

# TASK

This task involves building a real-time model that reads data from *Kafka*, scores payment transactions, and writes the results to a *MySQL database*.

## Technical Task : Real-Time Payment Scoring Model

### Objectives:

- 1. Read Data from Kafka:** Connect to a Kafka stream to consume payment transaction data in real time.
- 2. Score Payment Transactions:** Use a pre-trained model to score the payment transactions for fraud detection or credit scoring.
- 3. Store Results in MySQL:** Write the scoring results back into a MySQL database.

## Business Description : Real-Time Payment Scoring System

### Overview:

The goal of this project is to build a real-time payment scoring system that detects potentially fraudulent transactions or evaluates the creditworthiness of customers. This system will leverage Apache Kafka for real-time data streaming, a machine learning model for scoring transactions, and MySQL for storing the results.

 *This business description should give a clear overview of the task's purpose, objectives, and components.*

## Key Components:

- 1. Data Ingestion (Kafka):** The system will read payment transaction data from an Apache Kafka stream in real time. Kafka serves as a robust, scalable solution for handling high-throughput, real-time data feeds.
- 2. Transaction Scoring (Machine Learning Model):** A pre-trained machine learning model will be used to score each transaction based on various features. The model can be designed for fraud detection, credit scoring, or other relevant evaluations.
- 3. Data Storage (MySQL):** The scored transactions will be written into a MySQL database. This integration ensures that scoring results are immediately available for reporting, analysis, and further action.

## Implementation Phases:

- 1. Setup and Configuration:** Install and configure Kafka and MySQL, ensuring they are properly integrated with the existing infrastructure.
- 2. Model Integration:** Load and integrate the pre-trained machine learning model into the real-time processing pipeline.
- 3. Real-Time Processing:** Develop the Kafka consumer to read transactions, apply the scoring model, and write the results to MySQL.
- 4. Testing and Validation:** Thoroughly test the entire system to ensure accuracy, reliability, and performance under real-world conditions.

## Expected Outcomes:

- **Improved Fraud Detection:** Faster and more accurate identification of fraudulent transactions.
- **Enhanced Customer Service:** Better credit assessment leading to personalized and timely financial offerings.
- **Operational Efficiency:** Streamlined transaction processing and reduced manual intervention.
- **Actionable Insights:** Data-driven understanding of transaction patterns and customer behavior.

## Expected Deliverables: 🏆

- **Code Repository:** A GitHub repository containing the complete code.
- **Documentation:** A README file explaining the setup process and how to run the code.
- **Test Data:** Sample Kafka messages and MySQL schema.

Goodluck ✊