

Segment Tree

Concepts & Qns...




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"No more fear of Segment Tree"

#Motivation

ee The only thing I can control is
How Hard I work... 99 

video - 4

Recap :-

- we understood about segment Tree ? what ? why ? when ?
- buildSegmentTree ✓
- Example - Range Sum in an array
- Update Query
- Range Query

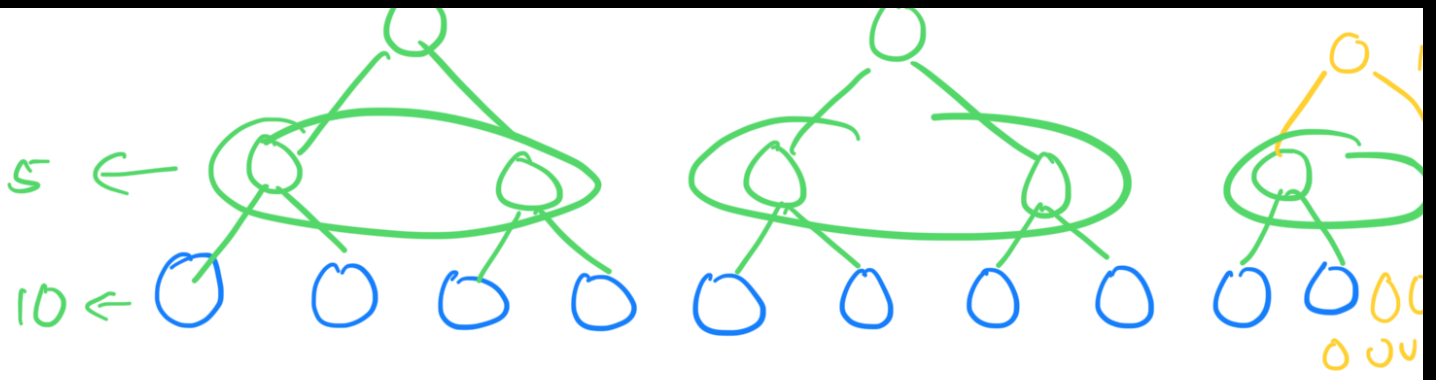
Why we have to
take $4 \times n$ size
array for Segment Tree?

First let's take some examples :-

$$\text{Size of array} \rightarrow n = 8 \rightarrow (2 \times n - 1)$$

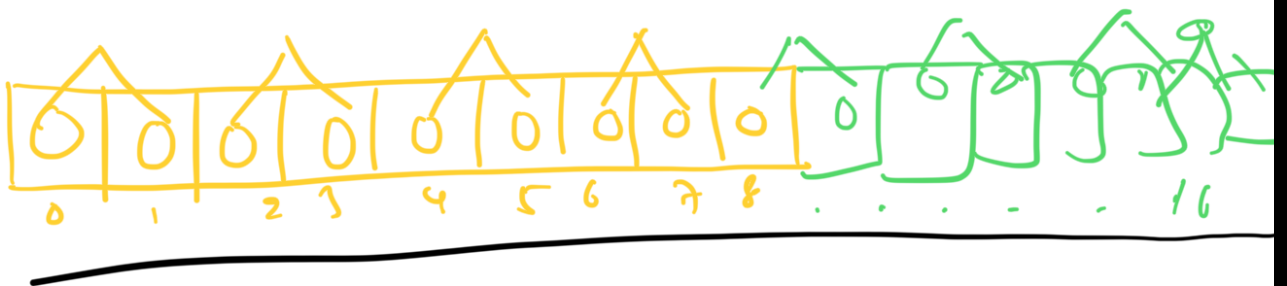
$2^2 \leftarrow n = 4 \leftarrow \rightarrow 7 \rightarrow (2^3 - 1)$
 $2^3 \leftarrow n = 8 \leftarrow \rightarrow 15 \rightarrow (2^4 - 1)$
 $2^4 \leftarrow n = 16 \leftarrow \rightarrow 31 \rightarrow (2^5 - 1)$

A hand-drawn diagram on a white background showing three nodes and three edges. The nodes are represented by small circles: one green circle at the bottom left, and two yellow circles at the top. The edges are represented by curved yellow lines connecting the nodes: one edge connects the green node to the left yellow node, another connects the left yellow node to the right yellow node, and a third connects the right yellow node to a partially visible yellow node on the far right edge of the frame.



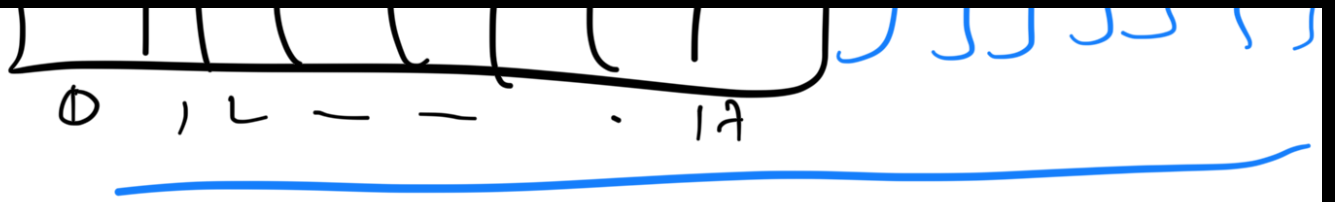
if n is not power of 2
we have to append some
extra/dummy nodes.

$$n=9$$

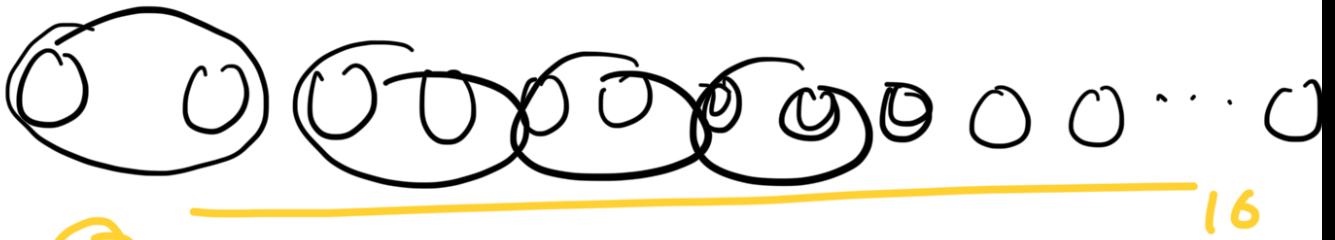


$$n=17$$





$n=9$ ✓✓



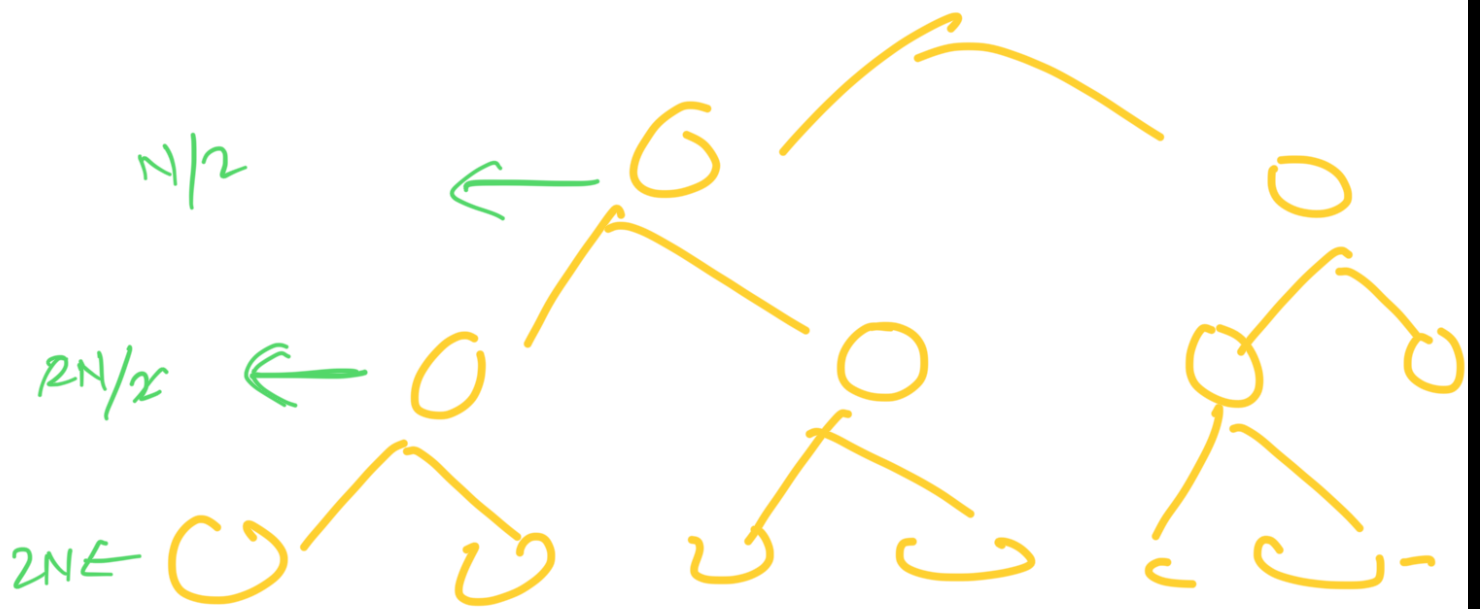
$n=17$



$n \rightarrow$ power of 2 नहीं है



$\approx (2*N)$ leaf nodes



$$\frac{\cancel{2N}}{2N} \quad (2 \times N) + N + N/2 + N/4 + \dots + 1$$

$$\text{Sum}_{\infty} = \frac{a}{1-r} = \frac{(2 \times N)}{1 - \frac{1}{2}} = (4 \times N)$$

$$\text{Segment} = (4 \times N) \quad (2N-1)$$

$$4 \times N$$

Next Video → We will solve

Qns on Segment
Tree.

Weekdays.