Link -> https://www.desiqna.in/14025/de-shaw-coding-oa-solution-july-2023-sde1-38-lac-ctc

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Understanding :-> What is the meaning of MEX ?

MEX of an array is the smallest positive integer which is absent in the array

A = [1 2 3 4 8 10]

MEX = 5

-> They are telling us to create a new array which has MEX of all the subarrays -> This is Q

-> [3 2 1 4]

—> [1 1 1 1 2 2 3 3 4 5] -> NOW FIND THE KTH SMALLEST MEX.

—> We can do it much more easily

—> Find the number of subarrays whose mex = 1

—> Find the number of subarrays whose mex = 2

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—> Find the number of subarrays whose mex is N

Solution. -> We find the number of subarrays whose mex = i for each i from 1 to N ; once we are done with this; we will iterate our final array of frequencies and easily find out the guy at kth index.

ARTHITHA's LAW-> We have to first find the number of subarrays whose MEX is 1, 2, ...n. And then find the kth mex.

What is the elephant in the room.?

-> How do we find the number of subarrays whose mex = i ?

-> First try to find the small values.

-> How will you find the number of subarrays whose mex = 1

-> According to Amitava's Law ; -> Find the position of 1 and then count the elements to the left of 1 and number of elements on right of 1 find the number of subarrays for each side -> x*(x+1)/2 + y*(y+1)/2

-> Now how to find the number of subarrays whose mex is 2 ?

It can only happen if the subarray is forcefully including 1 but not including 2.

-> (x+1)*(y+1)

-> According to Naman's law :-> Subarrays which have 1 and 2 in it but not having 3
-> First you find the smallest subarray which has 1 and 2 in it ; once you are done with this, do the same as above. (x+1)*(y+1)

-> According to Anwesha's Law Mex = 4 -> Subarrays which have 1 ,2 and 3 in it but not having 4 -> find the smallest subarray which has [1,2,3] then do (x+1)*(y+1)

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