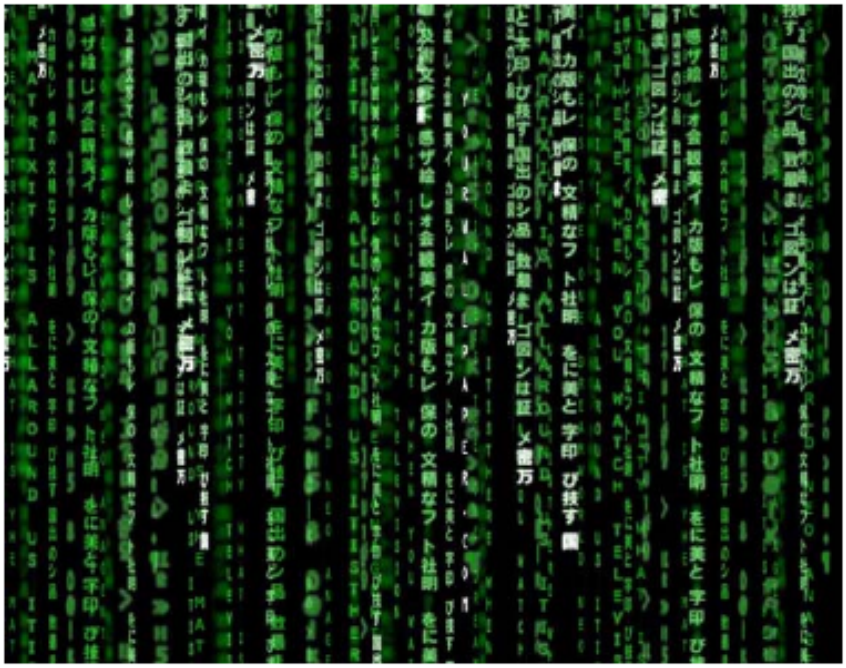
4858 - Digital Matrix

Asia - Dhaka - 2010/2011

You are given two $N \times N$ square matrices, A and B. Each of the elements of these matrices is an integer between 1 and K(inclusive). You have to convert matrix A into matrix B in minimum number of operations. In each operation you can choose one element of matrix A and change it to any integer between 1 and K (inclusive).



You have to ensure that after any operation the matrix is not converted to a symmetric matrix. A square matrix is said to be symmetric if j-th element of i-th row is equal to the i-th element of j-th row for all (i, j) where $1 \leq i \leq N$ and $1 \leq j \leq N$. For example -

$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$	$\begin{bmatrix} 1 & 2 & 2 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$
Symmetric Matrix	Non-symmetric Matrix

Input

Input will start with an integer T ($T \leq 200$), number of test cases. Each test case starts with a line containing two integers N ($1 \leq N \leq 100$) and K ($1 \leq K \leq 9$). This line will be followed by $2N$ lines. First N lines will

represent matrix A and next *N* line will represent matrix B. Each of these 2*N* lines will contain *N* integers, all of these integers are in between 1 and *K* (inclusive).

Output

For each test case, output a single line containing the case number followed by the minimum number of operations required to convert A into B. If it is impossible to convert A into B obeying the rules, print `-1' instead. See output for sample input for exact formatting.

Warning: Don't use cin, cout for this problem, use faster i/o methods e.g scanf, printf.

Sample Input

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

Sample Output

```
Case 1: 0
Case 2: 2
Case 3: 3
```

Dhaka 2010-2011

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Special Thanks: Manzurur Rahman Khan, Sohel Hafiz