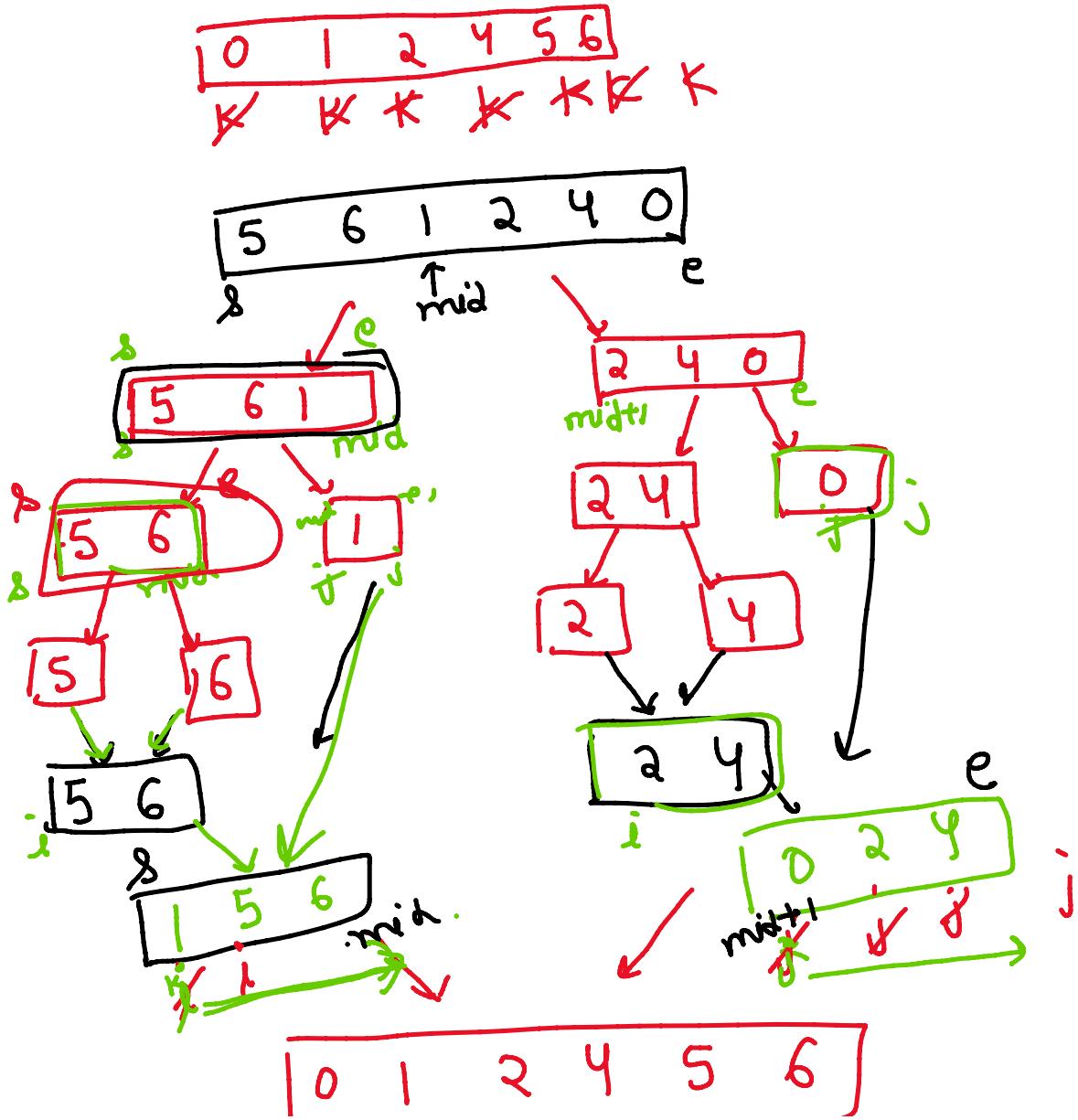
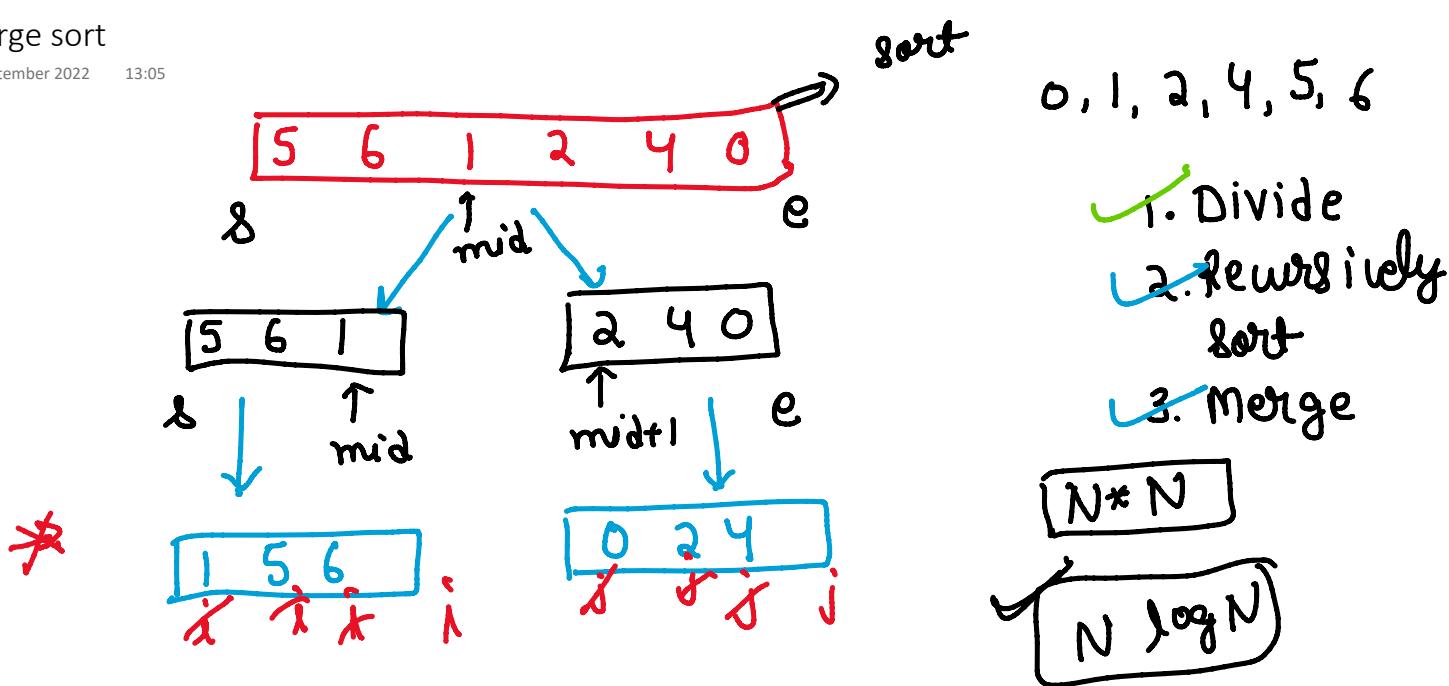
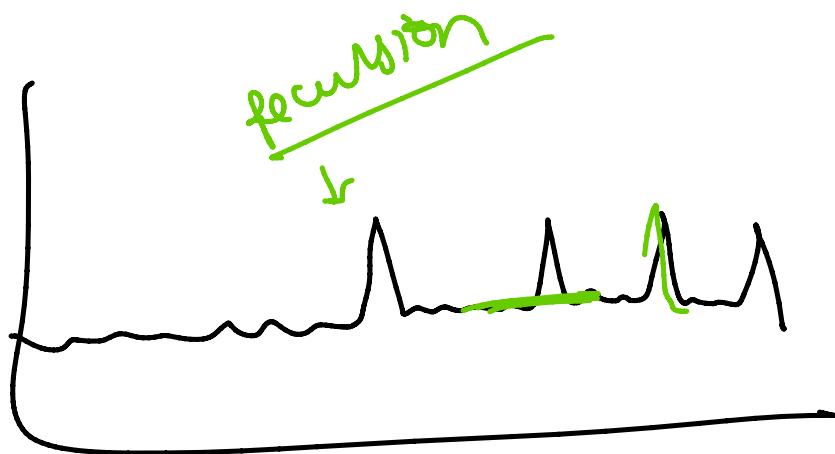


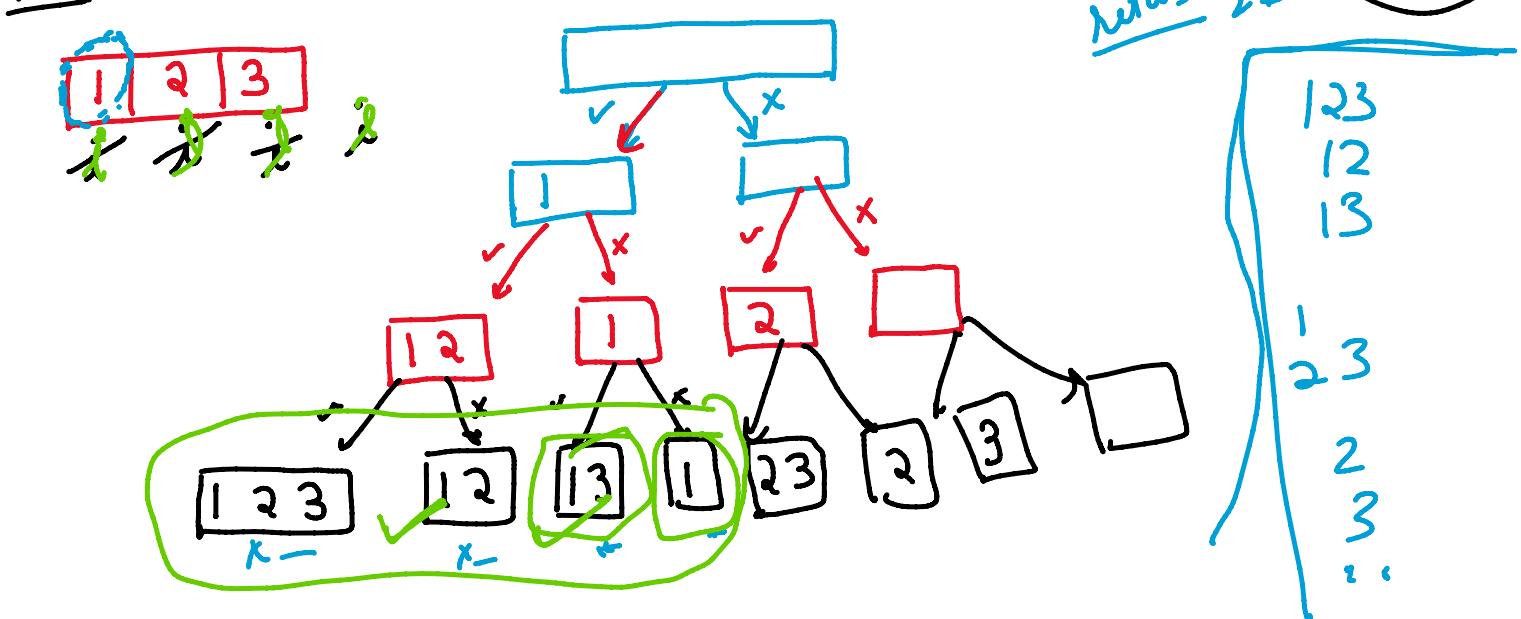
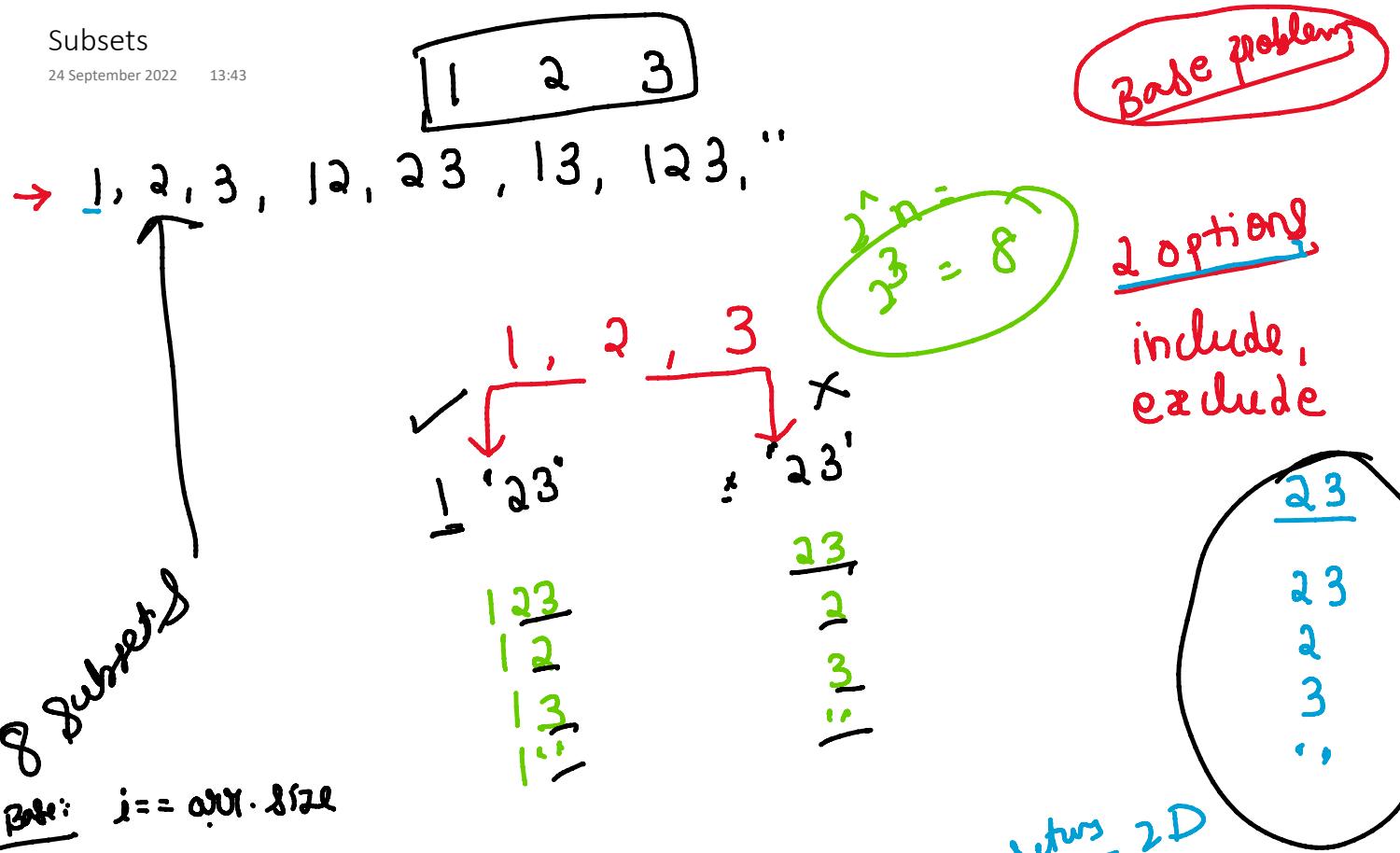
## Merge sort

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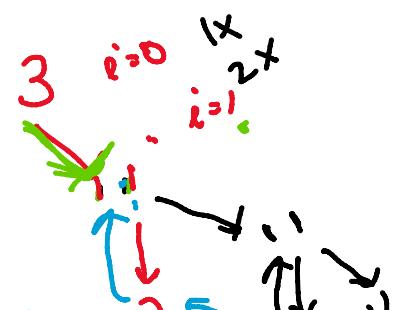
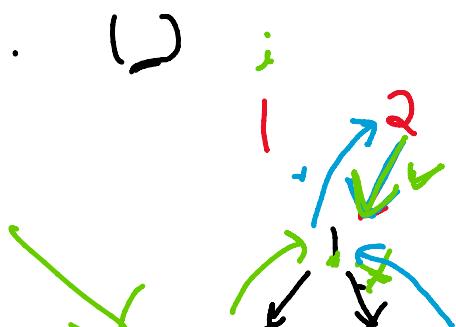
0	1	2	4	5	6
*	*	*	*	*	*



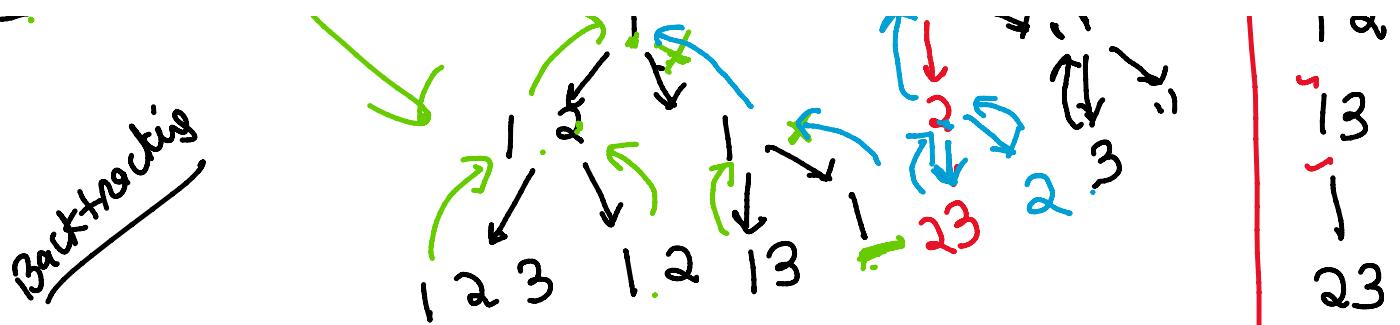


push-back

v. ( )

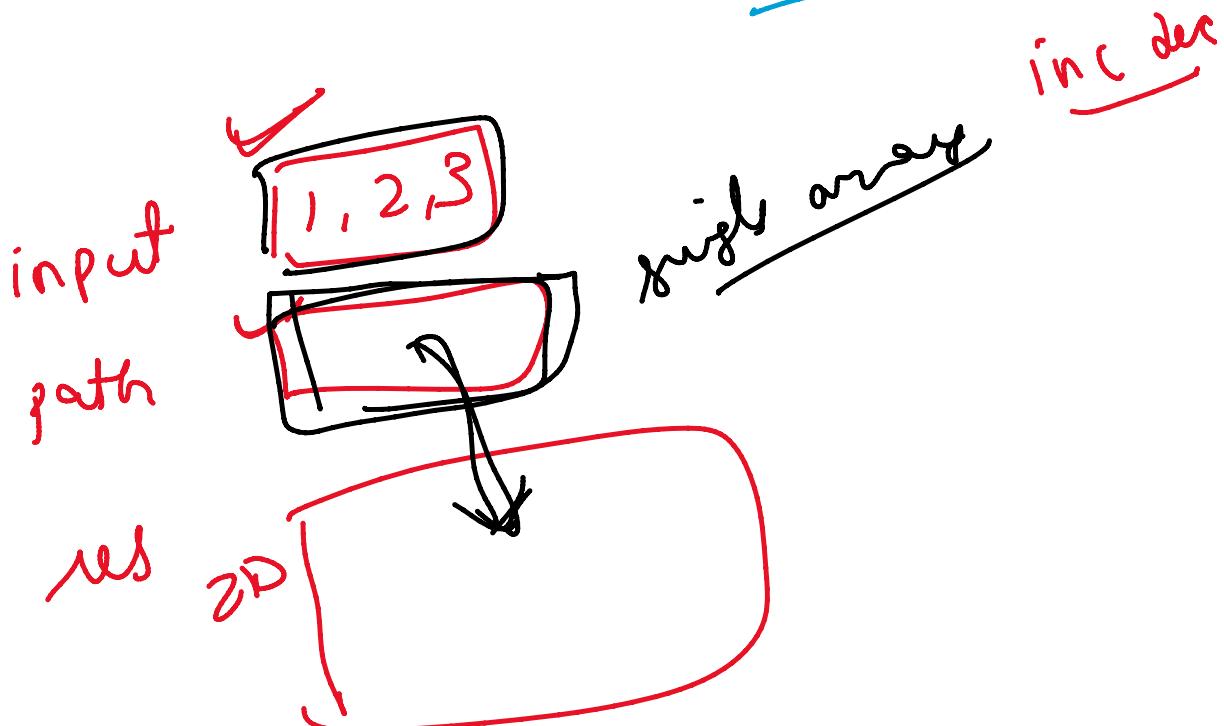


ఏలు  
1 2 3  
1 2  
1 2



current Path = ~~1.2.3.2~~ " "

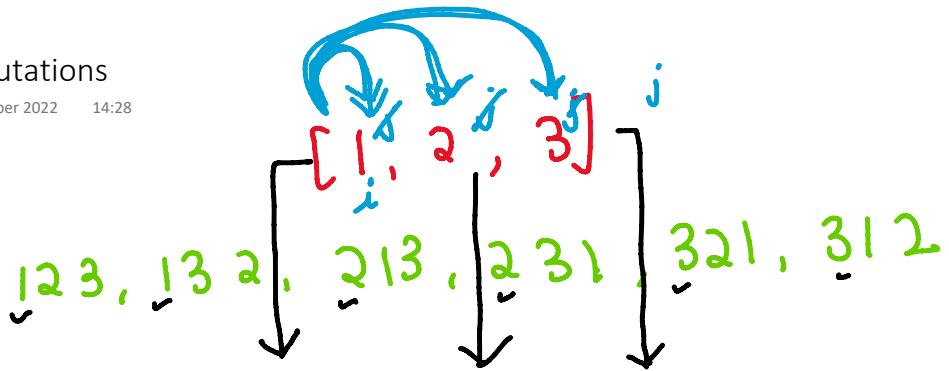
add (1, 2, 3)  
 function ()  
 //backtrack  
 remove (1, 2, 3)



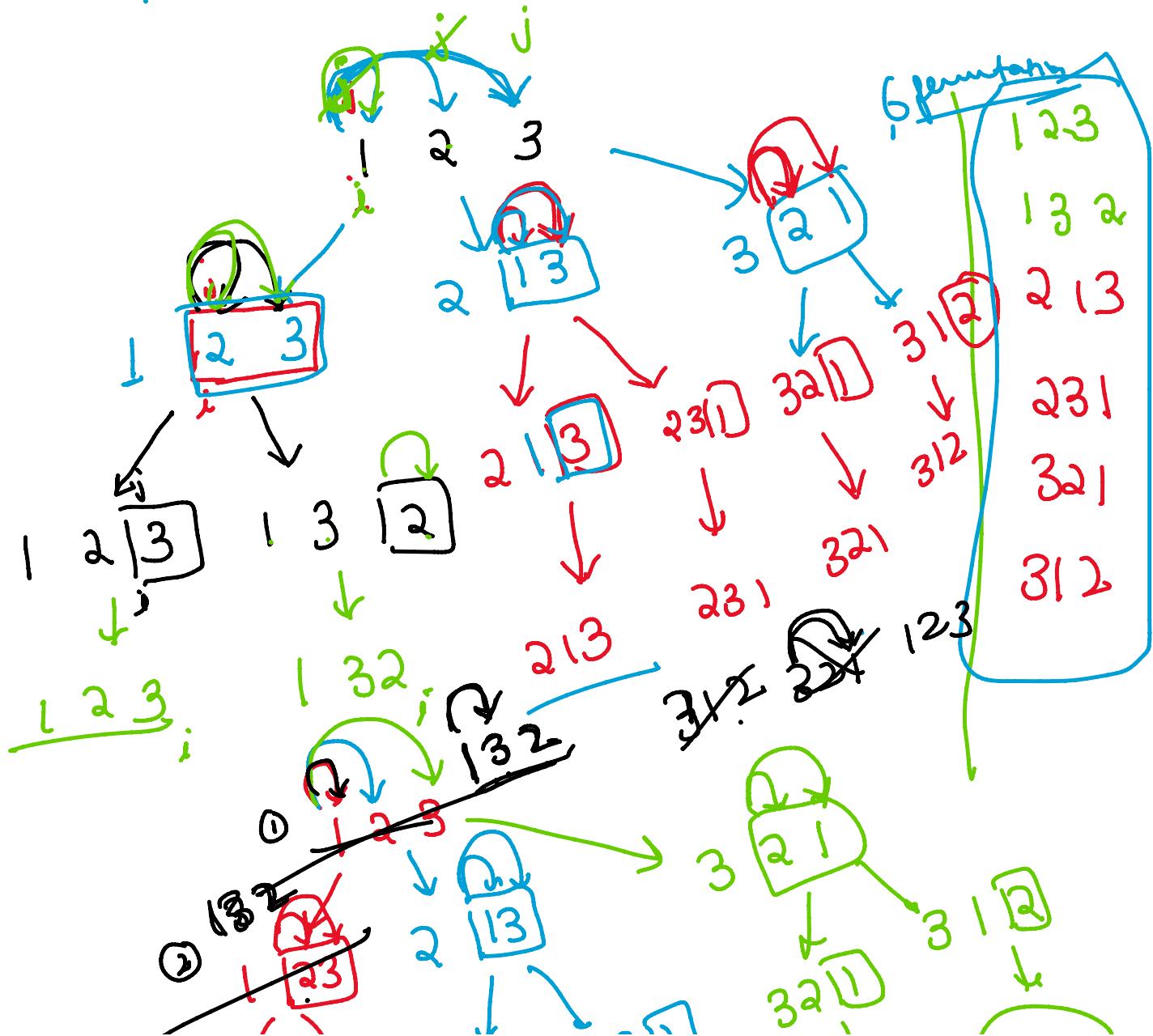
# Permutations

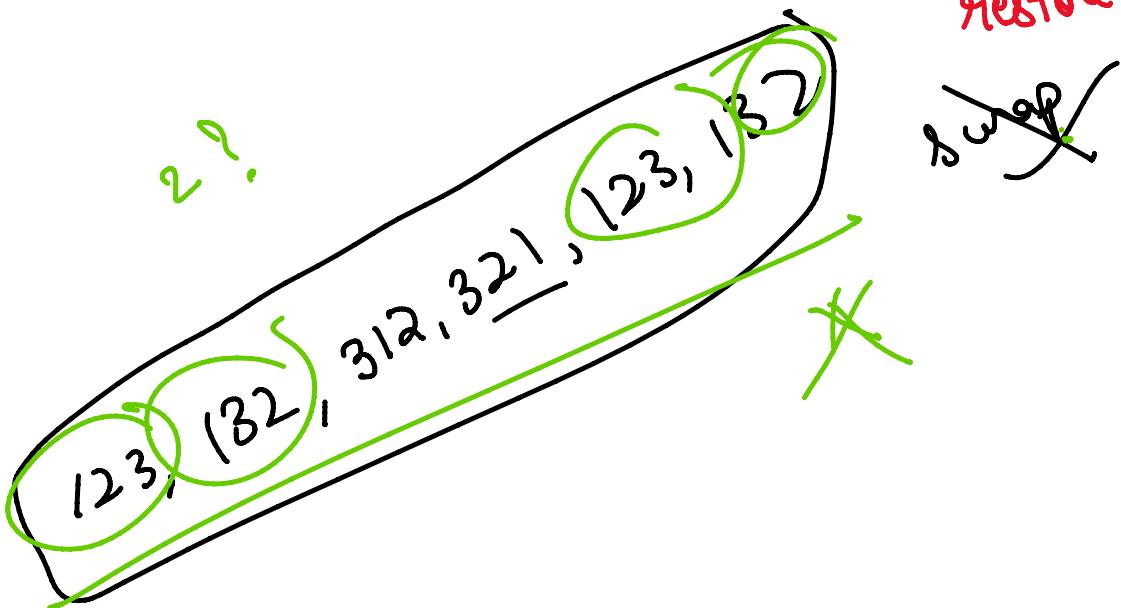
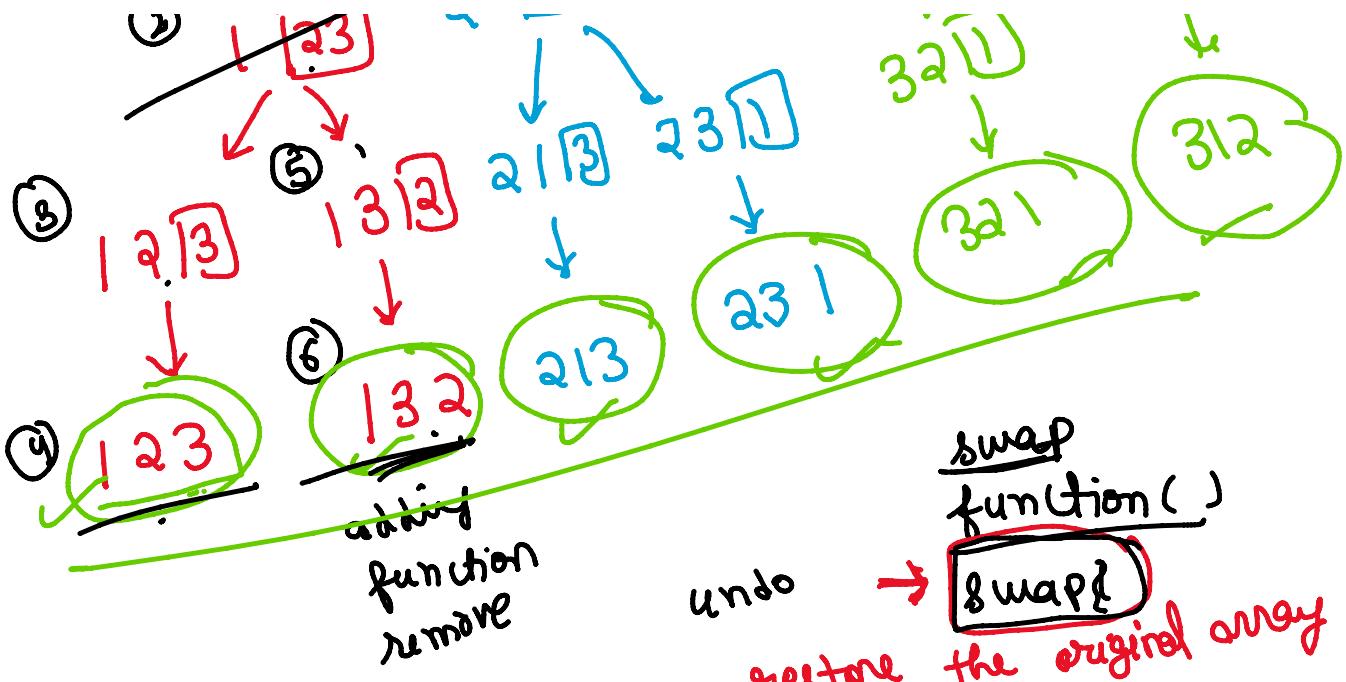
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$$3! = 6$$



123  
132  
213  
231  
312  
321





# Generating parenthesis

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$n=1$

$( )$   
 $(( ))$ ,  $( )()$

$n=2$

$n=3$

- 1  $(( (( )) ))$ ,
- 2  $(( () () ( )) )$ ,
- 3  $(( ( ) ) ( ))$ ,
- 4  $(( ( ) ( ) )$ ,
- 5  $(( ( ) ( ( )) )$

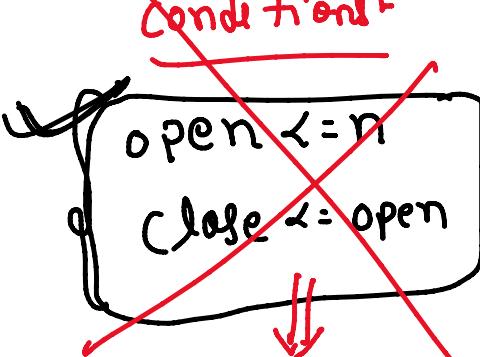
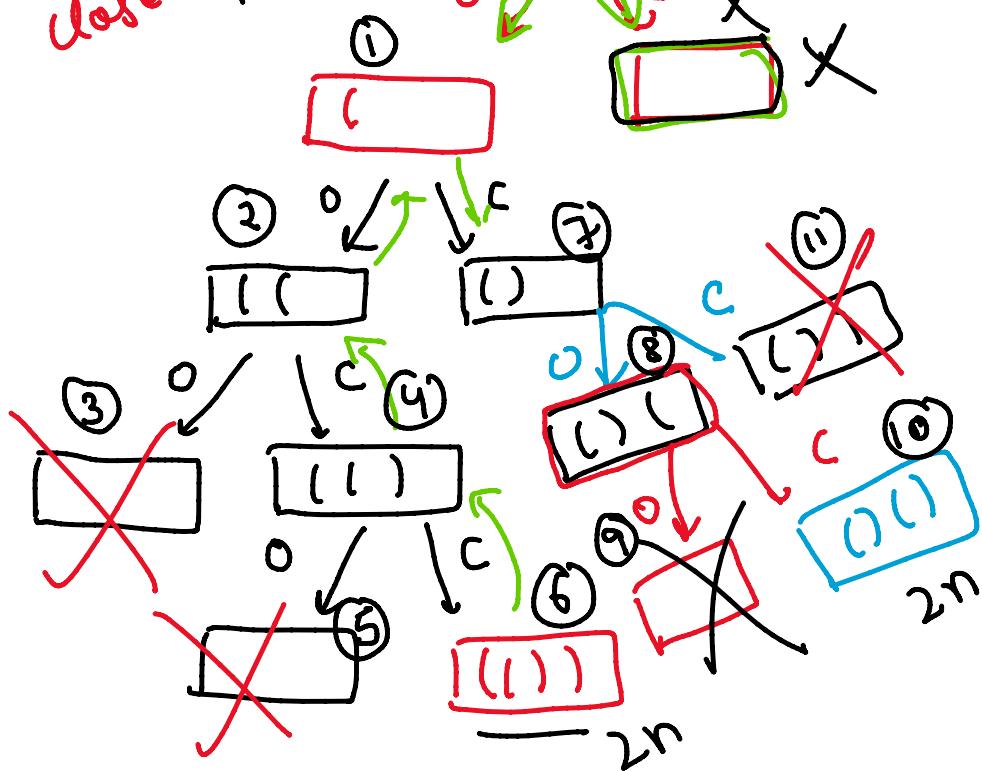
Base Case

1. closing =  $n$   
 2. size =  $2^n$

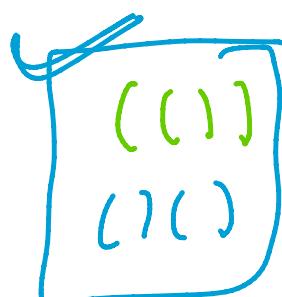
Count

$n=2$   
 open = 2  
 close = 0

$n=2$

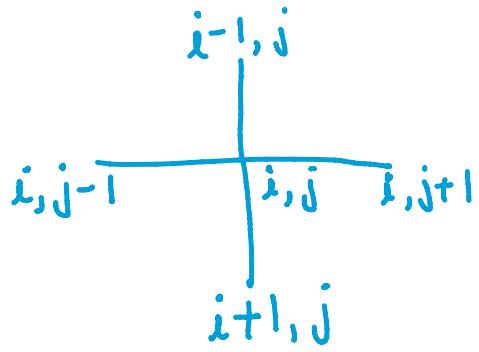
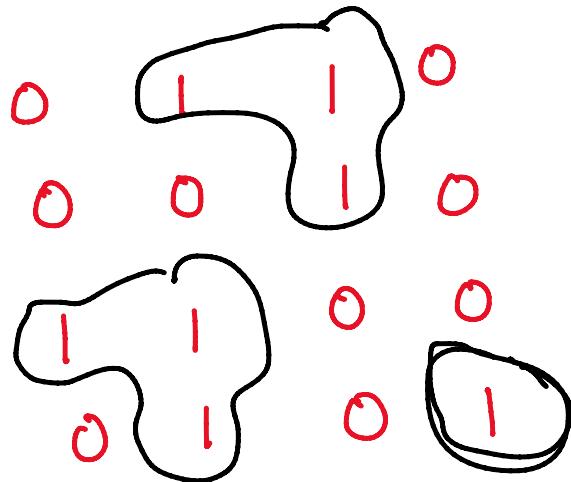


open < n  
 close < open



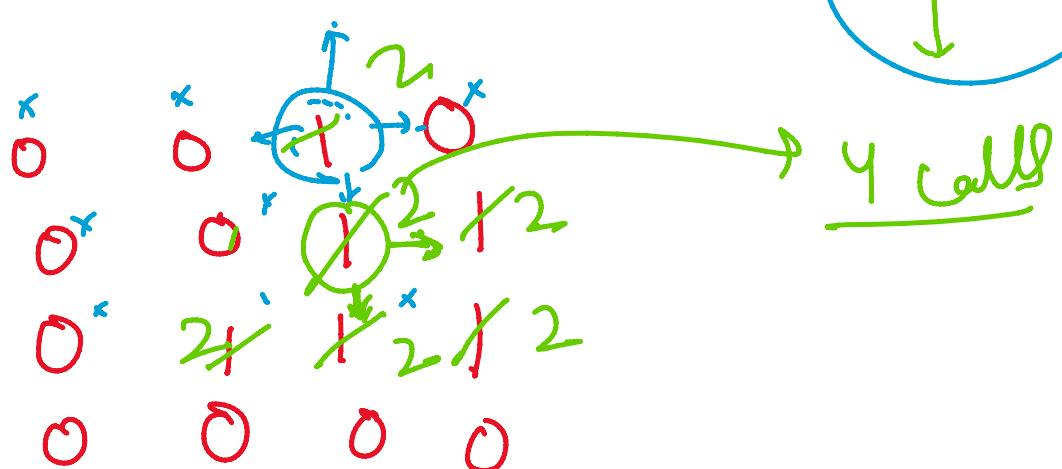
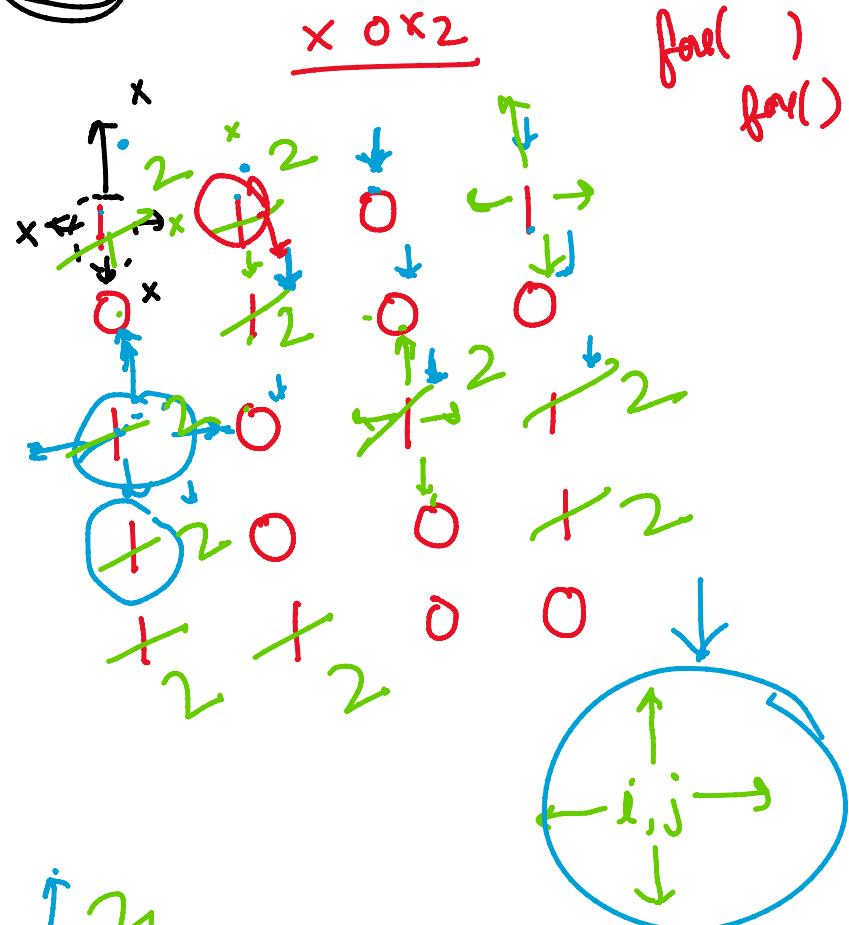
# Number of Islands

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$1 \rightarrow \text{land}$   
 $0 \rightarrow \text{water}$   
 $2 \rightarrow \text{visited}$

count = ~~1 2 3 4~~



Cent : !

✓. flood fill

✓. Combination sum

✓. ~~Phone number~~ letter combinations of phone numbers