

Problem 2171: Removing Minimum Number of Magic Beans

Problem Information

Difficulty: Medium

Acceptance Rate: 44.05%

Paid Only: No

Tags: Array, Greedy, Sorting, Enumeration, Prefix Sum

Problem Description

You are given an array of **positive** integers `beans`, where each integer represents the number of magic beans found in a particular magic bag.

Remove any number of beans (**possibly none**) from each bag such that the number of beans in each remaining **non-empty** bag (still containing **at least one** bean) is **equal**. Once a bean has been removed from a bag, you are **not** allowed to return it to any of the bags.

Return **the minimum** number of magic beans that you have to remove.

Example 1:

Input: `beans = [4,1,6,5]` **Output:** `4` **Explanation:** - We remove 1 bean from the bag with only 1 bean. This results in the remaining bags: `[4,0,6,5]` - Then we remove 2 beans from the bag with 6 beans. This results in the remaining bags: `[4,0,4,5]` - Then we remove 1 bean from the bag with 5 beans. This results in the remaining bags: `[4,0,4,4]` We removed a total of $1 + 2 + 1 = 4$ beans to make the remaining non-empty bags have an equal number of beans. There are no other solutions that remove 4 beans or fewer.

Example 2:

Input: `beans = [2,10,3,2]` **Output:** `7` **Explanation:** - We remove 2 beans from one of the bags with 2 beans. This results in the remaining bags: `[0,10,3,2]` - Then we remove 2 beans from the other bag with 2 beans. This results in the remaining bags: `[0,10,3,0]` -

Then we remove 3 beans from the bag with 3 beans. This results in the remaining bags: [0,10,_,**0**_,0] We removed a total of $2 + 2 + 3 = 7$ beans to make the remaining non-empty bags have an equal number of beans. There are no other solutions that removes 7 beans or fewer.

****Constraints:****

`*`1` <= beans.length <= 105` *`1` <= beans[i] <= 105``

Code Snippets

C++:

```
class Solution {
public:
    long long minimumRemoval(vector<int>& beans) {

    }
};
```

Java:

```
class Solution {
    public long minimumRemoval(int[] beans) {

    }
}
```

Python3:

```
class Solution:
    def minimumRemoval(self, beans: List[int]) -> int:
```