The Moving Points

Time Limit: 6000/3000 MS (Java/Others)   Memory Limit: 32768/32768 K (Java/Others)
Total Submission(s): 1723   Accepted Submission(s): 677

Problem Description

There are N points in total. Every point moves in certain direction and certain speed. We want to know at what time that the largest distance between any two points would be minimum. And also, we require you to calculate that minimum distance. We guarantee that no two points will move in exactly same speed and direction.

Input

The rst line has a number T (T <= 10) , indicating the number of test cases.
For each test case, first line has a single number N (N <= 300), which is the number of points.
For next N lines, each come with four integers X_i, Y_i, VX_i and VY_i (-10^6 <= X_i, Y_i <= 10^6, -10^2 <= VX_i , VY_i <= 10^2), (X_i, Y_i) is the position of the ith point, and (VX_i , VY_i) is its speed with direction. That is to say, after 1 second, this point will move to (X_i + VX_i , Y_i + VY_i).

Output

For test case X, output "Case #X: " first, then output two numbers, rounded to 0.01, as the answer of time and distance.

Sample Input

```
2
2
0 0 1 0
2 0 -1 0
2
0 0 1 0
2 1 -1 0
```

Sample Output

```
Case #1: 1.00 0.00
Case #2: 1.00 1.00
```

Source

2013 ACM/ICPC Asia Regional Online —— Warmup2

Recommend

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