# Model Development Phase Template

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|---|---|
| Date | 12 March 2024 |
| Team ID | 740001 |
| Project Title | Online payments fraud detection using 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:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=0)
```

### Model Validation and Evaluation Report:

| Model | Classification Report | Accuracy |
|---|---|---|
| Random forest classifier | `print(classification_report(y_test,y_test_predict1))`<br>precision recall f1-score support<br>is Fraud 0.98 0.79 0.87 1641<br>is not Fraud 1.00 1.00 1.00 1270883<br>accuracy 1.00 1272524<br>macro avg 0.99 0.89 0.94 1272524<br>weighted avg 1.00 1.00 1.00 1272524 | `test_accuracy=accuracy_score(y_test,y_test_predict1)`<br>`print(test_accuracy)` |
| Decision Tree classifier | `print(classification_report(y_test,y_test_predict2))`<br>precision recall f1-score support<br>is Fraud 0.88 0.87 0.87 1641<br>is not Fraud 1.00 1.00 1.00 1270883<br>accuracy 1.00 1272524<br>macro avg 0.94 0.93 0.94 1272524<br>weighted avg 1.00 1.00 1.00 1272524 | `test_accuracy=accuracy_score(y_test,y_test_predict2)`<br>`test_accuracy`<br>`0.9996785915236176` |
| Extra Tree classifier | `print(classification_report(y_test,y_test_predict3))`<br>precision recall f1-score support<br>is Fraud 1.00 0.71 0.83 1641<br>is not Fraud 1.00 1.00 1.00 1270883<br>accuracy 1.00 1272524<br>macro avg 1.00 0.86 0.92 1272524<br>weighted avg 1.00 1.00 1.00 1272524 | `test_accuracy=accuracy_score(y_test,y_test_predict3)`<br>`test_accuracy`<br>`0.999628297776702` |