ISTA 350 BST Worksheet   Name:

Start the definition of a Node class to be used to build BST's. Write the initializer. It takes one argument, the item to be stored in the node in an instance variable called datum. Initialize the children (called left and right) to None.

Write a method called num_leaves that returns the number of leaves in the tree with self as its root. There are 4 cases to think about: a node with 2 children, two cases of a node with one child, and a leaf. The leaf is the base case, dealing with all other cases requires recursion.

Write a method called height that returns the height of the tree with self as its root. Again, there are 4 cases and leaf is the base case.

Start the definition of a BST class. Write the initializer. It takes one argument, a list of items to be stored in the tree. It has a default argument of None. Initialize the instance variable root to None. If a list was passed, insert each item into the tree in the order in which it occurs in the list using the BST insert method.

Write a method called num_leaves that returns the number of leaves in the tree. If root is not None, call Node's num_leaves method on it. Otherwise, return 0.

Write a method called height that returns the height of the tree with self as its root. Follow the model of num_leaves.