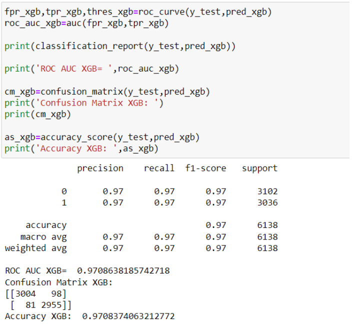
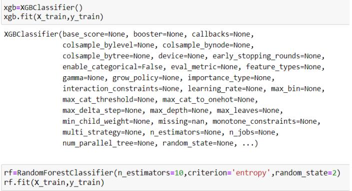
Project Development Phase
Model Performance Test

Date	10 NOvember 2022
Team ID	PNT2022TMID592960
Project Name	Project – AIRLINE REVIEW CLASSIFICATION
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 -	
2.	Tune the Model	Hyperparameter Tuning - Validation Method -	

```
fpr_xgb,tpr_xgb,thres_xgb=roc_curve(y_test,pred_xgb)
roc_auc_xgb=auc(fpr_xgb,tpr_xgb)

print(classification_report(y_test,pred_xgb))

print('ROC AUC XGB= ',roc_auc_xgb)

cm_xgb=confusion_matrix(y_test,pred_xgb)
print('Confusion Matrix XGB: ')
print(cm_xgb)

as_xgb=accuracy_score(y_test,pred_xgb)
print('Accuracy XGB: ',as_xgb)
```

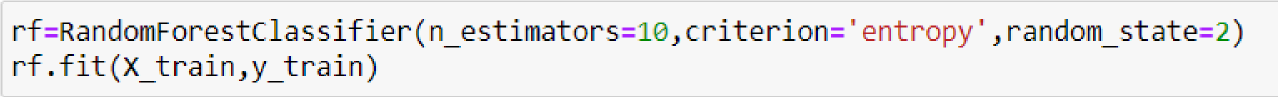
```
              precision    recall  f1-score   support

           0       0.97      0.97      0.97      3102
           1       0.97      0.97      0.97      3036

    accuracy                           0.97      6138
   macro avg       0.97      0.97      0.97      6138
weighted avg       0.97      0.97      0.97      6138

ROC AUC XGB=  0.9708638185742718
Confusion Matrix XGB: 
[[3004   98]
 [  81 2955]]
Accuracy XGB:  0.9708374063212772
```

```
xgb=XGBClassifier()
xgb.fit(X_train,y_train)
```

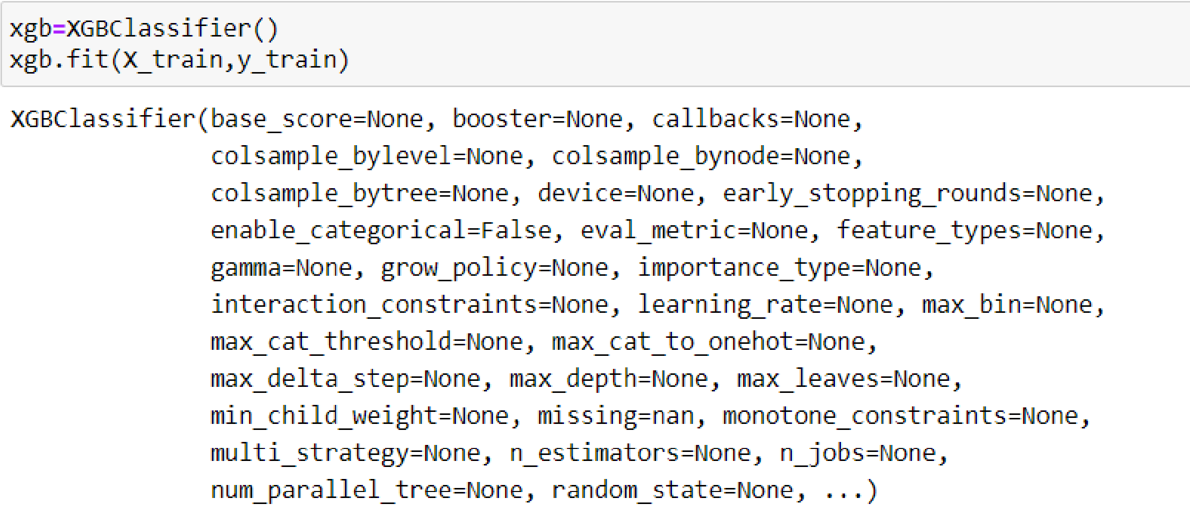
```
XGBClassifier(base_score=None, booster=None, callbacks=None,
              colsample_bylevel=None, colsample_bynode=None,
              colsample_bytree=None, device=None, early_stopping_rounds=None,
              enable_categorical=False, eval_metric=None, feature_types=None,
              gamma=None, grow_policy=None, importance_type=None,
              interaction_constraints=None, learning_rate=None, max_bin=None,
              max_cat_threshold=None, max_cat_to_onehot=None,
              max_delta_step=None, max_depth=None, max_leaves=None,
              min_child_weight=None, missing=nan, monotone_constraints=None,
              multi_strategy=None, n_estimators=None, n_jobs=None,
              num_parallel_tree=None, random_state=None, ...)
```

```
rf=RandomForestClassifier(n_estimators=10,criterion='entropy',random_state=2)
rf.fit(X_train,y_train)
```

Tuning Models:



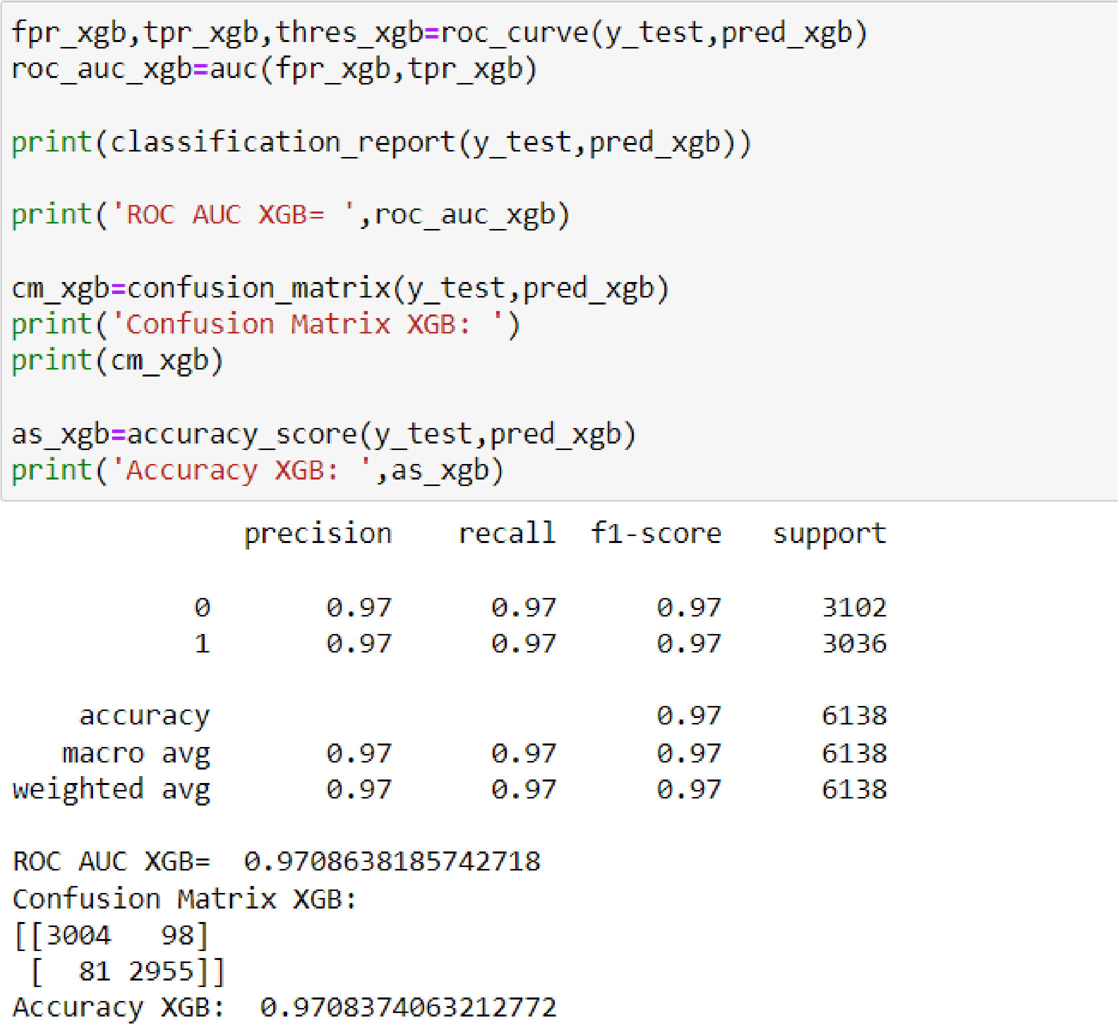
```
rf=RandomForestClassifier(n_estimators=10,criterion='entropy',random_state=2)
rf.fit(X_train,y_train)
```



```
xgb=XGBClassifier()
xgb.fit(X_train,y_train)
```

```
XGBClassifier(base_score=None, booster=None, callbacks=None,
              colsample_bylevel=None, colsample_bynode=None,
              colsample_bytree=None, device=None, early_stopping_rounds=None,
              enable_categorical=False, eval_metric=None, feature_types=None,
              gamma=None, grow_policy=None, importance_type=None,
              interaction_constraints=None, learning_rate=None, max_bin=None,
              max_cat_threshold=None, max_cat_to_onehot=None,
              max_delta_step=None, max_depth=None, max_leaves=None,
              min_child_weight=None, missing=nan, monotone_constraints=None,
              multi_strategy=None, n_estimators=None, n_jobs=None,
              num_parallel_tree=None, random_state=None, ...)
```

Metrics:



```
fpr_xgb,tpr_xgb,thres_xgb=roc_curve(y_test,pred_xgb)
roc_auc_xgb=auc(fpr_xgb,tpr_xgb)

print(classification_report(y_test,pred_xgb))

print('ROC AUC XGB= ',roc_auc_xgb)

cm_xgb=confusion_matrix(y_test,pred_xgb)
print('Confusion Matrix XGB: ')
print(cm_xgb)

as_xgb=accuracy_score(y_test,pred_xgb)
print('Accuracy XGB: ',as_xgb)
```

```
              precision    recall  f1-score   support

           0       0.97      0.97      0.97      3102
           1       0.97      0.97      0.97      3036

    accuracy                           0.97      6138
   macro avg       0.97      0.97      0.97      6138
weighted avg       0.97      0.97      0.97      6138

ROC AUC XGB=  0.9708638185742718
Confusion Matrix XGB: 
[[3004   98]
 [  81 2955]]
Accuracy XGB:  0.9708374063212772
```