QCC P4 - Genetic Sequencing

Time limit: 2.0s   **Memory limit:** 256M

Your next assignment from CodeVax is to help develop a COVID-19 vaccine. To do this, you must *decode* COVID-19's genetic sequence. More specifically, COVID-19's gene sequence is represented by an N by N grid of numbers. To decode COVID-19's genome sequence you must rotate given subgrids in a very specific way. Thankfully, other scientists have already figured out the sequence of rotating subgrids and given you Q instructions on what to do. You must apply these instructions in the order they were given to the given subgrid to complete the vaccine.

Let (r_1, c_1) and (r_2, c_2) represent the **top left** and **bottom right** corner of a square subgrid, respectively. Instructions will come in the form:

`r1 c1 r2 c2 x` : Rotate the square subgrid consisting of the points (r_1, c_1) and (r_2, c_2) clockwise by x degrees.

Given the N by N grid of numbers and Q such instructions, please print out COVID-19's decoded genetic sequence.

Input Specification

The first line of input will contain a positive integer, N.

The next N lines will each contain N positive integers.

The next line will contain a positive integer, Q.

The next Q lines will each contain the instructions on how to decode COVID-19's gene sequence.

Output Specification

Output COVID-19's genetic sequence after it has been decoded.

Constraints

For all subtasks:

$2 \leq N \leq 100$

$1 \leq Q \leq 2 \times 10^3$

$1 \leq r_1 < r_2 \leq N$

$1 \leq c_1 < c_2 \leq N$

$-360 \leq x \leq 360$

Every number in the grid will be a value in the range $[1, 10^4]$.

It is guaranteed that x is a multiple of 90 and that $r_2 - r_1 = c_2 - c_1$.

Note that you will NOT be required to pass all the samples to receive points.

Subtask 1 [15%]

$N = 2$

Subtask 2 [85%]

$2 \leq N \leq 100$

Sample Input 1

```
2
1 2
3 4
1
1 1 2 2 90
```

Sample Output 1

```
3 1
4 2
```

Sample Input 2

```
4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
5
1 1 4 4 360
2 2 3 3 -270
1 1 3 3 -90
2 2 4 4 180
3 2 4 3 90
```

Sample Output 2

```
3 6 7 4
2 16 15 14
1 8 12 5
13 11 9 10
```