6696   A Generalized N-Queens Problem

The following game is played on a masked N by N grid. A masked grid is one that some, if any, of the cells are pre-occupied with black stones. The goal of this single player game is to place as many white stones as possible to cells of a masked grid so that the following conditions hold at the same time:

1. You can place at most one white stone on a cell.

2. Two white stones cannot be placed so that they are in the same column, row or diagonal unless there is a black stone between them vertically, horizontally or diagonally, respectively.

Example 1: A 3 by 3 masked grid with one black stone on the left and a solution on the right by placing 3 white stones.

Example 2: A 3 by 3 masked grid without black stone on the left and a solution on the right by placing 2 white stones.
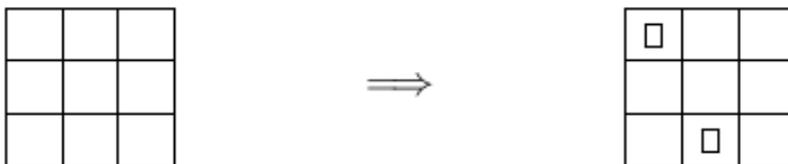
Your task is to write a computer program to compute the maximum number of white stones that can be placed on a given grid with some, if any, black stones.

Technical Specification

1. N is an integer and $0 < N \le 10$.

2. The number of black stones can be 0 and is at most N^2.

Input

The first line of the input contains an integer, denoting the number of test cases, which is at most 10, to follow. For each test case, the first line contains N. In the following N lines, the i-th line contains N characters which are the N numbers, separated by blanks, in the ith row where a number '1' means a black stone and a number '0' means an empty cell.

Output

For each test case, output in one line the maximum number of white stones that can be placed.

Sample Input

```
2
3
0 1 0
0 0 0
0 0 0
3
0 0 0
0 0 0
0 0 0
```

Sample Output

```
3
2
```