Problem 3449: Maximize the Minimum Game Score

Problem Information

Difficulty: Hard
Acceptance Rate: 25.52%
Paid Only: No
Tags: Array, Binary Search, Greedy

Problem Description

You are given an array `points` of size `n` and an integer `m`. There is another array `gameScore` of size `n`, where `gameScore[i]` represents the score achieved at the `ith` game. Initially, `gameScore[i] == 0` for all `i`.

You start at index -1, which is outside the array (before the first position at index 0). You can make **at most** `m` moves. In each move, you can either:

* Increase the index by 1 and add `points[i]` to `gameScore[i]`. * Decrease the index by 1 and add `points[i]` to `gameScore[i]`.

Note that the index must always remain within the bounds of the array after the first move.

Return the **maximum possible minimum** value in `gameScore` after **at most** `m` moves.

Example 1:

Input: points = [2,4], m = 3

Output: 4

Explanation:

Initially, index `i = -1` and `gameScore = [0, 0]`.

Move | Index | gameScore ---|---|--- Increase `i` | 0 | `[2, 0]` Increase `i` | 1 | `[2, 4]` Decrease `i` | 0 | `[4, 4]` The minimum value in `gameScore` is 4, and this is the maximum possible minimum among all configurations. Hence, 4 is the output.

Example 2:

Input: points = [1,2,3], m = 5

Output: 2

Explanation:

Initially, index `i = -1` and `gameScore = [0, 0, 0]`.

Move | Index | gameScore ---|---|--- Increase `i` | 0 | `[1, 0, 0]` Increase `i` | 1 | `[1, 2, 0]` Decrease `i` | 0 | `[2, 2, 0]` Increase `i` | 1 | `[2, 4, 0]` Increase `i` | 2 | `[2, 4, 3]` The minimum value in `gameScore` is 2, and this is the maximum possible minimum among all configurations. Hence, 2 is the output.

Constraints:

* `2 <= n == points.length <= 5 * 104` * `1 <= points[i] <= 106` * `1 <= m <= 109`

Code Snippets

C++:

```
class Solution {
public:
long long maxScore(vector<int>& points, int m) {

}
};
```

Java:

```
class Solution {
public long maxScore(int[] points, int m) {

}
```

```
}
```

Python3:

```
class Solution:
def maxScore(self, points: List[int], m: int) -> int:
```