SCRIPT NG PINAS

**AQUARIUM**

Good morning, everyone. We are (PANGALAN NATIN) and today, we are here to present our research titled **'Advanced Aquarium Care: A Mini-Computer Device Driven Solution for Real-Time pH Temperature Monitoring and Automated Feeding**.' This project was conducted in collaboration with my co-researchers under the guidance of our research adviser, Sir Ricardo Agustin.

**Introduction**

Let's begin with the introduction. Managing an aquarium is often labor-intensive, requiring constant monitoring of environmental conditions such as pH levels and temperature, as well as consistent feeding schedules. These manual processes are not only time-consuming but also prone to errors, leading to suboptimal conditions for aquatic life. My research aims to address these issues through a comprehensive system utilizing Raspberry Pi technology to automate and streamline aquarium management.

**Statement of the Problem**

The main problem our research addresses is the lack of an integrated automated system for monitoring and managing aquarium parameters. Current manual methods are inconsistent, prone to human error, and can delay necessary interventions, impacting the health of aquatic organisms. Specifically, traditional methods struggle with inconsistent data collection, inefficient response to parameter deviations, and challenges in automated feeding. Our proposed solution integrates real-time monitoring and automation to resolve these issues.

**Objectives of the Study**

The general objective of this study is to develop a Raspberry Pi-based system for real-time monitoring and automation of key aquarium parameters like pH levels, temperature, and feeding schedules.

Our specific objectives include:

1. Implementing real-time monitoring with continuous data collection and real-time alerts.
2. Automating environmental controls, such as adjusting pH and temperature.
3. Establishing an automated feeding system.
4. Enhancing data management through logging and analysis.
5. Designing a unified, user-friendly interface for system management.

**Scope and Limitations**

The scope of this study covers the development, implementation, and evaluation of our system for general aquarium care.

Limitations include:

* Sensor accuracy and the need for regular calibration.
* Initial setup costs and potential complexity in system integration.
* Environmental variability and control precision, which may require further refinement for specific aquarium conditions.

**Significance of the Study**

The significance of this study lies in its potential to revolutionize aquarium management by automating critical processes, improving accuracy, and reducing manual labor. This system not only enhances the care and welfare of aquatic life but also offers a scalable model for environmental management solutions using mini-computer devices like the Raspberry Pi.

**Methodology**

Our research methodology involves the design and implementation of a system that integrates high-precision sensors with a Raspberry Pi for real-time data collection. The system automates feeding schedules and environmental controls based on the monitored data. We conducted multiple trials to evaluate the system's performance in maintaining optimal conditions for various aquatic species.

**Conclusion and Recommendations**

In conclusion, our research demonstrates that a Raspberry Pi-based system can significantly improve the management of aquarium parameters, reducing manual intervention and enhancing the health of aquatic life. We recommend further studies to refine sensor calibration and explore additional automation features, such as water filtration control.