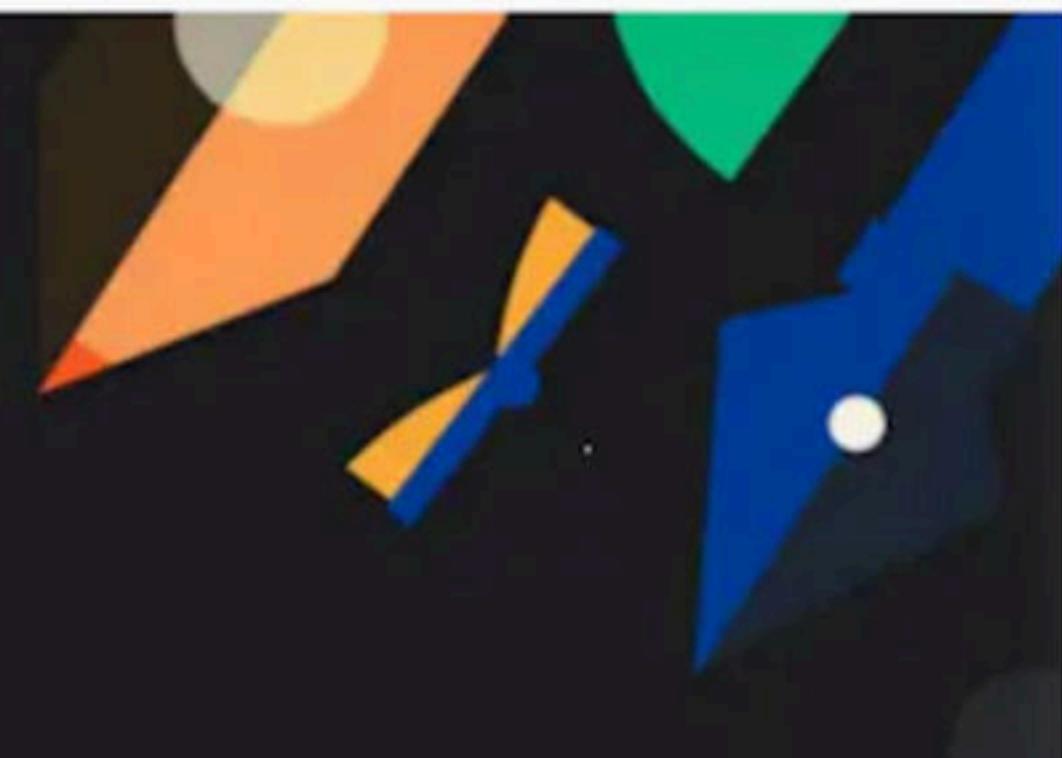


Hashmap & Tries



# Doubt Class With Lakshay Bhaiya

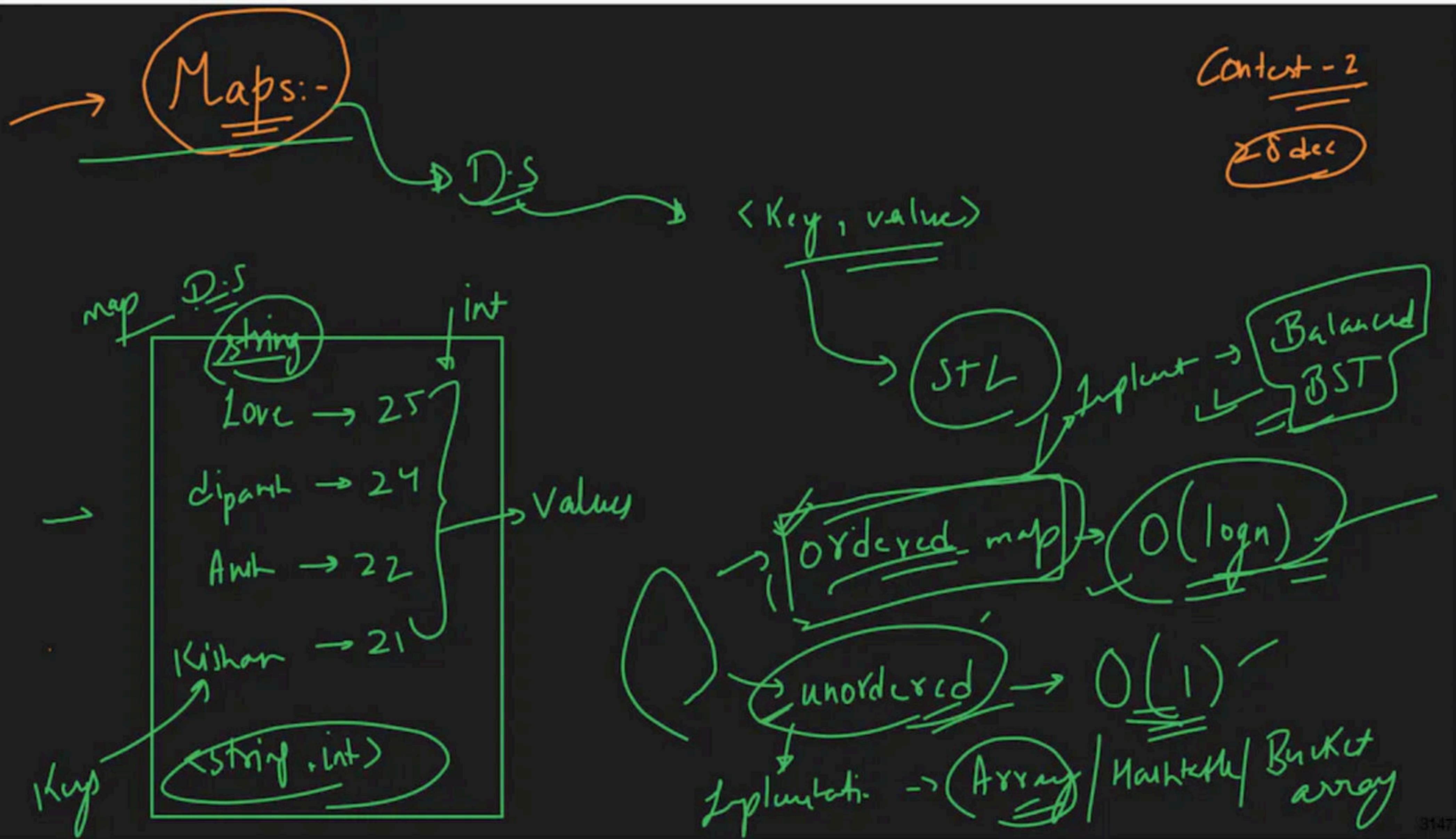
Special class



# Hashmaps & Tries - Class 1

Special class

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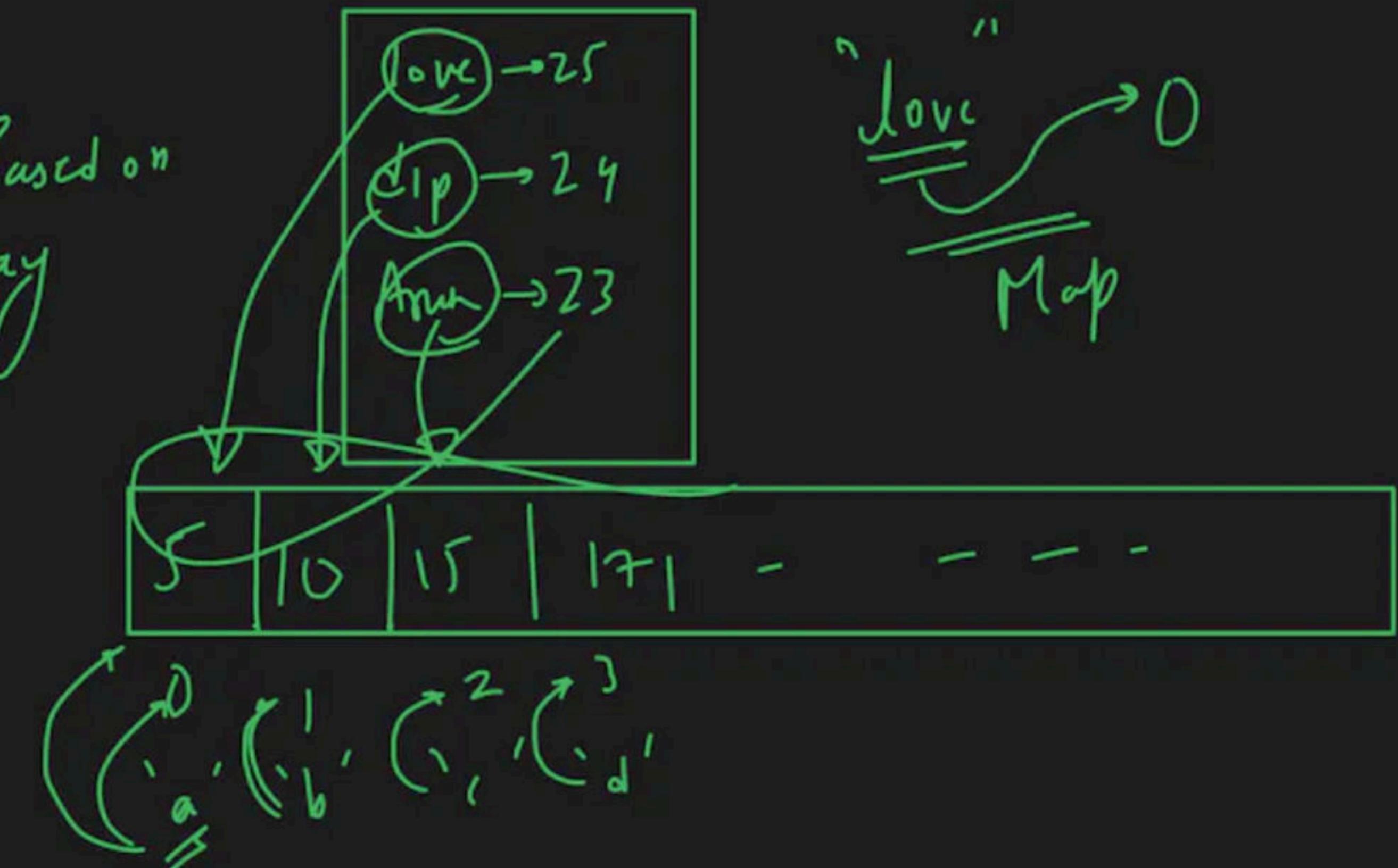


Unordered-map

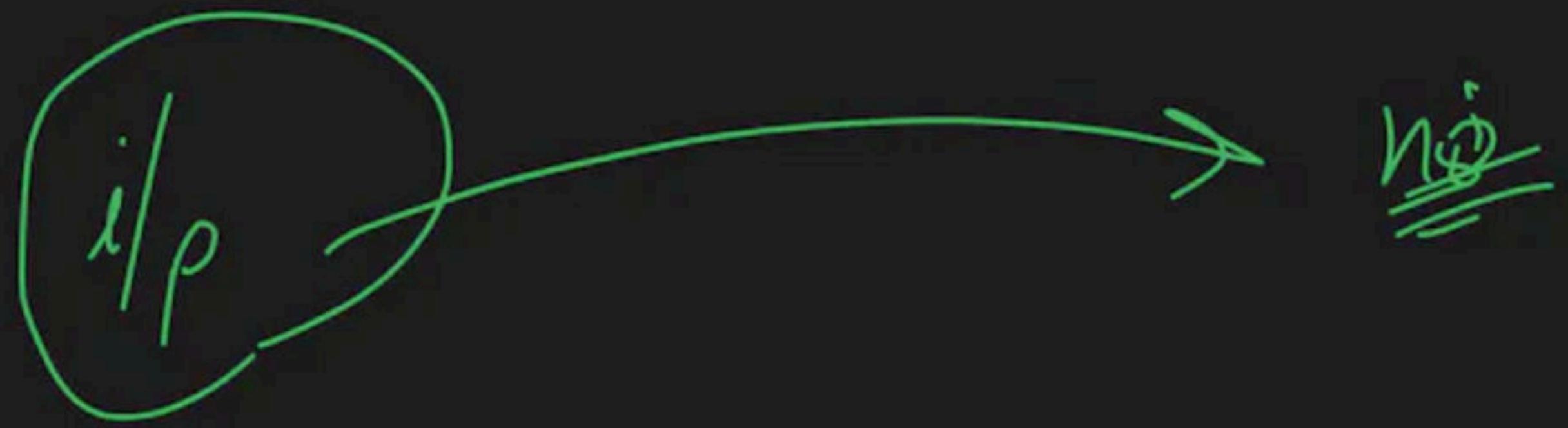
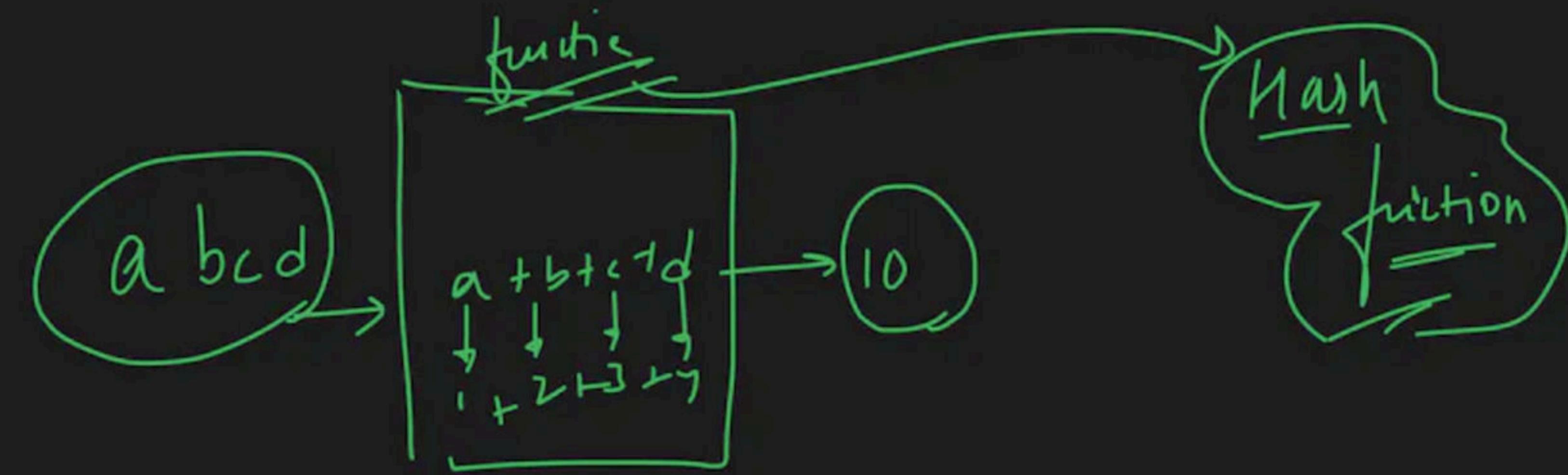


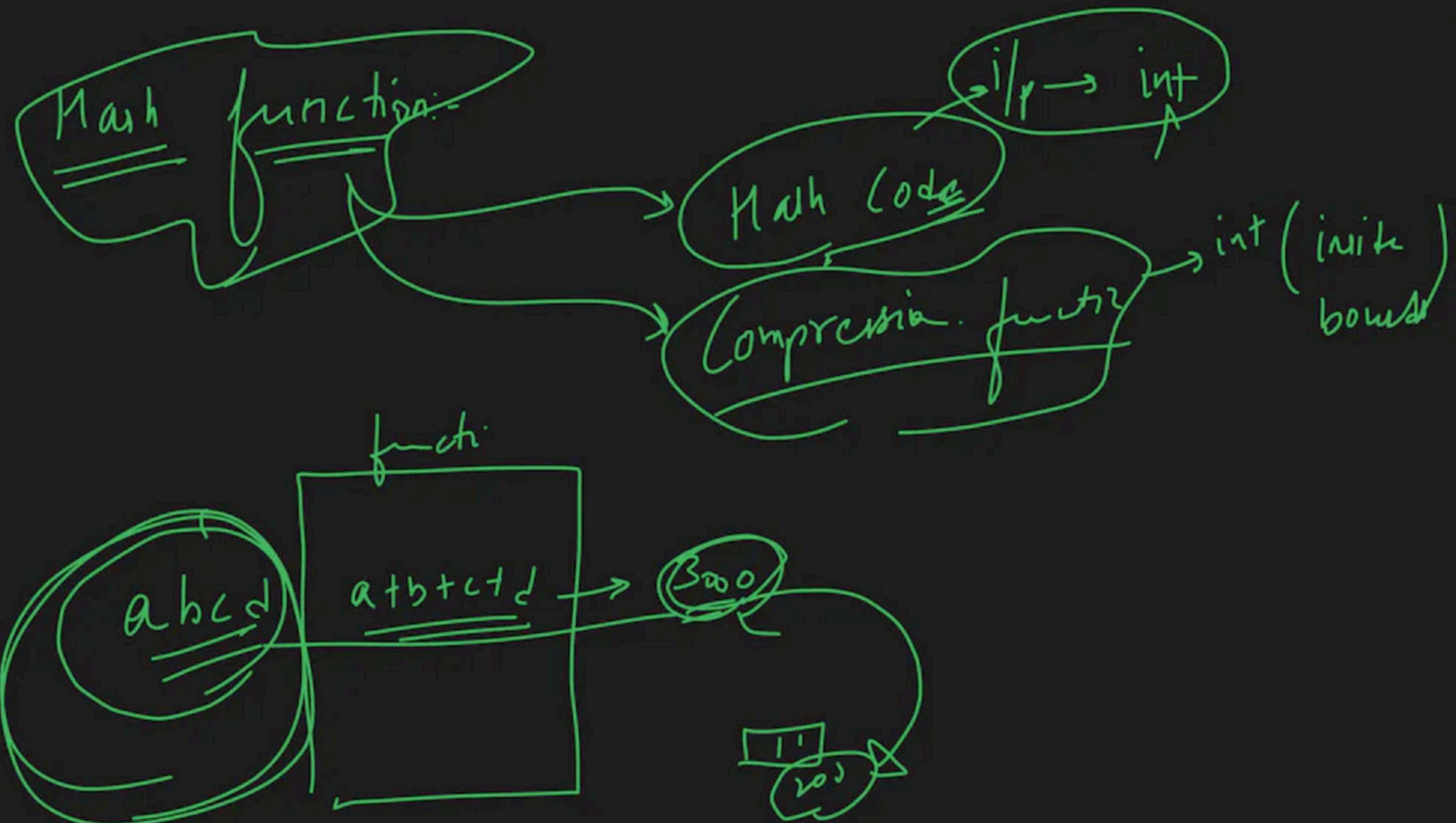
Based on  
Array

$a \rightarrow 5$   
 $b \rightarrow 10$   
 $c \rightarrow 15$   
 $d \rightarrow 17$   
 $e \rightarrow 19$



$i + 1 \alpha'$





Unordered-map < pair<int, int>, int,  $\rightarrow$  mp;

map

Hash fn,  $\Rightarrow$  D

✓ map < pair<int, int> mp; ✓

int =



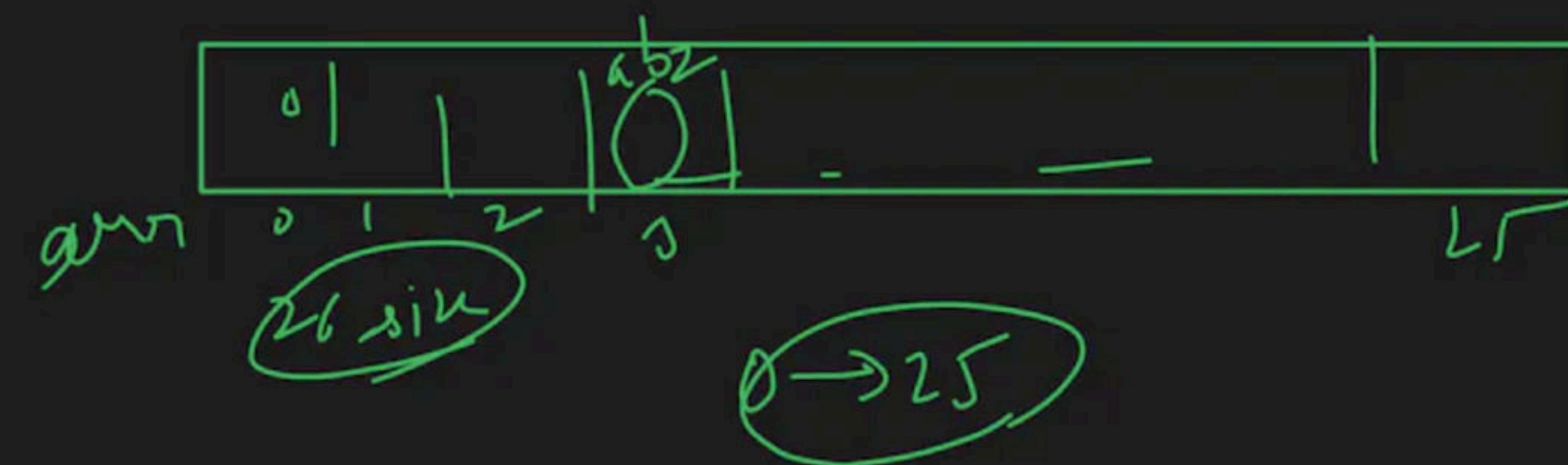
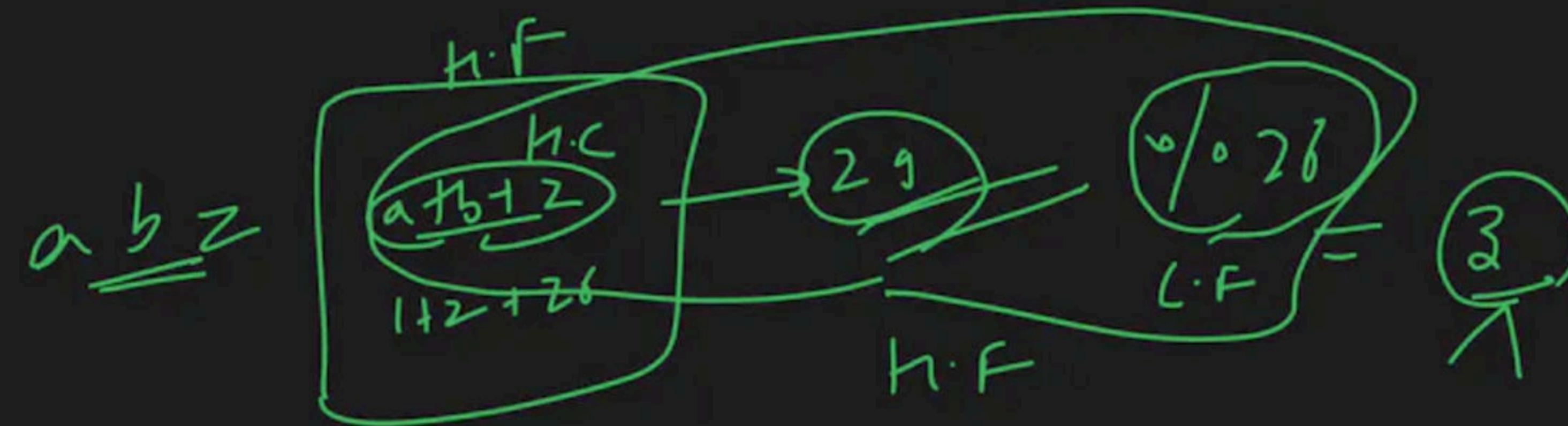
$a * 5 + b$

fn (int<sub>a</sub>, int<sub>b</sub>)

{

hash =  $a^b$ ;

}



abc

$$1 \times a + 2 \times b + 3 \times c$$

$$\begin{matrix} 1 \times 1 + 2 \times 1 + 1 \\ 1 + 2 + 1 \end{matrix}$$

17

17

key wise  
sorted

Map

a	15
b	5
m	300
n	10

z	10
b	5
a	15
m	300

H|F

babbay  
babbbab

b+a+b+b+a+r

2+1+2+2+1+18

r+a+b+b+a+b

28

int

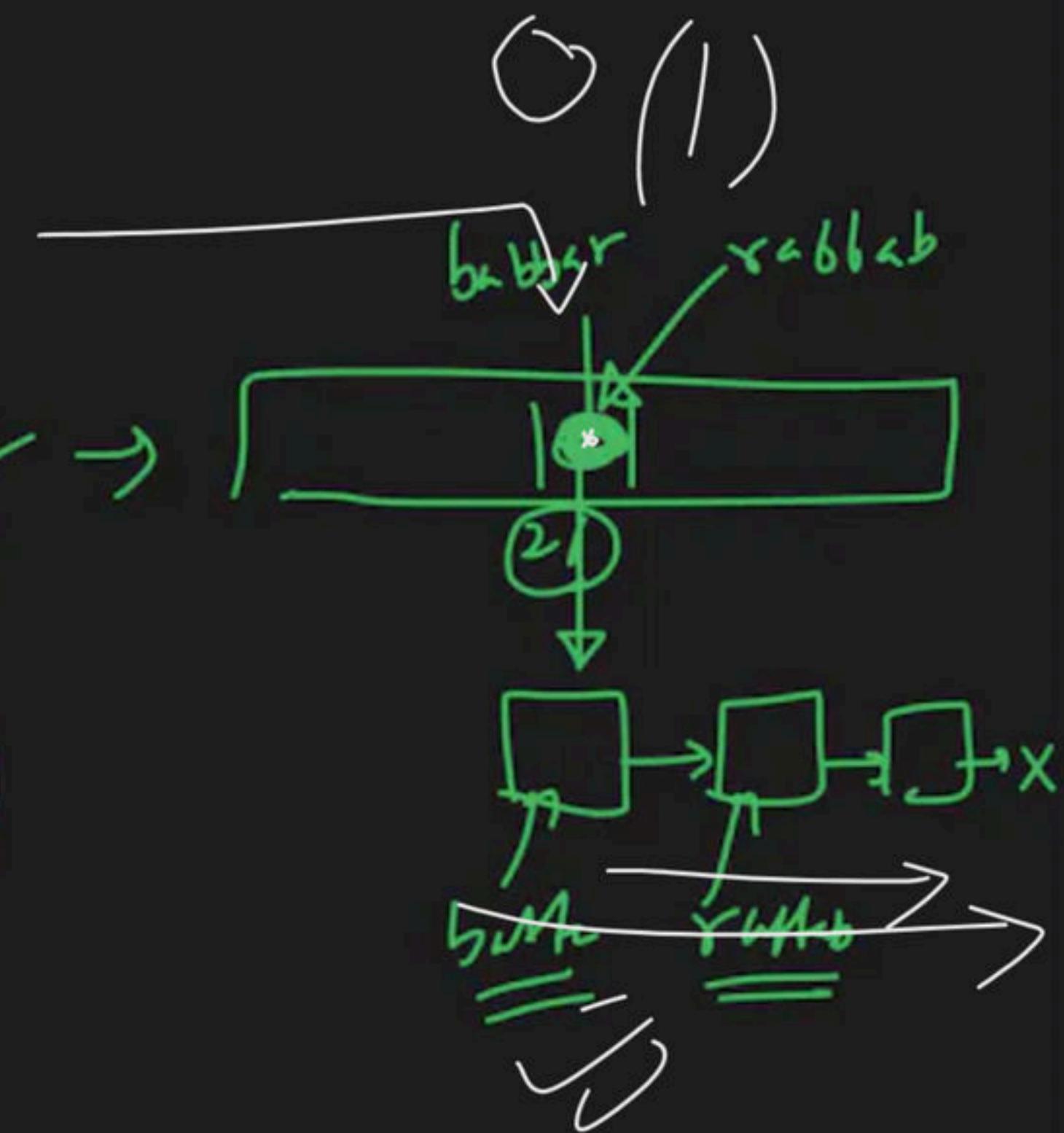
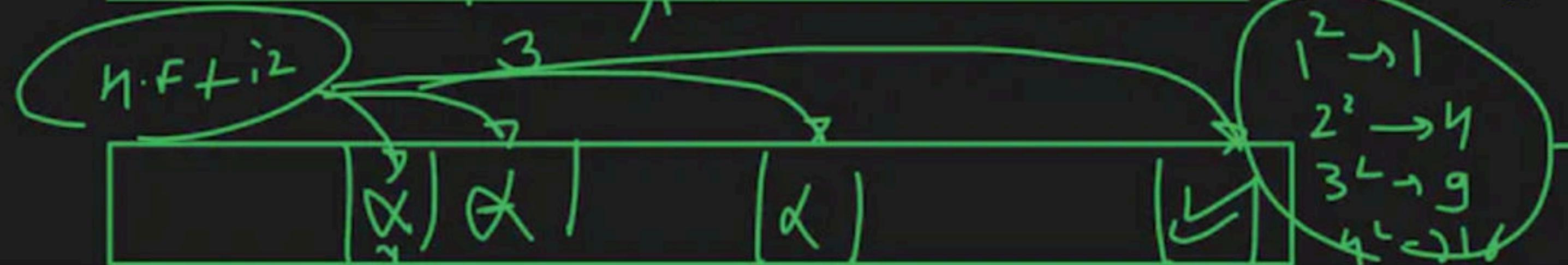
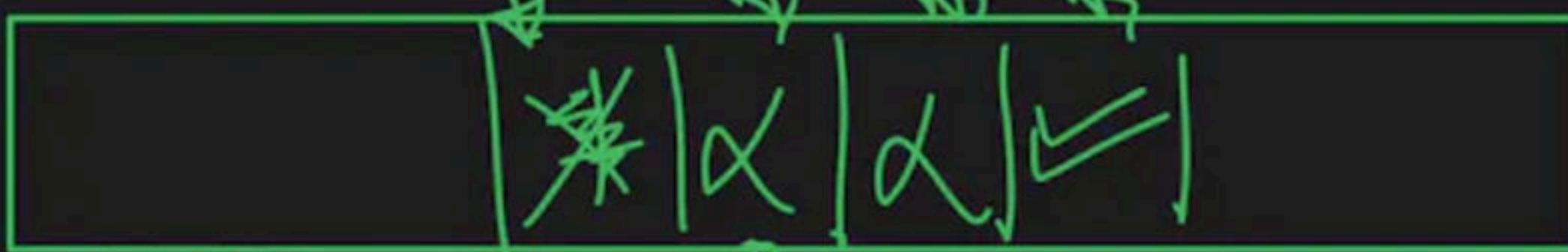
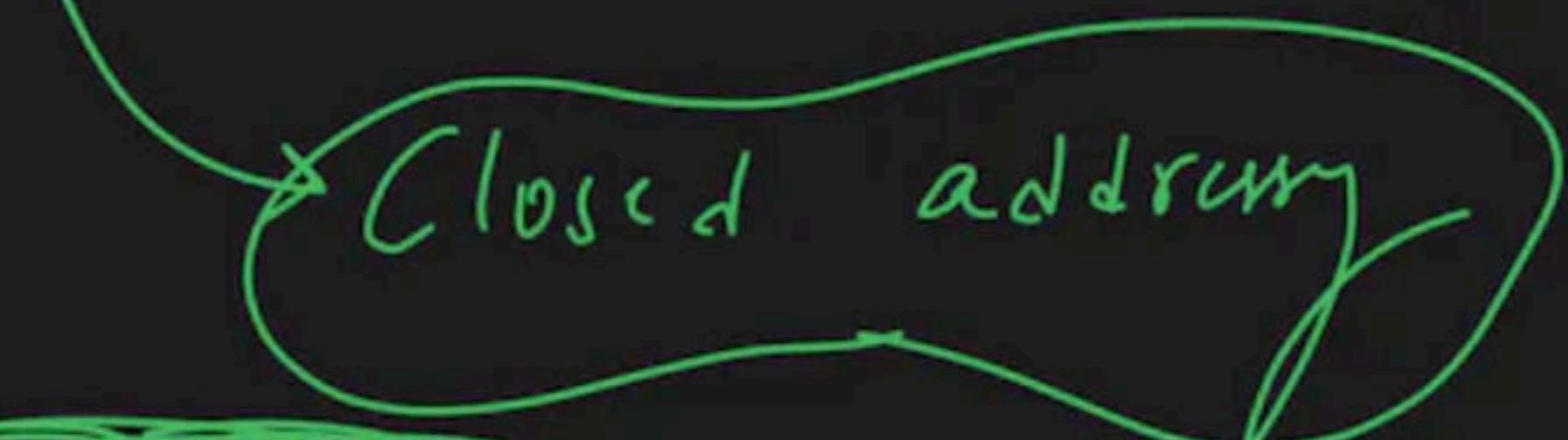
28

28

collision

# Collision - Handling Techniques

Open Hashing →





H.F

Load factor =  $\frac{n}{b}$

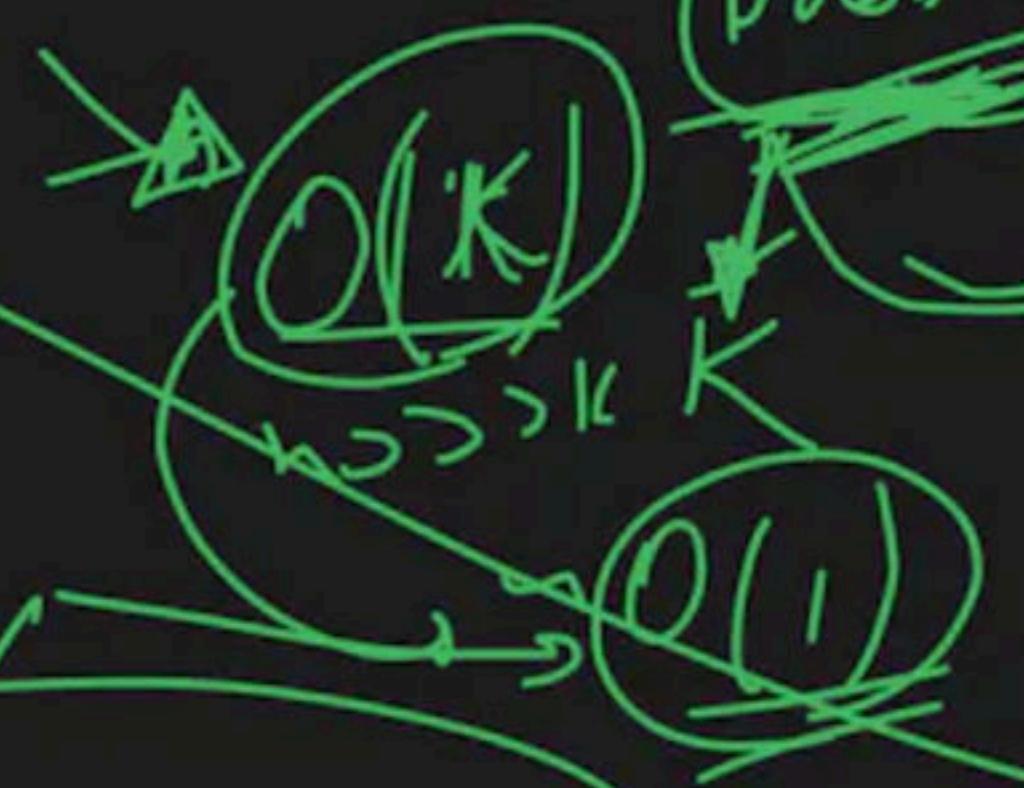
$n \gg K$

insertion

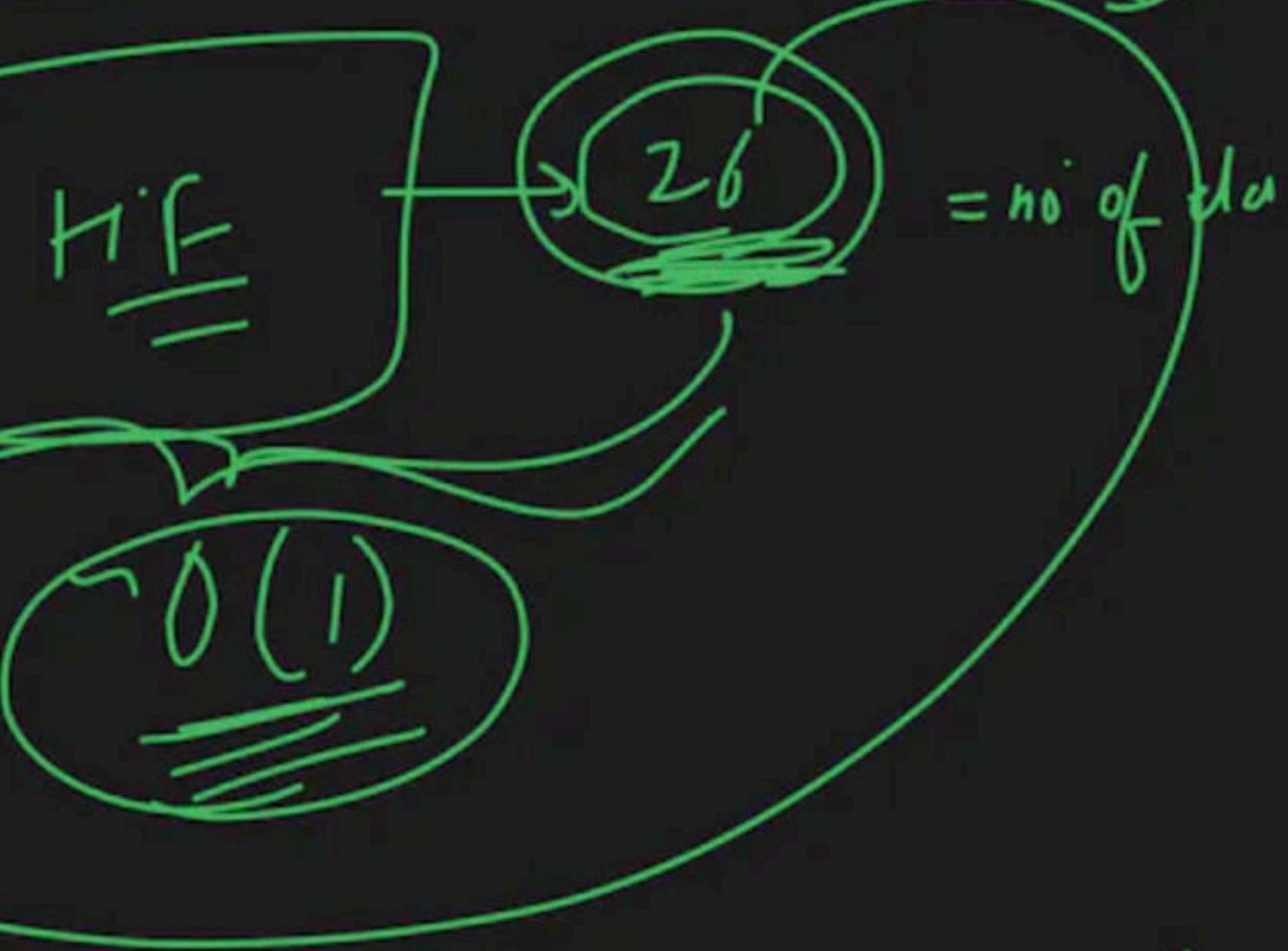
$arr[26] = 20$

deletion

$arr[26] = -1$



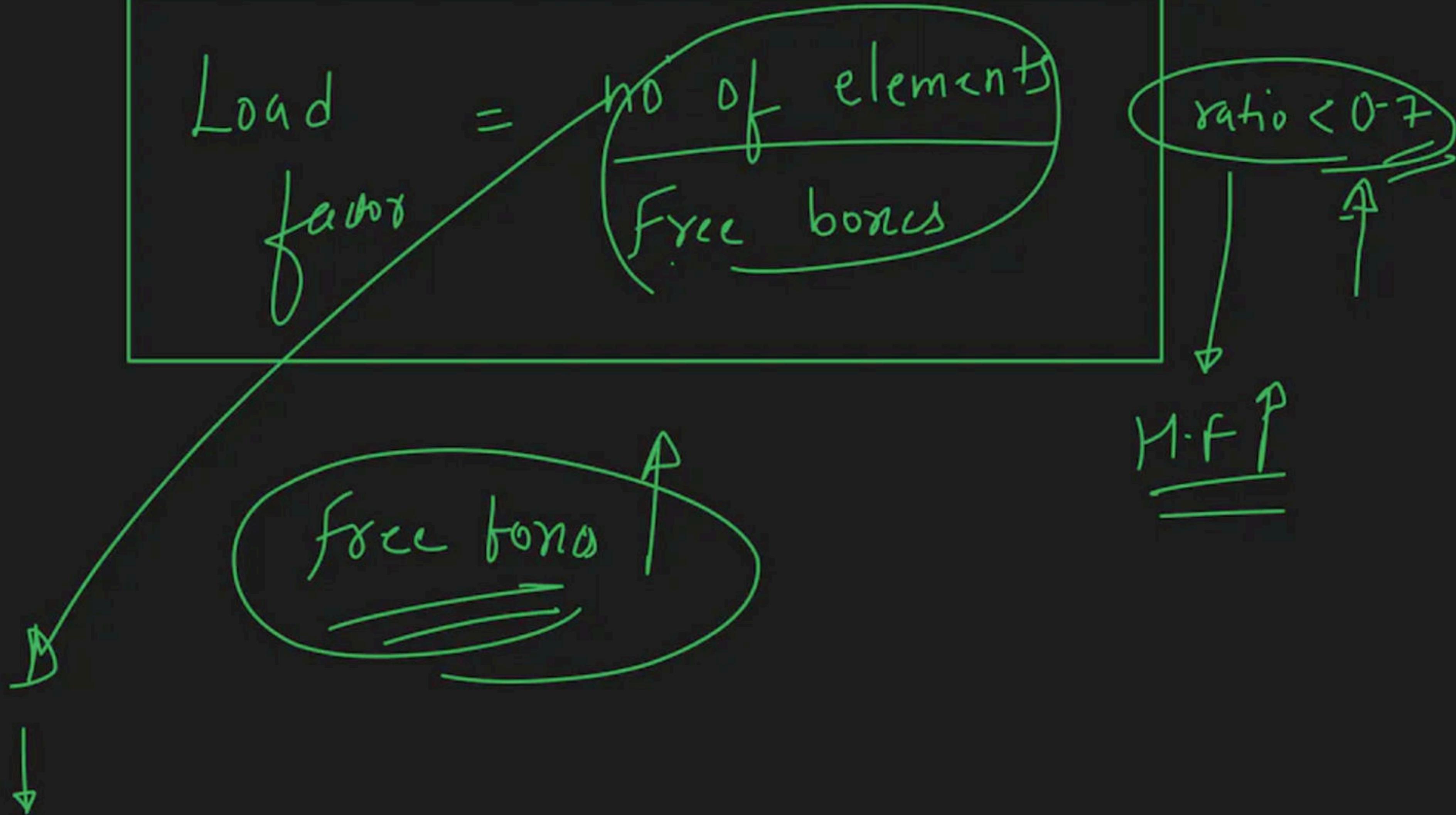
H.F



search

$arr[26]$

$O(1)$



$\mathcal{Q}_{min}$

$\pi/\rho \rightarrow$

$S\text{t}iy \rightarrow$

"done batter"

$o/\rho \rightarrow$

$l \rightarrow |$

$o \rightarrow |$

$v \rightarrow |$

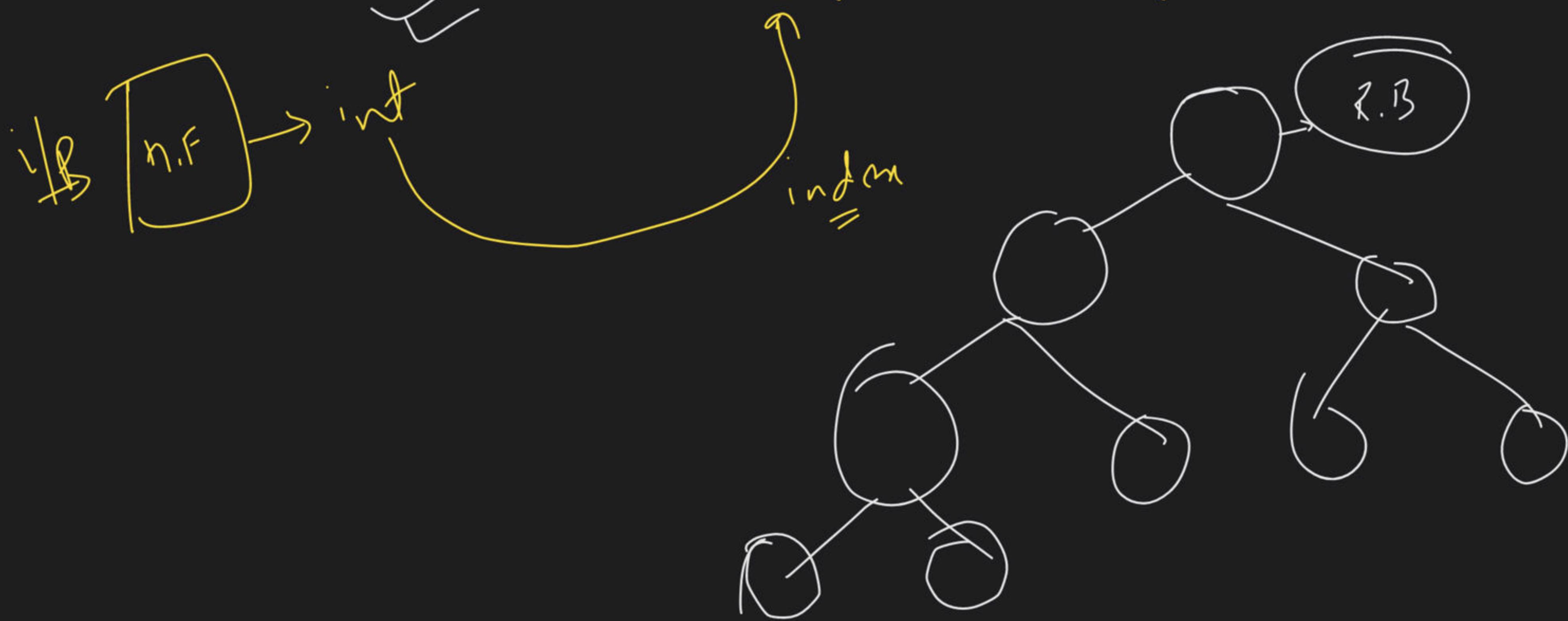
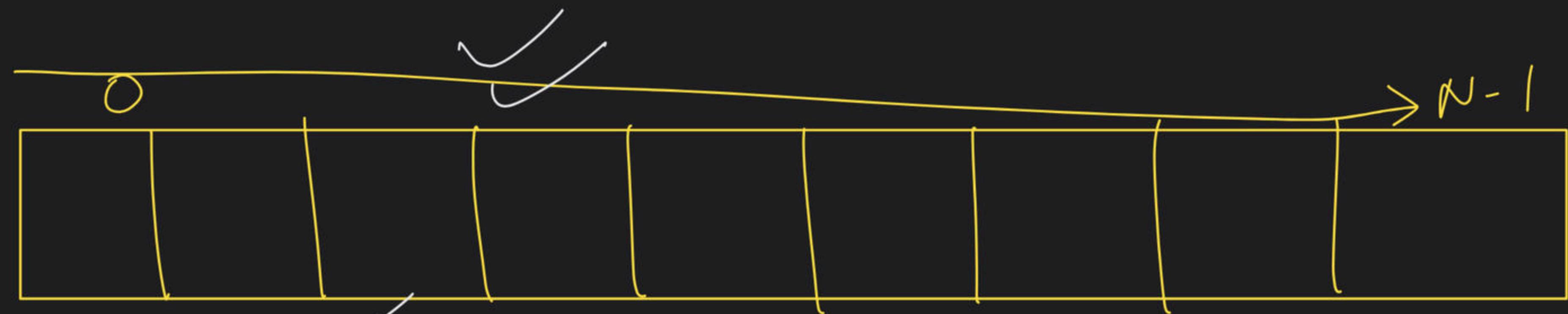
$e \rightarrow |$

$b \rightarrow 3$

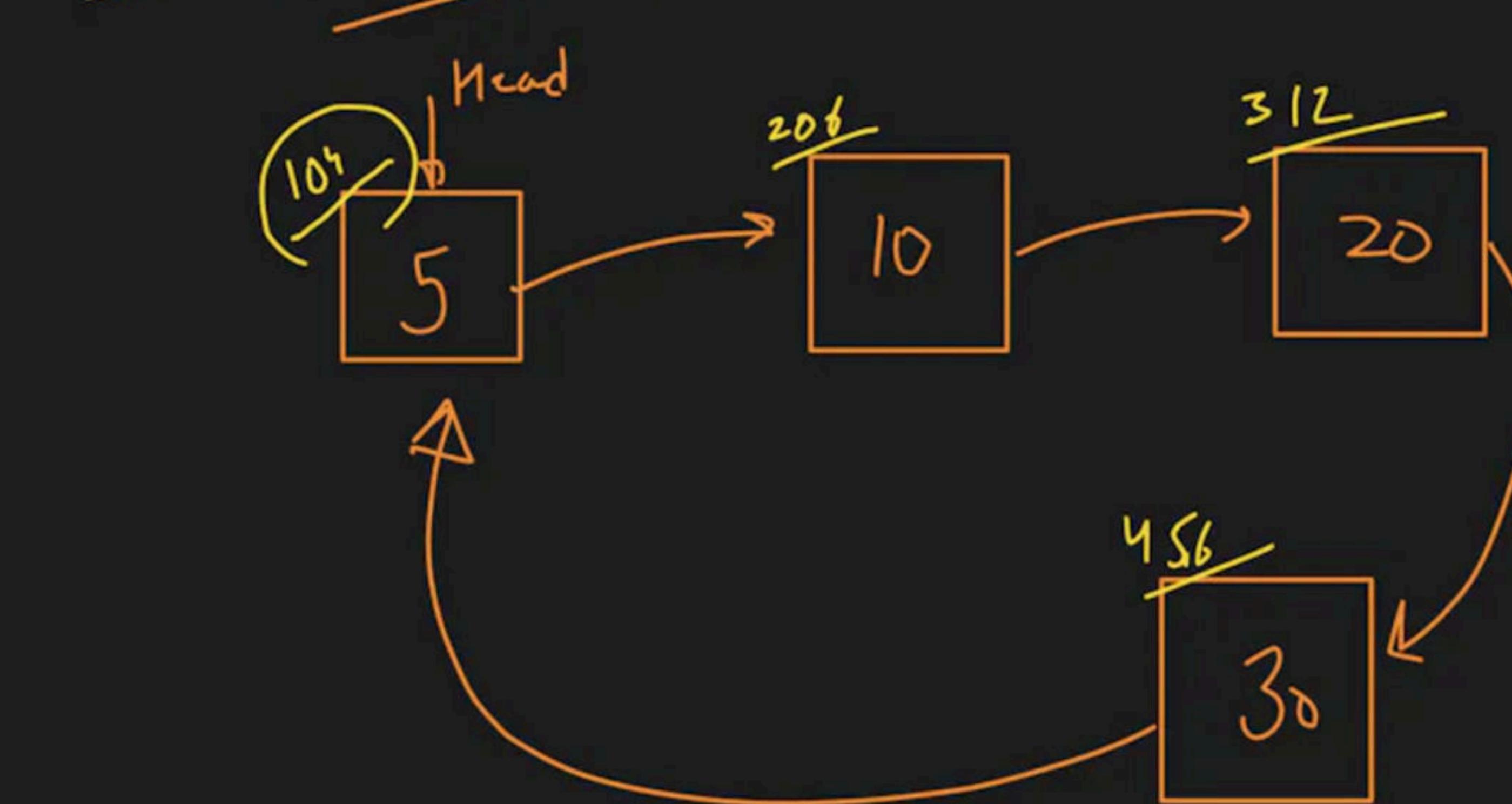
$a \rightarrow 2$

$n \rightarrow 1$

~~VSIZ~~



LL is circular or not → ?



Circular



206 → Tm

312 → Tm

456 → Tm

~~int hash[256]~~  
= {0, 3, ...}





























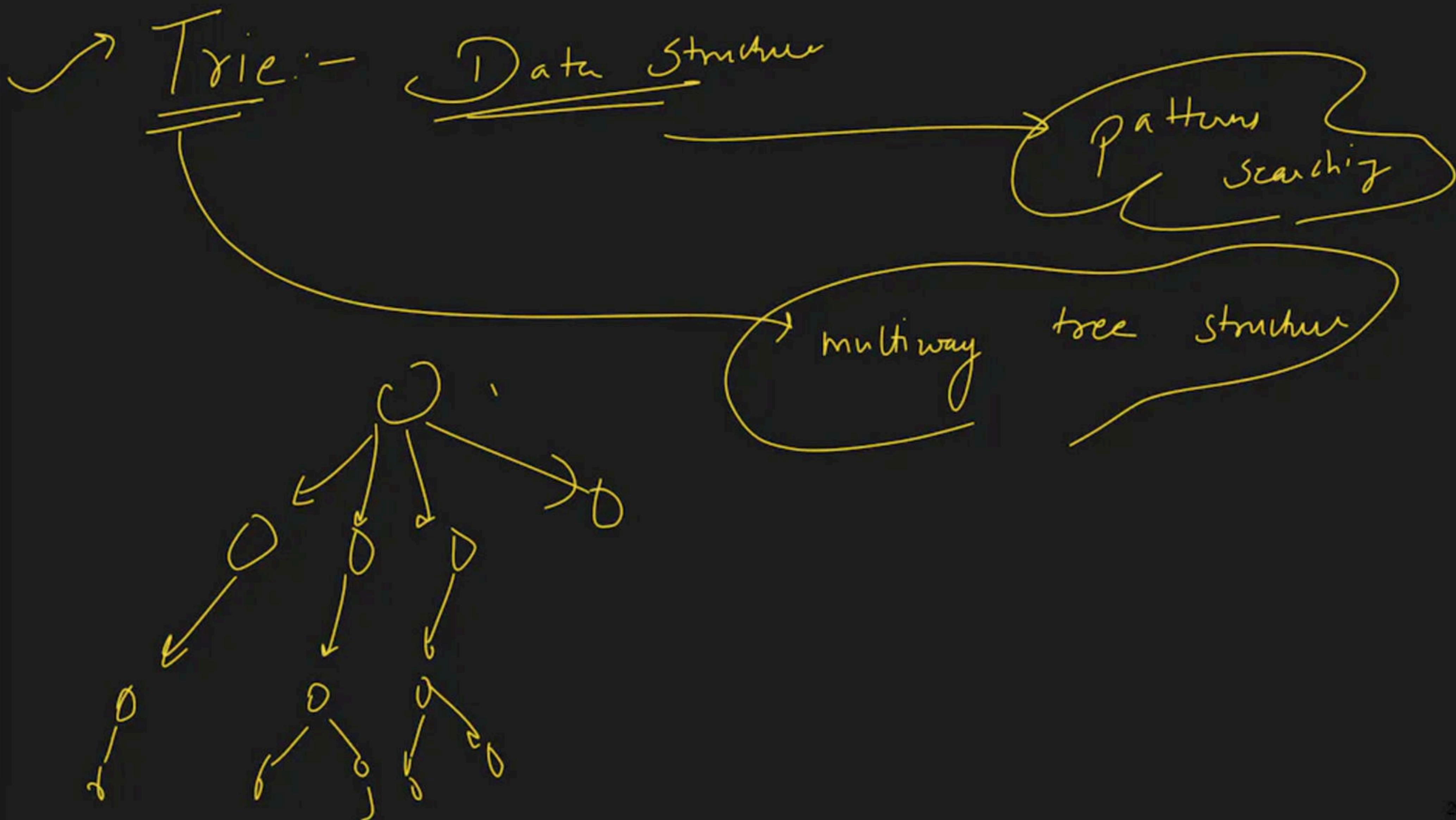


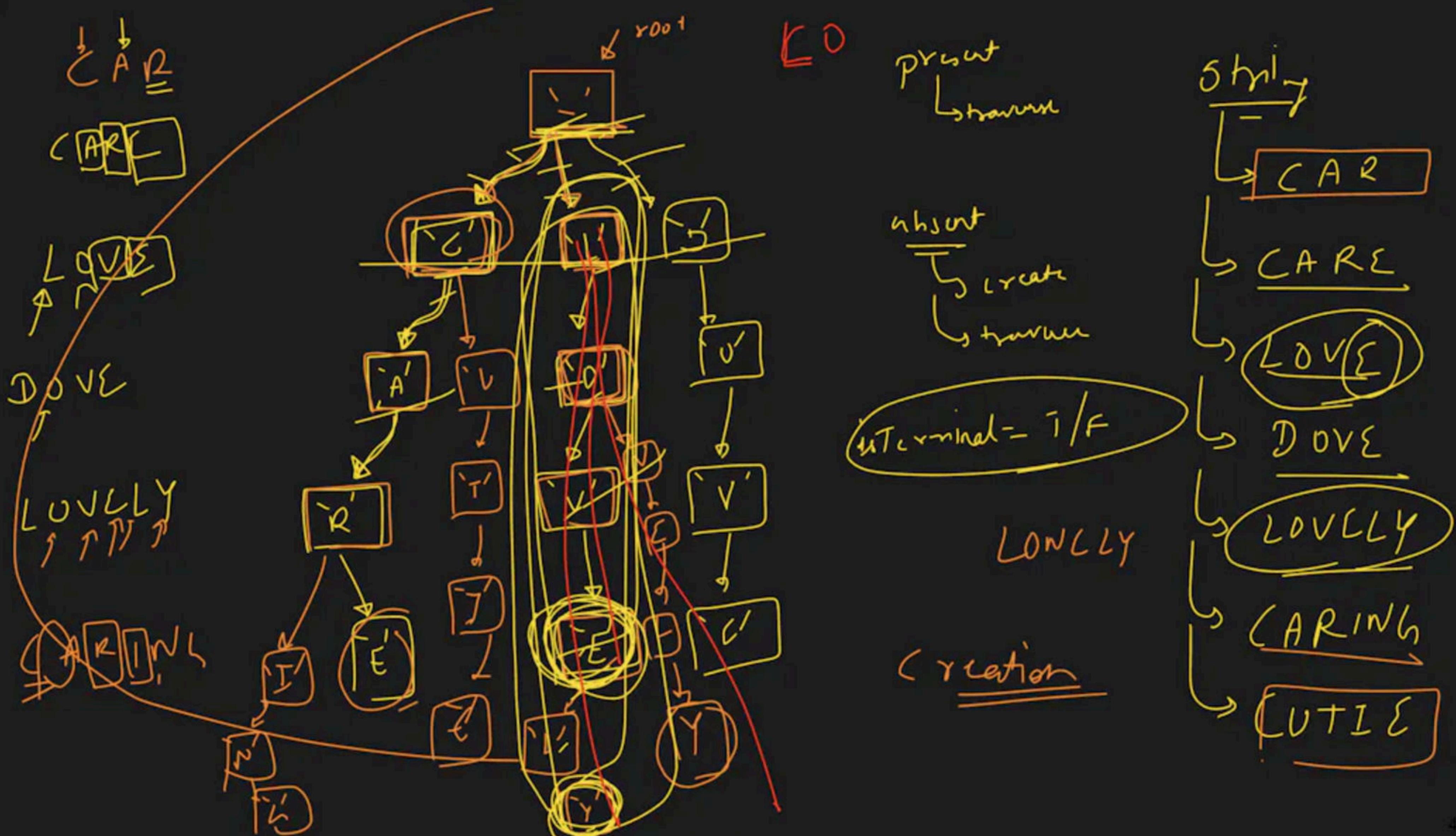




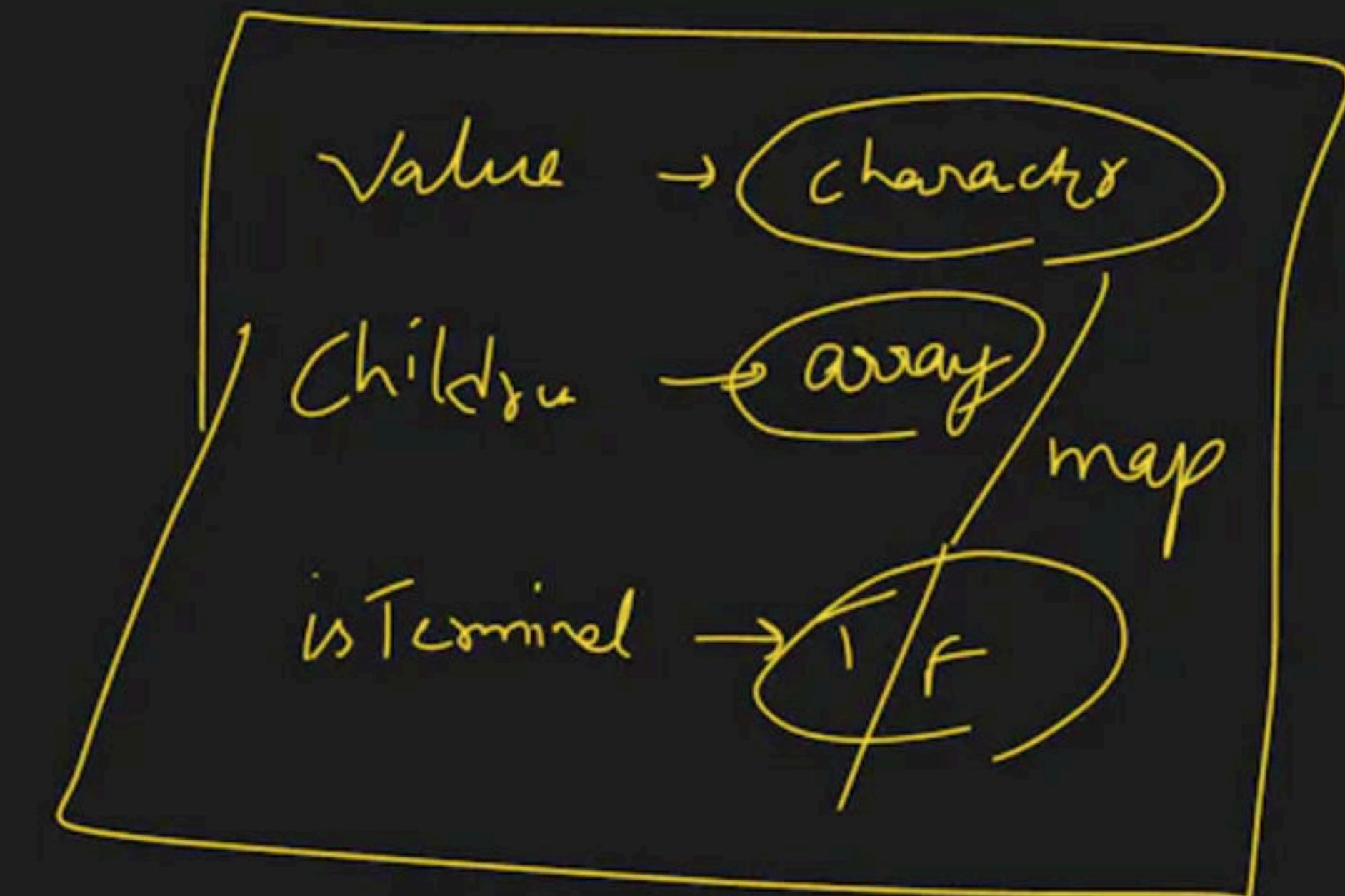
# Hashmaps & Tries - Class 2

Special class





node



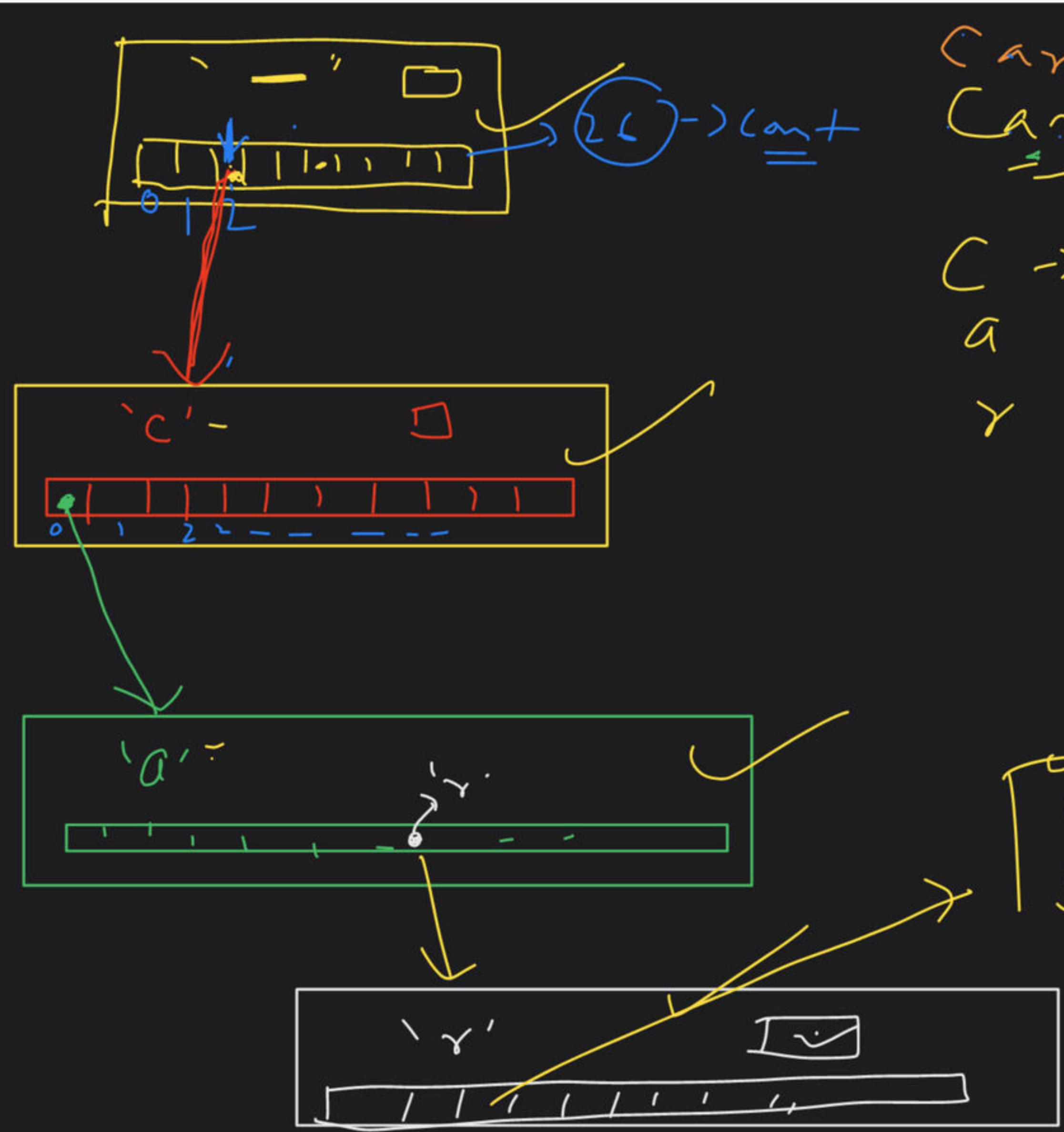
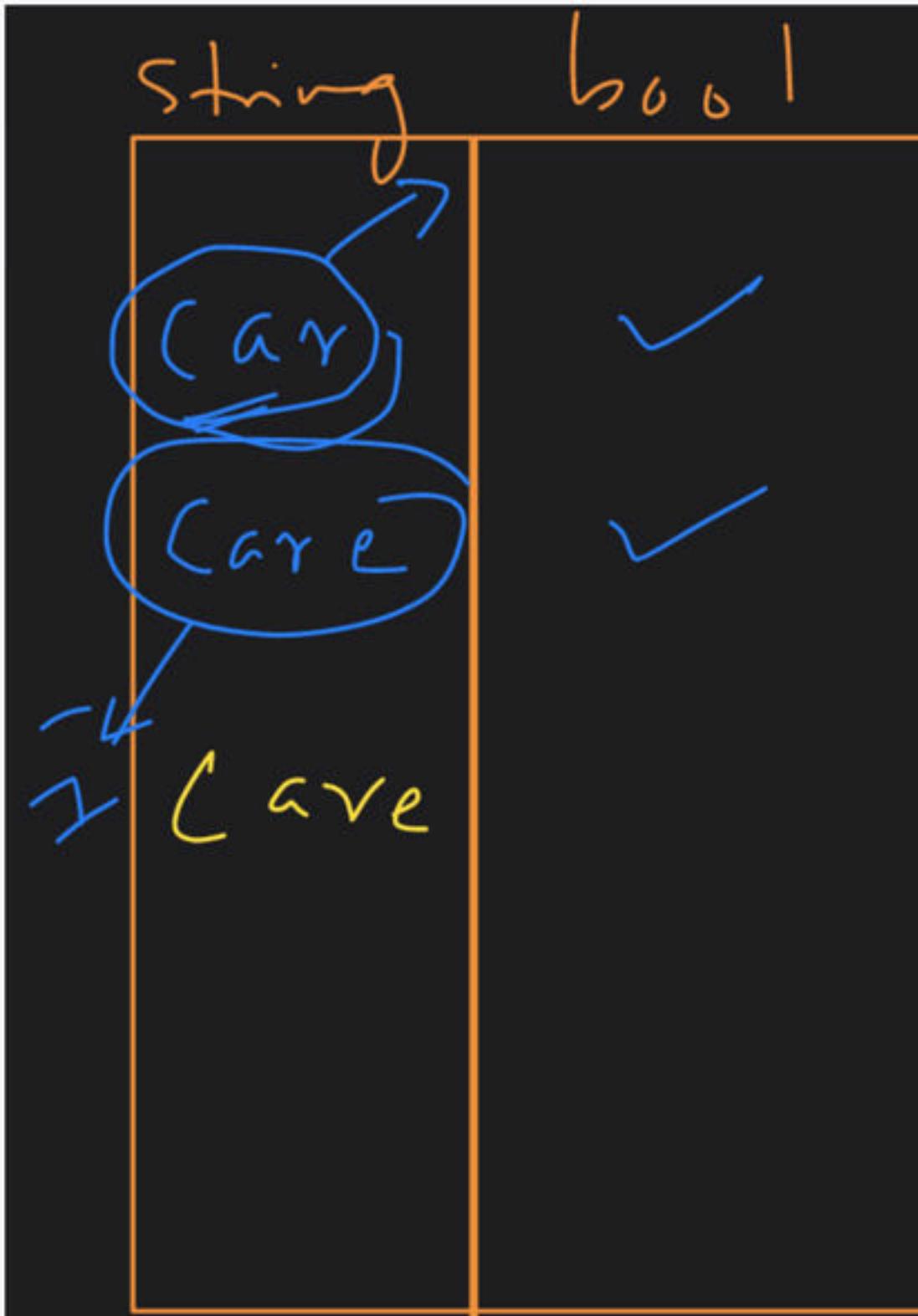
TreeNode

data,

isTerminal

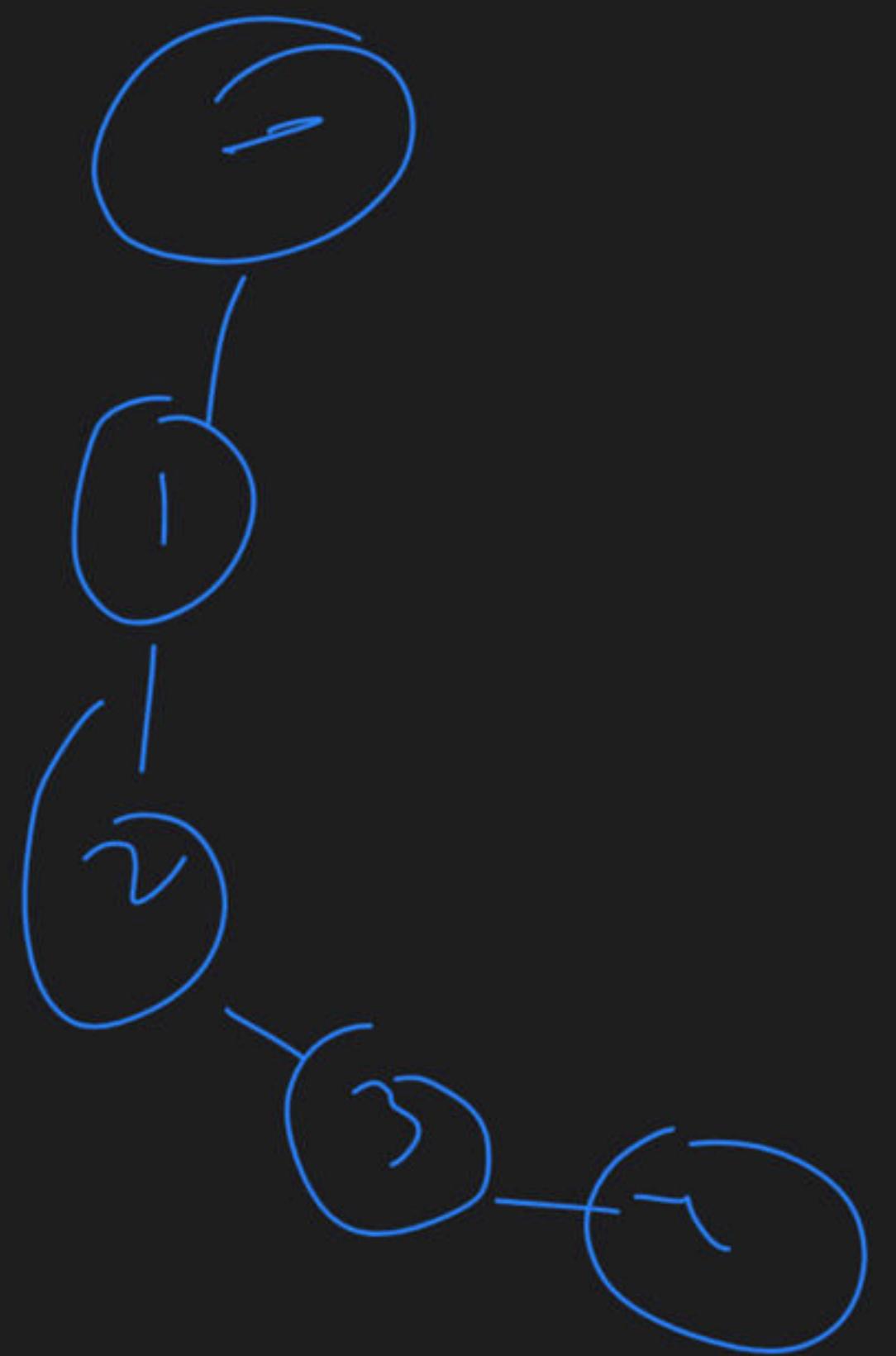
TreeNode\* children[26]

=



Care  
Car

$$\begin{array}{r} C \rightarrow \text{Ag} - \text{Ag} \\ \text{Ag} \\ \gamma \\ \hline \text{Ag} - \text{Ag} \\ = 2 \end{array}$$



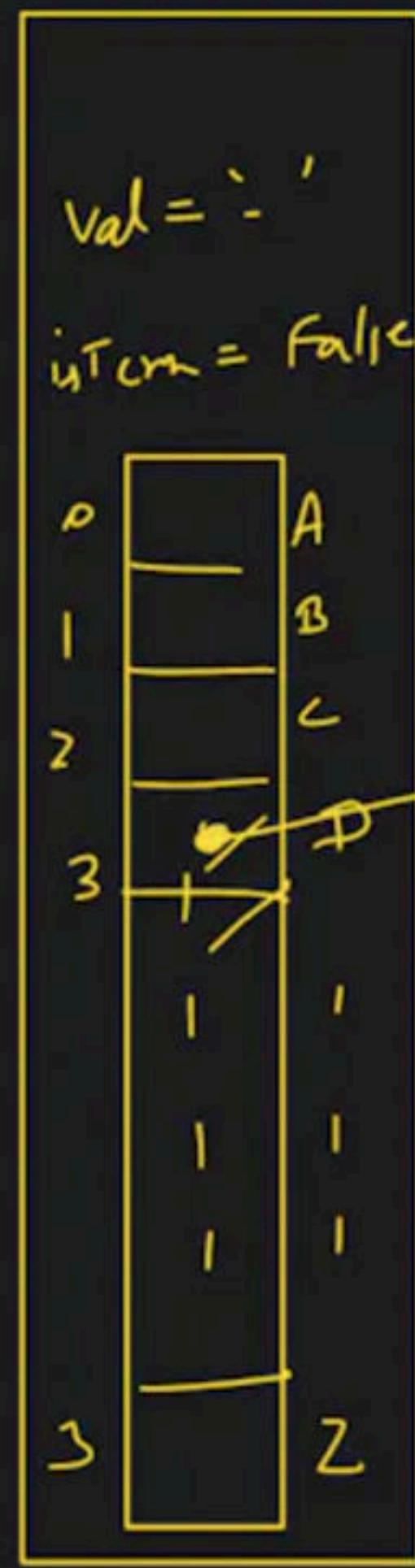
1 2 3 4

1 2 3 4 5 ( 2

1 2 3 4 5 6 > 8

1 3 5 6 > 8

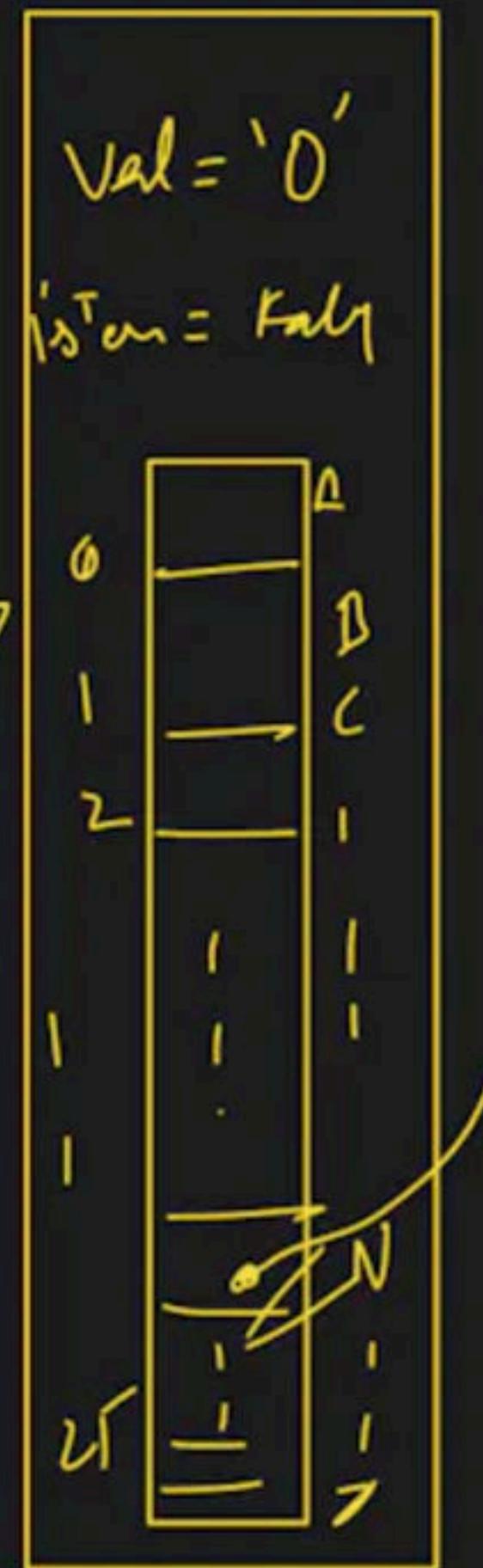
Q<sub>0</sub>na



DNA



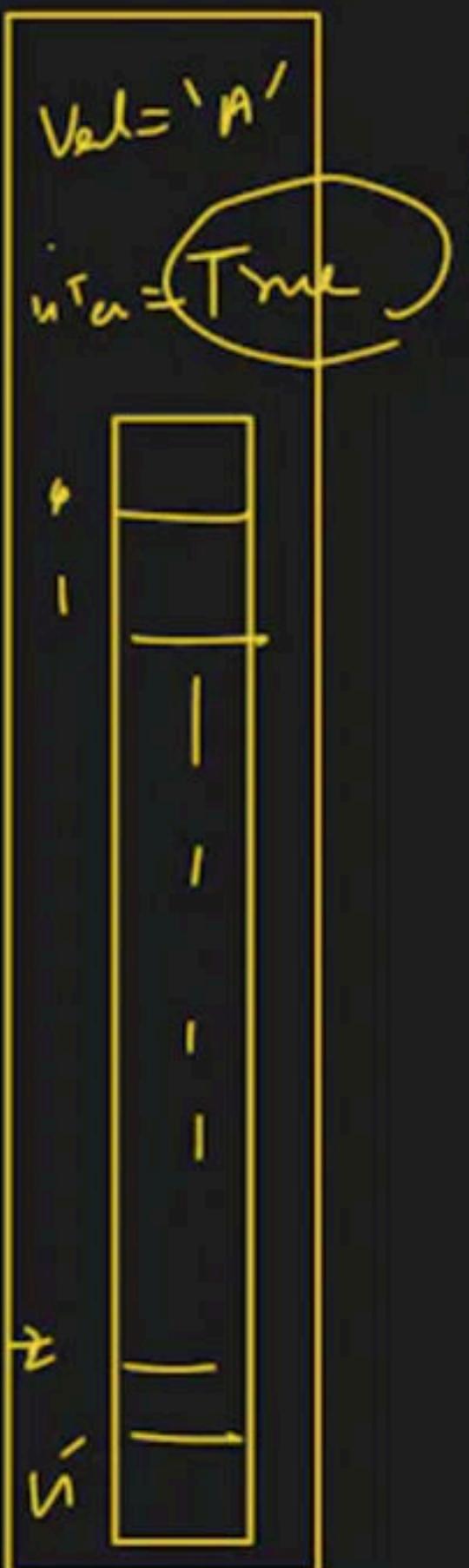
na



a



" " D-C



BABBAR

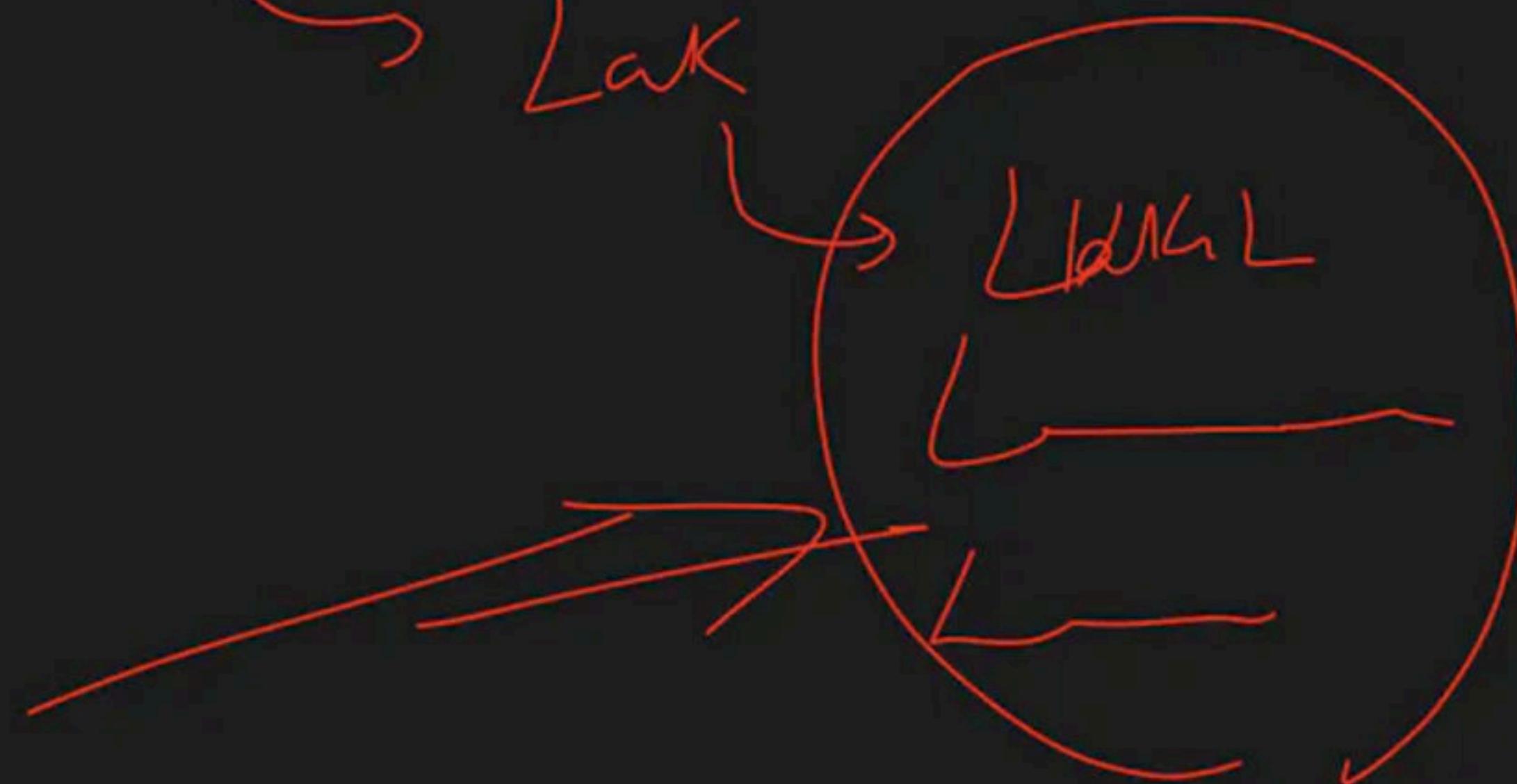


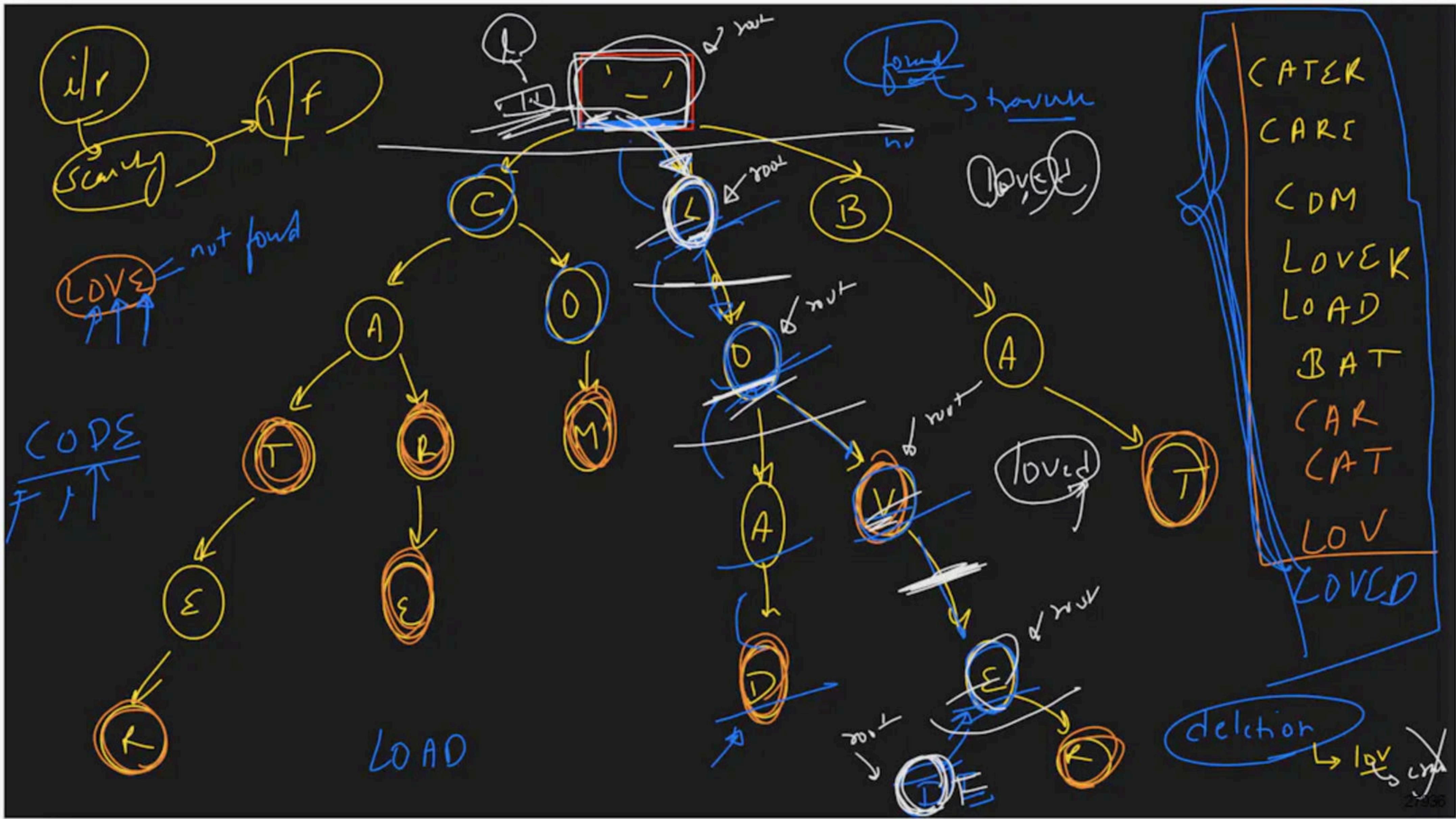
Phone Book

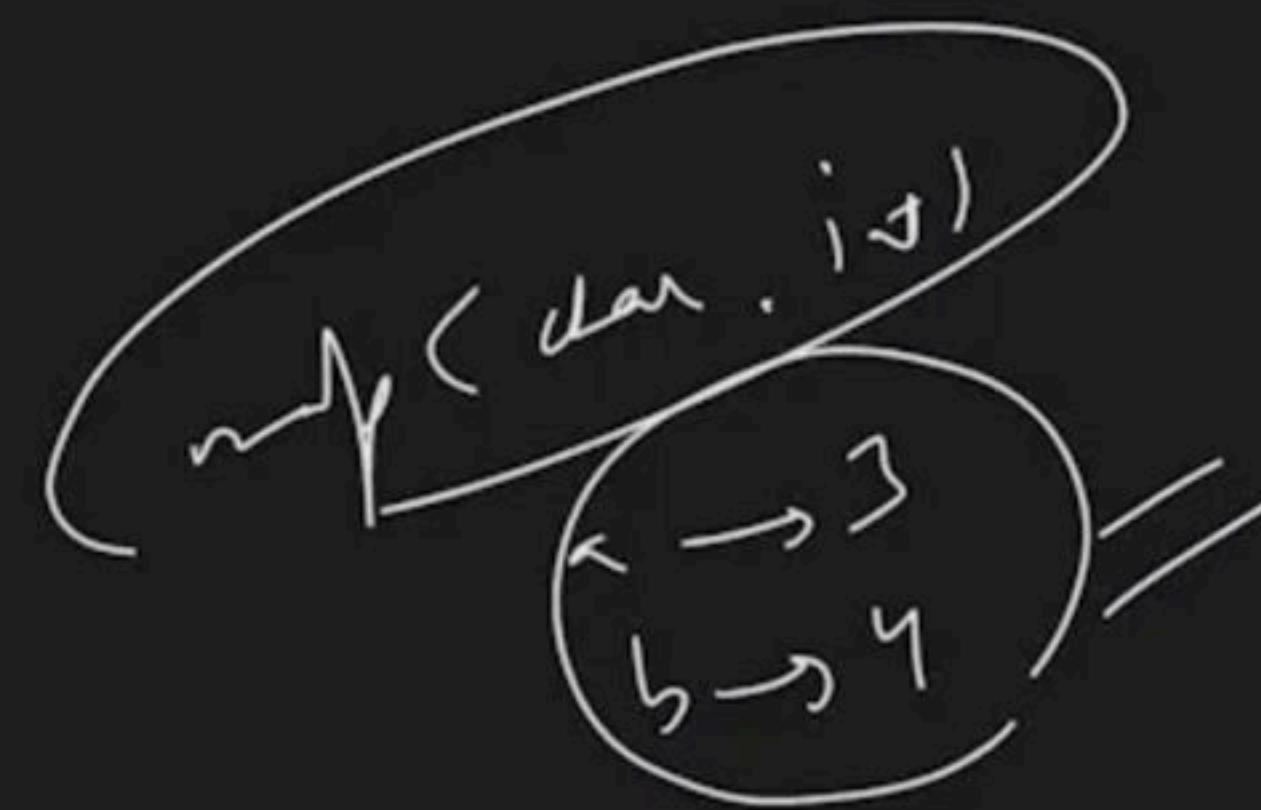


Lak

Udum L





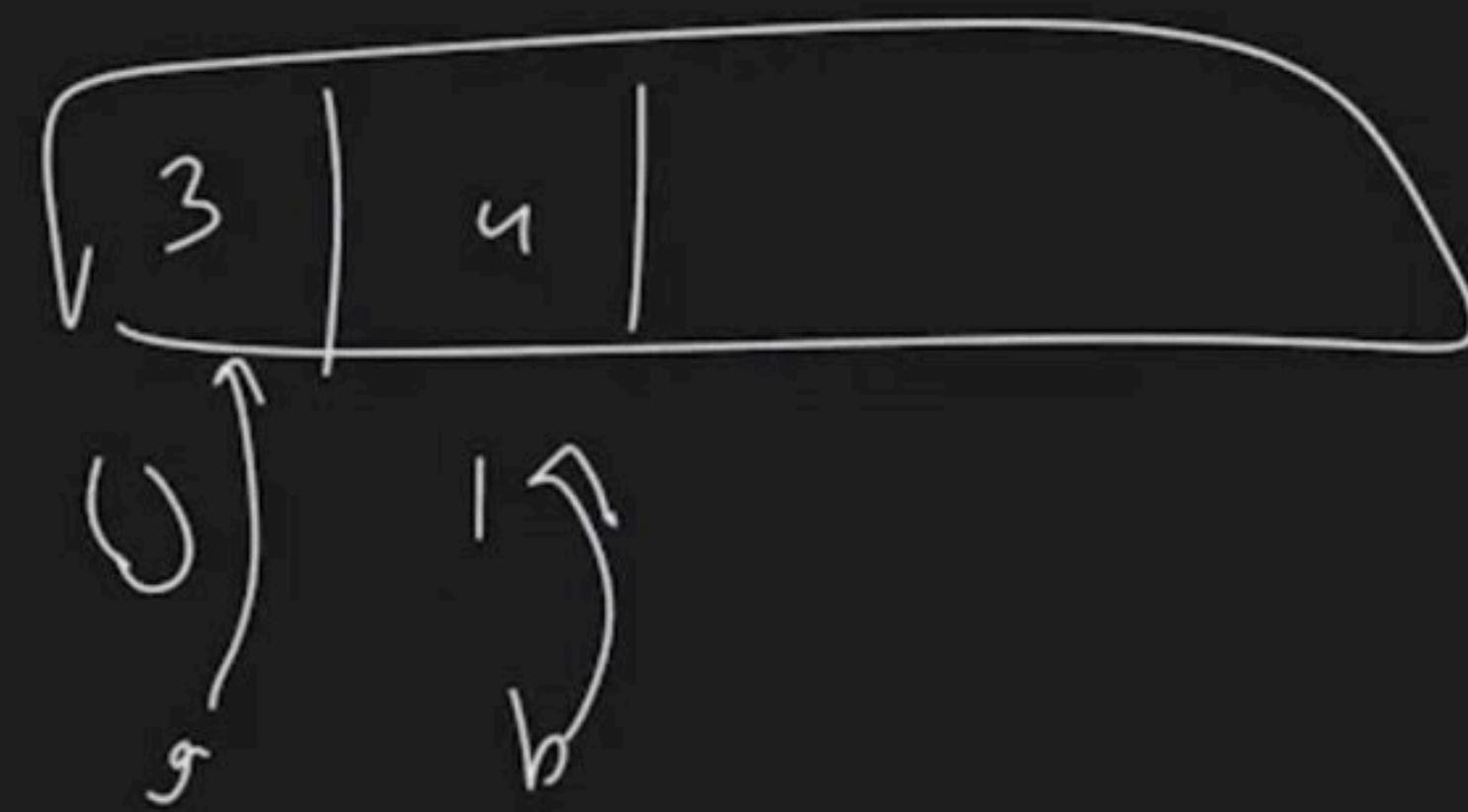


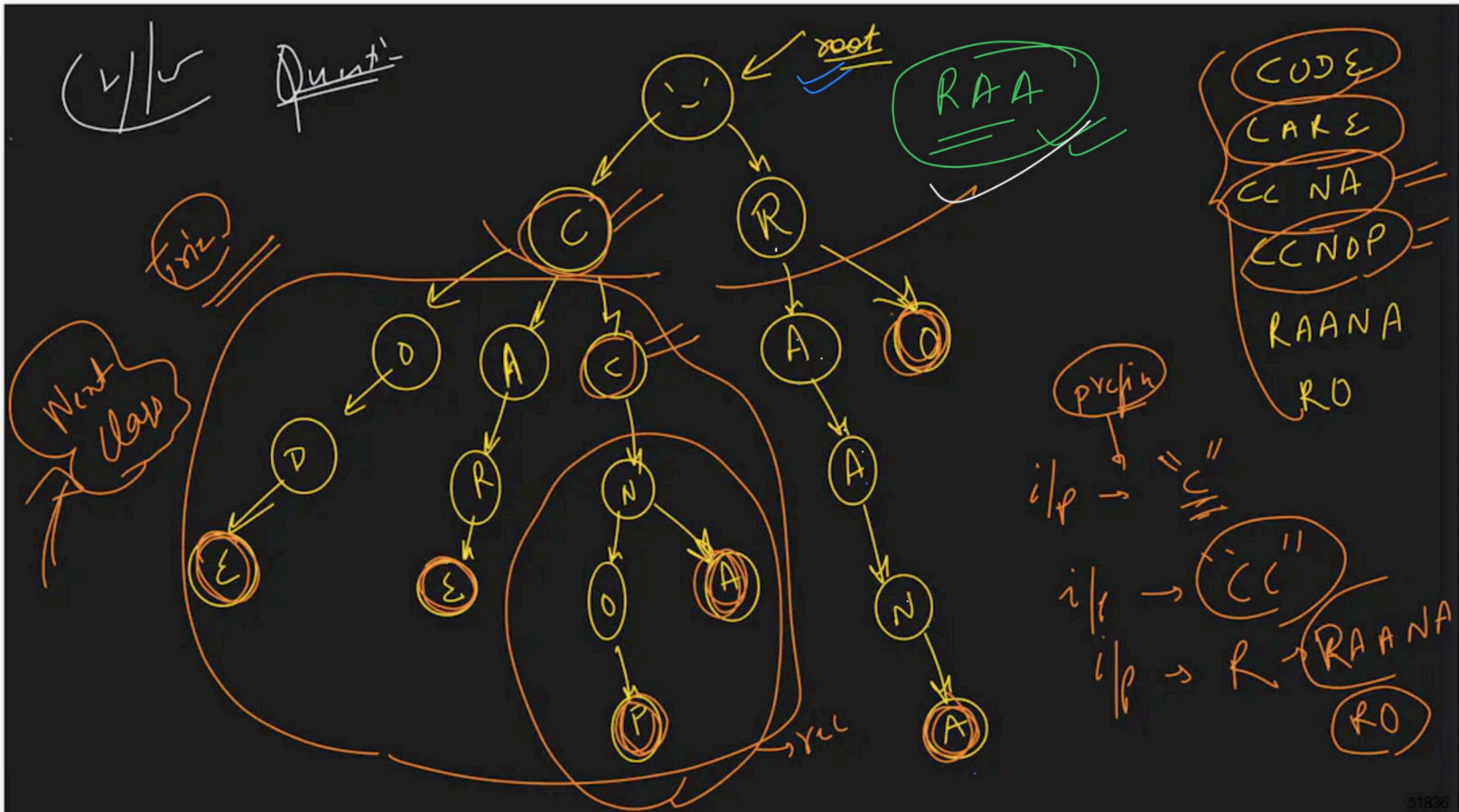
$\text{map} < \text{char}, \text{trie node}^*$

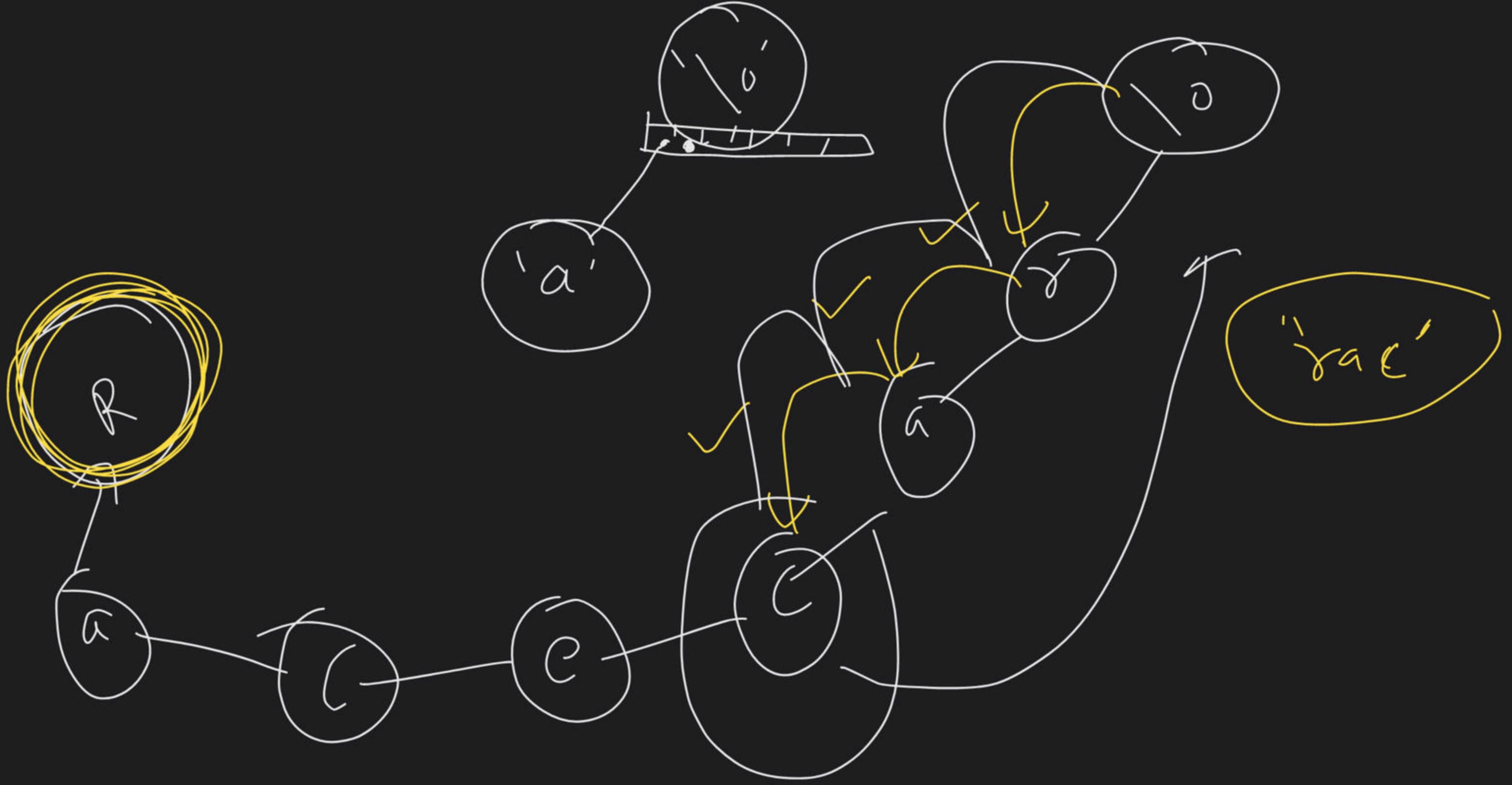
$\text{child} = \text{root} \rightarrow \text{children}(\text{index})$



'a'  $\rightarrow$  0  
'b'  $\rightarrow$  1







Course ✓



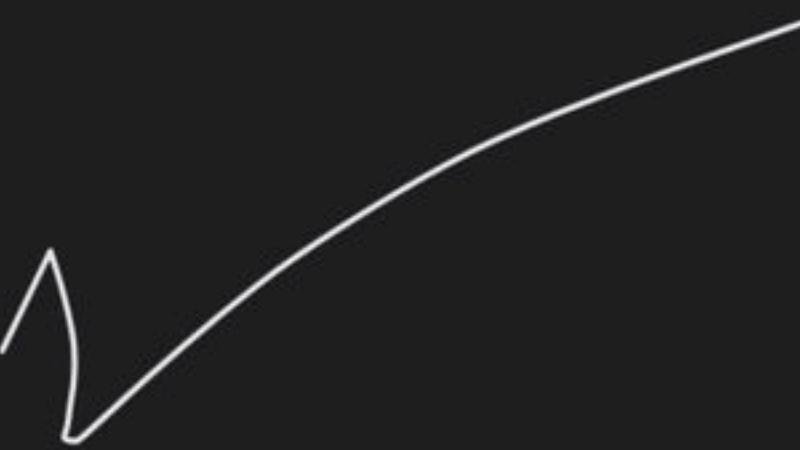
Mar chize →

D✓

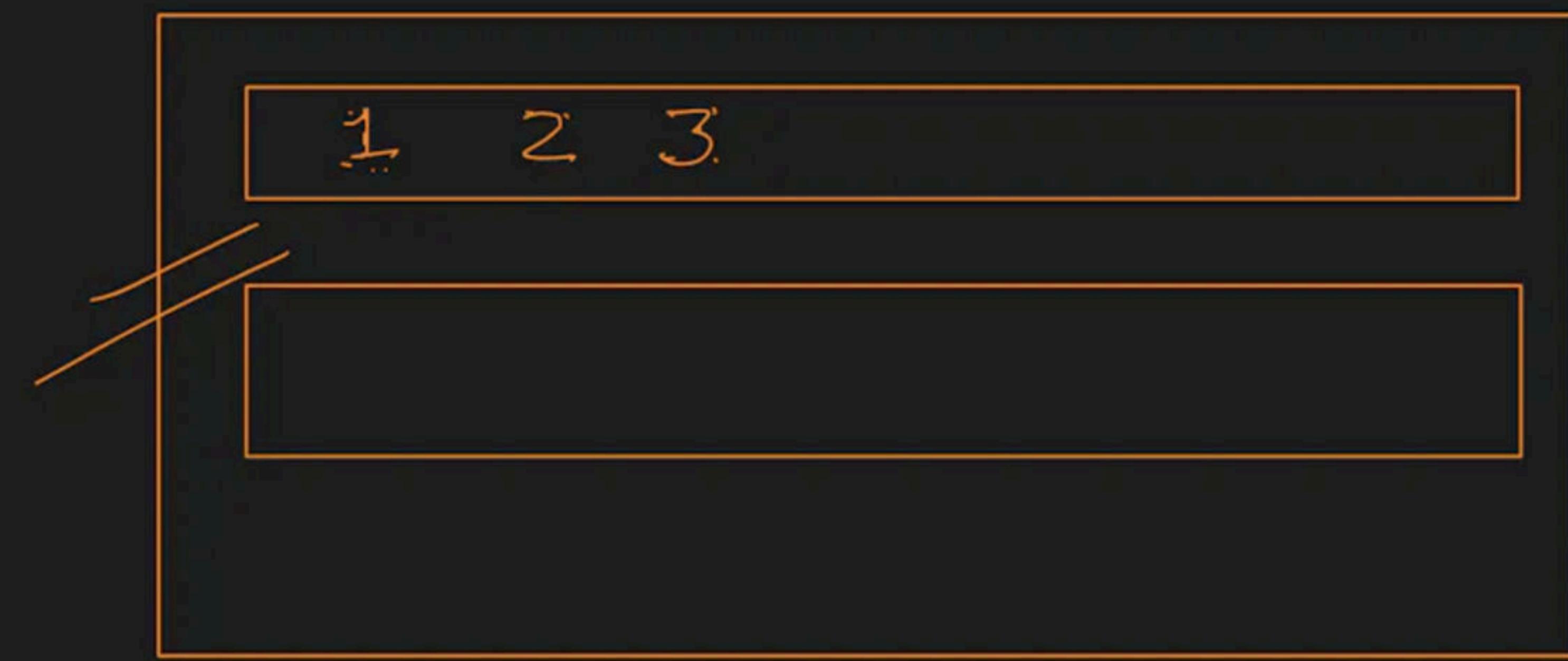
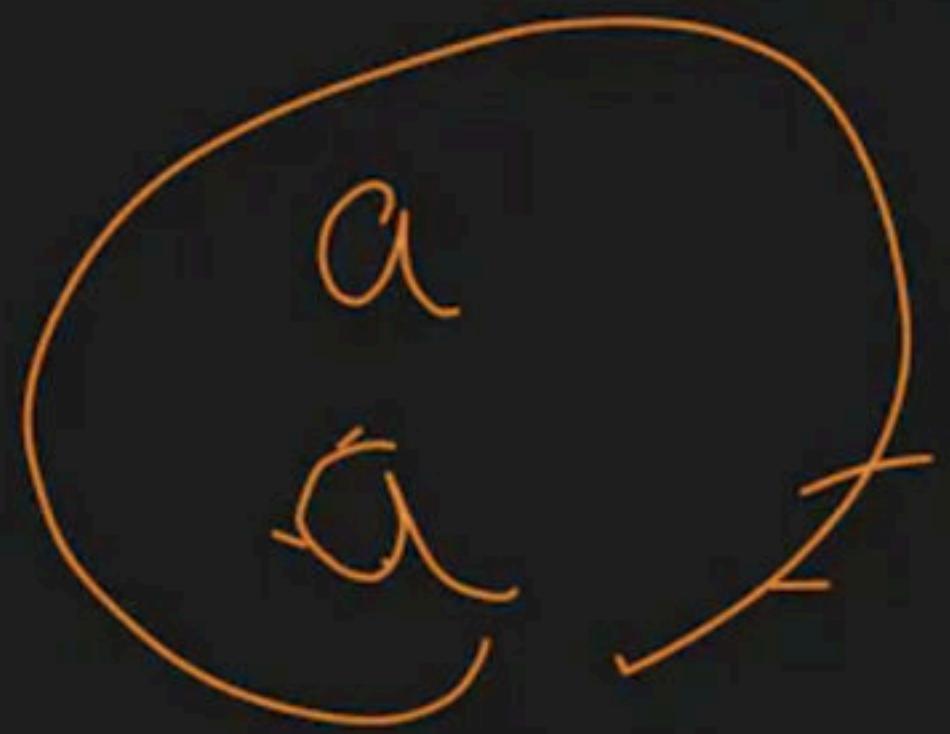
D

-TJ

D  
D



2 Min Break







































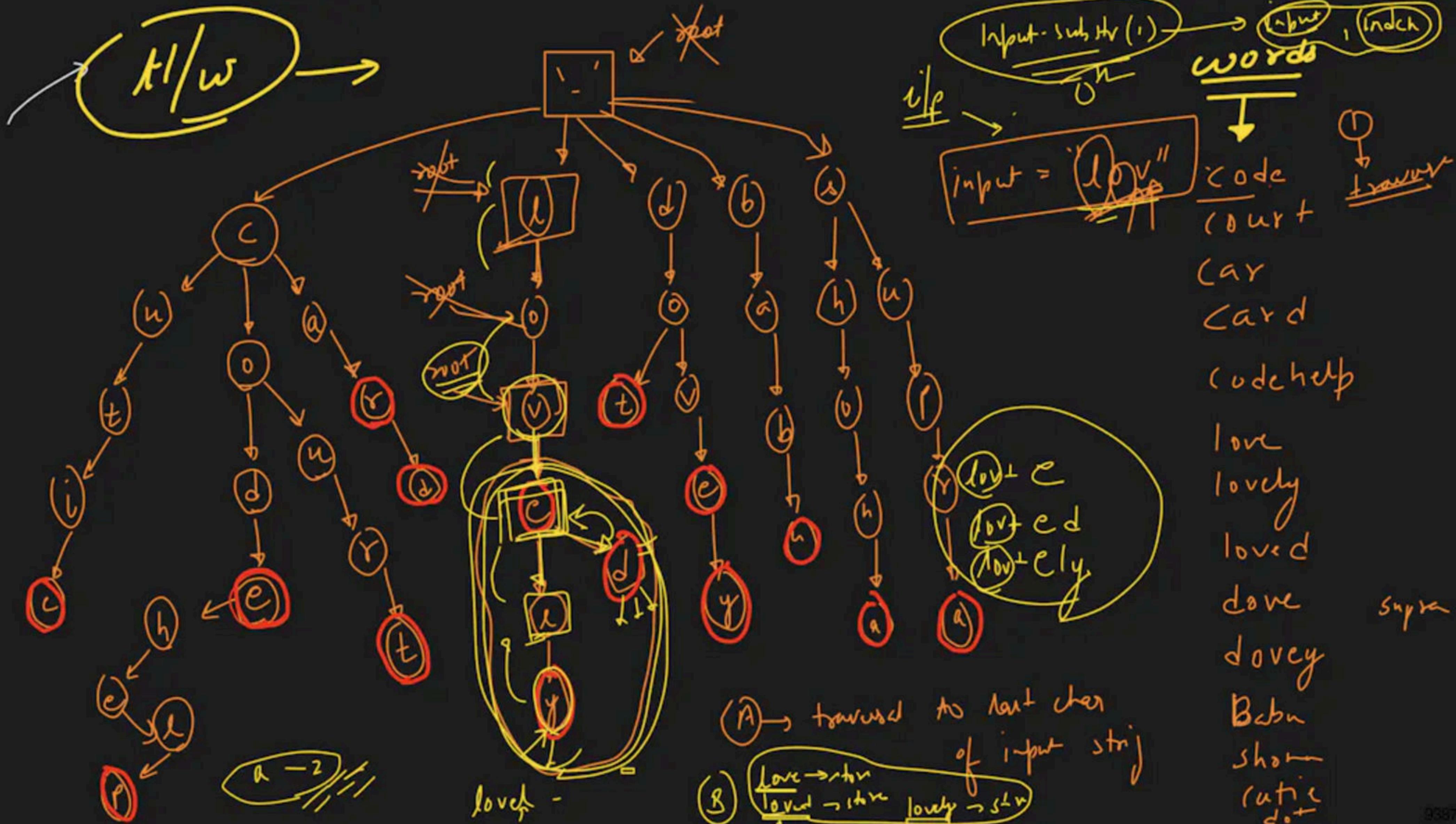




# Hashmaps & Tries - Class 3

Special class

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(A) → traversed to last char  
(B)  $\text{Love} \rightarrow \text{love}$   $\text{loved} \rightarrow \text{love}$   $\text{lovely} \rightarrow \text{love}$  of input str

