

ABSTRACT

The main problem faced in the storage system of goods in the campus laboratory environment is the use of conventional methods in the form of manual keys, which are vulnerable to loss, duplication, and less efficient in management. This condition becomes an important issue because the laboratory is a place to store high-value tools and items, so it requires a reliable security system that can be accessed easily. This topic is both interesting and important because the application of security systems based on the Internet of Things (IoT) is growing and is able to offer modern solutions in managing access that is more secure, practical, and controlled. The solution offered is the development of a smart LOCKER system called TELOCKER, which combines dual authentication using RFID and PIN Keypad, and is connected to the Blynk platform for remote monitoring and control. The system is designed using an ESP32 microcontroller, RC522 RFID module, 3x4 keypad, infrared sensor, and LCD display. The system is also equipped with an EEPROM for user data storage, as well as a buzzer as an error warning. The implementation results are three LOCKER units with 20 RFID cards. Test results show TELOCKER can automatically unlock with a response time of under 1 second, deny access to unregistered cards, and record status and history in real-time. The user satisfaction survey showed the following results: ease of access 95%, user authentication 90%, ease of maintenance 92%, ease of application 93%, and overall satisfaction reached 94%. These results prove the system is safe, practical, and stable in laboratory operational conditions. TELOCKER is expected to support automation innovation and can be developed with advanced security features in the future.

Keywords: *Authentication, Blynk, ESP32, Internet of Things, Keypad, RFID*