

World Finals 2012

- A. Zombie Smash
- B. Upstairs/Downstairs
- C. Xeno-archaeology
- D. Twirling Towards Freedom
- E. Shifting Paths

Contest Analysis
Questions asked

Submissions

Zombie Smash	
7pt	Not attempted 25/25 users correct (100%)
18pt	Not attempted 21/25 users correct (84%)
Upstairs/Downstairs	
13pt	Not attempted 21/24 users correct (88%)
17pt	Not attempted 16/21 users correct (76%)
Xeno-archaeology	
12pt	Not attempted 22/23 users correct (96%)
33pt	Not attempted 9/13 users correct (69%)
Twirling Towards Freedom	
10pt	Not attempted 18/22 users correct (82%)
39pt	Not attempted 3/8 users correct (38%)
Shifting Paths	
5pt	Not attempted 25/25 users correct (100%)
46pt	Not attempted 0/4 users correct (0%)

Top Scores

meret	121
neal.wu	121
misof	115
vepifanov	115
hos.lyric	115
bmerry	109
watashi	105
SnapDragon	98
dzhulgakov	97
eatmore	85

Problem C. Xeno-archaeology

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
12 points

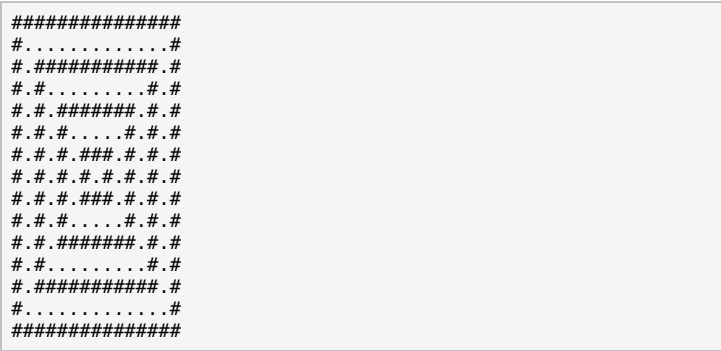
Solve C-small

Large input
33 points

Solve C-large

Problem

Long ago, an alien civilization built a giant monument. The floor of the monument looked like this:



Each '#' represents a red tile, and each '.' represents a blue tile. The pattern went on for miles and miles (you may, for the purposes of the problem, assume it was infinite). Today, only a few of the tiles remain. The rest have been damaged by methane rain and dust storms. Given the locations and colours of the remaining tiles, can you find the center of the pattern?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each one starts with a line containing **N**, the number of remaining tiles. The next **N** lines each contain **X_i**, **Y_i**, and the tile colour (either '#' or '.').

Output

For each test case, output one line containing "Case #c: **X Y**", where c is the case number (starting from 1) and (**X**, **Y**) is the location of the center of the pattern. If there is more than one possible answer, output the (**X**, **Y**) closest to (0, 0) in Manhattan distance (the distance in x, plus the distance in y). If there are still ties, output the one with the largest **X**. If there are still ties after that, output the one with the largest **Y**. If there is no possible answer, output "Case #c: Too damaged".

Limits

1 ≤ **T** ≤ 50.
The list of coordinates in each test case will not contain duplicates.

Small dataset

1 ≤ **N** ≤ 100.
-100 ≤ **X_i** ≤ 100.
-100 ≤ **Y_i** ≤ 100.

Large dataset

1 ≤ **N** ≤ 1000.
-10¹⁵ ≤ **X_i** ≤ 10¹⁵.
-10¹⁵ ≤ **Y_i** ≤ 10¹⁵.

Sample

Input	Output
6	Case #1: 0 0
1	Case #2: 1 0
0 0 .	Case #3: 1 1
1	Case #4: 50 31
0 0 #	Case #5: 1 0

```
3          Case #6: Too damaged
0 0 #
0 1 #
1 0 #
5
50 30 #
49 30 #
49 31 #
49 32 #
50 32 #
2
-98 0 #
99 50 .
4
88 88 .
88 89 .
89 88 .
89 89 .
```

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