Mold Risk Monitor

AI-Driven IoT System Development

Project Plan Preparation (PPP)

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1. Problem & Why It Matters

Problem

Mold growth in indoor spaces often goes unnoticed until it causes health issues or property damage, because it develops gradually under certain humidity and temperature conditions that are rarely monitored over time.

2. Project Focus (Team / Topic)

Project Focus Area

Sensor + Software Application

- Sensors collect environmental data
- Software visualizes patterns and trends
- System supports user decision-making

3. System Overview

1. Temperature & humidity sensor collects data
2. ESP32 logs and transmits readings
3. Web application displays:
    - Trends over time
    - Periods of elevated humidity
4. User interprets patterns to assess mold risk

4. Role of AI in This Project

AI will be used as a **development and learning assistant**, not as a predictive model.

AI will help with:

- Embedded programming
- Sensor integration and debugging
- Web application development
- Explaining unfamiliar concepts and tools

5. Learning with AI (Two Topics)

Hardware Topic (with AI)

- **I2C Communication**
  - Understanding how the AHT10 sensor communicates with the ESP32
  - Using AI to learn datasheets, wiring, and libraries

Software Topic (with AI)

- **Web Application Development**
  - Building a simple web dashboard
  - Visualizing temperature and humidity trends
  - Using AI to learn frameworks and visualization techniques

6. Sprint 1 – Learning & Exploration

What I Need to Learn (Iteration 1)

- How to interface the AHT10 sensor with the ESP32
- How to collect and log data reliably
- How to structure data for visualization

Activities

- Use AI to learn sensor libraries
- Prototype sensor readings
- Test basic data logging

7. Sprint 2 – Feature Development

What I Will Build (Iteration 2)

- Web application dashboard
- Time-based graphs for humidity and temperature
- Basic indicators for elevated humidity conditions

Activities

- Refine data presentation
- Analyze changes over time
- Evaluate system limitations

8. Final Goal

By the end of the semester, I expect to:

- Build a **working IoT prototype**
- Demonstrate it as part of my **portfolio**
- Use it as a foundation for future extensions

Thank you!

Any questions?