Software Implementation and Testing Document

For

Group 5

Version 3.0

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1. Programming Languages

- Python - using for backend, handles interfacing with Yahoo price data, Google NLP, Firebase, and Twitter API. Chosen because was one of the easier languages to use for this purpose. Used for simple version of price prediction. Numpy used for variance and moving average calculations over subsets of the price list. Options pricing done in pure Python.
- Java - using for app interface development. Is the language that Android Studio uses.

2. Platforms, APIs, Databases, and other technologies used

- Android Studio - using to create the app interface
- Google Natural Language API - using in the server side to perform sentiment analysis
- Twitter API (Twitter for Python) - using in the server side to collect specific tweets
- Firebase - using to store stock, user, and twitter watchlist information
- Yahoo Finance's v8 API was accessed by the Python backend to download minute-to-minute price data

3. Execution-based Functional Testing

- The application itself was run many times while developing the code to ensure that the correct output was occurring within the app
- RSS feed was executed in conjunction with the sentiment analysis to ensure it was behaving properly and outputting correct values
- Tested Yahoo minute-to-minute API V8, script checks for null input to eliminate errors further down the price prediction pipeline
- General app functionality testing to make sure that new code implementations did not break any other features.
- Exhaustive testing of database reading and writing functions to ensure that databases were formatted and accessed properly.
- Checking of moving averages against actual prices to ensure that errors did not occur.

4. Execution-based Non-Functional Testing

- Tested that graphs were displayed in the desired size and y coordinates
- Ran app and iterated through each page to ensure that pages were cohesive in design, and all information could be seen.

5. Non-Execution-based Testing

- Read through code of RSS feed script to ensure correct data was being pulled from the Google search queries
- Code review of graph implementation to ensure correct data was being pulled from database.
- Code review of application interface to ensure that everything was placed correctly and in an aesthetically pleasing manner