

Project Design Phase

Solution Architecture

Date	12 February 2026
Team ID	LTVIP2026TMIDS48224
Project Name	Online Payments Fraud Detection using Machine Learning
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

➤ **Overview**

The solution architecture is designed as a **simple, modular, and scalable ML web application** that predicts whether a given online payment transaction is **Fraud** or **Not Fraud** in real time.

It cleanly separates **Model Training, Model Serving (Flask), and User Interface (HTML/CSS)** for easy maintenance and extension.

➤ **Goals of the Architecture**

- Integrate a trained ML model into a live web app for instant predictions
- Keep training, model, and web layers independent
- Ensure fast response for real-time fraud checks
- Allow future deployment as an API/service for payment systems
- Maintain simplicity for academic demonstration and scalability for future use

➤ **Architecture Layers:**

1. Presentation Layer (Frontend)
2. Application Layer (Flask Backend)
3. Data & Model Layer (ML Training & Model Storage)