

Problem 2064: Minimized Maximum of Products Distributed to Any Store

Problem Information

Difficulty: Medium

Acceptance Rate: 62.84%

Paid Only: No

Tags: Array, Binary Search, Greedy

Problem Description

You are given an integer `n` indicating there are `n` specialty retail stores. There are `m` product types of varying amounts, which are given as a **0-indexed** integer array `quantities`, where `quantities[i]` represents the number of products of the `i`th product type.

You need to distribute **all products** to the retail stores following these rules:

- * A store can only be given **at most one product type** but can be given **any** amount of it.
 - * After distribution, each store will have been given some number of products (possibly `0`).
- Let `x` represent the maximum number of products given to any store. You want `x` to be as small as possible, i.e., you want to **minimize** the **maximum** number of products that are given to any store.

Return the minimum possible `x`.

Example 1:

Input: `n = 6, quantities = [11,6]` **Output:** `3` **Explanation:** One optimal way is: - The 11 products of type 0 are distributed to the first four stores in these amounts: 2, 3, 3, 3 - The 6 products of type 1 are distributed to the other two stores in these amounts: 3, 3 The maximum number of products given to any store is $\max(2, 3, 3, 3, 3, 3) = 3$.

Example 2:

Input: `n = 7, quantities = [15,10,10]` **Output:** `5` **Explanation:** One optimal way is: - The 15 products of type 0 are distributed to the first three stores in these amounts: 5, 5, 5 -

The 10 products of type 1 are distributed to the next two stores in these amounts: 5, 5 - The 10 products of type 2 are distributed to the last two stores in these amounts: 5, 5 The maximum number of products given to any store is $\max(5, 5, 5, 5, 5, 5, 5) = 5$.

Example 3:

Input: $n = 1$, quantities = [100000] **Output:** 100000 **Explanation:** The only optimal way is: - The 100000 products of type 0 are distributed to the only store. The maximum number of products given to any store is $\max(100000) = 100000$.

Constraints:

$m == \text{quantities.length}$ $1 \leq m \leq n \leq 105$ $1 \leq \text{quantities}[i] \leq 105$

Code Snippets

C++:

```
class Solution {
public:
    int minimizedMaximum(int n, vector<int>& quantities) {

    }
};
```

Java:

```
class Solution {
    public int minimizedMaximum(int n, int[] quantities) {

    }
}
```

Python3:

```
class Solution:
    def minimizedMaximum(self, n: int, quantities: List[int]) -> int:
```