Solution Design Documentation

**Calculating Best Fit Line on Any Stock Ticker**

To provide the list of valid stock ticker to users of the application, I will download stock(ticker) list from yahoo finance and extract the stock tickers from the csv file and hard code them as a list in my application against which user input will be check for correctness and validity. When this is accomplished users input will be validated against the hard coded list using a while construct for the user input so that input error can be properly handle with crashing the system and also providing multiple try for the user.

The stocks symbol(tickers) were not easily accessible on yahoo finance instead I downloaded it from https://www.nasdaq.com/screening/company-list.aspx from here I was able to get the stock list of NYSE and NASDAQ and from there, extract symbols from it. The symbols (ticker) is to be left in a text file from where it will be read into the python list and used to validate user input.

The application accepts user input convert it to upper and then compares with the tickers already downloaded if found then the market data for the ticker is downloaded from YAHOO FINANCE using panda\_datareader and fix\_yahoo\_finance libraries. The returned market data is then parse and the trade date and adjusted close price columns of the pandas data frame extracted into using numpy.

The numpy array is then plotted as data point using the pyplot from matplotlib. The best fit quadratic line for the function is then determined using interpolation from scipy library and that also is plotted on the same graph. The said graph is show below.

