ABSTRACT

In this modern era, many people like to keep ornamental fish because of their beauty and variety. However, at this time people are preoccupied with affairs that require them to leave the house for quite a long time . Then a system of supervision of ornamental fish in the aquarium that can reduce the potential number of stressed fish and diseases commonly experienced by ornamental fish.

In this Final Task is carried out the design of a microcontroller-based system that can monitor acidity levels, water temperature and ammonia levels. For the sensor used, the MQ-135 sensor as an ammonia detector, the dfRobot ph sensor as a water ph detector and the DS18B20 temperature sensor as a temperature detector, and the microcontroller connected to the WiFi network. The ESP-32 microcontroller is tasked with sending sensor data to WhatsApp and Telegram bots.

From the results of the tests that have been done, it is known that the system can work well. In addition, *Quality Of Service* testing is also carried out, on sending data from the tool to the WhatsApp API obtained an average delay of 0.05s and data delivery from the tool to the Telegram API obtained an average delay of 0.25 *s*. For the average throughput of sending data from microcontrollers to WhatsApp APIs obtained at 2026.5 *bps*, and the average *throughput* for sending data from microcontrollers to telegram APIs was obtained at 1683.8 *bps.*

Keywords: WhatsApp, Telegram, *IoT* concepts.