

Quick Mine Sweeper

The Omniscient Steve is playing Minesweeper to pass the time. Minesweeper on its most basic difficulty is played on a 9 by 9 grid. Clicking on a cell that does not contain a mine reveals the number of mines in the adjacent 8 cells. If there are no mines in the cell, a cascade is begun, and all adjacent cells are revealed. The Omniscient Steve already knows where all the mines are, and, being an impatient Omniscient Steve, would like to solve each puzzle as efficiently as possible. Alas, The Omniscient Steve, contrary to his name, does not know how many clicks it will take to efficiently sweep all the mines. Can you devise a program that, given the location of the mines, determine the minimum number of clicks to reveal all the non-mine cells?

Input

Input consists of one line with the number of test cases, and 9 lines for each test case. Each test case is given as blank line, followed by a 9 by 9 grid of numbers [0,1], in 9 adjacent integers on 9 lines. There is no spacing between numbers.

Output

Output is formatted with the case number, and the minimum number of clicks to reveal all non-mine cells as an integer.

Sample Input

```
2

101001000
000000000
100000000
000000000
000100100
000000010
000100001
000100000
000000000

110000000
000000010
001000000
000000000
000000001
000000000
000110100
000000010
000000010
```

Sample Output

```
Case 1: 12
Case 2: 12
```