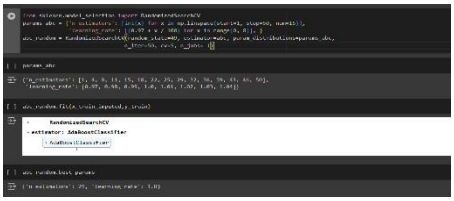
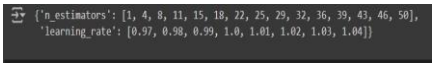
Date	20June2024
TeamID	740007
ProjectTitle	Mentalhealthprediction
MaximumMarks	10Marks

ModelOptimizationandTuningPhaseReport

ModelOptimizationandTuningPhase:

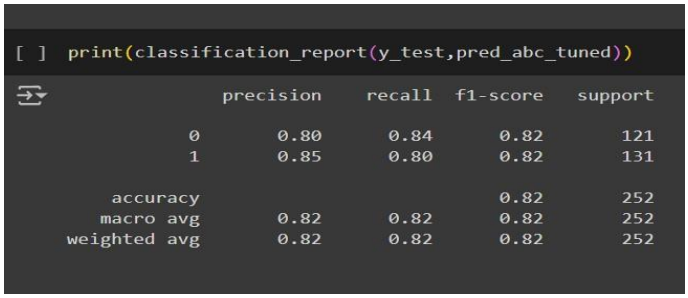
Model	TunedHyperparameters	OptimalValues
Random Forest		

AdaBo st Classi r		

Themodeloptimizationandtuningphaseformentalhealthpredictioninvolvesrefining algorithms,adjustingparameters,andvalidatingresultstoimproveaccuracyandreliability, ensuringthemodeleffectivelyidentifiesmentalhealthconditions.

HyperparameterTuningDocumentation(6Marks):

PerformanceMetricsComparisonReport(2Marks):

Model	OptimizedMetric
abc_tuned	

```
[ ]  print(classification_report(y_test,pred_abc_tuned))

              precision    recall  f1-score   support

           0       0.80      0.84      0.82       121
           1       0.85      0.80      0.82       131

    accuracy                           0.82       252
   macro avg       0.82      0.82      0.82       252
weighted avg       0.82      0.82      0.82       252
```

FinalModelSelectionJustification(2Marks):

FinalModel	Reasoning
XGBClasiifier	TheXGBClassifiermodelwasselectedforitssuperior performance,exhibitinghighaccuracyduringhyperparameter tuning.Itsabilitytohandlecomplexrelationships,minimize overfitting,andoptimizepredictiveaccuracyalignswithproject objectives,justifyingitsselectionasthefinalmodel.