

# T 126 Twist the Matrix

Problem

Submissions

Leaderboard

Discussions

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.

**Rotation**

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

**Querying**

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

**Updation**

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

**Constraints**

$1 \leq N \leq 1000$   
 $1 \leq A_{ij} \leq 1000$   
 $0 \leq S \leq 160000$   
 $1 \leq K, L \leq N$   
 $1 \leq Q \leq 100000$

**Output Format**

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

**Sample Input 0**

```
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
```

**Sample Output 0**

3  
1  
4  
6

### Explanation 0

Initial Matrix

1 2  
3 4

After 90 degree rotation, the matrix will become

3 1  
4 2

Now the element at A11 is 3 and A12 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 A11 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 A22 is 6.



Contest ends in **2 days**

Submissions: **39**



Max Score: 50



Difficulty: Medium

Rate This Challenge:



[More](#)

Current Buffer (saved locally, editable)  

C++14  

```
1 #include <cmath>
2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
8
9 int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
13
```

Line: 1 Col: 1

 [Upload Code as File](#) ☐ Test against custom input

Run Code

Submit Code