

## NEXT GENERATION CONTEST - 4

# H Having Fun with Matrices

Time Limit – 2 seconds

We have a matrix of size  $N \times N$ . Each value of the matrix occupies an integer from  $[0, 9]$ . A few operations are going to be performed on this matrix. We would like to know how the matrix looks like after these operations are performed sequentially.

There could be five different types of operations.

## row a b

In this operation, row **a** is interchanged with row **b**.

## col a b

In this operation, column **a** is interchanged with column **b**.

## inc

In this operation, every cell value is increased by 1 (modulo 10). That is, if after adding 1, a cell value becomes 10 we change it to 0.

## dec

In this operation, every cell value is decreased by 1 (modulo 10). That is, if after subtracting 1, a cell value becomes -1 we change it to 9.

## transpose

In this operation, we simply transpose the matrix. Transposing a matrix, denoted by  $A^T$ , means turning all the rows of the given matrix into columns and vice-versa.

## Example:

1 2 3		1 4 7
4 5 6	→ after transposing →	2 5 8
7 8 9		3 6 9

## Input

The input file starts with an integer **T** ( $T < 50$ ) that indicates the number of test cases. Each case starts with a positive integer **N** ( $N < 10$ ) that represents the size of the matrix. The next **N** lines contain **N** integers each. The value of each integer is in the range  $[0, 9]$ . Next there is a line with an integer **M** ( $M < 50$ ). Each of the next **M** lines contain an operation each. If the command is **row a**

## Output

Sample Input	Output for Sample Input
2	Case #1
4	1515
1234	2626
5678	3737
1234	4848
5678	
1	Case #2
transpose	222
3	111
000	111
111	
000	
2	
row 1 2	
inc	