Lab 8

1. Write a C Program to check if a user input string is palindrome or not.
    a. using String Library functions
    b. without using any string library functions.
2. Take a user input string.
    a. Copy it in another string using strcpy() – print both strings
    b. Check the error if size of the destination string is not large enough to store the copied string
    c. Write a function to mimic the strcpy() function and use it in your program. Do not use any predefined string manipulation functions.
3. Write a program that converts all lowercase characters in a string to its equivalent uppercase character.
4. Write the codes for strlen(), strcat() and strcmp() without using any string library functions.
5. Use dynamic memory allocation (DMA) to store the marks of **n** number of students, where **n** is input from user. Find the mean and standard deviation of the stored marks.
6. Use DMA to store **n** number of characters, where **n** is input from user. Find the character which is present maximum number of times among the stored characters. If there is a tie, print all the characters present maximum times.
7. Declare an integer array with name A of size 20 and populate it with user inputs, using the base address and pointer arithmetic to access array elements.
    a. Find all the even elements and store them in a separate array called a_even[].
    b. Find all the odd elements and store them in a separate array a_odd[].
    c. Sort these two arrays in ascending order.
    d. Create another array with name B of size 20 and populate this array from a_even[] and a_odd[] such that all the elements in B are in ascending order.
8. Write a program to sort all the elements of a 4 x 4 float matrix using pointer notation.
9. Write a program to multiply any two 3 x 3 integer matrices and print the output array.
10. Write a program to sort in alphabetical order, a set of 5 names stored in a 2D string. Assume that each name starts with a different letter.
11. Implement the following procedure to generate prime numbers from 1 to 100 into a program. This procedure is called sieve of Eratosthenes.

step 1: Fill an array num[100] with numbers from 1 to 100

step 2: Starting with the second entry in the array, set all its multiples to zero.

step 3: Proceed to the next non-zero element and set all its multiples to zero.

step 4: Repeat step 3 till you have set up the multiples of all the non-zero elements to zero

step 5: At the conclusion of step 4, all the non-zero entries left in the array would be prime numbers, so print out these numbers.

12. Write a program to obtain transpose of a 4 x 4 matrix. The transpose of a matrix is obtained by exchanging the elements of each row with the elements of the corresponding column.
13. Write a program that extracts part of the user input string from a specified start position till a specified end position, where positions are indicated by the indices.
14. Try problem 10 with dynamic memory allocation, where number of names to be stored will be entered by user