Balloonburst

You are given n balloons inside a hall. The ceiling of the hall is at a height of h meters. Each balloon initially floats at height a_i meters and rises upward at a constant rate of v_i meters per second. A balloon **bursts** the moment it reaches or exceeds the ceiling height h. You are also given a duration t in **minutes**. Your task is to determine:

1. How many balloons **do not burst** after t minutes?
2. Among the balloons that do not burst, print the **index** of the one that is at the **maximum height**.
    - If multiple balloons have the same maximum height, choose the one with the **largest index**.
    - If no balloons remain unburst, print `0 -1`.

Input

The first line contains three integers n, h, and t — the number of balloons, the height of the ceiling, and the time in minutes. Each of the next n lines contains two integers a_i and v_i — the initial height and the upward velocity of the i-th balloon.

Output

Print a single line containing two space-separated integers:

- The number of balloons that do not burst after t minutes.
- The index of the highest unburst balloon (or `-1` if there are none).

Constraints

- $1 \leq n, t \leq 10^5$
- $0 \leq a_i < h \leq 10^9$
- $1 \leq v_i \leq 10^4$

Subtasks

1. (15 points) $n = 1$ and $a_1 = 0$
2. (20 points) $n = 1$
3. (25 points) $a_i = 0$ for all i

4. (40 points) No additional constraints

Examples

Example 1

Input

```
4 100 2
10 1
20 5
30 0
50 3
```

Output

```
2 4
```

Example 2

Input

```
2 4 2
0 2
2 1
```

Output

```
0 -1
```

Example 3

Input

```
2 5 2
0 2
2 1
```

Output

```
2 2
```