Project: Diamond Prices

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?

   Then , we have to pay 8,413 more . I will explain you with the help of an example.
   Let's assume that diamond A has attributes - 1 carat , 1 cut_ord and 1 clarity_ord and there is another diamond B that has attributes - 2 carat , 1 cut_ord and 1 clarity_ord .
   *(**Price** = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**)*
   So , price for diamond A = -5,269 + 8,413 x **1** + 158.1 x **1** + 454 x **1 = 3756.1**
   price for diamond B = -5,269 + 8,413 x **2** + 158.1 x **1** + 454 x **1 = 12169.1**

   price for (diamond B - diamond A) = (12169.1 - 3756.1) = 8413

   Since , the diamond B is 1 carat heavier than diamond B with the same cut as that of diamond B , I should expect to pay 8,413 more .

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?

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

   Therefore , Price = -5,269 + 8,413 x **1.5** + 158.1 x **3** + 454 x **5 = 10094.8**
   So , according to the model prediction , you should pay 10094.8 .

: Awesome:

Great! This is how we interpret regression coefficients.

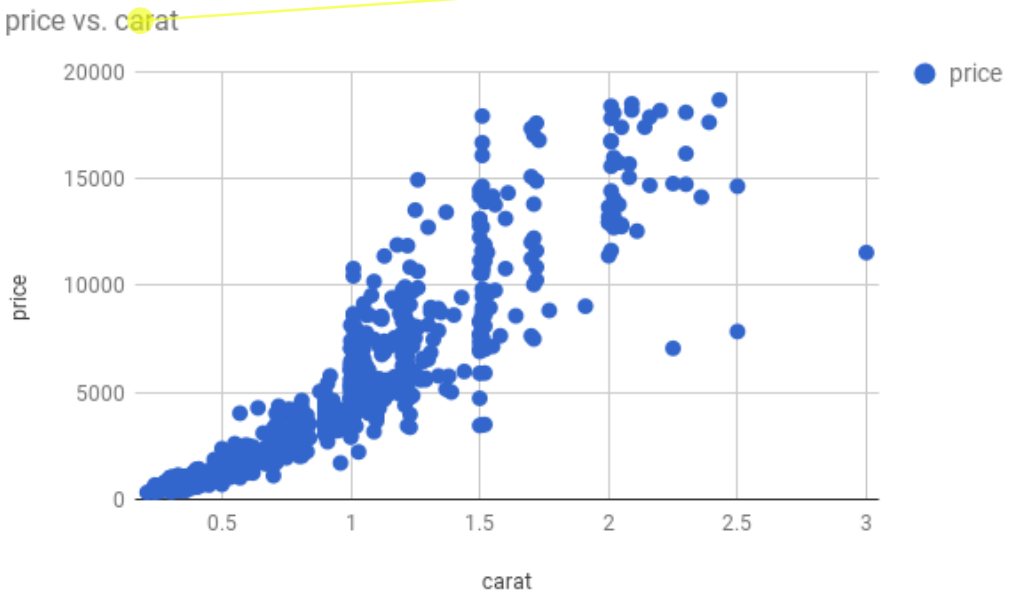
: Awesome:

Excellent! You clearly understood how to use regression equations!

Step 2: Visualize the Data

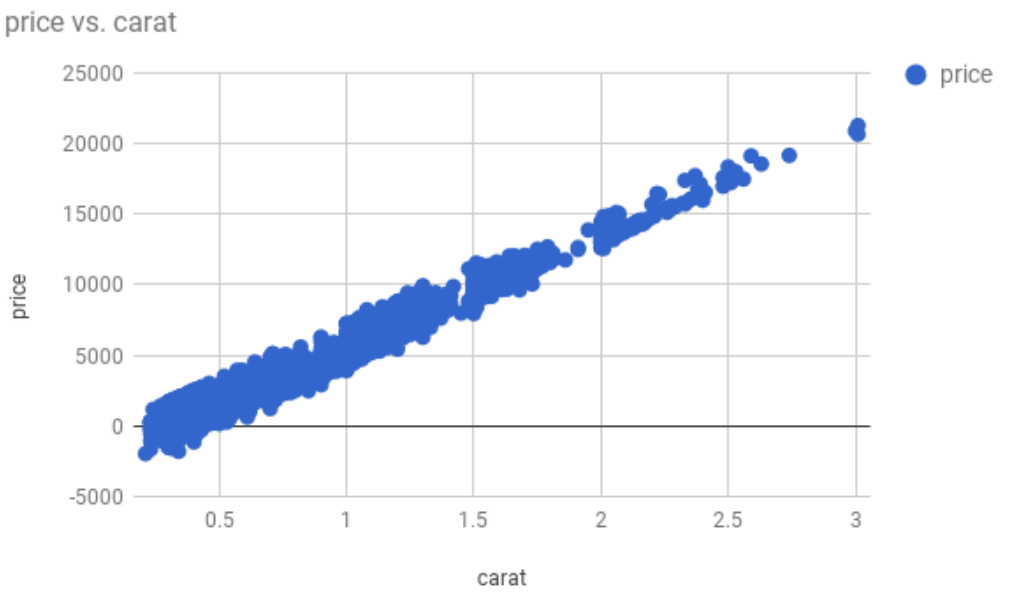
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.



: Suggestion:
Please make sure the titles describe the plots perfectly. The two plots are different, but they have the same title: that cannot be :)

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.



3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?

   Plot-2 has most of the points in the straight line whereas in Plot-1 , some points are spread and are away from the straight line .
   Yes , I am confident in the model's ability to predict prices .

: Suggestion:
Some observations we can make about the model:
- For low carat values it predicts negative prices (which does not make sense)
- The price dispersion is much higher with the real data

We should always check where our models fails because a model will never be perfect. Still, they can be useful!

Step 3: Make a Recommendation

1. What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.

   I recommend jewelry company to bid 8213465.932 .

   I sum up all the prices of 3000 diamonds in the new_diamonds.csv and get the sum as 11733522.76 and then bid sum will be 70% of the sum we got (11733522.76) .

   Bid sum = 0.7 * 11733522.76 = 8213465.932

: Perfect!! 100% correct!