This year, there have been many problems with population calculations, since in some cities, there are many emigrants, or the population growth is very high. Every year the ACM (for Association for Counting Members) conducts a census in each region. The country is divided into $N \wedge 2$ regions, consisting of an $N \times N$ grid of regions. Your task is to find the least, and the greatest population in some set of regions. Since in a single year there is no significant change in the populations, the ACM modifies the population counts by some number of inhabitants.

Input

In the first line you will find N ($0 \leq N \leq 500$), in following the N lines you will be given N numbers, wich represent, the initial population of city $C[i, j]$. In the following line is the number Q ($Q \leq 40000$), followed by Q lines with queries:

There are two possible queries:

- '`q` x_1 y_1 x_2 y_2' which represent the coordinates of the upper left and lower right of where you must calculate the maximum and minimum change in population.
- '`c` x y v' indicating a change of the population of city $C[x, y]$ by value v.

Output

For each query, '`q` x_1 y_1 x_2 y_2' print in a single line the greatest and least amount of current population. Separated each output by a space.

Notice: There is only a single test case.

Sample Input

```
5
1 2 3 4 5
0 9 2 1 3
0 2 3 4 1
0 1 2 4 5
8 5 3 1 4
4
q 1 1 2 3
c 2 3 10
q 1 1 5 5
q 1 2 2 2
```

Sample Output

```
9 0
10 0
9 2
```