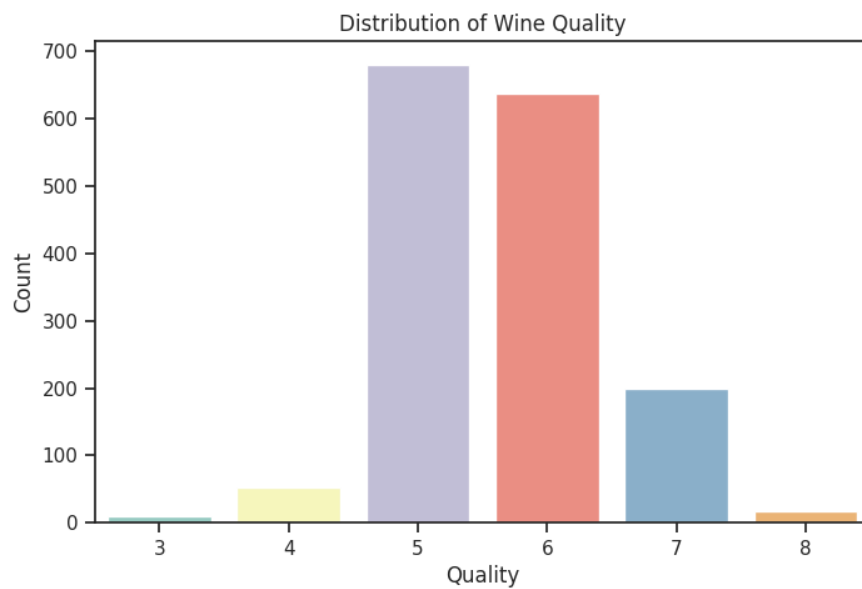
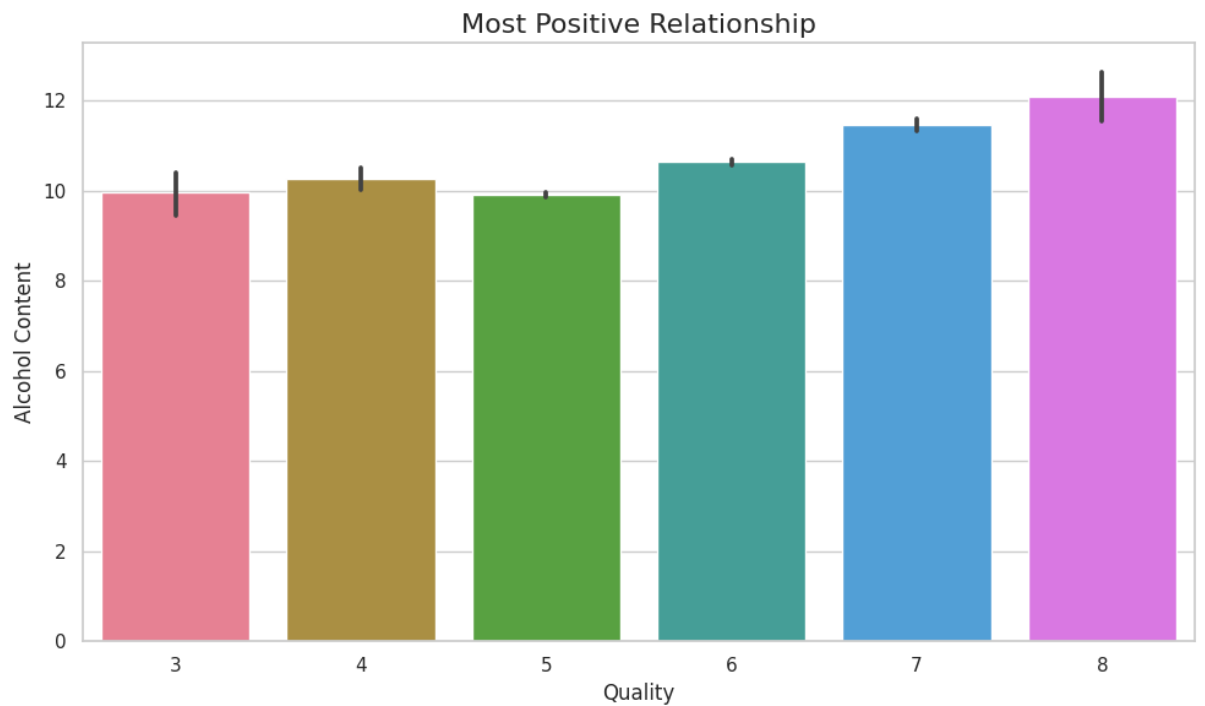


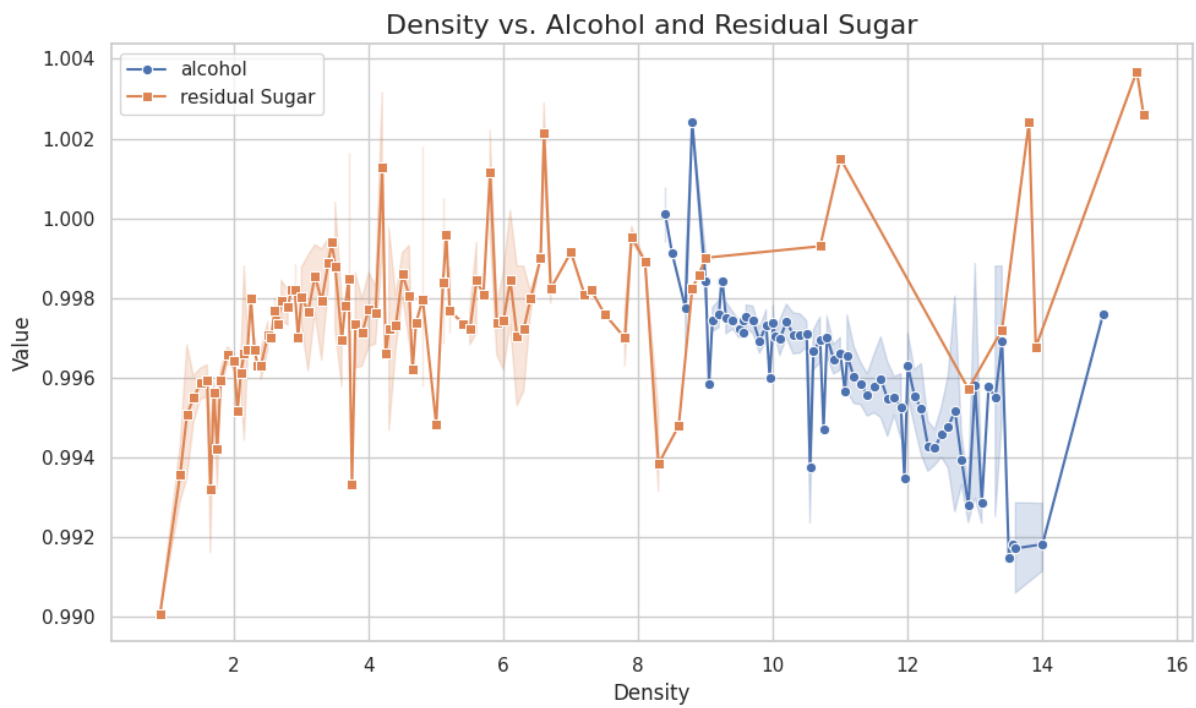
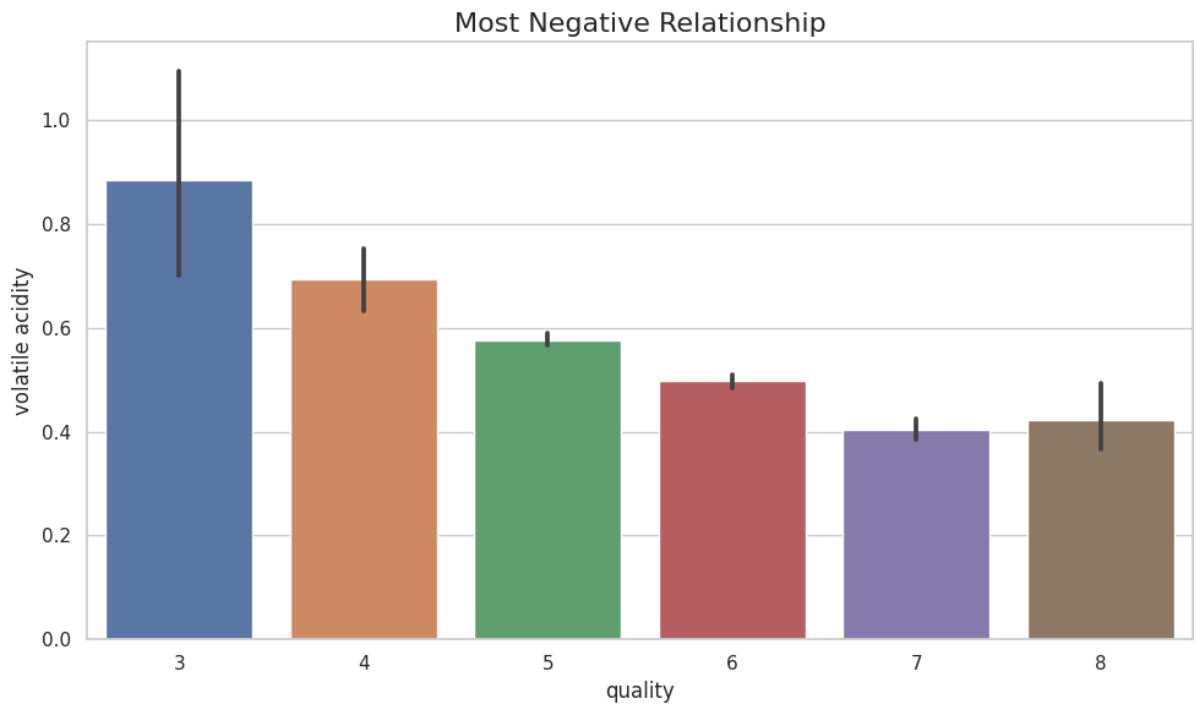
# WINE QUALITY PREDICTION

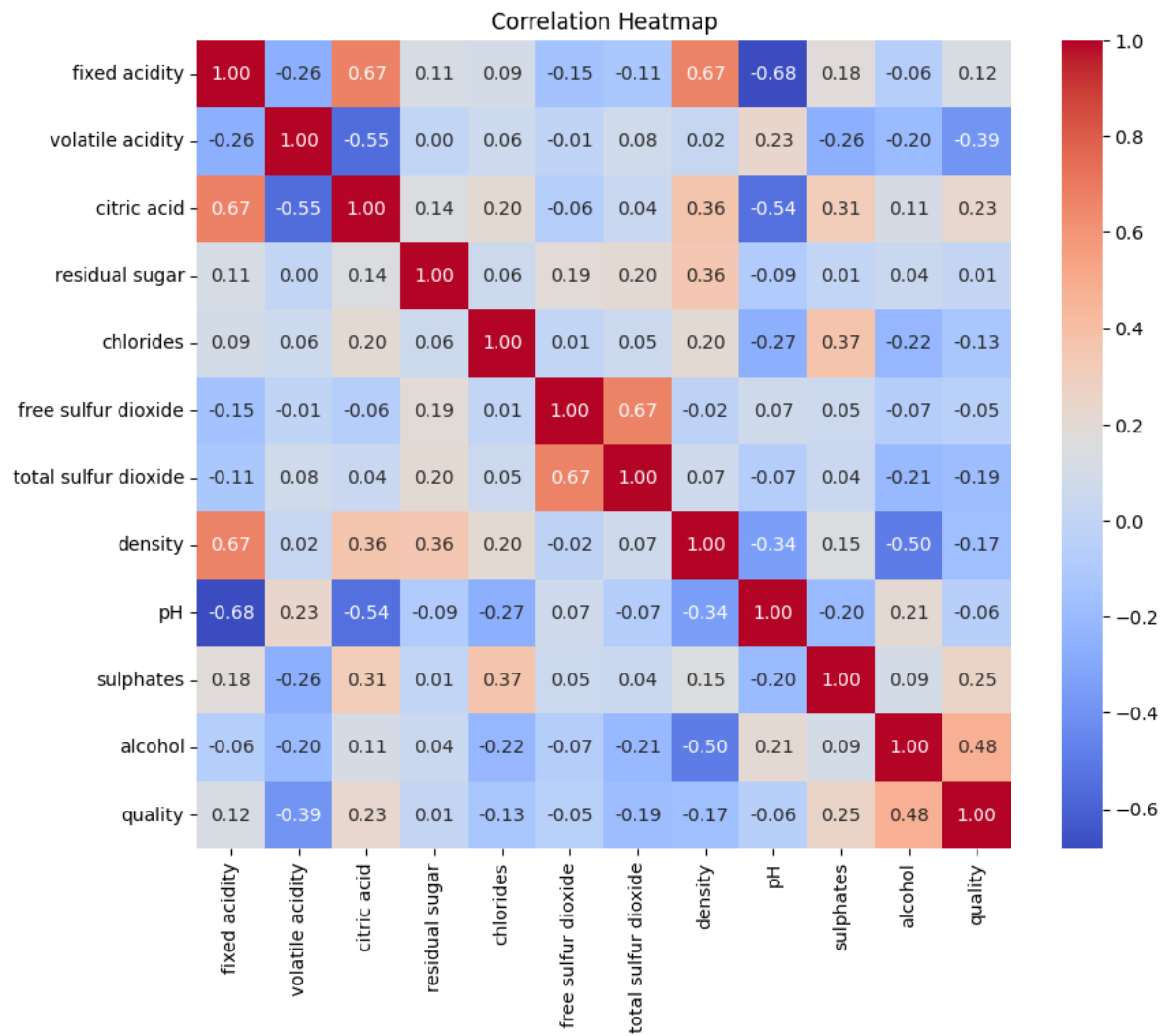
What is the distribution of the wine quality scores?



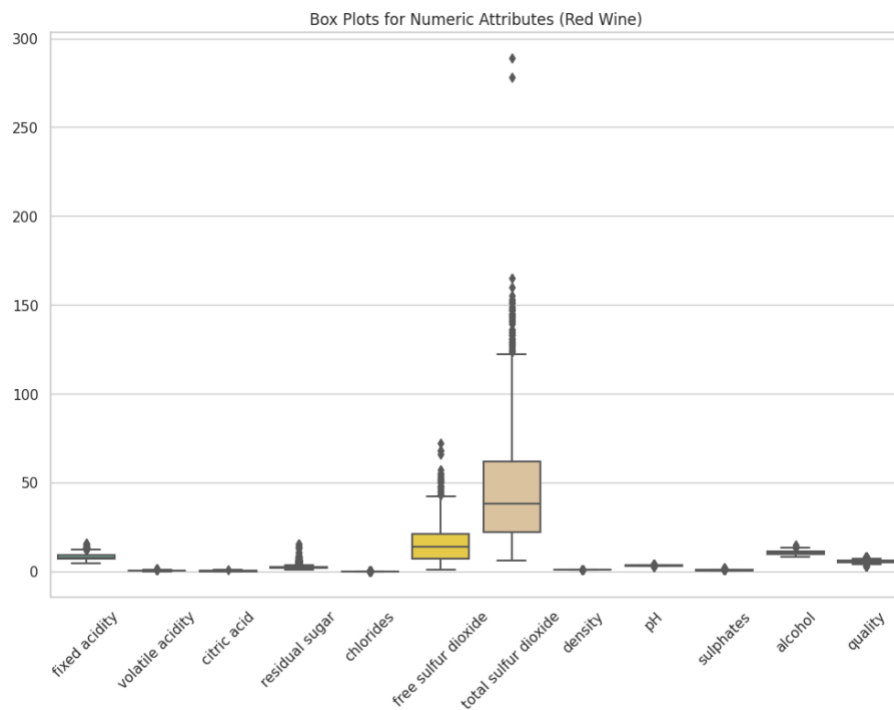
What are the relationships between the different features?



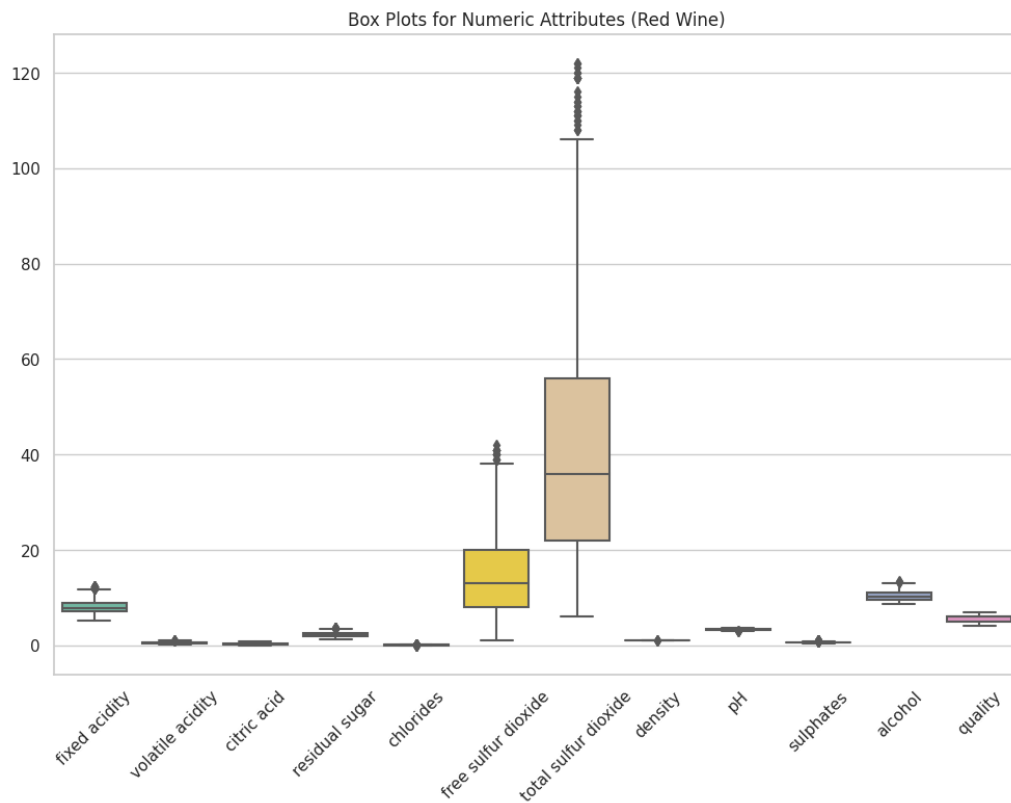




Are there any outliers in the data?



### After removing outliers



What are the most important features for the linear regression model?

```
features = ["volatile acidity", "citric acid", "sulphates", "alcohol",  
"density"]
```

What is the MSE of the linear regression model?

```
Mean Squared Error (MSE): 0.4005968041921791
```

What is the R-squared of the linear regression model?

```
R-squared (R2) Score: 0.38700350051137744
```

How can you improve the performance of the linear regression model?

Ans: Feature Engineering, Feature scalling, Data cleaning and preprocessing

What are the limitations of the linear regression model?

It is sensitive to outliers

What are the implications of your findings for the real-world problem?

Actionable Insights:

Your findings may provide actionable insights that can inform decision-making or strategies. For example, if you're working on a marketing analysis, your findings could suggest which marketing channels are most effective, leading to allocation of resources accordingly.

Problem Understanding:

Your analysis may contribute to a better understanding of the problem you're studying. It can help identify key factors, variables, or trends that affect the outcome.

Performance Improvements:

If you've built a predictive model, your findings may imply opportunities for performance improvements. This could include refining the model, optimizing features, or adjusting hyperparameters to enhance predictive accuracy.

Risk Assessment:

Your analysis may highlight risks or potential issues that need to be addressed. For instance, in a financial analysis, you might identify areas of financial risk or vulnerability.

Resource Allocation:

Findings can guide the allocation of resources, whether it's budget allocation in a business context or resource allocation in a research project. This ensures resources are used efficiently to achieve desired outcomes.

Policy and Strategy Development:

Your analysis may inform the development of policies, strategies, or interventions. In healthcare, for example, your findings could influence treatment protocols or public health initiatives.

Further Research:

Sometimes, findings may raise new questions or suggest areas for further research. This can lead to follow-up studies or investigations to delve deeper into specific aspects of the problem.

Communication and Reporting:

Effective communication of your findings is crucial. Your results need to be communicated to stakeholders, decision-makers, or the broader audience in a clear and understandable manner.

Validation and Testing:

It's important to consider whether your findings need validation or testing in a real-world context. In some cases, findings from data analysis may need to be tested through experiments or pilot projects.