Largest Subarray With Zero Sum

O(n)

O(n²) ~~x~~ S

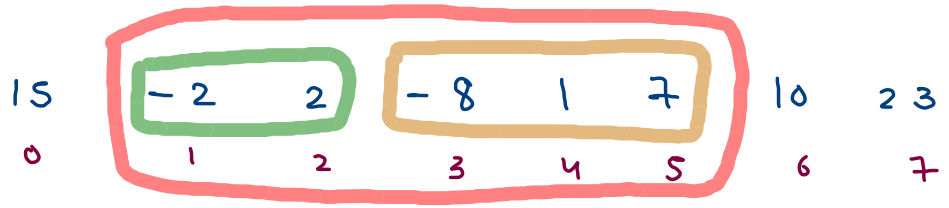
8
15 -2 2 -8 1 7 10 23

	15	-2	2	-8	1	7	10	23
	0	1	2	3	4	5	6	7
PS	15	13	15	7	8	15	25	48

PS vs Idx

0 -> (-1)
15 -> 0
13 -> 1
7 -> 3
8 -> 4
25 -> 6
48 -> 7

Count Of All Subarrays With Zero Sum



map
↳ prefix sum vs frequency

count = 1 + 1 + 1 + 2 + 2 + 2 + 2

	10	9	-19	8	-4	6	-2	2	-11	1	8
	0	1	2	3	4	5	6	7	8	9	10
ps	10	19	0	8	4	10	8	10	-1	0	8

0 -> 3

10 -> 3

19 -> 1

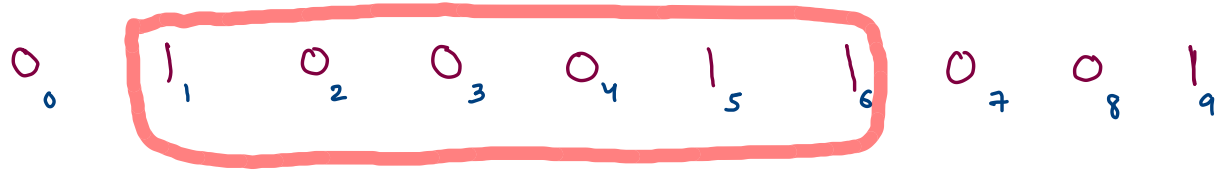
8 -> 3

4 -> 1

-1 -> 1

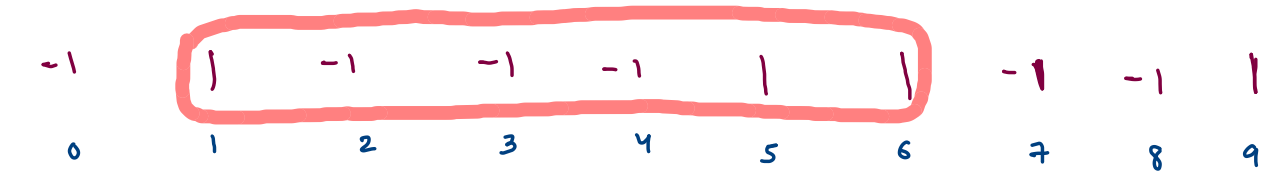
Longest Subarray With Equal Number Of Zeroes And Ones

T : O(n)



(i) replace all 0's by (-1)

(ii) now apply subarray having sum 0 logic.



PS	-1	0	-1	-2	-3	-2	-1	-2	-3	-2

PS vs $\int_0$

0 -> (-1)

-1 -> 0

-2 -> 3

-3 -> 4

ans = ~~0~~ ~~2~~ 6

Count Of Subarrays With Equal Number Of Zeroes And Ones

(i) replace 0 with -1

	-1	1	-1	-1	-1	1	1	-1	-1	1
	0	1	2	3	4	5	6	7	8	9
ps	-1	0	-1	-2	-3	-2	-1	-2	-3	-2

ps vs freq

0 -> 2

-1 -> 3

-2 -> 4

-3 -> 2

count = 1 + 1 + 1 + 2 + 2 + 1 + 3

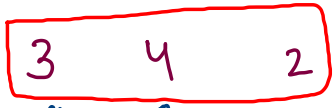
= 11

Maximum Size Subarray Sum Equals K

ps - k

k = 9

```
6
3 4 2 7 1 8
9
```



ps 3 7 9 16 17 25

ps vs j

0 -> (-1)

3 -> 0

7 -> 1

9 -> 2

16 -> 3

17 -> 4

25 -> 5

len = 3

Count Of Subarrays Having Sum Equals To K

k = 9

	3	4	2	7	1	8	-9	9
	0	1	2	3	4	5	6	7
ps	3	7	9	16	17	25	16	25

count : 1 + 1 + 1 + 1 + 2

count

ps vs freq

0 -> 1

3 -> 1

7 -> 1

9 -> 1

16 -> 2

17 -> 1

25 -> 2