1471. The k Strongest Values in an Array

Description

Given an array of integers `arr` and an integer `k`.

A value `arr[i]` is said to be stronger than a value `arr[j]` if `|arr[i] - m| > |arr[j] - m|` where `m` is the **median** of the array.
If `|arr[i] - m| == |arr[j] - m|`, then `arr[i]` is said to be stronger than `arr[j]` if `arr[i] > arr[j]`.

Return *a list of the strongest* `k` values in the array. return the answer **in any arbitrary order**.

Median is the middle value in an ordered integer list. More formally, if the length of the list is n, the median is the element in position `((n - 1) / 2)` in the sorted list **(0-indexed)**.

- For `arr = [6, -3, 7, 2, 11]`, `n = 5` and the median is obtained by sorting the array `arr = [-3, 2, 6, 7, 11]` and the median is `arr[m]` where `m = ((5 - 1) / 2) = 2`. The median is `6`.
- For `arr = [-7, 22, 17, 3]`, `n = 4` and the median is obtained by sorting the array `arr = [-7, 3, 17, 22]` and the median is `arr[m]` where `m = ((4 - 1) / 2) = 1`. The median is `3`.

Example 1:

```
Input: arr = [1,2,3,4,5], k = 2
Output: [5,1]
Explanation: Median is 3, the elements of the array sorted by the strongest are [5,1,4,2,3]. The strongest 2 elements are [5, 1]. [1, 5] is also
accepted answer.
Please note that although |5 - 3| == |1 - 3| but 5 is stronger than 1 because 5 > 1.
```

Example 2:

```
Input: arr = [1,1,3,5,5], k = 2
Output: [5,5]
Explanation: Median is 3, the elements of the array sorted by the strongest are [5,5,1,1,3]. The strongest 2 elements are [5, 5].
```

Example 3:

```
Input: arr = [6,7,11,7,6,8], k = 5
Output: [11,8,6,6,7]
Explanation: Median is 7, the elements of the array sorted by the strongest are [11,8,6,6,7,7].
Any permutation of [11,8,6,6,7] is accepted.
```

Constraints:

- $1 <= arr.length <= 10^5$
- $-10^5 <= arr[i] <= 10^5$
- $1 <= k <= arr.length$