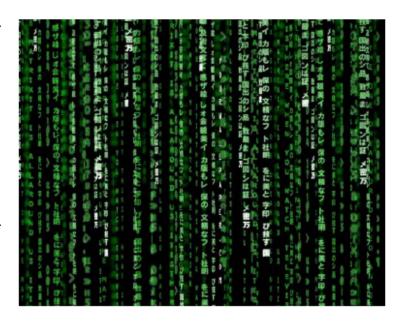
12284 Digital Matrix

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 $1 \le i \le N$ and $1 \le j \le N$.

For example:



[1	2	3		[1	2	2
2	4	5		2	4	5
3	5	6		3	5	6
Symmetric Matrix			Non-symmetric Matrix			

Input

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

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
- 3
 1

Sample Output

Case 1: 0

Case 2: 2

Case 3: 3