Project: Diamond Prices

Step 1: Understanding the Model

Answer the following questions:

1. According to the linear model provided, if a diamond is 1 carat heavier than another with the same cut and clarity, how much more should we expect to pay? Why?
    - A diamond that is 1 carat heavier will result in an additional price of 8413$. The regression formula given for the dataset determined a coefficient of 8413 for the carat. The price will increase according to this coefficient.

2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?
    - The formula to determine the price is :

      Price = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**

      By putting the given values, we arrive to a predicted price:

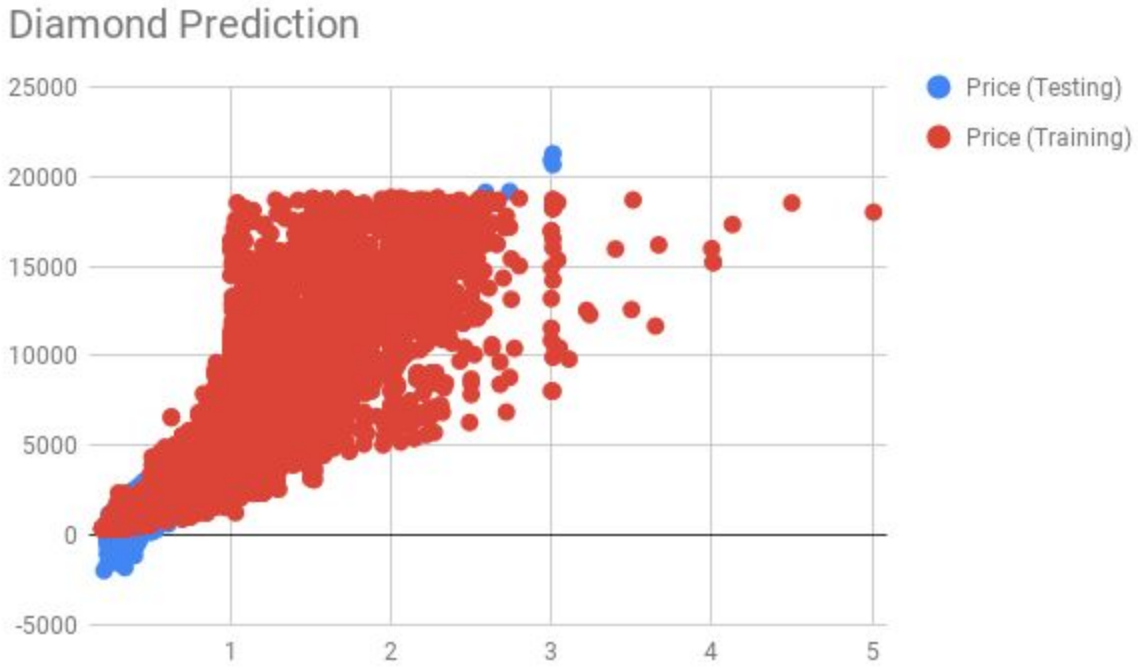
      Price = -5,269 + 8,413 x **1.5** + 158.1 x **3** + 454 x **5**

      Price = 10094.8 $

Step 2: Visualize the Data

Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.
2. Plot 2 - Plot the data for the diamonds for which you are predicting prices with carat on the x-axis and predicted price on the y-axis.
    - **Note**: You can also plot both sets of data on the same chart in different colors.
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?



There seems to be a correlation between the actual prices and the predicted ones. The model appears to give a correct prediction of the prices, although there are some outliers. The formula might not be accurate for a single diamond price prediction but for helpful in predicting the price of a whole set.

Step 3: Make a Recommendation

Answer the following questions:

1. What price do you recommend the jewelry company to bid? Please explain how you arrived at that number. HINT: The number should be 7 digits.

    - I recommend a bid of 8213465.932. I arrived to this number by using the given formula for the regression model, based on previous diamonds sales. I then applied the formula to the testing data set in order to get a predicted price for each diamond. After summing all the predicted prices, I multiplied the total sum by .70 to get the recommended prices to bid because the company purchases the diamonds from the distributors at generally 70% of the retail price