Problem A

Simple Operations in Matrix

Matrix is a mathematical object which arranges data into a rectangular array of N rows and M columns. The rows are indexed from 1 to N, while the columns are indexed from 1 to M. Matrix is very powerful and extremely useful in many applications. In this problem, we are going to focus on two simple operations in matrix: row addition and column addition.

You are given a matrix of integers of N rows and M columns, and Q queries of the following format:

- `row` k val : add each element on the k-th row by val,
- `col` k val : add each element on the k-th column by val.

Your task is to output the following three numbers after all queries have been performed:

- sum : the sum of all elements in the matrix,
- min : the value of the smallest element in the matrix,
- max : the value of the largest element in the matrix.

See the sample input for clarity.

Input

The first line contains two integers: N M ($1 \le N, M \le 50$) denoting the size of the matrix (number of rows and columns, respectively). The next N lines, each contains M integers: $A_{i,j}$ ($-100 \le A_{i,j} \le 100$) denoting the matrix element at the i-th row and j-th column for $1 \le i \le N$ and $1 \le j \le M$, respectively. The next line contains an integer: Q ($0 \le Q \le 100$) denoting the number of queries. The next Q lines, each contains a query in one of the following format:

- `row` k val ($1 \le k \le N$; $-100 \le val \le 100$)
- `col` k val ($1 \le k \le M$; $-100 \le val \le 100$)

Output

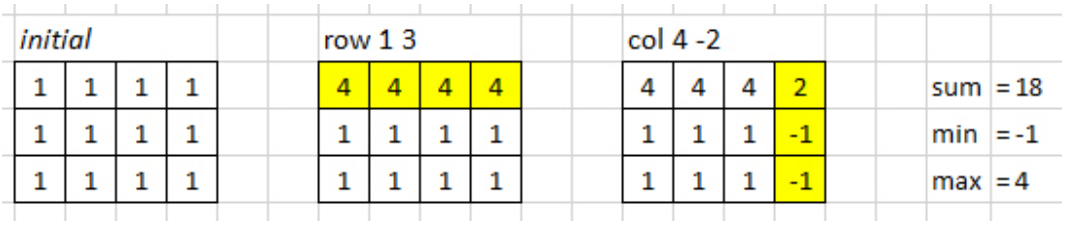
The output contains three integers (each separated by a single space) in a single line: sum min max, as described in the problem statement.

Sample Input	Output for Sample Input
3 4 1 1 1 1 1 1 1 1 1 1 1 1 2 row 1 3 col 4 -2	18 -1 4

4 3 10 10 10 10 10 10 10 10 10 10 10 10 5 row 2 -5 col 3 6 col 1 -10 row 4 7 col 1 3	122 -2 23
2 3 15 7 8 31 1 14 3 row 2 -15 col 1 10 row 1 2	57 -14 27

Explanation for the 1st sample case

These are the matrices after each queries for the first sample.



Explanation for the 3rd sample case

These are the matrices after each queries for the third sample.