Requirement Gathering and Analysis Phase
Solution Architecture

Date	09 July 2024
Team ID	SWTID1720106020
Project Name	Project – Banking Management App
Maximum Marks	2

Solution Architecture:

Solution Architecture for Digital Banking Platform

Overview: The bank aims to deliver a seamless digital banking experience leveraging the MERN stack (MongoDB, Express.js, React.js, Node.js). The solution architecture effectively addresses business challenges with advanced technology solutions, ensuring efficient development and delivery.

Goals:

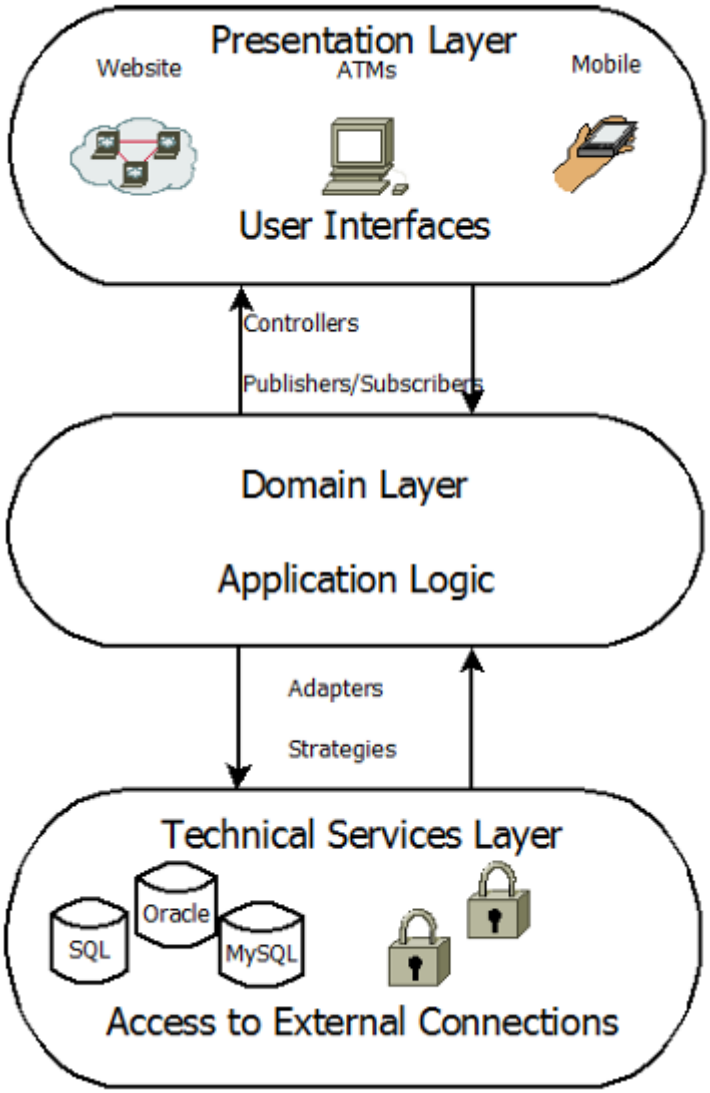
1. **Optimal Technology Solution**:
    - Utilize the MERN stack for developing a scalable, maintainable, and efficient application.
    - Implement robust authentication and authorization mechanisms using JWT (JSON Web Tokens) and OAuth for third-party logins.
2. **Structure and Behavior**:
    - **Frontend (React.js)**:
        - Design user interfaces for both mobile and web users, featuring functionalities such as registration, login, dashboard, money transfers, and loan applications.
    - **Backend (Node.js, Express.js)**:
        - Develop API endpoints for managing users, transactions, and loan processing.
    - **Database (MongoDB)**:
        - Organize collections for users, transactions, deposits, loans, and administrative activities.
    - **Admin Dashboard**:
        - Create a separate interface for administrators to manage users, transactions, and loan applications.
3. **Features, Development Phases, and Requirements**:
    - **Features**:
        - **User Registration and Login**: Support for email/password, Facebook, and Google logins.
        - **Account Management**: Enable users to view balances, transactions, and statements.
        - **Money Transfer**: Facilitate real-time fund transfers between users.
        - **Loan Application**: Allow online loan applications and status tracking.
        - **Real-Time Updates**: Provide notifications for transactions and loan statuses.
    - **Development Phases**:
        - **Phase 1**: Implement basic registration, login, and account management features.

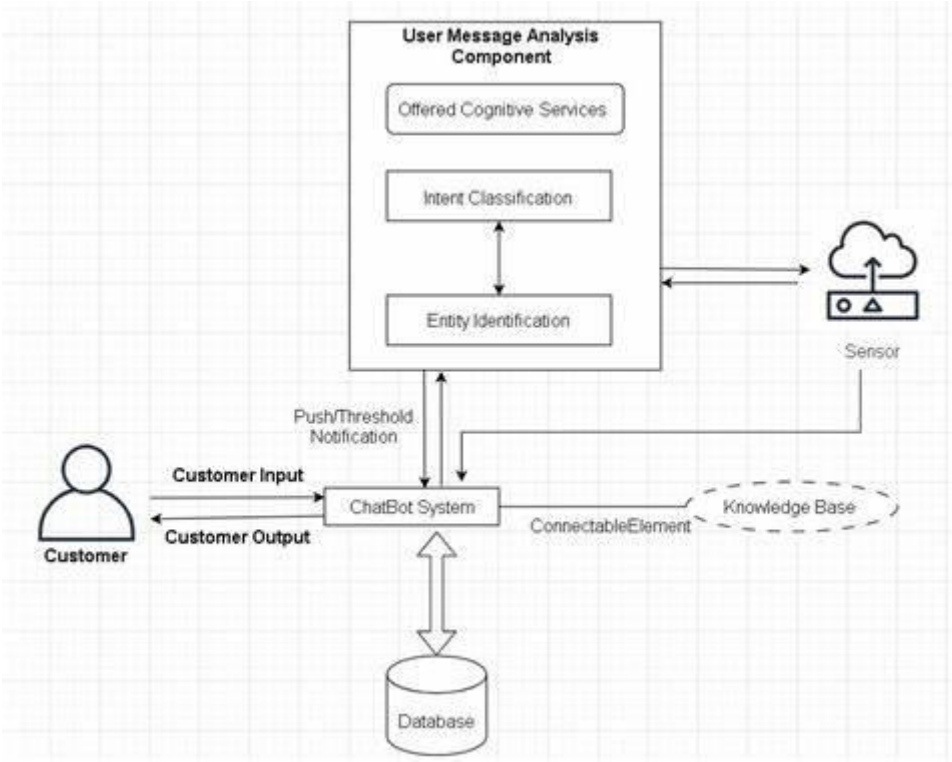
        - **Phase 2**: Develop money transfer, loan application, and real-time update features.
        - **Phase 3**: Focus on enhancements, admin dashboard, and customer support.
    - **Solution Requirements**:
        - **Security**: Implement HTTPS, data encryption, and secure APIs.
        - **Scalability**: Design the system to handle high traffic and large data volumes.
        - **Usability**: Ensure intuitive and responsive user interfaces.
4. **Specifications for Delivery**:
    - **Backend Specifications**:
        - Develop RESTful APIs with proper error handling and logging mechanisms.
        - Implement role-based access control (RBAC) to distinguish between admin and user functionalities.
    - **Frontend Specifications**:
        - Ensure responsive design for optimal user experience on both mobile and web platforms.
        - Use state management solutions like Redux or Context API for efficient state handling.
    - **Database Specifications**:
        - Design schema to support efficient querying and indexing.
        - Establish backup and disaster recovery plans to protect data integrity and availability.

Additional Considerations:

- **Performance Optimization**:
    - Implement caching strategies to reduce server load and improve response times.
    - Utilize code splitting and lazy loading to enhance application performance.
- **Monitoring and Maintenance**:
    - Set up monitoring tools to track application performance and detect issues proactively.
    - Schedule regular maintenance windows to apply updates and patches, ensuring the system remains secure and up-to-date.
- **Compliance and Regulations**:
    - Ensure the application complies with relevant banking regulations and data protection laws, such as GDPR and PCI DSS.

Solution Architecture Diagram:




User Message Analysis Component
Offered Cognitive Services
Intent Classification
Entity Identification
Sensor
Push/Threshold Notification
Customer Input
Customer Output
Customer
ChatBot System
ConnectableElement
Knowledge Base
Database