
>>>
```

Problem 1c

Run time test of non-recursive solution:

```
[5, 6, 3, 4, 2]  
[5, 6, 3, 4, 2]  
Elapsed time for non-recursive method: 5.120915174484253  
>>>
```

Run time test of recursive solution:

```
20  
20  
20  
Elapsed time for recursive method: 4.6435160636901855  
>>>
```

Explanation:

The recursive and the non-recursive code are similar but the non-recursive takes bit more time to compute. The recursive code is adding the total up each time as it access' the characters in the string and returning the total number back, but the non-recursive code is holding the list and adding to each vowel like a counter.

Attachments:

CSC401_H8_P1a.py