ABSTRACT

In today's digital era, security and convenience in access control are crucial aspects in managing doors and rooms. Smart door lock systems have become an innovative and effective solution to address these needs, providing an additional layer of security through authentication technology while offering better control to users in managing access to a room or building. This project focuses on the design and implementation of a smart door lock system based on RFID, integrated with the Internet of Things (IoT), using an electromagnetic lock as the locking mechanism. In addition to automatically unlocking the door, this system also functions for attendance recording in a laboratory room. By using RFID cards owned by students and lecturers, the system not only facilitates easy access to the lab but also automatically records their presence. The research results show that the system works effectively, with a success rate of 98% in reading RFID cards at a distance of 2 cm to 4 cm. The relay test showed that the electromagnetic lock can quickly lock and unlock the door once a valid card is scanned. Moreover, the system successfully sends attendance data in real-time to Firebase via the NodeMCU ESP8266, making the system both efficient and effective for access management and attendance tracking. This system is designed to offer a simple, reliable solution that can be implemented in various environments such as homes, offices, or rooms with specific access security needs. The advantages of this system include RFID-based authentication, enhanced security through the use of an electromagnetic lock, and improved access control for the owner or users of the space.

***Keywords**: RFID, scanning, IOT, EM Lock, Smart door lock*