A SMART LOCK SYSTEM FOR HOME DOORS BASED ON THE INTERNET OF THINGS USING RFID, KEYPAD, AND VIBRATION SENSOR

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ABSTRACT

The development of Internet of Things (IoT) technology has opened up new opportunities in home security systems, one of which is the implementation of smart lock systems. This research aims to design and implement an IoT-based smart lock system that integrates RFID technology, a keypad, and a vibration sensor to improve security and ease of access at home doors. This system uses an ESP8266 microcontroller as its main component, connected to the Telegram platform for real-time notifications. Users can open the door using an RFID card or enter a PIN via the keypad, while the vibration sensor detects vibrations resulting from burglary attempts and triggers alarms and alerts via Telegram. Test results show that the system is able to distinguish between valid and invalid input, detect vibration intensity, and provide appropriate responses via a buzzer, LCD display, and IoT notifications. This system successfully fulfills its function as a modern home security solution with remote monitoring and ease of use. This research also opens up opportunities for further development through the integration of biometric authentication and cloud-based data storage.

Keywords*: Internet of Things, RFID, keypad, vibration sensor, smart lock, home security, ESP8266*