Problem G

Symmetric Matrix

Time limit: 1 second
Memory limit: 1024 megabytes

Problem Description

You‘re given a square matrix M. Elements of this matrix are $M_{ij} : \{0 < i < n, 0 < j < n\}$. In this problem you’ll have to find out whether the given matrix is symmetric or not.

Definition: Symmetric matrix is such a matrix that all elements of it are non-negative and symmetric with relation to the center of this matrix. Any other matrix is considered to be non-symmetric. For example:

$M = \begin{bmatrix} 5 & 1 & 3 \\ 2 & 0 & 2 \\ 3 & 1 & 5 \end{bmatrix}$ is symmetric

$M = \begin{bmatrix} 5 & 1 & 3 \\ 2 & 0 & 2 \\ 0 & 1 & 5 \end{bmatrix}$ is not symmetric, because $3 \neq 0$

All you have to do is to find whether the matrix is symmetric or not. Elements of a matrix given in the input are $-2^{32} \leq M_{ij} \leq 2^{32}$ and $0 < n \leq 100$.

Input Format

First line of input contains number of test cases $T \leq 300$. Then T test cases follow each described in the following way. The first line of each test case contains n – the dimension of square matrix. Then n lines follow each of then containing row i. Row contains exactly n elements separated by a space character. j-th number in row i is the element M_{ij} of matrix you have to process.

Output Format

For each test case output one line ‘Test #t: S’. Where t is the test number starting from 1. Line S is equal to ‘Symmetric’ if matrix is symmetric and ‘Non-symmetric’ in any other case.

Sample Input 1

```
2
N = 3
5 1 3
2 0 2
3 1 5
N = 3
5 1 3
2 0 2
0 1 5
```

Sample Output 1

```
Test #1: Symmetric.
Test #2: Non-symmetric.
```