

## A Simple Stock Data Analyzer

### Goals:

- Learn how to choose a data structure for the desired performance.
- Practice with more Java collections, like HashMap and TreeSet.
- Learn how to customize a comparable data structure.
- Learn how to build an in-memory database for data analysis.

### Tasks:

\*\*\* Since YahooFinance API has been discontinued, just assign a random value to each stock price.\*\*\*

You would create a *myStock* class to implement the database and provide the following functionalities such that users can conduct simple stock data analysis.

- Users can quickly retrieve the current price and company name using the stock symbol.
  - Users can quickly insert and update the records.
- Users can quickly retrieve the stock record with top k prices

To achieve these functionalities, your task is to implement the following methods in *myStock.java* which is provided in the starter code. :

```
myStock() // initialize the in-memory database with proper data structures
stockInfo get(String symbol) // get the record using the symbol; runtime is O(1)
void insertOrUpdate(String symbol, stockInfo stock) // insert or update one
record; runtime is at least O(Log(n))
List<Map.Entry<String, stockInfo>> top(int k) //returns a list of records with
top k prices; runtime is O(k)
```

A list of stocks is provided in the file *US-Tech-Symbols.txt* where each line contains a stock symbol and the company name. The real-time price for each stock is assigned to be a random

value within [0, 1000]. According to the test code in myStock.java, the following output is expected (the actual price of the stock may vary).

```
=====Top 10 stocks=====
[1]CCUR CCUR Holdings, Inc. 999
[2]CABO Cable One, Inc. 718
[3]EQIX Equinix, Inc. (REIT) 652
[4]FICO Fair Isaac Corporation 611
[5]AVGO Broadcom Inc. 513
[6]MSCI MSCI Inc. 499
[7]LRCX Lam Research Corporation 454
[8]FDS FactSet Research Systems Inc. 432
[9]TDY Teledyne Technologies Incorporated 413
[10]INTU Intuit Inc. 399
=====Stock info retrieval=====
VMW VMware, Inc. 115
BIDU Baidu, Inc. 96
```

Please follow the comments and hints in myStock.java for details instruction when you are implementing the tool.

### **Submission:**

Please submit your completed myStock.java and a screenshot of your output to Blackboard. You won't receive full credits if you fail to submit the screenshot.