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IoT Based Smart Medicine Reminder

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Abstract: *The IoT-Based Smart Medicine Reminder with RFID Authentication is a healthcare solution designed to ensure that patients take their medications on time and prevent unauthorized access to medicines. This system is particularly useful for elderly individuals, chronic disease patients, or individuals with memory impairments, where regular medication intake is crucial for effective health management. Traditional methods, such as pill boxes and alarm reminders, lack the capability to authenticate the person taking the medication or track real-time adherence remotely. This project integrates Internet of Things (IoT) technology with Radio Frequency Identification (RFID) to provide a smart, secure, and user-friendly medicine reminder system.*

The proposed system is composed of several key components: amicrocontroller (NodeMCU or ESP32), RFID reader, medicine storage compartments, LCD display, buzzer alarm, andWi-Fi connectivity. Each medication compartment is assigned a time schedule, and the system triggers an alarm and displays instructions when it is time to take a particular dose. The system leverages RFID authentication to ensure that only authorized users can access specific medicines, preventing misuse or unauthorized access, which is crucial in multi-patient environments or homes with children. The IoT integration allows the system to send real-time notifications to a caregiver or family member via a mobile application (such as Blynk or a custom app). It also logs the medication intake in the cloud for tracking adherence and generates alerts for missed doses.

When the scheduled time arrives, the system activates a buzzer and displays the relevant medicine details on the LCD screen. The user must authenticate with theirRFID card or tag to confirm their identity before accessing the medication compartment. Upon successful authentication, the system records the time of intake and stores the data in a cloud database. If the user fails to take the medicine within a predefined period, a reminder is sent to the caregiver through the mobile application, ensuring prompt follow-up.

This system offers a high degree of flexibility and customization, allowing different medication schedules to be programmed based on individual requirements. The IoT functionality enables remote monitoring of adherence, making it easier for healthcare providers or caregivers to oversee patients. This is particularly beneficial for elderly individuals living independently or patients requiring regular monitoring.

In addition to the reminder and authentication features, the system can generate reports to help doctors evaluate medication adherence over time, thereby improving treatment outcomes. The use of RFID authentication makes the system reliable for multi-patient settings, such as nursing homes, where medication management is critical. The project also has scope for further enhancements, such as integrating a camera module for facial recognition or connecting with smart pill dispensers for automated medicine delivery.

In summary, the IoT-Based Smart Medicine Reminder with RFID Authentication is a comprehensive healthcare solution that addresses critical challenges in medication management. It offers timely reminders, secure authentication, remote monitoring, and adherence tracking, ensuring that patients take their medications on time while minimizing the risk of misuse. This system holds great potential for improving healthcare outcomes, particularly for individuals with chronic conditions, elderly people, and those requiring strict medication regimens. Through the combination of IoT technology, RFID security.

Keywords: IoT-Based Smart Medicine Reminder

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