**Model Development Phase Template**

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| Date | 15 March 2024 |
| Team ID | SWUID20250184320 |
| Project Title | Online Payment fraud Detection |
| Maximum Marks | 6 Marks |

**Model Selection Report**

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

**Model Selection Report:**

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| **Model** | **Description** | **Hyperparameters** | **Performance Metric (e.g., Accuracy, F1 Score)** |
| Model 1 | Logistic Regression — a simple linear model suitable for binary classification | solver='lbfgs', max\_iter=1000, random\_state=42 | Accuracy Score -1.00, F-1 Score -0.79 |
| Model 2 | Random Forest — ensemble of decision trees for improved accuracy | n\_estimators=100, random\_state=42 | Accuracy Score -0.99, F-1 Score – 0.75 |
| Model 3 | Support Vector Machine — finds the optimal hyperplane for classification | kernel='rbf', C=1.0, gamma='scale' | Accuracy Score -1.00, F-1 Score – 0.745 |
| Model 4 | K-Nearest Neighbors — instance-based learning using distance metric | n\_neighbors=5, metric='minkowski', p=2 | Accuracy Score -0.99, F-1 Score – 0.85 |
| **Model 5 (Best Model)** | XG Boost — gradient boosting optimized for performance and speed (**Best Model**) | n\_estimators=100, learning\_rate=0.1, max\_depth=5, subsample=0.8, colsample\_bytree=0.8, random\_state=42 | Accuracy Score -1.00, F-1 Score – 0.88 |