**Objective** Find predictable patterns of correlation or causation between the sentiment and price data for Apple Inc.

**Background**

A [stock market](https://en.wikipedia.org/wiki/Stock_market), equity market or share market is the aggregation of buyers and sellers (a loose network of economic transactions, not a physical facility or discrete entity) of [stocks](https://en.wikipedia.org/wiki/Stock) (also called shares); these may include securities listed on a [stock exchange](https://en.wikipedia.org/wiki/Stock_exchange) as well as those only traded privately.

Lots of research has gone into predicting stock markets in advance in order to increase gains, cut losses and diversify portfolios amongst many other. Numerous domains of expertise exist in predicting the markets such as fundamental analysis, technical analysis and behavioural analysis.

With the advent of social media channels and ubiquitous technology, researchers and investors have the opportunity to look into the dynamics of stock markets like never before. Sentiment Analysis has gotten a lot of attention, especially, as it is at the heart of behavioral analysis.

**Datasets**

* **Pricing JSON (prices.json)**
  + Contains the stock price of the security Apple Inc as it was traded on the Nasdaq Stock Exchange since 2012.
  + Other valuable metrics are also included such as gains and volatility.
  + Two important fields that need to be looked at
    - Date
    - Last (the last price at which the stock traded on the mentioned date)
* **Sentiment JSON (sentiment.json)**
  + An object storing a comprehensive list of sentiment metrics at the daily level as captured by Market IQ.
  + Important metrics to be looked at. Please note that Bullishness is the positivity of the tweet. It is a number that varies between 0 and 1. 0 being extremely negative and 1 being extremely positive.
    - 90day\_bull\_prop: The bullishness of the social data aggregated over the past 90 days.
    - 30day\_bull\_prop: The bullishness of the social data aggregated over the past 30 days
    - 7day\_bull\_prop: The bullishness of the social data aggregated over the past 30 days
    - bull\_prop: The bullishness of the social data for the past day

**Questions**

* What are some of the metrics that you derive from a data set before diving into a deeper analysis? E.g. means, standard deviations and interquartile ranges, etc.
  + Provide a comprehensive list of derivatived metrics and their values.
  + The information should be laid out in a form that is easy for a user to digest.
* Develop a predictive model that is able to forecast last price of the stock Apple Inc. 5 days into the future. The model can use all data up to the date when the prediction is made.
  + Provide an explanation of why you chose the model.
  + Include your code that was used to develop the model. You may use any open source libraries.
  + Provide a complete timeline of the predicted price of the stock.
  + Include accuracy check of the model.

**Note** The above exercise should be done in Python. You may use any open source machine learning libraries. Please submit the full code that is needed to recreate your submission.