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Coding Arena

<**C∗de**Vita/>
the TCS Coding Contest

A   B   C   D   E   F   G

Problem : Matrix Rotations

Time Left

05   24   37
hr   min   sec

You are given a square matrix of dimension **N**. Let this matrix be called **A**. Your task is to rotate **A** in clockwise direction by **S** degrees, where **S** is angle of rotation. On the matrix, there will be 3 types of operations viz.

Rules & Regulations

1. Rotation

   Rotate the matrix A by angle S, presented as input in form of **A S**

2. **Q**uerying

   Query the element at row K and column L, presented as input in form of **Q K L**

3. **U**pdation

   Update the element at row X and column Y with value Z, presented as input in form of **U X Y Z**

Print the output of individual operations as depicted in Output Specification

Input Format:

Input will consist of three parts, viz.
1. Size of the matrix (N)
2. The matrix itself (A = N * N)
3. Various operations on the matrix, one operation on each line. (Beginning either with A, Q or U)

-1 will represent end of input.

Note:

- Angle of rotation will always be multiples of 90 degrees only.
- All Update operations happen only on the initial matrix. After update all the previous rotations have to be applied on the updated matrix

Output Format:

For each Query operation print the element present at K-L location of the matrix in its current state.

Constraints:

1<=N<=1000

1<=Aij<=1000

0<=S<=160000

1<=K, L<=N

1<=Q<=100000

Sample Input and Output

SNo.	Input	Output
1	2 1 2 3 4 A 90 Q 1 1 Q 1 2 A 90 Q 1 1 U 1 1 6 Q 2 2 -1	3 1 4 6

Explanation:

Initial Matrix

1 2

3 4

After 90 degree rotation, the matrix will become

3 1

4 2

Now the element at A_{11} is 3 and A_{12} is 1.

Again the angle of rotation is 90 degree, now after the rotation the matrix will become

4 3

2 1

Now the element at A_{11} is 4.

As the next operation is **Update**, update initial matrix i.e.

6 2

3 4

After updating, apply all the previous rotations (i.e. 180 = two 90 degree rotations).

The matrix will now become

4 3

2 6

Now A_{22} is 6.

Note:

Please do not use package and namespace in your code. For object oriented languages your code should be written in one class.

Note:

Participants submitting solutions in C language should not use functions from <conio.h> / <process.h> as these files do not exist in gcc

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Submit Answer

☐ I , **BASANT BHALA** confirm that the answer submitted is my own.

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