Lab Test 1 - 23 Feb 2021

**Submission deadline:** 26/02/2021, 11:59pm

**Penalty for late submission:** % where d is the number of days late. Note after 3 days the penalty is set to 100%.

This test is worth **20%** of the overall mark for the module. The marking scheme is detailed at the end of this document.

This is a home assignment test. You are allowed to use yournotes, any material on Brightspace and the internet to consult python functions and methods. You **cannot** use the internet to find solutions for similar problems or reuse someone else's code. You will have to **demo** your code. If you are not able to do it, I will assume you copied it and will mark the whole assignment as 0.

**Submission:** Create one Python file for each question. Please submit all files via brightspace.

**Word Puzzles**

Many word puzzles can be solved by iterating through a list of words while checking for characteristics specified by the puzzle. A list of words “word\_list.txt” is provided in Brightspace. We have not covered file reading in detail yet, this test provides a function that reads a file named word\_list.txt in the same directory as your python file and returns a list of words (strings) in lowercase. The file has one word per line. For each puzzle, copy this program and write your solution as the puzzle function.

*# Word puzzle*

*# Assumes word\_list.txt file of one word per line*

***def*** *get\_word\_list():*

*""" Return a list of words from a word\_list.txt file. """*

*data\_file = open(****"word\_list.txt"****,* ***"r"****)*

*word\_list = [] # start with an empty word list*

***for*** *word* ***in*** *data\_file: # for every word (line) in the file*

*# strip off end−of−line characters and make each word lowercase*

*# then append the word to the word list*

*word\_list.append(word.strip().lower())*

***return*** *word\_list*

***def*** *puzzle(word\_list):*

*""" Puzzle solution goes here . """*

***pass*** *# filler that does nothing except put something in the suite*

***# You should add your solution here.***

**Hints:**

i) The word\_list.txt has 45,425 words. Do not write more than two nested loops to iterate through all the words. For example:

**for** word1 **in** word\_list:

**for** word2 **in** word\_list:

**for** word3 **in** word\_list:

This will result in 91 trillion operations and your code won’t finish running. All the questions can be answered by iterating over the list of words once.

ii) You will need to iterate over lists and strings. Some good friends: len function, in operator, count and find methods from strings.

**(a)** Find 5 uncapitalized, unhyphenated words that contain 9 of the letters of the alphabet from l to v ("lmnopqrstuv").

(4 marks)

**(b)** What words consist of two consecutive pronouns? This list of pronouns will be helpful.

pronouns = ['thou', 'thee', 'thine', 'thy', 'i', 'me','mine', 'my', 'we', 'us', 'ours', 'our', 'you', 'yours', 'your','he','him','his', 'she', 'her', 'hers', 'it', 'its', 'they', 'them', 'theirs', 'their']

(4 marks)

**(c)** Find all uncapitalized, seven-letter word, containing just a single vowel that does not have the letter s anywhere within it.

(3 marks)

**(d)** The word mimeographs contains all the letters of memphis at least once. Find other words that also contain all the letters of memphis. Note that the letter m has to appear at least twice.

(3 marks)

**(e)** Find two words that contains the string "tantan"

(3 marks)

**(f)** When you are writing in script, there are four letters of the alphabet that cannot be completed in one stroke: i and j (which require dots) and t and x (which require crosses). Find a word that uses each of these letters exactly once.

(3 marks)

**(h)** Extra challenge! Find two words that contain the vowels a, e, i, o, and u in that order. The letters between two consecutive vowels might also be vowels. For example, the world abdomen has the vowels a and e in order.

(3 marks)

**Marking Scheme**

**Code:**

Questions will receive full marks if the output is correct and it has appropriate layout and use of comments. Indentation and white space have to be used appropriately. Code should be easy to read, and naming conventions should be adopted.

**Demo:**

The demo is just an informal chat for me to check that you understood everything you did, to answer possible questions individually, and to provide feedback on your progress. We will do it during lab hours in class.