ABSTRACT

Fish farming in Indonesia is a kind of profitable entrepreneurship, because the level of fish consumption in Indonesia is quite high. Cultivation of freshwater fish is quite difficult because we must pay attention to the temperature and pH level of the pond. Often all new seeds stocked in fish ponds die all because the pond water has a pH of water that is not suitable for fish. Because of this problem, fish farming is a difficult thing for the decir to be a side business.

Reviewing the problem, it is necessary to have a system that can monitor the pH and temperature of the water to find out the condition of the pond from distance in real time. The system consists of NodeMCU, DS18B20 temperature sensor, SEN0161 pH sensor, servo, and Wireless Sensor Network technology. The system starts by detecting the pond water then the data is sent and displayed. If the pH and temperature match the condition of the fish being cultivated, the servo for feeding can be activated.

To find out the performance of the system that was designed, the authors tested the quality of the network system, and the results of NodeMCU network performance testing using the MQTT protocol at outdoor conditions a maximum of 80 meters. The value of delay, throughput, availability, and reliability is influenced by the number of nodes and distance. The smallest value of delay, availability, and reliability is at 20 meters. The smallest throughput value is at 80 meters.

Keywords: Wireless Sensor Network, microcontroller, pH, temperature.