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CS 202

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Assignment 4 Write up

The data structure that I used was perfect for this program because it allows for easy and quick insertion. A binary search tree contains a single node object at the start of the tree, so it will be very easy to implement it in the 5th program. The 5th program will contain a data structure that is an array of BSTs and I will just have each array index contain a node object. I can’t think of a better data structure that works better for this program, since an array is inefficient and a linked list would take a lot of time to traverse. It might be easier to use a hash table using chaining, but it still might take longer to traverse through it. The efficient part about my design is that my data is collected in the main class and inserted into the corresponding derived class object for that input, and then simply passed in to the BST. It’s a lot more efficient than inserting all of the data separately. If I had more time, I would actually implement the sorting function for the BST. I was supposed to include the sorting algorithm I had written out but ran out of time to do that.

**OOP**

My program using good object oriented programming. It took me some time to figure out the differences between java and C++ but I eventually got a grasp on it and made a vacation class (base class) with two derived classes (mountain and beach). In the derived classes, I have the display functions call the super class display function with the ‘super’ syntax. All of the classes had clear responsibilities and my BST class was clearly a data structure class and my node class was clearly implemented in the BST. I can’t think of a way that I could have made it more object oriented, but I definitely could have added more derived class types. It’s not really realistic to just have two types of vacation spots. Luckily for the way this was implemented (with polymorphism), I can easily add more classes and derived types from the base vacation class. Another thing that I wish I had implemented in my program was operator overloading. If I had used this, I could have easily added new derived classes. Now that I didn’t do that, I’d have to add a huge new chunk to the add formula in the main function in the main class. If I had implemented operator overloading, I would only need to add input.getX(); or something like that.