Problem 3091: Apply Operations to Make Sum of Array Greater Than or Equal to k

Problem Information

Difficulty: Medium
Acceptance Rate: 43.93%
Paid Only: No
Tags: Math, Greedy, Enumeration

Problem Description

You are given a **positive** integer `k`. Initially, you have an array `nums = [1]`.

You can perform **any** of the following operations on the array **any** number of times (**possibly zero**):

* Choose any element in the array and **increase** its value by `1`. * Duplicate any element in the array and add it to the end of the array.

Return _the**minimum** number of operations required to make the **sum** of elements of the final array greater than or equal to _`k`.

Example 1:

Input: k = 11

Output: 5

Explanation:

We can do the following operations on the array `nums = [1]`:

* Increase the element by `1` three times. The resulting array is `nums = [4]`. * Duplicate the element two times. The resulting array is `nums = [4,4,4]`.

The sum of the final array is `4 + 4 + 4 = 12` which is greater than or equal to `k = 11`. The total number of operations performed is `3 + 2 = 5`.

Example 2:

Input: k = 1

Output: 0

Explanation:

The sum of the original array is already greater than or equal to `1`, so no operations are needed.

Constraints:

* `1 <= k <= 105`

Code Snippets

C++:

```
class Solution {
public:
int minOperations(int k) {

}
};
```

Java:

```
class Solution {
public int minOperations(int k) {

}
}
```

Python3:

```
class Solution:
def minOperations(self, k: int) -> int:
```