1. Write a program in C to store elements in an array and print it.
Test Data :
Input 10 elements in the array :
element - 0 : 1
element - 1 : 1
element - 2 : 2
.....
Expected Output :
Elements in array are: 1 1 2 3 4 5 6 7 8 9

2. Write a program in C to read n number of values in an array and display it in reverse order.
Test Data :
Input the number of elements to store in the array :3
Input 3 number of elements in the array :
element - 0 : 2
element - 1 : 5
element - 2 : 7
Expected Output :
The values store into the array are :
2 5 7
The values store into the array in reverse are :
7 5 2

3. Write a program in C to find the sum of all elements of the array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 2
element - 1 : 5

element - 2 : 8
Expected Output :
Sum of all elements stored in the array is : 15

4. Write a program in C to copy the elements one array into another array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 15
element - 1 : 10
element - 2 : 12
Expected Output :
The elements stored in the first array are :
15 10 12
The elements copied into the second array are :
15 10 12

5. Write a program in C to count a total number of duplicate elements in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 1
element - 2 : 1
Expected Output :
Total number of duplicate elements found in the array is : 1

6. Write a program in C to print all unique elements in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 5
element - 2 : 1
Expected Output :
The unique elements found in the array are :
5

7. Write a program in C to merge two arrays of same size sorted in decending order.
Test Data :
Input the number of elements to be stored in the first array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 2
element - 2 : 3
Input the number of elements to be stored in the second array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 2
element - 2 : 3
Expected Output :
The merged array in decending order is :
3 3 2 2 1 1

8. Write a program in C to count the frequency of each element of an array.

Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 25
element - 1 : 12
element - 2 : 43
Expected Output :
The frequency of all elements of an array :
25 occurs 1 times
12 occurs 1 times
43 occurs 1 times

9. Write a program in C to find the maximum and minimum element in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 45
element - 1 : 25
element - 2 : 21
Expected Output :
Maximum element is : 45
Minimum element is : 21

10. Write a program in C to separate odd and even integers in separate arrays.
Test Data :
Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element - 0 : 25

element - 1 : 47
element - 2 : 42
element - 3 : 56
element - 4 : 32
Expected Output :
The Even elements are :
42 56 32
The Odd elements are :
25 47

11. Write a program in C to sort elements of array in ascending order.
Test Data :
Input the size of array : 5
Input 5 elements in the array :
element - 0 : 2
element - 1 : 7
element - 2 : 4
element - 3 : 5
element - 4 : 9
Expected Output :
Elements of array in sorted ascending order:
2 4 5 7 9

12. Write a program in C to sort elements of the array in descending order.
Test Data :
Input the size of array : 3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 9

element - 2 : 1
Expected Output :
Elements of the array in sorted descending order:
9 5 1

13. Write a program in C to insert New value in the array (sorted list)..
Test Data :
Input the size of array : 3
Input 3 elements in the array in ascending order:
element - 0 : 5
element - 1 : 7
element - 2 : 9
Input the value to be inserted : 8
Expected Output :
The exist array list is :
5 7 9
After Insert the list is :
5 7 8 9

14. Write a program in C to insert New value in the array (unsorted list).
Test Data :
Input the size of array : 4
Input 4 elements in the array in ascending order:
element - 0 : 1
element - 1 : 8
element - 2 : 7
element - 3 : 10
Input the value to be inserted : 5
Input the Position, where the value to be inserted :2

Expected Output :
The current list of the array :
1 8 7 10
After Insert the element the new list is :
1 5 8 7 10

15. Write a program in C to delete an element at desired position from an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array in ascending order:
element - 0 : 1
element - 1 : 2
element - 2 : 3
element - 3 : 4
element - 4 : 5
Input the position where to delete: 3
Expected Output :
The new list is : 1 2 4 5

16. Write a program in C to find the second largest element in an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array :
element - 0 : 2
element - 1 : 9
element - 2 : 1
element - 3 : 4
element - 4 : 6
Expected Output :

The Second largest element in the array is : 6

17. Write a program in C to find the second smallest element in an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array (value must be <9999) :
element - 0 : 0
element - 1 : 9
element - 2 : 4
element - 3 : 6
element - 4 : 5
Expected Output :
The Second smallest element in the array is : 4

18. Write a program in C for a 2D array of size 3x3 and print the matrix.
Test Data :
Input elements in the matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :
The matrix is :

1 2 3
4 5 6
7 8 9

19. Write a program in C for addition of two Matrices of same size.
Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :

1 2
3 4
The Second matrix is :

5 6
7 8
The Addition of two matrix is :

6 8

10 12

20. Write a program in C for subtraction of two Matrices.

Test Data :

Input the size of the square matrix (less than 5): 2

Input elements in the first matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

Input elements in the second matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The First matrix is :

5 6

7 8

The Second matrix is :

1 2

3 4

The Subtraction of two matrix is :

4 4

4 4

21. Write a program in C for multiplication of two square Matrices.
Test Data :
Input the rows and columns of first matrix : 2 2
Input the rows and columns of second matrix : 2 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :

1 2
3 4
The Second matrix is :

5 6
7 8
The multiplication of two matrix is :

19 22
43 50

22. Write a program in C to find transpose of a given matrix.
Test Data :

Input the rows and columns of the matrix : 2 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The matrix is :

1 2
3 4

The transpose of a matrix is :
1 3
2 4

23. Write a program in C to find sum of right diagonals of a matrix.
Test Data :
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The matrix is :
1 2
3 4
Addition of the right Diagonal elements is :5

Elements in array are:

24. Write a program in C to find the sum of left diagonals of a matrix.
Test Data :
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The matrix is :
1 2
3 4
Addition of the left Diagonal elements is :5

25. Write a program in C to find sum of rows an columns of a Matrix.
Test Data :
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :
The matrix is :
5 6
7 8
The sum or rows and columns of the matrix is :

5 6 11
7 8 15

12 14

26. Write a program in C to print or display the lower triangular of a given matrix.
Test Data :
Input the size of the square matrix : 3
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :
The matrix is :
1 2 3
4 5 6
7 8 9

Setting zero in lower triangular matrix

1 2 3
0 5 6

0 0 9

27. Write a program in C to print or display upper triangular matrix.
Test Data :
Input the size of the square matrix : 3
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :
The matrix is :
1 2 3
4 5 6
7 8 9

Setting zero in upper triangular matrix

1 0 0
4 5 0
7 8 9

28. Write a program in C to calculate determinant of a 3 x 3 matrix.
Test Data :
Input elements in the first matrix :

element - [0],[0] : 1
element - [0],[1] : 0
element - [0],[2] : -1
element - [1],[0] : 0
element - [1],[1] : 0
element - [1],[2] : 1
element - [2],[0] : -1
element - [2],[1] : -1
element - [2],[2] : 0
Expected Output :
The matrix is :
1 0 -1
0 0 1
-1 -1 0

The Determinant of the matrix is: 1

29. Write a program in C to accept a matrix and determine whether it is a sparse matrix.
Test Data :
Input the number of rows of the matrix : 2
Input the number of columns of the matrix : 2
Input elements in the first matrix :
element - [0],[0] : 0
element - [0],[1] : 0
element - [1],[0] : 1
element - [1],[1] : 0
Expected Output :
The given matrix is sparse matrix.

There are 3 number of zeros in the matrix

30. Write a program in C to accept two matrices and check whether they are equal.

Test Data :

Input Rows and Columns of the 1st matrix :2 2

Input Rows and Columns of the 2nd matrix :2 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Input elements in the second matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The first matrix is :

1 2

3 4

The second matrix is :

1 2

3 4

The Matrices can be compared :

Two matrices are equal.

31. Write a program in C to check whether a given matrix is an identity matrix.

Test Data :

Input number of Rows for the matrix :3
Input number of Columns for the matrix :3
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 0
element - [0],[2] : 0
element - [1],[0] : 0
element - [1],[1] : 1
element - [1],[2] : 0
element - [2],[0] : 0
element - [2],[1] : 0
element - [2],[2] : 1
Expected Output :
The matrix is :
1 0 0
0 1 0
0 0 1
The matrix is an identity matrix.