LAB 09 EXERCISES

# INSTRUCTIONS:

**NOTE: Violation of any of the following instructions may lead to the cancellation of your submission.**

1. Create a folder and name it by your student id (k18-1234).
2. Paste the .c file for each question with the names such as Q1.c, Q2.c and so on into that folder.
3. Submit the zipped folder on slate.

**NOTE: Use pointers to solve the following problems. Make a separate function to perform individual tasks. Use dynamic memory management for pointers.**

# Tasks to be performed only in Lab

## Question#1

Write a program to store n elements in an array and print the reverse elements of an array using pointer. (5-points)

## Question #2

Write a program in C to compute the sum of all elements in an array using pointers. (3- points)

## Question#3

Write a program in C to find the factorial of a given number using pointers. (3-points)

## Question#4

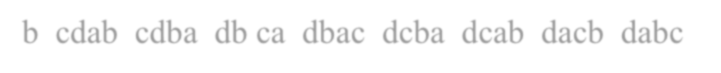
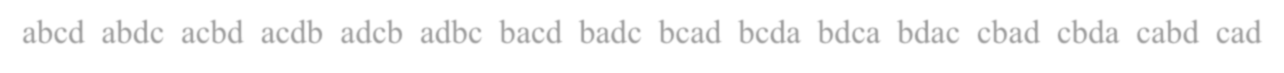
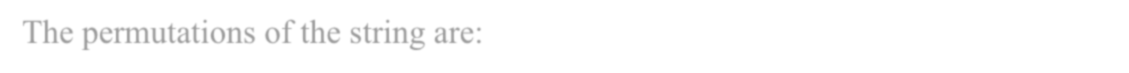
Write a program in C to calculate the length of the string using a pointer. (5-points)

## Question#5

Write a program in C to count the number of vowels and consonants in a string using a pointer. (5-points)

## Question#6

Write a program in C to print all permutations of a given string using pointers. (5-points) Output should be like



The permutations of the string are:

abcd abdc acbd acdb adcb adbc bacd badc bcad bcda bdca bdac cbad cbda cabd cad b cdab cdba db ca dbac dcba dcab dacb dabc

## Question#7

Write a program in C to print a string in reverse using a pointer. (3-points)

## Note:- Bonus Mark will be given to those students who will attempt all the above questions in lab.

**Take home practice problems**

**Question#8**

Write a function named Sum\_Num(float\* , int) which receives a float array and its size and returns the sum of numbers in the array. Call this function from main. Use appropriate parameters and return type.

## Question#9

Write a program to find the max of an integral data set. The program will ask the user to input the number of data values in the set and each value. The program prints on screen a pointer that points to the max value.

## Question#10

Write a program to swap two variables by passing the reference of these variables into a function declared as void swap(int \*, int \*).

Input Data:

First element: 12

Second element: 3

Third element: 9

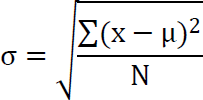
Output: The elements after swapping are:

First element: 12

Second element: 9

Third element: 3

## QUESTION#11

Write a single function that receives an array of 5 integers and returns the sum, average and standard deviation of these numbers without using return statement. Call this function from main( ) and print the results in main( ).

Where x represents each value in the population, μ is the mean value of the population, Σ is the summation (or total), and N is the number of values in the population.

Note: Use function type (call by reference)

## QUESTION#12

Write a function named Sum\_Num(int\* , int) which receives an integer array and it’s size and returns the sum of even numbers in the array. Call this function from main. Use appropriate parameters and return type.

## QUESTION#13

Write a program in C to find the largest element using Dynamic Memory Allocation. Input total number of elements (1 to 50): 6

Number 1: 4

Number 2: 7

Number 3: 1

Number 4: 19

Number 5: 0

Number 6: 8

Output: The largest number is 19

2

LAB 10 : POINTERS & DYNAMIC MEMORY MANAGEMENT IN C