IoT-Based Wireless pH Monitoring System for Aquariums

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This capstone project entitled "**IoT-Based Wireless pH Monitoring System for Aquariums**".

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ABSTRACT

Maintaining the right pH level in an aquarium is very important to keep fish and other aquatic life healthy. However, many aquarium owners find it hard to check water quality regularly. This project introduces an IoT-based wireless system that automatically monitors the pH level of aquarium water and alerts the owner when the water becomes unsafe.

The system uses a pH sensor connected to an ESP32 microcontroller. The ESP32 sends the pH readings to a web server using Wi-Fi. A full stack web application was developed using React for the front end, Laravel for the back end, and MySQL as the database. The pH readings are displayed on the website in a simple and easy-to-read format. When the pH level goes above or below the safe range, the system sends an SMS alert to the owner using a GSM module.

This project helps aquarium owners take quick action when water conditions become dangerous. It reduces the need for manual checking and provides both real-time monitoring and instant alerts. The system is a low-cost and user-friendly solution that can be used in both homes and small fish businesses.