Problem G: Security Backdoor

Base Program Constraints: 1s, 256 MB

Clear Reward: +1 Point, Basement Access

Now that they're in the casino, Polly and Calvin need to figure out how to sneak into the basement so they can access the **vault**. Unfortunately, the door to the basement is protected by **guards**!

Polly and her friends need x minutes of **uninterrupted** time to move their equiment into the basement, which they can only do there are **no guards present**. Luckily, Olivia has a **timetable** with the shifts that each guard will take during the night. The timetable starts at minute 0 - the same time that the team enters the casino.

There are n unique guards that will be guarding the basement door tonight. Each guard will be at the door for a single continuous **shift** of time. Shifts may **overlap**; in other words, multiple guards might be at the basement door at a single time.

No two shifts will start at the same time. The shifts in the timetable are also **ordered** by **starting time**; the i-th shift will always start before the $i + 1$-th shift.

From the timetable, Olivia also knows that exactly 1 guard has **called out sick** and will not show up for their shift. However, she does not know which one.

Depending on which guard is sick, can you help Polly and her friends find the **earliest** time when they can start moving their equipment into the basement?

Input

The first line contains an integer t $(1 \leq t \leq 10^3)$ - the number of test cases.

For each test case:

The first line contains two integers n $(1 \leq n \leq 2 * 10^5)$ and x $(1 \leq x \leq 10^9)$ - the number of shifts in the timetable and the needed time to sneak the equipment in, respectively.

The next n lines each contain two integers a_i and b_i $(0 \leq a_i < b_i \leq 10^9)$ - the **shift** that the i-th guard will take. Specifically, the i-th guard will start guarding the basement door at the *start* of minute a_i and leave at the *start* of minute b_i.

It is guaranteed that the sum of n across all test cases does not exceed $2 * 10^5$.

Output

For each test case, output n space separated integers $ans_1, ans_2, ..., ans_n$. The i-th integer a_i should represent the earliest time Polly and her team can start moving the equipment if the i-th guard is missing.

Sample Test Cases

Sample 1 - Input

```
2
3 5
0 5
5 10
10 15
2 5
0 15
5 10
```

Sample 1 - Output

```
0 5 10
0 15
```

Notes

In test case 1, each guard occupies a 5-minute shift, which the team can use to move into the basement if that guard is missing.

In test case 2, if the first guard is missing, Polly and her team can move into the basement from minute 0 to minute 5. If the second guard is missing, they must wait until the first guard ends their shift.