

## ABSTRACT

*Koi fish (Cyprinus carpio) is a type of ornamental fish that is very popular among people because of the charming color patterns on their bodies and their high price. Koi fish in an aquarium require care and accuracy in maintenance, one of which is knowing the quality of the water in the aquarium which can have an influence on the rate of fish reproduction. Water qualities that need to be considered include pH and water temperature. Internet of Things (IoT) is a technology where devices can interact without human intervention. IoT technology can be used in monitoring systems. Message Queue Telemetry Transport Protocol or MQTT is a communication protocol that connects Internet of Things devices. This research aims to apply the MQTT protocol to the water quality monitoring system in koi fish aquariums and test the performance of the MQTT protocol. The methods used are needs analysis, design, implementation and testing. In this research, the quality of koi fish aquarium water will be analyzed in the form of pH and water temperature as well as delay and packet loss parameters to determine the performance of the MQTT protocol. The results of this research are successful in creating a water quality monitoring system in koi fish aquariums that can monitor pH and water temperature when keeping koi fish by implementing the MQTT protocol and the performance of the water quality monitoring system in koi fish aquariums is Good with a delay result of 0.18266 seconds and the packet loss result is 0.26%.*

*Keywords: Koi fish, MQTT, pH, temperature*