

Segment Tree → Binary Tree (Complete)

Data Structure

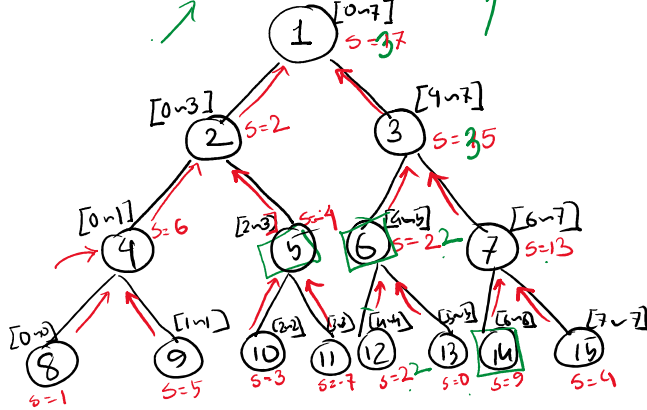
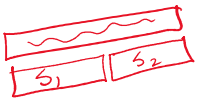
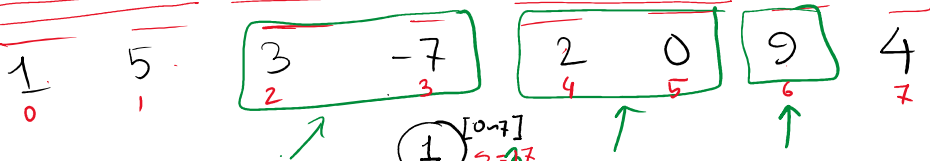
N size (10^6)
 $\sum Q(i, j)$
 $U(i, x)$

$a \rightarrow 1 \quad 3 \quad 20 \quad -2 \quad 20$
 $ps \rightarrow 1 \quad 4 \quad 14 \quad 12 \quad 32$

	prefix sum	naive	Segment Tree
Q	$O(1)$	$O(N)$	$O(\log_2 N)$
U	$O(N)$	$O(1)$	$O(\log_2 N)$

$12 - 1 = 11$

$ps[R] - ps[L-1]$

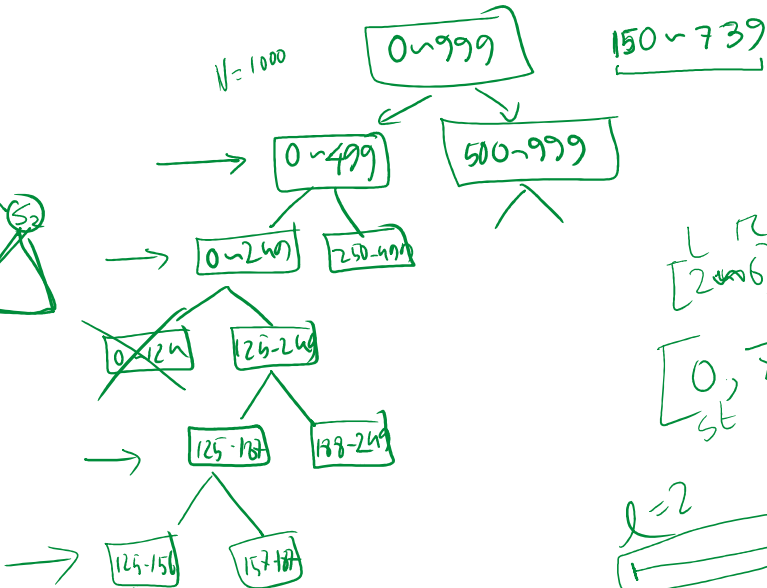
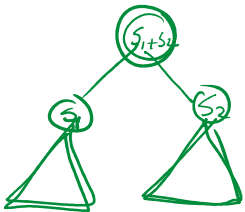
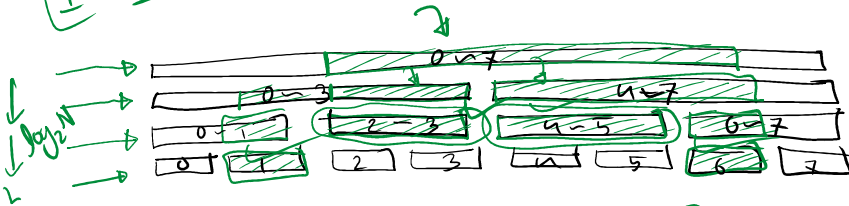


$[2, 6]$

$-4 + 2 + 9$

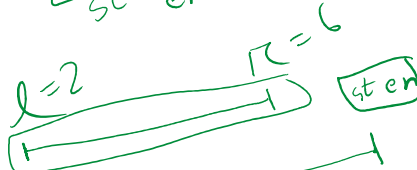
$[1 \sim 6]$

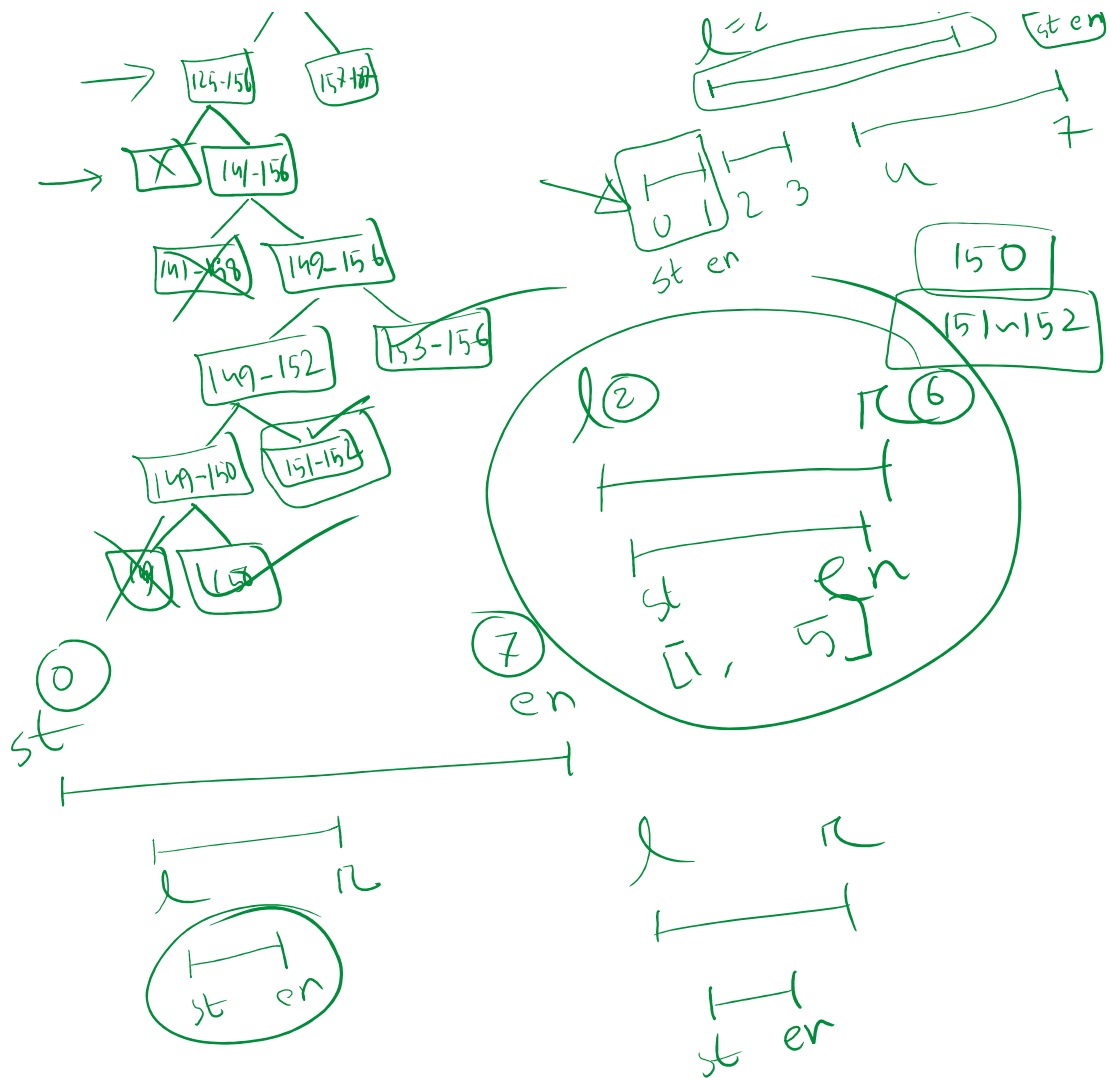
$0 \sim 7$



$[2 \sim 6]$

$[0, 7]$
 st en





$$4L_{\max} = 4\log_2 N$$

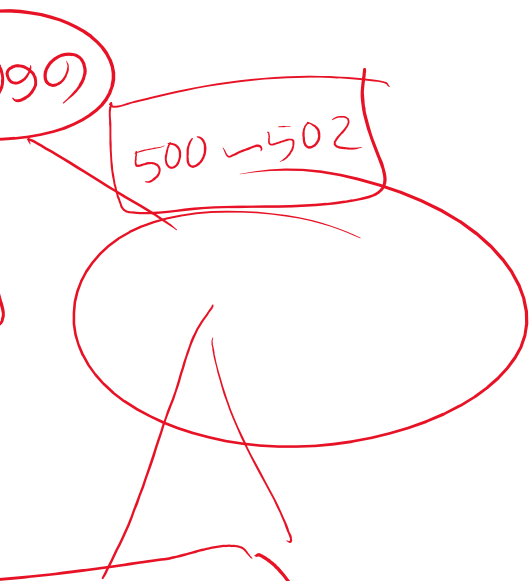
0 ~ 502

0 ~ 9

0 ~ 499

$$L_1 + L_2 + L_3 + \dots + L_k = 4\log_2 N$$

$$4L_{\max} = 4\log_2 N$$



$$4L_{\max} = 4 \log_2 N$$

$$4 \log_2 N \geq \boxed{3 \log_2 N}$$

$$\boxed{N + 1}$$