

ABSTRACT

Currently, technological advances make humans need an internet connection that can facilitate human work. One of them in the agricultural sector is hydroponics. Hydroponics is a plant planting technique that uses air as a substitute for soil and pays great attention to nutrients so that plants can grow well. In this final project, the author uses cayenne pepper because it can be planted in the lowlands and highlands. In addition, the need for cayenne pepper will continue to increase in line with the needs of the community and the development of the food industry which makes cayenne pepper a raw material.

With the above problems, a tool is designed that can monitor IoT-based hydroponic plants. IoT can connect a device to the internet network to perform various functions. IoT is suitable to be implemented in various fields, one of which is agriculture. This research uses the ESP32 microcontroller as the brain of the tool. To run ESP32 using Arduino IDE as open source software. The DHT11 sensor functions to determine the temperature and humidity in plants, the TDS sensor functions to measure the level of nutrient solution, the pH sensor functions to measure the pH value (acid-base), and The water level sensor is used to measure the water level in plants. Then the data will be sent using ESP32 and the data will be received by the Blynk Application as a monitoring tool.

The test results show that each tool can work properly according to its function. The results of the QoS parameter delay in sending data from the device to the Blynk application are very good with an average delay of 123,94 ms for the morning test, 144,549 ms for the afternoon test, and 147,895 ms for the afternoon test. The results of the QoS test throughput parameters are also very good with an average throughput of 3601,67 bps for the morning test, 4246,5 bps for the afternoon test, and 4090,67 bps for the afternoon test.

Keywords: Hydroponics, Internet of Things, ESP32, Arduino IDE, Blynk