Heap as priority queue

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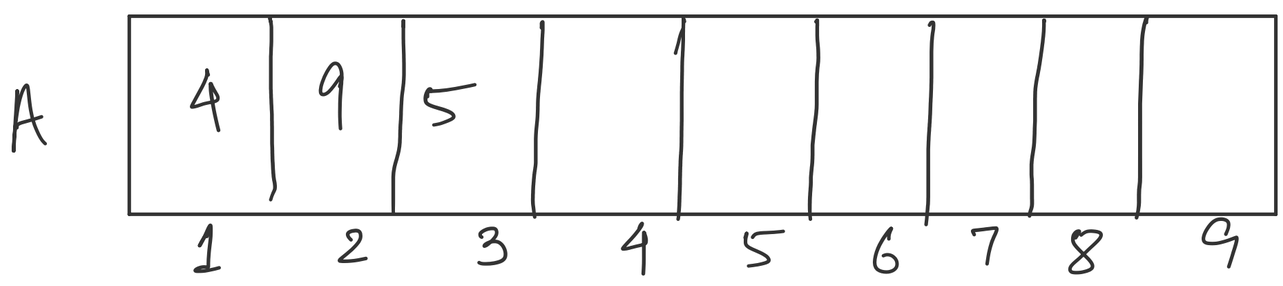
elements → 4, 9, 5, 10, 6, 20, 8, 15, 2, 18

Larger the element higher the priority

(we can give highest priority to either the highest or smallest element)

⇒ priority queue is related to insertion and deletion of elements. Elements will have their priority and they are inserted along with the priority. Than when we are deleting always highest priority element will be deleted.



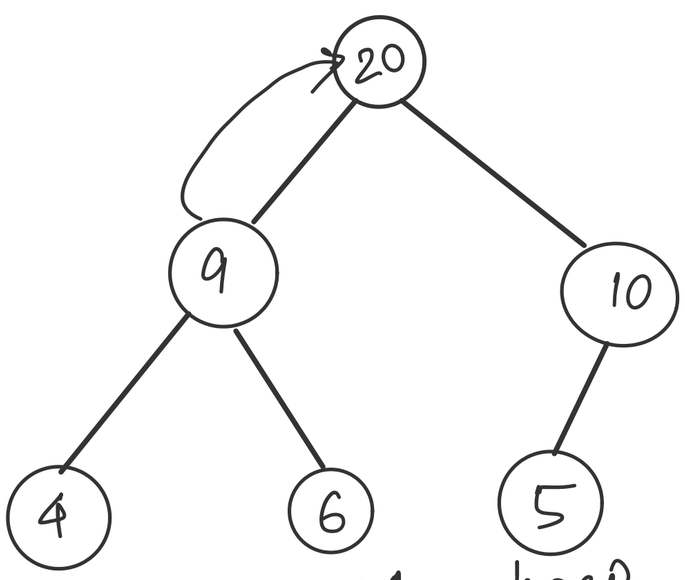
Insert is taking → O(1)

delete is taking → n+n → O(n)

searching

shifting

to optimise the above procedure we will make a max heap of the above elements ⇒



Max heap

Insert taking O(log n)

deletion taking ⇒ O(log n)

So heap is the best data structure for implementing priority queues.