

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 A. Zombie Smash

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
7 points

Solve A-small

Large input
18 points

Solve A-large

Problem

You are playing Zombie Smash: a game where the objective is to smash zombies with your trusty Zombie Smasher as they pop out of graves at the graveyard. The graveyard is represented by a flat 2D grid. Each zombie will pop out of a grave at some (X, Y) cell on the grid, stand in place for 1000 milliseconds (ms), and then disappear back into the grave. At most one zombie can stand around a grave at a time.

You can move to any one of the 8 cells adjacent to your location in 100ms; i.e., you can move North, East, South, West, NW, NE, SW, and SE of your current location. You may move through or stand on a cell even if it is currently occupied by a zombie. You can smash a zombie instantly once you reach the cell that the zombie is standing on, but once you smash a zombie it takes 750ms for your Zombie Smasher to recharge before you can smash another zombie. You may move around while Zombie Smasher is recharging. For example, immediately after smashing a zombie at (0, 0):

- It will take 750ms to reach and smash a zombie at (1, 1) **or**
- 2000ms to reach and smash a zombie at (20, 20).

You start at cell (0, 0) at the beginning of the game (time=0). After you play a level you would like to know how many zombies you could have smashed, if you had played optimally.

Input

The first line will contain a single integer **T**, the number of test cases. It is followed by **T** test cases, each starting with a line containing a single integer **Z**, the number of zombies in the level.

The next **Z** lines contain 3 space-separated integers each, representing the location and time at which a given zombie will appear and disappear. The *i*th line will contain the integers **X_i**, **Y_i** and **M_i**, where:

- **X_i** is the X coordinate of the cell at which zombie *i* appears,
- **Y_i** is the Y coordinate of the cell at which zombie *i* appears,
- **M_i** is the time at which zombie *i* appears, in milliseconds after the beginning of the game. The time interval during which the zombie can be smashed is inclusive: if you reach the cell at any time in the range [**M_i**, **M_i** + 1000] with a charged Zombie Smasher, you can smash the zombie in that cell.

Output

For each test case, output one line containing "Case #c: d", where c is the case number (starting from 1), and d is the maximum number of zombies you could have smashed in this level.

Limits

1 ≤ **T** ≤ 100.
-1000 ≤ **X_i**, **Y_i** ≤ 1000.
0 ≤ **M_i** ≤ 100000000 = 10⁸.
Two zombies will never be in the same location at the same time. In other words, if one zombie appears at (x, y) at time t, then any other zombie that appears at (x, y) must appear at or before (t - 1001), or at or after (t + 1001).

Small dataset

1 ≤ **Z** ≤ 8.

Large dataset

1 ≤ **Z** ≤ 100.

Sample

Input	Output
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```
3          Case #1: 3
4          Case #2: 2
1 0 0      Case #3: 2
-1 0 0
10 10 1000
10 -10 1000
3
1 1 0
2 2 0
3 3 0
5
10 10 1000
-10 10 1000
10 -10 1000
-10 -10 1000
20 20 2000
```

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