

## Model Development Phase Template

Date	14 July 2024
Team ID	739872
Project Title	Blood Donation Prediction
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:

```
from sklearn.linear_model import LogisticRegression

from sklearn.model_selection import train_test_split
from sklearn.datasets import load_iris
data=load_iris()
X=data.data
y=data.target
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2)
logreg=LogisticRegression()

logreg.fit(X_train,y_train)
```

```
y_pred_LOGREG=logreg.predict(X_test)

print('Training Set: ',logreg.score(X_train,y_train))
print('Test Set: ',logreg.score(X_test,y_test))
```

```
print('Training Set: ',logreg.score(X_train,y_train))
print('Test Set: ',logreg.score(X_test,y_test))
```

```
from sklearn import metrics # Import the metrics module
from sklearn.metrics import confusion_matrix
print(confusion_matrix(y_test,y_pred_LOGREG))
```

```
from sklearn.metrics import classification_report
print(classification_report(y_test,y_pred_LOGREG))
```

```
from sklearn.ensemble import RandomForestClassifier
rand_forest= RandomForestClassifier(random_state=42)
rand_forest.fit(X_train,y_train)
```

```

y_pred_RF=rand_forest.predict(X_test)

predictionRF=rand_forest.predict(X_test)
#checking the accuracy on the training set
print('Training set :', rand_forest.score(X_train,y_train))
#checking the accuracy on the testing set
print('Testing set :', rand_forest.score(X_test,y_test))

accuracy_RF=rand_forest.score(X_test, y_test)
print('Accuracy_RF: ', accuracy_RF*100)

from sklearn import metrics # Import the metrics module
from sklearn.metrics import confusion_matrix
print(confusion_matrix(y_test,y_pred_RF))

from sklearn.metrics import classification_report
print(classification_report(y_test,y_pred_RF))

from sklearn.svm import SVC
svm= SVC(kernel='rbf',random_state=0)
svm.fit(X_train,y_train)

y_pred_SVC=svm.predict(X_test)

print('Training Set:',svm.score(X_train,y_train))
print('Testing Set:',svm.score(X_test,y_test))

accuracy_SVC=svm.score(X_test,y_test)
print('Accuracy_SVM: ',accuracy_SVC*100)

from sklearn import metrics # Import the metrics module
from sklearn.metrics import confusion_matrix
print(confusion_matrix(y_test,y_pred_SVC))

from sklearn.metrics import classification_report
print(classification_report(y_test,y_pred_SVC))

```

## Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
Logistic Regression	<pre> from sklearn.metrics import classification_report print(classification_report(y_test,y_pred_logit))  precision    recall  f1-score   support  0       1.00      1.00      1.00         8 1       0.80      0.80      0.80         9 2       0.92      0.92      0.92        13  accuracy          0.94 macro avg         0.94 weighted avg      0.94 </pre>	93.3	<pre> from sklearn import metrics # Import the metrics module from sklearn.metrics import confusion_matrix print(confusion_matrix(y_test,y_pred_logit))  [[ 8  0  0]  [ 0  8  1]  [ 0  1 12]] </pre>
Random Forest	<pre> &gt; from sklearn.metrics import classification_report print(classification_report(y_test,y_pred_RF))  precision    recall  f1-score   support  0       1.00      1.00      1.00         8 1       0.80      0.80      0.80         9 2       0.92      0.85      0.88        13  accuracy          0.91 macro avg         0.91 weighted avg      0.90 </pre>	90.0	<pre> from sklearn import metrics # Import the metrics module from sklearn.metrics import confusion_matrix print(confusion_matrix(y_test,y_pred_RF))  [[ 8  0  0]  [ 0  8  1]  [ 0  2 11]] </pre>

Support  
Vector  
Machine

```

In [ ]: from sklearn.metrics import classification_report
        print(classification_report(y_test,y_pred_SVC))

Out[ ]:
              precision    recall  f1 score   support
0               1.00        1.00        1.00         8
1               0.00        0.00        0.00         9
2               0.50        0.85        0.68        11

 accuracy: 0.51      0.51      0.50      28
 macro avg: 0.50      0.45      0.48      30
 weighted avg: 0.50      0.48      0.49      30

```

90.0

```

from sklearn import metrics # Import the metrics module
from sklearn.metrics import confusion_matrix
print(confusion_matrix(y_test,y_pred_SVC))

[[ 8  0  0]
 [ 0  8  1]
 [ 0  2 11]]

```