

CUMULATIVE SUM

ANIMATED INTUITION

PREFIX SUM SUFFIX SUM

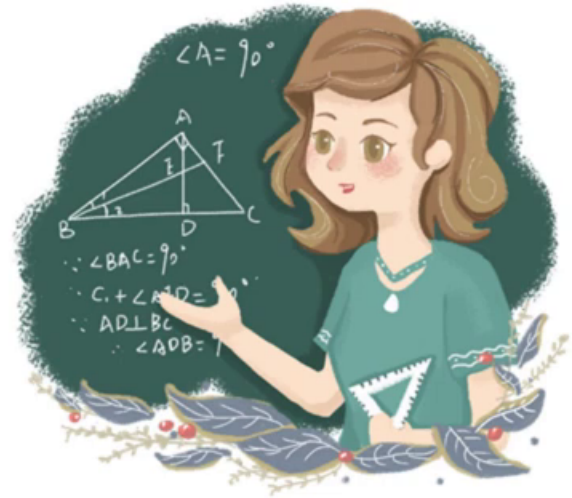
SUM FROM L TO R



cumulative sum

problem :

given an array of size n and
given t queries every query
from l to r find the sum
from l to r



cumulative sum

input :

5

1 2 3 4 5

2

1 4

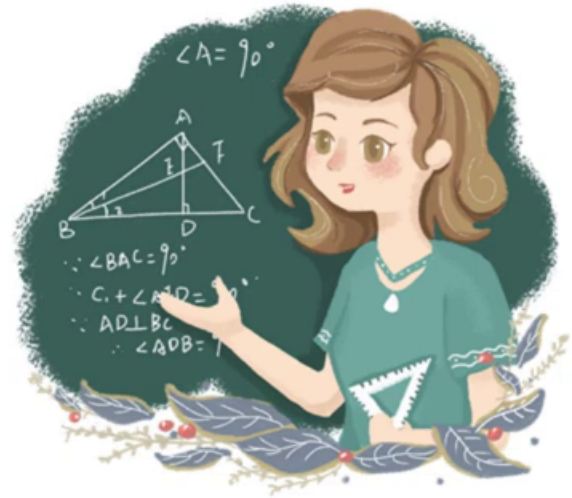
1 5

output :

10

15

time complexity is $t*n$

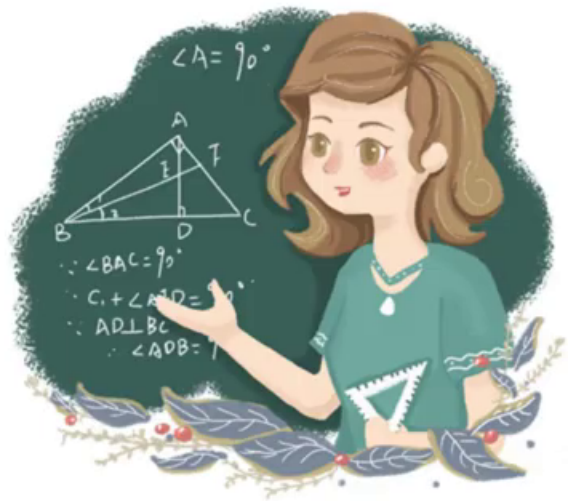


cumulative sum

two parts

prefix sum

suffix sum



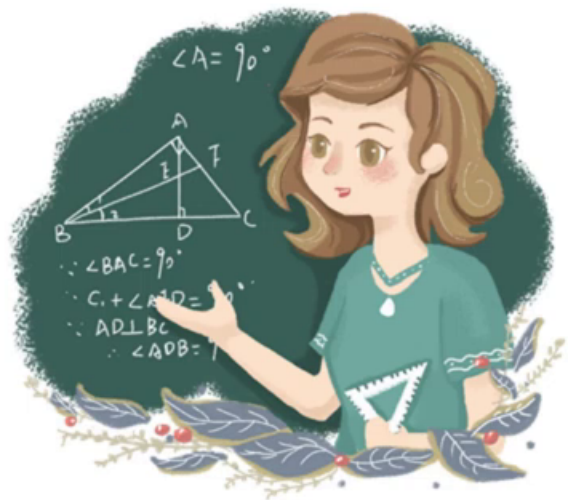
cumulative sum

prefix sum

index 0 1 2 3 4

value 1 2 3 4 5

sum 1 3 6 10 15



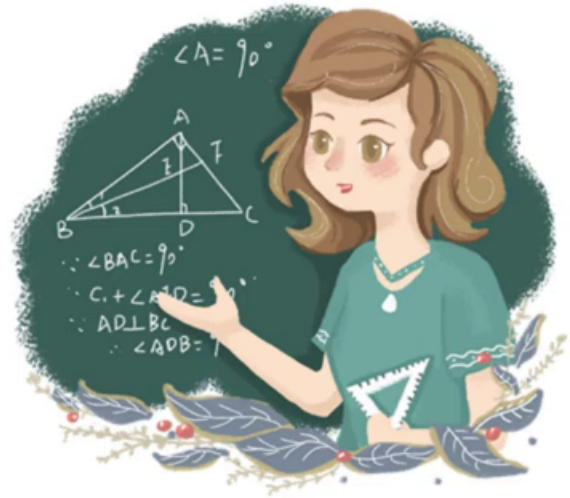
cumulative sum

prefix sum usage case 1

find the sum from index 2 to 4

index	0	1	2	3	4
values	1	2	3	4	5
sum	1	3	6	10	15

$$\text{sum} = 12 = 15 - 3$$



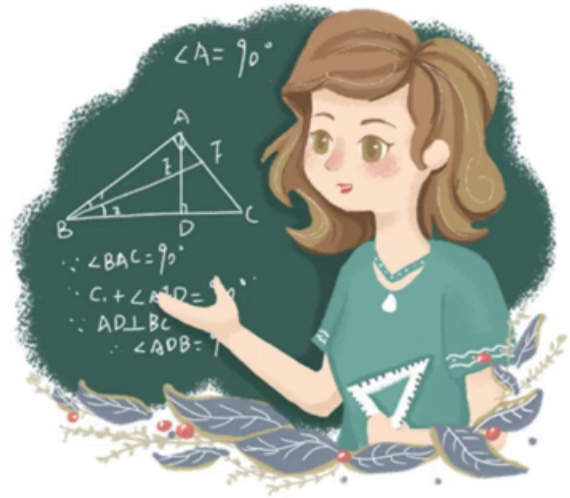
cumulative sum

prefix sum usage case 2

find the sum from index 0 to 3

index	0	1	2	3	4
values	1	2	3	4	5
sum	1	3	6	10	15

sum = 10



cumulative sum

suffix sum

opposite of prefix sum

index	0	1	2	3	4
values	1	2	3	4	5
sum	15	14	12	9	5

