

ABSTRACT

The house plays a crucial role in protecting its occupants from criminal activities. As crime incidents continue to rise, greater attention is needed for home security systems. This study aims to design and implement a home security system based on the Internet of Things (IoT), integrating a reed switch sensor and a fingerprint sensor while connecting to the Telegram platform for real-time notifications. This system utilizes the ESP32 microcontroller as the main controller, linking various components, including a reed switch sensor to detect door status, a fingerprint sensor for user authentication, a solenoid as a lock controlled by a relay, and a buzzer as a warning alarm. Testing was conducted with three trials for each of the 30 registered fingerprints in the system. The results showed that out of a total of 90 attempts, 73 fingerprint verifications were successful, while 17 failed. Additionally, the system successfully sent notifications via Telegram with a total delay of 228,710 ms and an average delay of 2,541.22 ms. Based on the test results, it can be concluded that this system is effective in detecting and verifying registered fingerprints with a fairly high success rate. Furthermore, the system can send real-time notifications via Telegram and enhance security by detecting door status using the reed switch sensor.

Keywords: *Fingerprint, Internet of Things (IoT), Home Security, Magnetic Reed Switch Sensor.*