Task 1 : Requirement

Project Name: Hydroponic IoT Monitoring System

A circuit board with wires and switches

AI-generated content may be incorrect.

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# Key Requirements

Based on stakeholder interviews, user stories, and the hydroponic system scenario, the following key functional requirements have been identified:

1. Real-time Monitoring – Continuously monitor water flow rates (inflow and return) and reservoir levels for early fault detection.

2. Automated Alerts – Automatically trigger alerts for low water levels, overflow, and abnormal flow rates.

3. Automatic Pump Shutdown – Automatically turn off the pump when:

- Critical reservoir level warning is triggered

- Trough overflow is detected

- Inflow rate drops below a defined threshold

4. Remote Control – Remotely start/stop the water pump through the dashboard.

5. Data Logging and Historical Analytics – Record historical data for trend analysis and system optimisation.

# User Personas

Persona 1: System Administrator – Alex

Responsibilities: Oversees the hydroponic system and responds to alerts.

Goals: Needs real-time performance visibility and remote-control access.

Pain Points: Lack of early fault detection and remote monitoring.

Persona 2: Maintenance Technician – Samira

Responsibilities: Performs physical checks and responds to alerts.

Goals: Requires prompt fault notifications and historical logs.

Pain Points: Delayed issue identification due to lack of alerts.

# Requirements Prioritisation Matrix

|  |  |
| --- | --- |
| Requirement | Priority |
| Real-time monitoring | Must Have |
| Automated alerts | Must Have |
| Remote control | Should Have |
| Data logging | Could Have |

# Client Questions and Responses

Q: What are the current issues to be resolved?

A: - The pump is noisy and needs to be turned off when students are in the lab.

- Pump gets damaged if the reservoir is dry.

- Leaks in the trough require alerts.

- Monitoring inflow and return water is necessary.

Q: Should the system support mobile notifications?

A: Yes, they would enhance responsiveness.

Q: Preferred cloud platform?

A: No preference, open to recommendations.

Q: Monitor anything else?

A: Yes, fertiliser levels in the water.

Q: Should the system act on fertiliser levels?

A: No, just monitoring is sufficient.

# Project Timeline

|  |  |
| --- | --- |
| Milestone | Timeline |
| Requirement gathering | Week 1 |
| System design | Week 2 |
| Prototype development | Week 3 – 4 |
| Testing and validation | Week 5 |
| Final report and presentation | Week 6 |