ABSTRACT

A healthy body with an ideal weight is everyone's desire. The ideal weight supports physical appearance and is related to one's health. During the COVID 19 pandemic, people are required to maintain their health, but are restricted to conducting examinations at the hospital. The telemedicine system utilizing information and communication technology (ICT) makes it easy to exchange medical information for early monitoring, diagnosis and prevention of diseases. As a consequence, public health remains monitored and still get health services remotely.

This System designs and implements a smart weight scale with the Advanced Encryption Standard (AES) encryption algorithm in the telemedicine system. The results of weight measurement obtained from the load cell will be processed and encrypted by the ESP32 Microcontroller, and can be displayed on the ILI9255 TFT and the android application. Eventually, the result is stored into the server as a user weight data record.

The system has an accuracy rate of 99.74 %. Data sent in real time to the application server are encrypted using the AES-CBC algorithm, which is coded with the Base64 algorithm. Based on Quality of Service examinations with parameters of delay and throughput, the transmission delay of Bluetooth Low Energy (BLE) is smaller than Wi-Fi, in which average values of delay and throughput of BLE between the device and mobile application are 88,522 ms and 297 bits/s, meanwhile in the Wi-Fi case between the device with the server, the average delay and throughput are 323,980 ms and 3514 bits/s.

Keywords: Telemedicine, Weight, Smart Weight Scale, ESP32, AES.