ABSTRACT

Ornamental fish is one of the most popular hobbies among the people because of its beauty. Ornamental fish are usually used as a hobby and not infrequently used as a business because the price is quite expensive. Ornamental fish can live in a clean and must be regularly fed so that the fish can grow well. However, for most ornamental fish lovers, this is often an obstacle due to various factors such as being busy at work or too many routine activities carried out so that the ornamental fish become unkempt.

This research created an internet of things (IoT)-based smart aquarium that can feed fish regularly according to predetermined hours, and can measure air temperature and light intensity in the aquarium. In addition, there is an automatic light based on the value of light intensity in the environment around the aquarium. As for this smart aquarium, users can connect to the website so they can monitor water temperature, pH levels, turbidity, light intensity, automatic lights, water heaters and fish feeding times regularly.

This IoT-based smart aquarium uses an ESP32 as a microcontroller, RTC as a scheduler for fish feeding, a servo motor as a controller for feeding fish, an LDR sensor as a measure of light intensity, a turbidity sensor as a measure of turbidity, a pH sensor as a measure of pH levels and a DS18B20 sensor as a gauge. aquarium water temperature. Based on the tests that have been carried out, the accuracy of the pH sensor is 95.95% and the DS18B20 sensor is 98.1%. In addition, the design that has been made has succeeded in sending sensor data and controlling lights, water heaters and fish feed via mqtt so that data can then be displayed and controlled via the website. The interval/delay testing for sending DS18B20 sensor data to the mqtt broker is 2.2 seconds, the pH sensor is 2.19 seconds and the Turbidity sensor is 2.13 seconds.

Keywords: Internet of Things, Ornamental fish, Smart aquarium