COP3035 - Intro to Programming in Python
Lab Guide 4

Instructions:
Go over each step in sequential order.
Practice ensuring you master the skills from each objective.
Don't forget to submit in Canvas your work to get your attendance after you complete this lab. If possible, try to submit in .pdf so is readable in Canvas.
Please reach any of the TAs or the instructor if you have questions.

Section 1:
Topic 1: List Methods
Create a list of fruits and add a new fruit to it using append().
Extend the list of fruits by adding multiple new fruits using extend().
Insert a fruit at the second position using insert().
Remove a fruit from the list using remove().
Remove the last fruit and print it using pop().
Clear the list using clear().
Find the index of a fruit using index().
Count the number of times a fruit appears in the list using count().
Sort the list of fruits alphabetically using sort().
Reverse the order of the list using reverse().
Create a copy of the list using copy().

Topic 2: Dictionary Methods
Retrieve a value using a key with get().
Update the dictionary with another dictionary using update().
Get all the keys in the dictionary using keys().
Get all the values in the dictionary using values().
Get all the key-value pairs in the dictionary using items().
Remove an item by key using pop().
Remove the last key-value pair using popitem().
Create a copy of the dictionary using copy().
Clear the dictionary using clear().

Topic 3: Tuple Methods
Find the index of an element in a tuple using index().
Count the number of times an element appears in a tuple using count().

Topic 4: Set Methods
Create a set from a list using set().
Add an element to the set using add().
Remove an element from the set using remove().
Find the intersection of two sets using intersection().
Find the union of two sets using union().
Find the difference between two sets using difference().

Topic 5: Booleans

Practice logical operations using and, or, and not.
Check if all elements are true using all().
Check if any element is true using any().
Check membership in a list using in.

Section 2:
Problem: Counting Vowels and Consonants in a Sentence

You are provided with a sentence, and your task is to count the number of vowels (A, E, I, O, U) in the sentence. Additionally, you need to identify the unique vowels and consonants present in the sentence. Use built-in methods for strings, lists, dictionaries and sets to solve the problem.
Tip: .upper(), list(), .count(), .intersection(), .difference()

Example:

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Sentence: This is an example sentence.

List: ['T', 'H', 'I', 'S', ' ', 'I', 'S', ' ', 'A', 'N', ' ', 'E', 'X', 'A',
'M', 'P', 'L', 'E', ' ', 'S', 'E', 'N', 'T', 'E', 'N', 'C', 'E', '.']

Vowel count:
A: 2
E: 5
I: 2
O: 0
U: 0

Vowels dictionary: {'A': 2, 'E': 5, 'I': 2, 'O': 0, 'U': 0}

Vowels in the sentence: {'A', 'E', 'I'}

Consonants in the sentence: {'X', 'M', 'S', 'P', 'N', 'L', 'T', 'C', 'H'}
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