**Assignment 2 :** Develop a case study analysing the implementation of SDLC phases in a real-world engineering project. Evaluate how Requirement Gathering, Design, Implementation, Testing, Deployment, and Maintenance contribute to project outcomes.

**Requirements Gathering:**

The project begins with a comprehensive requirements gathering process, involving stakeholders such as bank executives, branch managers, customer service representatives, and regulatory bodies.

Key requirements might include:

Account management (checking, savings, loans, etc.)

Transaction processing (deposits, withdrawals, transfers)

Customer onboarding and Know Your Customer (KYC) compliance

Fraud detection and prevention mechanisms

Reporting and regulatory compliance features

Integration with external systems (e.g., payment gateways, credit bureaus)

**Design:**

Based on the gathered requirements, the design phase involves creating detailed system architecture diagrams, database schemas, user interface wireframes, and security protocols. Decisions are made regarding the technology stack, programming languages, and development frameworks to be used.

**Implementation:**

The development team implements the designed features, writing code for the core banking application. This includes modules for account management, transaction processing, customer onboarding, fraud detection, reporting, and integration with external systems. Secure coding practices and industry-standard encryption protocols are followed.

**Testing:**

Rigorous testing activities are performed throughout the implementation phase, including unit testing, integration testing, performance testing, security testing, and user acceptance testing (UAT). This ensures that the application functions as expected, handles edge cases correctly, meets regulatory requirements, and maintains data integrity and security.

**Deployment:**

After thorough testing and obtaining necessary regulatory approvals, the core banking application is deployed to the bank's production environment. This may involve a phased rollout approach, starting with a pilot deployment and gradually scaling to all branches and online channels.

**Maintenance:**

Once the application is live, maintenance activities begin. This includes monitoring system performance, addressing reported issues, implementing security patches, and adding new features or enhancements based on evolving regulatory requirements or market demands. Regular updates and upgrades are released to ensure the application remains secure, compliant, and competitive.

**Outcomes:**

By following the SDLC phases, the core banking application is developed successfully, providing a robust and secure platform for managing customer accounts, processing transactions, and ensuring regulatory compliance. The bank benefits from improved operational efficiency, enhanced customer experience, and reduced risks associated with manual processes and legacy systems.

This case study highlights the importance of adhering to the SDLC phases in developing critical financial applications. Each phase plays a crucial role in ensuring the application meets stringent security, compliance, and performance requirements, while delivering the desired functionality and user experience.