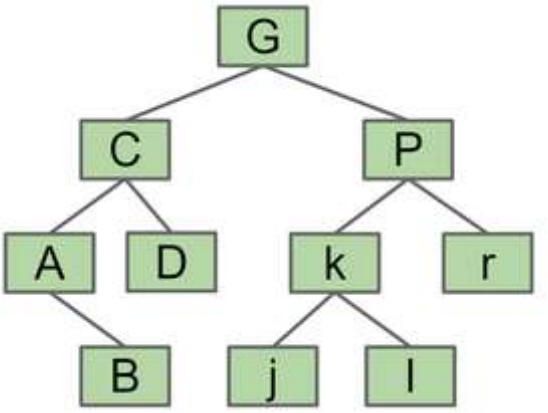
18.6 Exercises

Factual

1. Consider the tree below. If we call `rotateLeft(C)`, which operation reverts the tree back to its original form?



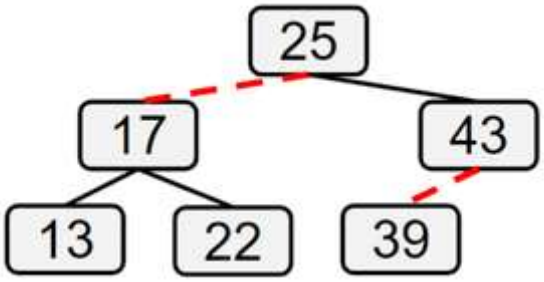
2. When you rotate a nodes in a tree, which of the following can happen?
   - [ ] If the tree was previously a valid search tree, it can become invalid.
   - [ ] The height can stay the same.
   - [ ] The height can increase.
   - [ ] The height can decrease.
   - [ ] The number of nodes can change.
   - [ ] The root of the tree can change.

> Problem 1

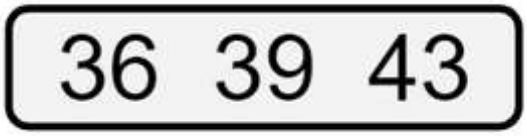
> Problem 2

Procedural

1. Consider the following LLRB. What is the height of the corresponding 2-3 tree and how many 3-nodes does it have?



2. Suppose we insert `15` in the LLRB above. What is the first operation that must be applied to maintain the LLRB invariants?
3. Suppose in the process of insertion, we end up with the following temporary 4-node. What is the corresponding LLRB representation of this node?



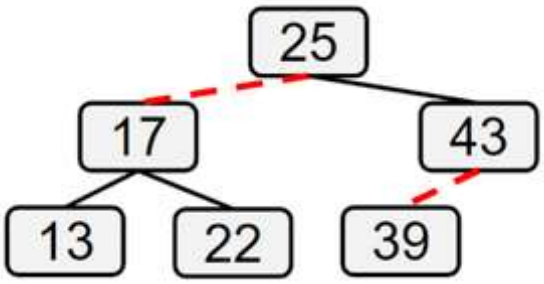
> Problem 1

> Problem 2

> Problem 3

Metacognitive

1. Give a range of values, when inserted into the LLRB below, results in a `rotateRight` operation as the first balancing operation. Assume that values are distinct, but not necessarily integers.



Problem 1

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Last updated 1 year ago