Middle Man

Note the unusual memory limit

Baba_ke_bachhe hate middle men and strive to eliminate them. They observed some people standing in a square field of side N which can be represented in the form of a matrix. Each person has a happiness value associated with him.

You are given a matrix A with dimensions N x N containing the happiness values of all the people in the square field.

They have a special number K, they want to eliminate the middleman for all submatrices with dimensions K x K. **K is odd**

The middleman for a submatrix is defined as the median of all the elements belonging to the submatrix.

Median of an array with N elements is the element in the middle position of the sorted array, there will always be an element in the middle position since K is odd.

Help Baba_ke_bachhe find the happiness value of the middleman for all the submatrices of size K.

Input

First line will contain two integers N ($1 \le N \le 10^3$) and K ($1 \le K \le \min(501,N)$), N denotes the size of the original matrix, K denotes the size of the submatrix.

Followed by N lines each containing N spaced integers, ($1 \le A_{i,j} \le 20$) denoting the happiness value of all the people in the matrix.

Output

Print the happiness value of the middle man for all the submatrices with side length K, in row-wise order, i.e, left to right and then top to bottom.

Example

Input

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

Output

```
4 4 5
4 3 5
4 4 5
```

Explanation

There will be 9 submatrices with size 3*3. K_{ij} denotes the submatrix whose top-left element is H_{ij}

Sorted(K_{11}) = [1, 1, 2, 2, 4, 4, 5, 8, 9], Median = 4

Sorted(K_{12}) = [1, 2, 2, 3, 4, 5, 5, 8, 8], Median = 4

Sorted(K_{13}) = [1, 2, 3, 5, 5, 6, 7, 8, 9], Median = 5

Sorted(K_{21}) = [1, 1, 2, 3, 4, 5, 7, 8, 9], Median = 4

Sorted(K_{22}) = [1, 1, 2, 2, 3, 3, 5, 8, 8], Median = 3

Sorted(K_{23}) = [1, 2, 3, 3, 5, 5, 6, 8, 9], Median = 5

Sorted(K_{31}) = [1, 2, 3, 4, 4, 5, 7, 8, 9], Median = 4

Sorted(K_{32}) = [1, 2, 2, 3, 4, 5, 6, 8, 9], Median = 4

Sorted(K_{33}) = [1, 2, 3, 4, 5, 5, 6, 8, 9], Median = 5

Submit solution

All submissions
Best submissions

Points: 70
Time limit: 1.5s
Memory limit: 650M

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Allowed languages
C

Clarifications

Request clarification

No clarifications have been made at this time.

Assignment 4 - 3 days 00:19:04