OBJECT ORIENTED PROGRAMMING – SPRING 2022

Dead line: 30th *March* 2022

Assignment # 2
Total Marks: 90

Problem 1: [10]

Declare three arrays dynamically containing alphabet letters, Array names are U= Set of all alphabets, A letters given by user and B letters given by user, find A n B and A u B , U –(AUB) , A' , B' .

Problem 2: [10]

Take a long string from user using char * str dynamically. Then find the total number of vowels and consonants in that string, also sort vowels in descending order and print the stats. You also have to write sorting code for sorting of vowel array. Also check for upper case letters as well.

Sample Input:

Enter String: This is a string which contains vowels and consonants. Our task is to sort them in descending order, and print their count.

Sample Output:
Total Consonants: 66
Total Vowels: 33
Total 'i': 10
Total 'o': 9
Total 'a': 6
Total 'e': 6
Total 'u': 2

Problem 3: [10]

Given three variables x, y, z write a function to circularly shift their values to right using pointers. In other words if x = 5, y = 8, z = 10 after circular shift y = 5, z = 8, x =10 after circular shift y = 5, z = 8 and x = 10. Call the function with variables a, b, c to circularly shift values.

Problem 4: [10]

Write a function to represent an array (created dynamically) using histogram. Make sure to scale up the histogram by 2.

Sample Output

Array A	Histogram (Output)
4	********
8	****************
2	****

6	**********
4	********
8	**********
10	**********
3	******
5	**********
10	**********

Problem 5: [50]

Create a class NLP with the following features:

Data Members:

// You have to figure which data members are required.

Member Functions:

Constructors: All constructors which should be logically present

Destructor

Mutators (Setters): All the setters as per data members

Accessors (Getters): All the getters as per data members

Utilities:

strLength: Should return the length of input string (character type dynamic array)

wordCount: Should return the number of words of the input string (character type dynamic array)

unique: The function should return number of unique words of a given string.

uniGram: The function should calculate frequency of each single unique word (uni-grams). For this task, at first, a list of unique words should be created and then frequency of each word should be stored.

biGram: The function should calculate frequency of each unique pair of words (bi-grams). For this task, at first, a list of bigrams should be created and then frequency of each bigram should be stored.

triGram: The function should calculate frequency of each unique combination of 3 words. For this task, at first, a list of unique combination of 3 words should be created and then frequency of each should be stored.

You can create certain class level data members