ACM International Collegiate Programming Contest 1999/2000
Mid-Central European Regional Contest
Practice Session

Problem D

Magic Squares

Source: `magic.(c|cc|pas|java)`
Input: `magic.in`

A *magic square* is a square matrix of numbers, where the sums of the numbers in each row, each column, and both main diagonals are the same. For instance, the following square is magic with 15 as the common sum:

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

The input file contains several square matrices. You are to find out whether they are magic.

Input

Each test case in your input file starts with a line containing a single integer n ($1 \leq n \leq 10$): the number of rows (and columns) in the square matrix. This is followed by n lines, each containing n blank-separated integers.

A test case starting with $n = 0$ terminates the input. It should not be processed.

Output

For each square, output the line "`Square #`k`:`", where k is the number of the square. Then, output either "`This square is magic.`" or "`This square is not magic.`", depending whether the square matrix is magic or not.

Output one blank line after each test case.

Sample Input

```
3
8 3 4
1 5 9
6 7 2
4
1 2 3 4
2 1 4 3
4 3 2 1
3 4 1 2
0
```

Sample Output

```
Square 1
This square is magic.

Square 2
This square is not magic.
```