

DESIGNING AND DEVELOPING AN IOT-BASED DOOR LOCKING AND ELECTRICAL APPLIANCE CONTROL SYSTEM

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ABSTRACT

The advancement of the Internet of Things (IoT) has significantly improved efficiency and security, particularly in smart home systems. This study presents the design of an IoT-based door locking and electrical appliance control system that can be managed remotely via a smartphone. The system utilizes the NodeMCU ESP8266 microcontroller, the MFRC522 RFID module for access authentication, and the Blynk application as a user interface. It enables automatic door locking and unlocking via RFID, as well as wireless control of lights and solenoids. Testing results show that the system operates reliably through both RFID and mobile app interfaces, with the added benefit of an automatic relay cutoff feature that enhances power efficiency. This solution offers a practical, secure, and energy-efficient approach to managing IoT-enabled home environments.

Keywords: IoT, NodeMCU, RFID, Blynk, Relay, Solenoid