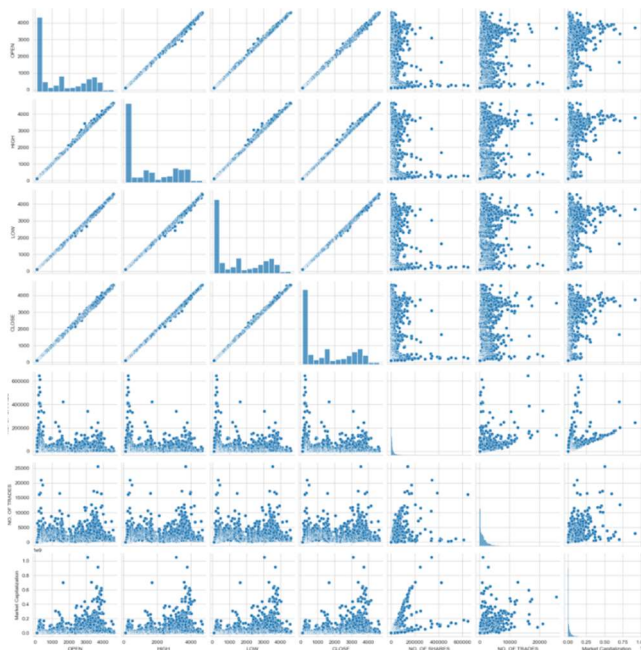


Stock Price Prediction

DESCRIBE : firstly I analysed the data using describe() and found the following result:

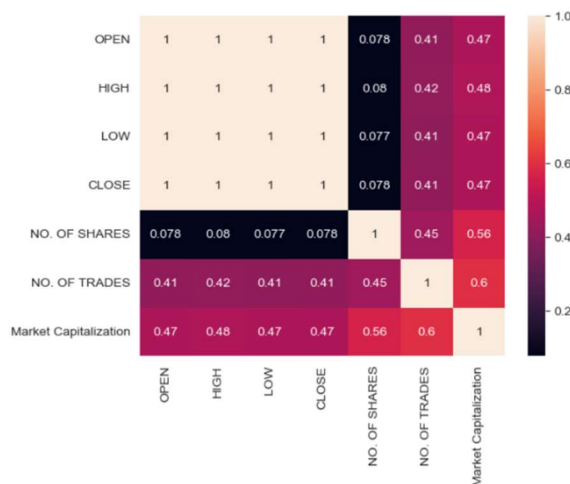
	OPEN	HIGH	LOW	CLOSE	NO. OF SHARES	NO. OF TRADES	Market Capitalization
count	3985.000000	3985.000000	3985.000000	3985.000000	3985.000000	3985.000000	3.985000e+03
mean	1467.650688	1484.091581	1449.475498	1465.725084	17042.246424	1343.587453	2.908947e+07
std	1389.585296	1403.450025	1373.930620	1387.892115	37614.425349	1720.521070	6.185443e+07
min	108.200000	110.500000	99.130000	108.340000	1.000000	1.000000	2.221000e+02
25%	200.700000	204.400000	199.100000	200.770000	3251.000000	254.000000	9.275194e+05
50%	955.700000	963.000000	946.250000	953.730000	7737.000000	871.000000	9.219919e+06
75%	2943.000000	2980.000000	2890.250000	2921.900000	16899.000000	1786.000000	3.096887e+07
max	4630.000000	4661.500000	4602.000000	4637.600000	645876.000000	25588.000000	1.050377e+09

PAIRPLOT: If we see the pairplot of the data:



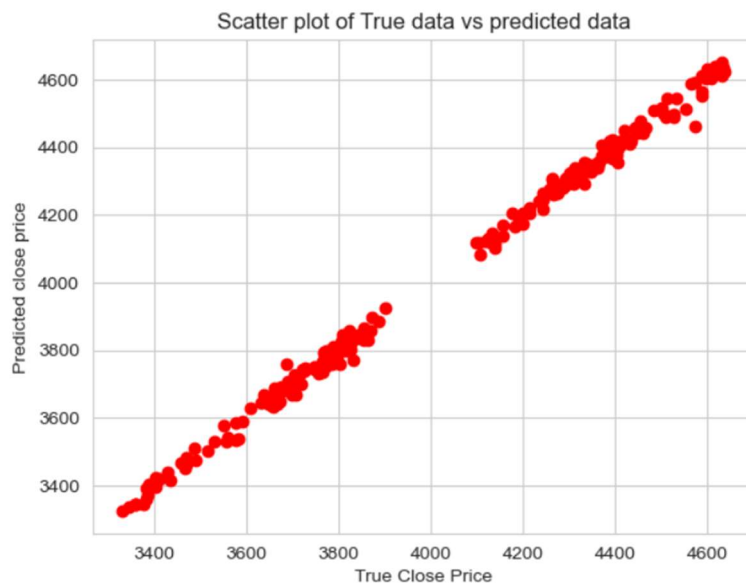
- Finding:
- we note that:
- the correlation of the stock closing price is most with
- HIGH, LOW and OPEN
- Which means that these affects our data the most so we make predictions acc to

HEATMAP: Next I found the heatmap of the given data which looks like:



- This heatmap gives a clear visualization of the data
- It shows that the closing data is highly correlated with the open , high and the low value
- The max correlation corresponds to value=1 on the map and least correlation is having value=0.078
- This implies that the no. of trades does not much affect the close.

SCATTER PLOT:



Link for the stock price data from 10th feb 2023 to 10th march 2023:

<https://finance.yahoo.com/quote/BRITANNIA.NS/history/>

from this Scatter plot we find that our predictions for the next month stock prices is pretty close to the Actual Stock price of Britannia industries from 10th feb 2023 to 10th march 2023

	True_val	Predictions
0	3487.050049	[3510.3624490934835]
1	3470.449951	[3462.996168901917]
2	3516.500000	[3501.0824761932704]
3	3560.949951	[3543.155106140964]
4	3557.600098	[3530.9802901614]
...
242	4630.850098	[4651.412394851761]
243	4606.899902	[4603.2371078054175]
244	4631.899902	[4612.294692920424]
245	4564.350098	[4587.624642912749]
246	4499.850098	[4516.457146675128]

- This dataframe shows the True value of the stock price vs the predicted value from the year 2008 to feb 2023
- By seeing this and the scatter plot we can easily tell that the predicted value is quite close to the actual value
- The difference is around 15-20 Rs. On an average

	Coefficient
OPEN	-0.404783
HIGH	0.657209
LOW	0.748195

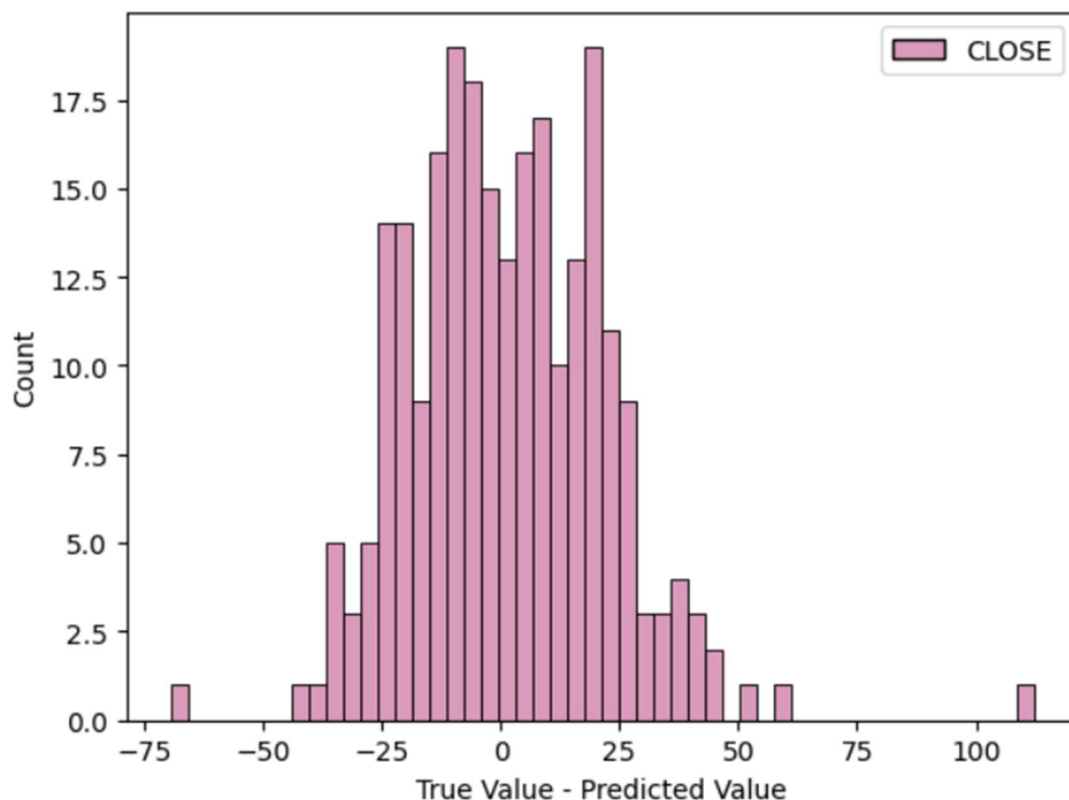
ERROR METRICS:

Mean Absolute Error: 16.39934775986488

Mean Squared Error: 434.46888571350786

Root Mean Squared Error: 20.843917235335297

R² value: 0.9969916339742485



HOW DID OUR MODEL PERFORM?

The answer of this question is that our model perform very well.

Some important things are:

- ✓ Our model predicted the Closing stock price of Britannia industries quite well...from the histogram its clear that the difference between the actual and the predicted values is around 15-20 Rs. Which is pretty nice as the stock price is high
- ✓ Is we see the error metrics, we can observe the values of mean absolute error, mean squared error , root mean squared error and R² value
- ✓ The **R² value of our model is 0.99** . R-squared value of 0.99 suggests that the model explains 99% of the variance in the dependent variable. This indicates a very strong relationship between the True and Predicted and suggests that the model provides a very good fit to the data.