

Day 14

Lab Assignments

1. WAP to check two matrices are equal or not. The user has to enter the order of two matrices and elements of two matrices. Then, these two matrix are compared.
 - a. If both matrix size and corresponding elements are equal, then it should display that the two matrices are equal.
 - b. If sizes of the two matrices are equal but the elements are not equal, then it should display that the matrix can be compared but are not equal.
 - c. If sizes of the two matrices are not equal, then it should display that the matrices cannot be compared.

Input 1: Enter the row and column size of matrix 1: 3 3

Enter the row and column size of matrix 2: 3 3

Enter the elements of matrix 1:

0 2 0

0 0 4

5 7 0

Enter the elements of matrix 2:

0 2 0

0 0 4

5 7 0

Output 1: Both the matrices are equal.

Input 2: Enter the row and column size of matrix 1: 3 3

Enter the row and column size of matrix 2: 3 3

Enter the elements of matrix 1:

0 2 0

6 5 4

5 7 9

Enter the elements of matrix 2:

0 2 0

0 0 4

5 7 0

Output 2: The matrices can be compared but are not equal.

Input 3: Enter the row and column size of matrix 1: 3 3

Enter the row and column size of matrix 2: 5 3

Output 3: Given matrices can not be compared.

2. WAP perform scalar matrix multiplication.

Input: Enter the row and column size of the matrix: 3 3

Enter the elements of the matrix:

3 2 1

6 5 4

5 7 9

Enter the scalar value: 5

Output: Matrix M=

3 2 1

6 5 4

5 7 9

5M=

15 10 5

```

30    25    20
25    35    45

```

3. WAP to interchange the columns in the matrix.

Input: Enter the row and column size of the matrix: 3 3

Enter the elements of the matrix:

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3    2    1
6    5    4
5    7    9

```

Enter the column numbers to interchange: 1 3

Output: Elements of the matrix before column interchange:

```

3    2    1
6    5    4
5    7    9

```

Elements of the matrix after column interchange:

```

1    2    3
4    5    6
9    7    9

```

4. WAP to find the normal of a matrix. Normal of a matrix is the value which is equivalent to the square root of sum of squares of matrix elements.

Input: Enter the row and column size of the matrix: 3 3

Enter the elements of the matrix:

```

3    2    1
6    5    4
5    7    9

```

Output: Normal of the given matrix: 15.684

5. WAP that builds the PASCAL triangle of degree n and store it in a square matrix P of dimension n+1.

Input: Enter the degree of the triangle: 5

Output: Pascal triangle of degree 5:

```

1
1    1
1    2    1
1    3    3    1
1    4    6    4    1
1    5    10   10   5    1

```

6. WAP to find the row with the maximum number of 1s.

Input: Enter the row and column size of the matrix: 5 5

Enter the elements of the matrix:

```

0 1 0 1 1
1 1 1 1 1
1 0 0 1 0
0 0 0 0 0
1 0 0 0 1

```

Output: The given 2D array is :

```

0 1 0 1 1
1 1 1 1 1
1 0 0 1 0
0 0 0 0 0
1 0 0 0 1

```

The index of row with maximum 1's is: 1

Home Assignments

1. WAP to search for an element in a row wise and column wise sorted matrix..

Input: Enter the row and column size of the matrix: 4 4
Enter the elements of the row wise and column wise sorted matrix:

15 23 31 39
18 26 36 43
25 28 37 48
30 34 39 50

Enter the element to search: 37

Output: The given matrix is:

15 23 31 39
18 26 36 43
25 28 37 48
30 34 39 50

The given value for searching is: 37

The element found at the position in the matrix is: 2, 2

2. WAP Write a program in C to return only the unique rows from a given binary matrix.

Input: Enter the row and column size of the matrix: 4 5
Enter the elements of the binary matrix:

0 1 0 0 1
1 0 1 1 0
0 1 0 0 1
1 0 1 0 0

Output: The given matrix is :

0 1 0 0 1
1 0 1 1 0
0 1 0 0 1
1 0 1 0 0

The unique rows of the given matrix are :

0 1 0 0 1
1 0 1 1 0
1 0 1 0 0

3. WAP to find the sum of lower triangular matrix.

Input: Enter the row and column size of the matrix: 3 3
Enter the elements of the matrix:

3 2 1
6 5 4
5 7 9

Output: Sum of the lower triangular matrix: 35

4. WAP to interchange diagonals of a matrix.

Input: Enter the row and column size of the matrix: 4 4
Enter the elements of the matrix:

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

4 2 4 3

Output: The given matrix is :

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

After interchanging the diagonals the given matrix is :

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

5. WAP to find the sum of minor diagonals of a matrix.

Input: Enter the row and column size of the matrix: 5 5

Enter the elements of the matrix:

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

Output: The given matrix is :

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

Sum of the minor diagonal of the matrix: 18