

5959. Minimum Operations to Make the Array K-Increasing

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You are given a **0-indexed** array `arr` consisting of `n` positive integers, and a positive integer `k`.

The array `arr` is called **K-increasing** if `arr[i-k] <= arr[i]` holds for every index `i`, where `k <= i <= n-1`.

- For example, `arr = [4, 1, 5, 2, 6, 2]` is K-increasing for `k = 2` because:
 - `arr[0] <= arr[2]` (`4 <= 5`)
 - `arr[1] <= arr[3]` (`1 <= 2`)
 - `arr[2] <= arr[4]` (`5 <= 6`)
 - `arr[3] <= arr[5]` (`2 <= 2`)
- However, the same `arr` is not K-increasing for `k = 1` (because `arr[0] > arr[1]`) or `k = 3` (because `arr[0] > arr[3]`).

In one **operation**, you can choose an index `i` and **change** `arr[i]` into **any** positive integer.

Return the **minimum number of operations** required to make the array K-increasing for the given `k`.

| | |
|--------------------|------|
| User Accepted: | 0 |
| User Tried: | 0 |
| Total Accepted: | 0 |
| Total Submissions: | 0 |
| Difficulty: | Hard |

Example 1:

Input: `arr = [5,4,3,2,1]`, `k = 1`
Output: 4
Explanation:
For `k = 1`, the resultant array has to be non-decreasing.
Some of the K-increasing arrays that can be formed are `[5,6,7,8,9]`, `[1,1,1,1,1]`, `[2,2,3,4,4]`. All of them require 4 operations.
It is suboptimal to change the array to, for example, `[6,7,8,9,10]` because it would take 5 operations.
It can be shown that we cannot make the array K-increasing in less than 4 operations.

Example 2:

Input: `arr = [4,1,5,2,6,2]`, `k = 2`
Output: 0
Explanation:
This is the same example as the one in the problem description.
Here, for every index `i` where `2 <= i <= 5`, `arr[i-2] <= arr[i]`.
Since the given array is already K-increasing, we do not need to perform any operations.

Example 3:

Input: `arr = [4,1,5,2,6,2]`, `k = 3`
Output: 2
Explanation:
Indices 3 and 5 are the only ones not satisfying `arr[i-3] <= arr[i]` for `3 <= i <= 5`.
One of the ways we can make the array K-increasing is by changing `arr[3]` to 4 and `arr[5]` to 5.
The array will now be `[4,1,5,4,6,5]`.
Note that there can be other ways to make the array K-increasing, but none of them require less than 2 operations.

Constraints:

- `1 <= arr.length <= 105`
- `1 <= arr[i], k <= arr.length`

```
1  /**
2   * @param {number[]} arr
3   * @param {number} k
4   * @return {number}
5   */
6  var kIncreasing = function(arr, k) {
7
8  };
```

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