Arrays.

Task 1: Write a program to sum values of an array

Task 2: Write a program to calculate the average value of array elements

Task 3: Write a program to test if an array contains a specific value.

Task 4: Write a program to find the index of an array element.

Task 5: Write a program to remove a specific element from an array

Task 6: Write a program to copy an array by iterating the array

Task 7: Write a program to insert an element (specific position) into an array

Task 8: Write a program to find the maximum and minimum value of an array.

Task 9: Write a program to reverse an array of integer values.

Task 10: Write a program to find the duplicate values of an array of integer values

Task 11: Write a program to find the common elements between two arrays of integers.

Task 12: Write a program to remove duplicate elements from an array

Task 13: Write a program to find the second largest element in an array

Task 14: Write a program to find the second smallest element in an array

Task 15: Write a program to find all pairs of elements in an array whose sum is equal to a specified number

Task 16: Write a program to test the equality of two arrays

Task 17: Write a program to print all unique elements in an array

Task 18: Write a program to count the frequency of each element of an array
Example: If elements of array are: 5, 10, 2, 5, 50, 5, 10, 1, 2, 2
Frequency of 5 = 3
Frequency of 10 = 2
Frequency of 2 = 3
Frequency of 50 = 1
Frequency of 1 = 1

Task 19: Write a program to read elements in an array from user and count total number of even and odd elements in the given array.

Example:
Input array: 1 2 3 4 5 6 7 8 9
Output:
Total even elements: 4
Total odd elements: 5

Task 20:Write a program to read elements in an array and count total number of negative elements in array

Example:
If elements of array are: 10, -2, 5, -20, 1, 50, 60, -50, -12, -9
Total number of negative elements are: 5

Task 21:Write a program to input elements in an array and put all even and odd elements in two separate array.

Example:
Input size of the array: 10
Input elements in array: 0 1 2 3 4 5 6 7 8 9
Output even elements in array: 0 2 4 6 8
Output odd elements in array: 1 3 5 7 9

Task 22: Write a program to read elements in two matrices and add elements of both matrices.

Example:

If matrix 1:	And matrix 2:	Sum of both matrix =
1 2 3	9 8 7	10 10 10
4 5 6	6 5 4	10 10 10
7 8 9	3 2 1	10 10 10

Task 23: Write a program to read elements in two matrices and find the difference of two matrices.

Example:

If matrix 1:	And matrix 2:	Difference of both matrices =
1 2 3	9 8 7	-8 -6 -4
4 5 6	6 5 4	-2 0 2
7 8 9	3 2 1	4 6

Task 24: Write a program to read elements in a matrix and perform scalar multiplication of matrix.

Example:

If matrix A=
1 2 3
4 5 6
7 8 9

Output: 2 x A =
2 4 6
8 10 12
14 16 18

Task 25: Write a program to read elements in two matrices and multiply them.

Example:

If matrix 1 =
1 2 3
4 5 6
7 8 9

And matrix 2 =
9 8 7
6 5 4
3 2 1

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

Task 26: Write a program to enter elements in two matrices and check whether both matrices are equal or not.

Example:

If matrix 1 =
1 2 3
4 5 6
7 8 9

And matrix 2 =
1 2 3
4 5 6
7 8 9

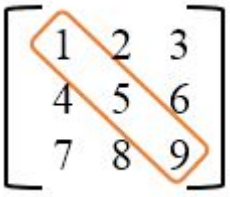
Output: Both matrices are equal.

Task 27: Write a program to read elements in a matrix and find the sum of main diagonal (major diagonal) elements of matrix.

Example:

If the array elements are:
1 2 3
4 5 6
7 8 9

Output: Sum of main diagonal elements = 15

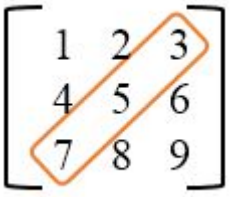


Task 28: Write a program to read elements in a matrix and find the sum of minor diagonal (opposite diagonal) elements.

Example:

If the matrix elements are:
1 2 3
4 5 6
7 8 9

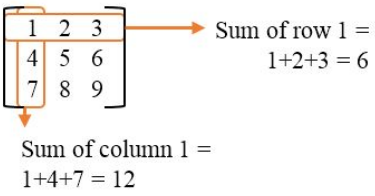
Sum of minor diagonal elements = 15



Task 29: Write a program to read elements in a matrix and find the sum of elements of each row and columns of matrix.

Example:
If elements of matrix are:
1 2 3
4 5 6
7 8 9

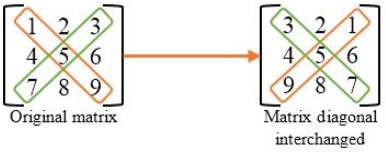
Output:
Sum of row 1 = 6
Sum of row 2 = 15
...
...
Sum of column 3 = 18



Task 30: Write a program to read elements in a matrix and interchange elements of primary(major) diagonal with secondary(minor) diagonal.

Example:
If elements of matrix are:
1 2 3
4 5 6
7 8 9

Matrix after interchanging its diagonal:
3 2 1
4 5 6
9 8 7

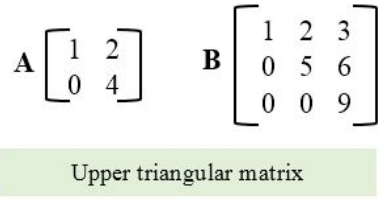


Task 31:Write a program to read elements in a matrix and check whether the matrix is upper triangular matrix or not.

Example:
If elements of matrix are:
1 2 3
0 5 6
0 0 9

Output: Matrix is upper triangular

Upper triangular matrix is a special type of square matrix whose all elements below the main diagonal is zero.

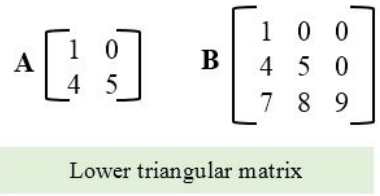


Task 32: Write a program to read elements in a matrix and check whether the matrix is a lower triangular matrix or not.

Example: If elements of the matrix are:
1 0 0
4 5 0
7 8 9

Output: Matrix is lower triangular

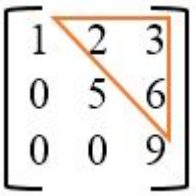
Lower triangular matrix is a special square matrix whose all elements above the main diagonal is zero.



Task 33: Write a program to read elements in a matrix and find sum of upper triangular matrix.

Example: If elements of the matrix are:
1 2 3
0 5 6
0 0 9

Sum of upper triangular matrix = 11

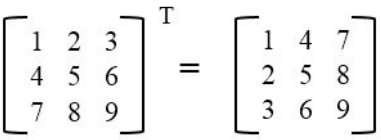


Task 34: Write a program to read elements in a matrix and find transpose of the given matrix.

Example: If elements of the matrix are:
1 2 3
4 5 6
7 8 9

Then its transpose is :
1 4 7
2 5 8
3 6 9

Transpose of a matrix **A** is defined as converting all rows into columns and columns into rows.



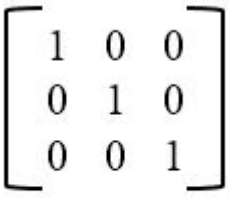
Transpose of a matrix

Task 35:Write a program to read elements in a matrix and check whether matrix is an Identity matrix or not.

Example: If elements of a 3x3 matrix are:
1 0 0
0 1 0
0 0 1

Output: It is an Identity matrix.

Identity matrix is a special square matrix whose main diagonal elements is equal to 1 and other elements are 0. Identity matrix is also known as unit matrix.



Identity matrix