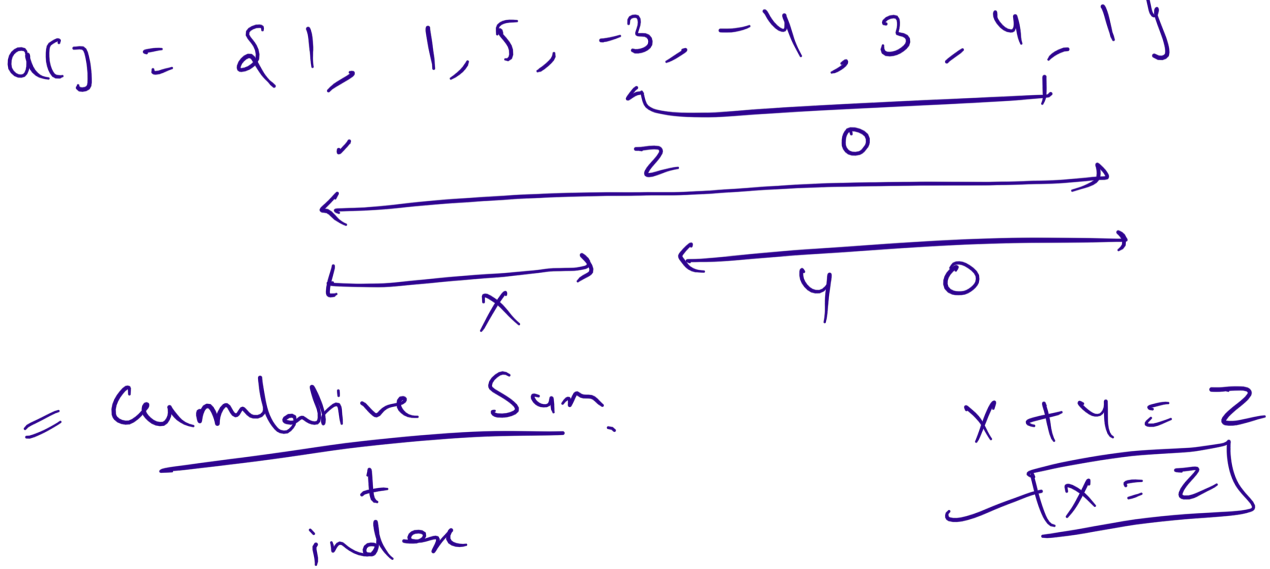
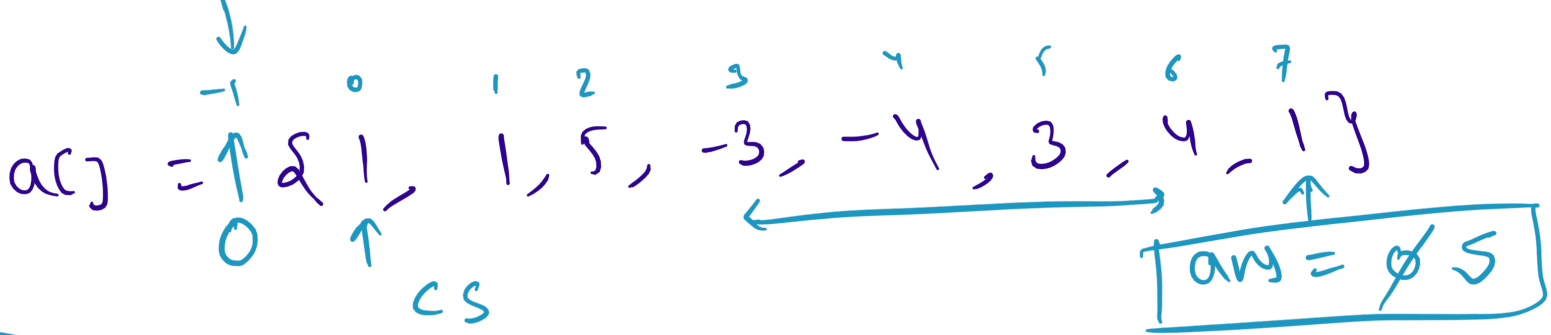
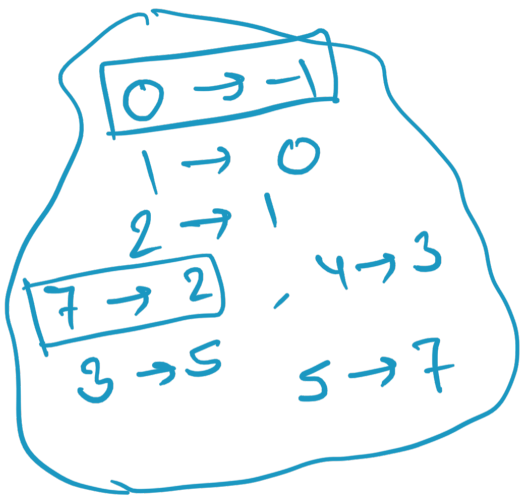
Hashing Problems - I

Largest Subarray with zero sum







$4 - (-1)$

$= 5$

$6 - 2 = 4$

{2, 5, -3, -4, 2, 3, 2}

0 1 2 3 4 5 6

ans = 0 4 5

0	-1
2	0
7	1
4	2
5	5

cs = 7

prev = 1

ans = max(0, 3 - (-1))

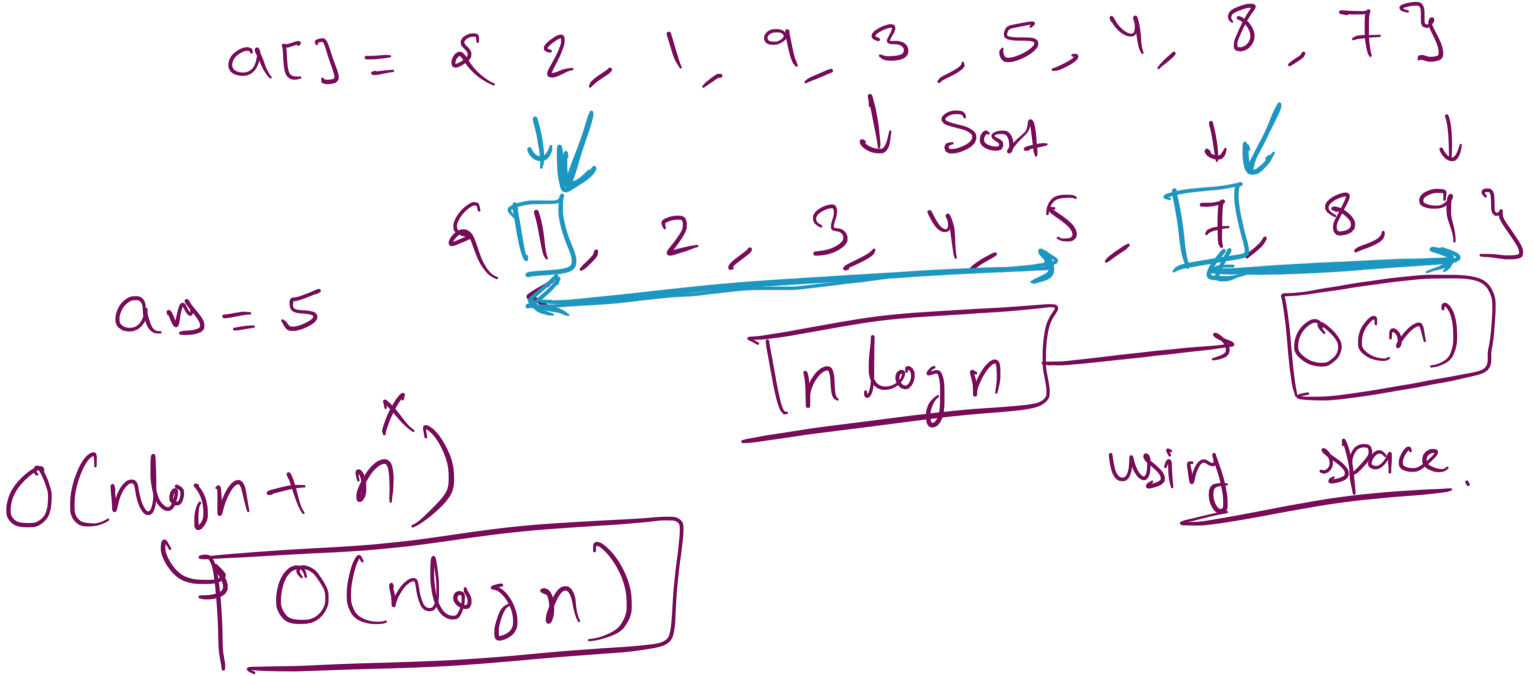
max(0, 4)

= 4

4 - 0 = 4

6 - 1 = 5

Longest Consecutive Subsequence



→ a[] = { 2, 1, 9, 3, 5, 4, 8, 7, 2, 1, 3 }

Set = → {2, 1, 9, 4, 3, 5, 7, 8}

ans = 5

0
2
3
4
5

2 - 1 = 1

len = 1+1+1+1+1 = 5

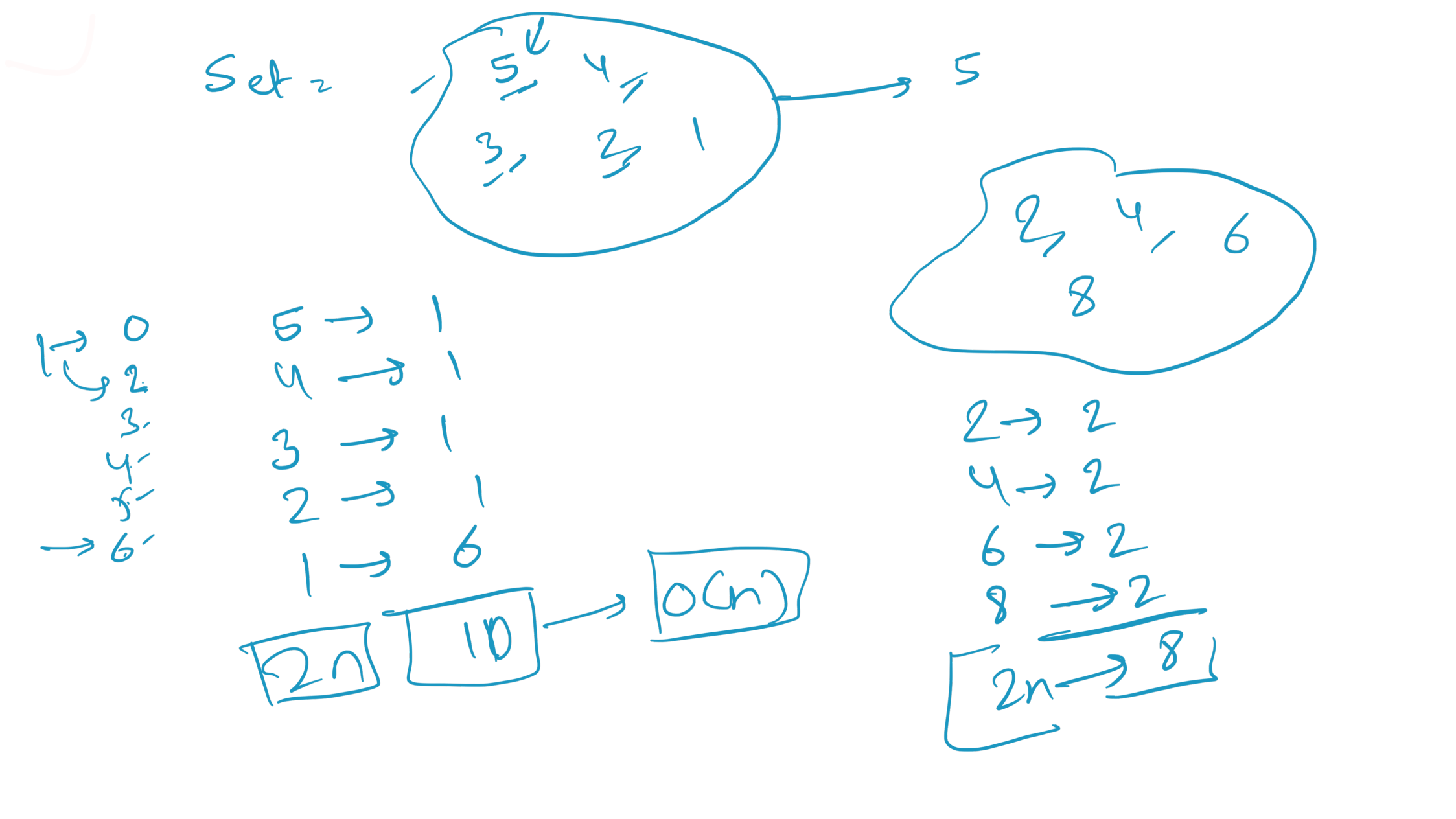
len = 1+1+1 = 3

2 → 1	5 → 1
1 → 5	7 → 3
9 → 1	8 → 1
4 → 1	
3 → 1	

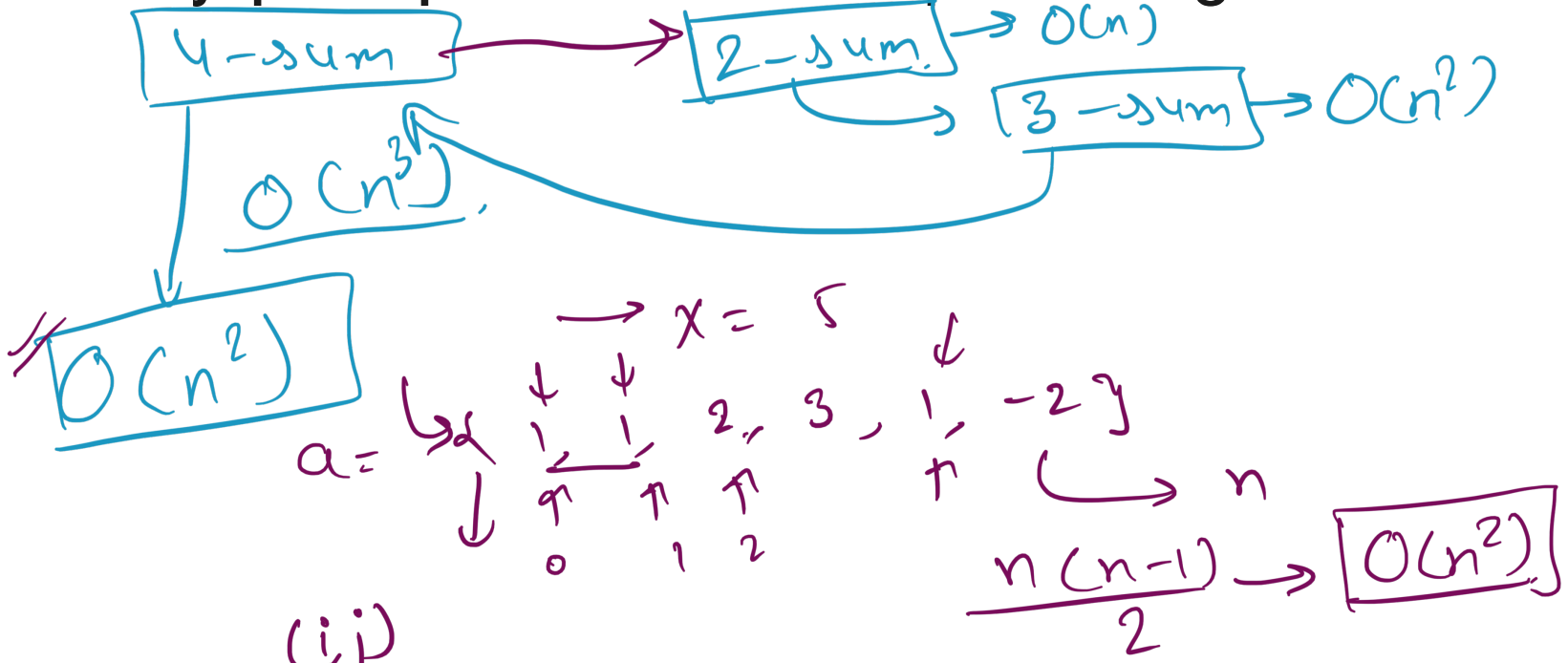
O(n)

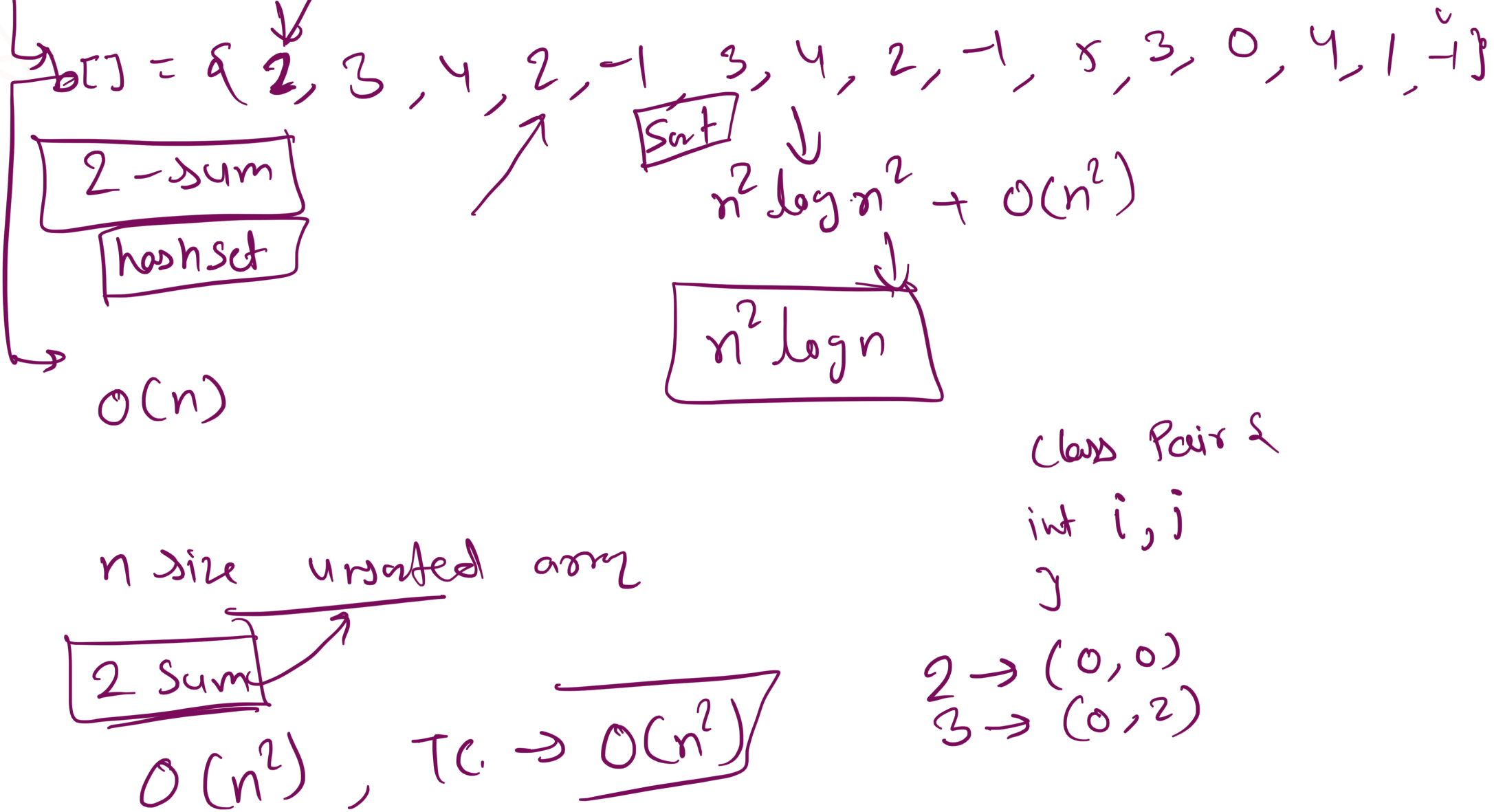
n → 2n

6
8
9


Set =
5
4
3
2
1
5
2
4
6
8
0
1
2
3
4
5
6
5 → 1
4 → 1
3 → 1
2 → 1
1 → 6
2 → 2
4 → 2
6 → 2
8 → 2
2n
10
O(n)
2n → 8

Find any quadruple whose sum is equal to the given sum.

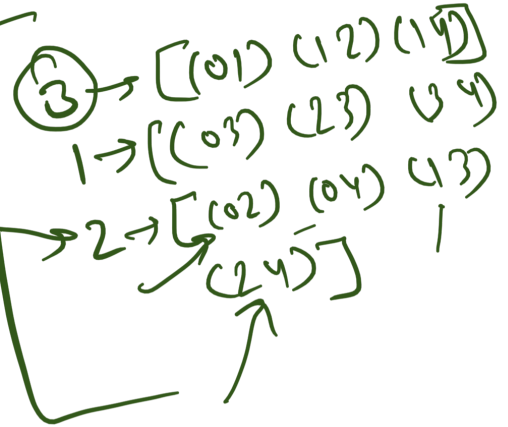



b[] = { 2, 3, 4, 2, -1, 3, 4, 2, -1, 5, 3, 0, 4, 1, -1 }
2 - sum
hashset
O(n)
Sort
$n^2 \log n^2 + O(n^2)$
$n^2 \log n$
n size unsorted arr
2 Sum
$O(n^2)$, TC. → $O(n^2)$
Class Pair {
int i, j
}
2 → (0, 0)
3 → (0, 2)

a[] = {1, 2, 1, 0, 1} → 5

0 1 2 3 4

x = 5



→ 3 → (0,1)

→ 2 → (0,2)

1 → (0,3) ✗

→ 2 → (0,4) ✗

3 → (1,2) ✗

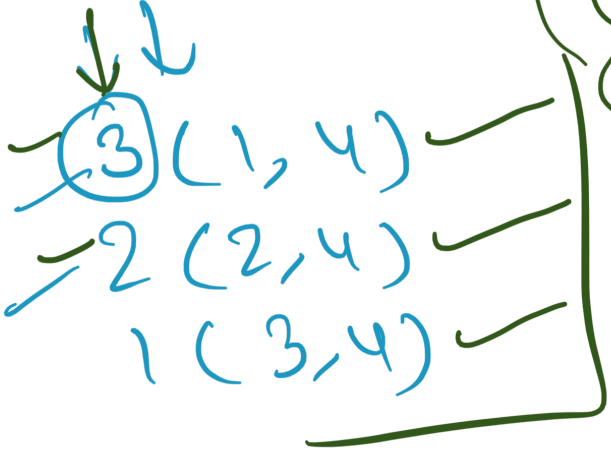
2 → (1,3) ✗

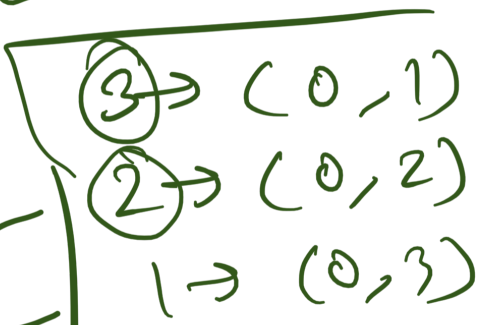
3 → (1,4) ✓

1 → (2,3) ✗

2 → (2,4) ✓

1 → (3,4) ✓





12 → { 2, 1, 3, 5, 6 }
0 1 2 3 4

3 → (0, 1)
5 → (0, 2)
X 7 → (0, 3)
X 8 → (0, 4)
4 → (1, 2)
6 → (1, 3)
7 → (1, 4)
8 → (2, 3)
9 → (2, 4)
11 → (3, 4)

0 1 2 3 4 5

nums[] = {1, 0, -1, 0, -2, 2}

0

1 → [(0,1), (0,3), (2,5)]

0 → [(0,2), (1,3), (4,5)]

-1 → [(0,4), (1,2), (2,3)]

3 → [(0,5)]

-2 → [(1,4), (3,4)]

2 → [(1,5), (3,5)]

-3 → [(2,4)]

(0,1,2,3)

(0,2,4,5)

(1,3,4,5)

HashMap<Array>

Practice Problems

1. Longest Substring without repeat.
2. https://www.interviewbit.com/problems/anagrams/
3. https://www.interviewbit.com/problems/colorful-number/
4. https://www.interviewbit.com/courses/programming/hashing