**Programming Analytics Project Plan Basil Latif, Manodhar Allu, Sarah Liu, Rebecca Fang, Kevin Li**

**• Topic — What topic did the team chose to focus on? This should include a brief overview of the background of the topic**We want to look at stock price data and try to understand what factors drive stock prices. We want to use machine learning techniques to predict stock price––time series forecasting. Stock prices are well-documented and historical and current data always exists. There are many fields of data given by a stock price such as Open Price, Close Price, Market Cap, 52 Week High/Low, P/E Ratio, etc. We can look at the relevant factors and come up with our own methods for evaluating stock prices.

**Background of the Stock Market**: Stocks are categorized in various ways and have many fields of data associated with them. We will focus on 5 technology stocks­­––Faceook, Apple, Amazon, Netflix, and Google––and perform data analysis on them using publicly available data. Then, we will perform machine learning to make predictions and see how accurate those predictions are.

**• Justification — Brief description of why you are proposing this topic, what questions you attempt to answer from the data, and how you plan to collect and analyze the data.**

We chose this topic because stock prices are a rich source of data and very valuable to understand the economy. Because the stock market is very volatile and subject to many factors, we believe it is worthwhile to try to understand it better using analytics. We will derive insights through a detailed, step-by-step process of data. Our work would help individual and institutional investors maximize their gains and reduce their risk.

In addition, the stock market is crucial for people looking to invest and grow their money and is used by people across all age groups. Many people today invest for their own. As people age, they look to invest for retirement by investing in the stock market and realizing steady returns.

**Data Extraction**  
We will gather data by using a stock market API (https://www.quandl.com/tools/api)**.** We use Python consolidate our data into a csv file.

**Data Analysis**  
We will use more Python to do data exploration and analysis as well as data science techniques. We will use machine learning to forecast stock prices using Prophet––a Facebook library for time series forecasting.

**Questions We Hope to Answer:**Can we analyze what events caused drastic stock prices changes?

Can we build an accurate model to predict stock prices and compare with actual data?