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CPSC223-01 HW08

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***Discussion and Analysis***

*Testing Strategy & Possible Improvements*

Initially, I was just testing my functions with the provided hw8\_tests.cpp file, but I eventually noticed that most of the test cases were simply testing a linked list, because the elements were being inserted in alphabetical order. Once I noticed this, I added some randomization and more inserts to make sure that I was actually making binary search trees and not just linked lists. Also, I noticed that the height function was not being tested, so I made sure to include some tests for this function as well.

*Implementation Issues/Challenges and How I Addressed Them*

Implementing the range\_search was definitely the part of the assignment that made me think the hardest. I knew that I wanted to avoid an approach that would visit every single node in the tree, and instead leverage the fact that the data is structured in a binary search tree. I ended up realizing that a slightly modified inorder traversal would do the trick. With this implementation, I was able to make sure than only nodes within the desired range are visited, and “skips over” all of the other nodes.

I had a dumb implementation issue with my preorder function which resulted in a segmentation fault and a ton of wasted time. When I was writing the recursive step for preorder, I mistakenly called the inorder function instead of recursively calling the preorder function.