



Job Scheduling

Alex has been recently gotten a new job. Her manager gives her many tasks to complete. Suppose she is given a sequence of tasks $\{(D_i, T_i)\}$, where D_i is the deadline of task i and T_i is the duration of task i , for $i = 1, 2, \dots, n$. While doing a task, she can interrupt it, switch to another task, and then switch back. She has to do all her tasks but it might not be possible to meet all the deadline. A task can be late in some minutes and we call it overtime which is the time extended to complete a task after a deadline. Please help Alex to minimize the maximum overtime of each task if all tasks are scheduled optimally.

Input:

- First line contains T ($1 \leq T \leq 10^4$) the number of tasks
- Each test case contains two numbers D_i, T_i ($1 \leq D_i \leq 10^4, 1 \leq T_i \leq 10^3$).

Output:

- Output T lines, the i^{th} line contains the maximum minutes of overtime, when the first i tasks on her lists are scheduled optimally.

Sample:

Standard Input	Standard Output
5	0
2 1	1
2 2	1
4 2	3
4 2	4
2 1	

Explanation

The first task can be completed in 1 minutes, so its deadline is not over. The answer is 0.

With the first 2 tasks, the optimal way is:

Time	1	2	3
Task	Task 1	Task 2	Task 2

Task 1 is completed in 1 minutes, so its deadline is not over.

Task 2 is completed at time 3, it's late by 1. So the maximum overtime is 1.

With all 5 tasks, if she schedules her tasks like:



Time	1	2	3	4	5	6	7	8
Task	Task 1	Task 2	Task 2	Task 3	Task 3	Task 4	Task 4	Task 5

Task 1 is completed in 1 minutes, so its deadline is not over.

Task 2 is completed at time 3, it's late by 1.

Task 3 is completed at time 5, it's late by 1.

Task 4 is completed at time 7, it's late by 3.

Task 5 is completed at time 8, it's late by 6.

So the maximum overtime is 6.

With all 5 tasks, the optimal way can be:

Time	1	2	3	4	5	6	7	8
Task	Task 1	Task 5	Task 2	Task 2	Task 3	Task 3	Task 4	Task 4

Task 1 is completed in 1 minutes, so its deadline is not over.

Task 2 is completed at time 4, it's late by 3.

Task 3 is completed at time 6, it's late by 2.

Task 4 is completed at time 8, it's late by 4.

Task 5 is completed at time 2, so its deadline is not over.

The maximum overtime is 4 which is the answer.