# In order Successor in a Binary Search Tree

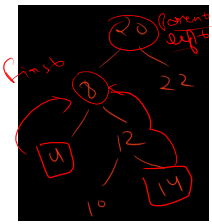

Inorder Traversal -) 4 8 10 12 14 20 22

Brute force -) Store all Nodes in an arraylist while Traversing in-order and then return next to it.

Time complexity -) O(n) -) n -) no. of nodes

space complexity -) O(n)

## If parent of each node is given



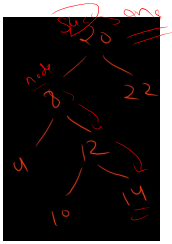

for 8 next will be 10, which is Right subtree min. element.

minBST() -) This function will provide that.

-) If there is no Right Subtree then the FIRST node that is left of its parent then its parent is the answer

If parent is not given in that case if there is Right subtree then its left most will be the ans

If not then start searching from top, keep the succ as parent when it goes left.




Input -) 14

-) T(n) = O(h) or O(log n)

h -) no. of levels

Because

$2^0 + 2^1 + 2^2 + \dots 2^{h-1} = n$

$\approx 2^h$ $\quad 2^h = n$

$h = \log_2 n$