

Project: 1

Code Explanation

I downloaded the past 10 years of Walmart stock price data from finance.yahoo.com. Here is the link to the dataset.

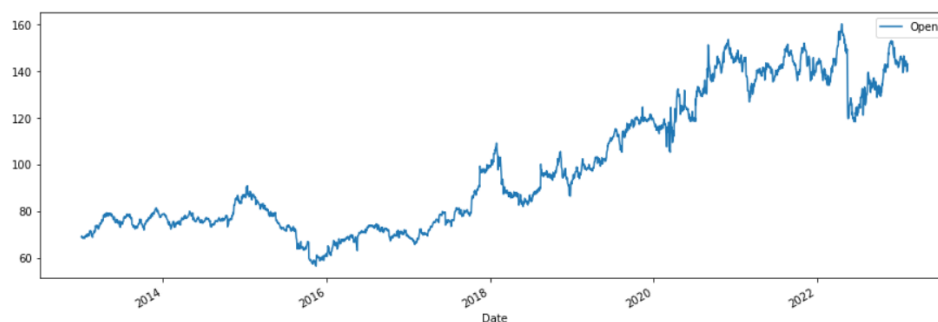
<https://finance.yahoo.com/quote/WMT/history?p=WMT>

First of all, I did some data preprocessing like converting the “Date” attribute’s data type from object to DateTime and then setting it as an index because our problem is related to Time.

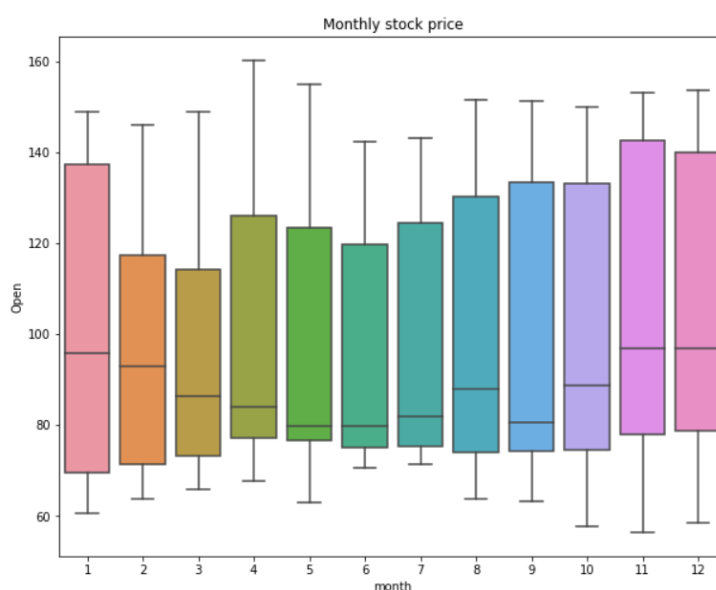
Further, I did some Time series analysis with the help of data visualization. Here are the graphs for the same.

Plotting opening price

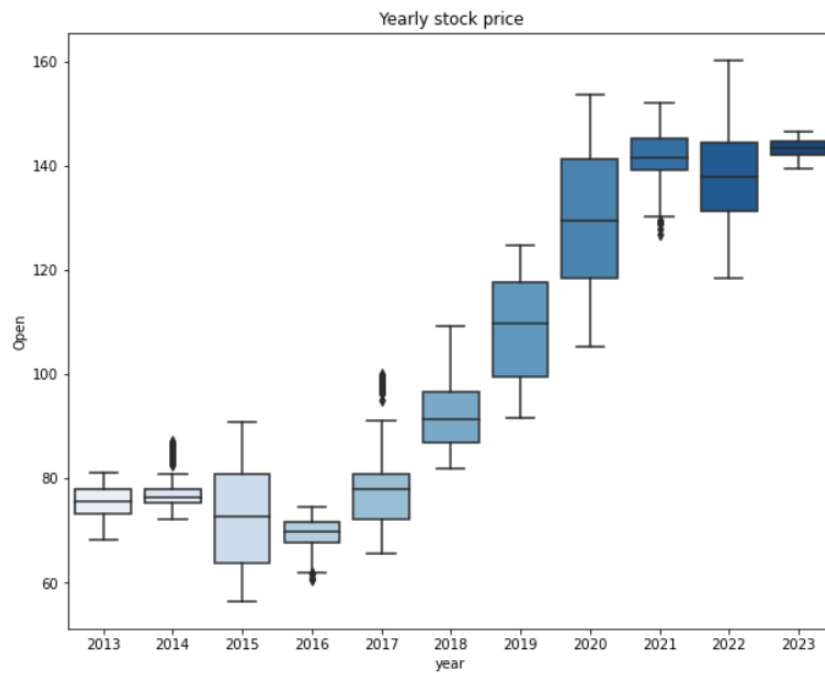
```
walmart_dataset = dataset.set_index('Date') # date as index
walmart_dataset.plot(y='Open', figsize=(15,5))
plt.show()
```



As we can see, the stock price of walmart is increasing seasonally.

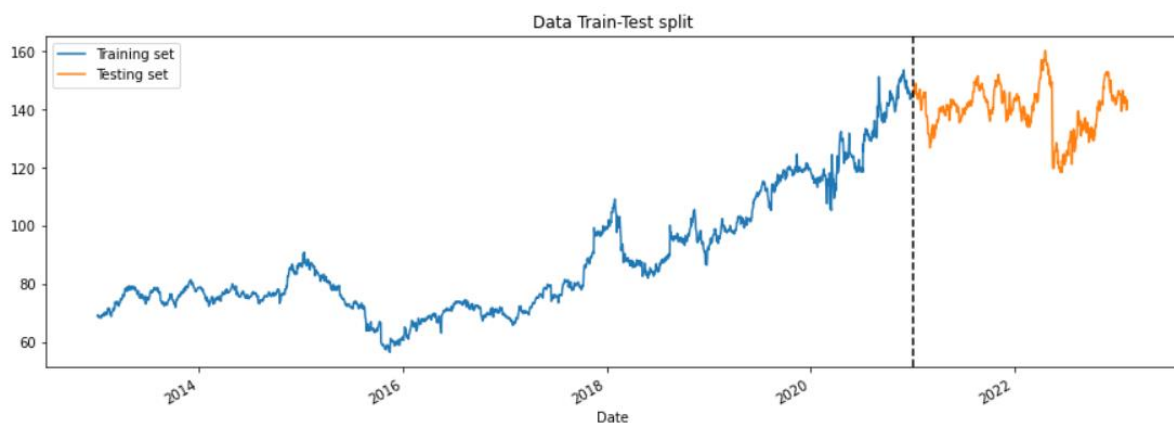


In winter the stock price seems to be increasing.



In 2019 and 2020, just before covid and during covid the stock prices increased heavily.

Then I split my dataset into two parts. 80% for training and 20% for testing without shuffling as the stock market highly depends on time and it needs to be in a sequence.

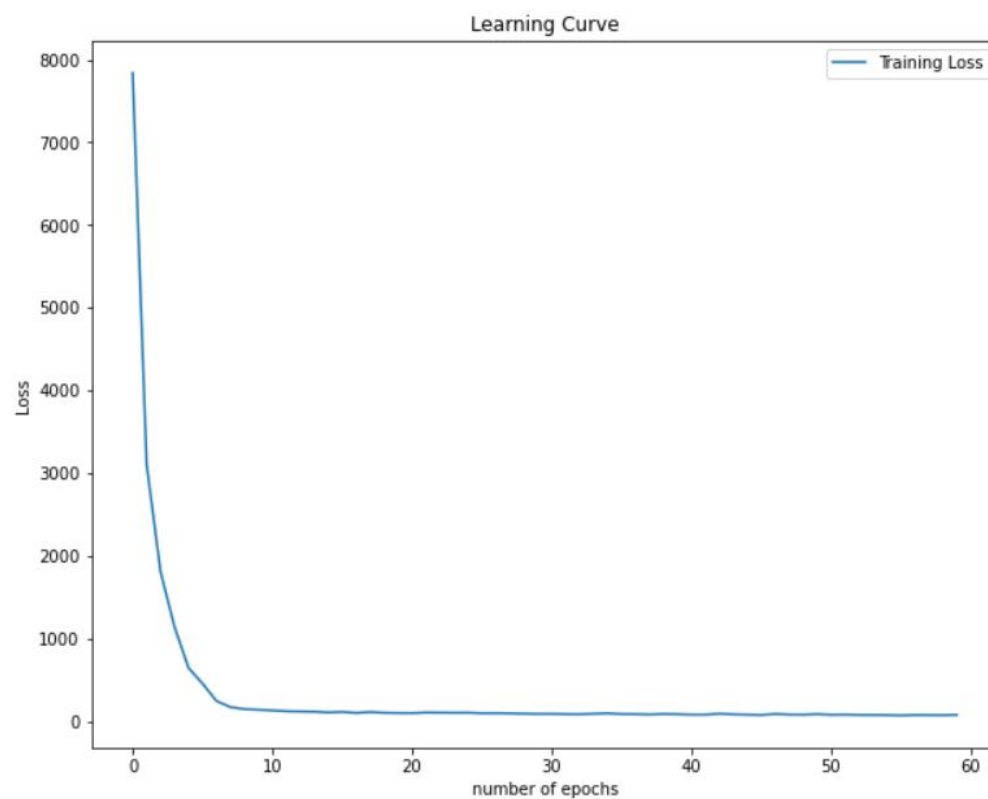


Further, I used the LSTM model for training and testing.

Model: "sequential"

Layer (type)	Output Shape	Param #
lstm (LSTM)	(None, 2, 50)	10800
dropout (Dropout)	(None, 2, 50)	0
lstm_1 (LSTM)	(None, 50)	20200
dropout_1 (Dropout)	(None, 50)	0
dense (Dense)	(None, 1)	51
Total params: 31,051		
Trainable params: 31,051		
Non-trainable params: 0		

Here is my Learning Curve representing my loss function.



Outputs:

Model training:

```
lstm_model = lstm.fit(X_train, y_train, epochs = 60, batch_size = 16, shuffle = False)
Epoch 51/60
128/128 [=====] - 1s 4ms/step - loss: 75.7419
Epoch 52/60
128/128 [=====] - 0s 4ms/step - loss: 77.5636
Epoch 53/60
128/128 [=====] - 0s 4ms/step - loss: 73.9764
Epoch 54/60
128/128 [=====] - 1s 4ms/step - loss: 73.2414
Epoch 55/60
128/128 [=====] - 0s 4ms/step - loss: 72.1266
Epoch 56/60
128/128 [=====] - 0s 4ms/step - loss: 68.2132
Epoch 57/60
128/128 [=====] - 0s 4ms/step - loss: 73.4612
Epoch 58/60
128/128 [=====] - 0s 4ms/step - loss: 72.0535
Epoch 59/60
128/128 [=====] - 0s 4ms/step - loss: 71.4466
Epoch 60/60
128/128 [=====] - 0s 4ms/step - loss: 74.5430
```

Testing:

Testing RMSE and MAPE errors

```
rmse = mean_squared_error(y_test, y_pred, squared = False)
mape = mean_absolute_percentage_error(y_test, y_pred)
print('RMSE score on test dataset:',rmse)
print('MAPE score on test dataset:',mape)
```

RMSE score on test dataset: 2.869180365553801

MAPE score on test dataset: 0.015821550375964367

Actual Price and Predicted stock price:

