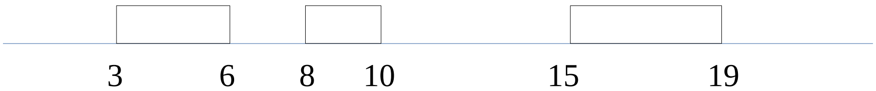
Beautiful fences

1 second, 256 MB

There are **N** houses on a straight line. House **i**, for 1 <= **i** <= **N**, can be viewed as a line segment starting from point S_i to T_i ($S_i < T_i$). Houses are ordered by their positions are are not overlapped, i.e., $S_i < T_i <= S_{i+1} < T_{i+1}$, for 1 <= **i** < **N**.

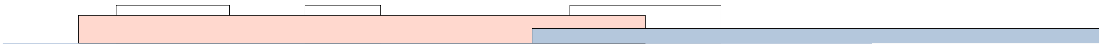
A new governor is planning to construct fences for every house. The ready-made fence has a fixed length of **L**. When placing a fence at position **X**, it cover the straight line from position **X** to **X+L**. We say that a fence placed at position **X** *covers* *house* **i** *completely* if **X** <= $S_i < T_i$ <= **X+L**. To ensure nice road-side view, every house should be covered completely by a ***single*** fence. (A house can be covered partially by more than one fence but at least one of them should cover the house completely.)

Consider the following example where N = 3 with houses shown as rectangles below. The positions S_i and T_i of houses are also shown.



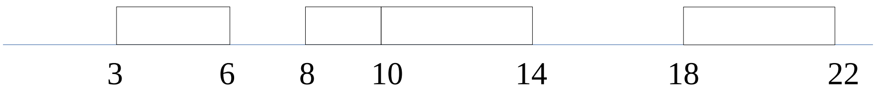
If the fence length **L** is 10, you can cover these 3 houses with 2 fences as follows, and this is the minimum number of fences that you need.

If the fence length **L** is 15, to cover these 3 houses you again need at least 2 fences.

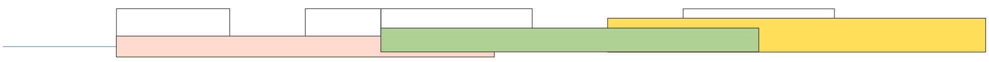


Note that the first fence (shown in red) partially cover house 3, but at least one fence **must** cover the house entirely; therefore, the second fence must at position less than or equal to 15.

Consider another example where N = 4 shown below.



If **L** = 10, you need at least 3 fences. One possible positions for fences are shown below. Note that if you do not need to cover house 3 completely, you can use only 2 fences. But if you have to cover all houses completely, you really need 3 fences.



Input

First line of the input contains two integer **N** and **L** (2 <= **N** <=100,000; 1 <= **L** <= 10,000).

The next **N** lines describe house positions. More specifically, for 1 <= **i** <= **N**, line 1+**i** contains two integer S_i and T_i ($S_i < T_i$ and $T_i <= S_i+1$; $T_i <= 1{,}000{,}000{,}000$). It is guaranteed that it is possible to cover all houses completely, i.e., $T_i - S_i <= L$, for all **i**.

Output

The output contains a single line with an integer, the minimum number of fences needed to completely cover all houses.

(Examples are in the next page.)

Example 1

Input	Output
3 10 3 6 8 10 15 19	2

Example 2

Input	Output
3 15 3 6 8 10 15 19	2

Example 3

Input	Output
4 10 3 6 8 10 10 14 18 22	3