

Ques Find the count of number of subarrays whose sum = 0

① All subarray  $\Rightarrow$  TC  $\Rightarrow O(n^2)$

a b c d e

6	3	-1	-3	4	-2	2	4	6	-12	-7
---	---	----	----	---	----	---	---	---	-----	----

prefix sum ~~0~~ ~~6~~ ~~9~~ ~~8~~ ~~5~~ ~~7~~ ~~9~~ ~~13~~ ~~19~~ ~~7~~ 0  $\uparrow$

ans = ~~0~~ ~~1~~ ~~3~~ ~~4~~ 5

$$a + b = 9$$

$$a + b + c + d + e = 9$$

$$\cancel{a} + c + d + e = \cancel{9}$$

$$c + d + e = 0$$

$$TC \Rightarrow O(n)$$

$$SC \Rightarrow O(n)$$

psum	Count
0	12
6	1
9	3
8	1
5	1
7	2
13	1
19	1

Ques Length of longest subarray having sum 0

0 1 2 3 4 5 6 7 8 9 10

6	3	-1	-3	4	-2	2	4	6	-12	-7
---	---	----	----	---	----	---	---	---	-----	----

psum ~~0~~ ~~6~~ ~~9~~ ~~8~~ ~~5~~ ~~7~~ ~~9~~ ~~13~~ ~~19~~ ~~7~~ 0  $\uparrow$

ans = ~~7~~ ~~8~~ 11

$$10 - (-1)$$

$$10 + 1 \Rightarrow 11$$

psum	idx
0	-1
6	0
9	1
8	2
5	3
7	5
13	7
19	8

Ques Find the count of number of subarrays whose sum =  $k$

① All subarray  $\Rightarrow$  TC  $\Rightarrow O(n^2)$

a	b	c	d	e
1	2	3	1	5

$$k = 6$$

psom ~~0~~ ~~1~~ ~~3~~ ~~6~~ ~~7~~ 12



ans = ~~0~~ ~~1~~ ~~3~~  
6 - 6  $\Rightarrow$  0

psom	Count
0	1
1	1
3	1
6	1
7	1
12	1

Ques Count no of subarrays where no of 0's and 1's are same

1 0 0 1 0 1 1  $\Rightarrow$  8

1 -1 -1 1 -1 1 1

Ques Length of Longest subarray with sum = k

Ques Length of Longest subarray with equal 0s and 1's in a binary array