



to i/o for women

Code Jam to I/O 2018 for Women

[A. Burger Optimization](#)**B. CEO Search**[C. Centrists](#)[D. Tricky Trios](#)[Contest Analysis](#)[Questions asked](#)

Submissions

Burger Optimization

| | |
|-----|---|
| 5pt | Not attempted 786/1165 users correct (67%) |
| 9pt | Not attempted 676/773 users correct (87%) |

CEO Search

| | |
|------|--|
| 8pt | Not attempted 448/712 users correct (63%) |
| 13pt | Not attempted 306/441 users correct (69%) |

Centrists

| | |
|------|--|
| 9pt | Not attempted 302/410 users correct (74%) |
| 14pt | Not attempted 214/250 users correct (86%) |

Tricky Trios

| | |
|------|--|
| 15pt | Not attempted 10/58 users correct (17%) |
| 27pt | Not attempted 6/6 users correct (100%) |

Top Scores

| | |
|--------------|-----|
| limli | 100 |
| mkirsche | 100 |
| alexwice | 100 |
| zhanaratanir | 100 |
| Stacy992 | 100 |
| BeatrixKiddo | 100 |
| ishu05 | 73 |
| surprise.me | 73 |
| kburaya | 73 |
| Rojko | 59 |

Practice Mode

Elenaires | [Contest scoreboard](#) | [Sign out](#)

Problem B. CEO Search

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
8 points [Download B-small-practice.in](#)your output file: outputSmall.txt

source file(s): not needed for the practice contest

 Large input
13 points

Judge's response for last submission: Correct.

Problem

The CEO of Code Jam has just retired to spend more time with *The Art of Computer Programming*, so we need your help finding a new one!

Every Code Jam employee has an *experience level* that is a nonnegative integer. When we hire our new CEO, we must organize the Code Jam team as follows:

- Every employee other than the CEO must have a single *direct manager* who is another employee with an experience level greater than that employee's own experience level. (The CEO cannot have a direct manager.)
- An employee (including the CEO) with experience level E can be a direct manager for between 0 and E other employees, inclusive. Note that if employee A is the direct manager of employee B , and B is the direct manager of C , A is *not* also a direct manager of C .
- Because of office politics, the new CEO cannot be one of the existing employees, no other new employees can be added, and no existing employees can be removed.

Of course, hiring a more experienced CEO is more expensive! What is the minimum possible experience level for the new CEO such that the Code Jam team can be organized according to the rules above?

Input

The first line of the input gives the number of test cases, T . T test cases follow. Each begins with one line with an integer L : the number of different experience levels present among the existing employees. Then, L lines follow; the i -th of these contains two integers N_i and E_i , and indicates that there are N_i existing employees that have the experience level E_i .

Output

For each test case, output one line containing *Case #x: y*, where x is the test case number (starting from 1) and y is the minimum possible experience level for the new CEO, as described above.

Limits

$1 \leq T \leq 100$.
For all $i < j$, $E_i < E_j$.

Small dataset

$1 \leq L \leq 10$.
 $1 \leq N_i \leq 10$.
The sum of all $N_i \leq 10$. $0 \leq E_i \leq 10$.

Large dataset

$1 \leq L \leq 1000$.
 $1 \leq N_i \leq 10^{12}$.
 $0 \leq E_i \leq 1000$.

Sample

| Input | Output |
|-------|------------|
| 2 | Case #1: 4 |
| 3 | Case #2: 5 |
| 2 0 | |
| 2 2 | |
| 1 3 | |
| 1 | |

5 0

In Sample Case #1, there are five existing employees: one with an experience level of 3, two with an experience level of 2, and two with an experience level of 0. We can hire a new CEO with an experience level of 4; then, for example, we can have the new CEO directly manage the level 3 and one level 0, and have the level 3 directly manage the two level 2s and the other level 0. (Other valid arrangements are possible.) Moreover, we know that the new CEO must be at least level 4, or else there would be nobody who could directly manage the existing level 3. So 4 is both an upper and lower bound, and must be the correct answer.

In Sample Case #2, all five of the existing employees have an experience level of 0 and cannot directly manage other employees. The new CEO must personally directly manage all of them, which requires an experience level of at least 5.

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