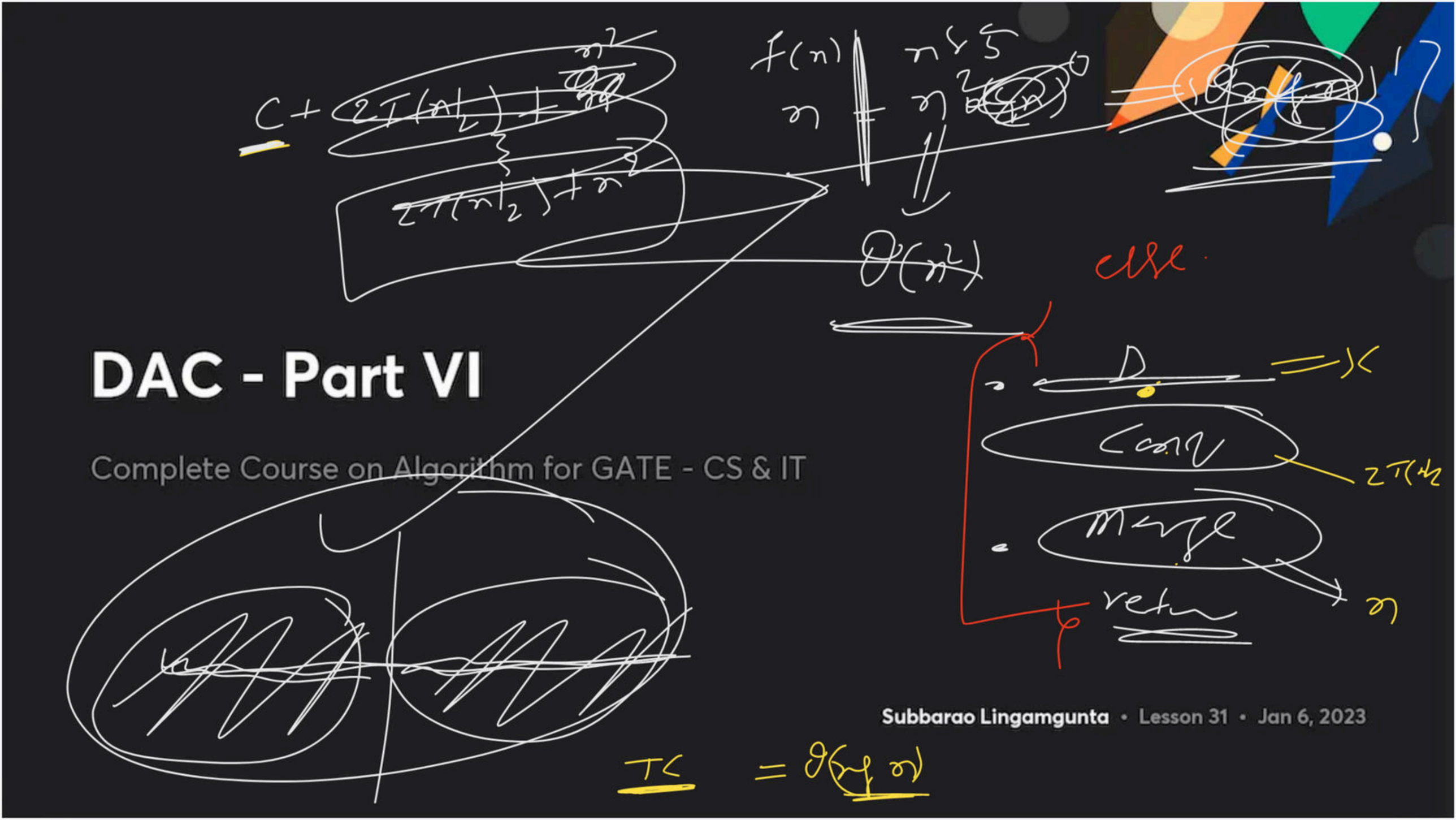


DAC - Part VI

Complete Course on Algorithm for GATE - CS & IT

Subbarao Lingamgunta • Lesson 31 • Jan 6, 2023

i/p: 80 - Sorted Subarrays each of size log n

o/p: Find log n Sorted Subarrays each of size n/log n

TC? [Best Algo. WC]

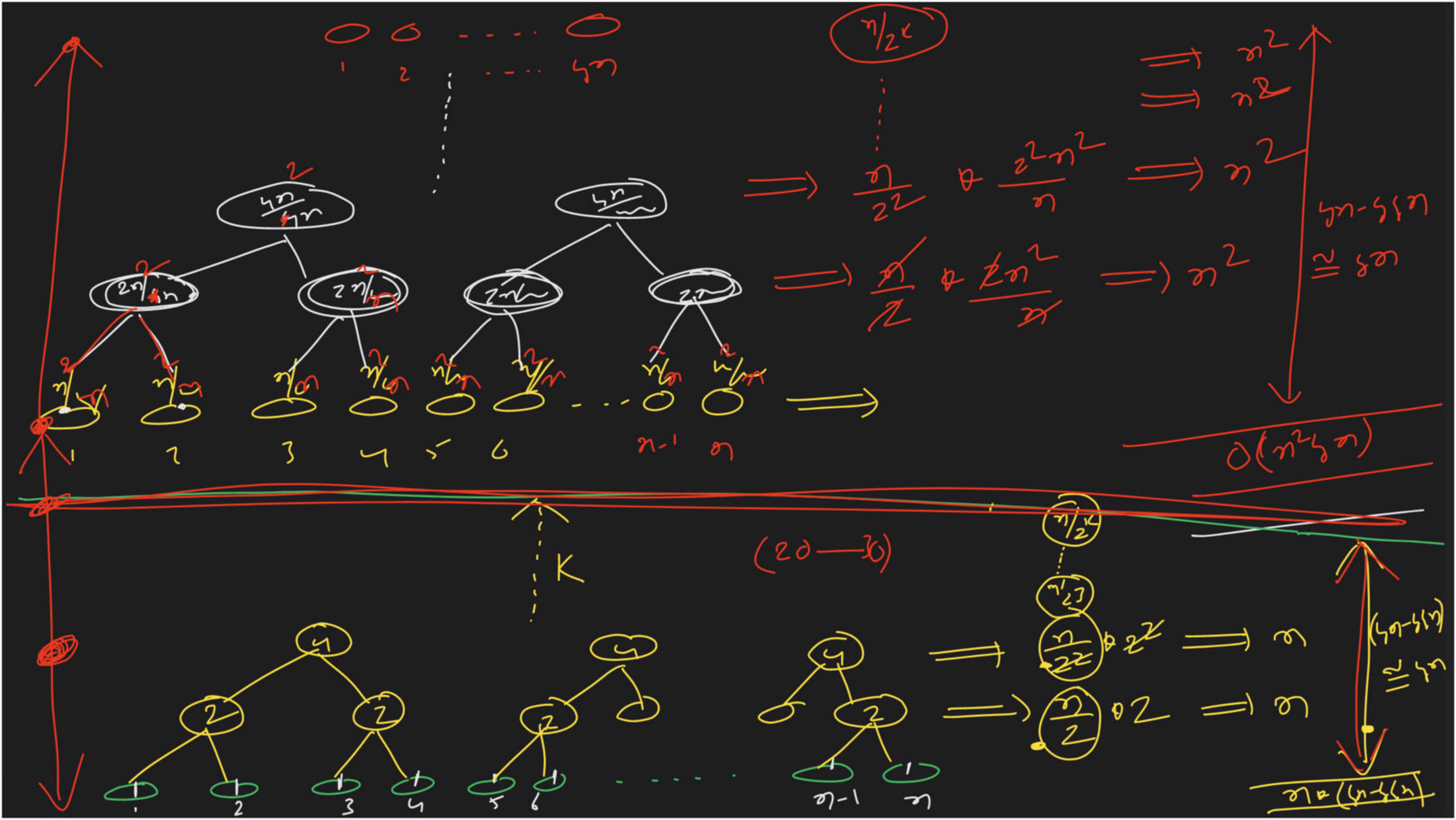
$\frac{n}{2^k} = \log n$

$n = 2^k \log n$

$\log n = k + \log\log n$

$k = \log n - \log\log n$

$\cong \log n$


O(n² log n)
(20—30)
K

i/p = n - sorted subarrays each of size $\frac{n^2}{n}$

o/p = Find $\log n$ sorted subarrays each of size $\frac{n^2}{\log n}$

TC ?

$$\frac{n}{2^k} = \log n$$

$$n = 2^k \cdot \log n$$

$$\log n = k + \log\log n$$

$$k = \log n - \log\log n$$

i/p: K- Sorted Subarrays each of size - m

o/p: Find single sorted array with all ele

TC?

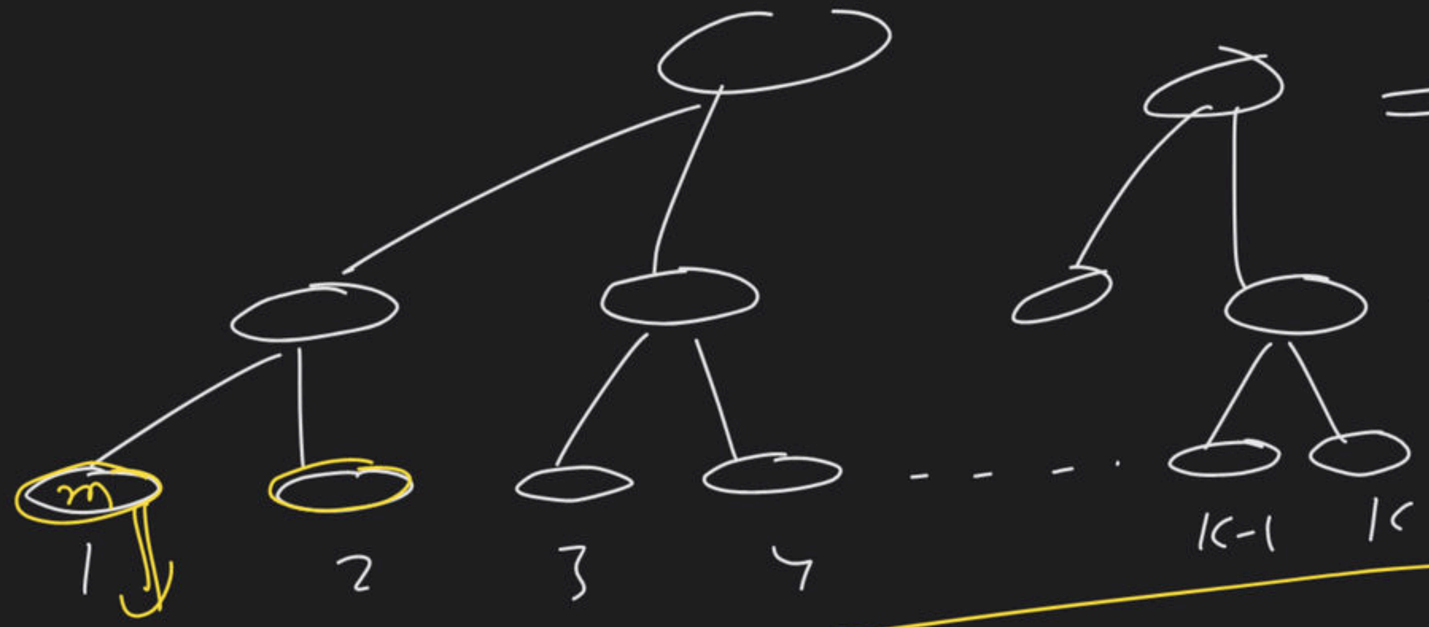
O(K*m log K)

i/p: K - Subarrays each of size m
where every subarray sorted index wlg I.S

o/p: Find single sorted array

TC?

$$O\{km^2 + km\log k\}$$



$\Rightarrow \frac{k}{2^2} \times 2^2 m \Rightarrow km$

$\Rightarrow \frac{k}{2} \times 2m = mk$

$\Rightarrow k \times m^2 + mk\log k$

$\log k$

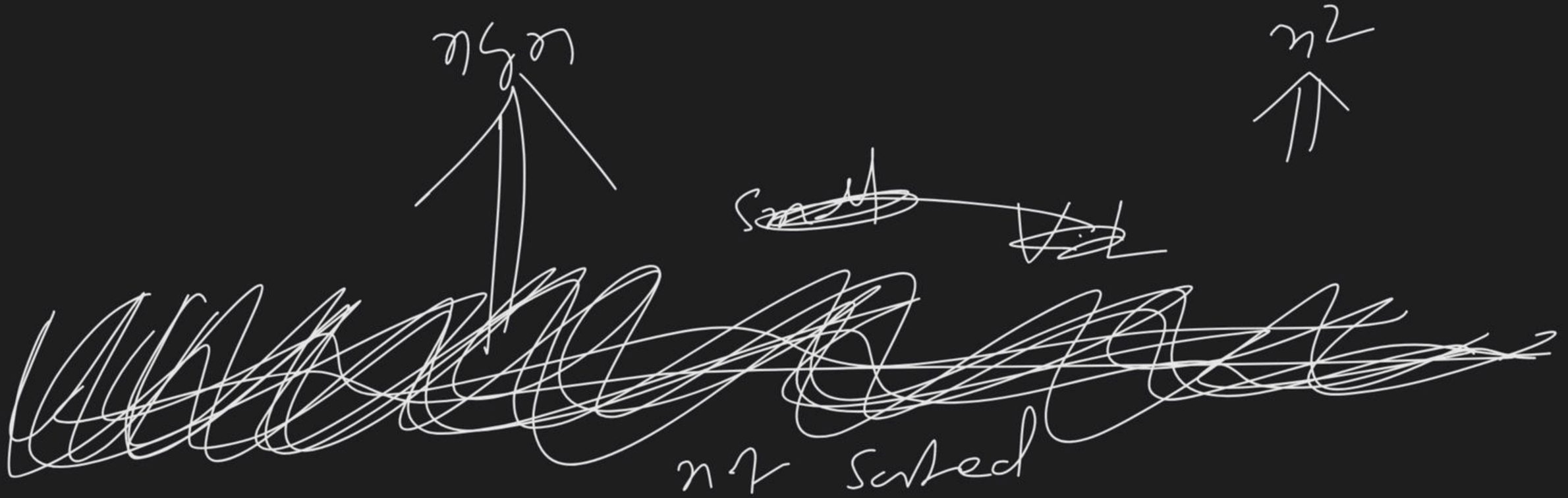
I.S - WC - m^2

Insr - WC - TC $\frac{n\text{-de}}{n\text{-de}}$ n^2 - Time

BC - TC n - Time

Note

1. merge sort preferred if array is very large

~~small~~

2. Small size arrays Selection sort preferred.