(/problems

6152. Minimum Hours of Training to Win a Competition

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Back to Contest (/contest/weekly-contest-307/)

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

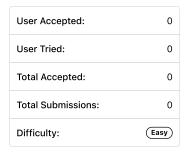
You are also given two $\mathbf{0}$ -indexed integer arrays energy and experience, both of length \mathbf{n} .

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.

 $\text{Defeating the i}^{\text{th}} \text{ opponent } \textbf{increases} \text{ your experience by } \text{ experience[i]}, \text{ but } \textbf{decreases} \text{ your energy by } \text{ energy[i]}.$

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 0<sup>th</sup> 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 1<sup>st</sup> 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 2<sup>nd</sup> 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 3<sup>rd</sup> 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

```
JavaScript
                                                                                                                      ₁ S
    const sm = (a) \Rightarrow a.reduce(((x, y) \Rightarrow x + y), 0);
2
3 ▼
    const minNumberOfHours = (initialEnergy, initialExperience, energy, experience) => {
4
        let res = calEnergy(initialEnergy, energy), res2 = calExperience(initialExperience, experience);
        // let res = sm(energy) + 1 - initialEnergy, res2 = calExperience(initialExperience, experience);
5
6
        return res + res2;
7
   };
8
9 ,
10
                  train = 0
   1
        cur = 5
   4
                  need cur = 5 train = 1
        cur = 4
   3
12
        cur = 1
```

```
14 */
15 v const calEnergy = (start, a) ⇒ {
        let cur = start, res = 0;
16
17 •
        for (const x of a) {
18
             // pr("energy", x, 'cur', cur, 'res', res)
19 ▼
            if (cur > x) {
20
                 cur -= x;
            } else {
21 ▼
22
                let train = x + 1 - cur;
23
                cur = 1;
24
                res += train;
                // pr("train", train)
25
26
27
        }
        // pr("res", res)
28
29
        return res;
30
    };
31
    const calExperience = (start, a) => {
32 ▼
33
        let cur = start, res = 0;
        for (const x of a) {
34 ▼
35
             // pr("experience", x, 'cur', cur, 'res', res)
            if (cur > x) {
36 ▼
37
                cur += x;
38 ▼
            } else {
39
                let train = x + 1 - cur;
40
                cur = x + 1 + x;
41
                res += train;
42
            }
43
        // pr("res2", res)
44
45
        return res;
46
    };
```

☐ Custom Testcase

Use Example Testcases

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