ABSTRACT

The rapid development of this era has resulted in the amount of land for farming decreasing, especially in big cities. During a pandemic like today, it makes it difficult for people to move freely. The pandemic also has an impact on social life in the community to meet needs due to limitations in going out of the house.

With the development of technology in the agricultural sector, this can be overcome by the hydroponic farming method. Hydroponic systems can createideal conditions for plants. The need for nutrients, humidity, temperature andplant media, and water quality are the most important things to produce quality plants. Rice or which has the scientific name Oryza Sativa is one of the most important cultivated plants and is rich in carbohydrates so that it becomes one of the staple foods by most people in the world, including Indonesia.

In this study, a hydroponic system was created which is equipped with several sensors, namely temperature humidity sensors and plant media, pH sensors, TDS sensors, webcams and is equipped with Arduino Uno ATmega328. ATmega328 is the brain or microcontroller in this Hydroponic system. This system has several stages, namely taking the value of the humidity of the growing media and nutrients in the water as a reference for watering. These data work as input for watering automation. This system is also supported by taking pictures of plant growth using a webcam.

After testing, it is known that the system can work as desired. Quality of Service (QoS) testing for sending sensor data to the website obtained an average delay value of 47.96 ms. While the average throughput value obtained is 2.32 mbps.

Keywords: Internet of Things, Arduino Uno ATMega328, DHT22 Sensor, pH Sensor, TDS Sensor, Water Level, and Relay