Greatest sorted submatrix

Problem Code: **SUBMATRI**

This problem is worth 2 points

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Given a square matrix of size n containing positive integers. Find the greatest submatrix(square or otherwise) which is sorted both row-wise and column-wise in increasing order. A matrix is sorted row-wise, if all the elements in any row are sorted in increasing order. And similarly, a matrix is sorted column-wise, if all the elements in any column are sorted in increasing order. Greatest submatrix is defined as the submatrix containing the maximum number of elements. You have to output the number of elements in the greatest sorted sub-matrix of the given matrix.

Input

The first line will contain the number 'n'. Then it will be followed by 'n' lines containing 'n' positive integers each separated by space.

Output

The output will contain a single positive integer specifying the size of the largest sub-matrix.

Solution Templates

In the solution templates provided, complete the function whose signature is

```
C / C++
int greatestSortedSubMatrix(int matrixSize, innt matrix[100][100])

Java
static int greatestSortedSubMatrix(int matrixSize, int[][] matrix)
```

greatestSortedSubMatrix should return the area of the largest submatrix in which all the elements in any row are sorted in increasing order, as well as, all the elements in any columns are sorted in increasing order. The first argument 'matrixSize' is the number of rows / columns in the square matrix 'matrix', which is the second argument.

Note: You are allowed to edit the code as you please. Add / delete headers. Add / delete methods. And so on.. So long as your final code solves the problem with Input and Output as described above. You may submit your own code, without using the template at all.

Constraints

n <= 100. All input positive integers < 10000.

Sample Input

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

Sample Output

```
8
```

Explanation

The greatest sub-matrix here will be between (1,0), (1,3), (2,0), (2,3). The matrix will be

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

This matrix is sorted in row wise as 1>4>6>8 and 3>6>7>9. This matrix is sorted in column wise as 1>3, 4>6, 6>7 and 8>9

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Source Limit:	50000 Bytes
Languages:	C, CPP 4.3.2, JAVA, PYTH, PYTH 3.5

Comments