Warmup Exercise Report

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In warmup exercise, different regression models were implemented to predict the wine quality and their performance for wine quality were obtained using MSE, MAE, RMSE, and R2 Score. The regression models that are implemented are:

- Linear Regression
- Random Forest
- Ridge Regression
- Lasso Regression

The data were separated into training and test features using train_test_split function from sklearn.model_selection module. Preprocessing for both test and training data was performed using StandardScaler() function.

The results that were obtained for different regression models:

	Model	MSE	MAE	RMSE	R2 Score
0	Linear	0.426070	0.499928	0.652740	0.344675
1	Random Forest	0.400216	0.493908	0.632626	0.384441
2	Ridge	0.425967	0.499919	0.652662	0.344833
3	Lasso	0.650538	0.683991	0.806559	-0.000572

For the classification, three machine learning classifiers were used:

- Random Forest Classifier
  - Accuracy for Train Data: 1.0
  - Accuracy for test Data: 0.5875

- Logistic Regression Classifier
  - Accuracy of Train Data: 0.5664160401002506
  - Accuracy of Test Data: 0.595

- Decision Tree Classifier
  - Accuracy of Train Data: 1.0
  - Accuracy of Test Data: 0.5058333333333334

Logistic Regression performed well on the test data as compared to Random Forest and Decision Tree classifiers. Decision Tree classifiers performed least compared to two others classifiers.