

◦ given the root of a BST and a integer  $k$  return the  $k^{th}$  smallest element in this BST

→ To brute force i would map the whole BST values to an array, order it ascend. and then get the  $k^{th}$  element

Need to be smarter than that

~//~//~//~//~//~

◦ Need a global list var to store values

L > lower values are on the left side

→ go all the way to the left first and store values in global var

L > as you go check list size with k

L > if it matches, stop and return the last element in the list

→ if you go all the left nodes and k doesn't match list size, start traversing right side nodes from

L, bottom to top

→ At some point list size will match  $H$  and you will have the answer

DFS algo applied as you will traverse whole left side first

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o You always have to traverse left tree, because lower values

are at the bottom, but that is not necessarily true to right side

↳ As you go traversing right side go checking to see if K hasn't already been found by (list.size == K)

↳ if that is true then quit.