Project Initialization and Planning Phase

Date	12 June 2025
Team ID	SWTID1749662491
Project Title	Online Payments Fraud Detection using Machine Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution):

The proposal report aims to enhance the security and reliability of online payment systems through intelligent fraud detection using machine learning. It focuses on detecting fraudulent transactions in real-time, minimizing financial losses, and safeguarding customer trust. The solution leverages pattern recognition, anomaly detection, and predictive analytics to flag suspicious activity.

Project Overview	
Objective	The primary objective is to detect and prevent fraudulent online payment transactions by utilizing advanced machine learning techniques for real-time analysis and alerting.
Scope	The project includes the development, training, and deployment of a machine learning-based fraud detection model that processes transaction data, identifies fraudulent behavior, and adapts to emerging fraud patterns. The scope spans data preprocessing, model evaluation, and system integration.
Problem Statement	
Description	The rising number of fraudulent online transactions compromises financial security and customer confidence. Traditional rule-based systems fail to adapt to evolving fraud strategies.
Impact	Solving this issue will significantly reduce financial fraud losses, enhance user trust in digital payment platforms, and improve compliance with financial regulations and industry standards.

Proposed Solution	
Approach	Leverage supervised and unsupervised machine learning algorithms (e.g., XGBoost, Random Forest) to detect anomalies in transaction patterns. Real-time scoring and adaptive learning models will be employed to flag high-risk activities.
Key Features	- Real-time fraud detection and alerting system - Adaptive ML models that learn from new patterns - Feature engineering based on transaction metadata (amount, time, device, etc.) - Integration with payment gateway APIs for live testing

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	T4 GPU
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib, seaborn
Development Environment	IDE, version control	Google colab notebook, pycharm
Data		
Data	Source, size, format	Kaggle dataset, csv