Project: Diamond Prices

Complete each section. When you are ready, save your file as a PDF document and submit it in your classroom.

Step 1: Understanding the Model

Answer the following questions:

1. According to the model, if a diamond is 1 carat heavier than another with the same cut, how much more should I expect to pay? Why?

   To answer this question, I calculated the difference between the price of tow diamonds where the two have the same cut and clarity but different carat which is one of them heavier by one than the other, and I came up with this result:

Example:							
	carat	cut	cut_ord	color	clarity	clarity_ord	predicted_price
1	1.22	Premium	4	G	SI1	3	6989.26
2	2.22	Premium	4	G	SI1	3	15402.26
							8413

   If we increase the carat by one, we need to pay 8412$ more. So, for every increase in carat the price will be increase by 8413$.

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?

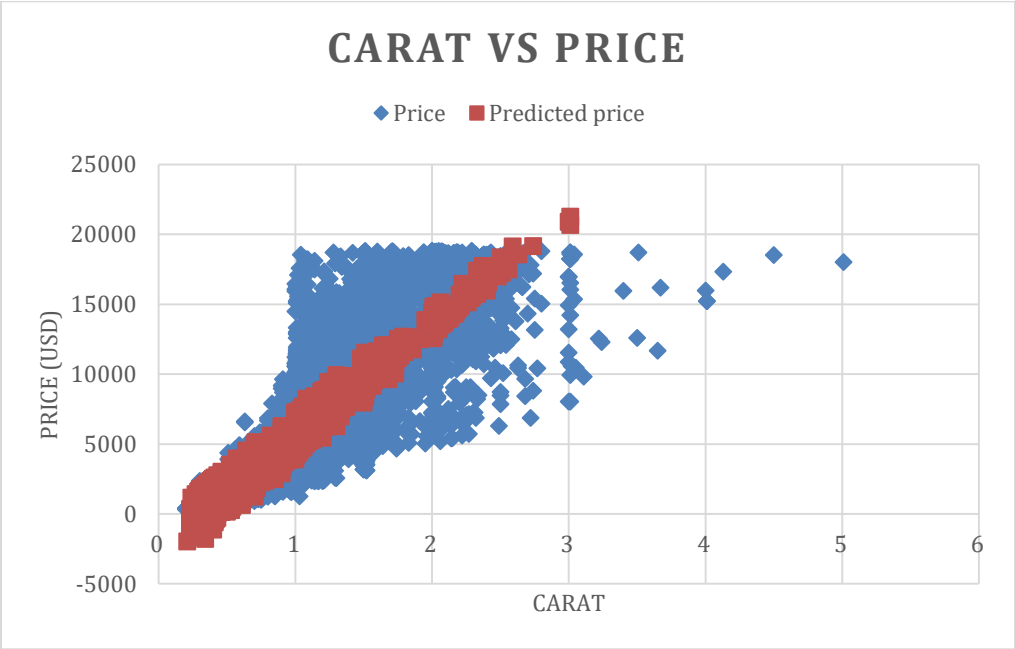
   If we used the provided formula:
   Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity

   1- We need to plug in the values:
      Price = -5,269 + 8,413 * 1.5 + 158.1*3 + 454*5
   2- The price will be = 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?



The actual data are more compact than the predicted price is. I don't think the problem with the accounting attributes because all these attributes (Carat, clarity, cut) will effect on the diamond price. According to our formula we consider all these attributes but when we look at the predicted price, we can see there are some prices in negative.

After looking at this plot the model in predicted prices was ok, but for certain diamond it doesn't work well. For example, when the carat was 0.23 the predicted price was negative number (-1635.51). As a result, the formula Is not accurate for all diamond, it should do a better job at predicting the price

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.

   I recommend a bid of $8213466.00. I get this number by first add all the predicted prices which is $11733522.76. After that I multiply the predicted prices by 0.70 to get the 70% of predicted price which will be $8213466.00.