# Assignment 2

## Assignment 2: Case Study on the Implementation of SDLC Phases in a Real-World Engineering Project

### Case Study: Implementation of a Smart Home Automation System

**Project Overview:** The project involves developing a Smart Home Automation System that integrates various home appliances and devices into a single network, enabling remote control and automation. The project follows the Software Development Life Cycle (SDLC) phases: Requirement Gathering, Design, Implementation, Testing, Deployment, and Maintenance.

**Requirement Gathering:**

- **Activities:**
  - Conducted meetings with stakeholders to understand their needs.
  - Collected data through surveys and questionnaires.
  - Defined functional and non-functional requirements.
- **Outcome:**
  - A detailed requirement specification document.
  - Identification of key features such as remote control, energy monitoring, and security alerts.

**Design:**

- **Activities:**
  - Created architectural designs and system models.
  - Developed wireframes and UI/UX designs.
  - Defined hardware and software interfaces.
- **Outcome:**
  - Design specifications document.
  - Prototypes of user interfaces and system architecture.

**Implementation:**

- **Activities:**
  - Coding and integration of software modules.
  - Hardware setup and integration.
  - Development of mobile and web applications.
- **Outcome:**
  - A working prototype of the Smart Home Automation System.
  - Code repositories and documentation.

**Testing:**

- **Activities:**
  - Conducted unit, integration, and system testing.
  - Performed user acceptance testing (UAT) with selected stakeholders.
  - Identified and fixed bugs and issues.
- **Outcome:**
  - Test reports and bug logs.
  - A stable and reliable system ready for deployment.

**Deployment:**

- **Activities:**
  - Deployed the system in real-world home environments.
  - Provided training to users and stakeholders.
  - Set up continuous monitoring and support.
- **Outcome:**
  - Successful installation and configuration of the system.
  - User manuals and training materials.

**Maintenance:**

- **Activities:**
  - Provided ongoing technical support and updates.
  - Collected user feedback for continuous improvement.
  - Managed system upgrades and scalability.
- **Outcome:**
  - Regular maintenance schedules.
  - Improved system performance and user satisfaction.

**Conclusion:** The implementation of SDLC phases in this project ensured a systematic and structured approach, leading to a successful deployment of the Smart Home Automation System. Each phase contributed significantly to the project's outcomes, from capturing accurate requirements to maintaining the system post-deployment.