Segment Tree

Concepts & Qns...

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"No more fear of Segment Tree"

video - ④

Recap :-

- We understood about segment Tree ? What ? Why ? When ?

- buildSegmentTree ✓✓

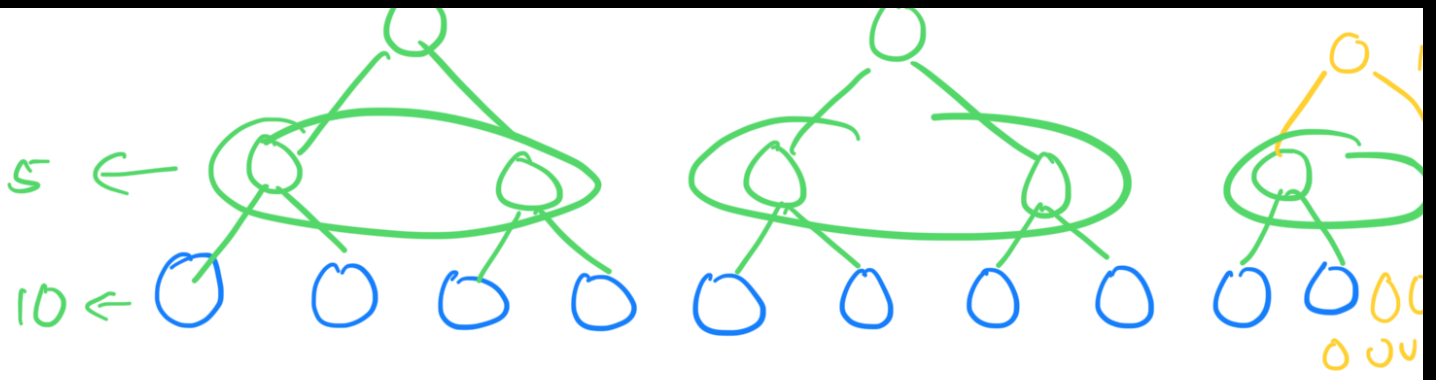- Example - Range Sum in an array

- Update Query

- Range Query

Why we have to take 4*n size array for Segment Tree?

First let's take some examples :-

Size of array → $n = 8$ → $(2*n - 1)$

$n = 16 \longrightarrow$ nodes $\rightarrow 2 \times 16 - 1 = 31$

$$2^2 \quad n = 4 \leftrightarrow 7 \rightarrow (2^3 - 1)$$
$$2^3 \quad n = 8 \leftrightarrow 15 \rightarrow (2^4 - 1)$$
$$2^4 \quad n = 16 \rightarrow 31 \rightarrow (2^5 - 1)$$

$n = 10$

5 ←

10 ←

if n is not power of 2 we have to append some extra/dummy nodes.

n = 9

0 1 2 3 4 5 6 7 8 16

n = 17

$n = 9$ ✓

16

$n = 17$

32
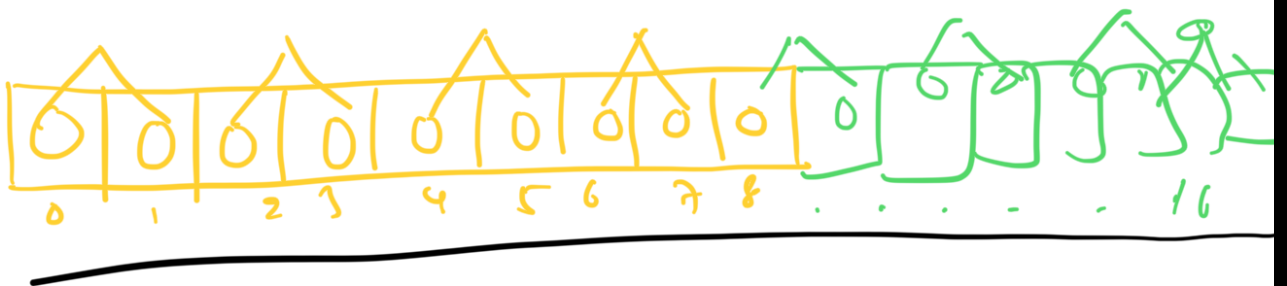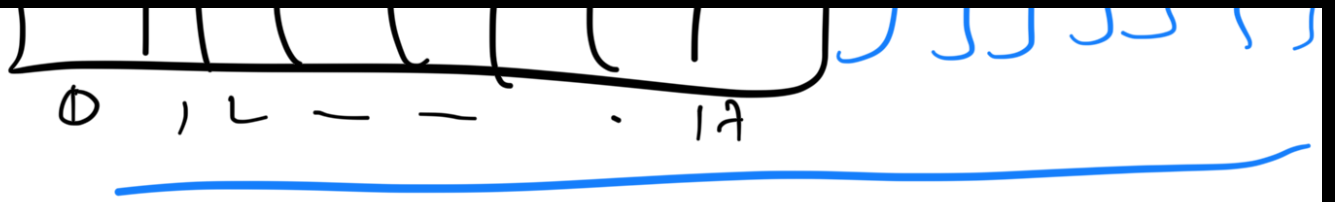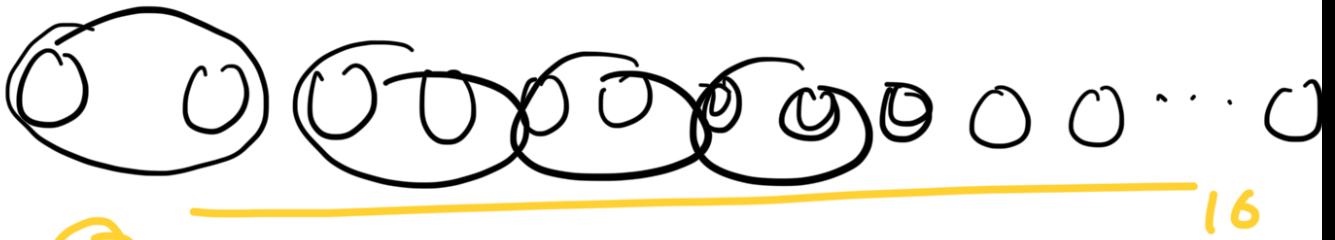
$n \rightarrow$ power of 2 नही है

$\downarrow$

$\simeq (2 * N)$ leaf nodes

$N/2$

$2N/x$

$2N \leftarrow$

$$\frac{\cancel{N}}{2 \cancel{N}}$$

$(2*N) + N + N/2 + N/4 + \cdots + 1$

$a \sim 1-$
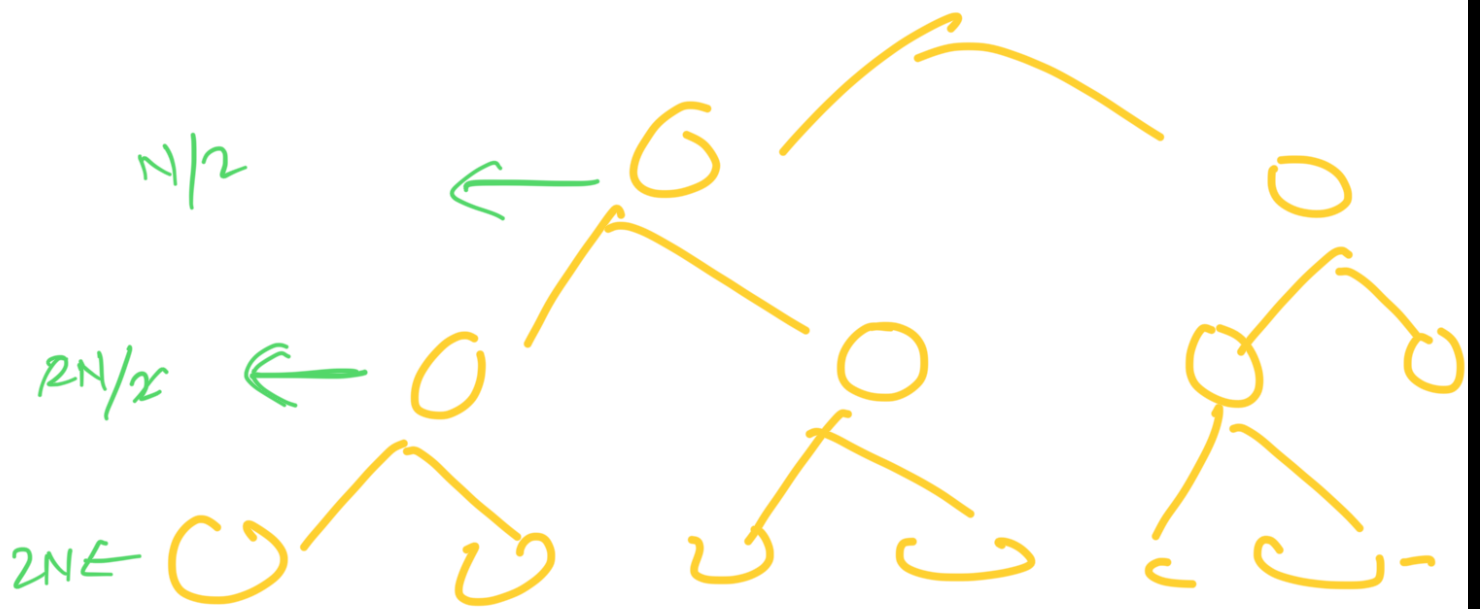
$Sum_{GP_\infty} = \dfrac{a}{1-\gamma} = \dfrac{(2*N)}{1-\frac{1}{2}} = (4*N)$

$$Segment = \dfrac{(4*N)}{}$$

$2N-1$

$4*N$

Next Video $\rightarrow$ We will solve

Qns on Segment
Tree.

Weekdays.