ABSTRACT

The development of technology every time is growing very rapidly, the Internet of Things (IoT) is present to facilitate human needs in carrying out their activities. In this Final Project, aqurium monitoring system design using a microcontroller has been integrated with the wireless chip. This system is designed to monitor the water level when filling the water in the tank using instant messaging as the communication media in the form of chat notifications. With this technology, it is expected to facilitate us in monitoring the filling of water in the aquarium. Thus, excessive water overflow can be avoided and can also save water use.

The test results show that the aquarium monitoring system can function properly. And the user can get information about water level from the instant messaging application. From testing and analysis of ultrasonic sensor measurements show that the farther the distance the sensor is to the object, the longer the time needed for sending data. The MQTT delay delay analysis shows that the average delay of dangerous status has the largest delay of 273.537 ms, while the average value of throughput from standby status has the highest value of 160.139 bps. For testing of the Heroku server Memory Usage is known to be a maximum of 26.8 MB. The longest response time on the Heroku server is 767 ms, while the fastest is 895 ms. In testing and analyzing communication from Wemos to the server until the notification goes to LINE user, the average delay is 220,377 ms, which can be categorized as Good according to ITU-T G.1010 standard with a delay of 150 - 300 ms. While the average throughput obtained is 227.938 bps. Reliability & Availability value when sending information from Wemos to Heroku has a value of 100% with a predetermined scenario.

Key Word : *IoT, Wireless, Microcontroller, Instant Messaging.*