1799. Minimum Incompatibility

Difficulty : Hard

https://leetcode.com/problems/minimum-incompatibility

You are given an integer array `numsâ€‹â€‹â€‹â€‹` and an integer `k`. You are asked to distribute this array into `k` subsets of **equal size** such that there are no two equal elements in the same subset.

A subset's **incompatibility** is the difference between the maximum and minimum elements in that array.

Return *the* ***minimum possible sum of incompatibilities*** *of the* `k` *subsets after distributing the array optimally, or return* `-1` *if it is not possible.*

A subset is a group integers that appear in the array with no particular order.

Example 1:

```
Input: nums = [1,2,1,4], k = 2
Output: 4
Explanation: The optimal distribution of subsets is [1,2] and [1,4].
The incompatibility is (2-1) + (4-1) = 4.
Note that [1,1] and [2,4] would result in a smaller sum, but the first subset contains 2 equal elements.
```

Example 2:

```
Input: nums = [6,3,8,1,3,1,2,2], k = 4
Output: 6
Explanation: The optimal distribution of subsets is [1,2], [2,3], [6,8], and [1,3].
The incompatibility is (2-1) + (3-2) + (8-6) + (3-1) = 6.
```

Example 3:

```
Input: nums = [5,3,3,6,3,3], k = 3
Output: -1
Explanation: It is impossible to distribute nums into 3 subsets where no two elements are equal in the same subset.
```

Constraints:

- `1 <= k <= nums.length <= 16`
- `nums.length` is divisible by `k`
- `1 <= nums[i] <= nums.length`