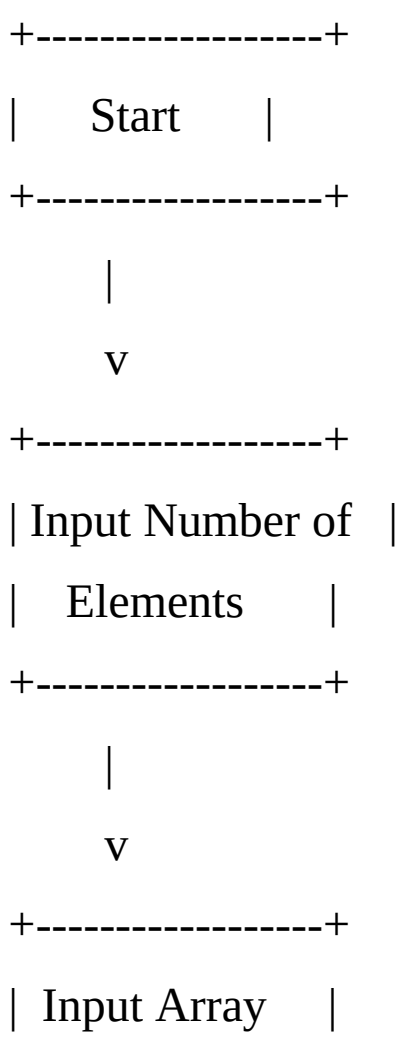
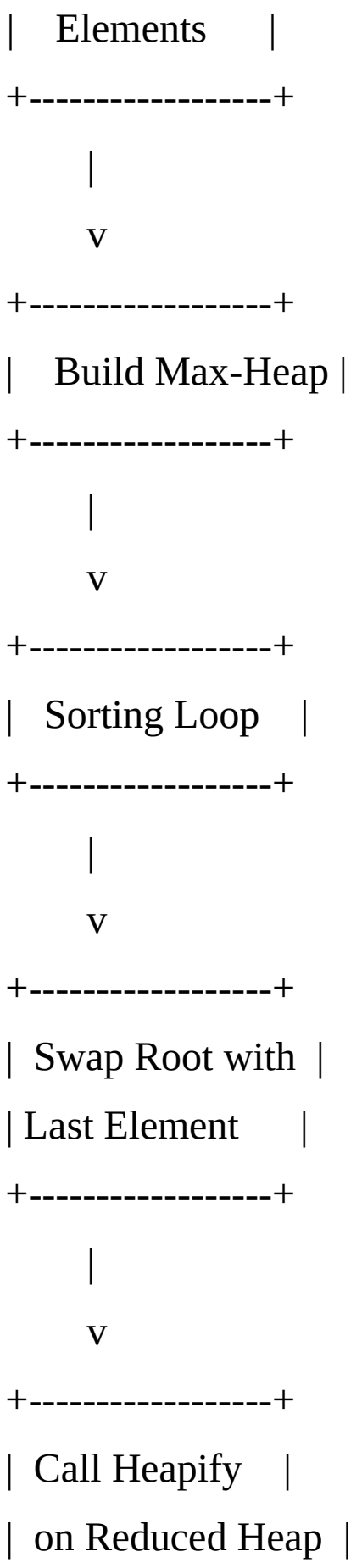
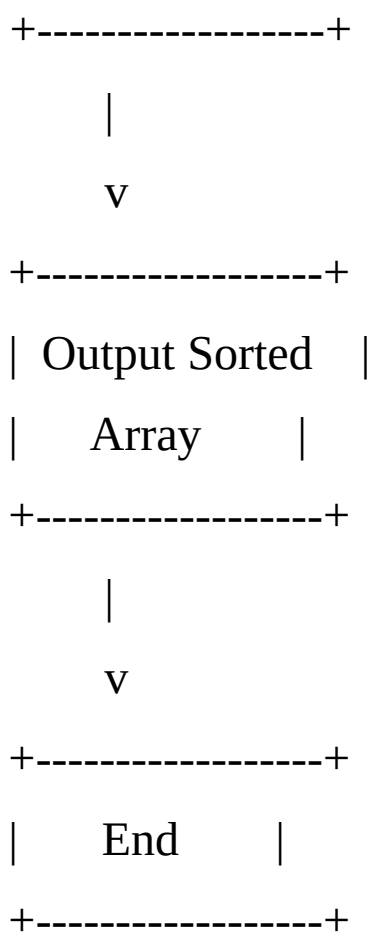
❖ HeapSort:

- Explanation- The problem is to sort an array using the Heap Sort algorithm, which involves first constructing a max-heap from the array elements. Once the max-heap is built, the maximum element is repeatedly extracted and placed at the end of the array, reducing the heap size until all elements are sorted. This method efficiently sorts the array in (O(n log n)) time complexity while using (O(1)) additional space.
- Time Complexity- O(nlogn)
- Space Complexity- O(1)
- Flowchart-




| Elements |
+----------+
|
v
+----------+
| Build Max-Heap |
+----------+
|
v
+----------+
| Sorting Loop |
+----------+
|
v
+----------+
| Swap Root with |
| Last Element |
+----------+
|
v
+----------+
| Call Heapify |
| on Reduced Heap |


Output Sorted
Array
End