

Ex 2.4.2: Criticize the following idea: To implement find the maximum in constant time, why not use a stack or a queue, but keep track of the maximum value inserted so far, then return that value for find the maximum?

Solution:

- Priority Queue acts like a Stack and Queue.
- Keeps track of max element with max element at the top.
- Typically heaps used to make Priority Queues due to fast $n\log N$ complexity of insert/delMax.
- For stacks and queues, we have to go through elements linearly to promote to 'max', so cannot be done in constant time.
- Similar to why insert and delMax are not always good complexities depending on sorted or unsorted arrays.