Lab 7 (10 points) Dictionaries and Sets

Task 1: Dictionary (5 points)

(1) Create a list of words from a paragraph of text, e.g. *python is an easy language python is easy to learn and easy to code a lot of python modules that are easy to use go python* (note: here punctuation or other special characters are omitted in the input, but as we discussed in the lecture, you may write code to remove these non-alphabet characters. You decide which way to go.)

(2) Create a dictionary to store words (as key) and the corresponding frequencies (as value). Print out the content of the dictionary with each line a word and its frequency.

(3) Display the top 3 most frequent words (as well as the corresponding frequencies) stored in the dictionary.

(4) Test your code with the above given text (e.g. python is an easy ….), then run two additional tests with your own input (make sure your input paragraph having at least 50 words, or 2+ lines long.)

Task 2: Sets (5 points) Let L1 be a list of first 100 randomly generated integer numbers in the range [1, 100], let L2 be the integers within the range [1, 100] that are divisible by either 3 or 4.

(1) Use list comprehension to generate L1, L2

(2) Form a set S1 and a frozen set S2 from L1 and L2 respectively.

(3) Create a new set R1 to contain those elements are either in S1 or in S2. Print out how many elements in R1.

(4) Create a new set R2 to contain those elements are in both S1 and in S2. Print out how many elements in R2.

(5) Create a new set R3 to contain those elements are in S1 but not in S2. Print out how many elements in R3.

Submission requirement: Paste results to the end of each task as comments. Place code and result for each task into .pdf file. Submit pdf file (one pdf only) as well as .py file(s) (may have one or more .py files).

Grading criteria:

Correctness; proper ways of creating/using the data structures; adequate test runs (for task 1).