

ABSTRACT

This research aims to design a secure safe security system using a combination of ESP8266 NodeMCU, RFID, One Time Password, and Telegram Bot. The main components utilized include ESP8266 NodeMCU as a microcontroller, Keypad as a password input, and RFID as a tag reader. Additionally, the research employs a 12V power supply and a 12V Solenoid lock as the safe locker. Integration with the Telegram Bot as a notification medium serves as an additional feature strengthening the system. The primary functionality of this device is to secure and monitor every interaction with the safe and dispatch notifications via Telegram. In cases where an unauthorized user attempts access, the RFID sensor will be temporarily disabled for several minutes as an additional security measure. The use of One Time Password as a second security layer enhances the overall security of the system. Consequently, safe owners can monitor the safe's condition in real-time through Telegram Bot notifications, providing an additional layer of security for stored valuables. The research uses four parameters, namely, RFID authentication, OTP uniqueness, OTP delivery delay, solenoid lock response. The results showed that the system can recognize the registered RFID, each OTP has a unique combination, the average delay of sending OTP is 8.74 seconds and Solenoid lock can open if the inputted OTP matches the OTP created by the system and does not unlock when the OTP is wrong.

Keywords: *ESP8266 NodeMCU, One Time Password, RFID, safe, Telegram BOT.*