

### Model Development Phase Template

Date	21 June 2024
Team ID	TMID740029
Project Title	Startup prophet
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:

```
#RANDOM FOREST MODEL
from sklearn.ensemble import RandomForestClassifier
rf=RandomForestClassifier()
rf.fit(x_bal,y_bal)
rftest=rf.predict(x_test)
rftrain=rf.predict(x_train)
print(confusion_matrix(rftest,y_test))
print(confusion_matrix(rftrain,y_train))
print(classification_report(rftest,y_test))
print(classification_report(rftrain,y_train))
```

```
#LOGISTIC REGRESSION
from sklearn.linear_model import LogisticRegression
lr=LogisticRegression()
lr.fit(x_bal,y_bal)
y_pred=lr.predict(x_test)
```

```
from sklearn.metrics import confusion_matrix,accuracy_score,classification_report
print(confusion_matrix(y_test,y_pred))
print(classification_report(y_test,y_pred))
```

```
#SUPPORT VECTOR MACHINE
from sklearn.svm import SVC
svm=SVC(kernel='rbf',C=2.0,random_state=42)
svm.fit(x_bal,y_bal)
y_predict=svm.predict(x_test)
```

```
print(confusion_matrix(y_test,y_predict))
print(classification_report(y_test,y_predict))
```

Model	Classification Report	F1 Score	Confusion Matrix
Random Forest	<pre> [[163  7]  [  7 182]] [[410  12]  [ 17 396]]                precision    recall  f1-score   support       0       0.96       0.96       0.96        170      1       0.96       0.96       0.96        189   accuracy          0.96  macro avg          0.96  weighted avg       0.96                precision    recall  f1-score   support       0       0.96       0.97       0.97        422      1       0.97       0.96       0.96        413   accuracy          0.97  macro avg          0.97  weighted avg       0.97 </pre>	97%	<pre> [[163  7]  [  7 182]] [[410  12]  [ 17 396]] </pre>

### Model Validation and Evaluation Report:

Logistic Regression	<pre> [[136  34]  [ 56 133]]                precision    recall  f1-score   support       0       0.71       0.80       0.75        170      1       0.80       0.70       0.75        189   accuracy          0.75  macro avg          0.75  weighted avg       0.75 </pre>	75%	<pre> [[136  34]  [ 56 133]] </pre>
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SVM	<pre> [[135 35]  [ 30 159]] precision recall f1-score support 0      0.82    0.79    0.81    170 1      0.82    0.84    0.83    189  accuracy macro avg    0.82    0.82    0.82    359 weighted avg 0.82    0.82    0.82    359 </pre>	82%	<pre> [[135 35]  [ 30 159]] </pre>