

## Model Development Phase Template

Date	16 july 2024
Team ID	740771
Project Title	Car Performance Prediction Using ML
Maximum Marks	4 Marks

Mode l	Classification Report	Accuracy
<b>Random forest classifier</b>	<div> <div>random forest regressor</div> <div> <pre>[ ] from sklearn.ensemble import RandomForestRegressor</pre> </div> <div> <pre>rf= RandomForestRegressor(n_estimators=10) rf.fit(x_train,y_train)</pre> </div> <div> <pre>&lt;ipython-input-48-5710e01e300c&gt;:2: DataCollection rf.fit(x_train,y_train)</pre> </div> <div> <div>RandomForestRegressor</div> <div>RandomForestRegressor(criterion='absolute_error', random_state=0)</div> </div> </div>	<div> <div>RandomForestRegressor</div> <div>RandomForestRegressor(criterion='absolute_error', random_state=0)</div> </div>
<b>Decision Tree classifier</b>	<div> <div>Model Building</div> <div> <pre>from sklearn.tree import DecisionTreeRegressor</pre> </div> <div> <pre>dt=DecisionTreeRegressor(random_state=42)</pre> </div> <div> <pre>dt.fit(X_train,y_train)</pre> </div> <div> <div>DecisionTreeRegressor</div> <div>DecisionTreeRegressor(random_state=42)</div> </div> <div> <pre>print("R2 Score :{}".format(dt.score(X_test,y_test)))</pre> </div> <div> <pre>R2 Score :0.8070208658711717</pre> </div> </div>	<div> <div>Decision Tree Regressor</div> <div>R2 Score is : 0.7944373542615825</div> </div>

### Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots.

Initial Model Training Code:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

Model Validation and Evaluation Report:

Extra Tree classif ier		
	from sklearn.ensemble import ExtraTreesRegressor	from sklearn.ensemble import ExtraTreesRegressor
	et_regressor = ExtraTreesRegressor(n_estimators=100, max_depth=10, random_state=23)	
	et_regressor.fit(x_train, y_train)	
	<div>ExtraTreesRegressor</div> <div>ExtraTreesRegressor(max_depth=10, random_state=23)</div>	
	print("R2 Score :{}".format(et_regressor.score(x_test,y_test)))	
	R2 Score :0.8989213134566164	

-----Extra Trees Regressor  
R2 Score is : 0.8937335681153357