CS 260 100P
Binary Search Trees

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Topics to learn

Please read up on the following subjects:

- binary nodes
- binary search trees

Tasks to perform

For this project, you will implement a binary node class, *BinaryNode*, and a binary search tree (bst) class, *BinarySearchTree*. The *BinaryNode* class will hold an integer value and two node pointers, plus the usual node class methods. The *BinarySearchTree* will have methods for inserting, deleting, and finding a value, plus others.

Provide a mini-interpreter that responds to the following commands:

f XXX

load the data from file *XXX* into the tree

i XXX

insert value *XXX* into the tree

f XXX

determine whether or not value *XXX* is in the tree

d XXX

delete value *XXX* from the tree

v

visualize the tree using graphviz

t

test the tree for correctness

s XXX YYY

find the node with value *XXX* and change it to *YYY* (used to inject a fault into the tree

r XXX

rotate the node with value *XXX* to the root.

Your *find* and *delete* methods should share a significant amounts of code.

You may work together on your graphviz code, but realize each persons code will be slightly different due to the individualized implementations of your binary search trees.

Demonstrating your problem

You should be prepared to discuss and modify any portion of your code. You should also be prepared to explain the runtime complexity of each of your methods.

Be prepared to answer these questions: trees-questions.html