SubArray Sum Equal

arr = [9, 4, 20, 3, 10, 5]   tar = 33

33   33

2 — Answer

Brute Force

1. Sum of all Subarrays
2. Then check which one's sum is equal to target.

```
for(i=0 to n)
    sum=0
    for(j=i to n){
        sum+=arr[j]
        if(sum==k)
            count++
```

T.C ~~$O(n^2)$~~

Optimal

Prefix Sum

PS[i] = 3
PS[J] = 10

[1 | 2 | 3 | 4 | 5]

SubArraySum(i+1, j) = PS[j] - PS[i]

Target = PS[j] - PS[i-1]

PS[i-1] = PS[j] - Target

9	4	20	3	10	5	n
				j		

46-33 = 13

9	13	33	36	46	51	PS
	i-1					

i=2

Subarray

```
PrefSum[n]
PS[0] = arr[0]
for(i=1 to n){
PS[i] = PS[i-1] + arr[i]
```

If

9	4	0	20	3	10	5
j						

9	13	13	33	36	41	51

PS[i-] = PS[j]-Tar

This will check every line

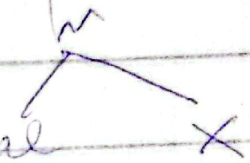
We will be taking unordered map

PS	Freq
9	1
13	2
33	1
36	1

```
prefSum[n]
ps[0] = arr[0]
for(i=1 to n)
  PS[i] = PS[i-1]+arr[i]
unorderd map<int,int> m
  for(j=0 to n)
    If(PS[j]==K) count++
    val = PS[j]-K
```

T.C
$O(n)$

S.C
$O(n)$



```
count += m[val]
m[PS[j]]++
```