

Using Java Version: java 22.0.1

To Run Code:

1. Open two different terminals.
2. Compile the server code: `javac Server.java`
3. Compile the client code: `javac Client.java`
4. Run the Server before the client: `java Server.java`
5. Run the client code: `java Client.java`
6. Follow the instructions on the Client terminal.

Testing Instructions:

Data Generator:

1. Input Validation:

- Test that the application accepts the number of tickers between 1 and 10,000.
- Test that the update interval is accepted between 1 and 30 seconds.
- Ensure that the application handles invalid inputs gracefully (e.g., characters instead of numbers, negative numbers, numbers out of the allowed range).
- Sample Incorrect Inputs: “t”, 0, 11000, “hello”

2. Data Generation:

- Verify that it generates initial data for all tickers correctly with reasonable and realistic values.
- Ensure that each ticker has a unique identifier and that bid, ask, and last prices are logically set (e.g., ask price should be higher than or equal to the bid price).
- Check that the quote time is correctly recorded in UTC.
- The program will output all of the initial data generation, upon receiving the inputs. Go through the generated data and make sure it all makes sense, in accordance with what is written above as well as the problem description.
- **DISCLAIMER:** The program will output the quote time in PST, as requested in the problem description.

3. Data Updates:

- Confirm that a subset of tickers (at least 1, up to 25% of total tickers) is updated at each interval.
- Validate that the tickers are updated roughly the same number of times over a prolonged period.
- Test the randomness and distribution of the selected tickers for updates.

Data Feed UI:

1. Display Functionality:

- Check that the UI correctly requests and displays the data for a specific ticker.
- Verify the UI updates the display in real-time as new data is received.
- Ensure that the last 10 updates for any ticker can be displayed correctly.
- Test the calculation and display of the 5-minute moving average for the last price of a ticker.
- Validate the display of the top 10 movers based on price changes since startup.