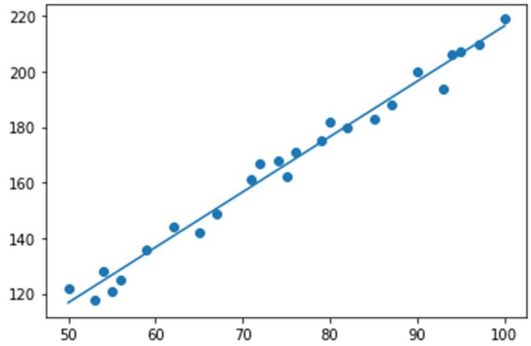
Koushik Sahu
118CS0597
Machine Learning Lab-IV
21st Sept 2021
Readme and output file

Since both the problems are based on linear regression I first made a **LinearRegression** class which has the following functions:

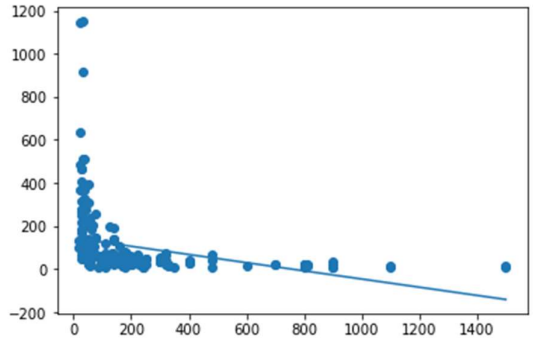
1. **Constructor**: Finds the value of β_0 and β_1. Creates a coefficient array for the regression line.
2. **Predict**: For a given x value it predicts the corresponding value on the regression line.
3. **Error**: Evaluates the array of errors which are the difference of y and y_hat.
4. **SSE**: Evaluates the sum of the squares of the error found in the above function.
5. **SSR**: Evaluates the sum of square of difference between y_hat and y_mean.
6. **R_sqrd**: Evaluates R^2 value by the formula ssr/(ssr+sse).
7. **Plot**: Plots the data points and the regression line.

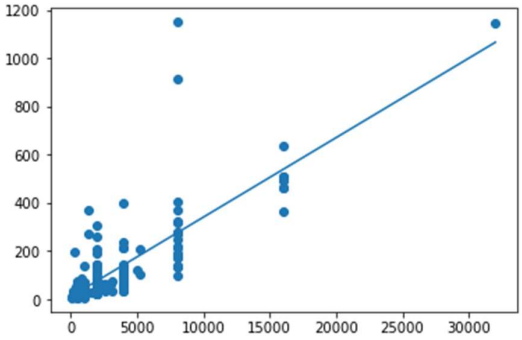
Problem 1 and Problem 2: A LinearRegression object is initiated and the corresponding functions are called to find error and R^2 value.

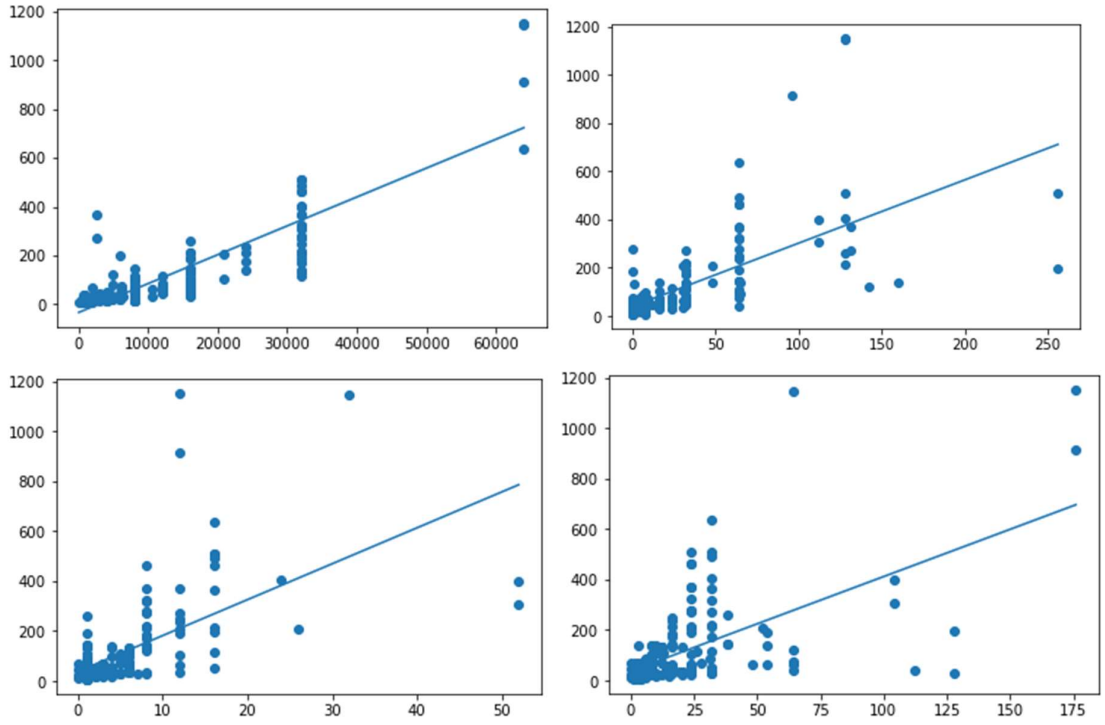
Graphs:
Problem 1:



Problem 2:
The regression line and data points for the columns are as follows:






1200
1000
800
600
400
200
0
0 10000 20000 30000 40000 50000 60000
1200
1000
800
600
400
200
0
0 50 100 150 200 250
1200
1000
800
600
400
200
0
0 10 20 30 40 50
1200
1000
800
600
400
200
0
0 25 50 75 100 125 150 175