**Programming for Big Data**

**Assignment 2**

**Due date : 07-04-24**

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**Question 1:** write a program to create an excel file in python and by taking 5 values from user in a single column, their sum should be saved in 7th cell as well take other 5 values and save their average into 7th cell of another column by adjusting the width and height of the sum and average column **50,50.**

**Question 2:** Write a Python program that merges cells in an existing Excel file. Implement a function that takes a specified range of cells and merges them into a single cell. The program should load an existing Excel workbook, merge the specified cells, and then save the modified workbook. Provide flexibility for users to input the cell range to be merged. Additionally, ensure the program informs the user upon successful merging of cells.

**Question 3:** Design a Python program that encrypts or decrypts the contents of a text file using a chosen encryption algorithm (e.g., Caesar cipher). Implement functions for both encryption and decryption, allowing users to specify the input file, output file, and encryption key

Notes:

The Caesar cipher is one of the simplest and most widely known encryption techniques. It is a substitution cipher where each letter in the plaintext is shifted a certain number of places down or up the alphabet.

Here's how the Caesar cipher works:

Encryption: Each letter in the plaintext is shifted forward in the alphabet by a fixed number of positions, called the key. For example, with a key of 3, 'A' would be replaced by 'D', 'B' would become 'E', and so on. If the end of the alphabet is reached, the shift wraps around to the beginning.

Example:

Plaintext: "HELLO"

Key: 3

Encrypted text: "KHOOR"

Decryption: To decrypt the ciphertext, each letter is shifted backward in the alphabet by the same number of positions. This is essentially the inverse operation of encryption.

Example:

Ciphertext: "KHOOR"

Key: 3

Decrypted text: "HELLO"

Function: isalpha() to check if the input is alphabets then it will be encrypted

**Question 4:** Write a Python program that reads a text file and calculates the frequency of each word in the file. Implement a function to display the top N most frequent words and their frequencies. Provide flexibility for users to specify the input file and the number of top words to display.

**Notes:**

Use these two:

from collections import Counter

import re

The Counter class from the collections module is used to easily count the frequency of elements.The Counter class provides an efficient way to count the occurrences of elements in a collection. It does the counting in a single pass over the collection, which can be much faster than manually counting each element.

The re module in Python provides support for working with regular expressions. Regular expressions are powerful tools for pattern matching and searching within strings

re.findall(r'\b\w+\b', text)