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Algorithms Lab

Exercise – *Placing Knights*

Let us have a square chessboard of a given size with holes. How many knights can you place on the chessboard so that no two knights threaten each other?

Input The first line of the input contains the number of chessboards $1 \leq t \leq 50$. Each of the t chessboards is described as follows:

- It starts with a line containing $1 \leq n \leq 2^6$,
  the length of each side of the chessboard in squares.
- The next n lines each contain n integer values, separated by a space,
  denoting whether the corresponding chessboard field is present (1), or is a hole (0).

Output For every testcase you should output a single line with the maximum number of knights you can place on the chessboard so that no two threaten each other.
(I.e. if a knight is placed on position $[i, j]$ (ith row, jth column), there can be no knights at positions $[i-1, j-2]$, $[i-1, j+2]$, $[i+1, j-2]$, $[i+1, j+2]$, $[i-2, j-1]$, $[i-2, j+1]$, $[i+2, j-1]$, $[i+2, j+1]$. It is disallowed to place knights on the holes or the outside of the chessboard.)

Points There are three groups of test sets which are worth 100 points in total.

1. For the first group of test sets, worth 30 points, you may assume that $n \leq 6$.
2. For the second and third group of test sets, worth 35 points each, there are no further assumptions.

Corresponding sample test sets are contained in `test`i`.in/out`, for $i \in \{1, 2, 3\}$.

Sample Input

```
3
3
1 1 1
1 0 1
1 1 0
3
1 0 1
0 0 1
1 0 1
7
1 0 1 1 1 1 1
1 1 1 1 0 1 1
1 0 1 1 1 1 1
1 1 1 1 1 1 1
1 0 1 1 1 1 1
1 1 1 1 1 1 1
1 1 1 0 1 1 1
```

Sample Output

```
4
4
25
```