

Project 3

Streaming Finance Data with AWS Lambda

- Language: Python
- Libraries: pandas, matplotlib, NumPy, seaborn, yfinance
- AWS Services: S3, Lambda, Kinesis, Glue, Athena

For this project, yfinance Python library was used to read stock data. Pricing information was from Monday, May 2nd, 2022, and included the following stocks:

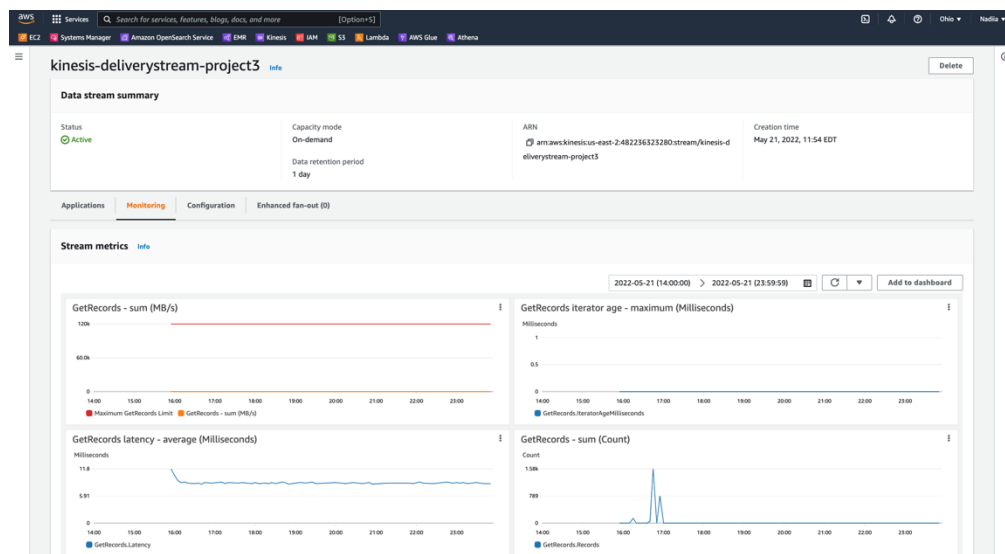
- Facebook (FB)
- Shopify (SHOP)
- Beyond Meat (BYND)
- Netflix (NFLX)
- Pinterest (PINS)
- Square (SQ)
- The Trade Desk (TTD)
- Okta (OKTA)
- Snap (SNAP)
- Datadog (DDOG)

This project aims to generate near real time finance data records for interactive querying with provisioning a Lambda function.

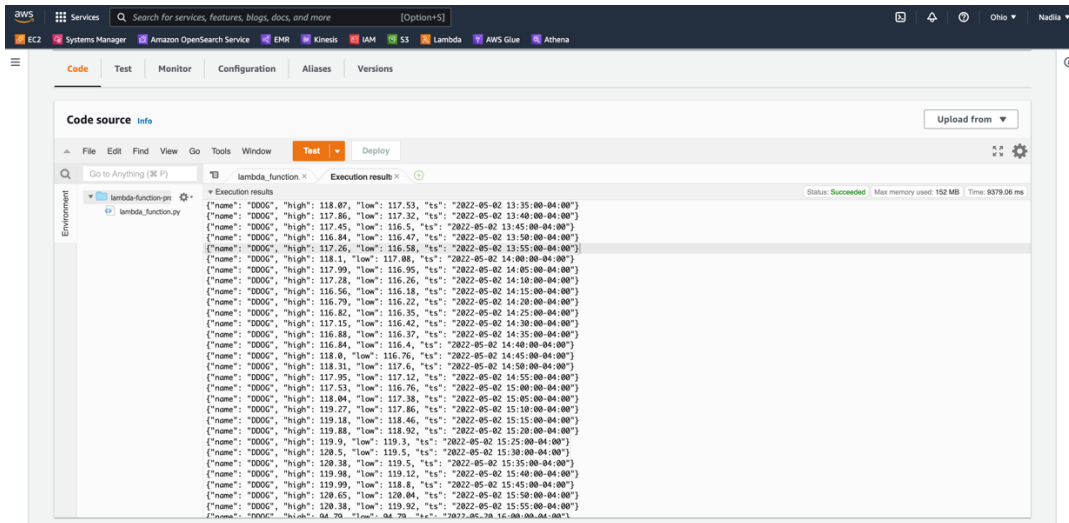
Steps:

- 1) Data Transformer
 - Lambda function to gather the data
- 2) Data Collector
 - Kinesis stream to hold the data
- 3) Data Analyzer
 - AWS Athena to query S3 files to gain insights from the data
- 4) Data Visualization
 - Anaconda Jupiter Notebook to visualize the data

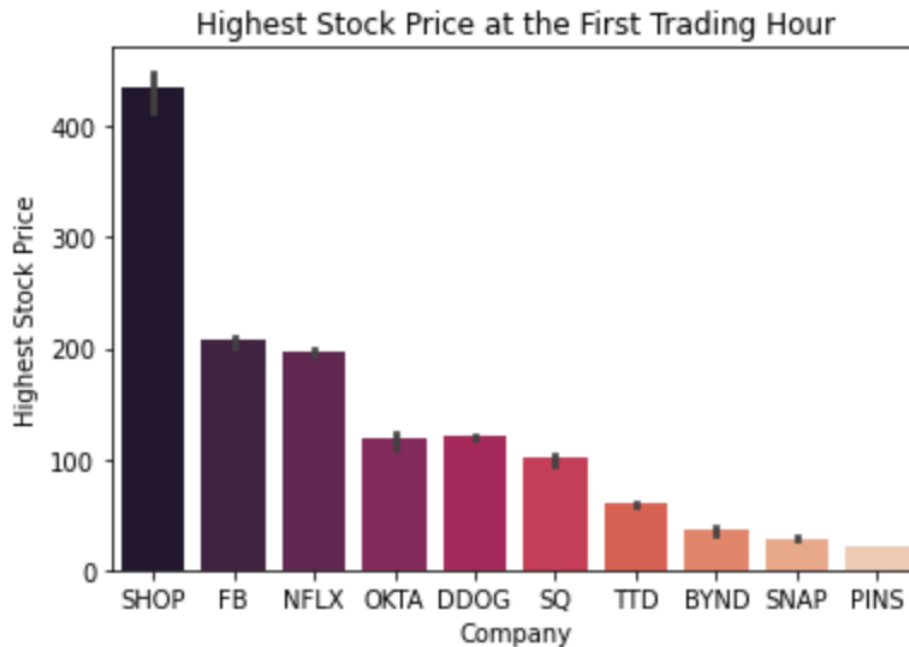
Kinesis Configuration



AWS Lambda Execution Results

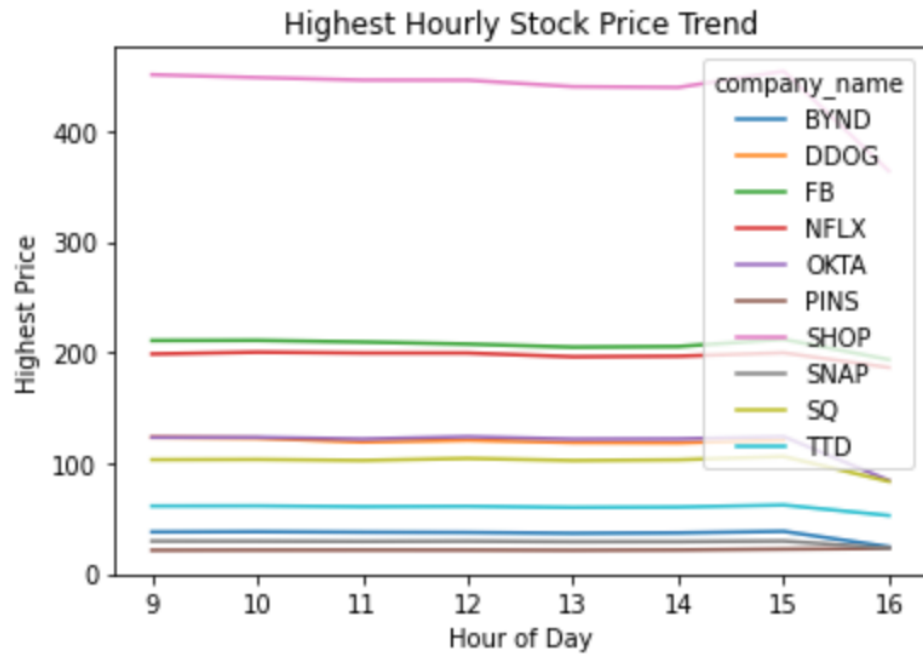


- **Analysis 1 – Highest Stock Price at the First Trading Hour**



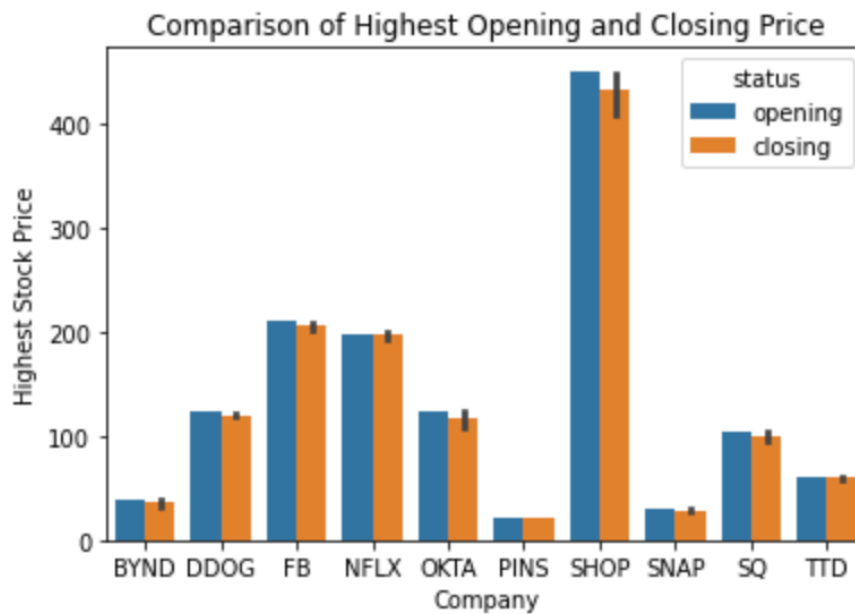
In order to analyze Highest Stock Price at the First Trading Hour, a bar chart was used. This visualization shows that according to the 9AM hour, the highest stock price was “SHOP” stock, which represents Shopify Inc company. The price was \$451.00.

- **Analysis 2 – Highest Hourly Stock Price Trend**



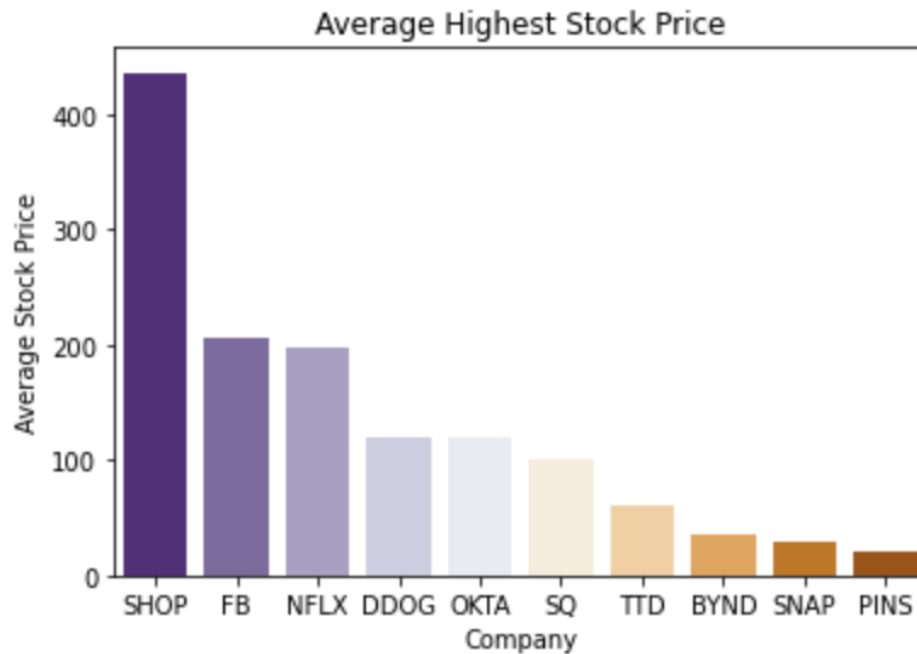
To visualize the Highest Hourly Stock Price Trend, a line graph was used. This visualization shows that the Highest Hourly Stock Price Trend was the “SHOP” stock (\$454.14) at 3:50PM, followed by “FB” (\$211.88) at 3:55PM, and “NFLX” (\$200.21) at 10:30AM.

- **Analysis 3 – Comparison of Opening and Closing Price**



To visualize the Comparison of Opening and Closing Price, a grouped bar chart was used. This visualization shows that the “SHOP” stock is leading, and that it closed with a higher price compared to when the stock market was opened for the day. The same pattern is observed with the rest of the stocks.

- **Analysis 4 – Average Highest Hourly Stock Price**



To visualize Average Highest Hourly Stock Price, a bar chart was used. This visualization shows that the “SHOP” stock is leading among all 10 stocks, in which the average highest stock price was \$ 436.15. “FB” (\$206.77) has the second-highest average price. The next highest average stock prices were “NFLX” (\$197.05), “DDOG” (\$120.44), and “OKTA” (\$118.67), respectively.