

## Model Development Phase Template

Date	9 July 2024
Team ID	team-740058
Project Title	Precise Coffee Quality Prediction
Maximum Marks	4 Marks

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

```
from sklearn.metrics import accuracy_score
from sklearn.linear_model import LogisticRegression
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import classification_report
accuracy_lr=accuracy_score(y_test,y_test_pred)
print('-----Model Accuracy-----')
print(accuracy_score(y_test,y_test_pred))
print(accuracy_score(y_train,y_train_pred))
accuracy=LR.score(x_test,y_test)
print('-----Logistic Regression-----')
print("Model Accuracy\t\t",{accuracy})
print(f'Accuracy in percentage\t("{:.1%}".format(accuracy))')
print(classification_report(y_test,y_test_pred))
print(classification_report(y_train,y_train_pred))
```

```
from sklearn.metrics import accuracy_score
from sklearn.tree import DecisionTreeClassifier
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import classification_report
accuracy_dtc=accuracy_score(y_test,y_test_pred1)
print('-----Model Accuracy-----')
print(accuracy_score(y_test,y_test_pred1))
print(accuracy_score(y_train,y_train_pred1))
accuracy=DTC.score(x_test,y_test)
print('-----DecisionTree Classifier-----')
print("Model Accuracy\t\t",{accuracy})
print(f'Accuracy in percentage\t("{:.1%}".format(accuracy))')
print(classification_report(y_test,y_test_pred1))
print(classification_report(y_train,y_train_pred1))
```

```
from sklearn.metrics import accuracy_score
from sklearn.ensemble import RandomForestClassifier
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import classification_report
accuracy_rfc=accuracy_score(y_test,y_test_pred2)
print('-----Model Accuracy-----')
print(accuracy_score(y_test,y_test_pred2))
print(accuracy_score(y_train,y_train_pred2))
accuracy=RFC.score(x_test,y_test)
print('-----Random Forest Classifier-----')
print("Model Accuracy\t\t",{accuracy})
print(f'Accuracy in percentage\t("{:.1%}".format(accuracy))')
print(classification_report(y_test,y_test_pred2))
print(classification_report(y_train,y_train_pred2))
```

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:**



Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix																														
Logistic Regression	<table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.96</td><td>0.70</td><td>0.81</td><td>37</td></tr><tr><td>1</td><td>0.00</td><td>0.50</td><td>0.14</td><td>2</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.69</td><td>39</td></tr><tr><td>macro avg</td><td>0.52</td><td>0.60</td><td>0.40</td><td>39</td></tr><tr><td>weighted avg</td><td>0.92</td><td>0.69</td><td>0.78</td><td>39</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.96	0.70	0.81	37	1	0.00	0.50	0.14	2	accuracy			0.69	39	macro avg	0.52	0.60	0.40	39	weighted avg	0.92	0.69	0.78	39	69.2%	
	precision	recall	f1-score	support																													
0	0.96	0.70	0.81	37																													
1	0.00	0.50	0.14	2																													
accuracy			0.69	39																													
macro avg	0.52	0.60	0.40	39																													
weighted avg	0.92	0.69	0.78	39																													
Decision Tree Classifier	<table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.94</td><td>0.92</td><td>0.93</td><td>37</td></tr><tr><td>1</td><td>0.00</td><td>0.00</td><td>0.00</td><td>2</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.87</td><td>39</td></tr><tr><td>macro avg</td><td>0.47</td><td>0.46</td><td>0.47</td><td>39</td></tr><tr><td>weighted avg</td><td>0.90</td><td>0.87</td><td>0.88</td><td>39</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.94	0.92	0.93	37	1	0.00	0.00	0.00	2	accuracy			0.87	39	macro avg	0.47	0.46	0.47	39	weighted avg	0.90	0.87	0.88	39	87.2%	
	precision	recall	f1-score	support																													
0	0.94	0.92	0.93	37																													
1	0.00	0.00	0.00	2																													
accuracy			0.87	39																													
macro avg	0.47	0.46	0.47	39																													
weighted avg	0.90	0.87	0.88	39																													
Random Forest Classifier	<table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.95</td><td>1.00</td><td>0.97</td><td>37</td></tr><tr><td>1</td><td>0.00</td><td>0.00</td><td>0.00</td><td>2</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.95</td><td>39</td></tr><tr><td>macro avg</td><td>0.47</td><td>0.50</td><td>0.49</td><td>39</td></tr><tr><td>weighted avg</td><td>0.90</td><td>0.95</td><td>0.92</td><td>39</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.95	1.00	0.97	37	1	0.00	0.00	0.00	2	accuracy			0.95	39	macro avg	0.47	0.50	0.49	39	weighted avg	0.90	0.95	0.92	39	94.9%	
	precision	recall	f1-score	support																													
0	0.95	1.00	0.97	37																													
1	0.00	0.00	0.00	2																													
accuracy			0.95	39																													
macro avg	0.47	0.50	0.49	39																													
weighted avg	0.90	0.95	0.92	39																													