7058 A Curious Matt

There is a curious man called Matt.

One day, Matt's best friend Ted is wandering on the non-negative half of the number line. Matt finds it interesting to know the maximal speed Ted may reach. In order to do so, Matt takes records of Ted's position. Now Matt has a great deal of records. Please help him to find out the maximal speed Ted may reach, assuming Ted moves with a constant speed between two consecutive records.

Input

The first line contains only one integer T, which indicates the number of test cases.

For each test case, the first line contains an integer N ($2 \leq N \leq 10000$), indicating the number of records.

Each of the following N lines contains two integers t_i and x_i ($0 \leq t_i, x_i \leq 10^6$), indicating the time when this record is taken and Ted's corresponding position. Note that records may be unsorted by time. It's guaranteed that all t_i would be distinct.

Output

For each test case, output a single line 'Case #x: y', where x is the case number (starting from 1), and y is the maximal speed Ted may reach. The result should be rounded to two decimal places.

Hint:

In the first sample, Ted moves from 2 to 4 in 1 time unit. The speed 2/1 is maximal.

In the second sample, Ted moves from 5 to 0 in 1 time unit. The speed 5/1 is maximal.

Sample Input

```
2
3
2 2
1 1
3 4
3
0 3
1 5
2 0
```

Sample Output

```
Case #1: 2.00
Case #2: 5.00
```