ABSTRACT

This research discusses the implementation of a monitoring and tracking system for city transportation using the Global Positioning System (GPS) and infrared sensors Four-wheeled vehicles are means of land transportation that have the function to carry goods, humans or others so that they reach their destination faster and facilitate human work. For now, the problem of four-wheeled vehicles in the city of Bandung is still not effectively resolved. Therefore, overcoming these problems can be done with the help of the Internet of Things (IoT).

This research is inspired by the Final Project which discusses monitoring and tracking buses using the Ublox Neo-6M GPS module. In this study, the authors designed a tool that can monitor the position of four-wheeled vehicles in real-time in the form of position coordinates, and the speed traveled, which can save time and find out information on the number of passengers who enter the four-wheeled vehicle. The data is stored in the firebase database. The monitoring and tracking tool is made using the NodeMCU ESP8266 Microcontroller.

The results of this final project, the accuracy of the GPS module obtained an average difference of 6.9 meters and the accuracy of the infrared (IR) sensor is 100% and the maximum distance obtained by the infrared (IR) sensor is 5 cm. The results of the Quality of Service (QoS) test from the tool to the database for an average throughput of 0,828561 *Kbps in the morning, and* 0,413212 *Kbps in the afternoon. The average delay is* 0,686918 *ms in the morning and* 0,305741 *ms in the afternoon. The results of the system availability test are* 89,58% *and the results of the system reliability testing are* 88,37%.

Keyword: *Monitoring, Tracking, Realtime, Internet of Things* (IoT), GPS Ublox Neo-6M, Sensor *Infrared*.