ABSTRACT

Monitoring of weather conditions in an area has an important role. This is due to changes in weather that are erratic every day. Especially in the agricultural sector, farmers need to know realtime and accurate weather information. Therefore, we need a weather monitoring system that can be accessed anywhere by utilizing the Internet Of Things (IoT).

In this final project, the Long Range (LoRa) weather monitoring system is implemented, to monitor weather conditions on large agricultural land, but has a lack of internet network and low signal. This tool uses the Raspberyy Pi 3 B + and the RAK831 module as a gateway, Arduino microcontroller and dragino as nodes, anemometer to measure wind speed, rain sensor is used to measure rain or no rain, DHT11 to measure air temperature and humidity, and BMP180 to measure pressure air. This system is designed to help people, especially those who work in the agricultural sector, so that farmers get good agricultural yields. In addition, this system also aims to facilitate users for monitoring the weather anywhere.

The accuracy of this tool works best when measuring real weather conditions. The research value of the Quality of Service (QoS) is based on differences in distances using the spreading factor (SF) 7-12. The results show that the higher the SF value the distance will be getting further. The RSSI value is good for long distances, namely SF-11 with a distance of 1.3 km and the power 78 dBm moreover it can be seen from the packet loss that is less than 50%. The higher the SF and the distance values are, the delay becomes greater. The worst packet loss value is in SF-12 at a distance of 3 Km because the packet loss is more than 50% sent packet.

Keyword: Internet of Things, Raspberry Pi, Arduino, LoRa, DHT11, BMP180, Anemometer, Rain Gauge.