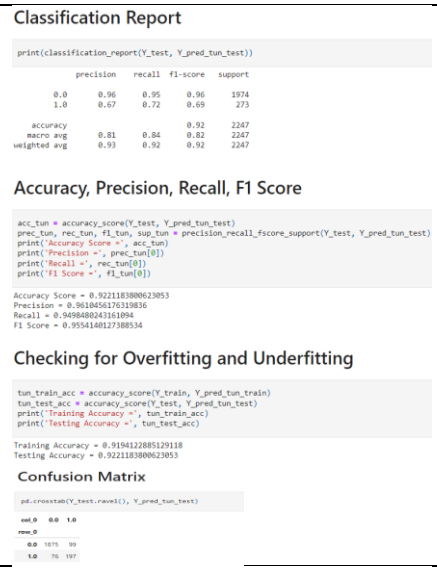
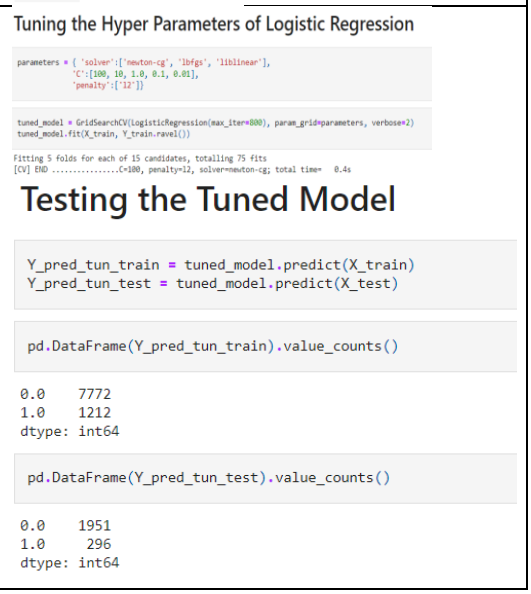
Project Development Phase
Model Performance Test

Date	10 NOvember 2022
Team ID	PNT2022TMID15570
Project Name	Project - **Developing a Flight Delay Prediction Model using Machine Learning**
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 -	

Evaluating the Tuned Model using Metrics

Classification Report

```
print(classification_report(Y_test, Y_pred_tun_test))
```

```
              precision    recall  f1-score   support

         0.0       0.96      0.95      0.96      1974
         1.0       0.67      0.72      0.69       273

    accuracy                           0.92      2247
   macro avg       0.81      0.84      0.82      2247
weighted avg       0.93      0.92      0.92      2247
```

Accuracy, Precision, Recall, F1 Score

```
acc_tun = accuracy_score(Y_test, Y_pred_tun_test)
prec_tun, rec_tun, f1_tun, sup_tun = precision_recall_fscore_support(Y_test, Y_pred_tun_test)
print('Accuracy Score =', acc_tun)
print('Precision =', prec_tun[0])
print('Recall =', rec_tun[0])
print('F1 Score =', f1_tun[0])
```

```
Accuracy Score = 0.9221183800623053
Precision = 0.9610456176319836
Recall = 0.9498480243161094
F1 Score = 0.9554140127388534
```

Checking for Overfitting and Underfitting

```
tun_train_acc = accuracy_score(Y_train, Y_pred_tun_train)
tun_test_acc = accuracy_score(Y_test, Y_pred_tun_test)
print('Training Accuracy =', tun_train_acc)
print('Testing Accuracy =', tun_test_acc)
```

```
Training Accuracy = 0.9194122885129118
Testing Accuracy = 0.9221183800623053
```

There is no big variation in the training and testing accuracy. Therefore, the Tuned Logistic Regression model is not overfit or underfit.

Confusion Matrix

```
pd.crosstab(Y_test.ravel(), Y_pred_tun_test)
```

col_0	0.0	1.0
row_0		
0.0	1875	99
1.0	76	197