**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.**

**\*\*Case Study: Implementation of SDLC Phases in Building a Mobile Application\*\***

**\*\*1. Requirement Gathering: \*\***

\*\*Project Overview: \*\* A software development company is tasked with building a mobile application for a client in the retail industry. The client wants an app that allows users to browse products, make purchases, and track orders.

\*\*Requirement Gathering Process: \*\* The project team conducts meetings with stakeholders from the client's company to gather requirements. They create user stories, conduct surveys, and analyse competitors' apps to understand user expectations and industry standards.

\*\*Outcome: \*\* Clear understanding of user needs and project scope. Documented requirements serve as a roadmap for the project.

**\*\*2. Design: \*\***

\*\*Design Phase: \*\* The design team creates wireframes and prototypes based on the gathered requirements. They focus on user experience (UX) design, ensuring the app is intuitive and visually appealing. Technical architects design the system architecture, database structure, and user interface (UI) elements.

\*\*Outcome: \*\* Detailed design documents and prototypes guide the development process. Stakeholders approve the design, ensuring alignment with their vision.

**\*\*3. Implementation: \*\***

\*\*Development Process: \*\* Developers start coding the mobile application using programming languages like Swift for iOS or Java/Kotlin for Android. They follow coding standards and best practices to ensure code quality and maintainability. Regular code reviews and collaboration among team members help identify and address issues early.

\*\*Outcome: \*\* Functional mobile application with features implemented according to design specifications. Codebase is well-structured and documented for future maintenance.

**\*\*4. Testing: \*\***

\*\*Testing Phase: \*\* Quality assurance (QA) engineers conduct various types of testing, including functional testing, usability testing, performance testing, and security testing. They use both manual testing techniques and automated testing tools to identify defects and ensure the app meets quality standards.

\*\*Outcome: \*\* Bug-free application with high reliability and performance. Testing reports document issues found and their resolutions.

**\*\*5. Deployment: \*\***

\*\*Deployment Process: \*\* The completed mobile application undergoes final testing and approval before deployment to app stores (e.g., Apple App Store, Google Play Store). Deployment engineers handle the release process, ensuring smooth rollout and compatibility with different devices and operating systems.

\*\*Outcome: \*\* Successful deployment of the mobile app to production environments. Users can download and install the app from app stores.

**\*\*6. Maintenance: \*\***

\*\*Post-Deployment Support: \*\* After the app's launch, the development team provides ongoing maintenance and support. This includes addressing user feedback, fixing bugs, releasing updates with new features, and optimizing performance based on usage analytics.

\*\*Outcome: \*\* Continued user satisfaction, increased app usability, and enhanced functionality over time. Maintenance activities ensure the app remains competitive and aligned with evolving user needs and technological trends.

**\*\*Evaluation of SDLC Phases: \*\***

- \*\*Requirement Gathering: \*\* Effective requirement gathering ensures the project meets stakeholders' expectations and delivers value to end users.

- \*\*Design: \*\* Well-planned design facilitates smooth development and helps achieve a user-friendly and visually appealing product.

- \*\*Implementation: \*\* Proper implementation ensures the app functions as intended, with clean and maintainable code.

- \*\*Testing: \*\* Rigorous testing helps identify and address defects early, ensuring a high-quality and reliable application.

- \*\*Deployment: \*\* Successful deployment ensures the app reaches users and performs well on different platforms and devices.

- \*\*Maintenance: \*\* Ongoing maintenance ensures the app remains relevant, competitive, and capable of meeting changing user needs.