658. Find K Closest Elements

Given a **sorted** integer array `arr`, two integers `k` and `x`, return the `k` closest integers to `x` in the array. The result should also be sorted in ascending order.

An integer `a` is closer to `x` than an integer `b` if:

- `|a - x| < |b - x|`, or
- `|a - x| == |b - x|` and `a < b`

Example 1:

```
Input: arr = [1,2,3,4,5], k = 4, x = 3
Output: [1,2,3,4]
```

Example 2:

```
Input: arr = [1,2,3,4,5], k = 4, x = -1
Output: [1,2,3,4]
```

Constraints:

- `1 <= k <= arr.length`
- `1 <= arr.length <= 10<sup>4</sup>`
- `arr` is sorted in **ascending** order.
- `-10<sup>4</sup> <= arr[i], x <= 10<sup>4</sup>`

```python
#Method : 1
import heapq
class Solution:
    def findClosestElements(self, arr: List[int], k: int, x: int) ->
List[int]:
        heap = []
        ans = []

        for i in range(len(arr)):
            if i<k:
                diff = -abs(arr[i]-x)
                heapq.heappush(heap,(diff,arr[i]))
            else:
                diff1 = -abs(arr[i]-x)
                diff2,num = heap[0]
```

```
                if diff1>diff2:
                    heapq.heappop(heap)
                    heapq.heappush(heap,(diff1,arr[i]))
        while len(heap)>0:
            num = heapq.heappop(heap)
            ans.append(num[1])
        return sorted(ans)
```

#Method : 2

```
def findClosestElements(self, arr: List[int], k: int, x: int) -> List[int]:
        new = deque(arr)
        while len(new) > k:
            new.pop() if abs(new[0]-x) <= abs(new[-1]-x) else new.popleft()

        return new
```