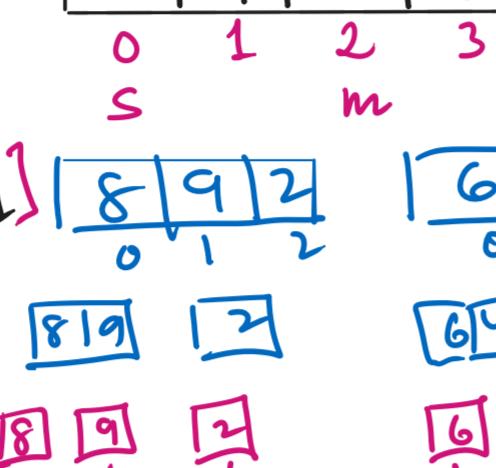


* Binary Search Trees :> It is a special type of Binary Tree where each node of the tree follows a unique property:
For each node in a BST \rightarrow (Left < Node < Right)

Binary Tree



BST



Every node will follow the (LNCR) property.

(10 < root) left
TC ($\log N$)

Sorted array

$[2|4|6|8|9|11]$ key = 9

$s = 0, e = m + 1$

$m = \frac{s+e}{2}$

$= \frac{0+11}{2}$

$= 5$

$k = 2$

i) $k == arr[mid]$ ($9 == 6$)

ii) $k > arr[mid]$ ($9 > 6$)

$s = m + 1$ ($right$)

$= 6$

iii) $k < arr[mid]$ ($2 < 6$)

$e = m - 1$ ($left$)

$N = 2^k$ (k is constant)

$k = \log_2 N$

Big O ($\log N$) = BST

Divide & Conquer
Algorithm

length

left = $\lfloor \frac{m}{2} \rfloor$

right = $\lceil \frac{m}{2} \rceil$

$m = \frac{s+e}{2}$

$= \frac{0+5}{2}$

$= 2.5$

$s = 0, e = 5$

$m = \frac{0+5}{2}$

$= \frac{5}{2}$

$= 2.5$

$s = 0, e = 2$

$m = \frac{0+2}{2}$

$= 1$

$s = 0, e = 1$

$m = \frac{0+1}{2}$

$= 0.5$

$s = 0, e = 0$

$m = \frac{0+0}{2}$

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$s = 0, e = 0$

$m = \frac{0+0}{2}$

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$s = 0, e = 0$

$m = \frac{0+0}{2}$

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