I've implement the AVLtree class by watching videos and make practice in geeksforgeeks. It was hard to understand the concept.

I didn't know about the java.util.Random and I've learned it's methods in this homework.

The most challenging part was the creating the graphs. I've tried many ways to measure the times and none of them worked. At the end I decided to try to measure the times in the StockDataManager class and store them in ArrayLists as you can see below but it didn't work and I still don't understand the reason…

```java
    private ArrayList<Long> addTimes;
public void addOrUpdateStock(String symbol, double price, long volume, long marketCap) {
        long startTime = System.nanoTime();
        Stock existingStock = avlTree.search(symbol);
        if (existingStock != null) {
            existingStock.setPrice(price);
            existingStock.setVolume(volume);
            existingStock.setMarketCap(marketCap);
        } else {
            Stock newStock = new Stock(symbol, price, volume, marketCap);
            avlTree.insert(newStock);
        }
        long endTime = System.nanoTime();
        addTimes.add(endTime - startTime);
    }
```

My graphs:

SEARCH Operation Performance

UPDATE Operation Performance