ABSTRACT

The importance of maintaining aquarium water quality needs to be realized by all parties who keep fish because water quality plays an important role for fish. This is what makes fish need adequate water quality in order to maintain their fitness and health of fish. For now, the problem of maintaining the quality of aquarium water has not been resolved effectively and optimally. Therefore to be able to overcome this problem is done with the help of the Internet of Things.

In this design, a Smart Aquarium application is created that can monitor water quality in real-time and control activities in the aquarium. Smart Aquarium is based on a web server that is connected to the internet network and can access through a website that will be accessed by users later. The sensor data in the smart aquarium (ESP32 module) will be sent and parsed to the API (Application Programming Interface), and the parsed data is sent directly to the web server database. Then the data received by the database will be displayed on the website. The database used is MySQL.

The results of functionality testing, all features on the smart aquarium website can be accessed and used properly. The results of the Quality of Service (QoS) test, client-server measurements obtained an average throughput of 2.11 Kbps, with the smallest throughput value of 2.06 Kbps and the largest throughput value of 2.13 Kbps. Client-server measurements get an average delay of 9.15 ms, with the smallest delay value of 7.87 ms and the largest delay value of 13.10 ms. The delay value is measured based on the RTT to ACK delay. The results of the Quality of Service (QoS) test show that the throughput and delay values are at the standard values used by the International Telecommunication Union for Telecommunication (ITU-T) G.1010.

***Keyword**: Smart Aquarium, Web server, Website, Application Programming Interface (API).*