Student Performance In Exams

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Introduction:

This topic was cherry-picked from numerous others due to its many metamorphoses in any situation where a select person is being subjected to studying certain material.

The aim is to lay out the data in a way where you could visualize the student's performance in the two subjects present in the dataset, possibly predicting their future outcomes in said subjects and scarce others.

Descriptive Statistics:

To analyze the entire dataset Pandas, NumPy and Matplotlib python libraries were used due to their vast amount of built-in tools that can help in the analysis and visualization of large data sets.

The measures of tendency for each subject were calculated for the grades of mathematics producing *66.089*, *66* and *65* for the mean(μ), median and mode respectively. They were also calculated for the grades of reading resulting in *69.169*, *70* and *72* for the latterly mentioned aspects.

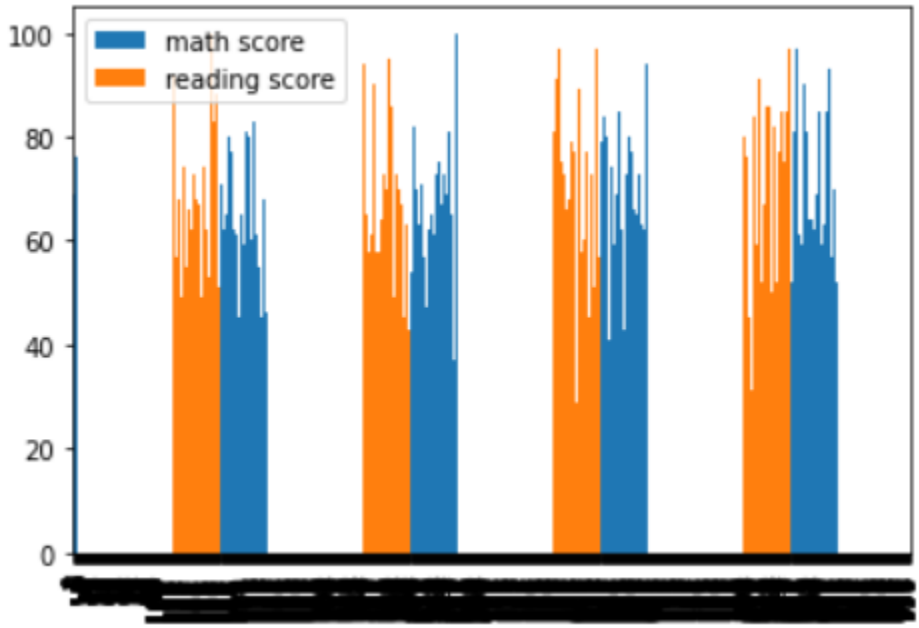
Also calculated were the interquartile values for both subjects coming in at *57*, *66* and *77* for the three interquartiles in order and *0* and *100* as the minimum and maximum apparent values for mathematics. The interquartile values for the reading grades came out as follows: *59*, *70* and *79* for the interquartiles and as for the minimum and maximum the resulting values were *17* and *100*. The IQR(Q_3 - Q_1) value for mathematics turned out to be *20* and as for reading it panned out as *22*.

The values of the standard deviation and variance for the students' grades in mathematics were shown to be *15.1631* and *229.9189* while being *14.6002* and *213.1656* for reading.

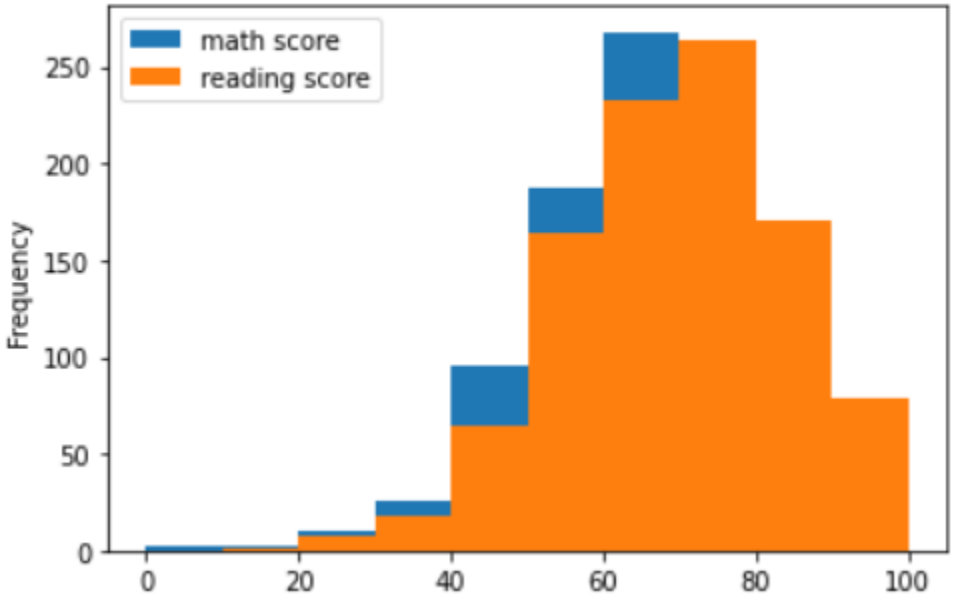
Pearson's correlation was also calculated coming in at *0.8176* indicating that the relation between the students' grades in both subjects is a strong positive correlation.

Graphical Representations:

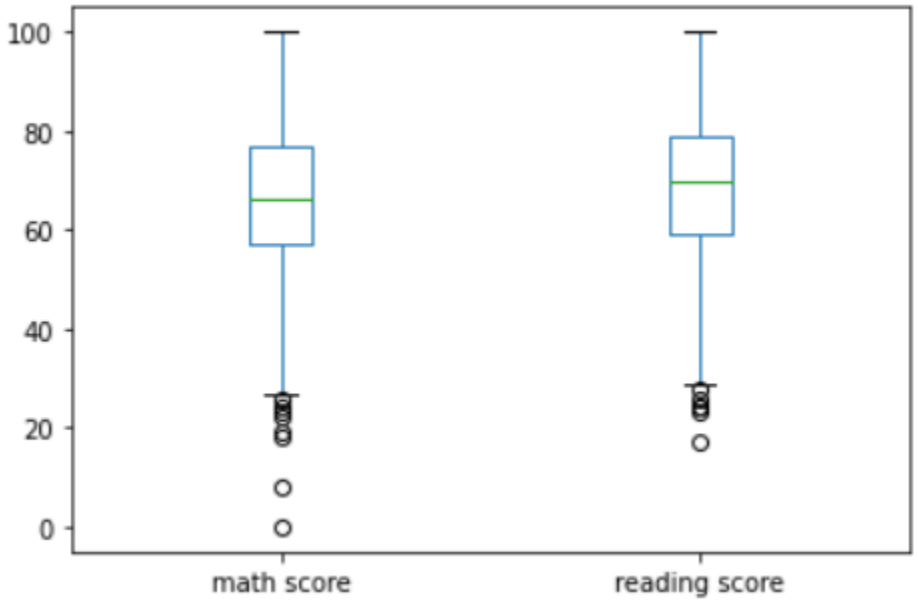
1. Bar Graph:



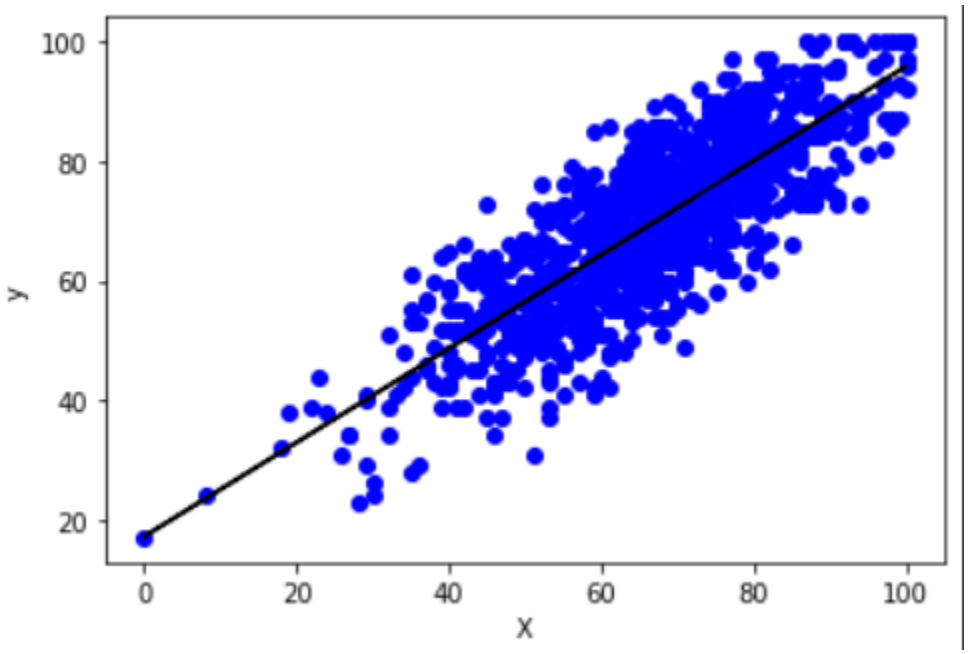
2. Histogram:



3. Box Plot:

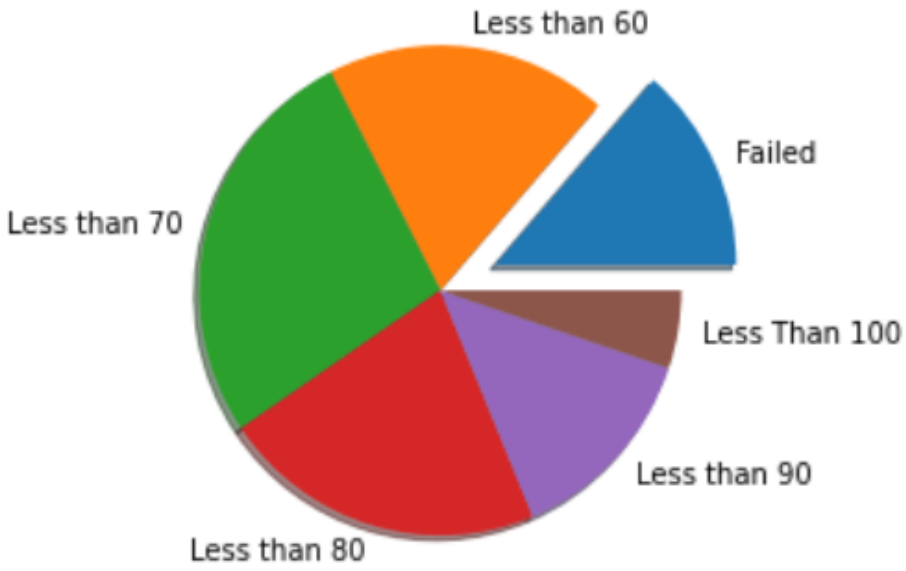


4. Scatter Plot:

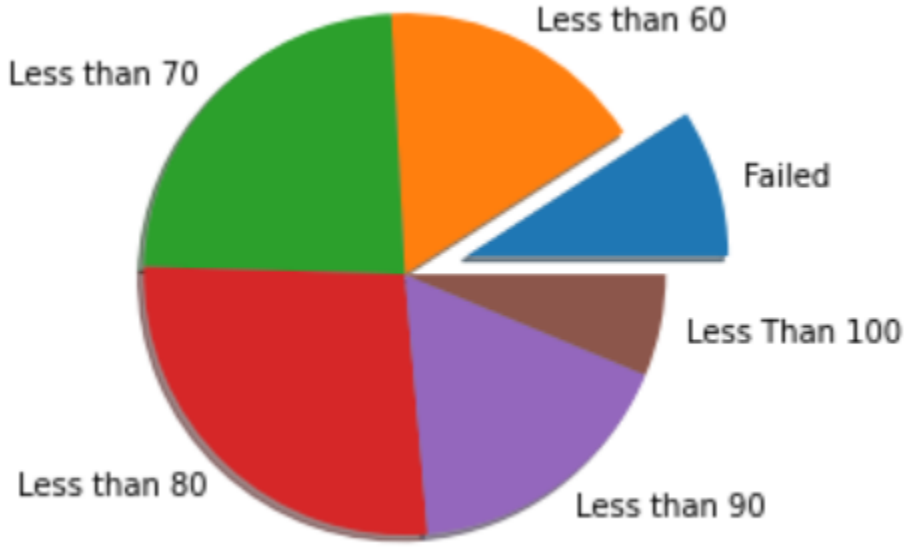


5. Pie Charts:

5.1 Mathematics:



5.2 Reading:



*All students with grades less than 50% (failing grades) are marked in a group of their own

Conclusion:

The findings from the in-depth analysis of the previously mentioned values showed astounding results in multiple realms. To sum up, as the student’s scores in mathematics increase in value, their scores in reading are likely to vary accordingly and vice versa. formulating a prime example of strong positive direct correlation.

References:

Pandas library documentation
NumPy documentation
Matplotlib documentation
Imported dataset

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Project Link