CSC/DCSCI 2720: Data Structures
Lab 5

Instructor: Shiraj Pokharel

Due : 48 hours after release
Late Submission deadline (with 25% penalty) 24 hours after due date

Answer the below questions. You must submit your responses as a SINGLE Jupyter Notebook, where each program is put in separate Jupyter Notebook cells within that SINGLE Jupyter Notebook. Do NOT submit Colab links. Failure to comply with this simple requirement will result in a score of Zero. Please, be careful not to be assigned a Zero score this way.

Few Rules to be followed, else will receive a score of ZERO

(1) Your submissions will work exactly as required.

(2) Your files shall not be incomplete or worse corrupted such that the file does not compile at all. Make sure you submit a file that compiles.

(3) Your submission will show an output. Should you recive a Zero for no output shown do not bother to email me with "but the logic is perfect" !

Note that your program's output must **exactly** match the specs(design , style) given here for each problem to pass the instructor's test cases .
Design refers to how well your code is written (i.e. is it clear, efficient, and elegant), while *Style* refers to the readability of your code (commented, correct indentation, good variable names).

[100 points] Design and code in Python, a solution such that given an array of strings strs, group the anagrams together. You can return the answer in any order.

Definition : An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once. That is to say, Two strings are anagrams if and only if their character counts (respective number of occurrences of each character) are the same

Example 1:
Input: strs = [”eat”,”tea”,”tan”,”ate”,”nat”,”bat”]
Output: [[”bat”],[”nat”,”tan”],[”ate”,”eat”,”tea”]]

Solution Approach :

transform each string s into a character count called, count, consisting of 26 non-negative integers representing the number of a’s, b’s, c’s, etc. Use these counts as the basis for your dictionary.

In Python, the dictionary representation of your count will be a tuple of the counts. For example, abbccc will be (1, 2, 3, 0, 0, ..., 0), where in there are 26 entries total.

Hint : Use a DefaultDict which contains a list.

REF : **https://docs.python.org/3/library/collections.html#collections.defaultdict**