

Round C APAC Test

A. Minesweeper

[B. Taking Metro](#)

[C. Broken Calculator](#)

[D. Tetris](#)

Questions asked 1

Submissions

Minesweeper

8pt Not attempted
748/1510 users
correct (50%)

14pt Not attempted
703/741 users
correct (95%)

Taking Metro

9pt Not attempted
64/319 users
correct (20%)

15pt Not attempted
56/62 users correct
(90%)

Broken Calculator

10pt Not attempted
570/1000 users
correct (57%)

16pt Not attempted
385/544 users
correct (71%)

Tetris

11pt Not attempted
29/163 users
correct (18%)

17pt Not attempted
27/29 users correct
(93%)

Top Scores

cebrusfs	100
LXZ	100
Kriiii	100
drazil	100
xing89qs	100
xhae	100
culaucon	100
whsb	100
jki14	100
zck921031	100

Problem A. Minesweeper

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
8 points

Solve A-small

Large input
14 points

Solve A-large

Problem

Minesweeper is a computer game that became popular in the 1980s, and is still included in some versions of the Microsoft Windows operating system. This problem has a similar idea, but it does not assume you have played Minesweeper.

In this problem, you are playing a game on a grid of identical cells. The content of each cell is initially hidden. There are M mines hidden in M different cells of the grid. No other cells contain mines. You may click on any cell to reveal it. If the revealed cell contains a mine, then the game is over, and you lose. Otherwise, the revealed cell will contain a digit between 0 and 8, inclusive, which corresponds to the number of neighboring cells that contain mines. Two cells are neighbors if they share a corner or an edge. Additionally, if the revealed cell contains a 0, then all of the neighbors of the revealed cell are automatically revealed as well, recursively. When all the cells that don't contain mines have been revealed, the game ends, and you win.

For example, an initial configuration of the board may look like this ('*' denotes a mine, and 'c' is the first clicked cell):

```
*..*...**
...*....
...C*....
.....*
.....*
```

There are no mines adjacent to the clicked cell, so when it is revealed, it becomes a 0, and its 8 adjacent cells are revealed as well. This process continues, resulting in the following board:

```
*..*...**
1112*....
00012*...
00001111*
00000001..
```

At this point, there are still un-revealed cells that do not contain mines (denoted by '.' characters), so the player has to click again in order to continue the game.

You want to win the game as quickly as possible. You want to find the minimum number of clicks to win the game. Given the size of the board ($N \times N$), output such minimum number of clicks.

Input

The first line of the input gives the number of test cases, T . T test cases follow. First line of each test case contains one integer N . N lines strings with length N follows containing '*' and '.', denotes the Minesweeper initial board.

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the minimum number of clicks to win.

Limits

$1 \leq T \leq 100$.

Small dataset

$1 \leq N \leq 50$.

Large dataset

$1 \leq N \leq 300$.

Sample

Input	Output
-------	--------

2	Case #1: 2
3	Case #2: 8

```
..*  
..*  
**.  
5  
..*..  
..*..  
.*.*  
.*..  
.*..  
.*..
```

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