

Q22)  $k^{\text{th}}$  largest in binary tree.

- create min heap with priority queue.

- iterate queue to return  $k^{\text{th}}$  element. }  
}

$k\text{Largest}(\text{Node } n, \text{int } k)$  {

Priority Queue  $q = \text{new Priority Queue } (\text{Node } n,$   
 $\text{int } a, \text{int } b, \text{Node } n_1, \text{Node } n_2) \Rightarrow \{ \text{return } \frac{b-a}{n_2-\text{data}} - n, \text{data}, \}$  };

$\text{treeToHeap } (\text{Node } n, q);$

$\text{int } i = 0; \text{ Node } r = \text{null};$

$\text{while } (i < k) \{$

$r = q.\text{poll}();$

$i++;$

$\}$

$\text{return } r;$

$\}$

$\text{treeToHeap } (\text{Node } n, \text{Priority Queue } <\text{Node}> q) \{$

$\text{if } (n == \text{null}) \text{ return; }$

$q.\text{offer}(n.\text{data});$

$n = \text{treeToHeap } (n.\text{left});$

$\text{treeToHeap } (n.\text{right});$

$\}$

Better Approach create max heap and keep checking the size  
of heap. if size ==  $K$ , don't add element until they are less than  
 $\text{heap.peek}()$ . maintain size =  $K$  for heap. This saves space.