2407. Longest Increasing Subsequence II

Description

You are given an integer array `nums` and an integer `k`.

Find the longest subsequence of `nums` that meets the following requirements:

- The subsequence is **strictly increasing** and
- The difference between adjacent elements in the subsequence is **at most** `k`.

Return *the length of the **longest** **subsequence** that meets the requirements.*

A **subsequence** is an array that can be derived from another array by deleting some or no elements without changing the order of the remaining elements.

Example 1:

```
Input: nums = [4,2,1,4,3,4,5,8,15], k = 3
Output: 5
Explanation:
The longest subsequence that meets the requirements is [1,3,4,5,8].
The subsequence has a length of 5, so we return 5.
Note that the subsequence [1,3,4,5,8,15] does not meet the requirements because 15 - 8 = 7 is larger than 3.
```

Example 2:

```
Input: nums = [7,4,5,1,8,12,4,7], k = 5
Output: 4
Explanation:
The longest subsequence that meets the requirements is [4,5,8,12].
The subsequence has a length of 4, so we return 4.
```

Example 3:

```
Input: nums = [1,5], k = 1
Output: 1
Explanation:
The longest subsequence that meets the requirements is [1].
The subsequence has a length of 1, so we return 1.
```

Constraints:

- `1 <= nums.length <= 10^5`
- `1 <= nums[i], k <= 10^5`