2) Perform 5 data visualization tasks on the student performance dataset given in the link below (create 5 different visualizations). Explain what kind analysis has become easier with each of the visualizations.

The code provided creates five different visualizations of the student performance data, each of which can provide insights into different aspects of the data. The types of analyses that are facilitated by each visualization are as follows:

1)

Chart, scatter chart

Description automatically generated

Scatter plot of Math Score vs Reading Score by Gender: This plot allows us to see the relationship between Math and Reading scores for each student, while also breaking the data down by gender. By examining this plot, we can investigate whether there are any gender differences in Math and Reading performance, and whether the correlation between Math and Reading scores is similar for males and females. For example, we could see if females tend to score higher in Reading compared to males, or if there is a stronger correlation between Math and Reading scores for one gender versus the other.

2)

Chart, box and whisker chart

Description automatically generated

Box plot of Math Score by Race/Ethnicity: This plot displays the distribution of Math scores for each racial and ethnic group. By comparing the box plots, we can investigate whether there are any differences in Math performance between different racial and ethnic groups. For example, we could see if there are any groups that tend to have higher or lower scores than others, or if the spread of scores is wider for some groups compared to others.

3)

Chart, bar chart

Description automatically generated

Count plot of Test Preparation Course by Parental Level of Education: This plot shows the number of students who took a test preparation course, broken down by the educational level of their parents. By examining this plot, we can investigate whether there are any patterns in test preparation course enrollment across different levels of parental education. For example, we could see if students with highly educated parents are more likely to take a test preparation course, or if there are any differences in enrollment based on the specific level of education (e.g., high school diploma vs. graduate degree).

4)

Chart, line chart

Description automatically generated

KDE plot of Density of Writing Scores by Gender -This plot displays the density (i.e., distribution) of Writing scores for each gender. By examining this plot, we can investigate whether there are any gender differences in Writing performance, and whether the distribution of Writing scores is similar for males and females. For example, we could see if one gender tends to have higher or lower scores, or if there are any differences in the shape of the distributions.

5)

Chart, bar chart

Description automatically generated

Count plot of Lunch by Race/Ethnicity-This plot shows the number of students who received free or reduced-price lunch, broken down by race/ethnicity. By examining this plot, we can investigate whether there are any patterns in lunch status across different racial and ethnic groups. For example, we could see if certain groups are more likely to receive free or reduced-price lunch compared to others, or if there are any differences in the proportion of students in each group who receive lunch assistance.