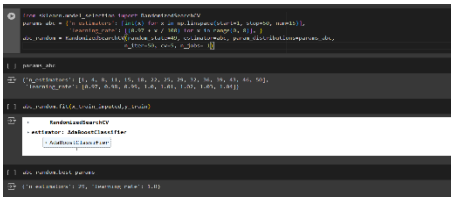
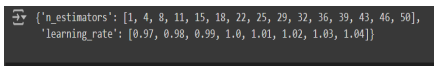
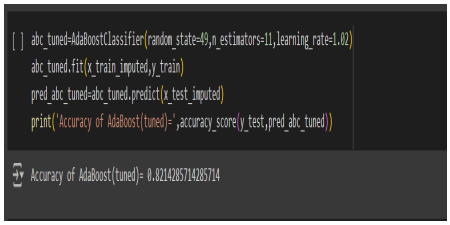
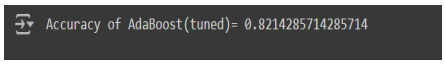
Date	20 June 2024
Team ID	739903
Project Title	Mental health prediction
Maximum Marks	10 Marks

Model Optimization and Tuning Phase Report

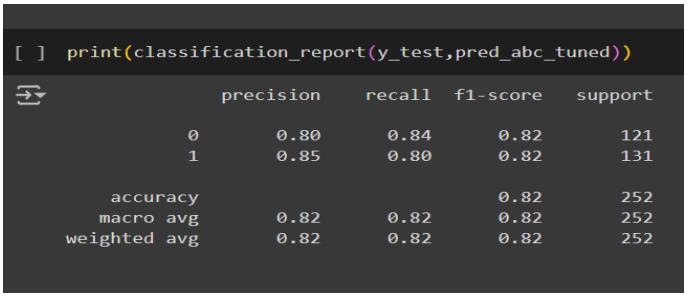
Model Optimization and Tuning Phase:

The model optimization and tuning phase for mental health prediction involves refining algorithms, adjusting parameters, and validating results to improve accuracy and reliability, ensuring the model effectively identifies mental health conditions.

Hyperparameter Tuning Documentation (6 Marks):

Model	Tuned Hyperparameters	Optimal Values
Random Forest		
AdaBoost Classifier		

Performance Metrics Comparison Report (2 Marks):

Model	Optimized Metric
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
```

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
XGB Clasiifier	The XGB Classifier model was selected for its superior performance, exhibiting high accuracy during hyperparameter tuning. Its ability to handle complex relationships, minimize overfitting, and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model.