Project: Diamond Prices

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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?

   A diamond **1 carat heavier than another** is **$8,413** more, with the **cut quality** and the **clarity** being **the same**. The reason behind this is so simple that due to the high carat value results in higher cost even if you're not willing to buy them.

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?

   With Accordance to my linear regression model, it would cost $10,094.80.

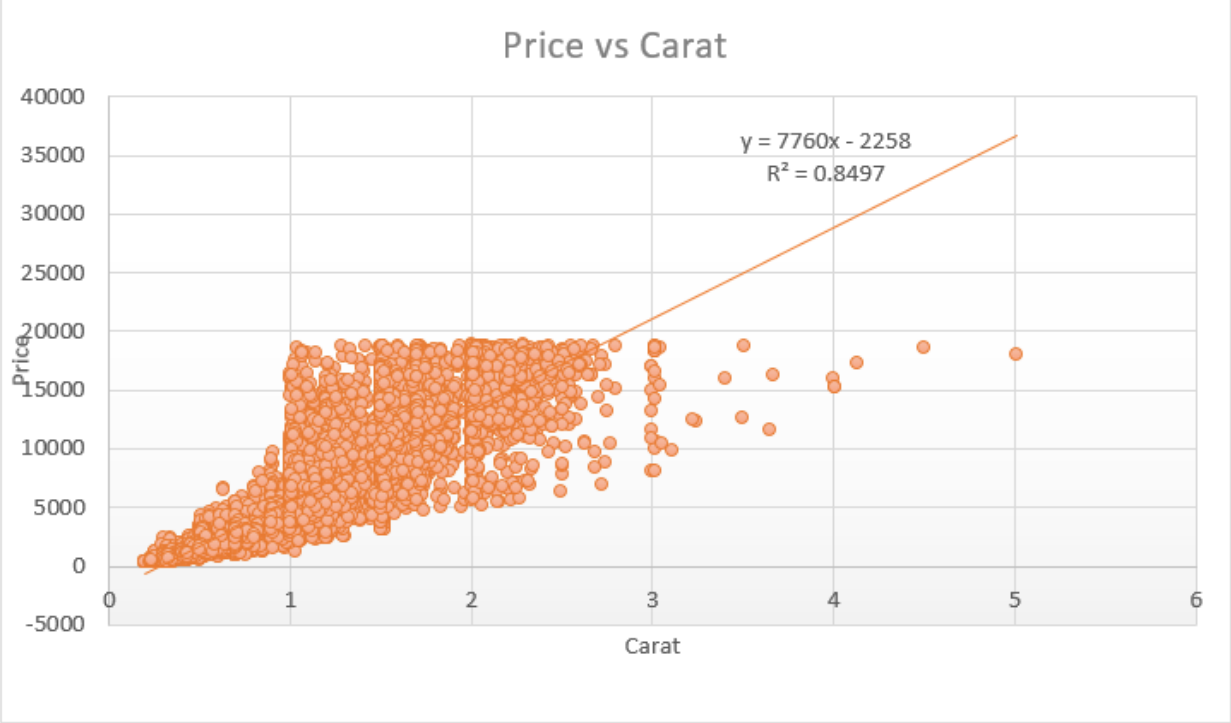
   Price = *- 5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity***
   = - 5269 + 8413 x (1.5) + 158.1 x (3) + 454 x (5)
   = $10094.80

   [Carat = 1.5, Cut = 3, Clarity = 5]

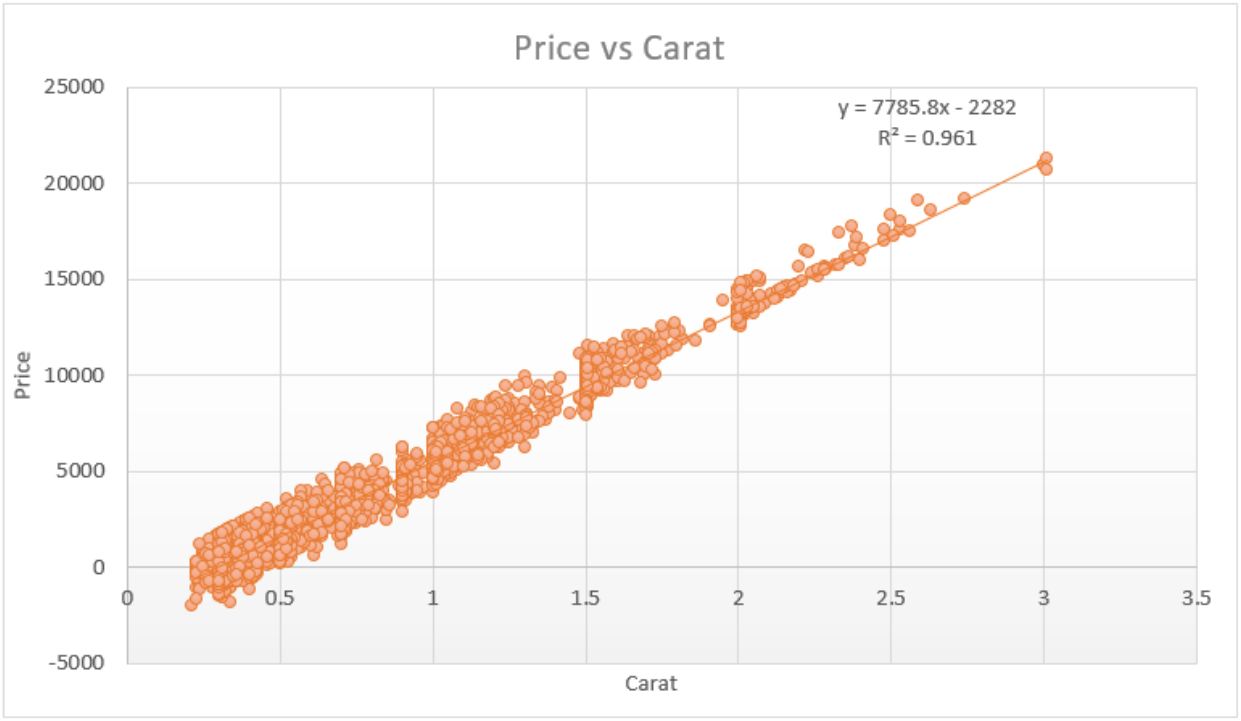
Step 2: Visualize the Data

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 relationship between price and carat are less obvious because when **Carat < 0.5**, then we get **Price = 0** which **is irrational and impossible**.
- It also predicts a **higher price** for diamond **larger than 3 carat.**
- There should be **idealogical factors and variables** to predict the exact value.
- The model shows a **strong correlation between carat and price** when carat is between **0.5 to 2.**

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.

    - Each **diamond price is predicted using linear regression model** where we can get the ideal values as per the data given.

    - The predicted prices are **summed up** using **our algorithm** where we can apply our own values for **external prediction**.

    - By applying **a 70% on the summation** for all predicted prices for bidding price, the bid price is recommended to be **$8,213,466**. So we can assume this value as our **recommended value** and suggest it to our company ASAP.