DAILY DSA | DAY-7 | SORTING ALGORITHMS – Heap Sort|
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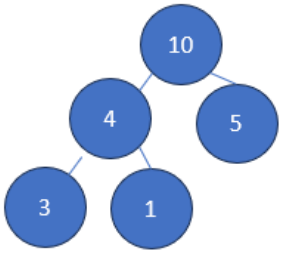
We will talk about the **"Heap sort" -** One of the efficient time complexity approaches for finding min/max values over large datasets.

The heap sort algorithm is a comparison-based sorting technique based on binary heap data structure

Types of heap sort:

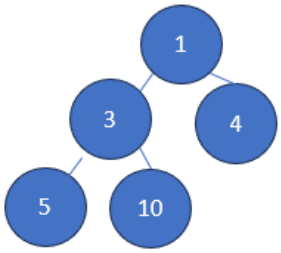
Max heap

Node value greater than all its descendants



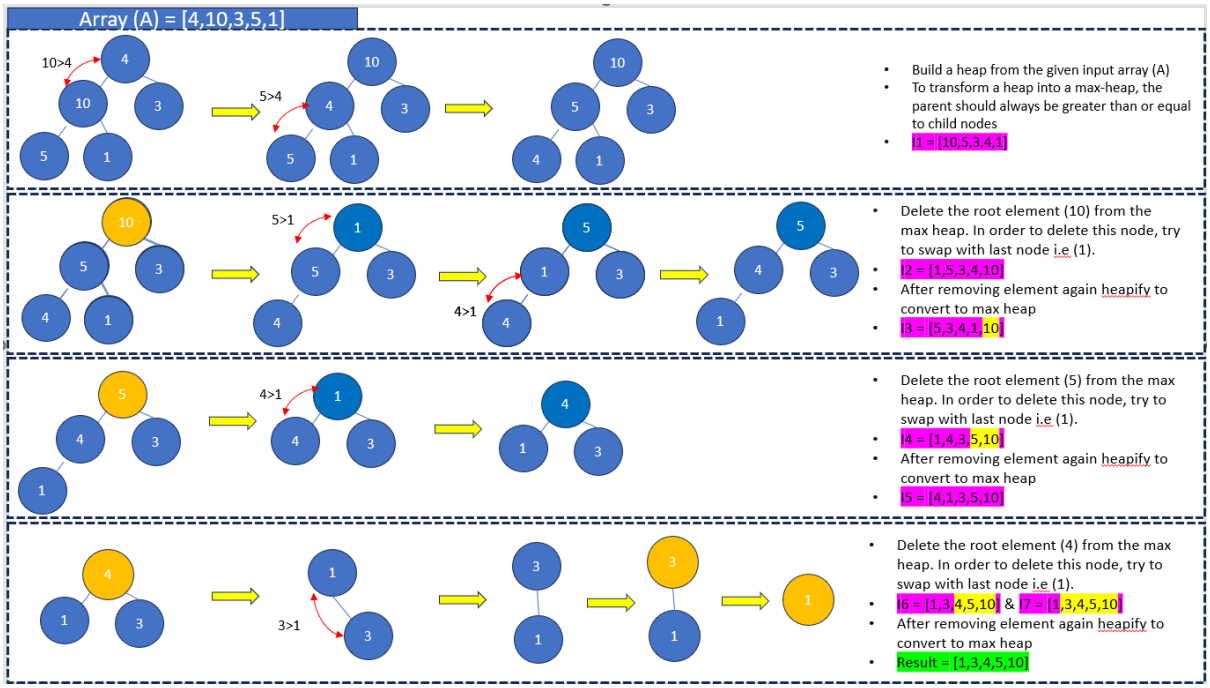
Min heap

Node value smaller than all its descendants



Approach:

(The current illustration is for Max heap)



Time complexity analysis:

- Insertion operation = (N log N)
- Deletion = (N log N)
- Total operations = 2(N log N). Considering 2 as constant --> O(N log N)

Advantages of heap sort:

- **Efficient time complexity:** The time complexity of O(N log N) in all cases, makes it efficient for storing large datasets
- **Memory usage: This can** be minimal because apart from what is necessary to hold the initial list of items to be sorted.
- **Simplicity:** It is simpler to understand than other equally efficient sorting algorithms

Disadvantages:

- Not very efficient when working with highly complex data

Useful links:

- https://www.geeksforgeeks.org/heap-sort/