Project Development Phase
Model Performance Test

Date	10 NOvember 2022
Team ID	Team-592746
Project Name	Project – Car Purchase Prediction using ML
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Metrics	**Regression Model:** MAE - , MSE - , RMSE - , R2 score - **Classification Model:** Confusion Matrix - , Accuray Score- & Classification Report -	**Logistic regression** Regression Model Metrics: MAE: 0.14 MSE: 0.14 RMSE: 0.37416573867739417 R2 Score: 0.4141646615754787 Classification Model Metrics: Confusion Matrix: [[114 7] [21 58]] Accuracy: 0.86 Classification Report: precision recall f1-score support 0 0.84 0.94 0.89 121 1 0.89 0.73 0.81 79 accuracy 0.86 200 macro avg 0.87 0.84 0.85 200 weighted avg 0.86 0.86 0.86 200

Random Forest Classifier

```
Regression Model Metrics:
MAE: 0.075
MSE: 0.075
RMSE: 0.27386127875258304
R2 Score: 0.6861596401297207

Classification Model Metrics:

Confusion Matrix:

[[112   9]
 [  8  71]]
Accuracy: 0.915
Classification Report:
```

	precision	recall	f1-score	support
0	0.93	0.93	0.93	121
1	0.89	0.90	0.89	79
accuracy			0.92	200
macro avg	0.91	0.91	0.91	200
weighted avg	0.92	0.92	0.92	200

Decision Tree classifier

```
Regression Model Metrics:
MAE: 0.11802618416066693
MSE: 0.06098884234518473
RMSE: 0.2469591916596439
R2 Score: 0.7447898636042066

Classification Model Metrics :

Confusion Matrix:

[[116   5]
 [ 10  69]]

Accuracy:
 0.925

Classification Report:
```

	precision	recall	f1-score	support
0	0.92	0.96	0.94	121
1	0.93	0.87	0.90	79
accuracy			0.93	200
macro avg	0.93	0.92	0.92	200
weighted avg	0.93	0.93	0.92	200

			Kernel SVM Regression Model Metrics: MAE: 0.135 MSE: 0.135 RMSE: 0.3674234614174767 R2 Score: 0.43508735223349737 Classification Model Metrics: Confusion Matrix: [[116 5] [22 57]] Accuracy: 0.865 Classification Report: precision recall f1-score support 0 0.84 0.96 0.90 121 1 0.92 0.72 0.81 79 accuracy 0.86 200 macro avg 0.88 0.84 0.85 200 weighted avg 0.87 0.86 0.86 200 **Best model: Decision Tree classifier**
2.	Tune the Model	Hyperparameter Tuning - Validation Method -	**Hyper tuning : Decision Tree classifier** Best Hyperparameters: {'criterion': 'gini', 'max_depth': 10, 'min_samples_leaf': 4, 'min_samples_split': 2, 'splitter': 'random'} Validation Accuracy: 0.91875 Test Accuracy: 0.885