**HW6: Parsing Information from Files**

In this homework you will read and parse a file with text and numbers. You will write three functions. First write a function to extract the numbers in the file and return the sum of the numbers. Then write a function to return a count of the number of times a given word appears in the file. Count the word even if it starts a sentence (begins with a capital letter). Don’t count the word if it has additional characters after it (like an ‘s’). Finally, write a function to return a list of all of the URLs in the file of the form something.something.something like “www.cnn.com”. The something should be any number of alphanumeric characters (but at least one alphanumeric character).

**Data Files**

We provide two files for this assignment.

* Sample data: <http://py4e-data.dr-chuck.net/regex_sum_42.txt> (There are 90 values with a sum=445833)
* Actual data: <http://py4e-data.dr-chuck.net/regex_sum_132198.txt> (There are 82 values and the sum ends with 566)

Open these links open in a new window. Make sure to save the file into the same folder as you will be writing your Python program.

**Data Format**

The file contains text from the introduction of a textbook except that random numbers are inserted throughout the text. Here is a sample of the output you might see:

Why should you learn to write programs? 7746

12 1929 8827

Writing programs (or programming) is a very creative

7 and rewarding activity. You can write programs for

many reasons, ranging from making your living to solving

8837 a difficult data analysis problem to having fun to helping 128

someone else solve a problem. This book assumes that

everyone needs to know how to program ...

The sum for the sample text above is **27486**. The numbers can appear anywhere in the line. There can be any number of numbers in each line (including none).

**Handling the Data**

1. Write a function *sumNums(filename)* to read from a file when given the filename and look for integers (that are not phone numbers) using the **re.findall()**, and then convert the extracted strings to integers and return the sum of the integers.
2. Write a function *countWord(filename,word)* to return a count of the number of times a specified word appears in a file. It should match the word when it starts a sentence also (starts with a capital letter). It should not match any additional letters after the word. For example, if called on “computer” it should match “Computer” and “computer” but not “computers”. For file regex\_sum\_42.txt it will return 15 when called with the word “computer”.
3. Write a function *listURLs(fileName)* to return a list of the URLs in the file when given the file name. It should match URLs like [www.cnn.com](http://www.cnn.com). It doesn’t have to return the http:// part or the https:// part of the URL, but it can. For file regex\_sum\_42.txt it will return a list of three URLs.

Use hw6.py to start. It has unit tests to test your code. Turn in a link to your github repo.

**Grading**

* 15 points for passing the test\_sumNums1
* 15 points for passing the test\_sumNums2
* 10 points for passing the test\_countWord with “computer”
* 5 points for passing one of our tests that you haven’t been given for countWord.
* 10 points for passing the test listURLs.
* 5 points for passing one of our tests with listURLs that you haven’t been given for listURLs.

**Total 60**

You can earn 1 point of extra credit for a possible total of 3 points for each non-trivial commit that you make before Friday Oct 19th at 10pm. Each commit must be at least 3 hours apart.

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