1.Name : MD.Junaid Shahriar
2.Student ID (ID that is related to the course) : 11724340207
3.Project Title : Wine Quality Prediction
4..Provide a brief description of your project (2-3 sentences):I work on prediction wine quality using machine learning models to measure the quality of wine.
5.What is the primary problem your project aims to solve :i found some duplicate on dataset
6.Who are the stakeholders or beneficiaries of your project? Data Understanding:Wine exporter, Wine buyer,Wine maker
7.What dataset(s) did you use? Provide the source(s):https://www.kaggle.com/code/abhishek0032/exploring-regression-models-on-wine-data/notebook

https://www.kaggle.com/code/mohamedkhaledmahmoud/red-wine-quality-prediction-model/notebook#-Model-Selection-%F0%9F%A7%A9
8.How did you preprocess and clean the data:missing value,outliers
9.Did you face any missing data or outliers? How did you handle them:yes i find outlier and i solve it to fixed a range .
10.What exploratory data analysis (EDA) techniques did you apply:Graphical Analysis
Statistical Summary
Correlation Analysis
11.Did you create any new features? If yes, explain their significance:yes i do binary classification
12.Which machine learning models or techniques did you use? Why:Random Forest
decision tree
linear regression
13.Describe your model training and validation approach (e.g., train-test split, cross- validation).:i split train data to 80% and test data to 20% and use Mean squared error to train and test data
14.What performance metrics did you use to evaluate your model?:Mean squared error
15.What were the key challenges in model selection and training:i face the prediction error on linear regression model
i face overfitting on decision tree model

16.What were your model’s final results (accuracy, precision, recall, F1-score, RMSE, etc.)?:
accuracy - 0.97
Precision -0.97
Recall -0.99
F1-0.98
17.Did you deploy your model (e.g., Flask API, Streamlit app)? If yes, provide details.:yes on Streamlit
18.Provide a link to your GitHub repository Interpretation and Insights:https://github.com/ShahriarOni/DSP_Project_DataScience_MLModels.git
19.What key insights did you gain from your project?:i gain the quality of wine
20.What are the strengths and limitations of your approach?:It's Accuracy it good looking and correct
21.If you had more time, what would you improve or add to this project?:yes i wanna improve it on future using different model