

Problem 1921: Eliminate Maximum Number of Monsters

Problem Information

Difficulty: Medium

Acceptance Rate: 50.92%

Paid Only: No

Tags: Array, Greedy, Sorting

Problem Description

You are playing a video game where you are defending your city from a group of `n` monsters. You are given a **0-indexed** integer array `dist` of size `n`, where `dist[i]` is the **initial distance** in kilometers of the `ith` monster from the city.

The monsters walk toward the city at a **constant** speed. The speed of each monster is given to you in an integer array `speed` of size `n`, where `speed[i]` is the speed of the `ith` monster in kilometers per minute.

You have a weapon that, once fully charged, can eliminate a **single** monster. However, the weapon takes **one minute** to charge. The weapon is fully charged at the very start.

You lose when any monster reaches your city. If a monster reaches the city at the exact moment the weapon is fully charged, it counts as a **loss**, and the game ends before you can use your weapon.

Return **_the maximum number of monsters that you can eliminate before you lose, or _`n` if you can eliminate all the monsters before they reach the city._**

Example 1:

Input: dist = [1,3,4], speed = [1,1,1] **Output:** 3 **Explanation:** In the beginning, the distances of the monsters are [1,3,4]. You eliminate the first monster. After a minute, the distances of the monsters are [X,2,3]. You eliminate the second monster. After a minute, the distances of the monsters are [X,X,2]. You eliminate the third monster. All 3 monsters can be eliminated.

****Example 2:****

****Input:**** dist = [1,1,2,3], speed = [1,1,1,1] ****Output:**** 1 ****Explanation:**** In the beginning, the distances of the monsters are [1,1,2,3]. You eliminate the first monster. After a minute, the distances of the monsters are [X,0,1,2], so you lose. You can only eliminate 1 monster.

****Example 3:****

****Input:**** dist = [3,2,4], speed = [5,3,2] ****Output:**** 1 ****Explanation:**** In the beginning, the distances of the monsters are [3,2,4]. You eliminate the first monster. After a minute, the distances of the monsters are [X,0,2], so you lose. You can only eliminate 1 monster.

****Constraints:****

* `n == dist.length == speed.length` * `1 <= n <= 105` * `1 <= dist[i], speed[i] <= 105`

Code Snippets

C++:

```
class Solution {  
public:  
    int eliminateMaximum(vector<int>& dist, vector<int>& speed) {  
  
    }  
};
```

Java:

```
class Solution {  
public int eliminateMaximum(int[] dist, int[] speed) {  
  
}  
}
```

Python3:

```
class Solution:  
    def eliminateMaximum(self, dist: List[int], speed: List[int]) -> int:
```