

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:****

$1 \leq \text{beans.length} \leq 105$ $1 \leq \text{beans}[i] \leq 105$

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:
```