

Hw0_Problem4:

Update Log:

Ball.java:

-getVolume() does not return the defined volume variable and instead just returns 0. Replaced with return volume;

-getColor() does not return the defined color variable and simply returns null. Replaced with return color;

-Ball() used parameter names identical to the class's defined member variables. Changed parameter names to c and v;

BallContainer.java:

I definitely think the method of updating the volume each time a ball is added is the better approach, as opposed to counting all of the ball once the function is called as this would take $O(n)$ time each time it is called whereas when we update with each ball it runs in constant time.

Box.java:

The two ways that I debated implementing getBallFromSmallest() were: 1, using a simple list/vector to contain the sorted Ball data that is updated every time a ball is added with a $O(n)$ for loop insertion method. 2, using a map/tree like java class that will automatically keep the data sorted with each insertion taking $\text{Log}(n)$ time. I ultimately decided on 1 because even though it is objectively slower, it is more minimalistic and simple, and I wouldn't have to spend the time finding the appropriate tree class in java.