

## 2444. Count Subarrays with fixed Bounds

i/p  $\rightarrow$  nums = [1, 3, 5, 2, 7, 5]

minK = 1, maxK = 5

o/p  $\rightarrow$  2

answer  $\rightarrow$  [1, 3, 5]

[1, 3, 5, 2]

Intuition :-

0	1	2	3	4
6	3	5	2	2

minK = 1,  
maxK = 5

$\hookrightarrow$  Suppose that we

are at  $i = 4$  index और हम यह चाहते हैं कि इस  $i$  पर end होने वाले सभी subarrays में ऐसे मिलने subarrays हैं जिनमें  $\min \text{Elc} = \min K$  &  $\max \text{Elc} = \max K$

total subarrays ending at  $i$  are

{1} X

{2, 1} X

{5, 2, 1} ✓

{3, 5, 2, 1} ✓

{6, 3, 5, 2, 1}

But these two subarrays are valid in which  $\min = \min K$  &  $\max = \max K$

Teacher's Signature







maxValue = maxK and you can expand to your subarray till culprit index.

So how can you find the no. of valid subarray for index - i

maxK Position = 2

minK Position = 4

culprit Position = 0

smaller = min(maxK Position, minK Position)  
= min(2, 4) = 2

temp = smaller - culprit  
= 2 - 0 = 2

ans += (temp >= 0) ? 0 : temp

most important part.

why we are doing this

Suppose

0	1	2	3	4
3	5	2	6	1

maxK Position = 1

minK Position = 4

culprit Position = 3

temp = 1 - 3 = -2

and by seeing we can find that for idx = 4 there are no valid subarrays.



Day Run

0	1	2	3	4	5
1	3	5	2	7	5

$$\min K = 1$$

$$\max K = 5$$

initially

$$\min K \text{ Position} = -1$$

$$\max K \text{ Position} = -1$$

$$\text{culloid Position} = -1$$

for  $i = 0$

↳ find the valid subarray ending at index = 0 for

$$\min K \text{ Pos} = 0$$

$$\max K \text{ Pos} = -1$$

$$\text{culloid Pos} = -1$$

$$\text{smaller} = -1$$

$$\text{temp} = -1 - (-1)$$
$$= 0$$

$$\text{ans} += (\text{temp} > 0) ? 0 : \text{temp}$$

$\text{temp} = 0$  it says that there is no valid subarray ending at index = 0.



for i=1

minKPos = 0 } smaller = -1  
 maxKPos = 1  
 calPosit = -1

temp = -1 - (-1) = 0  
 } no valid subarray  
 #1

for i=2

minKPos = 0 } smaller = 0  
 maxKPos = 2  
 calPosit = -1

temp = 0 - (-1) = 1  
 } i.e. 1 valid subarray

{1, 3, 5}

for i=3

minKPos = 0  
 maxKPos = 3  
 calPosit = -1

temp = 0 - (-1) = 1  
 } 1, 3, 5, 2

for i=4

minKPos = 0  
 maxKPos = 4  
 calPosit = 4

temp = 0 - 4 = -4. that means  
 no valid subarray

for idx = 4



$i = 5$

$\text{maxIdx} = 2$

$\text{minIdx} = 0$

is valid subarray

Logic/Intuition :- We are going to check every index i.e. from  $i=0$  to  $n-1$  और सचता index पर जाके हम यह check कर रहे हैं कि इस index 'i' पर end होने वाले total valid subarray i.e.  $[\text{minK}, \text{maxK}]$  कितने हैं।  
किसी भी index पर total valid subarray हम कैसे find करें।

By using  $\rightarrow$  minK position  
maxK position  
current position

$\text{smaller} = \min(\text{minK position}, \text{maxK position})$

$\text{temp} = \text{smaller} - \text{current position}$

$\text{ans} += (\text{temp} < 0) ? 0 : \text{temp}$