Queue Class-3

Special class

Love Babbar • Nov 28, 2023

→ First non-repeating character in a stream

L → R

first

i/p → a b a c d f i a b c d z - - - - - - - - - - - -

t → 0 1 2 3 4 5 1 2 8 9 10 11

t = 0 ① ⇒ a → any = a

t = 1 ⇒ a b → "a"

t = 2 ⇒ a b → "b"

t = 3 ⇒ a b a c → "b"

t = 4 2 → a b a c d → "b"

frequency ( )

pre-computation

X

i/p → a b a b c - - -

a → 1 2

b → 1 2

c → 1

→ t = 0 → a → a

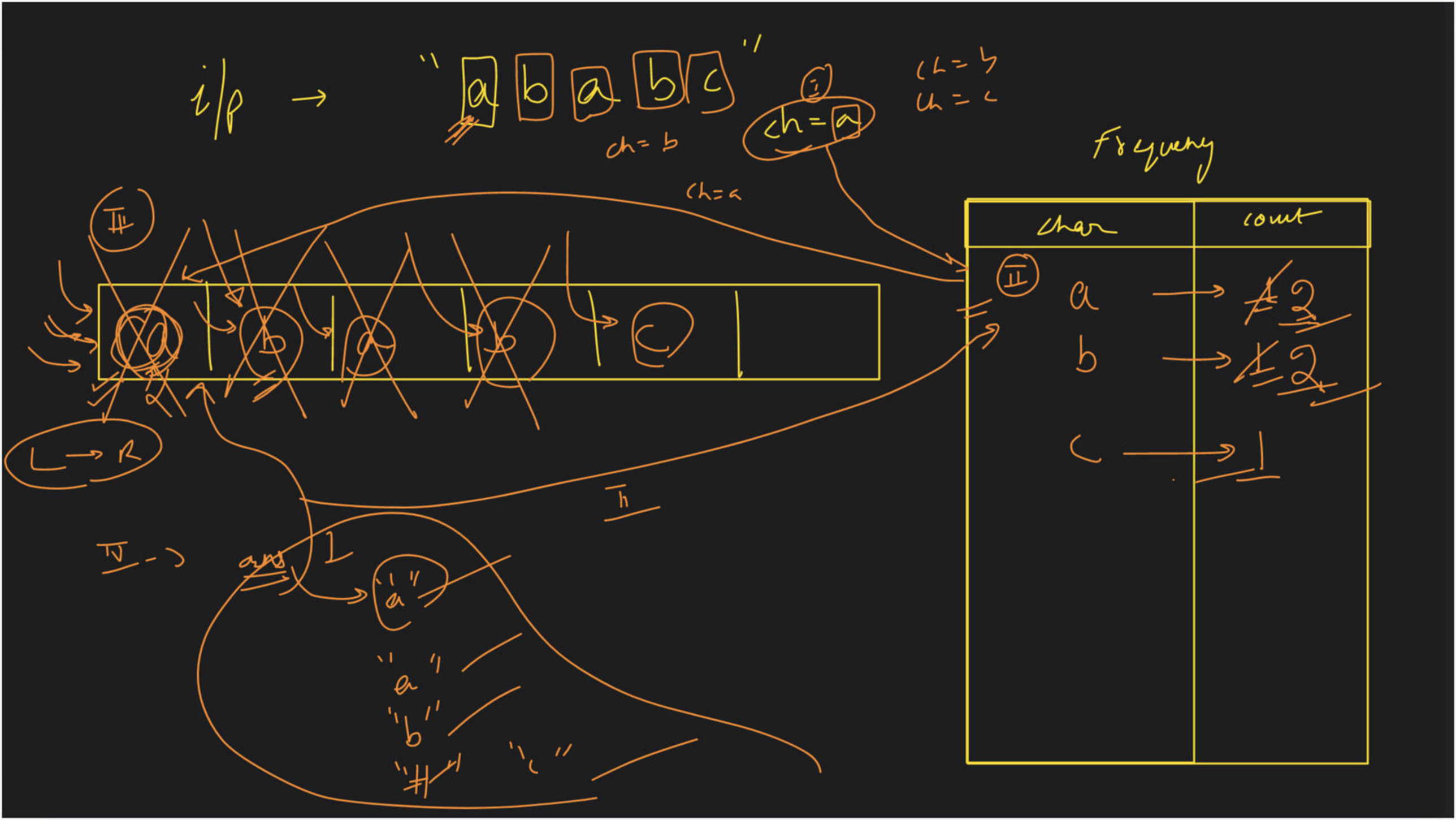
t = 1 → ab → a

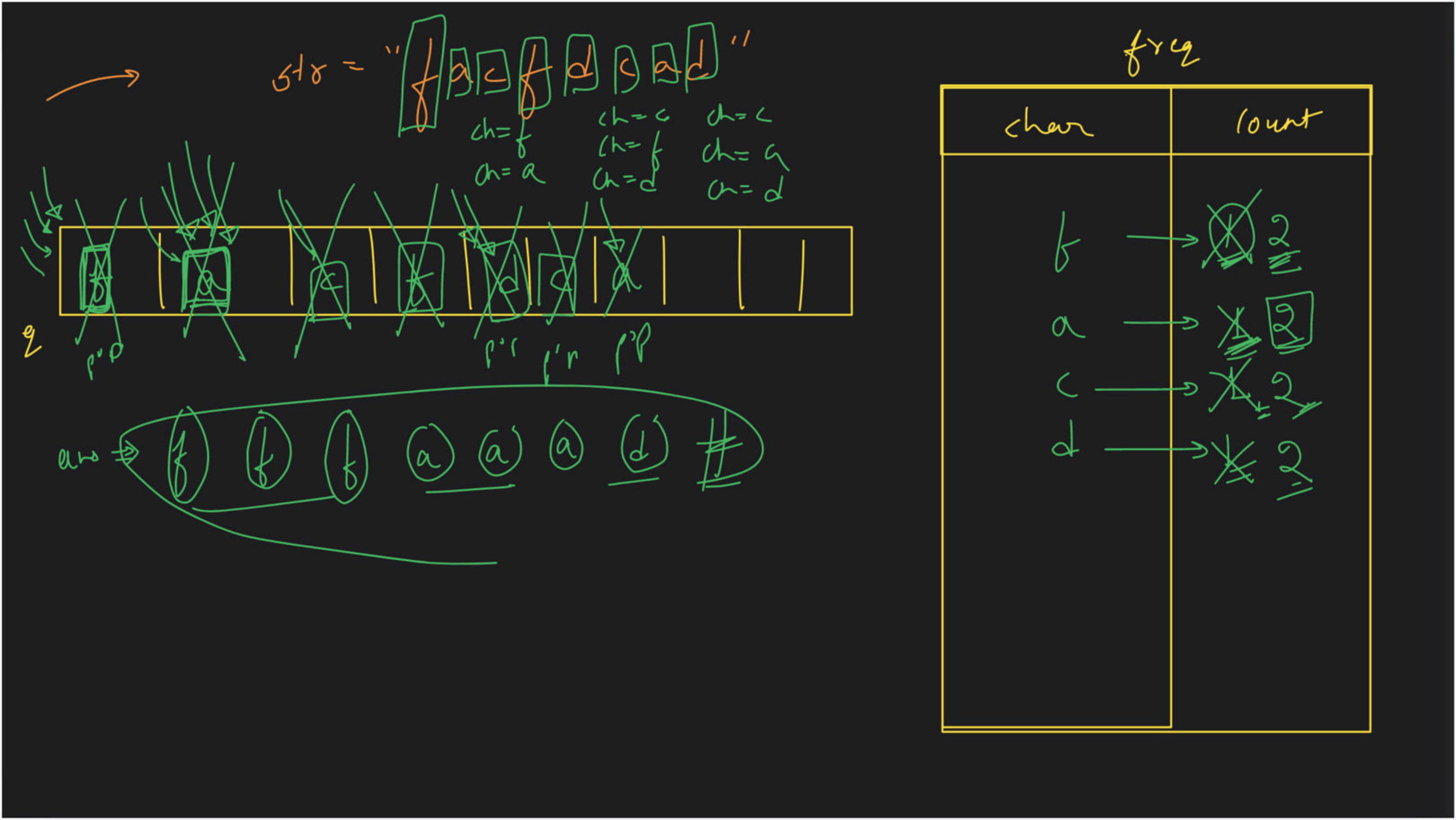
t = 2 → aba → b

t = 3 → abab → #

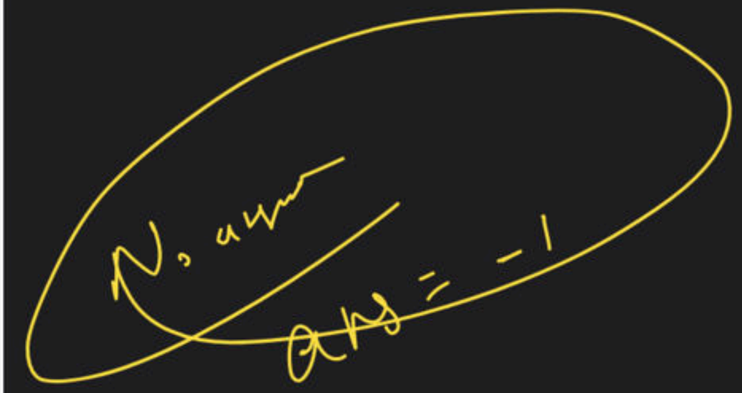
t = 4 → ababc → c

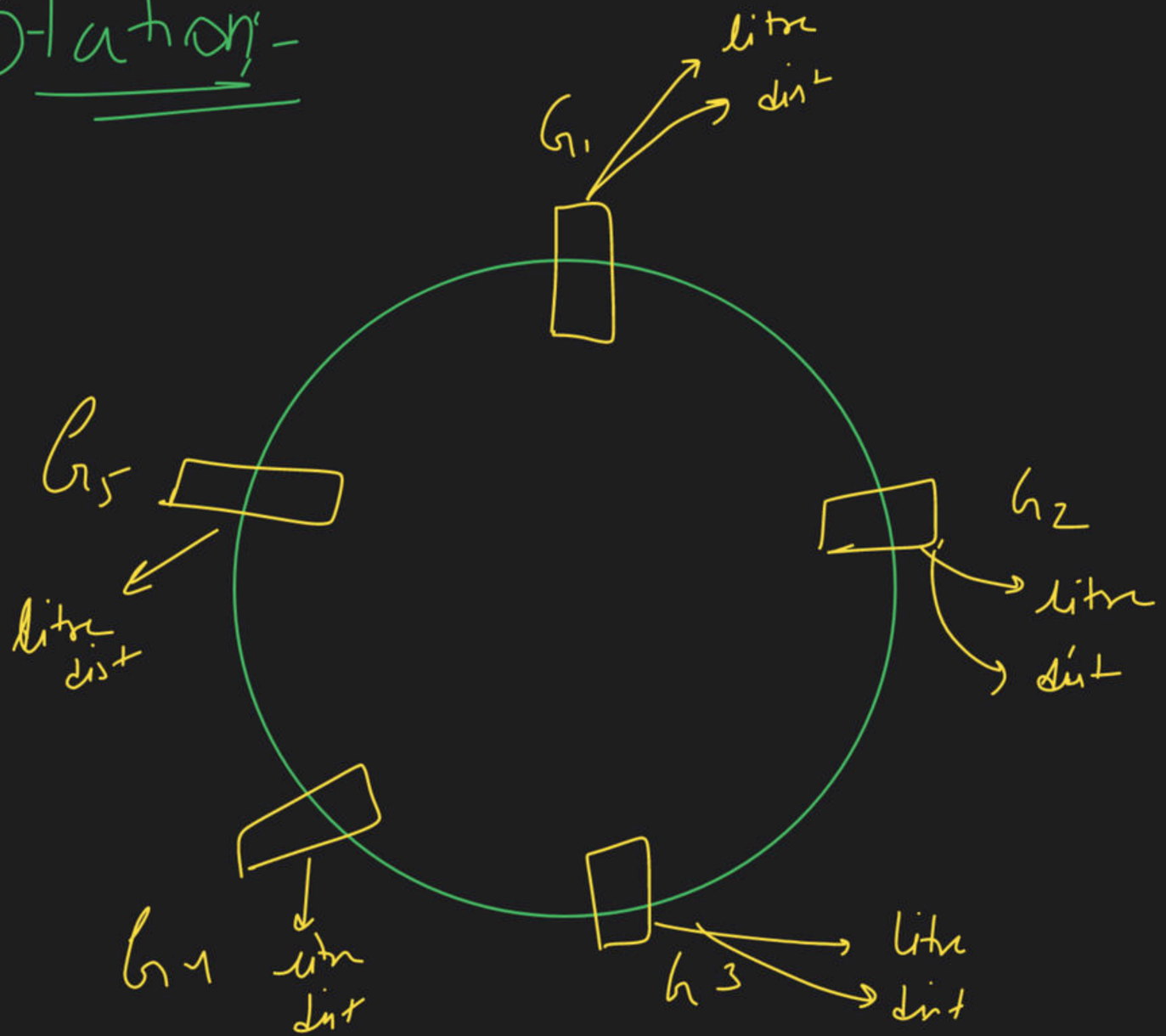
aab#c

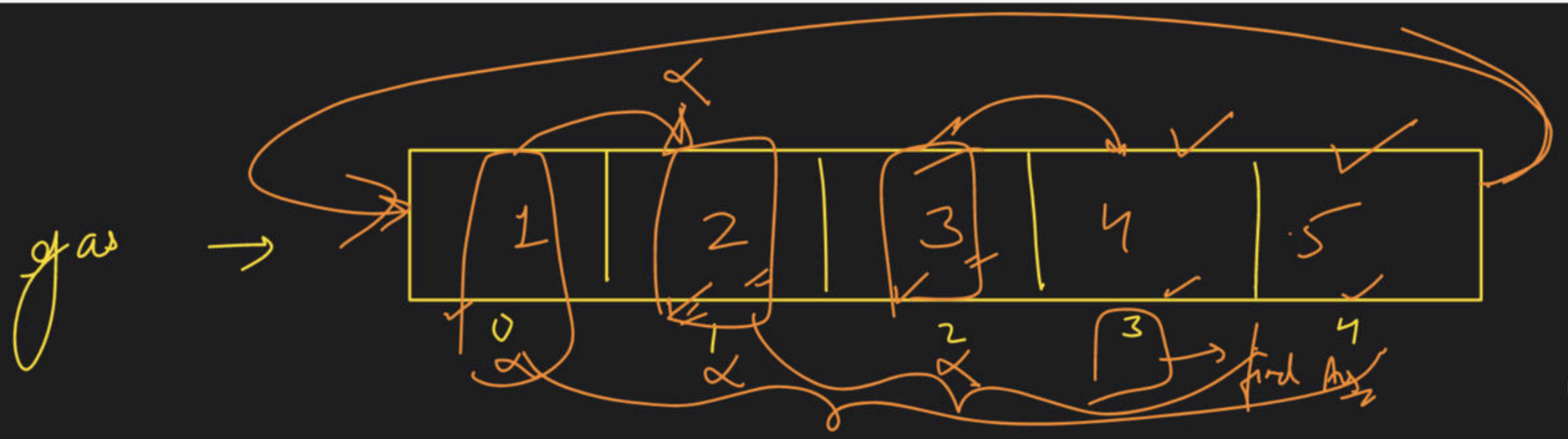

i/p → "ababc"
ch = a
ch = b
ch = c
Frequency
char
count
a → 2
b → 2
c → 1
L → R
ans
"a"
"b"
"c"
"#"


str = "fbcfdsad"
ch=f
ch=a
ch=c
ch=f
ch=d
ch=c
ch=a
ch=d
q
pop
pop
pop
freq
char
count
f
a
c
d
2
2
2
1

⇒ Gas Station :-


No. cars
Gas = -1


G1
litre
dist
G2
litre
dist
G3
litre
dist
G4
litre
dist
G5
litre
dist



$O(n^2)$

#1 Brute check karlo

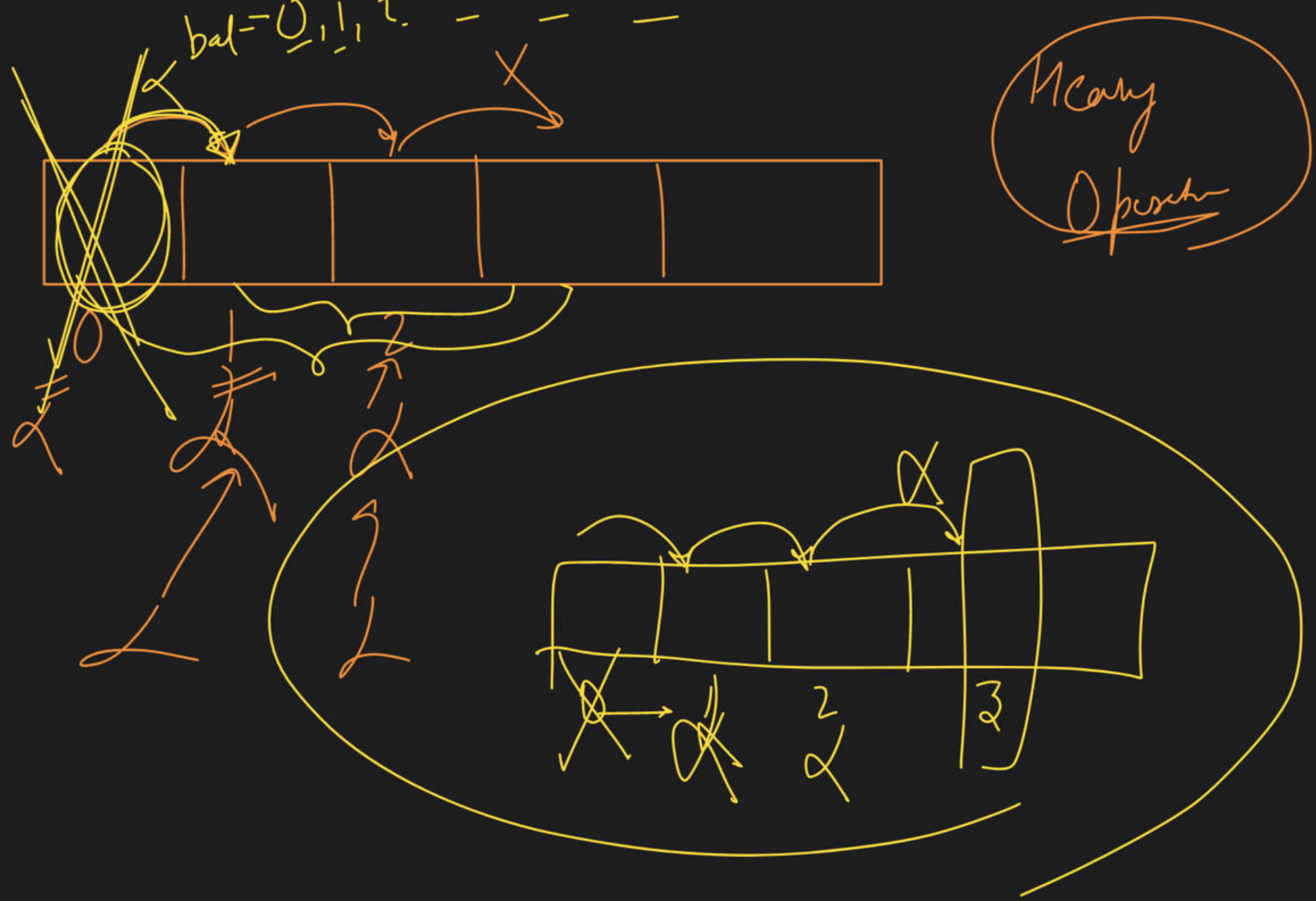
2^{nd} index → gas = 4, dist = 1

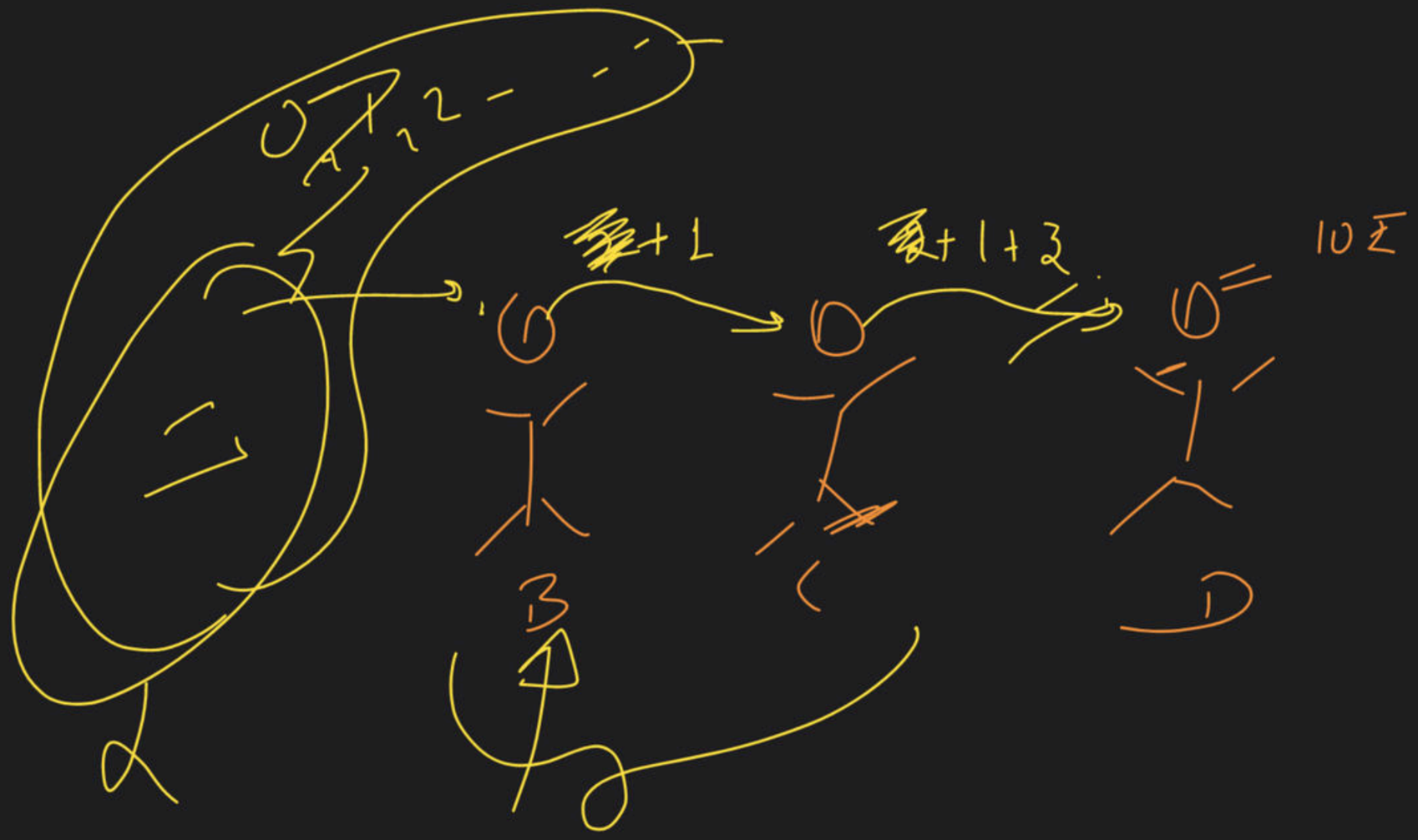
4^{th} idx → gas = 13 = 8, dist = 2, bal = 3

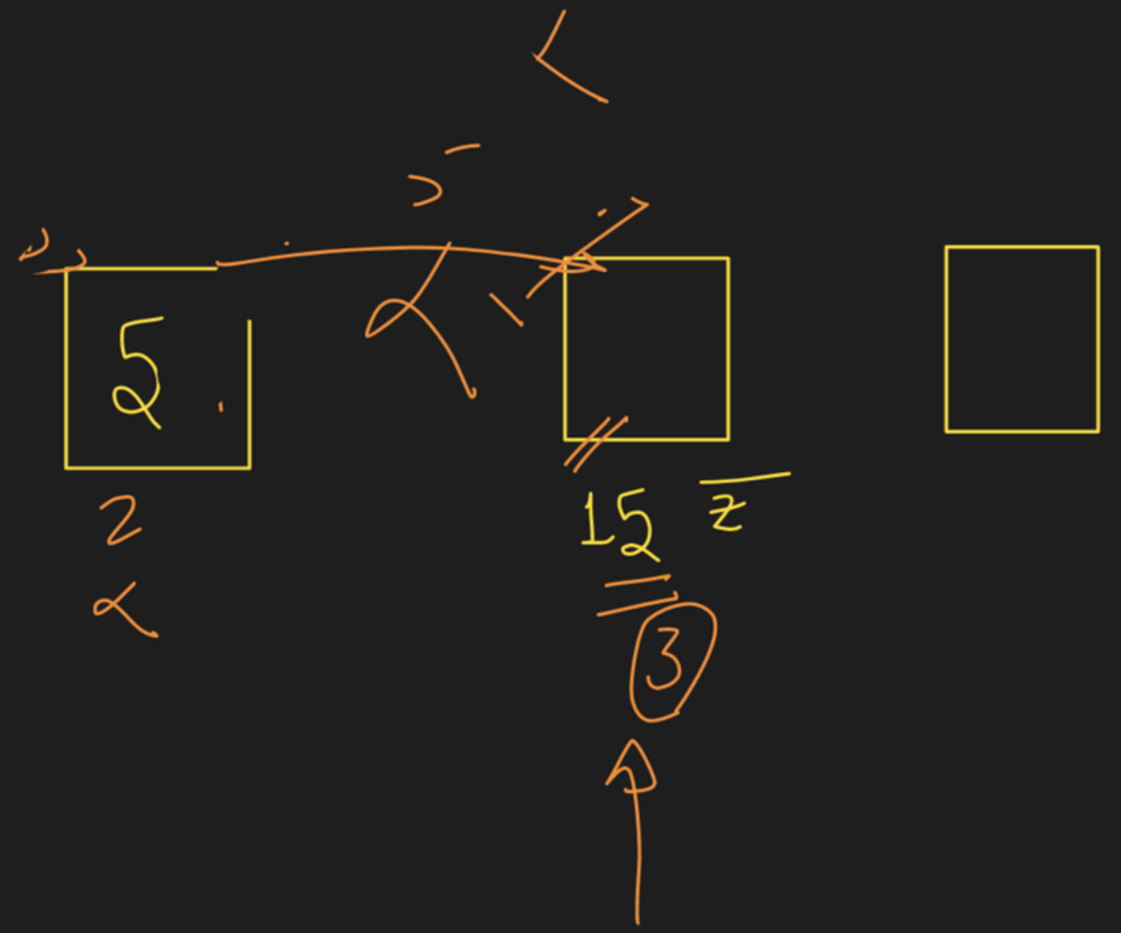
bal = 2, $2^4 = 8 \to 12$, d = 1, 3 ✓ 1

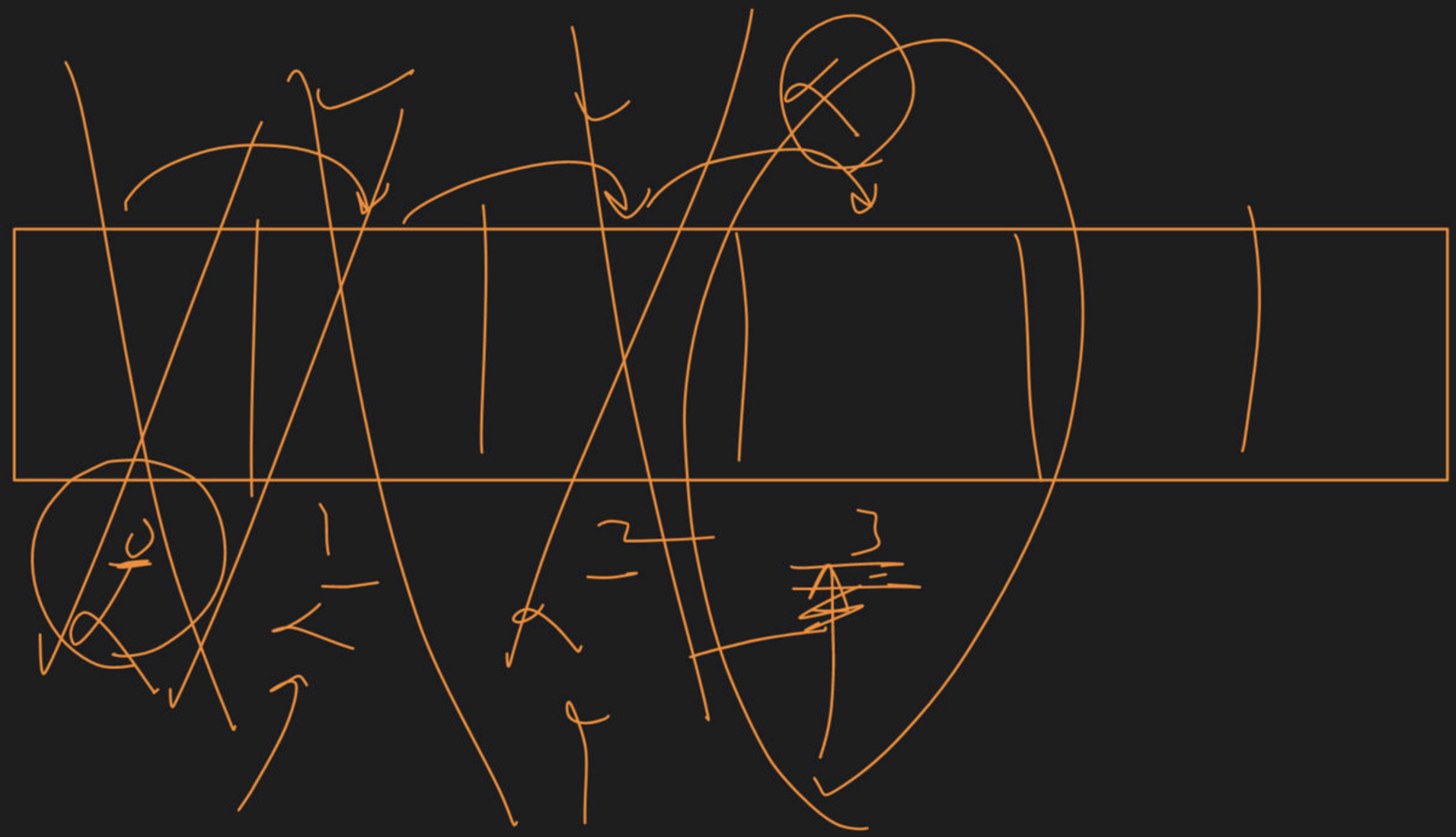
bal = 6, 0 → 1 + 6 = 7, d = 3, bal = 4

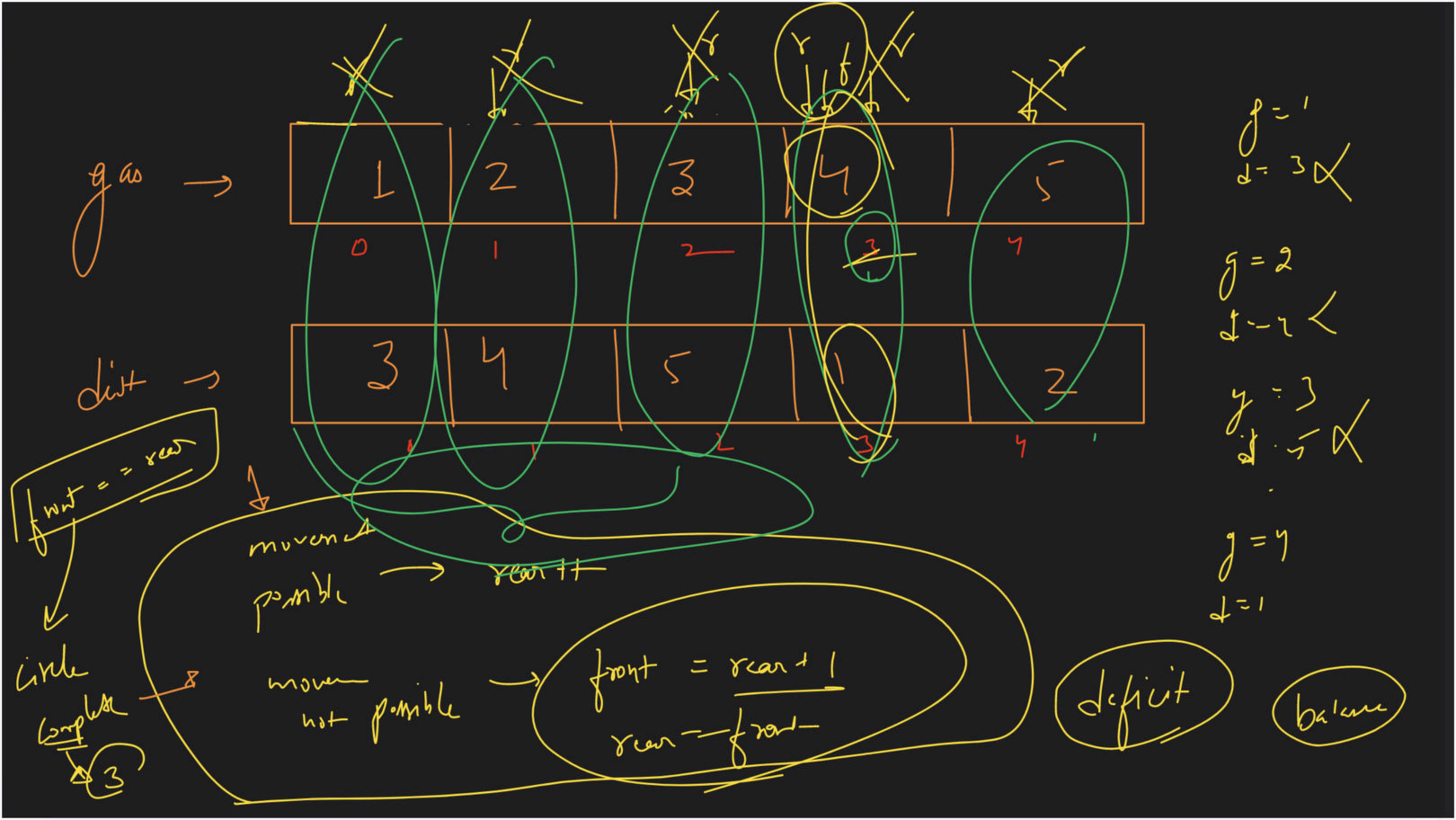
idx - 2 + 4 = 6, d = 1, bal = 2

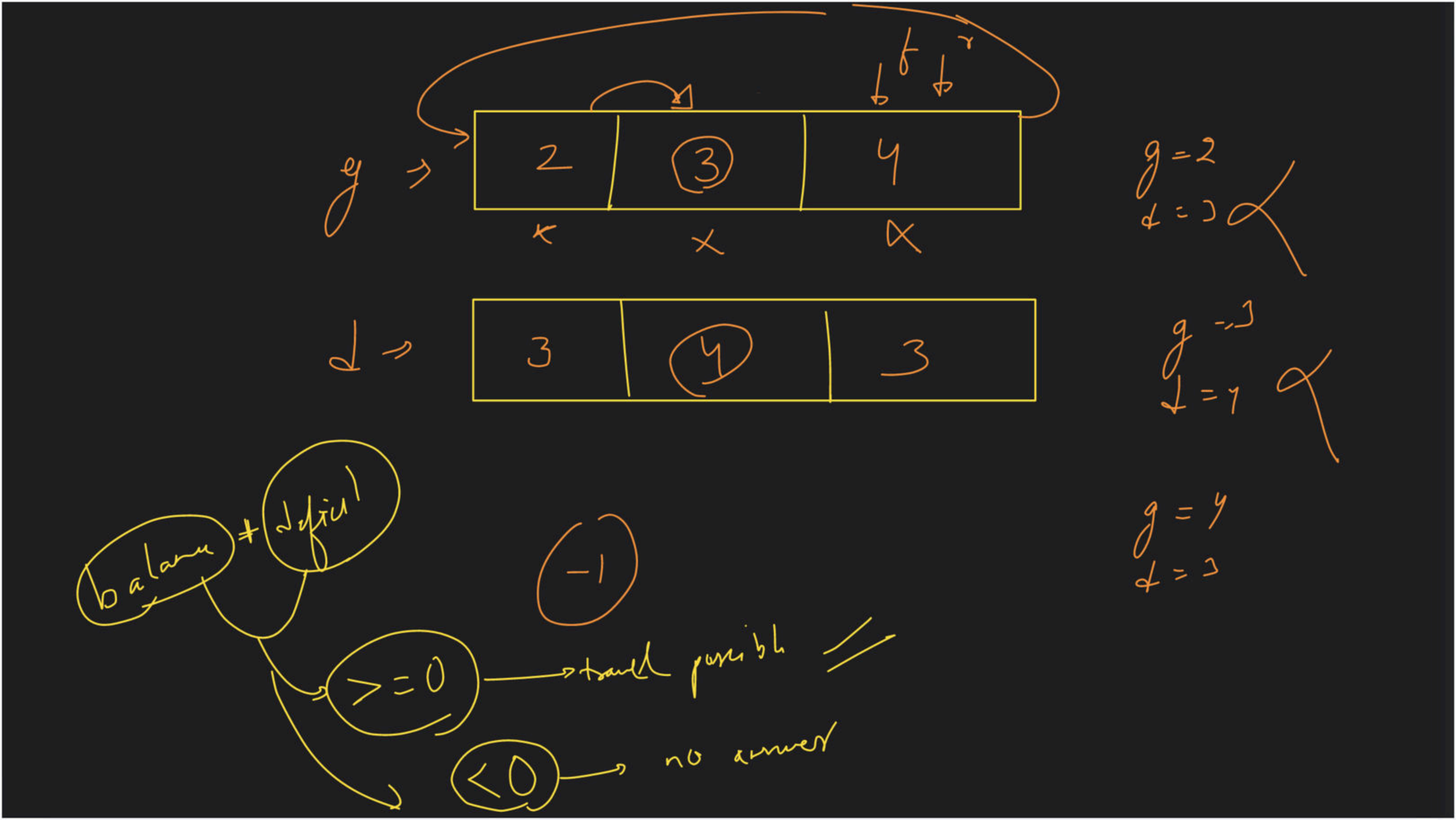

bal=0,1,2
X
Memory
Operation
0
1
2
3

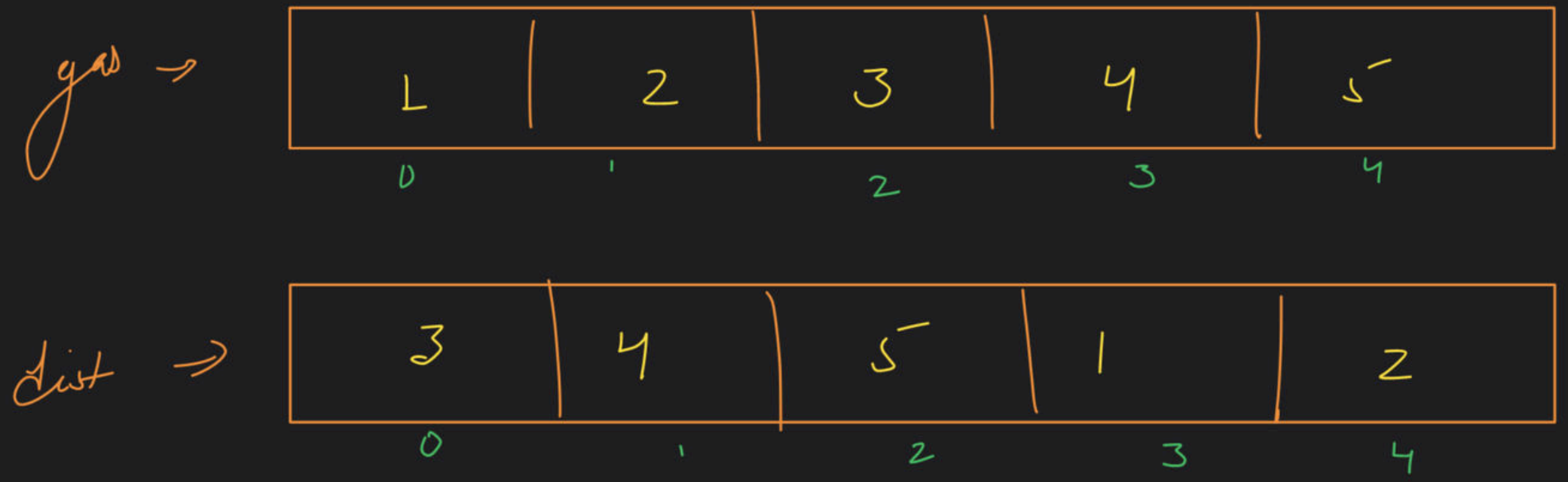

A
B
C
D
+1
+1+3
10Σ


5
2
15
z
3

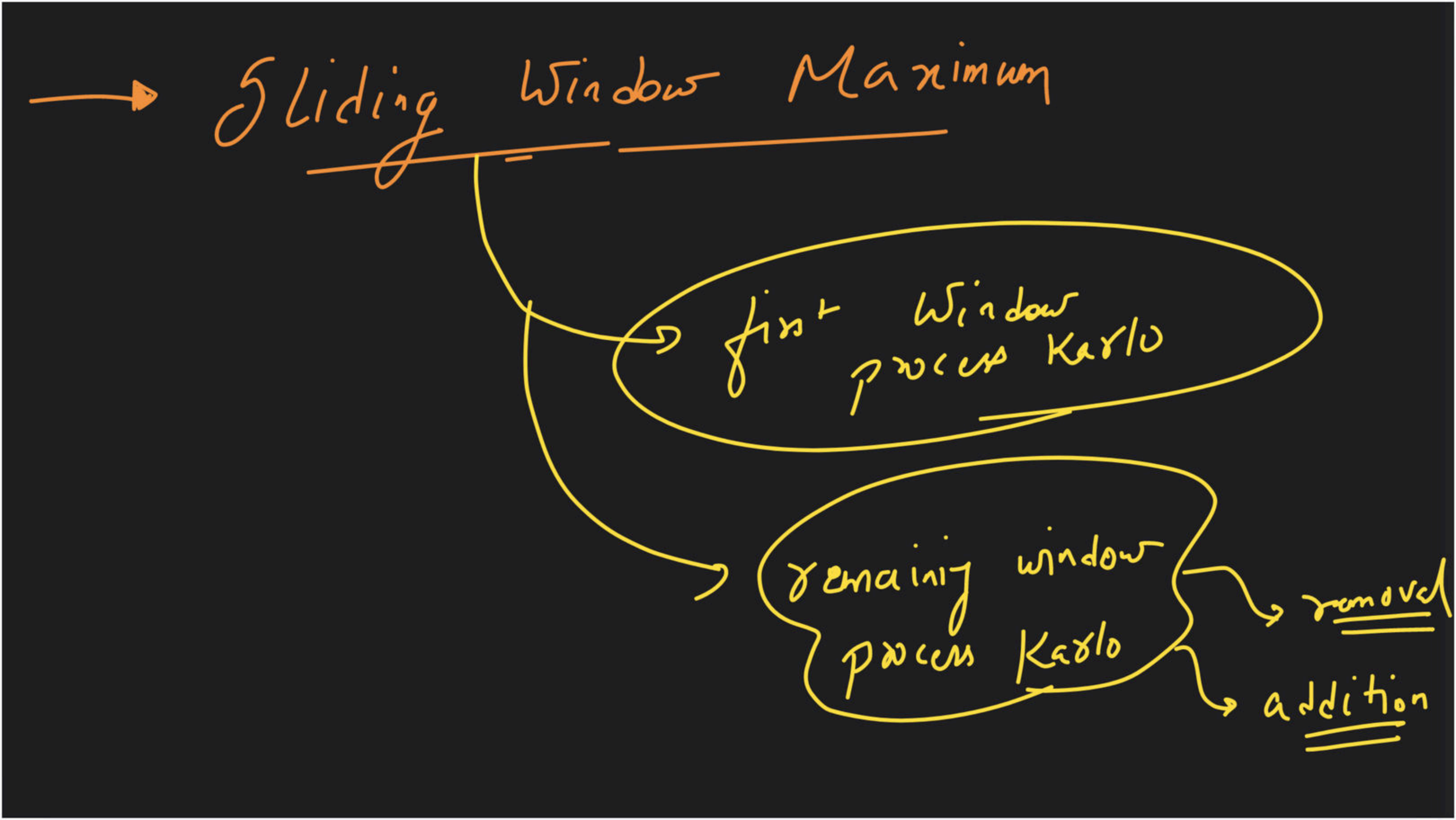


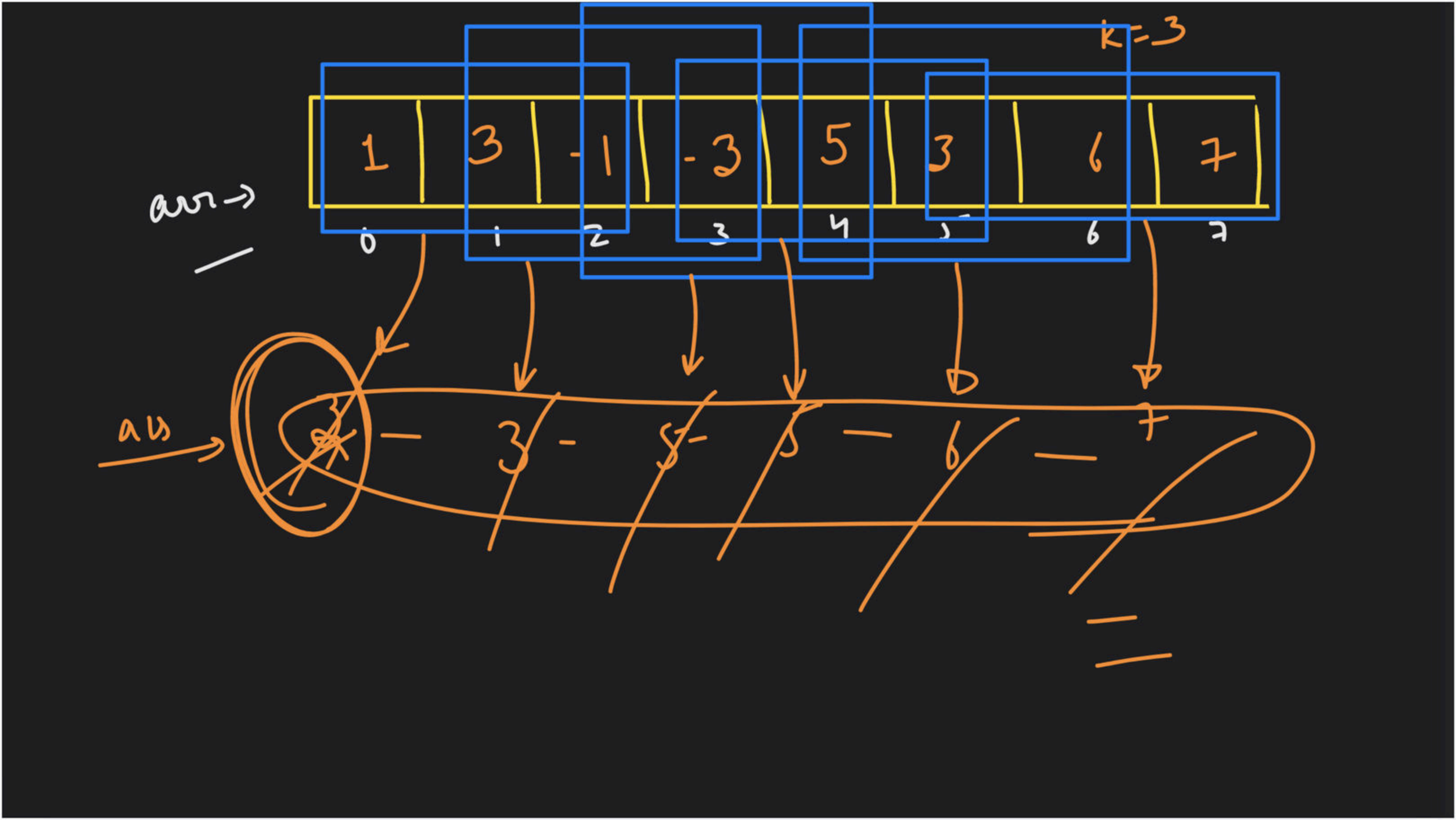

gas →
1 2 3 4 5
0 1 2 3 4
dist →
3 4 5 1 2
0 1 2 3 4
front == rear
circle complete
3
movement possible
rear++
movement not possible
front = rear + 1
rear = front
deficit
balance
g = 1
d = 3 ✗
g = 2
d = -2 ✓
g = 3
d = -5 ✗
g = 4
d = 1

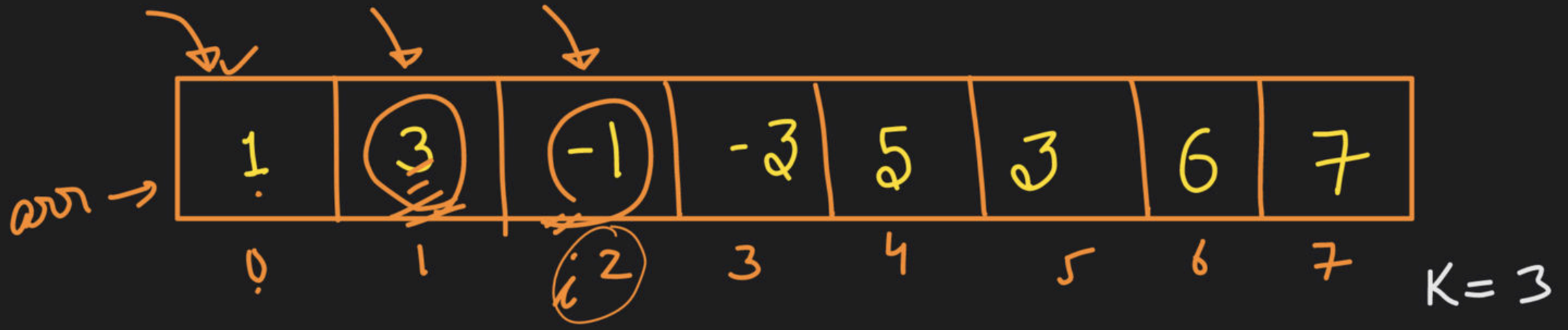

g =>
2
3
4
l r
g = 2
d = 3
d =>
3
4
3
g = 3
d = 1
balance + deficit
-1
>=0
check possible
<0
no answer
g = 4
d = 3

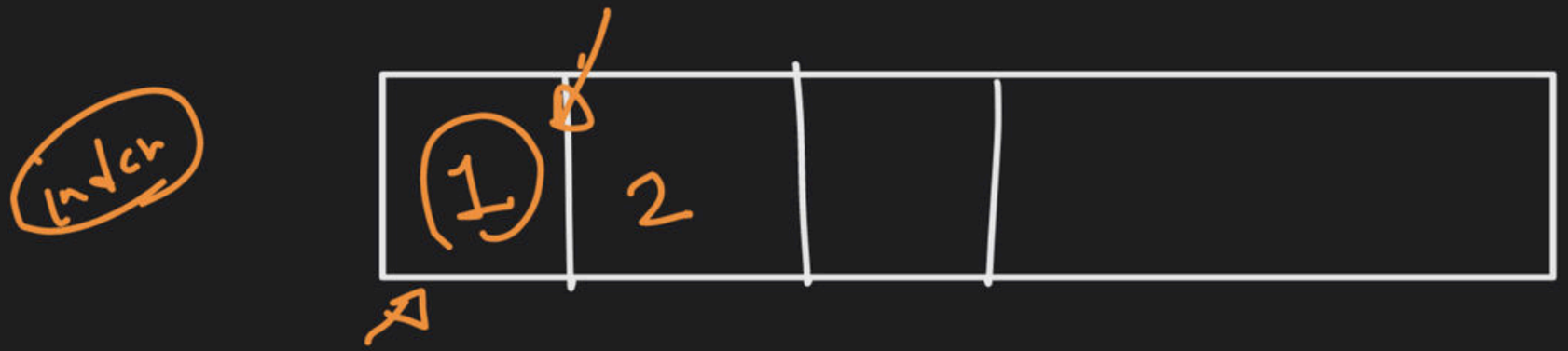

gas
1
2
3
4
5
0
1
2
3
4
dist
3
4
5
1
2
0
1
2
3
4


5 min
Break

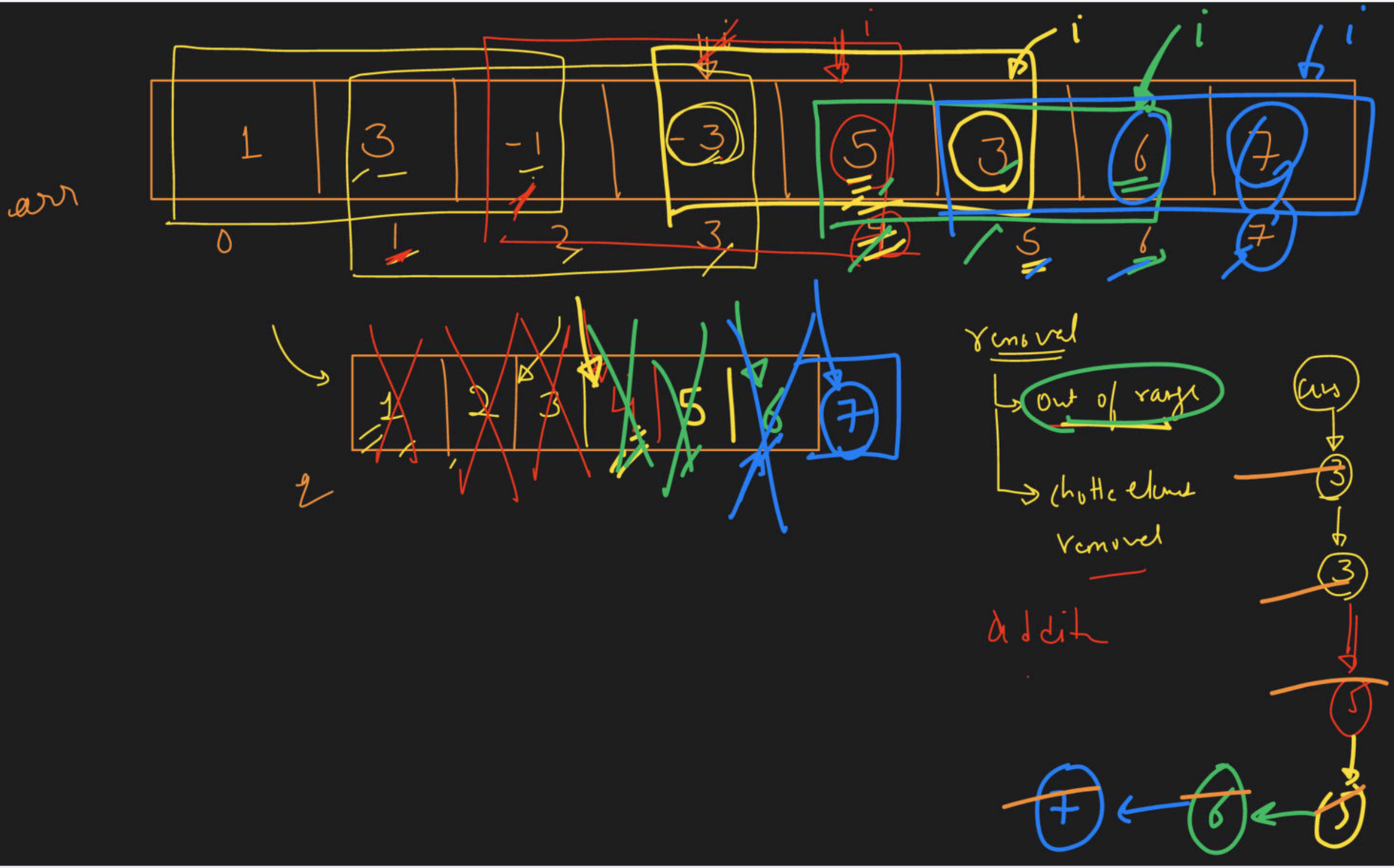

Sliding Window Maximum
first Window process Karlo
remaining window process Karlo
removal
addition


k=3
1
3
-1
-3
5
3
6
7
arr →
0
1
2
3
4
5
6
7
als →





(1) process first window of size "K" → ans → 3


arr
1
3
-1
-3
5
3
6
7
0
1
2
3
5
6
7
i
i
i
i
i
2
1
2
3
5
7
removal
Out of range
Choose element
removed
Addith
cus
3
3
5
7
6
5