Lab 3 – Questions to answer Daniel Holst danho919

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The time complexity of the BiIterator::operator++ and the BiIterator::operator—in the best, average and worst case will be demonstrated below. Let us assume that the tree contains *n* number of nodes.

* Best case

The best case is when the node you are currently at is threaded in the direction you are going in. If using the operator++ the best case is when the node is threaded to the right. Then it will only have to move one step, node = node->right. Therefor the time complexity in this case will only be O(1).

* Worst case

The worst case is when the node is not threaded and you have to find the next smallest node in the right sub-tree. This could be almost *n* nodes to go through before finding the smallest node there. So the time complexity in the worst case is O(*n*).

* Average case

In the average case the time complexity will be O(log *n*) since you can ignore half of the nodes for each new iteration.