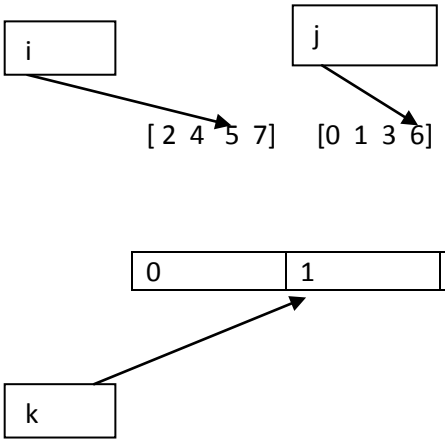
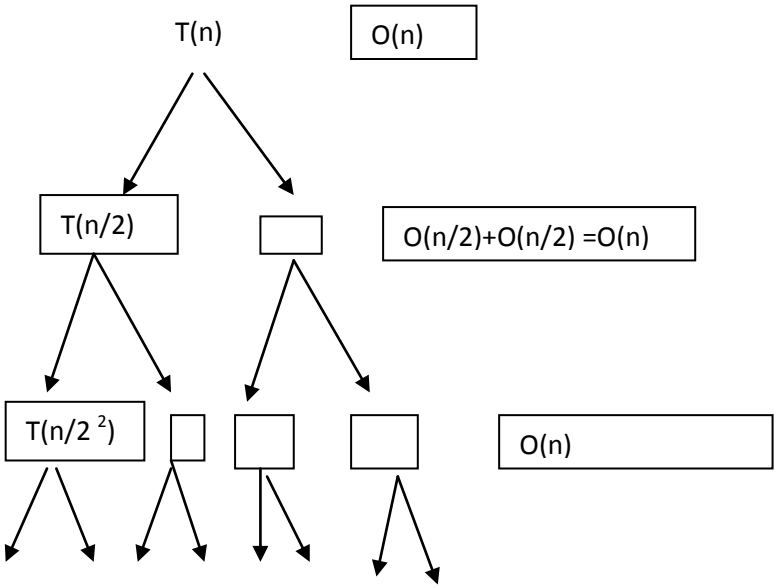


T(n)= 2T(n/2) + O(n)



At level x, time spent is O(n)

at level x , size of the sub problem: $n/2^x$

$n/2^x=1$, x=logn

Total sub-problems at level x = 2^x

Time spent at level x is 2^x. T(1)= 2^x [T[1]=1]

$=2^{logn}$ = O(n) Therefore , T(n) = $\sum_{i=1}^{logn} O(n) = O(nlogn)$