Project: Diamond Prices

Step 1: Understanding the Model

Answer the following questions:

- equation that you can use to predict diamond prices:

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

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?

If a diamond one carat heavier than another with the same cut the price will increase by knowing the carat coefficient which is from the equation in the top, we can see the increasing will be 8,413

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?

By taking the equation in the top:

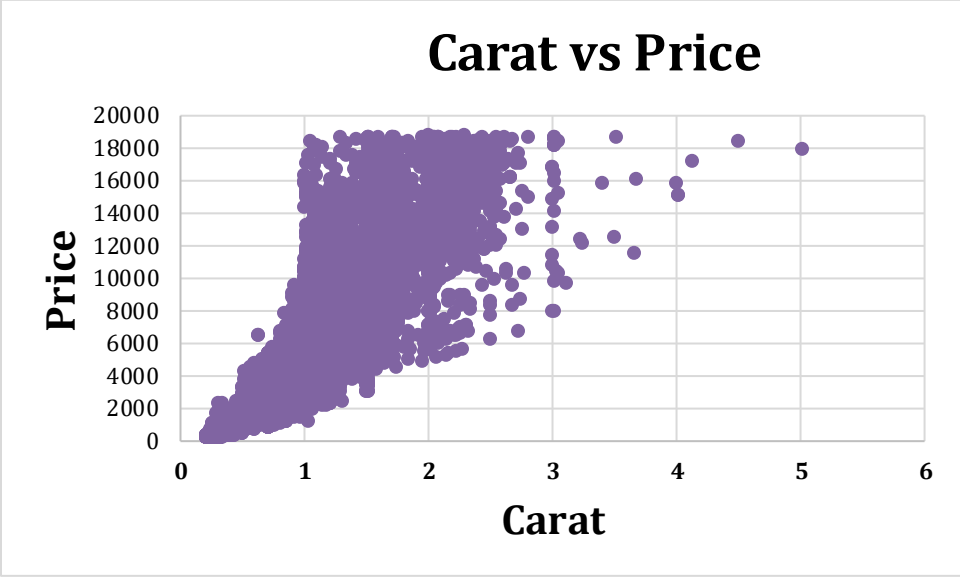
Price = -5,269 +(8,413*1.5)+ (158.1 *3) + (454 *5)

to get 1.5 carat diamond I will pay $10,094.8

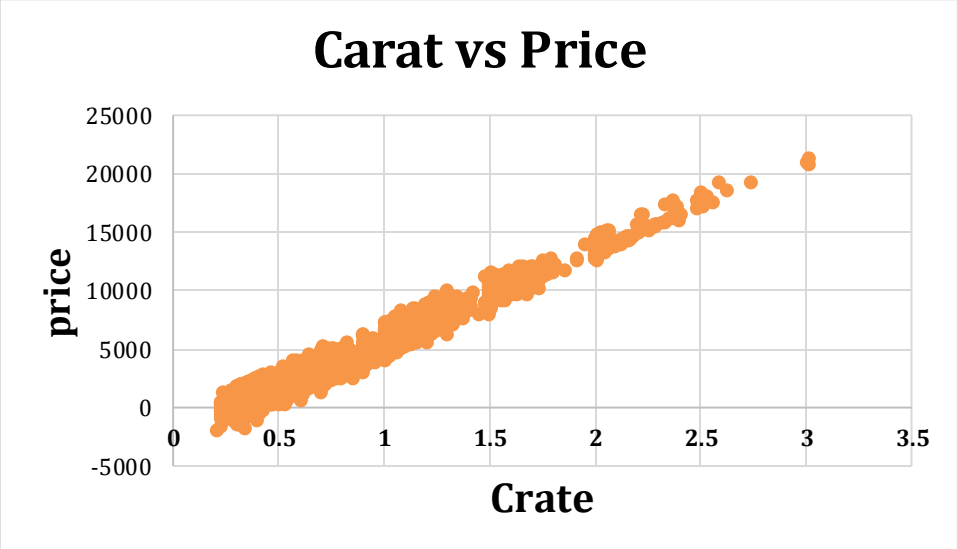
Step 2: Visualize the Data

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?

by looking in first chart of carat and prices for old price, I noticed that the plot from 0 to 1 can look like linear but from 1 to 3 the carats and prices start to be distributed and becoming nonlinear and it shows weak correlation which brings us to the conclusion that there is independent factors that give rise to affect diamond price.

In second chart for predicting diamonds prices, we can see that it looks linear because of the strong correlation between the carat and prices but as we see in the predicting prices that there are negative prices which not possible for the prices, so that express that the linear regression not the right solution for this problem.

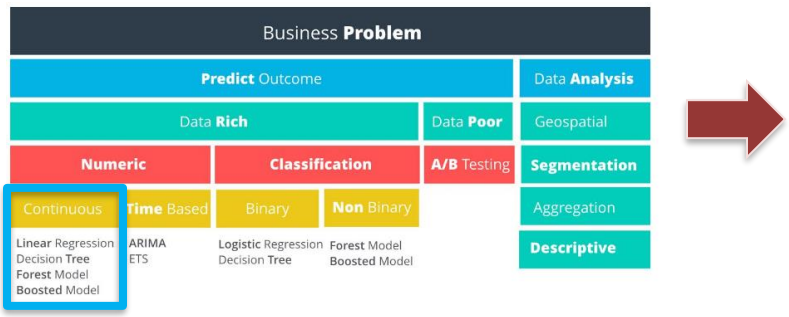
Step 3: Make a Recommendation

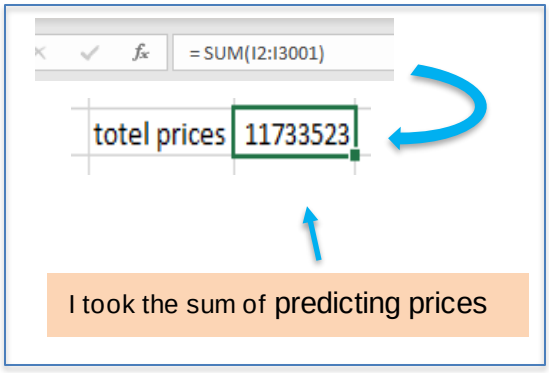
Answer the following questions:

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

the price will be $8213465.932, by using the decision tree by taking the 70% of the sum of predicting prices (random forest model) which I learned in the lesson.

Below we can see the steps that I did:





decision tree