



# Practice Arena

Practice problems aimed to improve your coding skills.

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# Spin the Matrix

LAB-PRAC-09\_PTR-MAT

**Spin the Matrix [20 marks]****Problem Statement**

In the first line you will be given a single strictly positive integer  $n$ . In the next  $n$  lines, you will be given an  $n \times n$  matrix, call it  $A$ , filled with integers. Each row of the matrix will be given in a single line with entries in a row separated by a single space. In the last  $(n+2)$ -th line of the input, you will be given a list of characters delimited by the character 'X'. The list will only contain the characters 'L' and 'R' and not contain the terminating character 'X'. The list will contain at least one 'L' or 'R' character but no more than 99 L/R characters.

Each 'L' is an instruction to *rotate* the matrix  $A$  counterclockwise by 90 degrees (see example below). Each 'R' is an instruction to *rotate* the matrix  $A$  clockwise by 90 degrees (see example below). Find the matrix that forms after following the L/R instructions in the list. Call this matrix  $B$ .

For your output, first print the matrix as you would get it if you were to just rotate it 90 degrees clockwise. Then output the matrix  $B$  as calculated above (by following the instructions in the list).

**Caution**

1. When printing matrices, print each row on a separate line, with a single space between two elements. Be careful to not include any stray spaces at the end of any line.
2. There will be a newline character after  $n$  as well as one before the list of L/R begins. Be careful to discard these newline characters.
3. Be careful about extra/missing lines and extra/missing spaces in your output.

**EXAMPLE:**

INPUT

2

1 2

3 4

LRLX

OUTPUT:

3 1

4 2

2 4

1 3

**Explanation:** After rotating the matrix  $A$  once clockwise 90 degrees, we get the matrix

3 1

4 2

If we are to follow the instructions LRL, we effectively rotate the matrix counterclockwise 90 degrees (L and R cancel each other) and we get the matrix

2 4

1 3

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**Grading Scheme:**

Total marks: **[20 Points]**

There will be partial grading in this question. There are  $2 * n$  in your output depending on  $n$ . Printing each line correctly, in the correct order, carries equal weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

 **Start Solving!** (</editor/practice/6184>)