<p style="text-align:center;"><u>Project: Diamond Prices</u></p>

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?

   Linear equation is :

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

   If a diamond is 1 carat heavier than another with the same cut, then we would expect to pay 8413 more than a diamond which has a same cut. It is because of its coefficient value. As coefficient value is 8413, value will increase in the multiple of 8413 for the diamond having same cut and clarity.

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?

   Model predict as per below

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

   Price = -5269 + 8413 * 1.5 + 158.1 * 3 + 454 x*5 = 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.
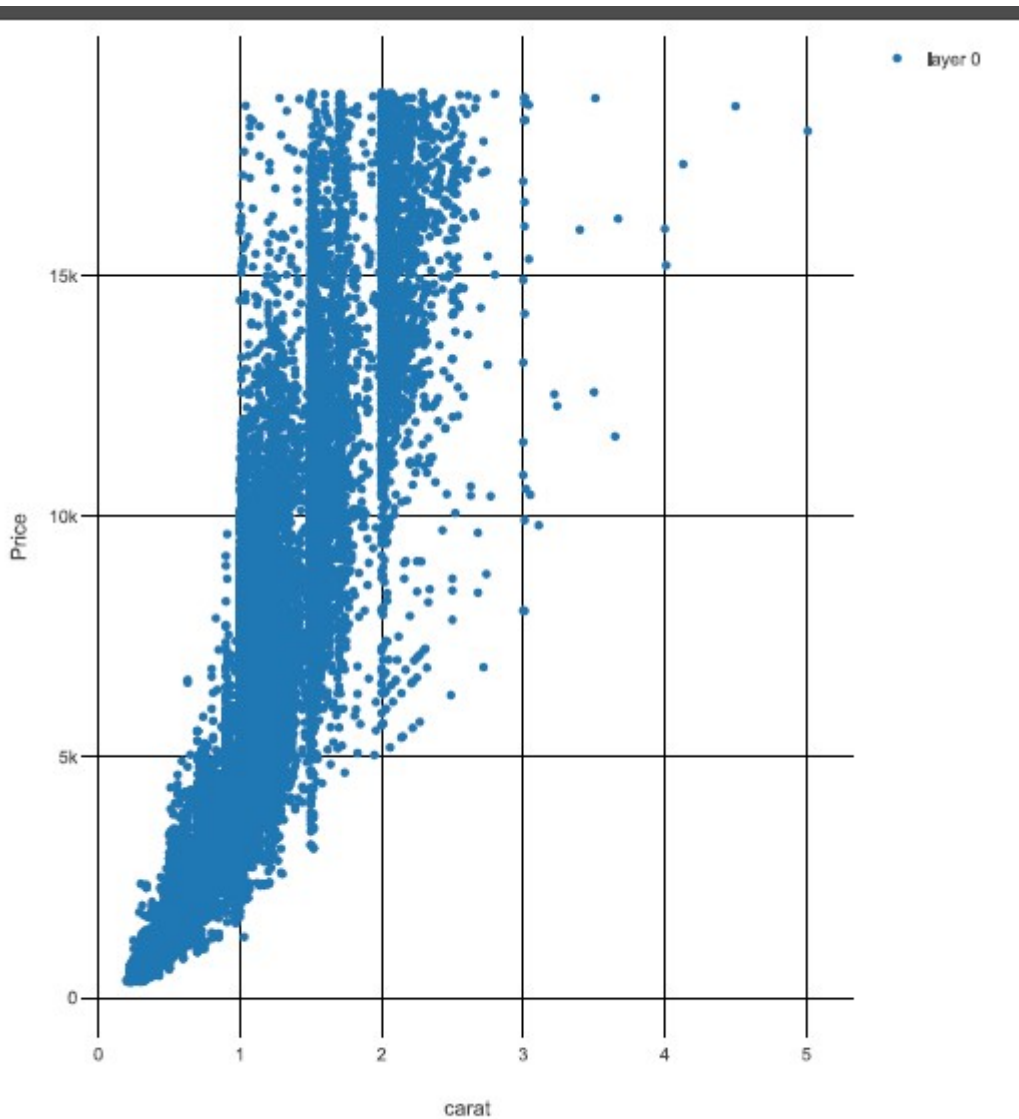
2. Plot 2 - Plot the data for the diamonds for which you are predicting prices with carat on the x-axis and predicted price on the y-axis.
   - o **Note**: You can also plot both sets of data on the same chart in different colors.

price vs carat (diamond_new.csv)
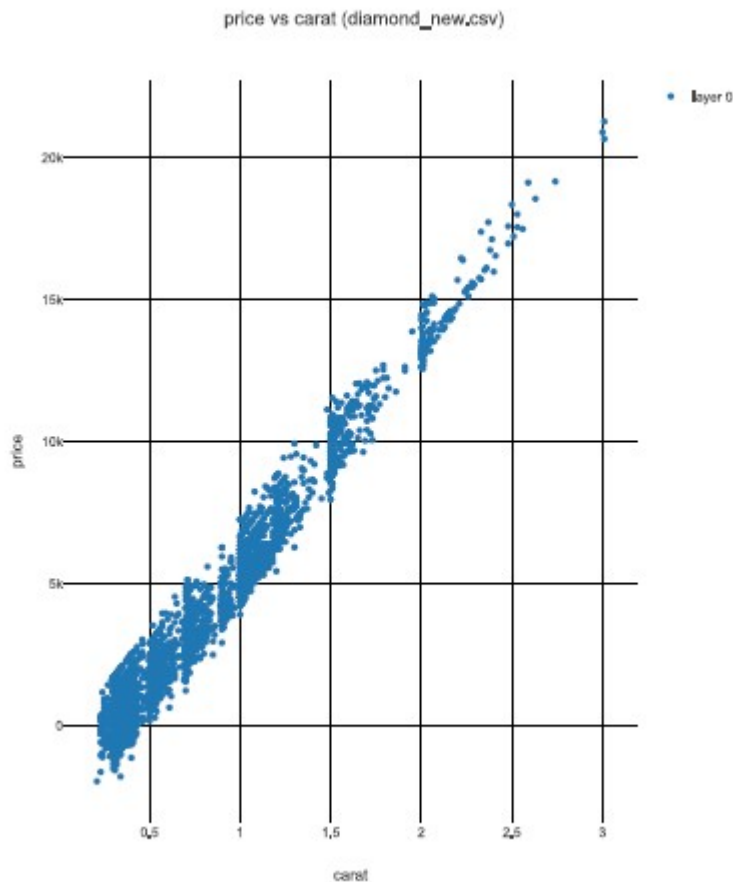
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?
   As we can see in plot1, price increases as carat increases.Number of diamonds having carat between 0.5 and 2.5 are more. Diamonds having same carat shows different price based on its cut and clarity.
   After looking into plot 2, price increases as carat increases. This is because of its coefficient value. As coefficient value is 8413, value will increase in the multiple of 8413 based on carat value.

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.
    After summing all predicted price of diamond as per equation, company should bid on price 11733522.76