Problem 2233: Maximum Product After K Increments

Problem Information

Difficulty: Medium
Acceptance Rate: 42.87%
Paid Only: No
Tags: Array, Greedy, Heap (Priority Queue)

Problem Description

You are given an array of non-negative integers `nums` and an integer `k`. In one operation, you may choose **any** element from `nums` and **increment** it by `1`.

Return _the**maximum** **product** of _`nums` _after**at most** _`k` _operations._ Since the answer may be very large, return it **modulo** `109 + 7`. Note that you should maximize the product before taking the modulo.

Example 1:

Input: nums = [0,4], k = 5 **Output:** 20 **Explanation:** Increment the first number 5 times. Now nums = [5, 4], with a product of 5 * 4 = 20. It can be shown that 20 is maximum product possible, so we return 20. Note that there may be other ways to increment nums to have the maximum product.

Example 2:

Input: nums = [6,3,3,2], k = 2 **Output:** 216 **Explanation:** Increment the second number 1 time and increment the fourth number 1 time. Now nums = [6, 4, 3, 3], with a product of 6 * 4 * 3 * 3 = 216. It can be shown that 216 is maximum product possible, so we return 216. Note that there may be other ways to increment nums to have the maximum product.

Constraints:

* `1 <= nums.length, k <= 105` * `0 <= nums[i] <= 106`

Code Snippets

C++:

```
class Solution {
public:
int maximumProduct(vector<int>& nums, int k) {

}
};
```

Java:

```
class Solution {
public int maximumProduct(int[] nums, int k) {

}
}
```

Python3:

```
class Solution:
def maximumProduct(self, nums: List[int], k: int) -> int:
```