**Model Development Phase Template**

| Date | 25 February 2025 |
| --- | --- |
| Team ID | NIL |
| Project Title | Online Payments Fraud Detection Using ML |
| Maximum Marks | 6 Marks |

**Selection Justification:**

* **Chosen Model:** Decision Tree
* **Reasons:**
  1. Highest F1 score (0.93) for fraud class.
  2. Handles non-linear relationships (e.g., amount thresholds).
  3. Interpretable rules for fraud flags.

**Model Selection Report:**

| **Model** | **Description** | **Hyperparameters** | **Performance Metric (e.g., Accuracy, F1 Score)** |
| --- | --- | --- | --- |
| **Decision Tree** | Non-linear model for complex patterns | max\_depth=5, criterion='gini' | Accuracy: 99.95%  F1 (Fraud): 0.93 |
| **Logistic Regression** | Linear baseline model | penalty='l2', C=1.0 | Accuracy: 99.87%  F1 (Fraud): 0.86 |
| **Naive Bayes** | Probabilistic model for independence assumptions | priors=None, var\_smoothing=1e-9 | Accuracy: 99.61%  F1 (Fraud): 0.78 |