1503. Last Moment Before All Ants Fall Out of a Plank

Solved ●

Medium   🏷 Topics   🔒 Companies   📍 Hint

We have a wooden plank of the length `n` **units**. Some ants are walking on the plank, each ant moves with a speed of **1 unit per second**. Some of the ants move to the **left**, the other move to the **right**.

When two ants moving in two **different** directions meet at some point, they change their directions and continue moving again. Assume changing directions does not take any additional time.

When an ant reaches **one end** of the plank at a time `t`, it falls out of the plank immediately.

Given an integer `n` and two integer arrays `left` and `right`, the positions of the ants moving to the left and the right, return *the moment when the last ant(s) fall out of the plank*.

Example 1:
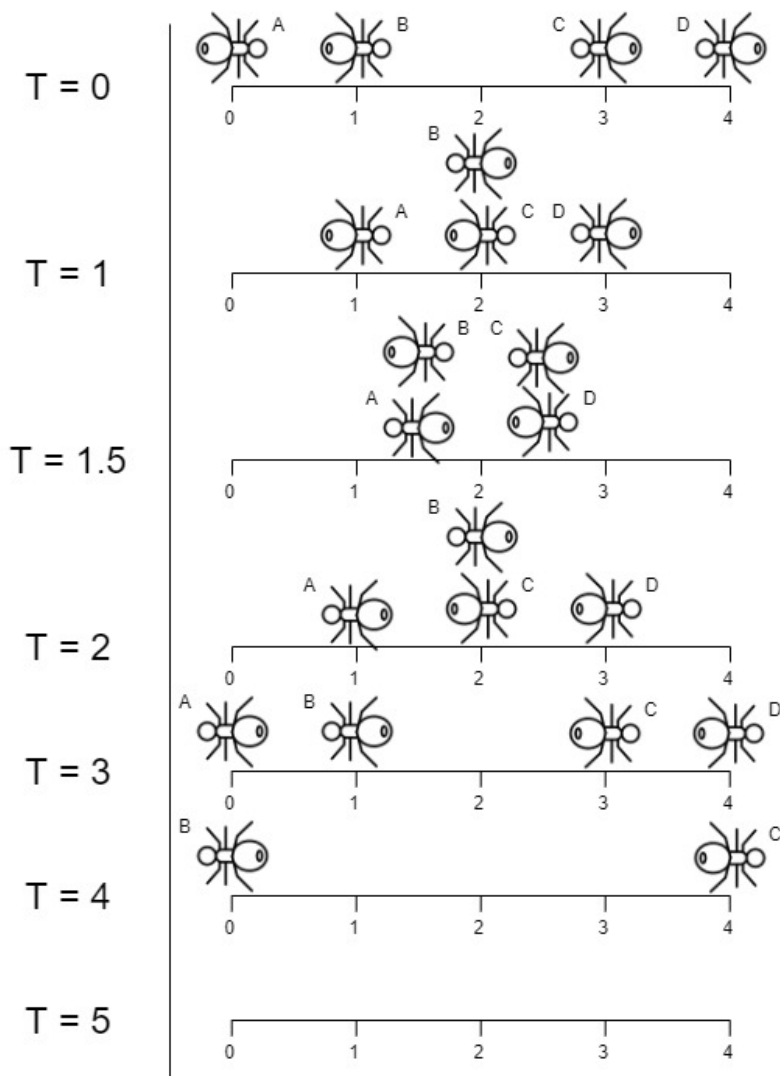
**Input:** n = 4, left = [4,3], right = [0,1]
Output: 4
Explanation: In the image above:
-The ant at index 0 is named A and going to the right.
-The ant at index 1 is named B and going to the right.
-The ant at index 3 is named C and going to the left.

-The ant at index 4 is named D and going to the left.
The last moment when an ant was on the plank is t = 4 seconds. After that, it falls immediately out of the plank. (i.e., We can say that at t = 4.0000000001, there are no ants on the plank).
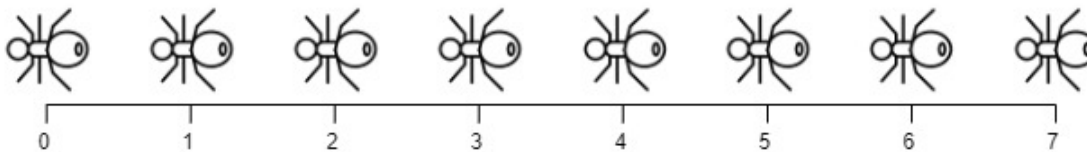
Example 2:
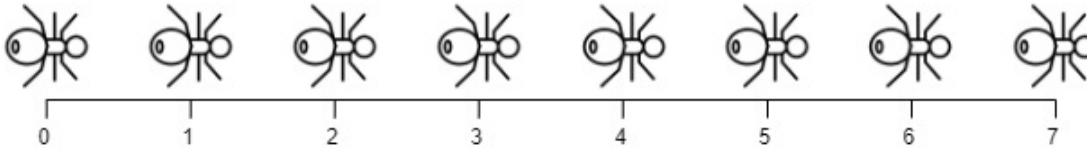
Input: n = 7, left = [], right = [0,1,2,3,4,5,6,7]
Output: 7
Explanation: All ants are going to the right, the ant at index 0 needs 7 seconds to fall.

Example 3:

Input: n = 7, left = [0,1,2,3,4,5,6,7], right = []
Output: 7
Explanation: All ants are going to the left, the ant at index 7 needs 7 seconds to fall.

Constraints:

- $1 <= n <= 10^4$

- $0 <= left.length <= n + 1$

- $0 <= left[i] <= n$

- $0 <= right.length <= n + 1$

- $0 <= right[i] <= n$

- $1 <= left.length + right.length <= n + 1$

- All values of left and right are unique, and each value can appear **only in one** of the two arrays.

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Yes   No

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