

5920. Minimized Maximum of Products Distributed to Any Store

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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 be 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.

User Accepted:	0
User Tried:	0
Total Accepted:	0
Total Submissions:	0
Difficulty:	Medium

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:

- $m == \text{quantities.length}$
- $1 \leq m \leq n \leq 10^5$
- $1 \leq \text{quantities}[i] \leq 10^5$

JavaScript

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```
1 const minimizedMaximum = (n, a) => {
2   let low = 0, high = 1e5 + 1;
3   while (high - low > 1) {
4     let mid = low + high >>> 1, tot = 0;
5     for (const e of a) tot += parseInt((e + mid - 1) / mid);
6     tot <= n ? high = mid: low = mid;
```

```
7     }  
8     return high;  
9 };
```

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