A PROJECT REPORT ON

“Stock Price Prediction”

BY

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INTRODUCTION

The stock market refers to public markets that exist for issuing, buying and selling stocks that trade on a stock exchange or over-the-counter. Stocks, also known as equities, represent fractional ownership in a company, and the stock market is a place where investors can buy and sell ownership of such investible assets. An efficiently functioning stock market is considered critical to economic development, as it gives companies the ability to quickly access capital from the public. The stock market is a network which provides a platform for almost all major economic transactions in the world at a dynamic rate called the stock value which is based on market equilibrium.

The stock market serves two very important purposes. The first is to provide capital to companies that they can use to fund and expand their businesses. If a company issues one million shares of stock that initially sell for $10 a share, then that provides the company with $10 million of capital that it can use to grow its business (minus whatever fees the company pays for an investment bank to manage the stock offering). By offering stock shares instead of borrowing the capital needed for expansion, the company avoids incurring debt and paying interest charges on that debt. The secondary purpose the stock market serves is to give investors – those who purchase stocks – the opportunity to share in the profits of publicly-traded companies. Investors can profit from stock buying in one of two ways. Some stocks pay regular dividends (a given amount of money per share of stock someone owns). The other way investors can profit from buying stocks is by selling their stock for a profit if the stock price increases from their purchase price. For example, if an investor buys shares of a company's stock at $10 a share and the price of the stock subsequently rises to $15 a share, the investor can then realize a 50% profit on their investment by selling their shares.

Stock market analysts and investors may look at a variety of factors to indicate a stock's probable future direction, up or down in price. Here's a rundown on some of the most commonly viewed variables for stock analysis. Analysts and investors also frequently examine any of a number of financial ratios that are intended to indicate the financial stability, profitability, and growth potential of a publicly traded company.

Predicting this stock value offers enormous arbitrage profit opportunities which are a huge motivation for research in this area. Knowledge of a stock value beforehand by even a fraction of a second can result in high profits. Stock Price prediction and analysis is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. Stock market is the important part of economy of the country and plays a vital role in the growth of the industry and commerce of the country that eventually affects the economy of the country. Both investors and industry are involved in stock market and wants to know whether some stock will rise or fall over certain period of time. The stock market is the primary source for any company to raise funds for business expansions. It is based on the concept of demand and supply. If the demand for a company's stock is higher, then the company share price increases and if the demand for company's stock is low then the company share price decrease. The successful prediction of a stock's future price will maximize investor's gains.

METHODOLOGY

Problem Statement

Stock market is very vast and it is considered too uncertain to be predictable due to huge fluctuation of the market. The stock price prediction system which will be able to predict closing price of various stocks. Based on the parameters like high, open and low taken as input from Investor the system will predict the closing price for the same.

Scope of Project

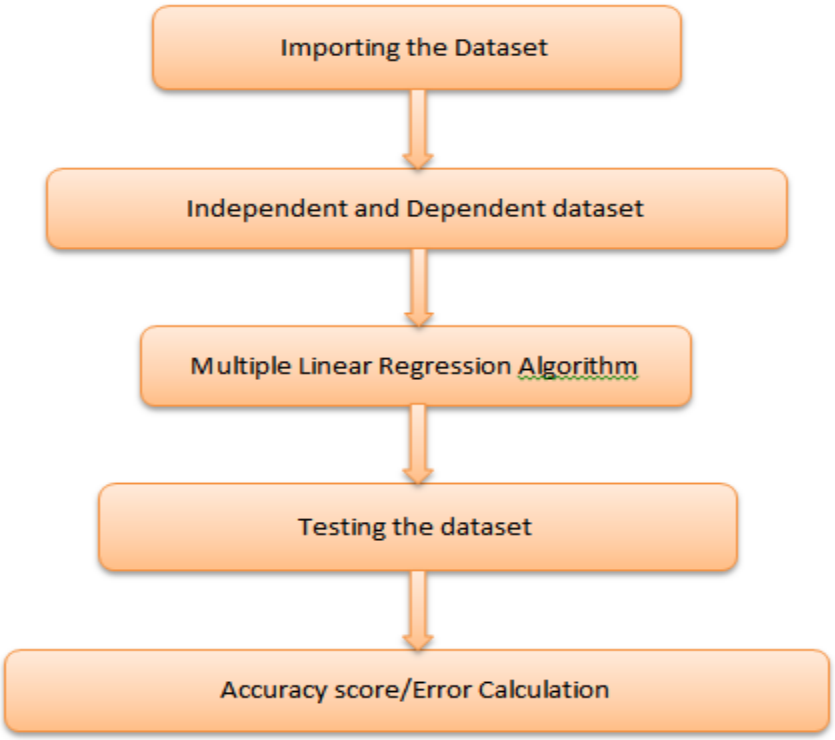
This project will reduce the problem with suitable accuracy faced in such real time scenario like Investing in a good stock but at a bad time can have disastrous result, while investing in a stock at the right time can bear profits. Financial investors of today are facing this problem of trading as they do not properly understand as to which stocks to buy or which stocks to sell in order to get optimum result. Thus, System helps in predicting an approximate closing value for the stock

Algorithm

The system is to predict the price of stocks by analyzing the historical data, directly taken from website, so that system can have stock data for prediction and the accuracy of the system increase. Machine learning algorithm used here is Multiple Linear Regression that is based on supervised learning. Regression model predict value based on adjusted close. This model help to analyze the marketing effectiveness, pricing. If company XYZ, wants to know if the funds that they have invested in marketing a particular brand has given them substantial return on investment this system help to analyze and help the investor to take the decision. Cost function of Multiple Linear Regression is the Root Mean Squared Error (RMSE) between predicted value and the original value is also calculated.

FLOW OF PROJECT

1. Stock data of any company is acquired.
2. Preprocessing of data is done.
3. The attributes which are used to predict stock price are open, high, low and close.
4. There are 4 columns in dataset, 3 are independent and 1 is dependent.
5. Dataset is divided into two parts, training and testing.
6. While training the model supervised learning is done.
7. For regression, MLR (Multiple Linear Regression) is used.
8. Testing of trained model is done to check accuracy of model.
9. New stock data is acquired and given as input to this trained model.
10. Predicted stock price are displayed as output.



Block Diagram

System Requirements

HARDWARE REQUIREMENTS

- Processor : Compatible with any framework
- Memory : Minimum 64MB
- Auxiliary Storage : Minimum 5MB free space

SOFTWARE REQUIREMENTS

- Operating System: Windows 10
- Environment: Anaconda: Spyder
- Language: Python
- Dataset: CSV or Excel file

LIBRARIES USED

- sklearn
- pickle
- tkinter
- pandas

IMPLEMENTATION AND RESULT

For prediction of Stock Price Multiple Linear Regression is used. MLR is used to explain the relation between one dependent and two or more independent variables. Pickle method is used while training the model. This makes program efficient.

4.1 Dataset

Stock Data of any company is acquired. Here we have taken Historical data of Amazon Company.

date	open	high	low	close	volume
AMZN - Historical Price and Volume Data					
Note: Historical prices are adjusted for stock splits.					
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Excel Data

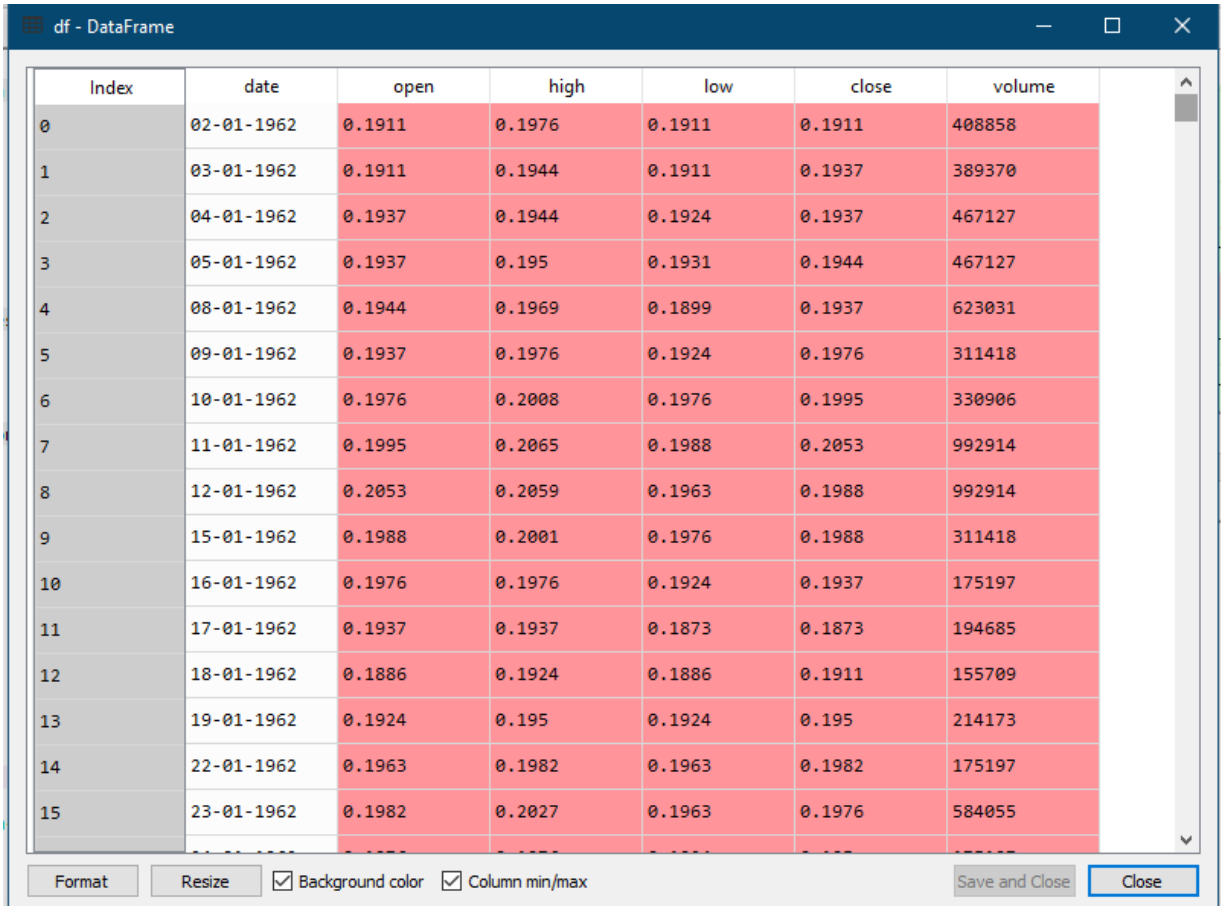
This dataset contain information i.e categorical data about the company which is not required for the prediction process.

29	date	open	high	low	close	volume
30						
31	5/16/1997	1.865	1.9792	1.7083	1.7292	14700000
32						
33	5/19/1997	1.7083	1.7708	1.625	1.7083	6106800
34						
35	5/20/1997	1.7292	1.75	1.6358	1.6358	5467200
36						
37	5/21/1997	1.6042	1.6458	1.375	1.4275	18853200
38						
39	5/22/1997	1.4375	1.4483	1.3125	1.3958	11776800
40						
41	5/23/1997	1.4067	1.5208	1.3333	1.5	15937200
42						
43	5/27/1997	1.4792	1.6458	1.4583	1.5833	8697600
44						
45	5/28/1997	1.6092	1.6358	1.5317	1.5317	4574400
46						
47	5/29/1997	1.5417	1.5417	1.4792	1.505	3472800
48						
49	5/30/1997	1.5	1.5108	1.4792	1.5	2594400
50						
51	6/2/1997	1.5108	1.5317	1.5	1.5108	591600

Fig. 4.2 Attributes of Dataset

Preprocessing of data is done. Replace the Null field with the appropriate entries of the dataset that is adjusting rows and save the dataset for further implementation of system. The attributes which are used to predict closing price of stock are open, high, low.

The below image shows head() of final dataset which is used for training the model for prediction of stock price.



Index	date	open	high	low	close	volume
0	02-01-1962	0.1911	0.1976	0.1911	0.1911	408858
1	03-01-1962	0.1911	0.1944	0.1911	0.1937	389370
2	04-01-1962	0.1937	0.1944	0.1924	0.1937	467127
3	05-01-1962	0.1937	0.195	0.1931	0.1944	467127
4	08-01-1962	0.1944	0.1969	0.1899	0.1937	623031
5	09-01-1962	0.1937	0.1976	0.1924	0.1976	311418
6	10-01-1962	0.1976	0.2008	0.1976	0.1995	330906
7	11-01-1962	0.1995	0.2065	0.1988	0.2053	992914
8	12-01-1962	0.2053	0.2059	0.1963	0.1988	992914
9	15-01-1962	0.1988	0.2001	0.1976	0.1988	311418
10	16-01-1962	0.1976	0.1976	0.1924	0.1937	175197
11	17-01-1962	0.1937	0.1937	0.1873	0.1873	194685
12	18-01-1962	0.1886	0.1924	0.1886	0.1911	155709
13	19-01-1962	0.1924	0.195	0.1924	0.195	214173
14	22-01-1962	0.1963	0.1982	0.1963	0.1982	175197
15	23-01-1962	0.1982	0.2027	0.1963	0.1976	584055

Fig. 4.3 Final Dataset

Result

Enter Open, High and Low Value in respective textbox and click on predict button for the prediction of close price.

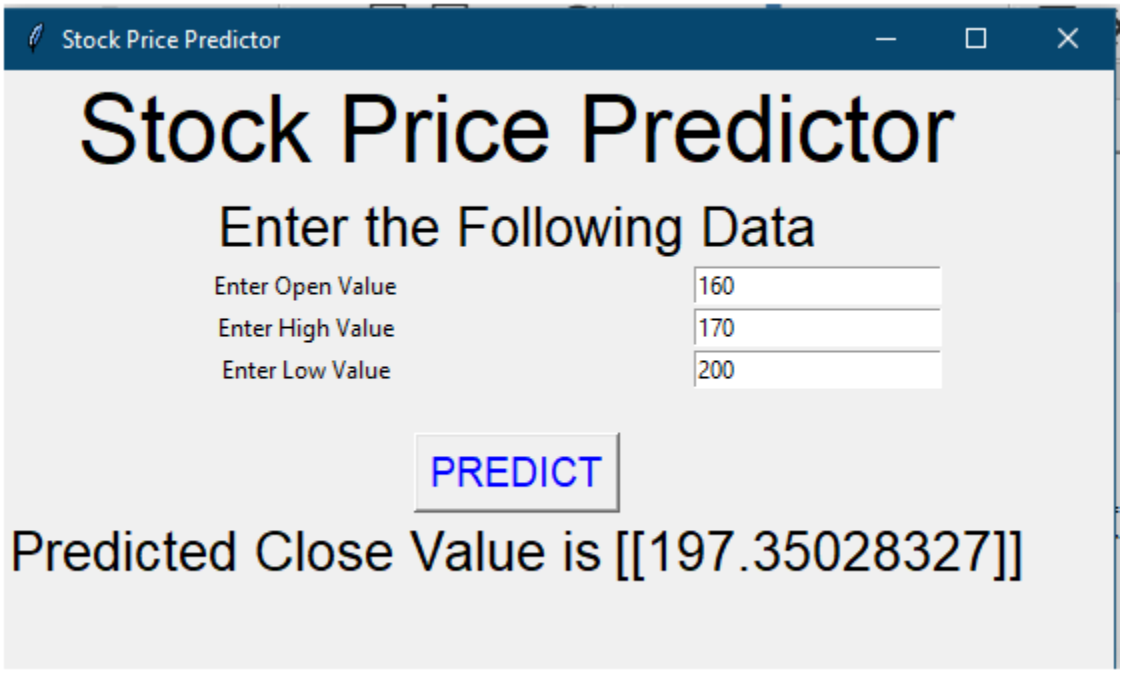


Fig. 4.4 Window

CONCLUSION

We implement the application of Machine Learning to the task of stock market prediction. Our initial analysis show significant correlation between different input parameter. The result obtained in the project as prediction is fairly accurate unless there is huge and sudden variation in the actual data. After the phase of analysis, the result that is prediction for further days will be displayed to users. We have been successfully predicting rough estimation of the future stock price in the project.