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The TCS Global Coding Contest

02 Hr 23 Min 37 Sec

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Coding Area

A B C D E F

ONLINE EDITOR (D)

Unlocker

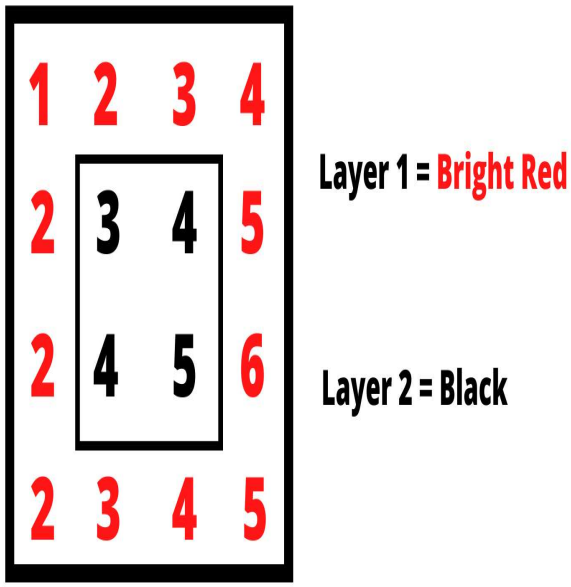
Problem Description

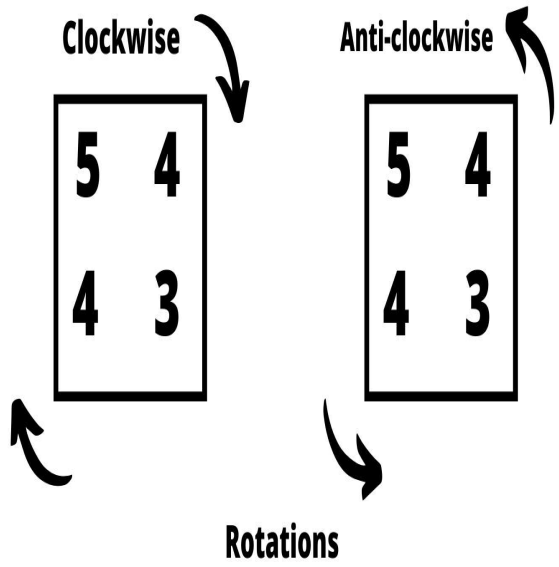
A locker is comprised of one or more layers. Each layer can be rotated only in one direction. Odd numbered layers rotate in anti-clockwise direction (left to right), and even numbered layers rotate in clockwise direction (right to left).

You are given a locker, in the form of a matrix. The matrix will be rectangular in shape. The outer most layer of this matrix is layer1. In context of the diagram below, the numbers painted in red are layer1 and the inner numbers constitute layer2. Bigger matrices will have more layers.

One rotation defined as a given number moving in the neighbouring spot i.e. one spot left for clockwise rotation and one spot right for anti-clockwise rotation.

Number of rotations for each layer required to unlock the locker will be provided as input. Print the final unlocked matrix as output.





Constraints

1 < M, N <= 300

0 <= Numbers in matrix < 100

1 <= Number of rotations <= 10^9

M%2=0 && N%2=0

Input

First line contains two space separated integer M and N which denotes the number of rows and number of columns, respectively

Next M lines contain N space separated integers depicting the locked matrix

Last line contains L space separated integers, where L is the number of layers. Each number on this line denotes the number of rotations for every layer from 1 to L

Output

Print unlocked matrix

Time Limit

2

Examples

Example 1

Input

2 2

1 2

3 4

2

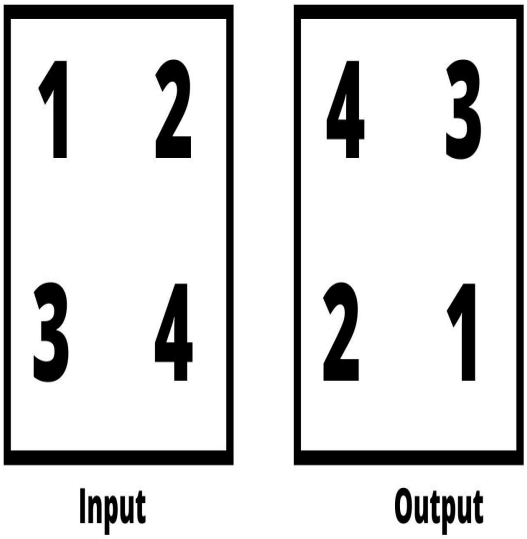
Output

4 3

2 1

Explanation:

There is only one layer. So, we have to rotate it in anti-clockwise direction with 2 rotations.



Example 2

Input

4 4

1 2 3 4

2 3 4 5

2 4 5 6

2 3 4 5

2 2

Output

3 4 5 6

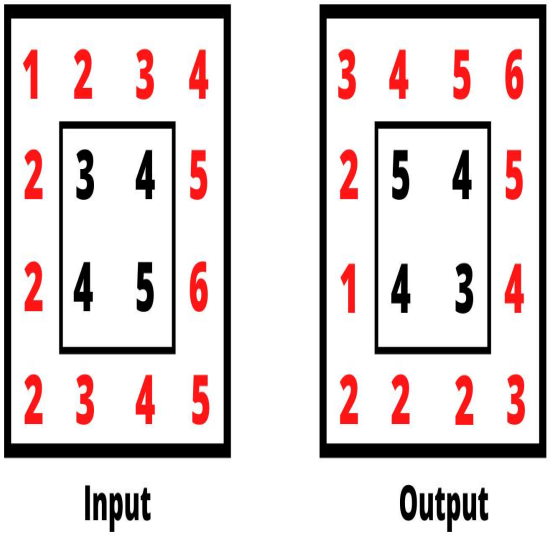
2 5 4 5

1 4 3 4

2 2 2 3

Explanation:

Here we have to rotate layer1 in anti-clockwise direction with 2 rotations, and layer2 clockwise with 2 rotations.



Upload Solution [Question : D]

☐ I, **gowtham g** confirm that the answer submitted is my own.

☐ Took help from online sources (attributions)

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