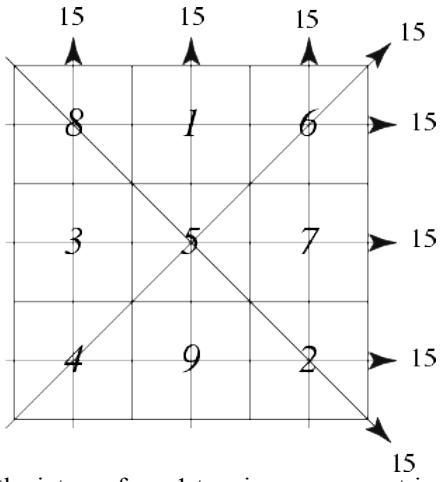
Problem 6 | **6 Points**

Matrix

Program Name: matrix.java **Input File: matrix.dat**



A magic square is formed by placing the integer from 1 to *n* in a square matrix where the sums of each row, column, and both diagonals are equal. Each integer from 1 to *n* must be used **exactly once** to form a magic square. In the illustration, each row, column, and diagonal sums to 15.

Write a program that will determine if a given matrix represents a magic square.

Input

The input will consist of up to 20 square matrices of dimension 1x1 to 10x10. The first line of the input file will contain an integer indicating the total number of matrices in the input. For each matrix, there will be a single line containing an integer, *n*, indicating the size of the matrix (*n* x *n*). The next *n* lines will contain *n* integers separated by spaces; this represents one of the matrices that is to be tested.

Output

For each matrix in the input, output a single line. If the matrix is a magic square, output, "This magic square has sum = <sum>." Replace <sum> with the number that is the sum of each row, column, and diagonal. If this matrix isn't a magic square, output, "This isn't a magic square." (Don't forget the periods!)

Example Input File

```
3
3
8 1 6
3 5 7
4 9 2
4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
3
9 2 7
4 6 8
5 10 3
```

Example Output To Screen

```
This magic square has sum = 15.
This isn't a magic square.
This isn't a magic square.
```