

Magic Square

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Magic Square

Johnny designed a magic square (square of numbers with the same sum for all rows, columns and diagonals i.e. both the **main diagonal** - meaning the diagonal that leads from the top-left corner towards bottom-right corner - and the **antidiagonal** - meaning the diagonal that leads from top-right corner towards bottom-left corner). Write a program to test it.

Task

Write a program that will check if the given square is magic (i.e. has the same sum for all rows, columns and diagonals).

Input

First line: **N** , the size of the square ($1 \leq N \leq 1000$).
Next **N** lines: The square, **N** space separated integers pre line, representing the entries per each row of the square.

Output

First line: **M** , the number of lines that **do not sum up** to the sum of the **main diagonal** (i.e. the one that contains the first element of the square). If the Square is magic, the program should output 0.
Next **M** lines: A sorted (in **incremental order**) list of the lines that do not sum up to the sum of the main diagonal. The rows are numbered 1,2,...,N; the columns are numbered -1,-2,...,-N; and the antidiagonal is numbered zero.

Note: There is a newline character at the end of the last line of the output.

Sample Input 1

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

Sample Output 1

```
0
```

Sample Input 2

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

Sample Output 2

3
-2
-1
0

Explanation of Sample Output 2

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

The input square looks as follows:

The square has 4 rows (labeled from 1 to 4 in orange) and 4 columns (labeled from -1 to -4 in green) as depicted in the image above. The main diagonal and antidiagonal of the square are highlighted in red and blue respectively.

The main diagonal has sum = $16 + 10 + 7 + 1 = 34$.
The antidiagonal has sum = $13 + 11 + 9 + 4 = 37$. This is different to the sum of the main diagonal so value 0 corresponding to the antidiagonal should be reported.
Row 1 has sum = $16 + 3 + 2 + 13 = 34$.
Row 2 has sum = $5 + 10 + 11 + 8 = 34$.
Row 3 has sum = $6 + 9 + 7 + 12 = 34$.
Row 4 has sum = $4 + 15 + 14 + 1 = 34$.
Column -1 has sum = $16 + 5 + 6 + 4 = 31$. This is different to the sum of the main diagonal so value -1 should be reported.
Column -2 has sum = $3 + 10 + 9 + 15 = 37$. This is different to the sum of the main diagonal so value -2 should be reported.
Column -3 has sum = $2 + 11 + 7 + 14 = 34$.
Column -4 has sum = $13 + 8 + 12 + 1 = 34$.
Based on the above, there are 3 lines that do not sum up to the sum of the elements of the main diagonal. Since they should be sorted in incremental order, the output should be:

3
-2
-1
0