ABSTRACT

In preventing the spread of COVID-19, patients are advised not to go to health facilities except in an emergency. Telemedicine system application for remote health diagnosis and monitoring is urgently needed. Therefore, the final project focuses on the design and implementation of the telemedicine system for independent health checks using the android application "Self Checkup".

This system was designed using the framework React Native to check the user's health by looking at the data in real-time from three IoT healthcare devices are Weight Scale Device, Body Temperature Device, and electrocardiogram device through NodeMCU ESP32 with Bluetooth Low Energy communication protocol. Pairing between the android application and the IoT device is using an authentication method with a QR code. Then the data received from the IoT device is encrypted with a 256-bit AES algorithm before being sent to the cloud server.

The experimental result shows that the Quality of Service from the three IoT healthcare devices to the Android application with an average delay value is 97 ms, throughput is 2.424 Kbps and packet loss is 0%. The average value of delay from the android application to the cloud server is 203 ms, throughput is 4.624 Kbps and packet loss is 0%. As for the security performance of the 256-bit AES algorithm, the average encryption is 54 ms and AES decryption is 72 ms.

Keywords: *Android Application, QR Code, Internet of Things, Bluetooth Low Energy, Telemedicine, Cloud Server, AES.*