UNIVERSITI TEKNOLOGI MARA

ARDUINO BASED AQUARIUM MONITORING SYSTEM VIA BLYNK APPLICATION

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ABSTRACT

Certain aquatic organisms living in an aquarium such as aquatic plants, fish, and invertebrates need a specific type of PH value of the water and specific water temperature to keep them alive. As such, the job of maintaining the aquarium ecosystem is mainly done manually which can cause significant human error that will resort in massive losses and death of many aquamarine life that are precious. Conventional monitoring solutions frequently don't allow remote access. Through the Blynk app, users of this project may use a smartphone or other connected device to monitor and manage their aquariums from any location. This thesis project an innovative Arduino Based Aquarium monitoring system via Blynk application using Arduino Microcontroller, temperature sensor, PH level sensor and water level sensor as well as a food feeder system. Therefore, to eliminate the possibilities of human error and to act efficiently in maintaining the aquarium ecosystem. This study is conducted to monitor and ease the job of maintaining the stability of the aquarium without human intervention. This project utilizes both hardware and software part to achieve full efficiency. The hardware part uses the 3 sensors to measure the parameters and a food feeder, The data are then collected and displayed on the user's phone enabling real time monitoring and control of the system. This system will help to increase the efficiency of aquarium monitoring procedure so that the number of accidents occurs that result in the death of aquamarine life can be reduce.

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INTRODUCTION

1.1 Research Background

Fish, plants, and invertebrates are just a few of the many aquatic creatures that call aquariums home. They also make for fascinating ecosystems. The health and survival of these aquamarine residents depend on the delicate balance of pH levels, water temperature, and other environmental factors. Historically, keeping aquarium conditions under check has been a labour-intensive and error-prone manual operation that frequently results in large losses and the premature death of priceless aquatic life.

Acknowledging the limitations of traditional monitoring methods, this thesis offers a novel method for managing aquariums. The suggested approach makes use of contemporary technology, notably the incorporation of automated food feeder systems, pH, water level, and temperature sensors, as well as Arduino microcontrollers. The key component of this system is its seamless connectivity via the Blynk application, which lets users use a smartphone to remotely monitor and operate their aquariums from any location.

This project's major goal is to overcome the difficulties that come with maintaining an aquarium by hand. This research attempts to remove human error and improve the overall efficiency of maintaining stable aquarium ecosystems by adopting a technologically enhanced monitoring system. The suggested system combines hardware and software components to measure important parameters and give the user real-time control and data visualization on their mobile device.

To address the issues with manual aquarium maintenance, this project provides an Aquarium Monitoring System based on Arduino that is coupled with the Blynk application. With the use of temperature, pH, and water level sensors and an automatic food feeder, the system is intended to reduce human error and increase overall effectiveness in preserving ideal aquarium conditions. Users may remotely monitor and operate their aquariums thanks to the