PA4 - 4001 Discussion Thread

The Brave Link

Description

When exploring the kingdom of Hyrule, the brave Link has to climb the Sheikah Tower of n meters to fetch the map. Now Link is at the bottom of the tower, he decides to jump step by step to the top of tower.

The surface of the tower's walls vary in quality: somewhere they are slippery, but somewhere have labor-saving ledges. In other words, if Link is on the x meters below the top of the tower, then in one jump, he can go up on any integer distance from 0 to a_x meters (both inclusive).

In addition, Link has to take a break after each jump, even when jumping up 0 meters. So after jumping up to position x meters below the top of the tower, he'll slip exactly b_x meters down while taking rest.

Calculate the minimum number of jumps Link needs to reach the top of tower.

Input

The 1st line: a single integer n, which is the height of the tower.

The 2nd line: n integers $a_1, a_2, ..., a_n (0 \le a_x \le x)$, where a_x is the maximum height Link can jump from x meters below the top of the tower.

The 3rd line: n integers $b_1, b_2, ..., b_n (0 \le b_x \le n - x)$, where b_x is the distance Link will slip down of he takes a break on x meters below the top of the tower.

20% cases, $n \le 10$.

40% cases, $n \le 1000$.

80% cases, $n \le 50000$.

100% cases, $n \le 300000$.

Output

If Link can't reach ground level, print -1.

Otherwise, print the minimum possible number of jumps.

`programming`

Updated 22 days ago by Yining She (佘以宁)

followup discussions *for lingering questions and comments*   **1 endorsed followup comment**

● Resolved ○ Unresolved

Yining She (佘以宁) 20 days ago
To students who came to my office-hour with questions about PA4001, I made a try and found that using pure DP algorithm can AC.

So don't be too worried about it. You just need to be a little bit more careful :)

~ An instructor (王书悦) thinks this is a good comment ~

good comment | 1

● Resolved ○ Unresolved

刘雨乐 15 days ago
what does ground level mean?

helpful! | 0

> **Yining She (佘以宁)** 15 days ago   Fixed. There should be the top of the tower.
>
> good comment | 0