# Model Development Phase Template

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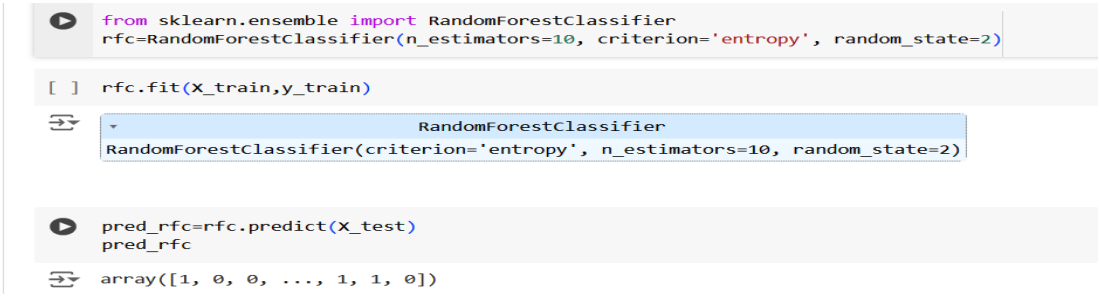
|---|---|
| Date | 15 July 2024 |
| Team ID | 739839 |
| Project Title | Airline Reviews Classification |
| Maximum Marks | 4 Marks |

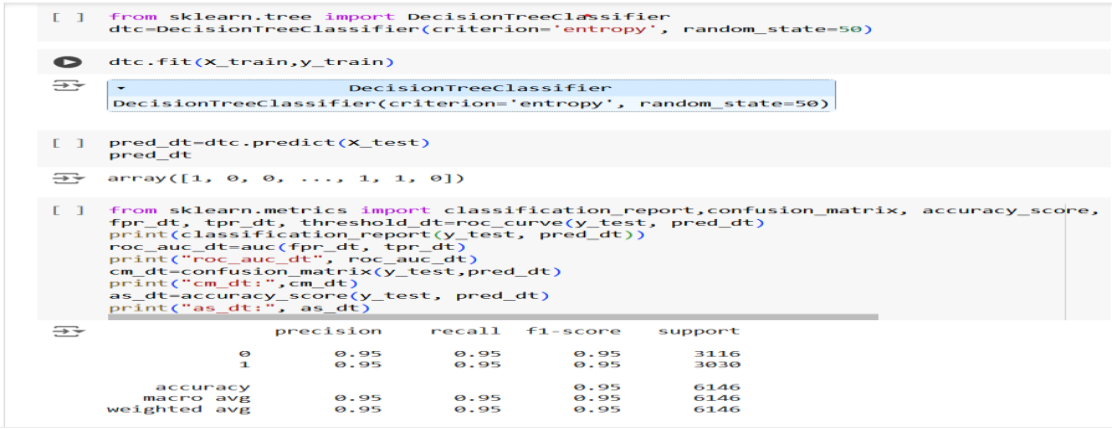
## Initial Model Training Code, Model Validation and Evaluation Report

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:



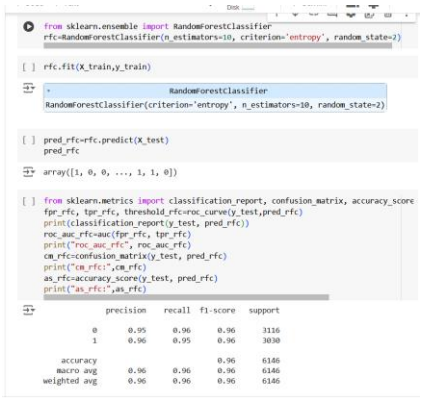
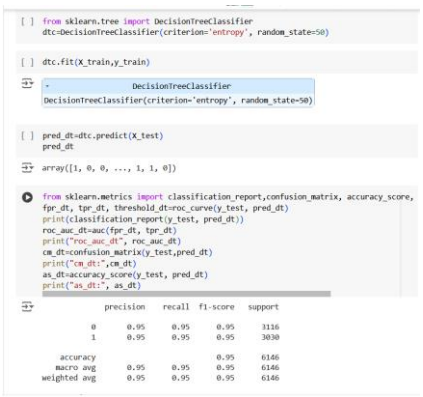
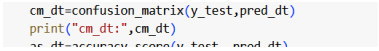
```
from sklearn.ensemble import RandomForestClassifier
rfc=RandomForestClassifier(n_estimators=10, criterion='entropy', random_state=2)

rfc.fit(X_train,y_train)

RandomForestClassifier(criterion='entropy', n_estimators=10, random_state=2)

pred_rfc=rfc.predict(X_test)
pred_rfc

array([1, 0, 0, ..., 1, 1, 0])
```

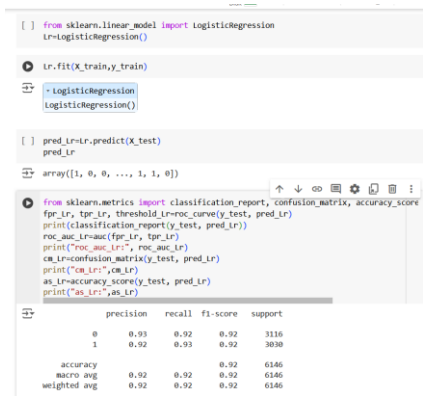
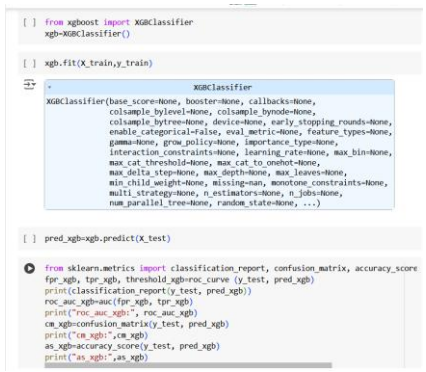
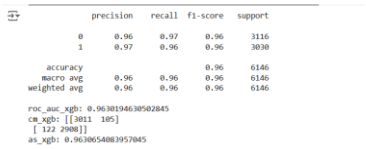


```
from sklearn.tree import DecisionTreeClassifier
dtc=DecisionTreeClassifier(criterion='entropy', random_state=50)

dtc.fit(X_train,y_train)

DecisionTreeClassifier(criterion='entropy', random_state=50)

pred_dt=dtc.predict(X_test)
pred_dt

array([1, 0, 0, ..., 1, 1, 0])

from sklearn.metrics import classification_report,confusion_matrix, accuracy_score,
fpr_dt, tpr_dt, threshold_dt=roc_curve(y_test, pred_dt)
print(classification_report(y_test, pred_dt))
roc_auc_dt=auc(fpr_dt, tpr_dt)
print("roc_auc_dt", roc_auc_dt)
cm_dt=confusion_matrix(y_test,pred_dt)
print("cm_dt:",cm_dt)
as_dt=accuracy_score(y_test, pred_dt)
print("as_dt:", as_dt)
```

| | precision | recall | f1-score | support |
|---|---|---|---|---|
| 0 | 0.95 | 0.95 | 0.95 | 3116 |
| 1 | 0.95 | 0.95 | 0.95 | 3030 |
| accuracy | | | 0.95 | 6146 |
| macro avg | 0.95 | 0.95 | 0.95 | 6146 |
| weighted avg | 0.95 | 0.95 | 0.95 | 6146 |

## Model Validation and Evaluation Report:

| Model | Classification Report | Accuracy | Confusion Matrix |
|---|---|---|---|
| Random forest classifier |  | 95% |  |
| Decision tree |  | 94% |  |

| | | | |
|---|---|---|---|
| Logistic Regression |  | 92% |  |
| XGB |  | 96% |  |