LAB University of Applied Sciences

Bachelor of Engineering, Industrial Information Technology

Course: Implementing IOT pipeline

SPRINT REVIEW 1

IoT Villa - C:

- Matheus Bueno Magalhães
- Ibrahim Abdulganiy
- Eshaan Ramaul
- Elishama nyeche
- Nformi kingsly

1 Project Scope and Objectives

The goal of this project is to develop a robust system for collecting, analyzing, and visualizing sensor data. The key objectives include:

- Implementing a reliable sensor data collection pipeline.

- Developing a secure and user-friendly browser-based UI for data interaction.

- Ensuring data security and system scalability.

Deliverables

- Fully integrated sensor network.

- Cloud-based data storage and processing framework.

- Web-based dashboard for real-time data monitoring.

- Security protocols for data protection.

2 Project Plan

Our project will be monitored using MS projects. From these preliminary phases, we are going to develop a work breakdown structure with all the detailed task necessary for the realization of the project.

The project will be executed in the following phases:

1. Requirement Analysis and Research (Weeks 1-2)
   o Identify required sensor technologies.
   o Research data security best practices.

2. System Architecture Design (Weeks 3-4)
   o Define the data collection and processing pipeline.
   o Design the UI framework.

3. Development Phase (Weeks 5-8)

   o Implement sensor data collection and transmission.

   o Develop the backend for data processing.

   o Build the browser-based UI.

4. Testing and Debugging (Weeks 9-10)

   o Conduct unit and integration testing.

   o Ensure security measures are in place.

5. Deployment and Documentation (Weeks 11-12)

   o Deploy the system in a production-like environment.

   o Document technical specifications and user guides.

Milestones and Deadlines

- Week 2: Completion of research and requirement analysis.
- Week 4: Finalization of system architecture.
- Week 8: Completion of development phase.
- Week 10: Successful system testing and debugging.
- Week 12: Full deployment and documentation.

Roles and Responsibilities

Team Members:

- Nformi Kingsly - Project Manager and embedded systems (Oversees project progress, manages deadlines, ensures communication among members.
- Matheus Bueno - Lead Developer (Responsible for backend development and system architecture)
- Elishama Nyeche – Developer & Embedded systems
- Eshaan Ramaul - Data Analyst (Handles sensor data processing and analysis)
- Ibrahim Abdulganjy – Developer, R & D lead

3   Setup Communication and Collaboration Tools

- Whatsapp and Discord for team discussions and updates.
- GitHub for version control and collaborative coding: *https://github.com/mayluv17/IOT-villa-C*
- MS Project/Jira for task management and tracking project progress.
- Google Drive/Notion for document sharing and collaborative documentation.

1. **Install and Configure Development Tools**

All team members already have all the necessary software packages needed to execute the project which are as follows:

- Wokwi: for embedded system simulation
- Visual studio: for coding both the embedded systems and API setup
- Azure cloud subscription (Microsoft Azure).
- Node js and influx DB
- Set up the required software and frameworks.
- Ensure compatibility across team members' systems.
- Document installation and configuration steps for reproducibility.
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2. **Define Testing Strategy**

- Specify test cases to validate project functionalities.
- Manual testing will be the main testing method.
- Testing will be done for every sensors purchased and secondly at the end of each milestone achieved.
- Determine testing frequency (unit testing, integration testing, etc.).

- Implement security measures and performance evaluations.

3. Final Deliverables

- Fully integrated sensor network.
- Cloud-based data storage and processing framework.
- Web-based dashboard for real-time data monitoring.
- Security protocols for data protection.