Skyline

Task: You are a famous architect and your current project is to plan an entire new city. Since you are impressed by Manhattan you decide that the streets will form a grid, and in each block there shall be a gigantic skyscraper. Investors already handed in plans for the buildings. You are interested in the minimum distance between two skyscrapers of the same height, because this is important to ensure that the city will have a nice skyline.

Input: The blocks of the city are arranged in a grid of dimension n. The first line of the input contains this number. Then n lines follow. The i-th line contains the n heights h_{ij} of the skyscrapers in row i.

You can assume without loss of generality that the heights are in $\{0, \ldots, n^2 - 1\}$ and that there are at least two skyscrapers of the same height. The distance between two blocks is given by the Manhattan distance.

Output: Output the minimum distance between two skyscrapers of the same height.

Sample Input 1:

```
3
0 1 0
1 0 1
0 0 0
```

Sample Output 1:

```
1
```

Sample Input 2:

```
4
0 1 2 3
4 5 6 7
8 9 10 11
12 13 14 0
```

Sample Output 2:

```
6
```