Project: Diamond Prices

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

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?

   Answer 1:

   You are expected to pay 8413 more.
   Because the heavier the carat weight by one, the higher the price by 8,413.
   The linear regression model provides an equation that we can use to predict diamond prices:
   Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
   Let us conclude by saying that the price of one carat is 8413.
   So, whenever the weight of the carat increases by one, this number will get double.

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?

   Answer 2:

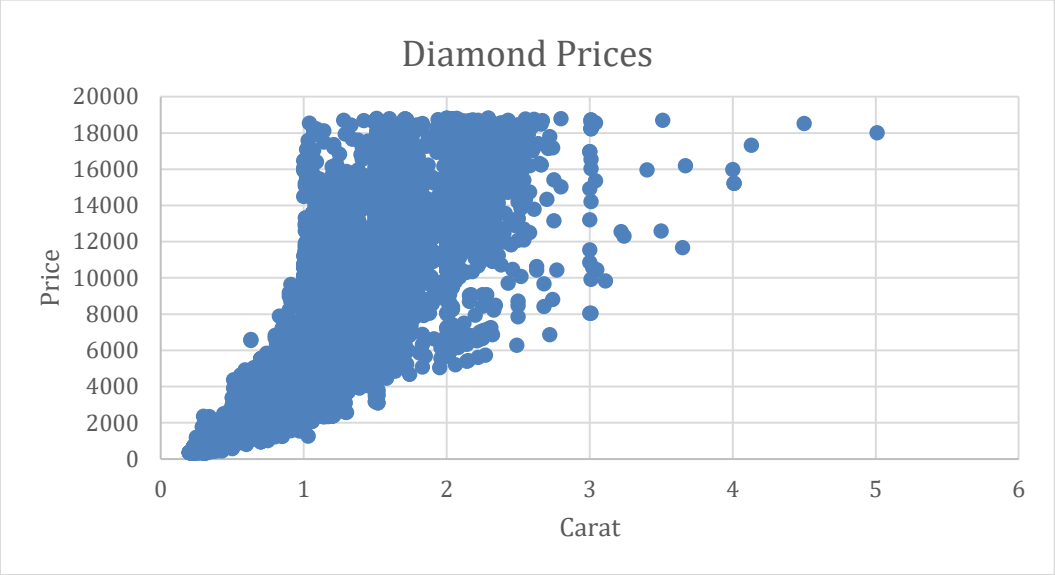
   The equation to predict diamond prices is :
   Price = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**

   So, the price will be:
   Price = -5,269 + 8,413 x **1.5** + 158.1 x **3** + 454 x **5 = 10,094.8**

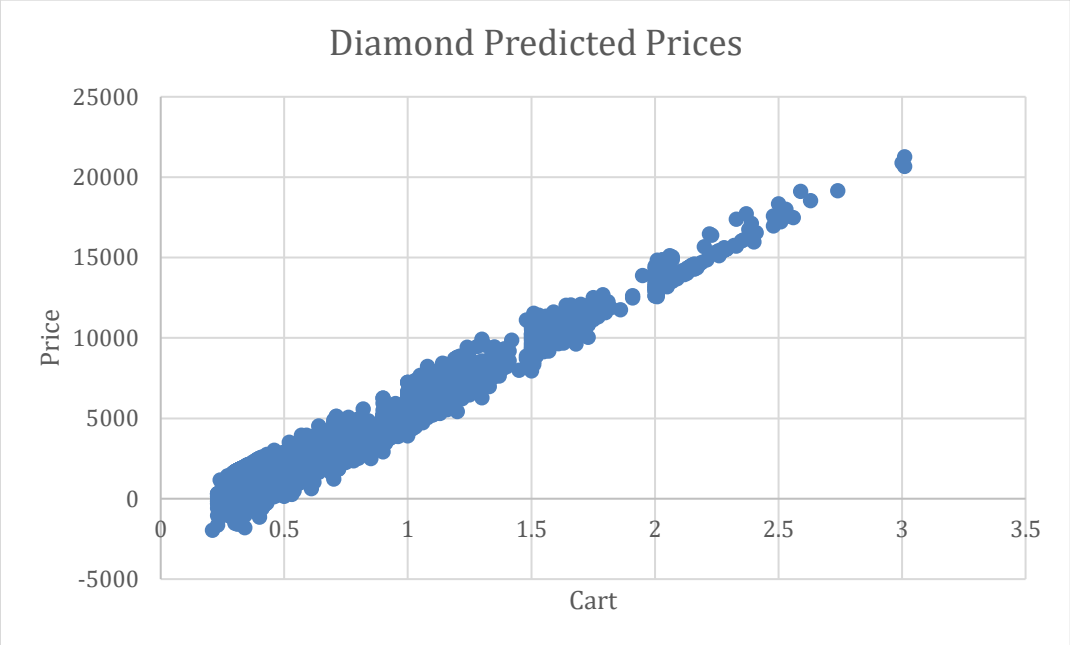
Step 2: Visualize the Data

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.



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

   The answer:

Initially, according to the data, I am quite confident about the outcomes of this model as long as we assume that other factors remain constant.
On the other hand, several factors were not taken into account, such as colour, cut, and purity. If we take these factors into account, I think the result will change dramatically.

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.

The answer:
The recommended the company to bid = 8,213,465.93 $
I recommend this because the sum of all the predicted prices is 11,733,522.76 $.
While the company generally purchases diamonds from distributors at 70% of the final retail price the consumer will pay.
Therefore, the bid price must be equal or slightly less than the price that I illustrated above to cover its costs and avoid any increase in it and ensure a good profit margin for the company.