

Round 2 2009

A. Crazy Rows[B. A Digging Problem](#)[C. Stock Charts](#)[D. Watering Plants](#)[Contest Analysis](#)[Questions asked](#)

Submissions

Crazy Rows

6pt	Not attempted 1837/2092 users correct (88%)
10pt	Not attempted 1605/1744 users correct (92%)

A Digging Problem

9pt	Not attempted 193/388 users correct (50%)
17pt	Not attempted 70/152 users correct (46%)

Stock Charts

7pt	Not attempted 741/1384 users correct (54%)
21pt	Not attempted 355/537 users correct (66%)

Watering Plants

5pt	Not attempted 1251/1420 users correct (88%)
25pt	Not attempted 64/226 users correct (28%)

Top Scores

ACRush	100
winger	100
iwi	100
wata	100
bwps	100
natalia	100
Burunduk1	100
AS1	100
Khuc.Anh.Tuan	100
Nerevar	100

Problem A. Crazy Rows

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
6 points

[Solve A-small](#)

Large input
10 points

[Solve A-large](#)

Problem

You are given an $N \times N$ matrix with 0 and 1 values. You can swap any two *adjacent* rows of the matrix.

Your goal is to have all the 1 values in the matrix below or on the main diagonal. That is, for each X where $1 \leq X \leq N$, there must be no 1 values in row X that are to the right of column X .

Return the minimum number of row swaps you need to achieve the goal.

Input

The first line of input gives the number of cases, T . T test cases follow. The first line of each test case has one integer, N . Each of the next N lines contains N characters. Each character is either 0 or 1.

Output

For each test case, output

Case #X: K

where X is the test case number, starting from 1, and K is the minimum number of row swaps needed to have all the 1 values in the matrix below or on the main diagonal.

You are guaranteed that there is a solution for each test case.

Limits

$$1 \leq T \leq 60$$

Small dataset

$$1 \leq N \leq 8$$

Large dataset

$$1 \leq N \leq 40$$

Sample

Input	Output
3	Case #1: 0
2	Case #2: 2
10	Case #3: 4
11	
3	
001	
100	
010	
4	
1110	
1100	
1100	
1000	

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