ABSTRACT

Ornamental fish farming has become an important commodity for some Indonesians due to its promising economic potential. This activity requires special attention to the aquarium ecosystem, including regular feeding, monitoring water pH, temperature regulation, and maintaining cleanliness to support the growth and health of ornamental fish. In maintenance, the ideal water temperature for ornamental fish, especially goldfish, ranges from 27°C for cold conditions to 27–30°C for warm conditions. However, conventional methods of maintenance still face challenges, particularly in maintaining consistent feeding and monitoring water quality around the clock. This research aims to develop an Internet of Things (IoT)-based aquarium device capable of automating fish feeding using the RTC DS3231 with precision. This system also monitors three main water quality parameters, namely pH, temperature, and turbidity levels in real time, with data displayed through a PHP-based web interface. Monitoring data is stored in a MySQL database and can be accessed via a WiFi network using the ESP8266 module. The test results showed that the automatic feeding system ran well and according to the specified schedule, with a success rate of 100%. The pH4502C sensor was able to accurately read the water pH of 6.06, the DS18B20 sensor detected the water temperature stably in the range of 27–30°C, while the TS300B sensor, when tested in clear water, showed a value of 12.3, which was categorized as cloudy/fairly suitable. The system that was run was proven to be stable with an optimal internet connection on a home scale, as has been tested at the Burayak Shophouse Fish, Pucung.

***Keywords**: Automatic Aquarium, Internet of Things (IoT), Water Quality Monitoring, Feeding, RTC DS3231.*