Date: 16/12/2025

NATIONAL SKILL TRAINING INSTITUTE (WOMEN), INDORE

ARTIFICIAL INTELLIGENCE PROGRAMMING ASSISTANT
(MODULE 2 - INTERNAL PRACTICAL)
2025-26

Set 6

TIME: 3 Hrs **MARKS: 50**

Note: Attempt any 2

1. Count frequency of each vowel in a sentence (case-insensitive). Write a Python program that takes a sentence as input from the user and counts how many times each vowel (a, e, i, o, u) appears in the sentence, regardless of case. Convert the sentence to lowercase, iterate through each character, and maintain a dictionary like {'a': count_a, 'e': count_e, ...}. Finally, display the original sentence and the dictionary with vowel counts.
   Sample Input
   Enter a sentence:
   Education is the most powerful weapon which you can use to change the world.
   Sample Output
   Entered sentence:
   Education is the most powerful weapon which you can use to change the world.
   Vowel frequencies:
   {'a': 3, 'e': 7, 'i': 2, 'o': 6, 'u': 3}
2. Count substring occurrences in a main string (ignore case) Write a Python program that reads two strings from the user: a main string and a substring. The program should count how many times the substring occurs in the main string, ignoring case differences. Convert both strings to the same case (for example, lowercase) and then count all (possibly overlapping or nonoverlapping, as you specify) occurrences of the substring. Display the main string, substring, and the count.
   Sample Input
   Enter the main string:
   Data Science and data analysis rely on DATA quality.
   Enter the substring to search:
   data
   Sample Output
   Main string: Data Science and data analysis rely on DATA quality.
   Substring: data
   Occurrences (case-insensitive): 3
3. Frequency of each character in a given string Write a Python program that asks the user to enter a string and then computes the frequency of every character in that string. Consider all characters, including spaces and punctuation, unless you decide to filter them. Use a dictionary where keys are characters and values are counts. Display the original string and the character frequency dictionary.

Sample Input
Enter a string:
Python 3.11!
Sample Output
Entered string:
Python 3.11!
Character frequencies:
{'P': 1, 'y': 1, 't': 1, 'h': 1, 'o': 1, 'n': 1, ' ': 1, '3': 1, '.': 1, '1': 2, '!': 1}