

Transformation

Objective

The objective of this problem is to test the students' understanding on 2-dimensional array and manipulation of the array.

Problem Description

Given a 2 dimensional matrix, output the final state of the matrix after performing the given operations. There are 2 valid operations:

1. **Rotate X:** Rotate the matrix by X degree, X can be 90, 180, or 270 **clockwise**.
2. **Reflect x:** Reflect the matrix across the x-axis.
3. **Reflect y:** Reflect the matrix across the y-axis.

Input

The first line of the input contains one integers, **N** ($1 \leq N \leq 100$). The next line is an array with size **N** x **N**. The next line is an integer **K** ($1 \leq K \leq 100$), where **K** is the number of operations performed. The next line is the query with format "Rotate **x**", ($x \in \{90, 180, 270\}$), "Reflect x" or "Reflect y".

Output

The output is the final state of the matrix.

Sample Input

```
3
1 2 3
4 5 6
7 8 9
3
Rotate 90
Reflect x
Reflect y
```

Sample Output

```
3 6 9
2 5 8
1 4 7
```

Explanation

- | | |
|------------------------------------|------------------------------------|
| 1. Initial matrix: | 2. After 90° clockwise rotation: |
| 1 2 3 | 7 4 1 |
| 4 5 6 | 8 5 2 |
| 7 8 9 | 9 6 3 |
| 3. After reflection across x axis: | 4. After reflection across y axis: |
| 9 6 3 | 3 6 9 |
| 8 5 2 | 2 5 8 |
| 7 4 1 | 1 4 7 |

Note

The main Java class must be called Transformation, and be in the source file Transformation.java.