Data Source: <https://www.kaggle.com/datasets/umerhaddii/apple-stock-data-2025>

**Introduction and Prep**

***Project Start Date:*** 2025.01.16

***Goal:*** The goal of this project is exploratory analysis to try to find patterns for entry signals in the Apple stock. I’d like to explore for yearly, monthly, weekly, and daily patterns.

***Defining Limitations / Restrictions:***

* Yearly: Even though the data goes all the way back to the year 1980 to 2025, only data from 2008 to 2024 will be analyzed. The decision to start in the year 2008 was chosen by looking at the Max chart for the stock. The year 2008 makes a nice low that continually uptrends from that point onwards. Data from 2025 won’t be analyzed as there isn’t much data produced as of now when starting the project. This should give me 17 aggregated datasets.
* Monthly: To narrow down the focus from the yearly plan, I’m going to use the past three years (2022-2024) to analyze monthly data. This should give me 36 aggregated datasets .
* Weekly: To narrow down even further, I’m going to use the past year (2024) for weekly data. This should give me 52 aggregated datasets. (EDIT: Future me here. I used )
* Daily: Finally, I’m going to use the past 3 months (October 2024 - December 2024) for daily data. This should give me 92 aggregated datasets.
* The data within this project doesn’t include intraday movements

Questions to further define what is needed for this project:

* How do I define success for this project? - As this is my first official data analysis project, I’d be happy if I found one concrete pattern within the data in any timeframe.
* What kind of results are needed? - To define a concrete pattern, I’d like to find a way to discover entry signals that would have at least a probability of 75% of succeeding if a prospective trader entered in a position.

S - Is there a connection between stock price and stock volume? If volume is increased on a particular trading day, is the close higher than the open? Is there a pattern that’s apparent over a particular time frame (EX: Every first week of the month, the stock is priced lower than the rest of the month)?

M - What is the average growth of the stock price year over year? What are the highs and lows every week? How do opens and closes usually compare to highs and lows percentage wise?

A - Is there a certain indicator that can be used to know when it’s a good time to enter a position? A certain percentage when low compared to open? Compared to previous days?

R - How can yearly and/or daily predictions be made based on historical prices of the stock?

T - What time frame should be focused on with this stock? Do you want yearly predictions or daily predictions?

**Conclusion**

Since 2008, the Apple stock has been in an uptrend. Every chart, 1Y, 1M, 1W, and 1D, all closed at a price higher than they opened. Within the given timeframes specified for this project, the stock’s combined average of Open, High, Low, and Close prices rose an average of 29.165% every year, 1.27% every month, 0.645% every week, and 0.1675% every day.

While no definitive entry signals were identified, the stock historically has been rising since 2008. I believe more information could be obtained by choosing the Monthly, Weekly, or Daily timeframe, expanding the timeframe to include older price information, and doing further research using technical indicators (SMA, EMA, etc.).