

ABSTRACT

A clean and healthy environment can enhance the beauty of the environment. For example the park in the Komplek. In the Komplek Sanggar Indah Banjaran, during the dry season, the growth of the garden is not very good because of the busyness of park officials. So we need a garden watering system that can help garden cleaners in the Komplek Sanggar Indah Banjaran. Therefore, a Smart Garden watering system will be designed that can assist in the garden watering process.

In this final project, a soil moisture sensor will be implemented with MQTT for watering the garden at the Komplek Sanggar Indah Banjaran. This final project uses a Soil Moisture sensor, MQTT (Message Queuing Telemetry Transport) protocol, and Raspberry Pi. The way this system works is, every soil moisture value detected by the soil moisture sensor will be sent to the Raspberry Pi using the MQTT protocol, garden watering is done automatically and manually. During the watering process, the system will calculate the amount of water that has been removed using the Water Flow Sensor. This system is connected to Firebase and the web for monitoring and controlling.

The results of this final project have a successful system functionality of 88.89%, can help cleaners in the process of watering and garden development to grow well, this system can calculate the number of liters of water that has been removed with an average success rate of 88.50% and can measure soil moisture with accuracy values: soil moisture sensor A 80% suitable and soil moisture sensor B 86.67% suitable, can use the MQTT protocol for sending soil moisture values with average publisher delay: Nodemcu A 0.124168 seconds and Nodemcu B 0.205778 seconds, and upload delay of Raspberry Pi to Firebase worth 0.566 seconds.

Keywords: *Internet of Things, Implementasi, Solenoid Valve, MQTT, Water Flow Sensor, Raspberry Pi, Firebase, dan Smart Garden Watering..*