Magic squares   P99555_en

Once, a messenger of the sultan found a wall with this square filled with numbers:

6	1	8
7	5	3
2	9	4

Asked, Beremiz told the sultan that it was a "magic square" of order 3, that is, a square of size 3, where all the numbers between 1 and $3^2 = 9$ appear once, and where all the rows, all the columns and the two diagonals add up to the same number, 15 in the example.

Input

Input consists of several cases, each with the order n of a square, followed by n rows, each with n natural numbers between 1 and n^2. Assume $1 \leq n \leq 100$.

Output

For every case, print "`yes`" if the given square is magic, and "`no`" otherwise.

Sample input

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

Sample output

```
yes
no
no
yes
no
yes
```

Problem information

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