Problem Solving on Sorting

Wednesday, 24 February 2021 4:44 PM

Q1 ⇒ You are Given N sticks i^th stick has length A[i].

⇒ To make lengths of all sticks equal.

⇒ In one operation you can either increase or decrease the length of any stick by 1.

⇒ Return the min number of operation.

⇒ 3 2 2 1 5
⇒ 2 2 2 1 5
2 2 2 2 5
4
3
2 2 2 2 2

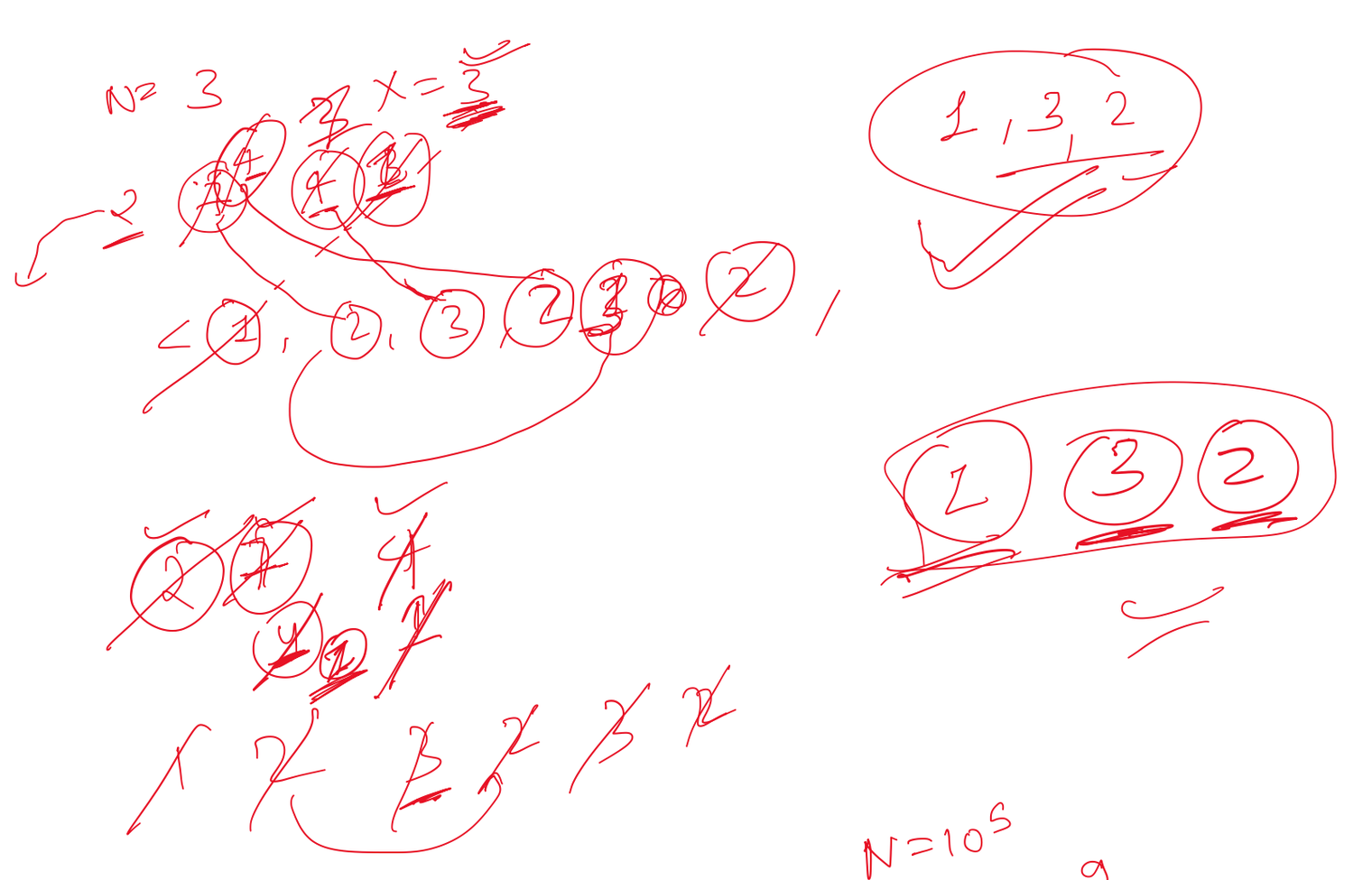
Ans = 5

⇒ 111 2 3 4 5 → mode → max freq

⇒ 11111111 100 100 → mean/avg

⇒ → median

10
23
30
100
-10
10
1000
n+y
Sort → a[n/2]
a[(n-1)/2]
1
2
100
1000
5000
7000



N=3
X=3
2
2, 2, 3, 2, 3, 2
1, 3, 2
2 3 2

N=10^5
A[i] ≈ 10^9
X = 1~10^9
X≥1
A[i] ≤ 10^9
10^5
10^14

N=5 X=6
9 10 4 7 26
1 1

⇒ 3, 5, 1, 2, 4

X = 10

1 2 3 4 5 6 -- 7

first first fir

secon Second

three three

Ceil(a[i]/x) → 62 → 7

(ceil(a[i]/x), i)

5

4 2 1 5 3

1, 2, 3 --- N

⇒ 1
2, 3
4 5

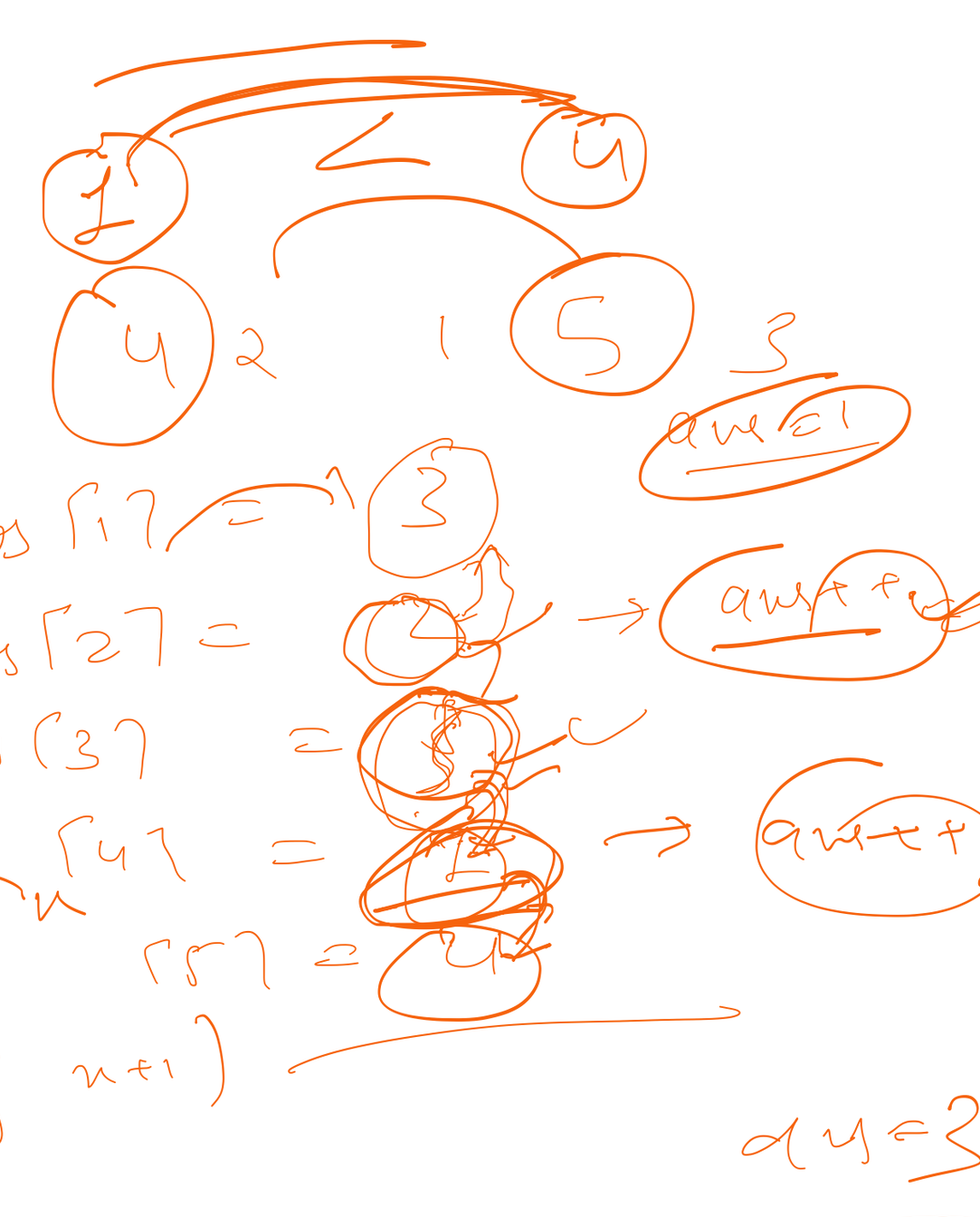
4 2 6 3
4 5

x

n+1

n+1 to be on right of x

Σ x (which are on right of n+1)



1
4 2
1
4
5
3
pos[1] =
pos[2] =
pos[3] =
pos[4] =
pos[5] =
3
ans=1
ans++
ans++
ans=3

pos[ ]

cum num

{num, index}

sort

1 < _ < __ < __ < __ < __

1 2 3 7 9

2 7 9

Ans will always a power 2 ⇒ O(N)

16

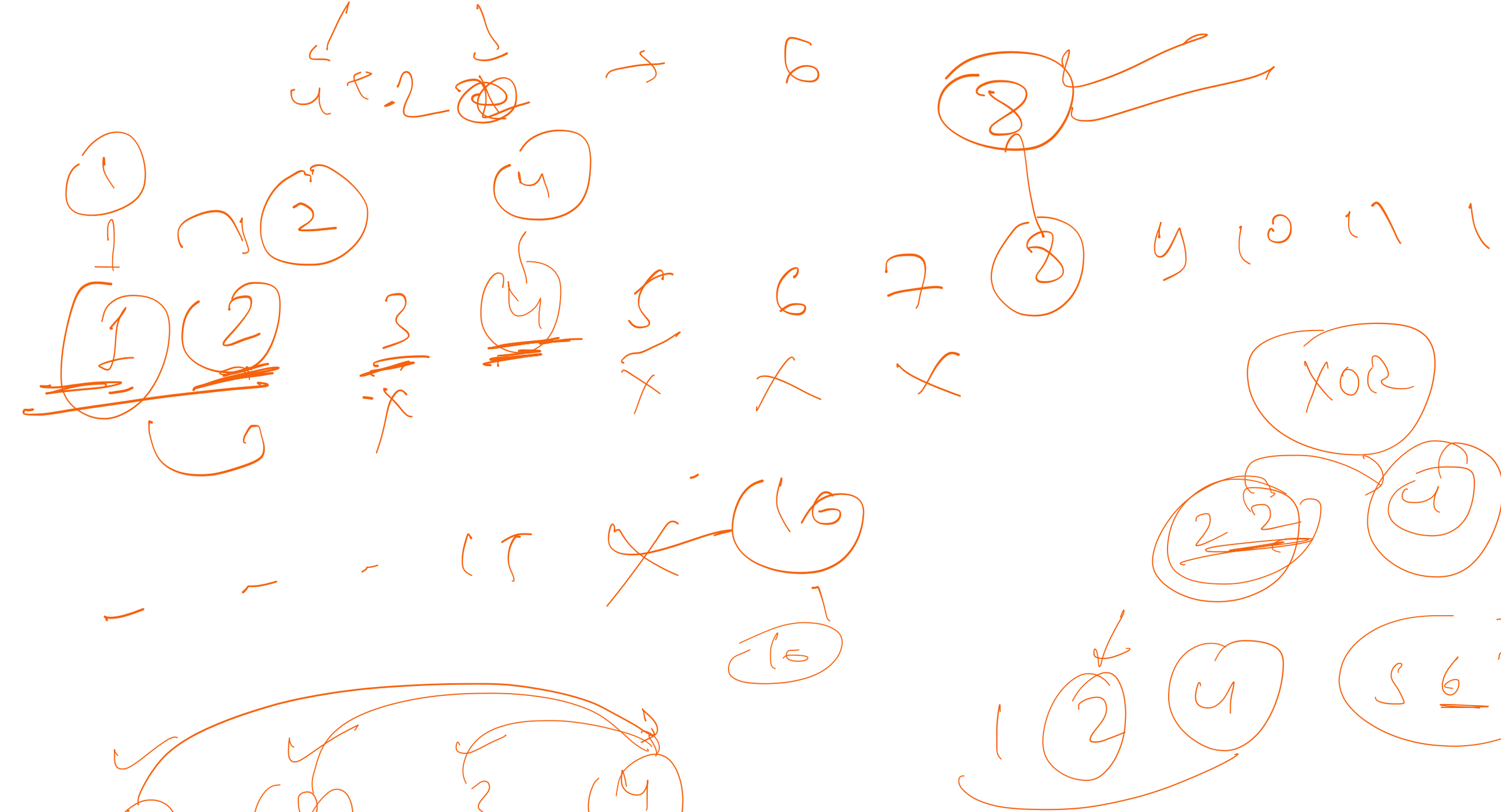
ans×N

TCO 2019 India finals Onsite (Jaipur)

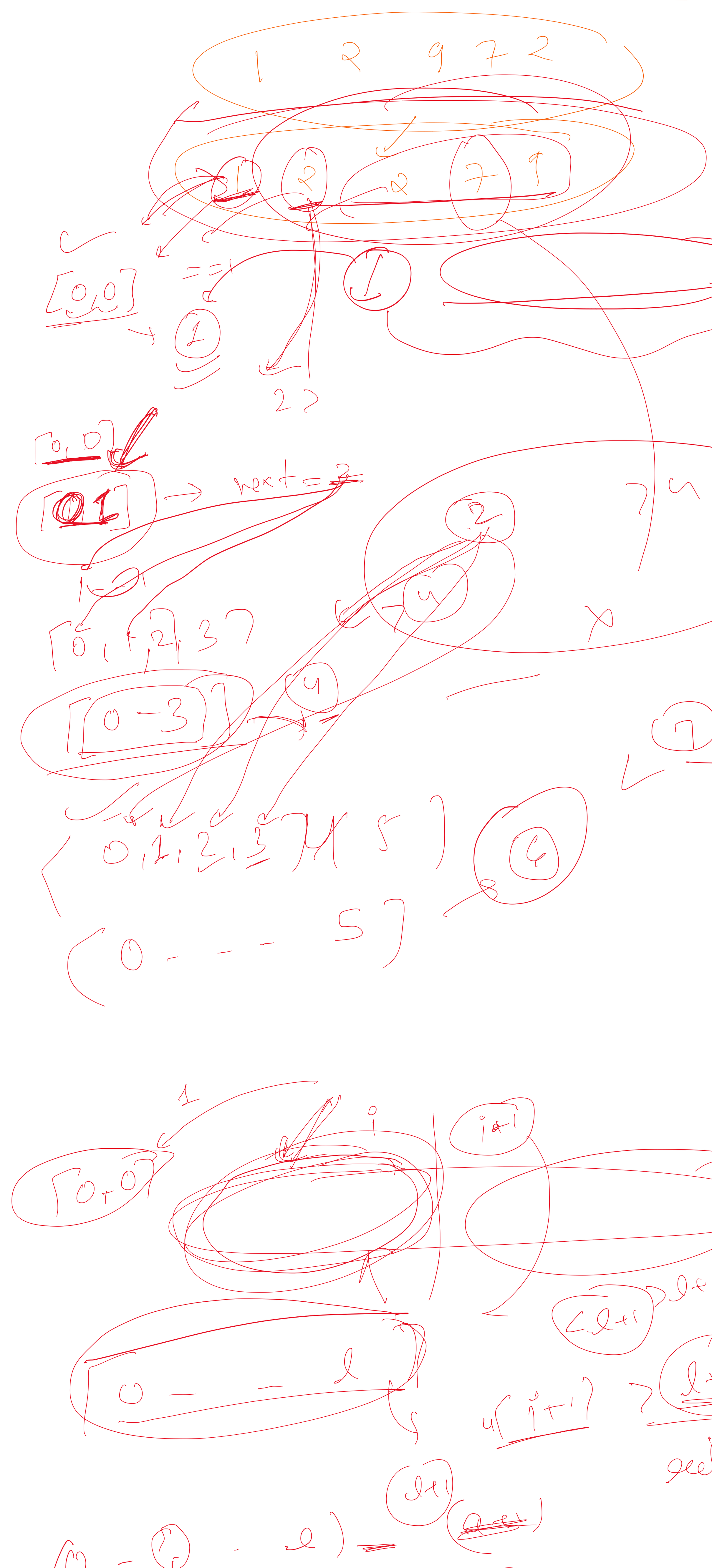
log(Ans) × N

7 ⇒ 1+2+4 → binary.

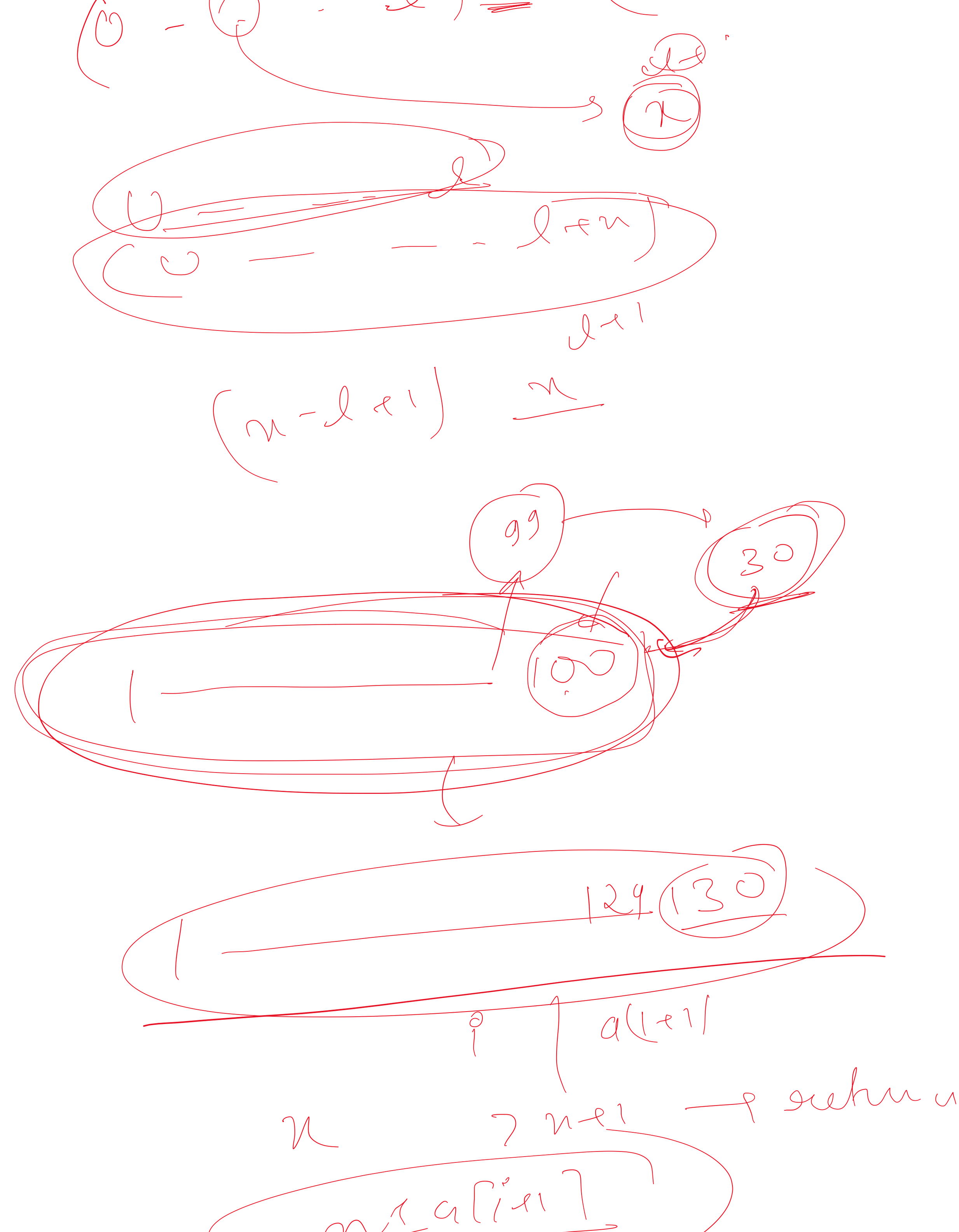
6 → 110
4+2+0 → 6



8
1 2 4
1 2 3 4 5 6 7 8 9 10 11 12
-- -- -- 15 16
16
XOR
2 2
4
1 2 4
5 6 7
1 2 3 4



1 2 9 7 2
1 2 2 7 9
[0,0]
==1
1
1
2?
[0,0]
[0 1]
next = 2
[0,1,2,3]
[0-3]
4
2
4
7 4
x
[0,1,2,3,4,5]
[0 --- 5]
7
6



1
i
[0,0]
i+1
<l+1
>l+1
[0 --- l]
a[i+1] > l+1
return (l+1)
(0 - ? . l)
l+1
x
[0 --- l]
[0 --- l+x]
(x-l+1)
x
l+1

99
30
1 ——— 100

1 ——— 124 130
i a[i+1]

x > x+1 → return

[x+a[i+1]]

[0 --- x+a[i+1]]