Adapters

1. Implement Queue using 2 Stacks
2. Implement stack using 2 Queue

Implement Queue using 2 Stacks

enque
deque
peek
size O(1)
isEmpty O(1)

1. Enque efficient
   enque O(1) deque O(n)
   peek O(n)
2. Deque efficient
   deque O(1) enque O(n)
   peek O(1)

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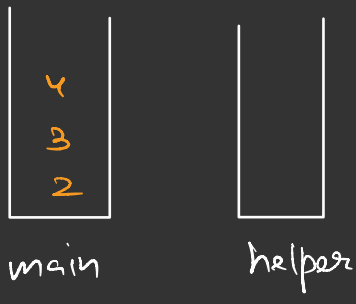
1. | | 2 | 3 | 4 |

add(1)
add(2)
add(3)
remove

val = 1



① Add push O(1)

② Remove ① pop n-1 and push helper O(n)

③ pop helper push main O(n)

→ O(n)

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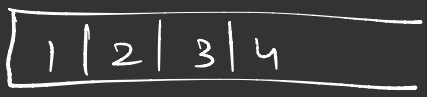
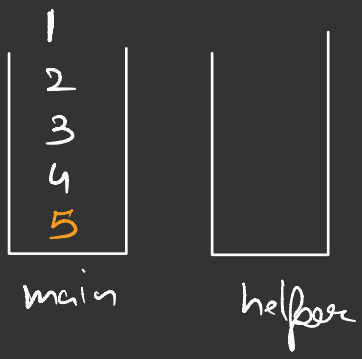
② Deque Efficient O(1)





remove → st.pop O(1)

add (5) O(n)

(2) Implement Stack Using 2 Queues

Push
pop
peek
size
isEmpty

(1) Push Efficient

push O(1)

pop O(n)
peek

(2) Pop Efficient

pop O(1)
peek O(1)

push O(n)

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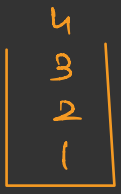
(1) Push Efficient

main



push(1)
push(2)
push(3)

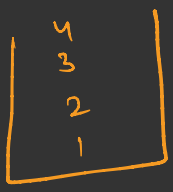
helper

push → q.add O(1)

pop

main = helper
helper = new LL

② Pop Efficient



main | ~~4~~ | ~~3~~ | ~~2~~ | ~~1~~

helper | 5 | 4 | 3 | 2 | 1

pop → main.remove()

push(s)