Sleepy Joe

Sleepy Joe is playing with a light bulb. The bulb is initially on. For the next X minutes, he will do one of the following:

- Toggle the light bulb (If it's on, turn it off. If it's off, turn it on). It takes 1 minute to do that.
- Sleep for next L minutes (light bulb will be unaffected). Note that he must wake up before or on Xth minute. Otherwise, he won't sleep.

However, Joe has a rule: he must do something each minute. That is, he must toggle the bulb, or must be in sleep each minute. Determine if it is possible to have the light bulb on after X minutes despite following the rules. If possible, output two integers M and N describing one possible scenario, where M is the number of times he toggles the bulb, and N is the number of times he goes to sleep (each time for L minutes). Otherwise, output `-1 -1`.

Input

Each test contains multiple test cases. **The first line of the input contains the number of test cases T.** Then for each of the T test cases, input is given in the following format:

- line 1: L X

Output

For each of test cases, if it is possible to have the light bulb on after X minutes, output in the following format:

- line 1: M N

Otherwise, output in the following format:

- line 1: -1 -1

If there are multiple correct solutions print any of them.

Constraints

- $1 \leq T \leq 10^5$
- $1 \leq L \leq 10^9$

- $1 \leq X \leq 10^9$

Subtasks

Subtask	Score	Additional constraints
1	10	$L = 1$
2	16	X is even
3	20	L is even
4	30	$L = 5$
5	24	No additional constraints.

Examples

Example 1

```
3
4 10
4 5
5 15
```

One possible output is:

```
2 2
-1 -1
0 3
```

In the 1st case, one possible way is to sleep twice taking $2 \times 4 = 8$ minutes, and then toggle the bulb twice taking rest of the 2 minutes. The first toggle turns the bulb off, and the second toggle turns it on again.

In the 2nd case, it is impossible to have the light bulb on after 5 minutes while doing something every minute.

In the 3rd case, one possible way is to sleep 3 times covering the entire $3 \times 5 = 15$ minutes.