CSE 104L: Programming Lab Training 9

Write separate functions for each task. Don't write everything in the main function. Try to write main function without printf() and scanf() statements. Avoid declaring global variables.

Q1. You have to implement a bubble sort program in the following way:
1. The program should contain two functions bubblesort and swap.
2. Function bubblesort will sort the array. It will call swap function to swap the consecutive elements of the array.
3. bubblesort function will pass each element by reference to the swap function.

Q2. For a given an n x n matrix. Write a C program to determine whether the matrix is a **triangular matrix**.
A matrix is **lower triangular** if every entry above the diagonal is 0.
For example,
1 0 0
8 1 0
4 3 2
A matrix is **upper triangular** if every entry below the diagonal is 0.
For example,
1 2 3
0 2 8
0 0 9

Q3. Write a C program to **multiply Rectangular Matrices**.
i.e. C[n][p] = A[n][m] x B[m][p].
For example,
Input:
A[2][4] = {{3, 2, 1, 5},
{9, 1, 3, 0}};
B[4][3] = {{2, 9, 0},
{1, 3, 5},
{2, 4, 7},
{8, 1, 5}};

Output:
c[2][3] = {{50, 42, 42},
{25, 96, 26}};

Q4. Write a C program to count the number of **vowels** and **consonants** in a string using a **pointer**.
For Example,
Input(string): Example
Output:
Number of vowels: 3
Number of constant: 4

Q5. Write a program that read names of 10 students and print them in alphabetical order.

Q6. Create the following user defined function

(a) int strlength(str1): To calculate the length of a string variable or string constant
(b) strconcat(str1, str2) : append the content of string variable or constants (i.e., str2) into the string variable (i.e., str1)
(c) int strcompare(str1, str2):- Compare two string variable and constant
(d) strcopy(string1, string2);:- Copy the content of string variable or constants (i.e., str2) into the string variable (i.e., str1)

These functions work similar to the built-in functions strlen, strcat, strcpy, strcmp defined in string.h.

Don't use any in-built function.

Write a main function to call these function over different strings