ABSTRACT

Amid rapid technological advancements, SMK Telkom Bandung is committed to enhancing the efficiency and quality of education. The current student attendance system, which relies on application-based methods, is prone to errors and data delays, necessitating a transition to a more modern and automated system.

This final project aims to develop an RFID-based attendance system at SMK Telkom Bandung, equipped with a LED Matrix Display to provide real-time student attendance information. RFID technology enables automatic and accurate attendance monitoring, while the LED Matrix Display ensures clarity of information.

The system utilizes the internet to send and receive data to Firebase and MQTT databases. Research findings indicate that RFID data is successfully transmitted 100% to the databases and displayed on the LED Matrix Display without errors. When no RFID data is received, the system displays the message "Welcome to SMK Telkom Bandung" along with real-time clock information. Upon receiving attendance data, the LED matrix displays attendance information for 6 seconds before returning to the "Welcome to SMK Telkom Bandung" message and the current time. Distance testing has demonstrated success as the system only requires an internet connection to transmit and display data. The system automatically detects attendance statuses: "Present" (06:00-07:00), "Late" (07:01-14:00), and "Departed" (14:01-17:00). Outside of these times, attendance is recorded as "Outside of Attendance Hours". This system is designed to enhance school operational efficiency and students learning experience.

Keywords: *Attendance, RFID, LED Matrix Display, Telkom Vocational School Bandung.*