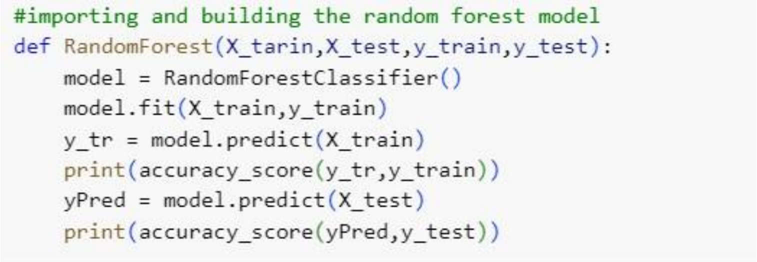
Model Development Phase Template

Date	15 July 2024
Team ID	740144
Project Title	Loan Sanction Amount Prediction Data With Ml
Maximum Marks	4 Marks

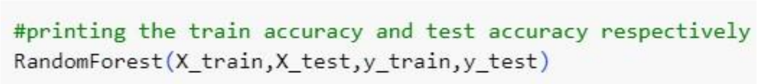
Initial Model Training Code, Model Validation and Evaluation Report

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.

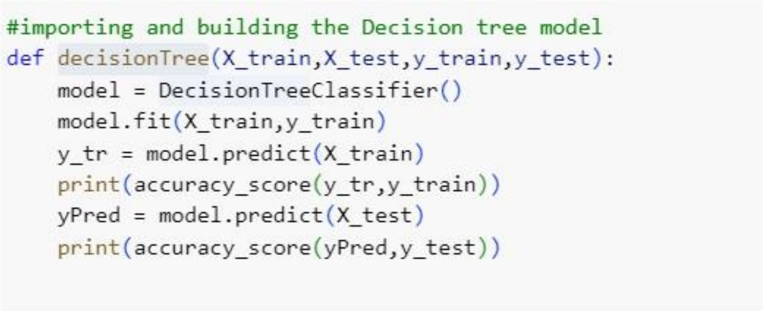
Initial Model Training Code:



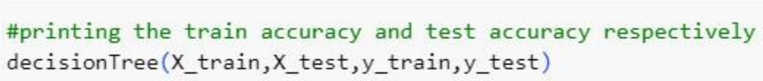
```
#importing and building the random forest model
def RandomForest(X_tarin,X_test,y_train,y_test):
    model = RandomForestClassifier()
    model.fit(X_train,y_train)
    y_tr = model.predict(X_train)
    print(accuracy_score(y_tr,y_train))
    yPred = model.predict(X_test)
    print(accuracy_score(yPred,y_test))
```



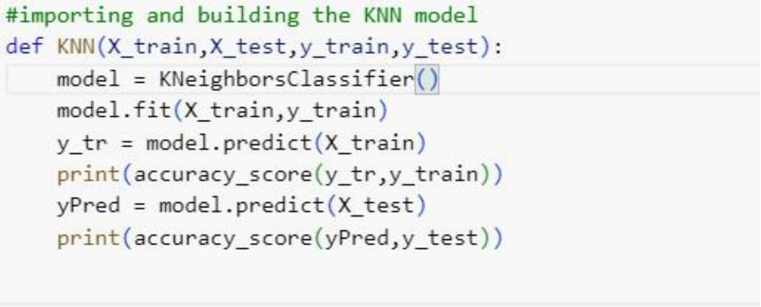
```
#printing the train accuracy and test accuracy respectively
RandomForest(X_train,X_test,y_train,y_test)
```



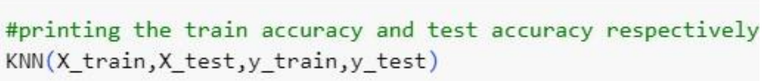
```
#importing and building the Decision tree model
def decisionTree(X_train,X_test,y_train,y_test):
    model = DecisionTreeClassifier()
    model.fit(X_train,y_train)
    y_tr = model.predict(X_train)
    print(accuracy_score(y_tr,y_train))
    yPred = model.predict(X_test)
    print(accuracy_score(yPred,y_test))
```



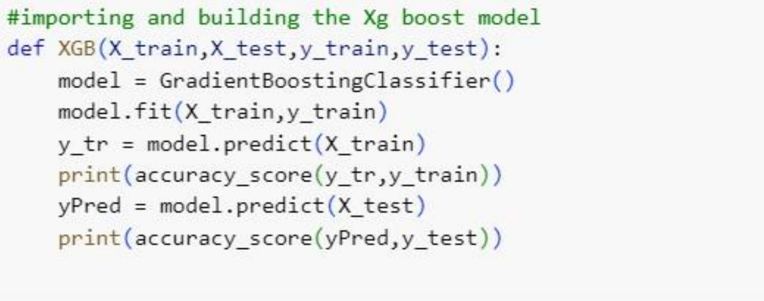
```
#printing the train accuracy and test accuracy respectively
decisionTree(X_train,X_test,y_train,y_test)
```



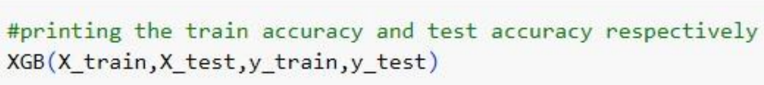
```
#importing and building the KNN model
def KNN(X_train,X_test,y_train,y_test):
    model = KNeighborsClassifier()
    model.fit(X_train,y_train)
    y_tr = model.predict(X_train)
    print(accuracy_score(y_tr,y_train))
    yPred = model.predict(X_test)
    print(accuracy_score(yPred,y_test))
```



```
#printing the train accuracy and test accuracy respectively
KNN(X_train,X_test,y_train,y_test)
```

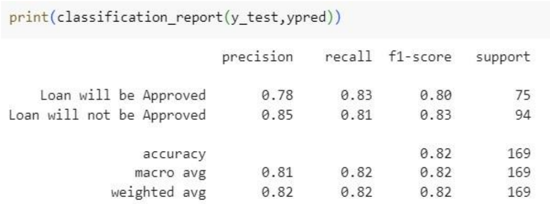
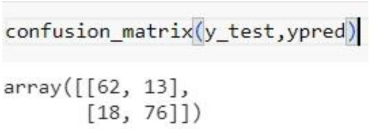


```
#importing and building the Xg boost model
def XGB(X_train,X_test,y_train,y_test):
    model = GradientBoostingClassifier()
    model.fit(X_train,y_train)
    y_tr = model.predict(X_train)
    print(accuracy_score(y_tr,y_train))
    yPred = model.predict(X_test)
    print(accuracy_score(yPred,y_test))
```

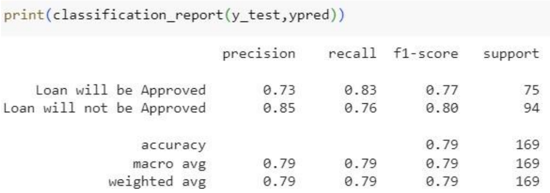
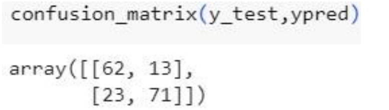
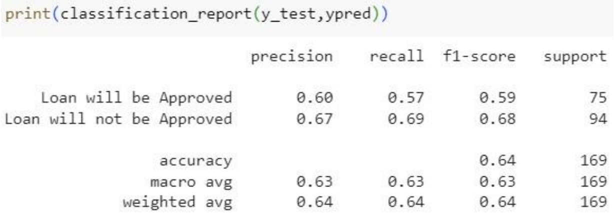
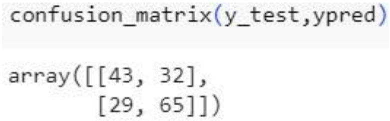
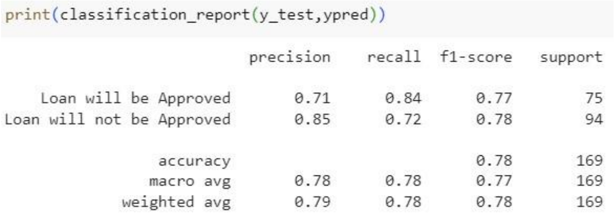
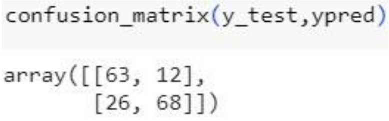


```
#printing the train accuracy and test accuracy respectively
XGB(X_train,X_test,y_train,y_test)
```

Model	Classification Report	F1 Score	Confusion Matrix

Random Forest	 print(classification_report(y_test,ypred)) precision recall f1-score support Loan will be Approved 0.78 0.83 0.80 75 Loan will not be Approved 0.85 0.81 0.83 94 accuracy 0.82 169 macro avg 0.81 0.82 0.82 169 weighted avg 0.82 0.82 0.82 169	81%	 confusion_matrix(y_test,ypred) array([[62, 13], [18, 76]])

Model Validation and Evaluation Report:

Decision Tree	 print(classification_report(y_test,ypred)) precision recall f1-score support Loan will be Approved 0.73 0.83 0.77 75 Loan will not be Approved 0.85 0.76 0.80 94 accuracy 0.79 169 macro avg 0.79 0.79 0.79 169 weighted avg 0.79 0.79 0.79 169	79%	 confusion_matrix(y_test,ypred) array([[62, 13], [23, 71]])
KNN	 print(classification_report(y_test,ypred)) precision recall f1-score support Loan will be Approved 0.60 0.57 0.59 75 Loan will not be Approved 0.67 0.69 0.68 94 accuracy 0.64 169 macro avg 0.63 0.63 0.63 169 weighted avg 0.64 0.64 0.64 169	64%	 confusion_matrix(y_test,ypred) array([[43, 32], [29, 65]])
Gradient Boosting	 print(classification_report(y_test,ypred)) precision recall f1-score support Loan will be Approved 0.71 0.84 0.77 75 Loan will not be Approved 0.85 0.72 0.78 94 accuracy 0.78 169 macro avg 0.78 0.78 0.77 169 weighted avg 0.79 0.78 0.78 169	78%	 confusion_matrix(y_test,ypred) array([[63, 12], [26, 68]])