Objective of the Lab session:

To understand and implement the Programs on loops, conditional statements, multidimensional array and string functions.

The commonly-used string functions (<string.h> Standard Header)

- strcat - concatenate two strings
- strchr - string scanning operation
- strcmp - compare two strings
- strcpy - copy a string
- strlen - get string length
- strlwr()- converts string to lowercase
- strupr()- converts string to uppercase

1. Write a C program to check whether a number is palindrome or not.

   Note: *A palindromic number is a number that remains the same when its digits are reversed. Ex: 101, 111, 121*

2. Write a C program to find all factors of a number.
3. Write a C program to calculate factorial of a number.
4. Write a C program to find HCF (GCD) of two numbers.
5. Write a C program to print all Prime numbers between 1 to n using while loop.
6. Write a C program to print Fibonacci series up to n terms.

   Note: *The Fibonacci sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1.* ***Fibonacci Sequence****: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...*

7. Write a C program to input elements in array from user and count even and odd elements in array.

   Example: Input array: 1 2 3 4 5 6 7 8 9

   Output

   Total even elements: 4

   Total odd elements: 5

8. Write a C program to read elements in two matrices and multiply them.

   Input

```
Input elements of matrix1:
1 2 3
4 5 6
7 8 9
Input elements of matrix2:
9 8 7
6 5 4
3 2 1
```

   Output

```
Product of matrices =
30 24 18
84 69 54
138 114 90
```

***Note:** Two matrices can be multiplied only and only if number of columns in the first matrix is same as number of rows in second matrix. Multiplication of two matrices is defined as -*

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} e & f \\ g & h \end{bmatrix} = \begin{bmatrix} ae+bg & af+bh \\ ce+dg & cf+dh \end{bmatrix}$$

9. Write a C program to find length of a string using loop.

   a) Find length of a string without using in-built library function strlen() in C programming.

   b) Find length of a string using strlen() string function.

Note: strlen() is a string library function defined in string.h header file. It returns length of the string.

10. Write a C program to compare two strings using loop character by character. Compare two strings using inbuilt library function strcmp() in C programming.

    Note: use strcmp(str1, str2) to compare two strings present in string.h header file. It returns -1 if first string is lexicographically smaller than second string, returns 0 if both string are lexicographically equal else returns 1 if first string is lexicographical greater than second string.