ASSIGNMENT-4

1. Write a program to find out the sum of the elements present in array.
2. Write a program to search an element from an array.
3. Write a program to find out maximum and minimum element from an array.
4. Write a program to reverse a 1D array
5. Write a program to sort a 1D array
6. Write a program to find out No. of occurrences of an element in array
7. Write a program to calculate the sum of elements present in a 2D array.
8. Write a program to search an element whether it is present in a 2d array or not
9. Write a program to find max and min element from a 2D array.
10. Write a program to add and subtract two matrices of m x n. [c(m,n) = A(m,n) + B(m,n) and c(m,n) = A(m,n) - B(m,n)]
11. Write a program to reverse a 2D array.
12. Write a program to calculate the sum of diagonal elements of an nxn array.
13. Write a program to interchange the diagonal elements of an nxn array.
14. Write a program to multiply two matrices. [c(m,p)=A(m,n) x B(n,p)]
15. Suppose A, B, C are arrays of integers of size M, N, and M + N respectively. The numbers in array A appear in ascending order while the numbers in array B appear in descending order. Write a user defined function to produce third array C by merging arrays A and B in ascending order. Use A, B and C as arguments in the function.
16. Given two arrays of integers A and B of sizes M and N respectively. Write a function named MIX () with four arguments, which will produce a third array named C. such that the following sequence is followed.
    All even numbers of A from left to right are copied into C from left to right.
    All odd numbers of A from left to right are copied into C from right to left.
    All even numbers of B from left to right are copied into C from left to right.
    All old numbers of B from left to right are copied into C from right to left.
    A, B and C are passed as arguments to MIX (). e.g., A is {3, 2, 1, 7, 6, 3} and B is {9, 3, 5, 6, 2, 8, 10} the resultant array C is {2, 6, 6, 2, 8, 10, 5, 3, 9, 3, 7, 1, 3}
17. Write a menu driven program to do following operation on two dimensional array A of size m x n. You should use user-defined functions which accept 2-D array A, and its size m and n as arguments. The options are:
    a. To input elements into matrix of size m x n
    b. To display elements of matrix of size m x n
    c. Sum of all elements of matrix of size m x n
    d. To display row-wise sum of matrix of size m x n
    e. To display column-wise sum of matrix of size m x n
    f. To create transpose of matrix B of size n x m

18. Write a user-defined function to display the multiplication of row element of two-dimensional array A[4][6] containing integer.

19. Write a user defined function named UpperHalf() which takes a two dimensional array A, with size N rows and N columns as argument and prints the upper half of the array.

```
2 3 1 5 0                      2 3 1 5 0
7 1 5 3 1                        1 5 3 1
2 5 7 8 1  Output will be:         1 7 8
0 1 5 0 1                            0 1
3 4 9 1 5                              5
```

20. Write a function which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column.
[Assuming the 2D Array to be a square matrix with odd dimension i.e. 3x3, 5x5, 7x7 etc...]
Example, if the array contents is

```
3  5  4
7  6  9
2  1  8
```

Output through the function should be:
Middle Row : 7 6 9
Middle column : 5 6 1