

Problem I. Shortest Path Queries

Input file: *standard input*
 Output file: *standard output*
 Time limit: 5 seconds
 Memory limit: 256 mebibytes

You are given a $W \times H$ grid. Each cell contains an integer. The top-left cell is called $(1, 1)$, and the bottom-right cell is called (W, H) .

A path from a cell S to a cell T is a sequence of cells such that the first cell in the sequence is S , the last cell in the sequence is T , and any two consecutive cells in the sequence share an edge. The cost of a path is defined as the sum of costs of all cells in the path.

You are given the integers written on the grid, and also Q pairs of cells (SX_i, SY_i) , (TX_i, TY_i) . For each pair, compute the minimum cost of the path from the cell (SX_i, SY_i) to the cell (TX_i, TY_i) .

Input

On the first line, you are given three integers W , H , and Q ($1 \leq W \leq 10$, $2 \leq H \leq 10^4$, $1 \leq Q \leq 10^5$).

On the next H lines, you are given the information about the grid. The x -th number in the y -th of these lines, $A_{x,y}$, is the integer written in the cell (x, y) ($0 \leq A_{x,y} \leq 10^9$).

On the next Q lines, you are given pairs of cells (SX_i, SY_i) , (TX_i, TY_i) ($1 \leq SX_i, TX_i \leq W$, $1 \leq SY_i, TY_i \leq H$, $(SX_i, SY_i) \neq (TX_i, TY_i)$).

Output

Print Q lines. On the i -th line, print the answer for the pair (SX_i, SY_i) and (TX_i, TY_i) .

Examples

standard input	standard output
2 5 4 0 1 0 1 0 0 1 0 1 0 1 1 2 5 2 1 1 5 1 3 2 3 1 5 1 1	0 2 0 1
3 6 5 1 9 2 3 4 1 2 5 3 4 2 2 3 1 5 2 6 3 1 1 3 1 1 1 3 6 1 6 3 6 1 3 3 4 2 6 3 2	11 21 11 10 15