Checkerboard Path

You find yourself on the top left most tile of a checkerboard only able to move, up, down, left, or right. On each tile of the checkerboard is a toll station which must be paid in order to move onto that tile. You want to find the shortest path from the top left square of the checkerboard to the bottom right square of the checkerboard.

Input

There is a single positive integer T on the first line of input. Then follow T test cases. A test case consists of:

- A positive integer L, the length of the side of the checkerboard, the checkerboard is always a square.
- Followed by L lines each with L positive integers n_1, …, n_{L*L}, the checkerboard and the cost of traveling to each square on the checkerboard.

Output

For each test case, output the minimum cost needed to travel from the top leftmost of the checkerboard to the bottom rightmost square. This includes the cost of the starting square and the ending square.

Constraints

$1 <= T <= 100$

$2 <= L <= 50$

$1 <= n_1, …, n_{L*L} <= 100$

Sample Input

```
3
2
1 2
3 4
4
1 5 3 6
2 5 1 8
4 8 9 11
4 3 7 5
5
1 1 1 9 9
9 9 1 9 9
1 1 1 9 9
1 9 9 9 9
1 1 1 1 1
```

Sample Output

```
7
26
13
```