

There is a matrix designed to find "The One" and it serves as a test for the same. The matrix has the dimension $N \times N$ (where N is odd) and the goal is to reach the center in as many steps as possible. Every cell of the matrix has a height associated with it defined by $H_{i,j}$. A step is defined as moving from a cell S to T such that the height of cell T is strictly less than that of S . You are initially on cell $(1, 1)$.

Find the maximum number of steps that you can take to reach the center of the matrix or print -1 if it is not possible.

NOTE: All the cells have distinct height. i.e. No two cells have the same height.

Input Format

First line contains T , number of test cases, First line of each test case contains N , next N lines describe the height of each cell in the matrix. Each of the next N lines contain N space separated integers.

Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 99$
- N is odd
- $1 \leq H_{i,j} \leq 10^9$

Output Format

For each test case print the maximum number of steps that you can take or print -1 if it is not possible to reach the center.

Sample Input 0

```
2
3
10 7 12
8 3 14
11 5 2
3
9 7 12
8 13 14
11 5 2
```

Sample Output 0

```
4
-1
```

Explanation 0

In the first test case, you can move through the following path -

$(1, 1) \rightarrow (2, 1) \rightarrow (1, 2) \rightarrow (3, 2) \rightarrow (2, 2)$ Center

In the second example it is not possible to reach the center as it is higher than $(0, 0)$