Assignment 4

2D Array Tasks:

1. Write a program to read elements in a matrix and find the sum of main diagonal (major diagonal) elements of the matrix.

Input array elements:
1 2 3
4 5 6
7 8 9
Output
Sum of main diagonal elements = 15

2. Write a program to read elements in two matrices and add elements of both matrices.

Input
Input elements in 3x3 matrix1:
1 2 3
4 5 6
7 8 9
Input elements in 3x3 matrix2:
9 8 7
6 5 4
3 2 1

Output
Sum of both matrix =
10 10 10
10 10 10
10 10 10

3. Write a program to read elements in a matrix and find the sum of elements of each row of the matrix.

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

Output
Sum of row 1 = 6
Sum of row 2 = 15
Sum of row 3 = 24

4. Write a CPP program to read elements in a matrix and check whether the given matrix is a symmetric matrix or not.

Example for Symmetric matrix:

1 2 3

2 4 5

3 5 8

What is a Symmetric Matrix?

A symmetric matrix is a square matrix which is equal to its transpose. A symmetric matrix is always a square matrix. Symmetric matrix A is defined as – A = AT

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 8 \end{bmatrix} = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 8 \end{bmatrix}^T$$

Symmetric matrix

Functions Tasks:

5. Create a void function, take an integer then print it then call this method in main.

6. Create a function, take three integers then return the average as float value then call this method in main.

7. Create a function, take an integer then return true if this number is prime otherwise return false

8. Create a function, take an integer then return true if this number is even otherwise return false

9. Write a CPP program to input two or more numbers from the user and find the maximum and minimum of the given numbers using functions.

10. Write a function to find a cube of a given number.
Input any number: 5
Output
Cube of 5 = 125

11. Write a program to input radius of circle from user and find diameter, circumference and area of the given circle using function
Input radius: 10
Output
Diameter = 20 units
Circumference = 62.83 units
Area = 314.16 sq. units

12. create void function to take number and print all divisors of number

13. create function to take number and return true if this number can divide by 3 and 4