NAME : AMMAAR AHMAD
ROLL NO: 1801CS08
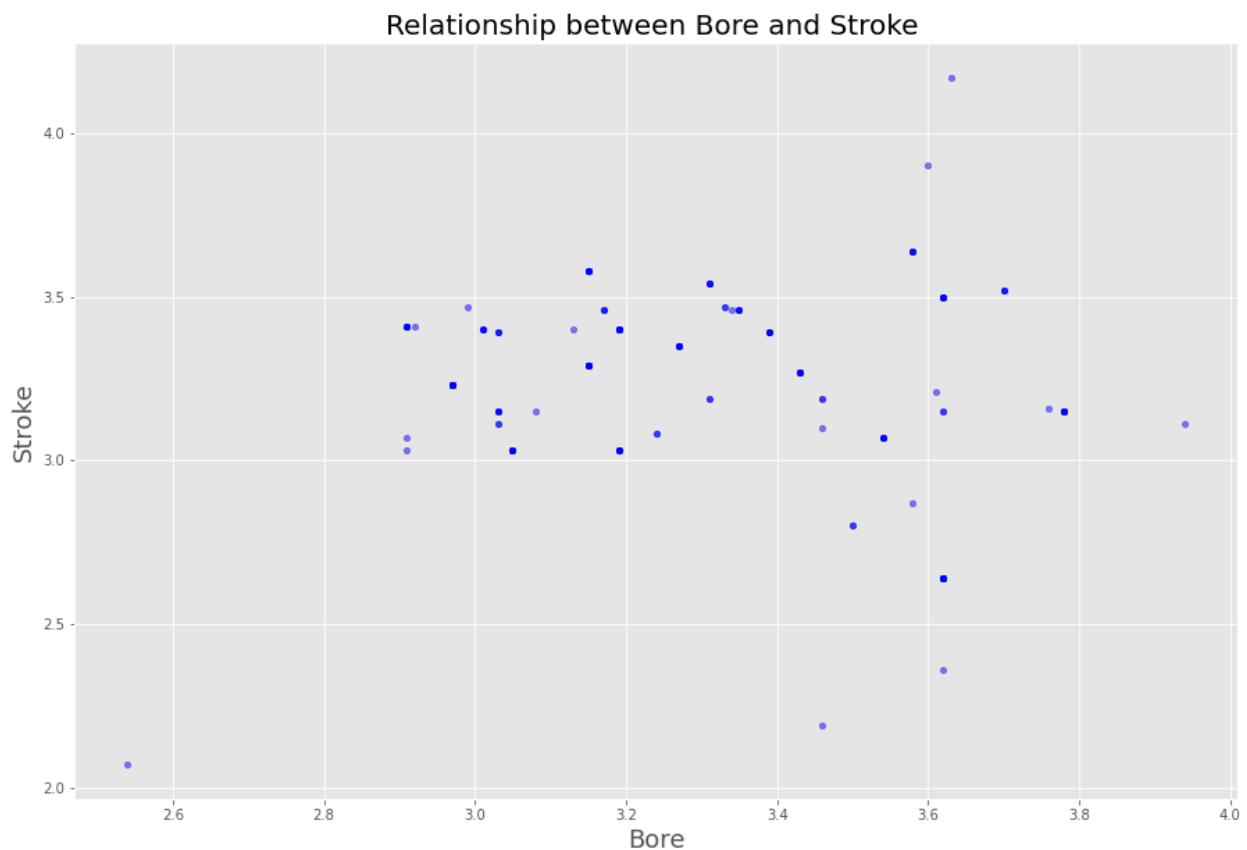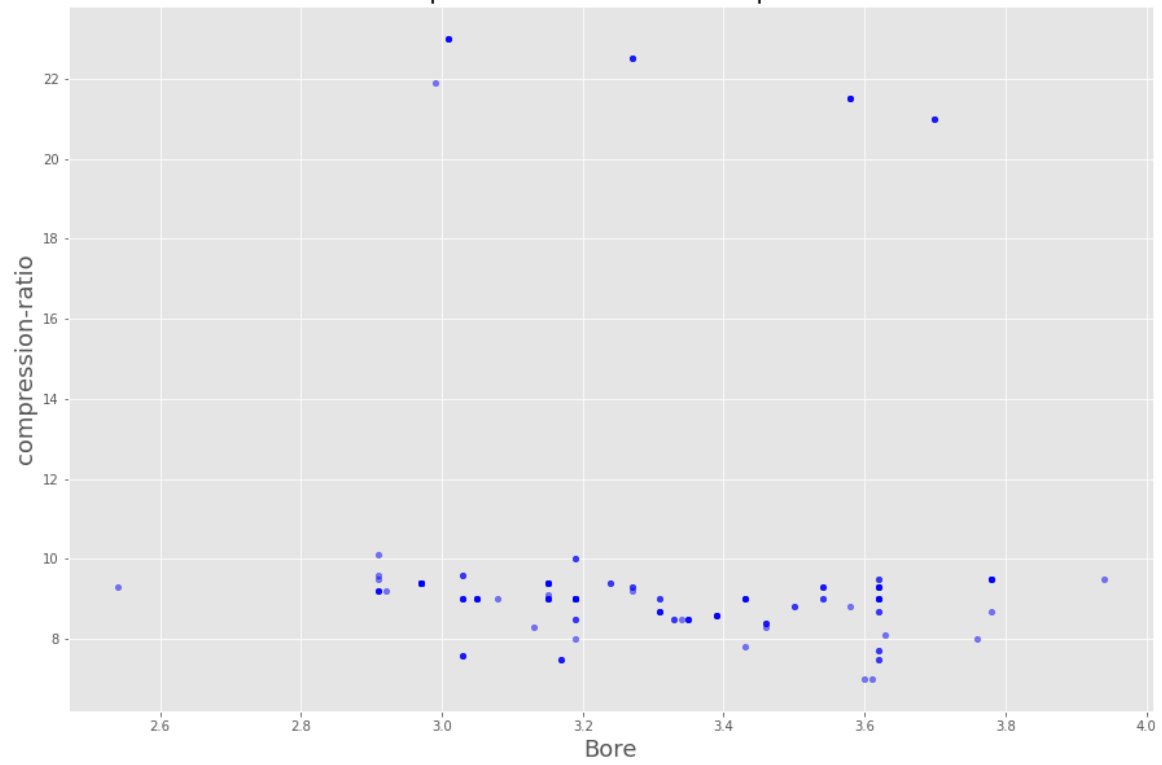**CS575 - LAB3**

Colab Link -
https://colab.research.google.com/drive/1EbB67cG9D-jbFal9
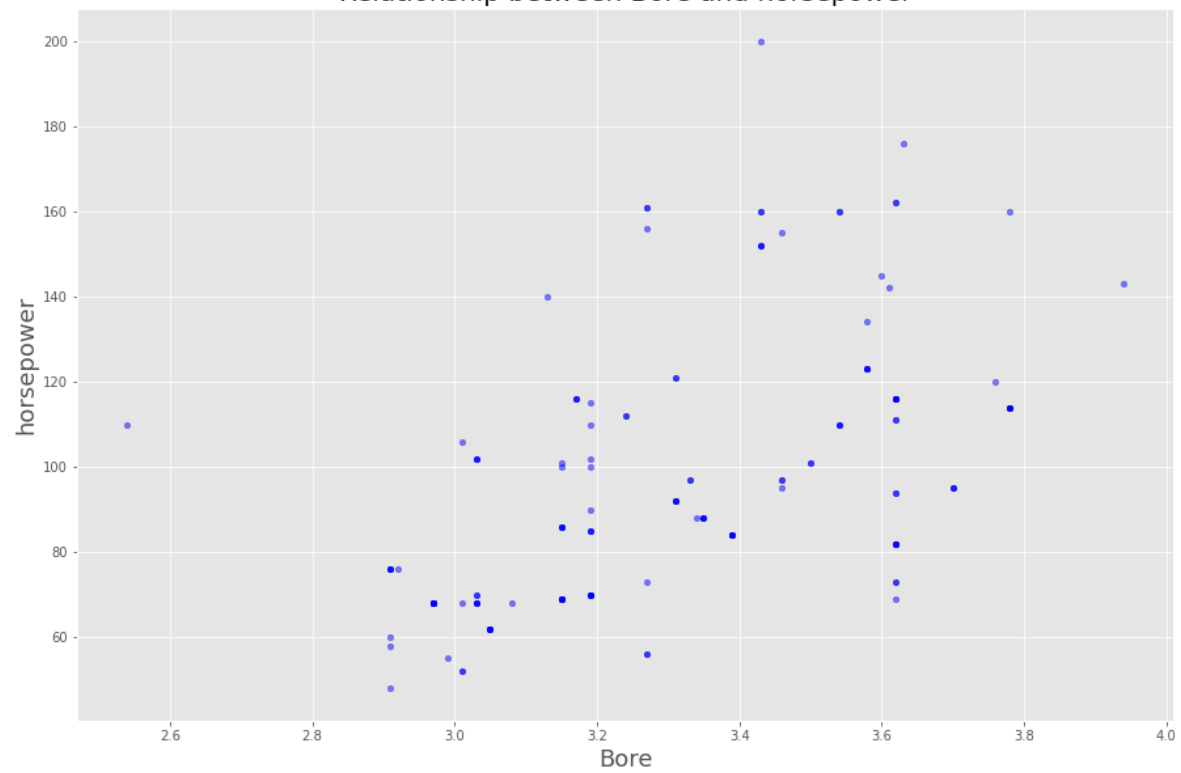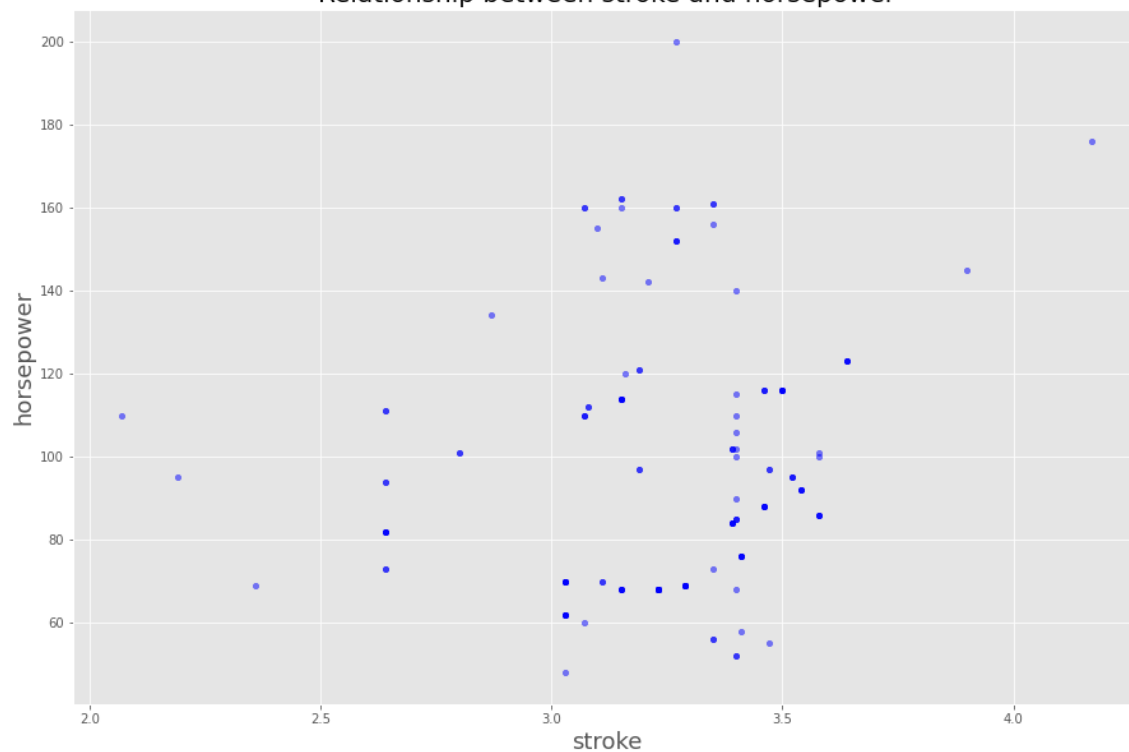**2Y1GMzlVj9ZAFX78?usp=sharing**

Task 1

Q1.

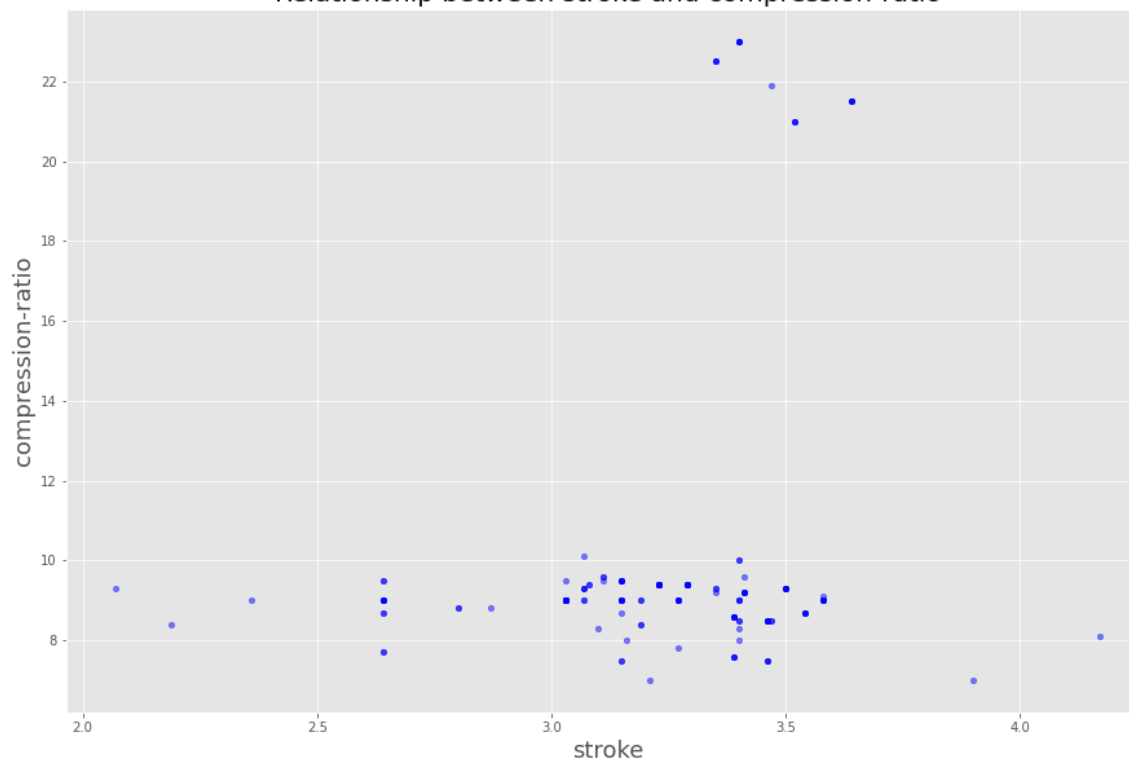Relationship between Bore and compression-ratio

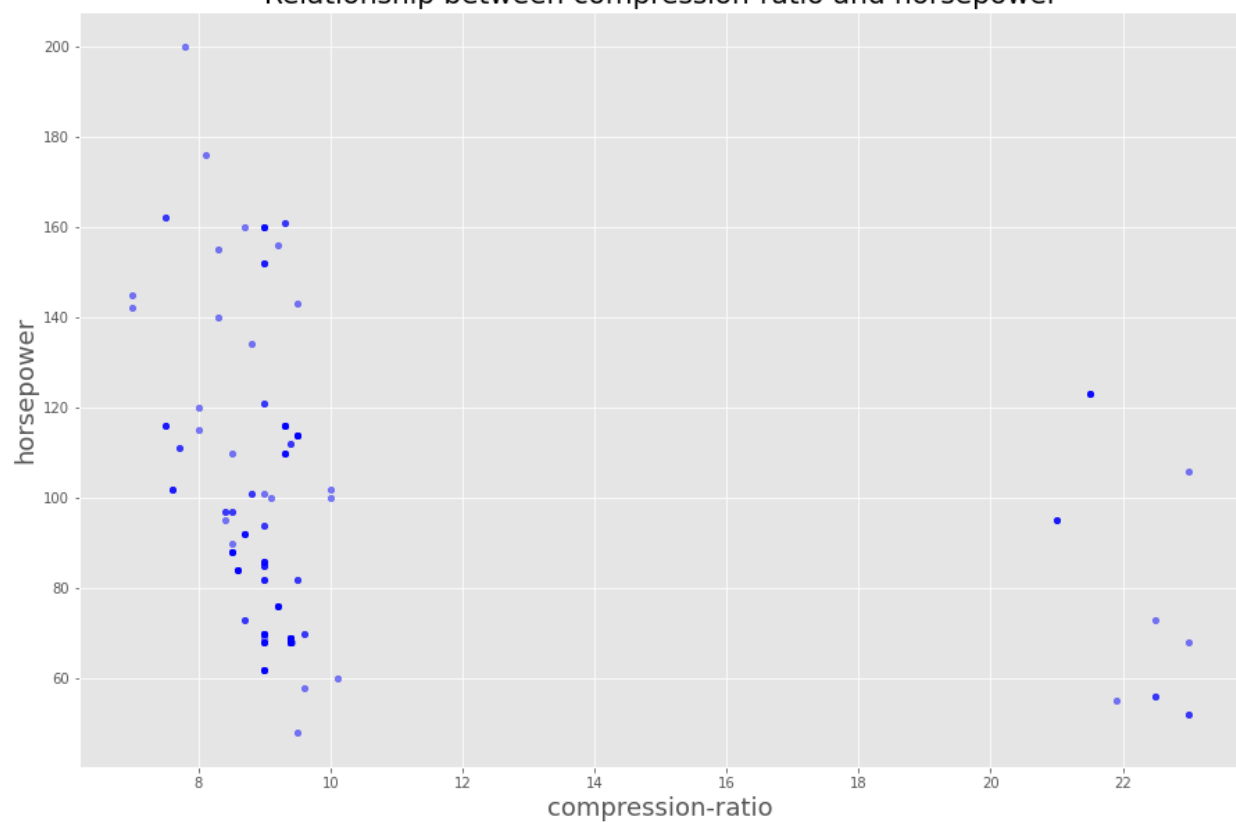Relationship between Bore and horsepower

Relationship between stroke and horsepower

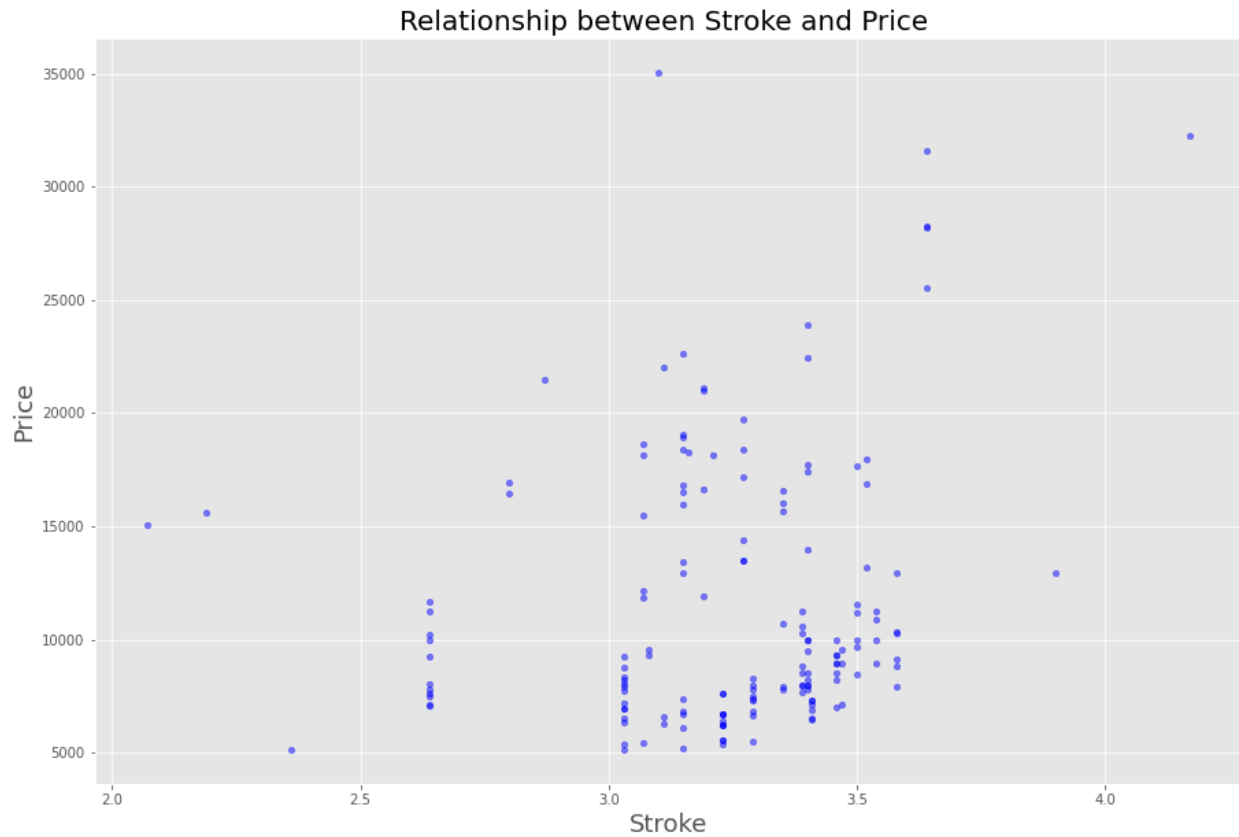# Relationship between stroke and compression-ratio

Relationship between compression-ratio and horsepower

Q2.
Correlation Coefficient between Stroke and Price = 0.16066434143610164
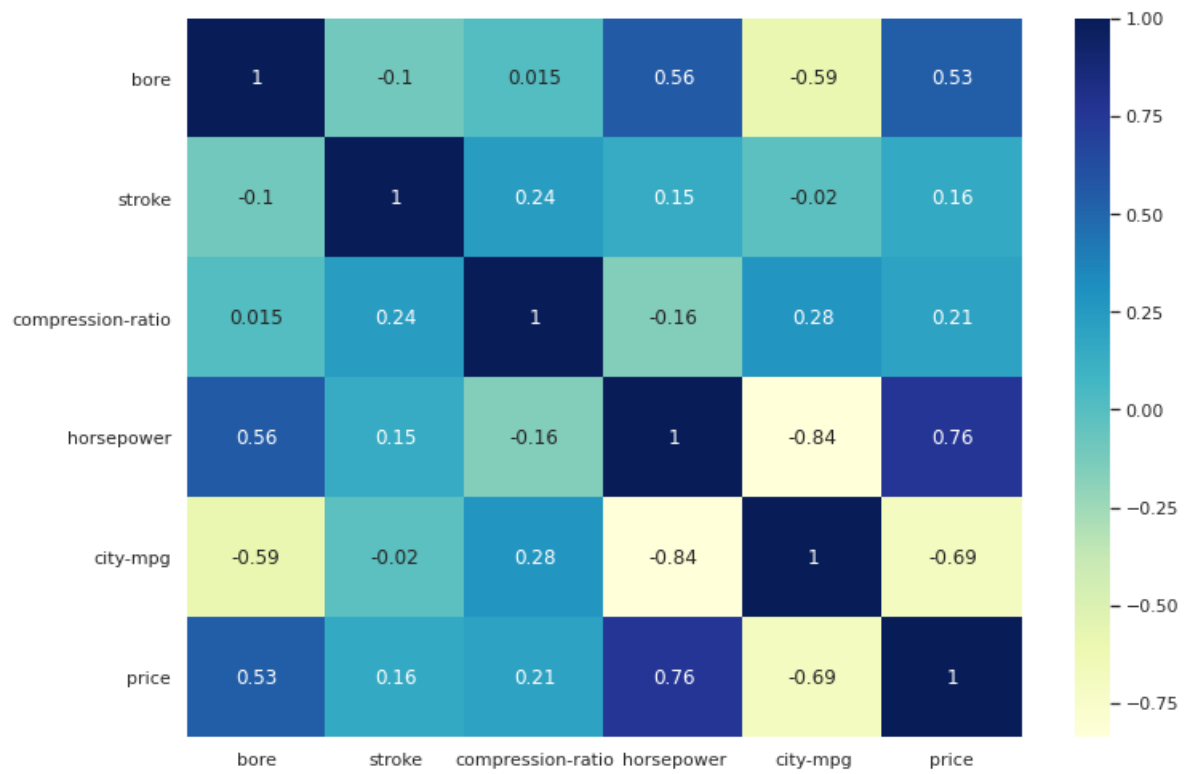

Relationship between Stroke and Price

Q3.
Pearson's correlation coefficient : 0.7344189369206997 and p-value is: 3.221918254220027e-28

Q4.

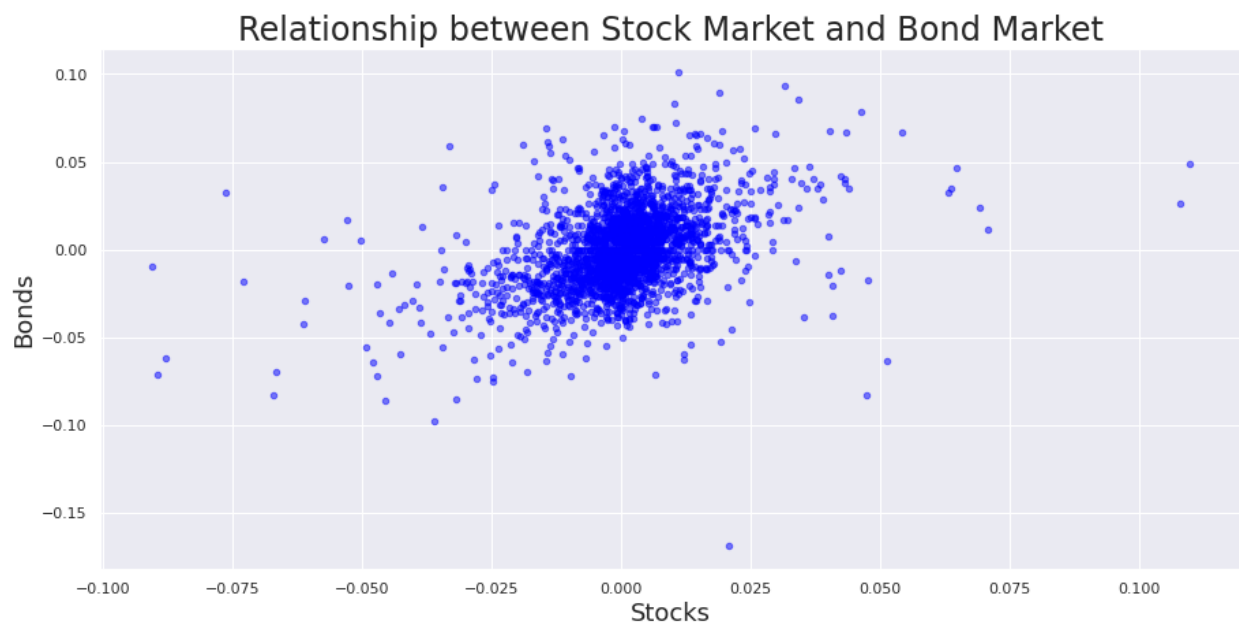Relationship between Stroke and Price
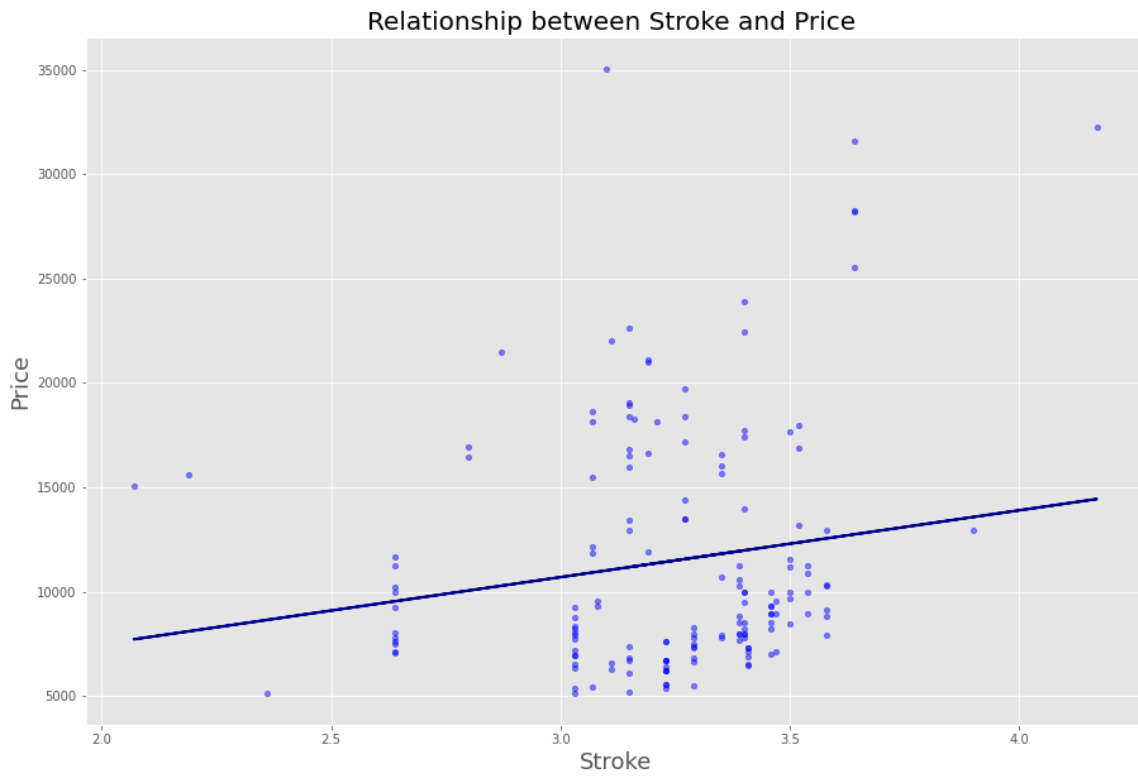
Q5.

Task 2

Q1. Merged (in Colab)

Q2. `Correlation of stocks and bonds:  0.4119448886249272`

Q3.

Relationship between Stock Market and Bond Market

Task 3

Q1.

Relationship between true_value and fourth_graders_guess


y=70.61+0.86*x
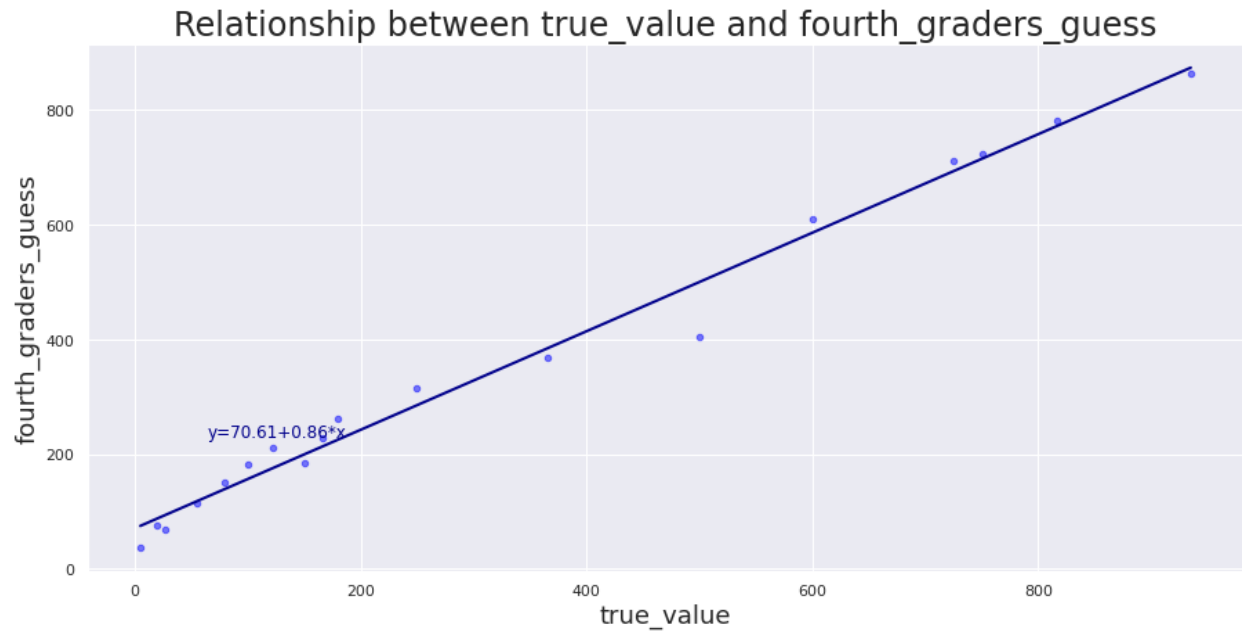
Explanation - There is a linear relationship between true_value and fourth_graders_guess as evident from a plot

Q2. Linear regression is not a correct relationship between true_value and second_graders_guess as evident from a plot

Relationship between true_value and second_graders_guess

y=306.75+0.60*x
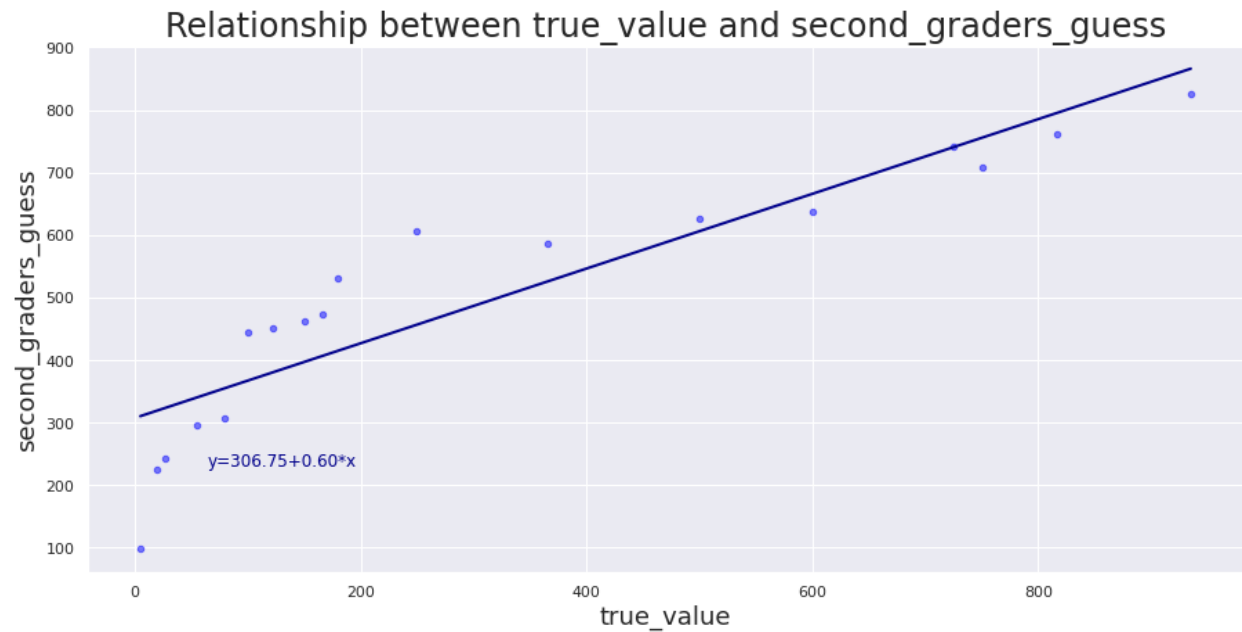
Text(0, 0.5, 'second_graders_guess')

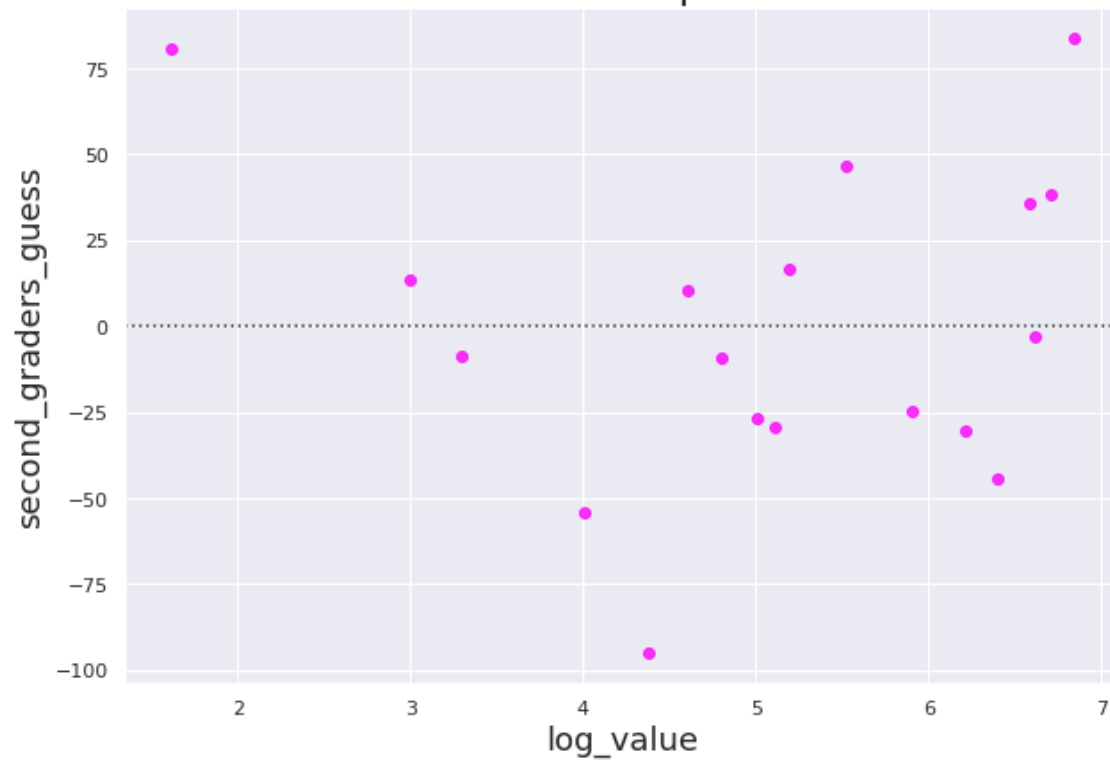Relationship between log_value and second_graders_guess
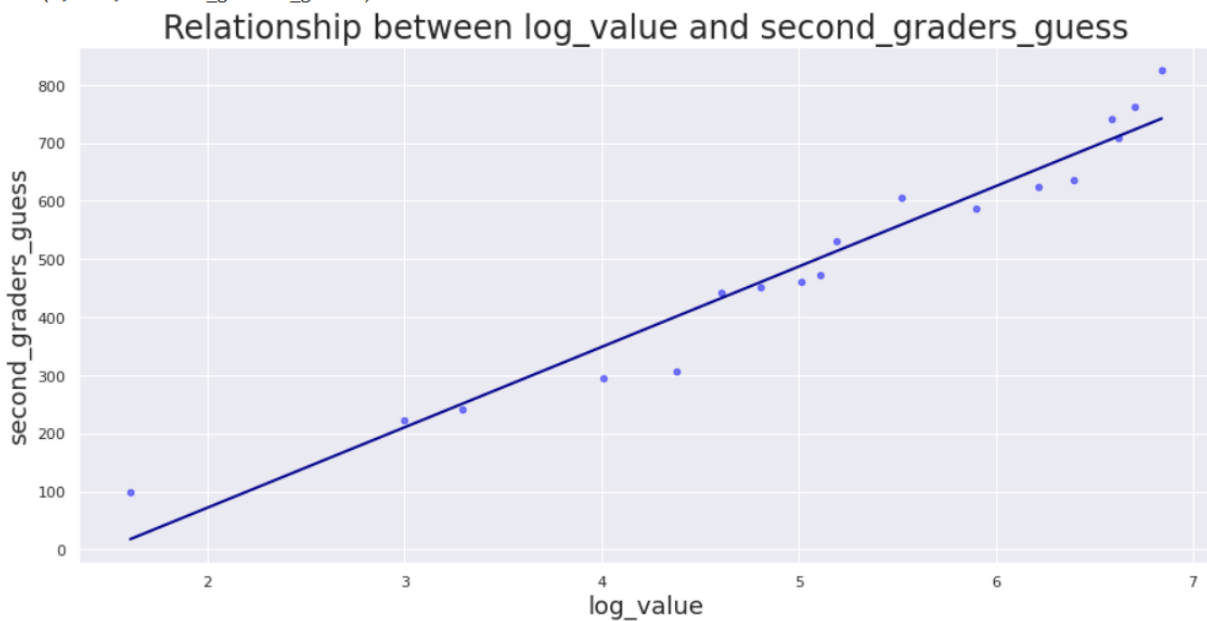
Transformation of true_value to log(true_value) leads to linear relationship and second_graders_guess as evident from a second plot
Residual Plots of Untransformed and Transformed Value is below
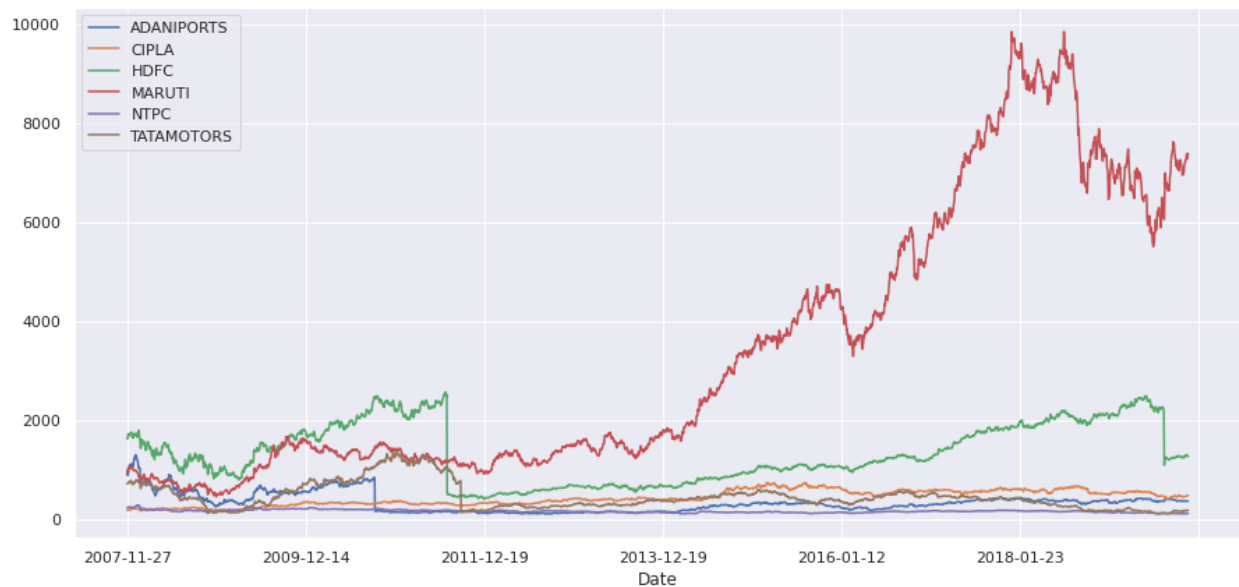
Residual plot
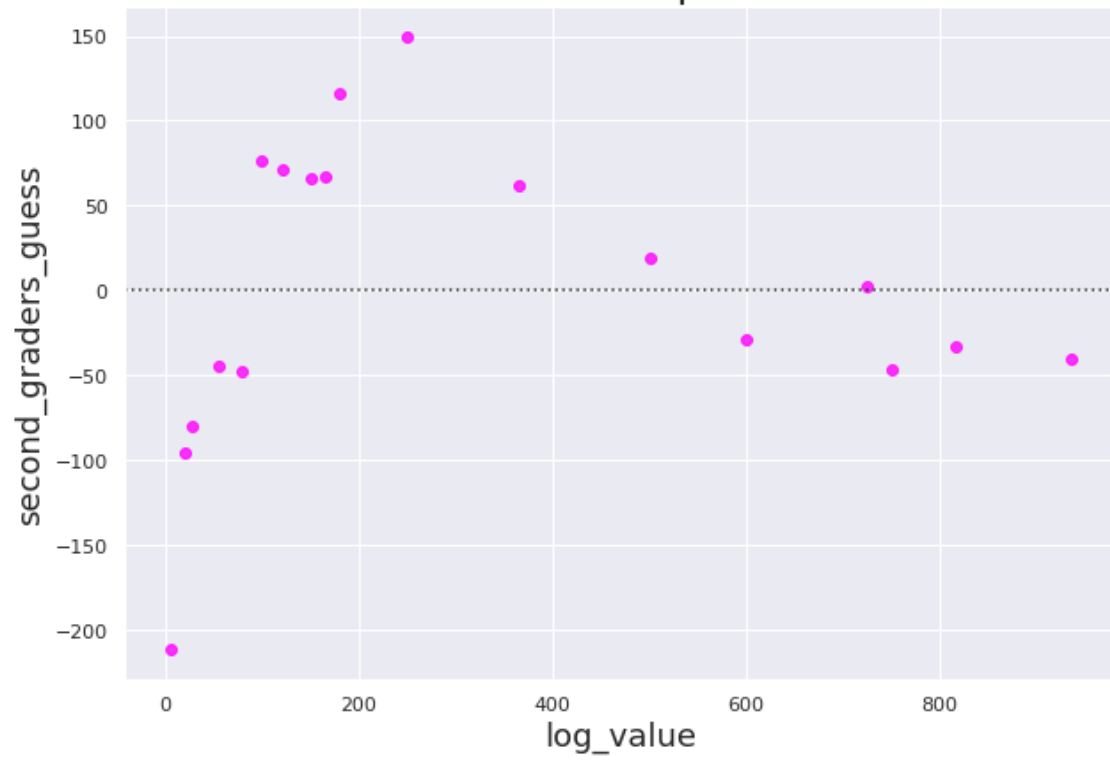
Residual plot

Q3. Residual Plots shows that after transformation residual it is more evenly distributed
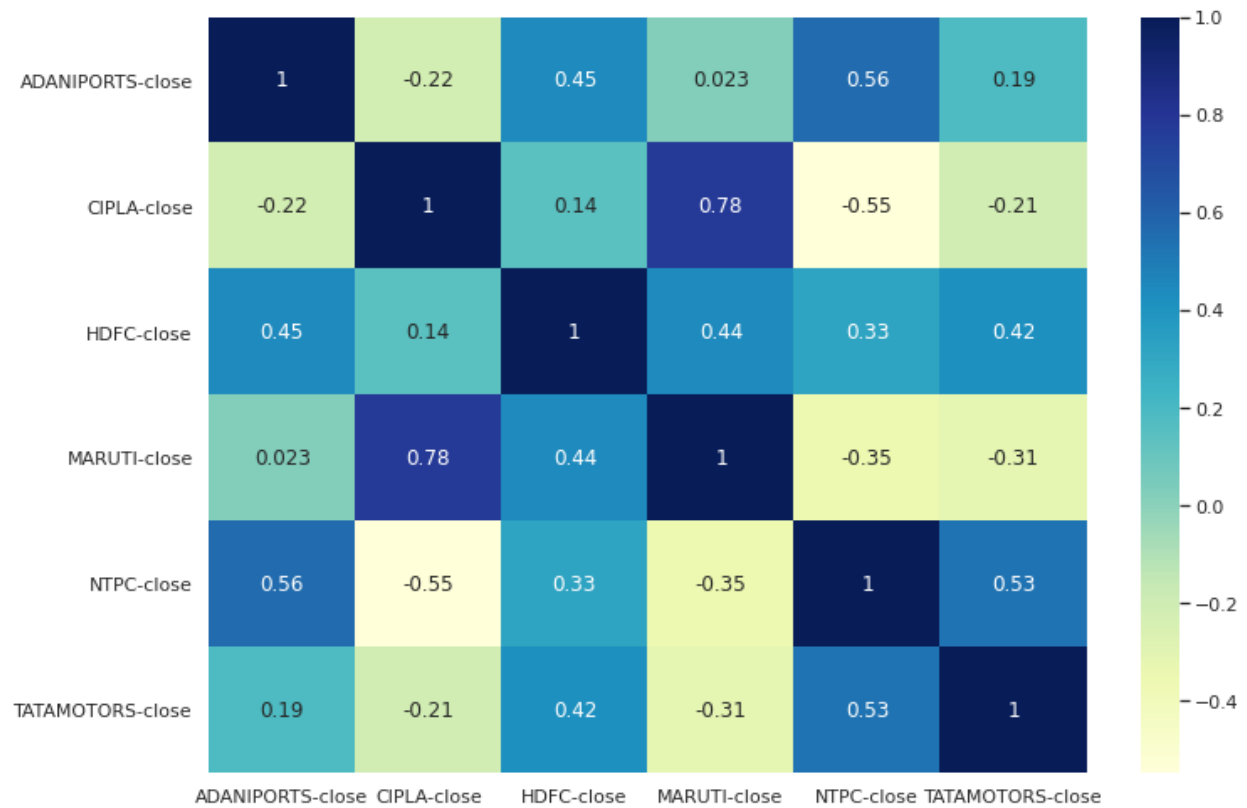**Second_graders presumes numbers in logarithmic scale whereas fourth_graders presumes number in linear scale**

Task 4

Q1.

Maruti Stocks VWAP has been in increase in the last few years whereas others are more or less stable. This is due to less number of stocks available for sale.

Q2.

Cipla and Maruti Stocks are very strongly correlated (0.78) whereas Maruti and TataMotors are negatively correlated (0.35) as they are both in competition in Motor Vehicles