

# Scenery

SEASON 2021/2022 – FORTH ROUND



Harry loves walking in Varna. To be precise - in the "Chaika" district. While Harry was planning his next trip, he found out that a construction company "Galab" has started the construction of new buildings in the neighborhood. This didn't appeal to him at all because it would spoil the landscape. Fortunately, Barry, a friend of Harry, works for the company and has the plans for the construction.

The neighborhood can be envisioned as an  $N \times M$  matrix. The rows and columns are indexed from 1. Barry knows the positions of each of the intended  $Q$  buildings. Building with number  $i$  will be constructed in cell  $(x_i, y_i)$  (more than one building can be constructed in the same cell). Each cell has a certain view beauty factor  $a_{i,j}$ . A building in cell  $(x, y)$  decreases the beauty of all cells in its row and column by the distance to the cell. The distance between two cells in the same row  $(x, y_1)$  and  $(x, y_2)$  is  $|y_1 - y_2|$  and the distance between two cells in the same column  $(x_1, y)$  and  $(x_2, y)$  is  $|x_1 - x_2|$ .

Harry wants to know what the view beauty factor will be for each cell after all the buildings are constructed. At the moment, he is busy making a list of places he wants to visit (again) in Varna, so there is no time for these simple calculations. He needs your help. Write a program called `scenery.cpp` to calculate the view beauty factor for each cell of the neighborhood.

## Input

From the first line of the `scenery.in` file, three positive integers are entered -  $N$ ,  $M$  and  $Q$ , respectively the size of the neighbourhood and the number of buildings to be built. On each of the next  $N$  lines,  $M$  numbers are entered – the initial view beauty factor for each cell. On the following  $Q$  lines, two numbers are entered – the row and column for each building.

## Output

In the `scenery.out` file, you need to print  $N$  lines with  $M$  numbers that represent the view beauty factor for each of the cells in the neighborhood after all the buildings are built.

## Constraints

$$1 \leq N, M \leq 1000$$

$$1 \leq Q \leq 10^5$$

$$-10^9 \leq a_{i,j} \leq 10^9$$

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**Time limit: 2sec.**

**Memory limit: 256 MB.**

**Sample test:**

Input (scenery.in)	Output (scenery.out)
4 5 5	2 7 -10 12 -1
3 9 -4 15 2	8 -9 -6 8 0
11 -5 -2 8 1	4 -1 12 -13 12
7 2 14 -9 17	1 7 -9 1 -9
3 12 -8 4 -7	
2 4	
3 3	
1 2	
3 2	
4 3	