Problem 2383: Minimum Hours of Training to Win a Competition

Problem Information

Difficulty: Easy
Acceptance Rate: 42.22%
Paid Only: No
Tags: Array, Greedy

Problem Description

You are entering a competition, and are given two **positive** integers `initialEnergy` and `initialExperience` denoting your initial energy and initial experience respectively.

You are also given two **0-indexed** integer arrays `energy` and `experience`, both of length `n`.

You will face `n` opponents **in order**. The energy and experience of the `ith` opponent is denoted by `energy[i]` and `experience[i]` respectively. When you face an opponent, you need to have both **strictly** greater experience and energy to defeat them and move to the next opponent if available.

Defeating the `ith` opponent **increases** your experience by `experience[i]`, but **decreases** your energy by `energy[i]`.

Before starting the competition, you can train for some number of hours. After each hour of training, you can **either** choose to increase your initial experience by one, or increase your initial energy by one.

Return _the**minimum** number of training hours required to defeat all _`n` _opponents_.

Example 1:

Input: initialEnergy = 5, initialExperience = 3, energy = [1,4,3,2], experience = [2,6,3,1] **Output:** 8 **Explanation:** You can increase your energy to 11 after 6 hours of training, and your experience to 5 after 2 hours of training. You face the opponents in the following

order: - You have more energy and experience than the 0th opponent so you win. Your energy becomes 11 - 1 = 10, and your experience becomes 5 + 2 = 7. - You have more energy and experience than the 1st opponent so you win. Your energy becomes 10 - 4 = 6, and your experience becomes 7 + 6 = 13. - You have more energy and experience than the 2nd opponent so you win. Your energy becomes 6 - 3 = 3, and your experience becomes 13 + 3 = 16. - You have more energy and experience than the 3rd opponent so you win. Your energy becomes 3 - 2 = 1, and your experience becomes 16 + 1 = 17. You did a total of 6 + 2 = 8 hours of training before the competition, so we return 8. It can be proven that no smaller answer exists.

Example 2:

Input: initialEnergy = 2, initialExperience = 4, energy = [1], experience = [3] **Output:** 0 **Explanation:** You do not need any additional energy or experience to win the competition, so we return 0.

Constraints:

* `n == energy.length == experience.length` * `1 <= n <= 100` * `1 <= initialEnergy, initialExperience, energy[i], experience[i] <= 100`

Code Snippets

C++:

```
class Solution {
public:
int minNumberOfHours(int initialEnergy, int initialExperience, vector<int>&
energy, vector<int>& experience) {

}
};
```

Java:

```
class Solution {
public int minNumberOfHours(int initialEnergy, int initialExperience, int[]
energy, int[] experience) {

}
```

```
}
```

Python3:

```
class Solution:
def minNumberOfHours(self, initialEnergy: int, initialExperience: int,
energy: List[int], experience: List[int]) -> int:
```