CS2302 - Data Structures

Spring 2020

Exercise - Binary Search Trees

1. Write the function *smallest(t)* that receives a reference to the root of a binary search tree and returns the smallest item in the tree. If T is a BST object, the instruction to call your function would be *smallest(T.root)*.

2. Write the function *largest(t)* that receives a reference to the root of a binary search tree and returns the largest item in the tree.

3. Write the function *isLeftChild(x)* that receives a reference to a node x in a binary search tree and determines if x is a left child in the tree. For example, if x is a reference to the node that contains item 14, *isLeftChild(x)* should return *True* and if x is a reference to the node that contains item 4, *isLeftChild(x)* should return *False*.

4. Extra credit: Write the function *printByLevel(t)* that receives a reference to the root of a binary search tree and prints the data in the tree ordered by depth. Thus if T is the BST object in the figure, *printByLevel(T.root)* would print 11 6 16 2 7 14 17 1 4 8 13 15 18 20.