

ABSTRACT

In this era of increasingly advanced technological development, IoT technology is also growing. This IoT technology is a technology that really helps human work, one of which is in the plantation sector. With the advent of IoT, tasks such as monitoring soil moisture and watering plants, which are important factors for plant growth, can be controlled remotely. Therefore, a smart garden tool was created to do this work so that it can increase crop yields and also make the work of its users easier. The research tool that the author made this time, is designed for vertical garden plants, which is a garden with plants arranged vertically.

The IoT smart garden system that the author designed is made with components such as the NodeMCU ESP32 as the microcontroller, the relay is used as a switch to turn off and turn on the water pump, soil moisture sensor to read soil moisture from plants, water pump to do watering and fertilization, and LCD as a tool to monitor sensor values directly. This system is also connected to Telegram as a monitoring and controlling system. The plants used in this study are Poinsettia (Kastuba) plants, because these plants need adequate monitoring.

The test results obtained from the value of the soil moisture sensor for 14 days obtained an average of 42.3% for sensor, 41.9% for sensor 2, 42.3% for sensor 3, and 43.1% for sensor 4. in 4 certain distances, resulting in a delay value of 3.24 seconds for a distance of 1 meter, 6.79 seconds for a distance of 5 meters, 8.69 seconds for a distance of 10 meters, and 12.92 seconds for a distance of 15 meters. Measurement of QoS parameters using wireshark uses throughput and packet loss as parameters. The value obtained from the two parameters has an index of 4.

Keywords: IoT, Smart Garden, Vertical Garden, NodeMCU, Telegram, QoS.