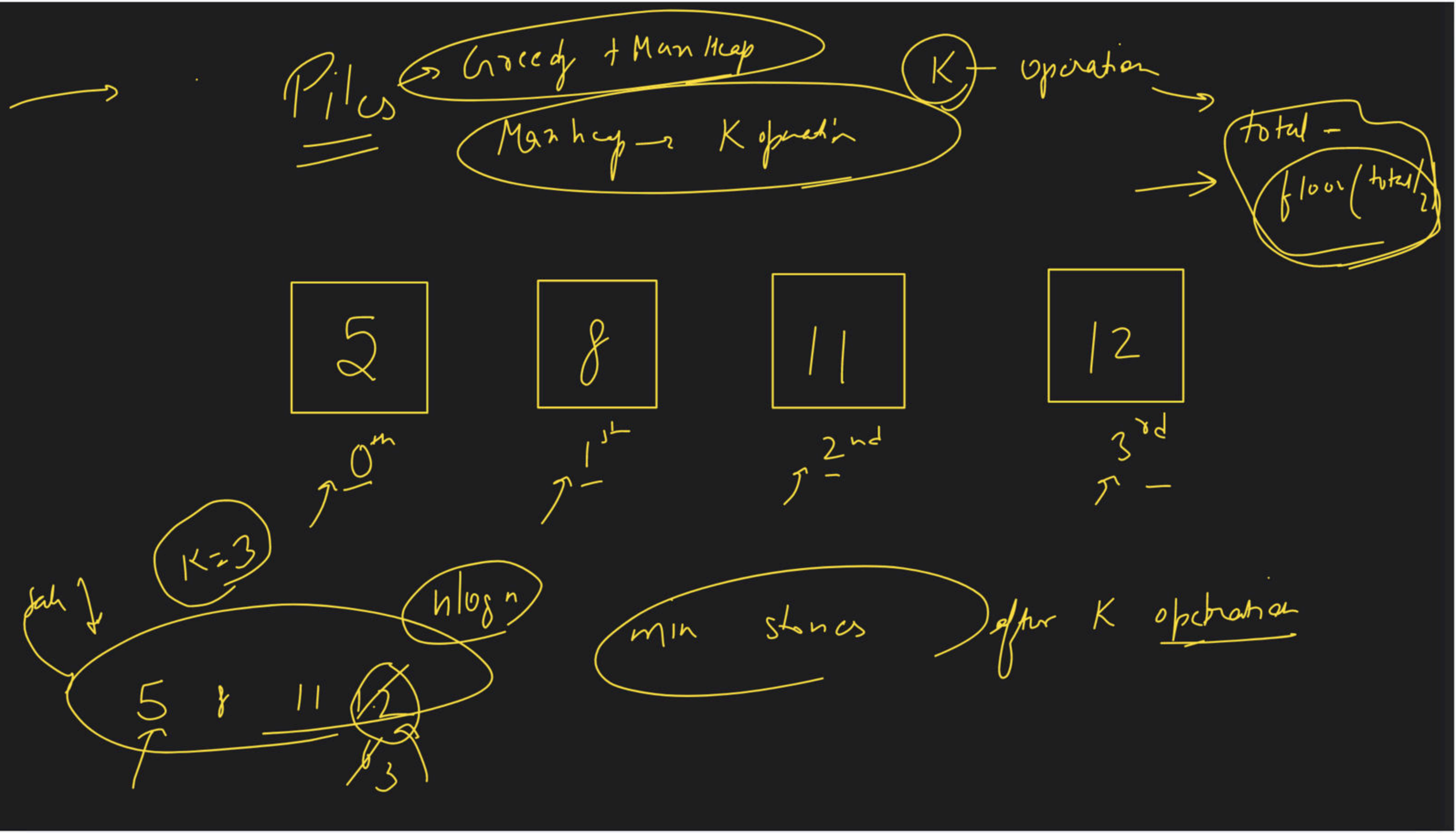
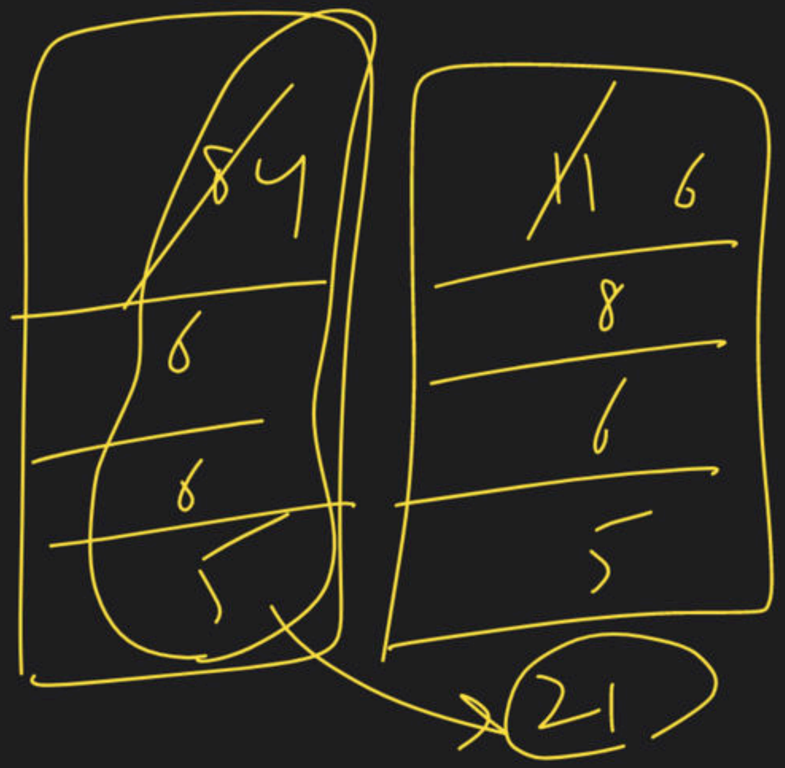
Heaps Class - 4

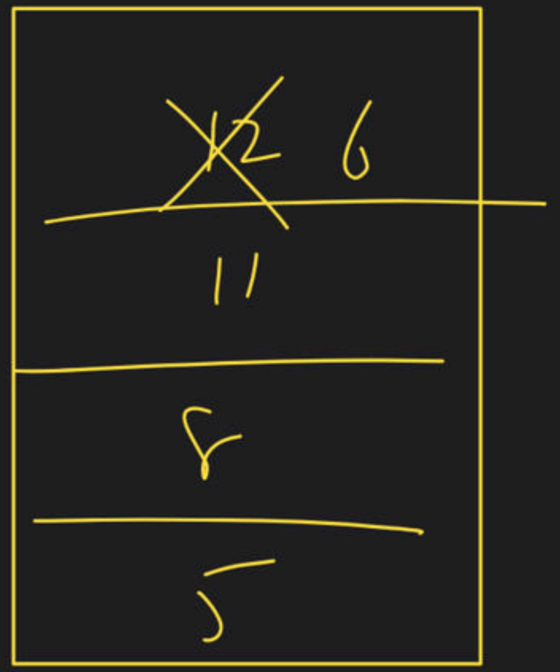
Special class

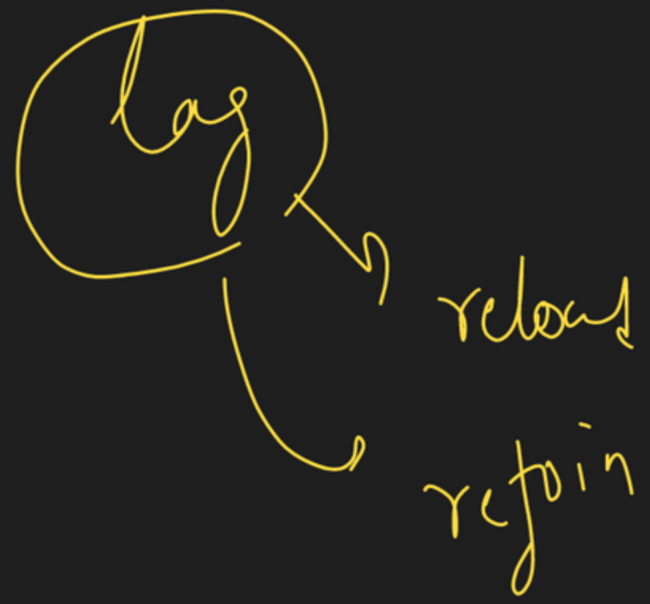
Love Babbar • May 27, 2023

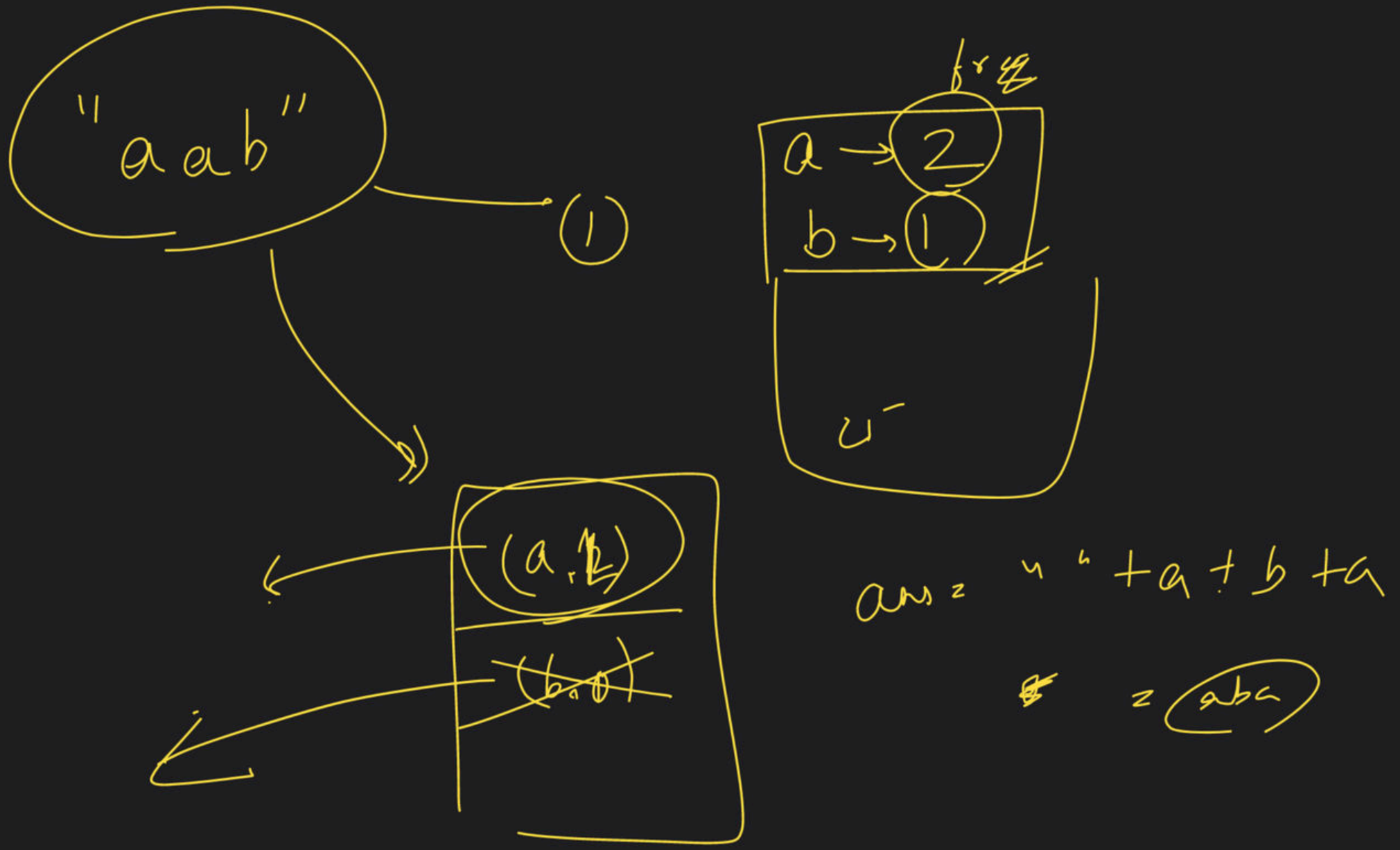

Piles
Greedy + Max Heap
Max heap → K operation
K operation
total -
floor(total/2)
5
8
11
12
0th
1st
2nd
3rd
K=3
stack
n log n
5 8 11 12
3
min stones after K operation

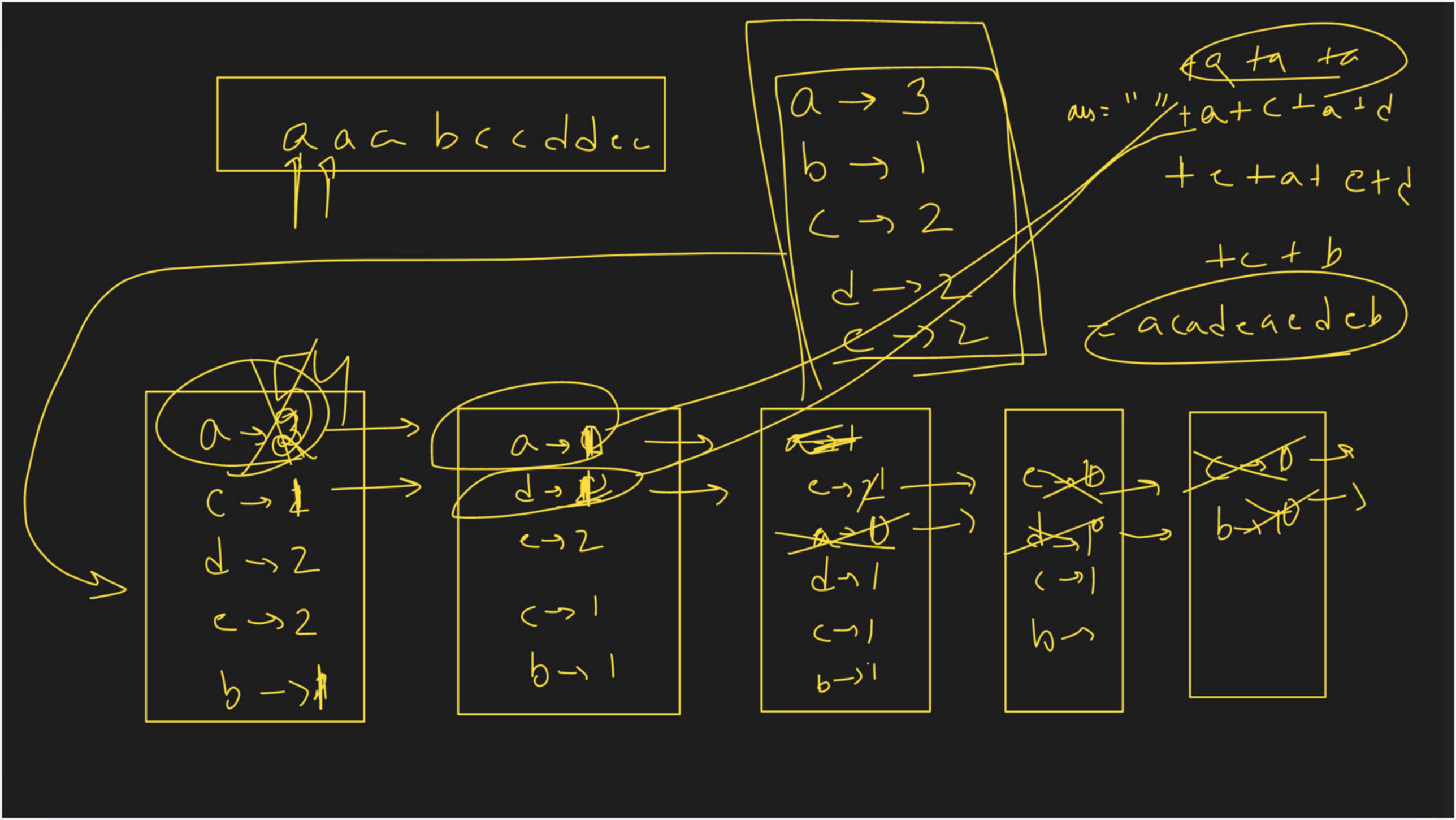
K=3

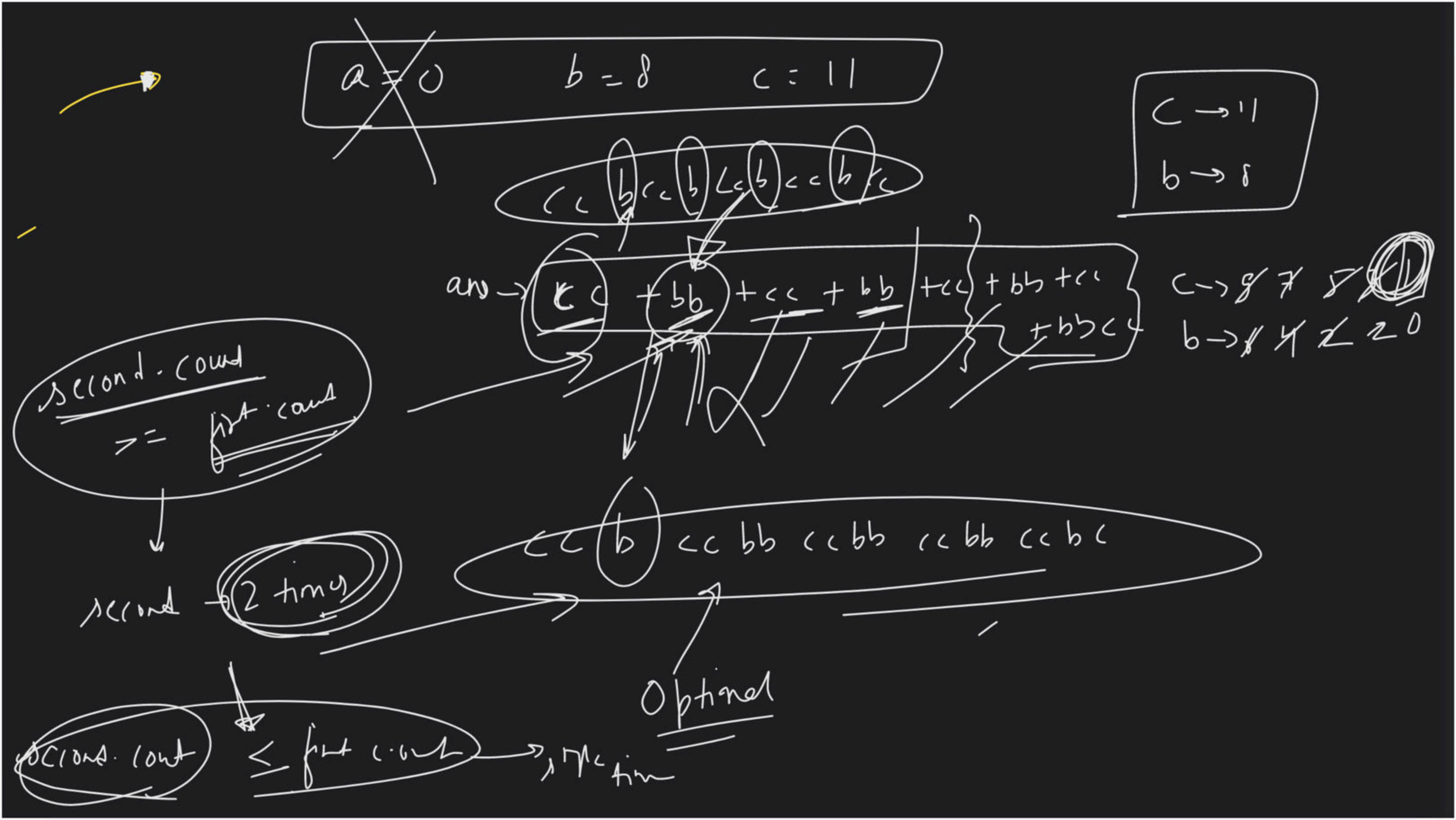





log
release
retain

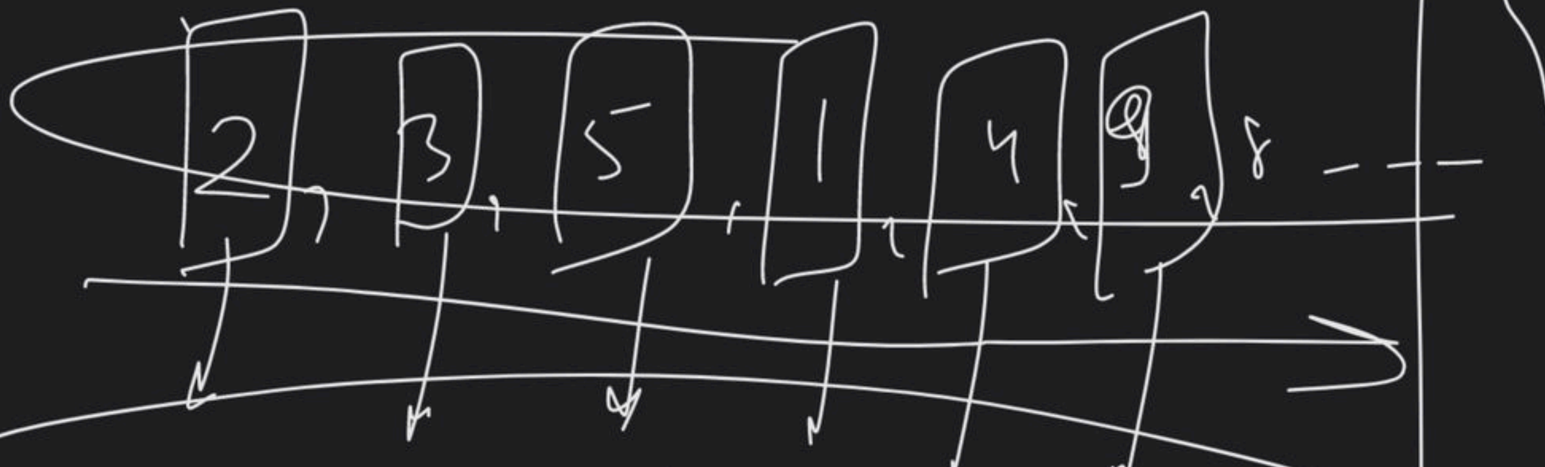

"aab"
1
a → 2
b → 1
(a, 2)
(b, 1)
ans = "" + a + b + a
= aba


a a c a b c c d d e c
a → 3
b → 1
c → 2
d → 2
e → 2
aus: " " + a + c + a + d
+ c + a + c + d
+ c + b
a c a d e a c d c b
a → 3
c → 1
d → 2
e → 2
b → 1
a → 1
d → 1
e → 2
c → 1
b → 1
c → 1
a → 0
d → 1
c → 1
b → 1
c → 0
d → 0
c → 1
b → 0
b → 1


a = 0
b = 8
c = 11
c → 11
b → 8
second . count
== first . count
2 times
Optional

Median in a stream

integer data stream



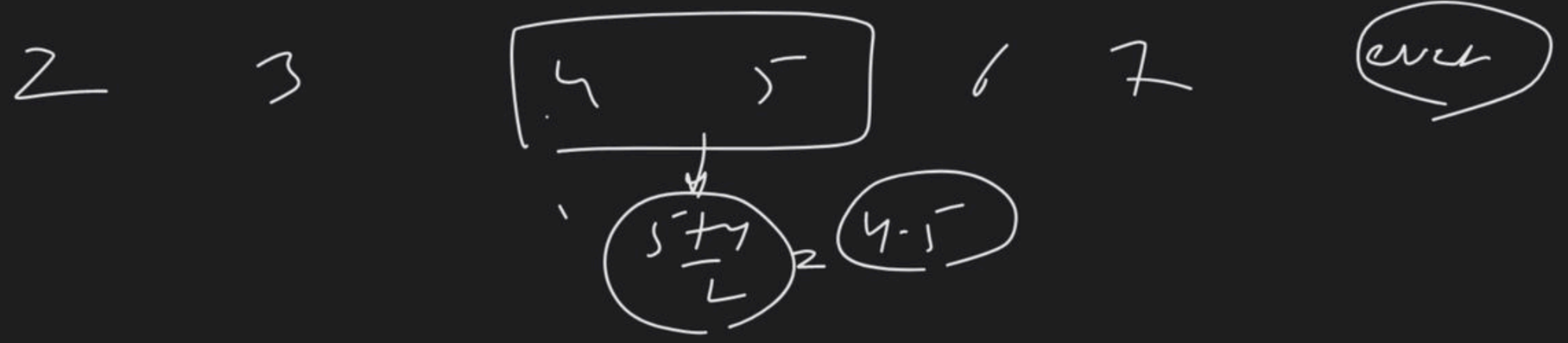
median median ~ ( )

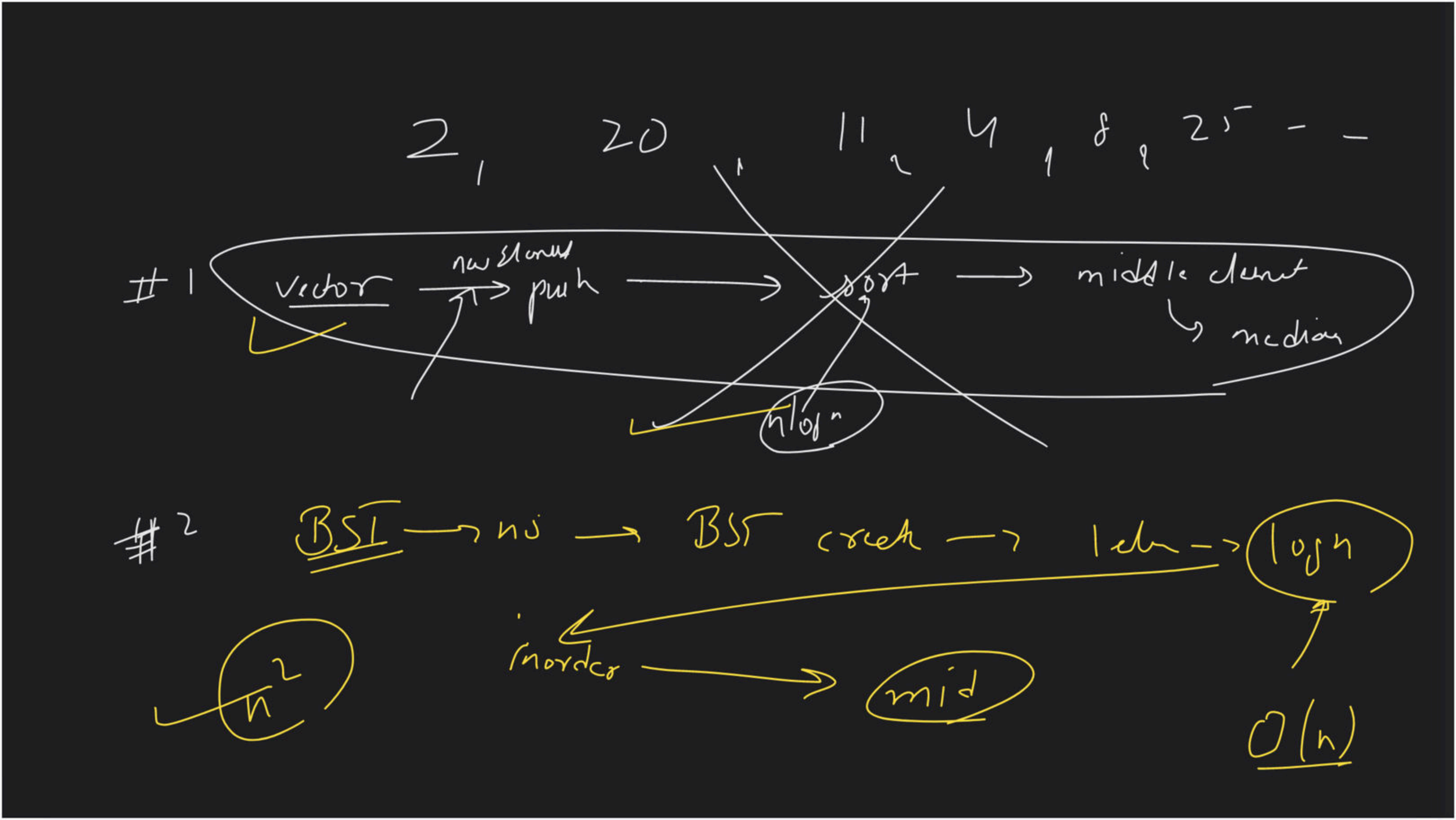
O(1)

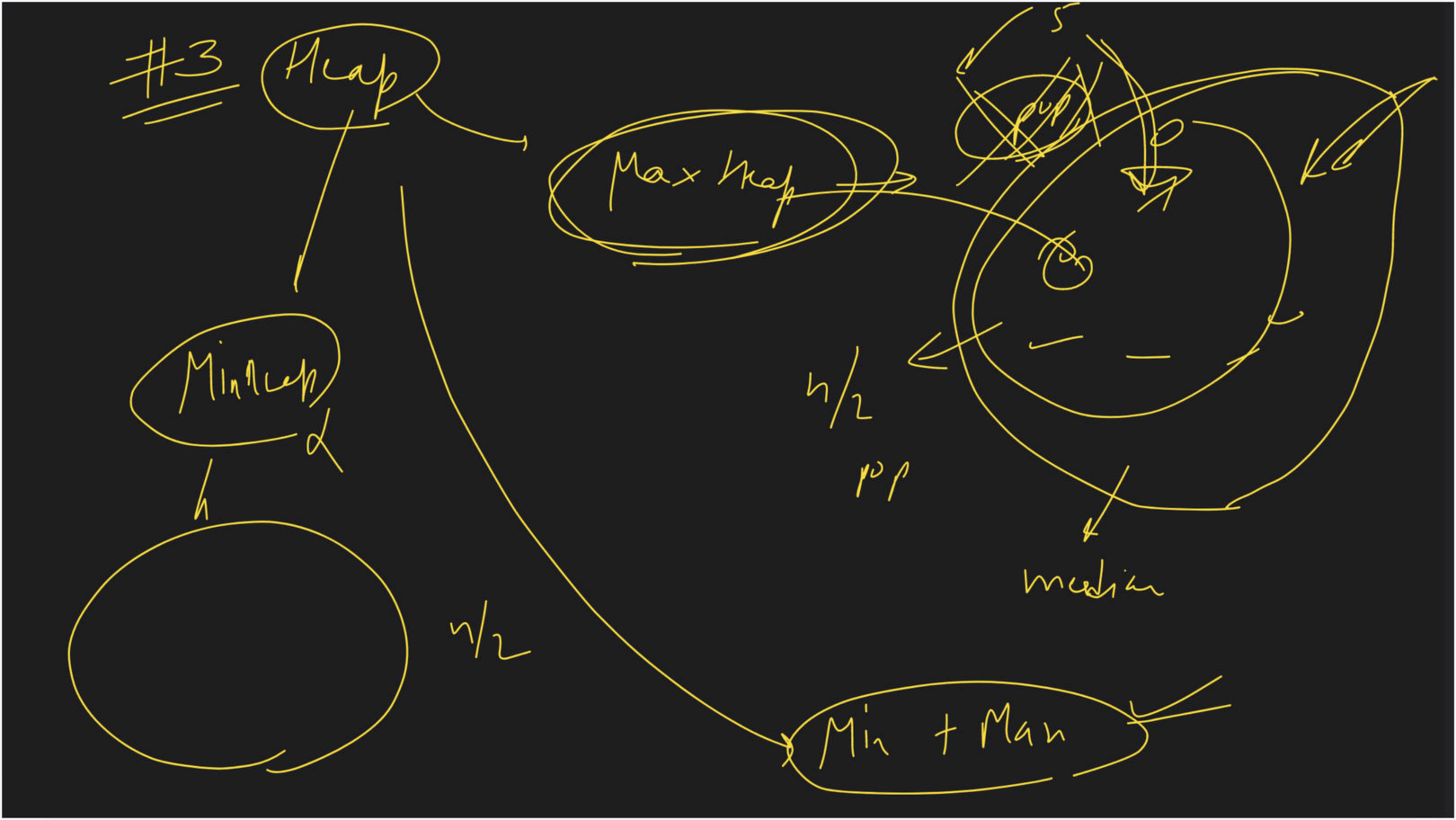
Lag face

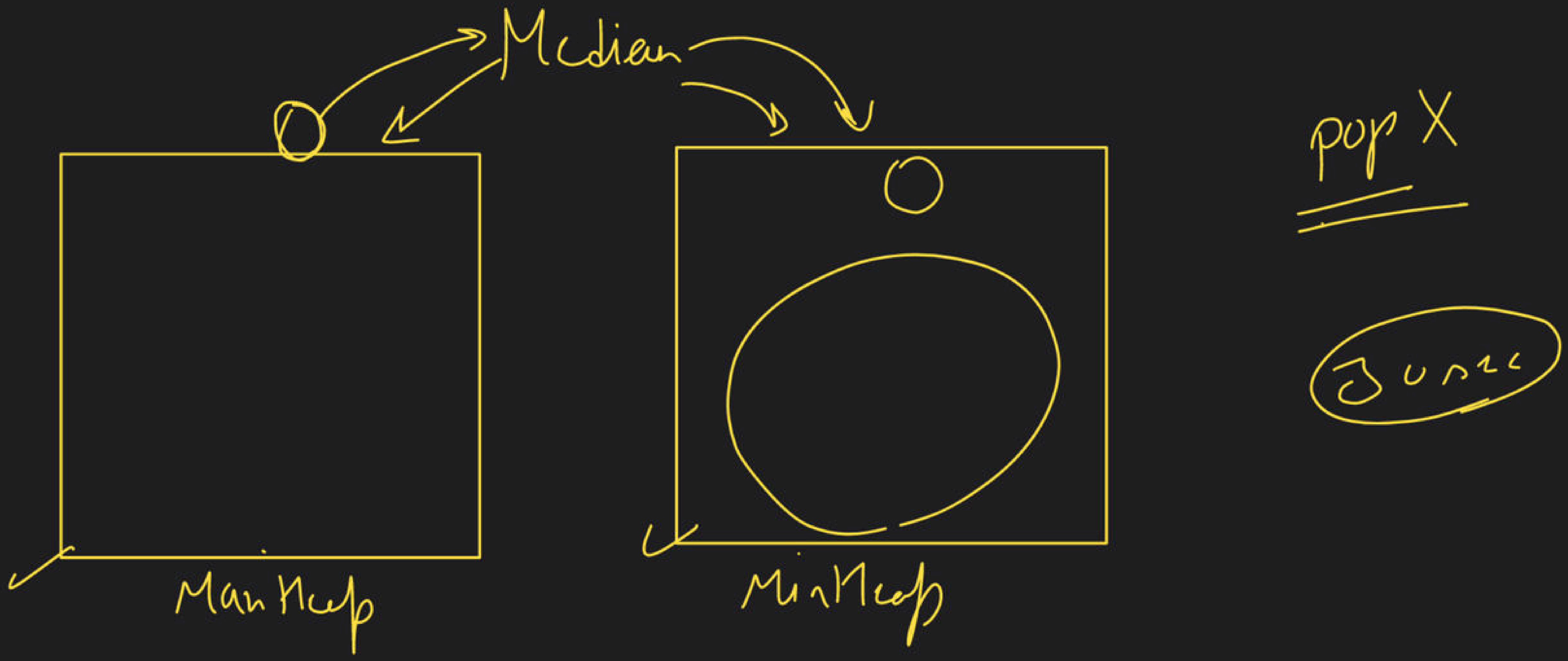
prashma-patel @ macademy.com

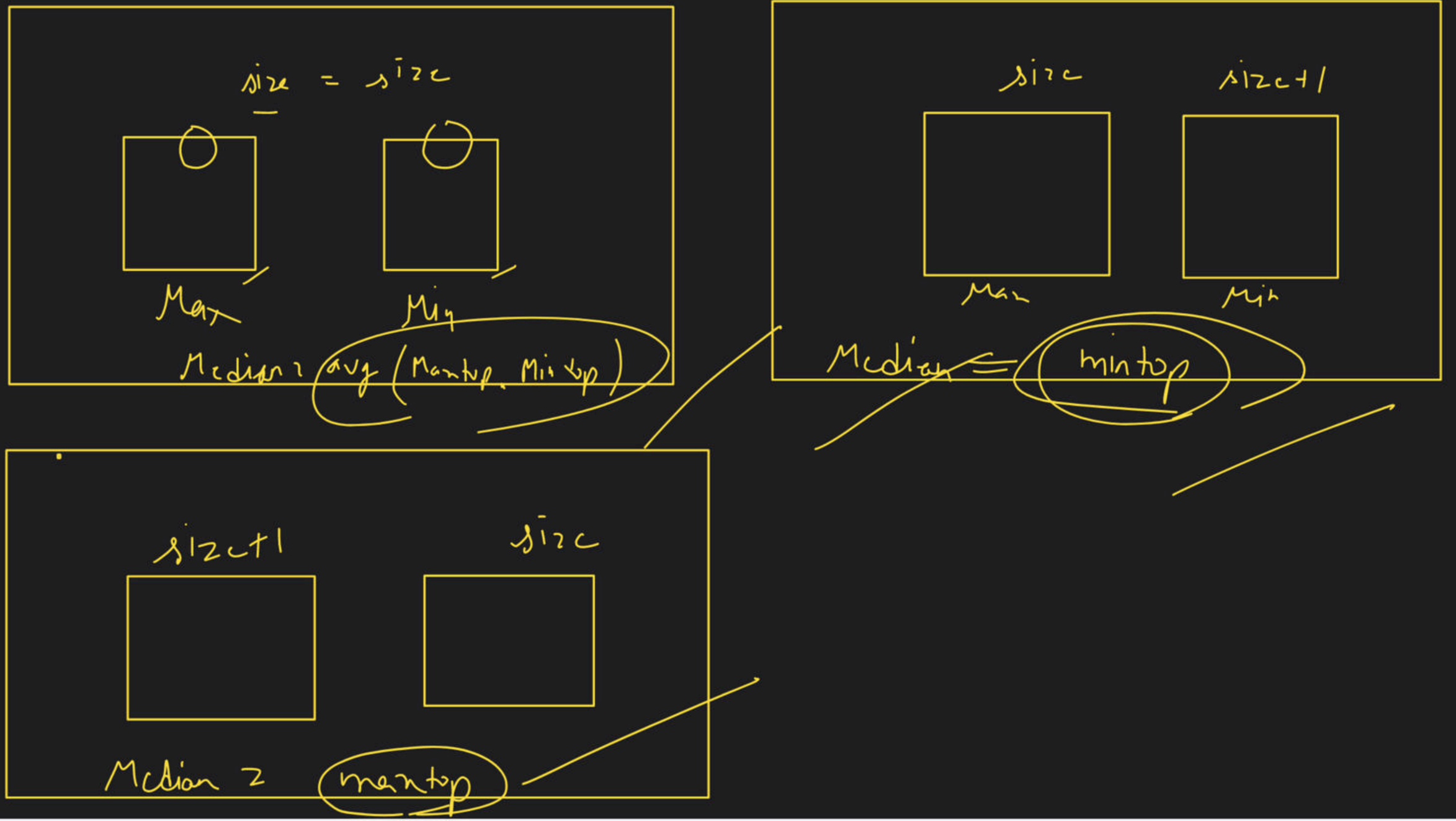
Medians?

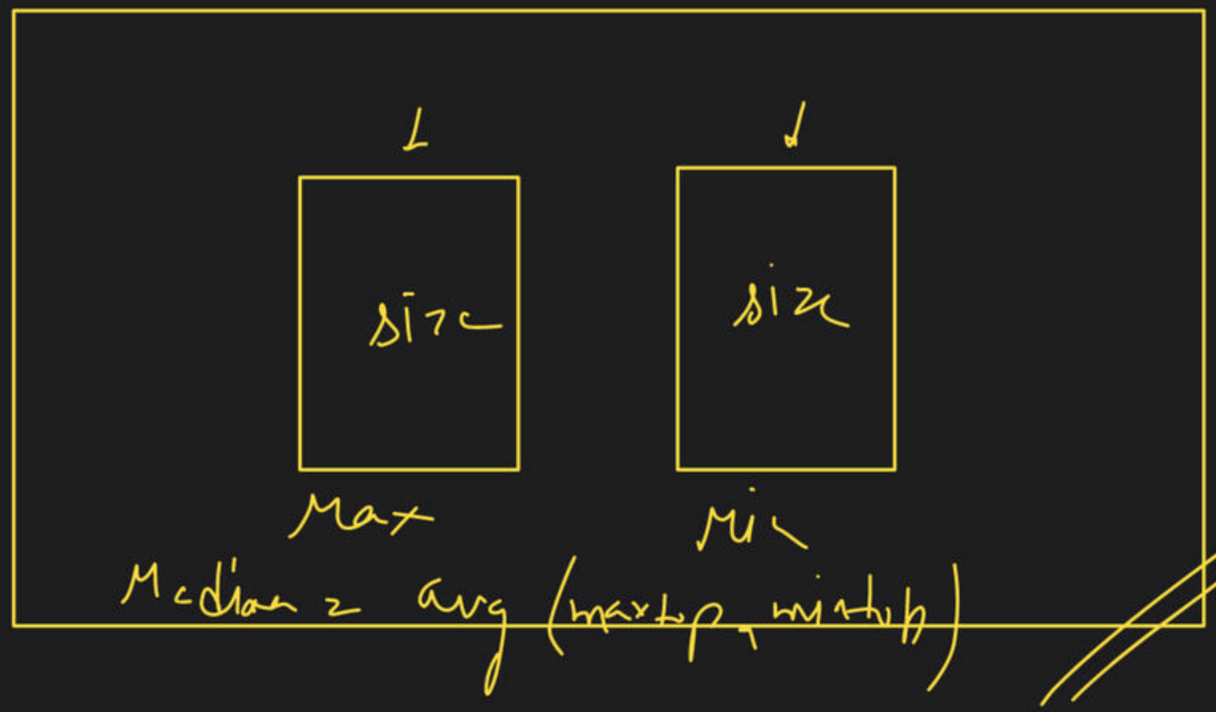



2, 20 11 4 1 8 9 25 - -
#1
Vector
new element push
sort
middle element
median
nlogn
#2
BST
ns
BST creat
Inder
logn
n^2
inorder
mid
O(n)


#3
Heap
Max Heap
Min Heap
n/2
n/2
median
Min + Max


Median
MaxHeap
MinHeap
pop X


size = size
Max
Min
Median = avg (Maxtop, Mintop)
size
size+1
Max
Min
Median = mintop
size+1
size
Median = maxtop



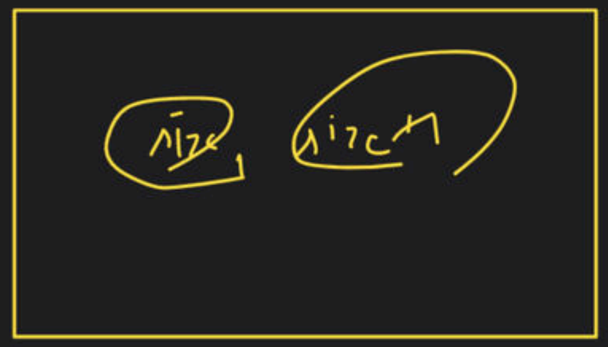
1 new element

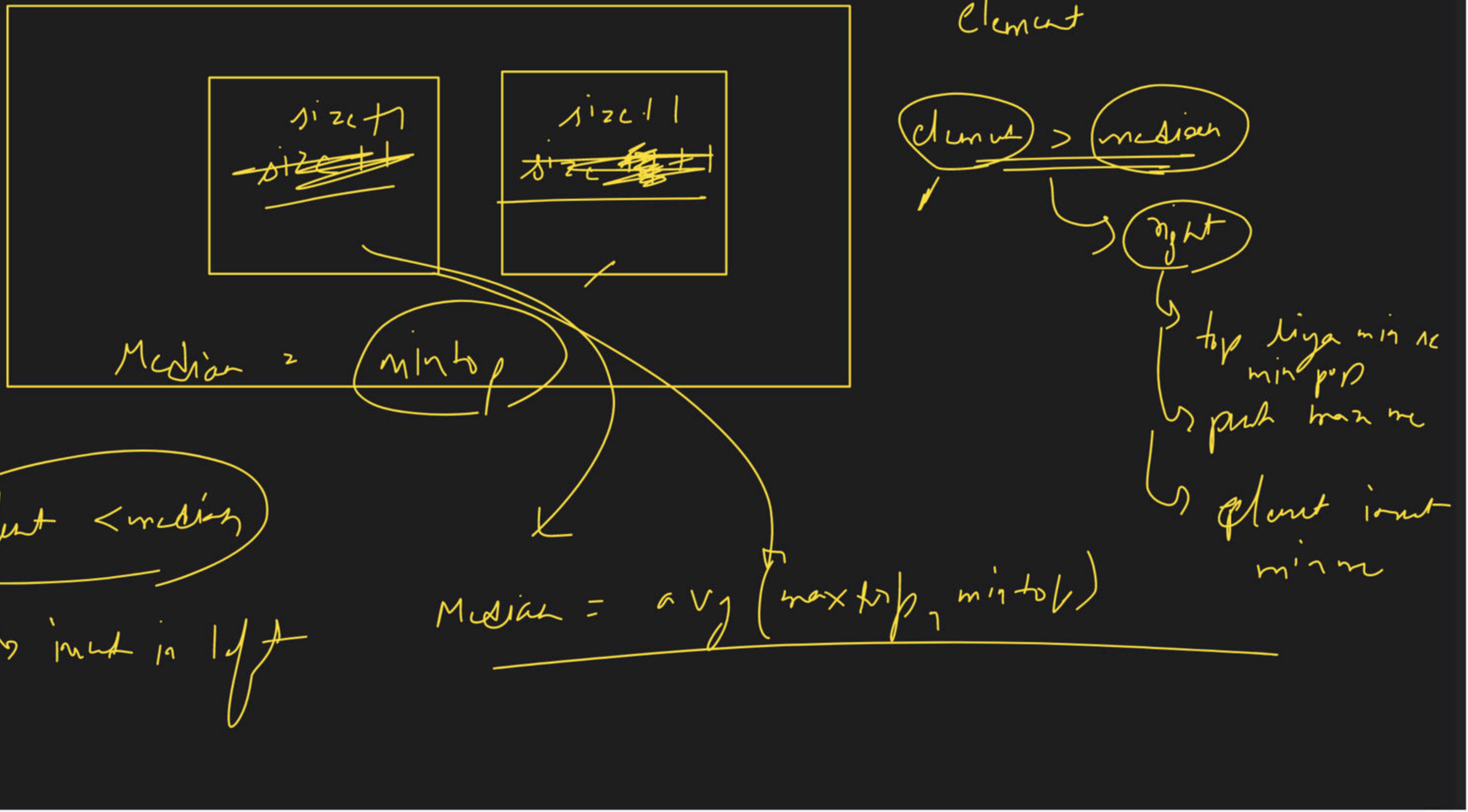
element > median

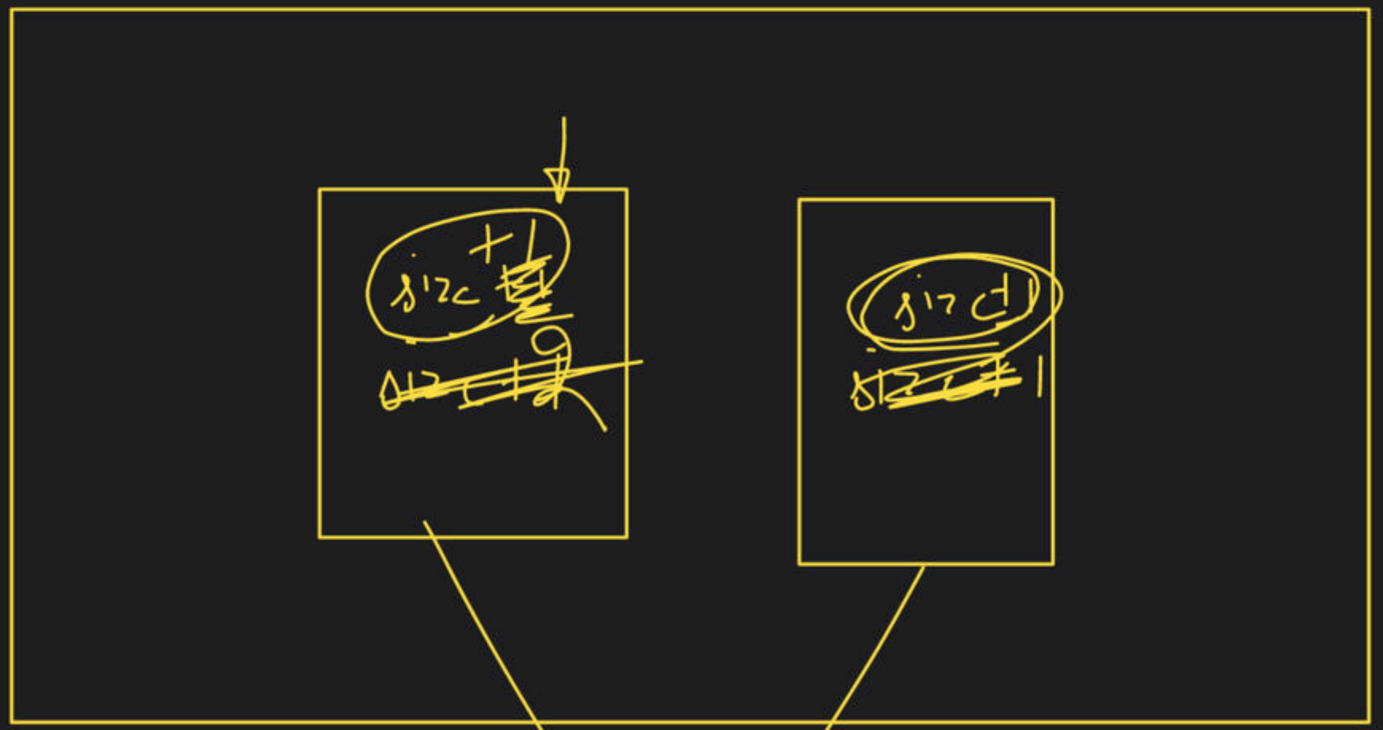
→ insert MinHeap

element < median

→ insert MaxHeap




element
size left
size right
element > median
right
top liya min se
min pop
push max se
element insert
min se
Median = minTop
element < median
insert in left
Median = avg (maxTop, minTop)



Max arr

element

element > median

↳ insert in right

element < median

↳ left

↳ top kiya max se

max.pop

↳ insert top in max

↳ element -> insert left