ABSTRACT

The implementation of Bus Rapid Transit through the operation of Trans Metro Bandung (TMB) is an effort taken by Regional Transportation Office of Bandung City to reduce traffic congestion. Throughout 2020, the number of TMB passengers reached 360 thousand. However, the problem faced is the method of monitoring the position and calculating the number of bus passengers is still manual so that the monitoring process becomes less effective and efficient.

Therefore, this final project is a combination of the implementation of the Internet of Things using GPS U-BLOX Module NEO-6M, Logitech C270 Webcam and android application. Of the three components, the author only focuses on designing, building and testing android applications that can be used by Regional Transportation Office of Bandung City to carry out monitoring activities.

At the design stage of this final project, the author creates a Unified Modeling Language (UML) using the Rational Rose application. Then the application will be created using Android Studio. The quality of the application is tested using the ISO/IEC 25010. The test results show that the application is feasible to use, with a percentage of 100% on the functional suitability aspect, 100% on the compatibility aspect and 77.34% on the usability aspect. In testing the performance efficiency aspect, the average CPU usage was 15.87% and RAM was 186.7 MB for the use of the position check feature. For the use of the income check feature, the average CPU usage is 16.17% and RAM is 195.07 MB. Furthermore, network performance measurements were carried out using Wireshark with the average throughput of 19800 bps at 9 am and 20.1667 bps at 4 pm. For the delay measurement, the average value is 80,150 ms at 9 am and 78,071 ms at 4 pm.

Keywords: *Internet of Things, Rational Rose, Bus Rapid Transit, Android, Monitoring, UML, ISO/IEC 25010, Wireshark.*