heap_sort Algorithm:

Steps:
1. Build a max-heap by calling heapify for all non-leaf nodes.
2. Extract the maximum (root) by swapping it with the last element.
3. Reduce heap size and call heapify to restore the heap property.
4. Repeat until the heap is sorted.

heapify Algorithm:

Steps:
1. Compare the current node with its left and right children.
2. Swap with the largest child if needed.
3. Recursively call heapify on the affected subtree.

Time Complexity
O(n log n) In worst case
O(n log n) In best case
O(n log n) In average case

Space Complexity
In place => O(1)