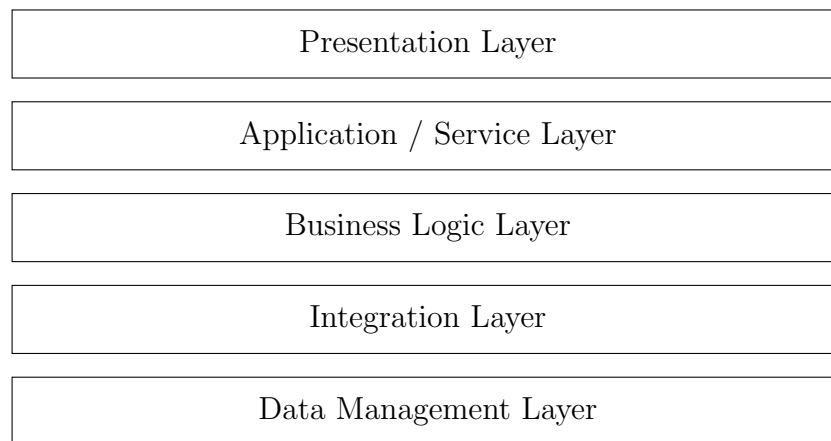


Application Components – Automated Fraud Detection System

This section describes the major application components of the Automated Fraud Detection System, organized according to the **Layered Architecture** style. Each layer has a specific responsibility and interacts only with its adjacent layers, improving modularity, maintainability, and scalability.

Layered Architecture Overview



1. Presentation Components

- **Customer Interface**
 - Displays transaction status and fraud alerts to users
- **Fraud Analyst Dashboard**
 - Enables analysts to view flagged transactions and investigate fraud cases
- **System Admin Console**
 - Allows administrators to manage rules, AI models, and compliance settings

2. Application / Service Components

- **Transaction Monitoring Service**
 - Monitors real-time transactions and behavioral patterns
- **Risk Scoring Service**
 - Computes fraud risk scores for each transaction
- **Transaction Decision Service**

- Approves, flags, or blocks transactions based on risk thresholds
- **Manual Review Service**
 - Sends suspicious transactions for human investigation
- **Alert Management Service**
 - Generates and dispatches fraud alerts in real time

3. Business Logic Components

- **Fraud Detection Rules Engine**
 - Applies predefined and dynamic fraud detection rules
- **AI / ML Risk Evaluation Engine**
 - Uses machine learning models to identify anomalies and predict fraud
- **Risk Classification Module**
 - Classifies transactions into Low, Medium, or High risk categories

4. Integration Components

- **External Fraud Database Connector**
 - Interfaces with external blacklists and fraud intelligence sources
- **Notification Service Adapter**
 - Integrates with SMS, Email, and Push notification systems
- **Banking / Payment Gateway Interface**
 - Communicates with core banking and payment processing systems

5. Data Management Components

- **Transaction Database**
 - Stores transaction details, risk scores, and outcomes
- **User and Role Database**
 - Maintains user profiles, roles, and access permissions
- **Audit and Compliance Repository**
 - Stores logs and audit trails for regulatory compliance

- **Case Management Database**

- Records fraud investigation history and analyst actions