

FishHaven

Kelompok 23

LOUIS BENEDICT ARCHIE

2206025224

MUHAMMAD DAFFA RIZKYANDRI

2206829194

MUHAMMAD ABRISAM CAHYO JUHARTONO

2206026050

DARREN NATHANIEL BOENTARA

2206059490

Table of contents

01 INTRODUCTION

04 CONCLUSION

02 IMPLEMENTATION

05 APPENDICES

03 TESTING AND
EVALUATION



01 INTRODUCTION

Why FishHaven?

Traditionally fish farming practices often face many challenges in maintaining optimal water quality, which is critical for the health and growth of aquatic life. Challenges such as fluctuating water levels, unstable temperatures, and poor water clarity which can lead to stress, disease, or even loss of stock. These things will surely negatively impact productivity and profitability. These problems are caused by a lack of real-time monitoring and automation, farmers are required to rely on manual inspections, which are time-consuming, labor-intensive, and not immune to human error. Without timely interventions, deviations in water quality parameters can escalate into severe problems, resulting in reduced efficiency and sustainability of aquaculture operations.



What is FishHaven

FishHaven is a Smart IoT Monitoring System designed to revolutionize fish farming by optimizing aquaculture management through real-time monitoring and automation. It incorporates sensors for water level (Universal), temperature (DS18B20), and turbidity (AB147), transmitting data via Wi-Fi to the Blynk app for remote monitoring.

Farmers receive instant alerts when parameters like turbidity or temperature deviate from safe levels, enabling quick interventions to maintain water quality. By ensuring a healthier aquatic environment, FishHaven enhances efficiency, reduces risks, and promotes sustainable and productive fish farming.

Acceptance Criteria

The acceptance criteria for this project are as follows:

1. FishHaven must be able to accurately measure water levels, providing real-time data to ensure optimal conditions.
2. FishHaven must be able to monitor water temperature precisely, ensuring a stable environment for fish growth.
3. FishHaven must be able to detect water clarity levels, identifying issues such as contamination or waste buildup.
4. FishHaven must be able to send instant notifications to users when sensor readings deviate from the predefined safe thresholds.
5. FishHaven must provide users with an intuitive interface in the Blynk app to view sensor data and system settings in real-time.

Roles & Responsibilities

Roles	Responsibilities	Person
Coding	Developing and debugging software for sensor integration, data processing, and real-time monitoring via the Blynk app, ensuring secure and efficient system performance.	Darren Nathanael Boentara
		Muhammad Daffa Rizkyandri
Building	Assembling and calibrating hardware components, conducting tests, and troubleshooting to ensure proper functionality and seamless integration with the software.	Louis Benedict Archie
		Muhammad Abrisam Cahyo Juhartono
Report	Documenting all aspects of the project, including objectives, hardware and software integration, testing results, and final outcomes, ensuring clarity and comprehensiveness.	All Members

Timeline

Work	November		December	
	3rd Week	4th Week	1st Week	2nd Week
Planning				
Hardware Design				
Software Development				
Integration and Testing of Hardware and Software				
Final Product Assembly and Testing				



02 IMPLEMENTATION

Hardware

ESP32

The core of the system, handling data from sensors and enabling connectivity with the Blynk application.

Water Level Sensor Universal

Measures water levels with high accuracy, helping maintain optimal conditions for fish farming.

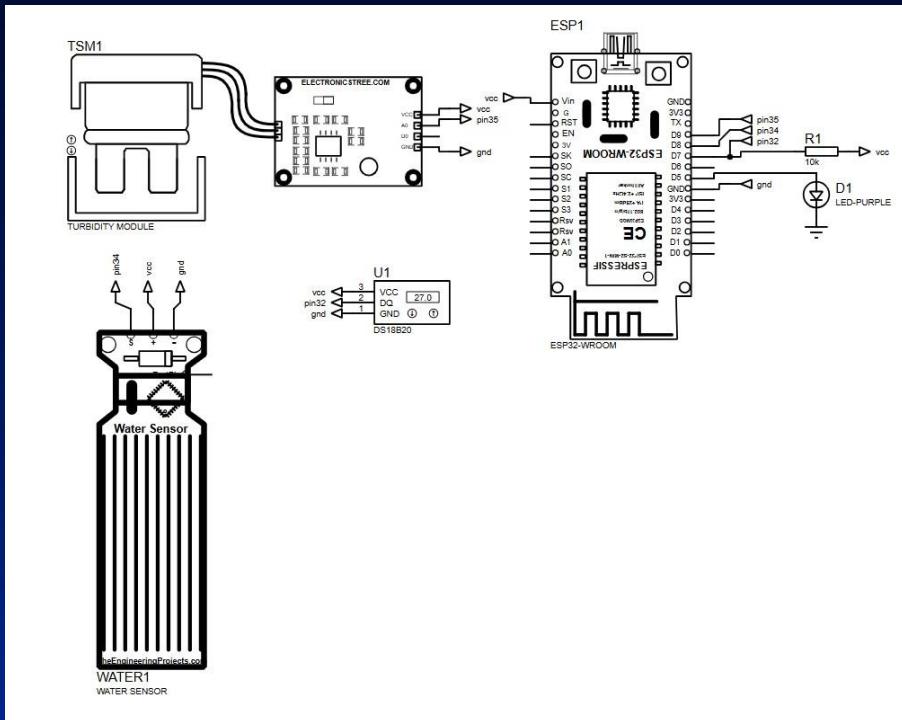
Dallas Temperature Sensor (DS18B20)

Precisely monitors water temperature to ensure a stable and suitable environment for fish growth.

Turbidity Sensor Module (ABI47)

Detects water clarity to prevent issues caused by poor water quality, safeguarding the health of aquatic life.

Schematics



Software

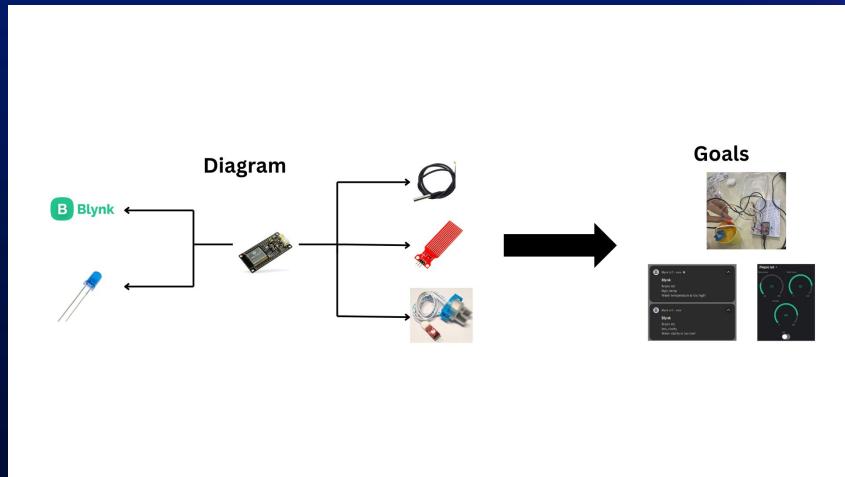
The Fish Haven project is a smart aquaculture management system that combines the ESP32 microcontroller with various sensors and the Blynk app for real-time monitoring and control. It tracks critical parameters like water temperature (using the DS18B20 sensor), turbidity (via the AB147 sensor), and water level to ensure a healthy fish farming environment. The system connects to Wi-Fi and the Blynk server, enabling users to set thresholds, receive alerts, and remotely manage operations through an intuitive mobile interface. This integration enhances efficiency, sustainability, and ease of management in aquaculture.



Hardware & Software Integration

The FishHaven system seamlessly combines advanced hardware and software to create a smart aquaculture management solution. The ESP32 microcontroller acts as the system's core, integrating key sensors like the Dallas Temperature Sensor (DS18B20), Turbidity Sensor Module (AB147), and Water Level Sensor Universal. These sensors monitor critical parameters, including temperature, water clarity, and level, providing real-time data for maintaining optimal conditions.

The system connects to the Blynk app via Wi-Fi, enabling users to remotely monitor and control operations through an intuitive interface. This integration ensures precise monitoring, efficient data processing, and a user-friendly experience, simplifying aquaculture management while enhancing sustainability and efficiency.





03

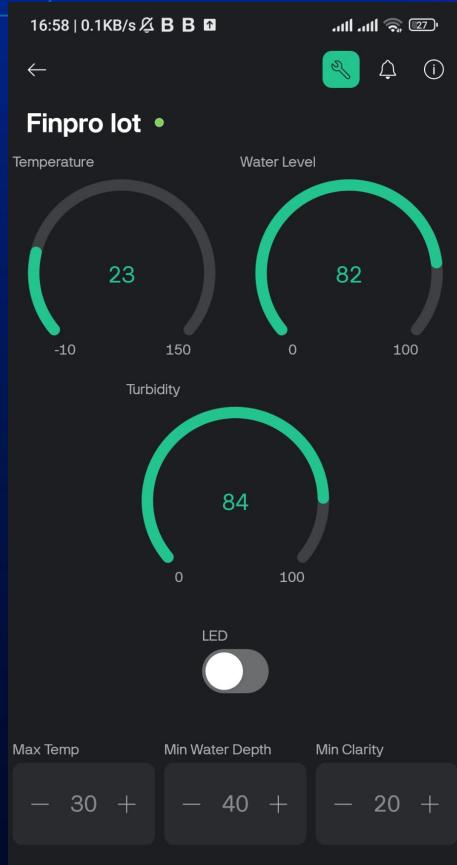
TESTING, RESULTS & EVALUATION

Testing

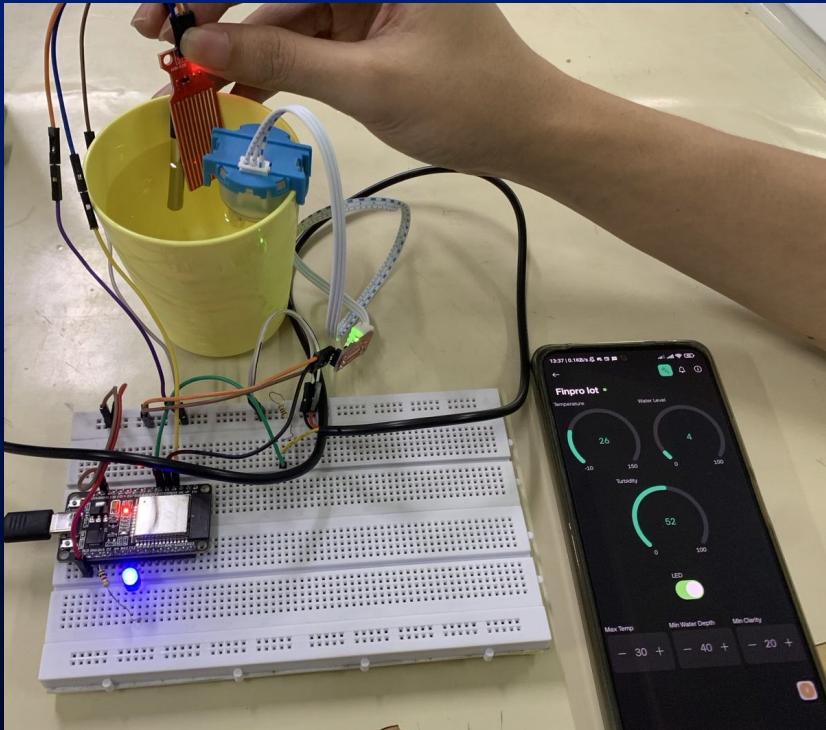
```
==== Sensor Data ====
Temperature: 25.81 °C
Water Depth: 92 %
Water Clarity: 13.00 %
==== Sensor Data ====
Temperature: 25.81 °C
Water Depth: 96 %
Water Clarity: 14.00 %
==== Sensor Data ====
Temperature: 25.81 °C
Water Depth: 76 %
Water Clarity: 15.00 %
==== Sensor Data ====
Temperature: 25.81 °C
Water Depth: 69 %
Water Clarity: 12.00 %
```

```
==== Sensor Data ====
Temperature: 25.87 °C
Water Depth: 19 %
Water Clarity: 52.00 %
Updated Min Clarity: 40.00
```

Testing



Results

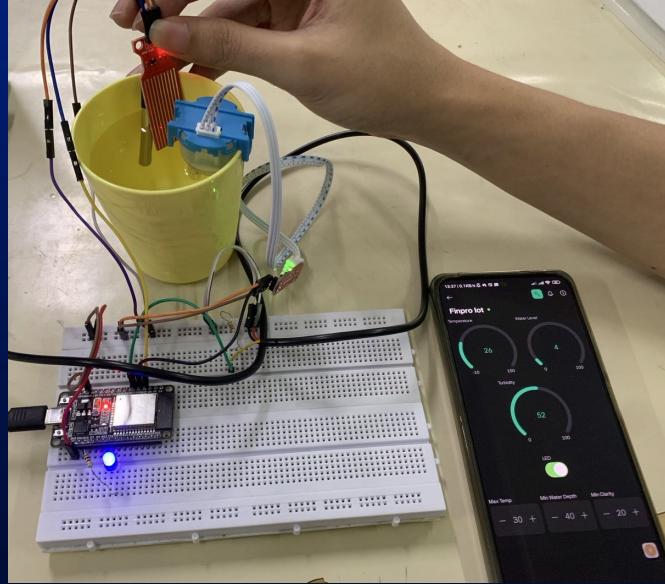




04

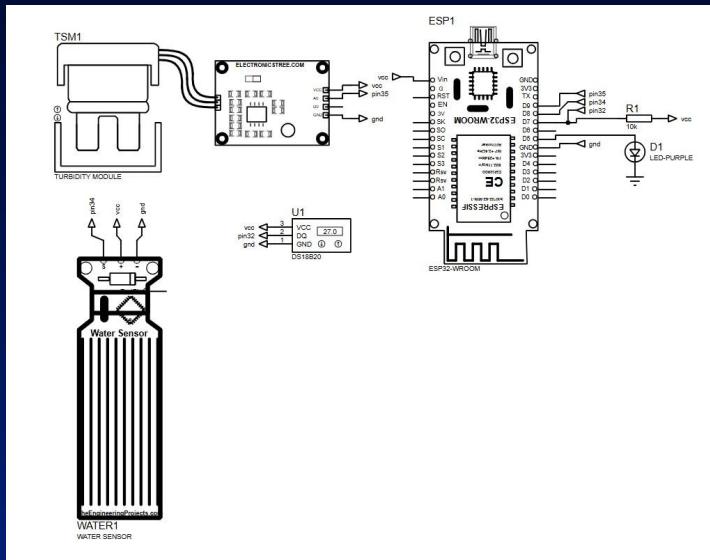
CONCLUSION

The FishHaven project successfully developed a smart IoT-driven aquaculture management system, integrating the ESP32 microcontroller with sensors for water level, temperature, and turbidity to provide real-time monitoring via the Blynk platform. Testing confirmed stable Wi-Fi connectivity, reliable communication, and user-friendly access to sensor data, though the DS18B20 temperature sensor showed inaccuracies due to hardware issues identified through virtual testing. Future iterations will address hardware reliability and introduce automated feeding mechanisms, enhanced sensor calibration, expanded remote control, and advanced analytics to further optimize efficiency and promote healthier aquatic environments.





05 APPENDICES





THANK YOU