Date	25-02-2026
Team ID	LTVIP2026TMIDS42037
Project Name	Online Payment Fraud Detection
Maximum Marks	4 Marks

Project Design Phase:

Solution Architecture:

Solution architecture bridges the gap between the business problem of online payment fraud and the technological solution using Machine Learning. The architecture defines how transaction data is collected, processed, analyzed, and deployed for real-time fraud detection. Goals of the Solution Architecture: • Identify the most suitable ML algorithms for fraud detection. • Define data preprocessing and feature engineering steps. • Structure the training, validation, and testing workflow. • Deploy the trained model using Flask for real-time web-based predictions. • Ensure scalability and maintainability of the fraud detection system.

Solution Architecture Flow:

Data Sources
Online payment
transaction dataset
(CSV file)

Data Ingestion
Load dataset using
Pandas in Python

Data Preprocessing
Handle missing values,
encode categorical
variables, feature scaling

Model Training
Apply Logistic Regression,
Random Forest,
Decision Tree

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Random Forest,
Decision Tree

Model Evaluation
Accuracy, Precision, Recall,
F1-score, Cross-validation

Model Deployment
Save model using Joblib
and deploy using
Flask framework

Model Action
Web interface for real-time
fraud prediction

User Access
Web interface for real-time
fraud prediction