ICS 352 Machine Learning

Lab 2

Due: Sunday February 2, 2025, at 11:59 PM
Upload the lab to D2L In Labs, Lab2 dropbox
Objective: Overview of List, Tuple, Dictionary, and Set
Submission: Screen shots of code working, your code in *.txt files and *.py files (yes both are needed as *.py files do not open under D2L). No zip files.

(10 points) Program 1:
Summarizing Letters in String

Write a function summarize_letters that receives a string and returns a list of tuples containing the unique letters and their frequencies in the string. Test your function and display each letter with its frequency. Your function should ignore case sensitivity (that is, 'a' and 'A' are the same) and ignore spaces. When done, write a statement that says whether the string has all the letters of the alphabet or not.

You can assume that there is no punctuation or special things like emojis.

(10 points) Program 2:
Counting Duplicate words

Write a script that uses a dictionary to determine and print the number of duplicate words in a sentence. Treat uppercase and lowercase letters the same and assume there is no punctuation in the sentence. Words with count larger than 1 have duplicates.

Example: The Brown cow jumped over the brown jug which contained BROWN milk

Output should be:

brown 3

the 2

(10 points) Program 3:
Numbers Frequency

Write a program that generates 100 random numbers between 1 and 10. The program should store the frequency of each number generated in a dictionary with the number as the key and the amount of times it has occurred as the value. For example, if the program generates the number 6 a total of 11 times, the dictionary will contain a key of 6 with an associated value of 11. Once all of the numbers have been generated, display information about the frequency of each number.

(5 points) Program 4:

Is a Sequence Sorted

1. Search for the meaning of sequences in Python, and explain what is a sequence in python?
2. Create a function is_ordered that receives a sequence and returns true if the elements are in sorted order (ascending and/or alphabetical). Test your function with sorted and unsorted lists, tuples and strings.