IOT BASED SMART MEDICINE BOX

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Node MCU, Blynk cloud, IR Sensor

Introduction:

Utilizing the power of the Internet of Things (IoT) and the computational capabilities of the Node MCU, the system features a compact and intelligent device that goes beyond traditional pill organizers**.**

- The Smart Medicine Box employs a servo motor for precise medication dispensing, an IR sensor for proximity detection, and an LCD for display.
- The user interface is enriched through the integration of a Bylnk application, allowing for remote monitoring and control.
- Auditory feedback is facilitated by a speaker and buzzer, providing timely medication reminders and system status alerts.
- The Node MCU serves as the central processing unit, coordinating various functionalities a motorized mechanism for dispensing the correct dosage, and connectivity options (like Wi-Fi or Bluetooth) for real-time communication with a mobile app or cloud- based platform.

Objectives:

The objective of an IoT-based smart medicine box is to enhance medication management and adherence. The smart medicine box can remind users to take their medication at the right time through notifications sent to their smartphones or other connected devices. For individuals with chronic conditions or those requiring close monitoring, IoT-enabled medicine boxes can provide real-time data to healthcare providers, enabling remote monitoring

Proposed System Design

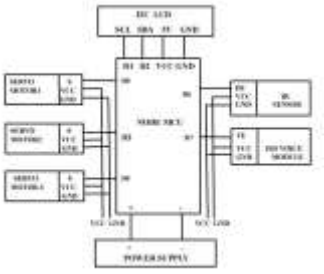

Fig. 1: Detailed Block Diagram

Fig. 1 shows the detailed block diagram of IOT based smart medicine Box

- The proposed system is a holistic approach to medication management, combining cutting-edge technologies and userfriendly design.
- The Node MCU serves as the central intelligence, enabling seamless communication with the blynk app.
- This connectivity allows for remote monitoring, ensuring that patients' medication adherence can be tracked and adjusted as needed.
- This adds precision to medication schedules, eliminating the guesswork associated with traditional methods.
- A speaker acts as an audible reminder, alerting patients when it's time to take their medication.

- The inclusion of a servo motor enhances accessibility by automating the process of opening the dispenser cap.
- This feature not only simplifies the user experience but also addresses potential issues for patients with limited dexterity or mobility. The LCD is a addition, displaying medication parameters.
- This project addresses these challenges head-on, providing an automated and intelligent solution that ensures medication.

Methodology:

- The system begins by configuring a delay based on the user's specific medication times throughout the day.
- When it's time for the user to take their medication, the system activates a voice alert and displays the names of the medications on an LCD screen, serving as a reminder.
- To ensure accuracy, only the relevant medication box caps are opened at each scheduled timThe system checks if the required medication is available in the opened box.
- If tablets are present, the box remains open for a set duration, allowing the user to access the medication; otherwise, an alert is displayed indicating that the tablets are empty.
- Simultaneously, the system notifies the care taker via the Blynk application, providing real-time updates on medication availability.
- Once the designated retrieval time ends, the medication boxes automatically close, and the system prepares for the next scheduled medication interval, maintaining a seamless and reliable support system for the user's medication regiment
- By customizing the schedule according to individual needs, the smart medicine box accommodates variations in medication timing and dosage frequency.

Conclusion:

In conclusion, the IoT-based Smart Medicine Box project represents a significant stride towards revolutionizing medication management through the integration of cutting-edge technologies. By leveraging the power of the Internet of Things (IoT) and the computational capabilities of the Node MCU, this project offers a comprehensive solution to address the complexities of medication adherence. The seamless coordination of components such as the servo motor, IR sensor, LCD and speaker results in an intelligent system that not only dispenses medications accurately but also communicates effectively with users. As we move forward, the IoT-based Smart Medicine Box project exemplifies the convergence of healthcare and technology, emphasizing the importance of innovative solutions in enhancing patient well-being.

Scope for future work:

- Machine Learning for Predictive Adherence: Incorporate machine learning algorithms to analyze user adherence patterns and predict potential deviations from medication schedules.
- This predictive capability can provide proactive interventions, personalized reminders, and recommendations to improve overall adherence.
- Expandable Medication Database: Develop a mechanism for easily expanding and updating the medication database.
- This could involve incorporating machine-readable codes (such as QR codes) on medication packaging, enabling automatic identification and entry into the system.
- Continued research and development in these areas will contribute to the evolution of the IoT- based Smart Medicine Box, making it a more sophisticated and impactful solution.

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