Title:

Mastering Advanced Python: Tricky and Situational Programming

Challenges Objective:

The objective of this assignment is to strengthen your problem-solving skills and enhance your understanding of core Python concepts such as strings, tuples, dictionaries, sets, lists, functions, lambda expressions, filters, and modules. This exercise aims to challenge your thinking, simulate real-world scenarios, and improve your ability to write efficient, modular, and optimized Python code.

Tasks:

1. Write a function to count the number of vowels and consonants in a given string.
2. Write a function to return the minimum and maximum elements from a tuple.
3. Write code to unpack the first two elements and the rest from a tuple of unknown length.
4. Write a function that takes a string and returns the frequency of each word.
5. Write a function to find duplicate elements in a list.
6. Use a filter with a lambda function to extract even numbers from a list.
7. Create a Python module named mymath.py with functions for addition, subtraction, and multiplication. Import and use it.
8. Sort a List of Tuples Based on the Second Element
9. Write a function to find the symmetric difference (elements not common) between two sets.

10.Write a function that returns a list of prime numbers up to a given number n.

Submit Guidelines

- Execute the assignment in a jupyter notebook file and download it as pdf. Once downloaded, zip the folder.

How to ZIP a folder:

● Put all files you want to compress into a new folder.
● Right click on that folder.
● Select the "Compress to ZIP file" option and then click "Compressed (Zipped) folder."
● A new .ZIP file will be created that contains your document(s). Upload this folder.