Lab Assignment No. 4 : Arrays

Exercise 1: One-Dimensional Arrays (Vectors)

Let the following vector *V*, containing positive integers, be given:

4	1	6	3	8	1	6	2	8	1	5	7

Write a C program that does the following :

1. Read and display the vector V.
2. Compute and display the sum and the average of the elements of vector V.
3. Find and display the maximum and minimum values of vector V, as well as their position(s).
4. Read a value n, then check if it exists in vector V. If yes, display its position(s).
5. Compute and display the number of occurrences of each element in vector V.
6. Using another vector V1, sort the elements of vector V in ascending order and display V1.
7. Using another vector V2, reverse the elements of vector V and display V2.

Exercise 2: Two-Dimensional Arrays (Matrices)

Let the following matrix ***M***, containing positive integers, be given:

2	4	8	16
2	4	6	8
3	4	5	6

2^j
2 * j
2 + j

Write a C program that does the following :

1. Compute and display the matrix M. Each element of each row of matrix M is defined in the additional column.
2. Compute and display the transpose matrix MT of matrix M.
3. Compute and display the matrix MM, the result of the matrix multiplication of M and MT.
4. Find and display all elements of matrix M that appear in at least two rows.
5. Using a vector V3, compute and display the product of the elements of each column of matrix M. The result for the example above is as follows:

12	64	240	768