ABSTRACT

Keeping fish in an aquarium requires attention to regular water requirements such as monitoring the clarity, pH, and temperature of the water. Although water clarity can be monitored with the naked eye, pH and water temperature cannot be measured in the same way. According to research, most aquariums can be a good habitat with a pH level of 6–8, water turbidity below 25 NTU, and temperatures between 21 and 27°C. The maintenance of ornamental fish requires an aquarium water feasibility monitoring system utilizing the Internet of Things. This study describes the implementation of water quality monitoring tools in ornamental fish aquariums containing Neon Tetra Fish using an applications that can be accessed via mobile phones. This system can monitor water parameters such as acidity level using the pH-4502C sensor, turbidity level using the SKU SEN0189 turbidity sensor, and temperature level using the DS18B20 temperature sensor. The sensor is connected to the Arduino Nano microcontroller for sensor data processing and the NodeMCU ESP8266 for data transmission via Wi-Fi. The data is sent to Google Firebase and continued to the application created through MIT App Inventor to display the sensor output value so that it can be monitored remotely, followed by Quality of Service (QoS) testing on the parameters of delay, throughput, and packet loss. The results of the system test obtained a good value, the sensor can function with an accuracy value above 85%. Quality of Service testing was taken from a distance of 1–10 meters every 1 minute with throughput results obtaining an average value of 4727.756 bits/s in the very good category, delay obtained an average value of 1.0747s in the poor category, and packet loss obtained an overall percentage of 0.03408% in the very good category even though there were a few packets lost.

Keywords: Water Quality, Internet of Things, Wireless Sensor Network, Firebase, MIT App Inventor.