



SMART PILL BOX USING IOT

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ABSTRACT

There can be a lot of individuals out there who need constant help – may it be our elderly people, family members, the ones who have special needs. These people apparently need the kind of care which most busy family members cannot provide. Some people may forget to take the medicines at the correct time and can forget the medicines which they have to take. So in order to help them with this liability we have developed this project. The people are provided a smart med box on which there will be a display which notifies the people about the medicine. Along with this we can alert them with an alarm and light indications. So that even if the person is sleeping or busy with some work the alarm helps in alerting him. to confirm that the person has taken that medicine or not we can put one button at the opening end of the pill box. so when the person tries to open the box the button is pressed and the alarm will be off only if the buzzer is pressed. by this data we can tell that the person has taken the medicine. It comes with one more feature that when the person is feeling uneasy or in case of some emergency he can notify the people by pressing the button on the device. There are different buttons, one is used to notify the doctor and the other one is used to notify family members about the emergency. **Key words:** Node MCU, Pill box, Buzzer, Reset Button, Mobile App

INTRODUCTION

Currently, worldwide aging and regularity of persistent diseases are flattering a broad concern. Numerous countries are undergoing hospital restructuring by reducing number of hospital beds and escalating home healthcare, which is envisioned to perk up health care

quality, has fascinated wide-ranging attention. In order to track the physical status of the elderly and, in the meanwhile, to keep them healthy, the proposed idea will be helpful. IOT expands the Internet into our everyday lives by wirelessly connecting various smart objects , and will bring significant hangs in the way we live and interact with smart devices. The new wave in the era of computing will be outside the sphere of the conventional desktop.

Internet of Things (IOT) is a network where many of the objects that surrounds us will be networked in one form or another. By using this technology the health statistics of medication are observed. In this process of encryption the schedule data or doctor's prescription are send to pill box through mobile app. The LEDs are placed for indication and buzzer for alarm alerts and reset button is used to count for medicine in cloud platform. The existing techniques to the market for the reminder include a pill box. But this does not help in checking the medicine. This proposed idea is valuable solution to the medical non-compliance problem. The innovation scheme to help patient keep trail of their medicine consumption through a series LED alarm indicator signal and audio alarm indicator signals.

The main objectives of the project are:

- Dispense of medicines from pill box at scheduled time.
- Medical alerts to care taker and retailer
- Online report generation of medicine
- Real-time health statistics monitoring of medicines
- Configuration data is send through mobile app

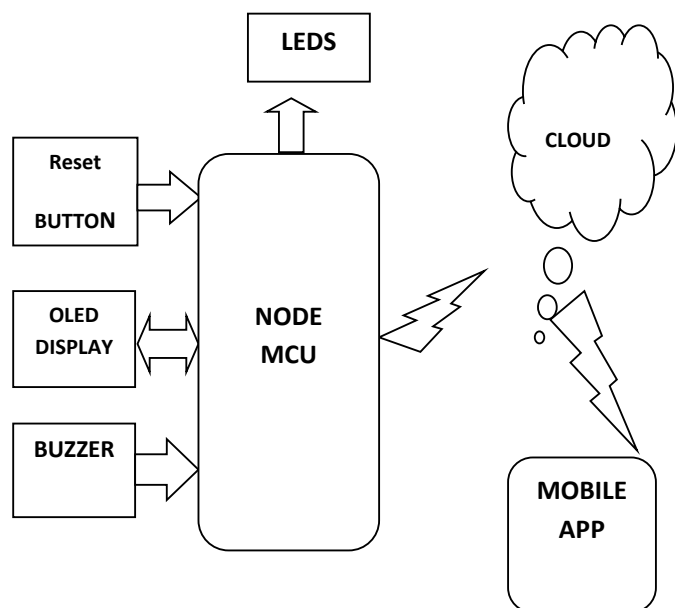
BLOCK DIAGRAM

Fig 1: Working Principle of Smart pill box

INTERNET OF THINGS

The Internet of Things (IOT) is an important topic in technology industry, policy, and engineering circles and has become headline news in both the specialty press and the popular media. This technology is embodied in a wide spectrum of networked products, systems, and sensors, which take advantage of advancements in computing power, electronics miniaturization, and network interconnections to offer new capabilities not previously possible. An abundance of conferences, reports, and news articles discuss and debate the prospective impact of the “IOT revolution”—from new market opportunities and business models to concerns about security, privacy, and technical interoperability.

IOT systems like networked vehicles, intelligent traffic systems, and sensors embedded in roads and bridges move us closer to the idea of “smart cities”, which help minimize congestion and energy consumption. IOT technology offers the possibility to transform agriculture, industry, and energy production and distribution by increasing the availability of information along the value chain of production using networked sensors. However, IOT raises many issues and challenges that need to be considered and addressed in order for potential benefits to be realized.

PROPOSED METHOD

To ensure the people consume medicines as per schedule time table, here we developed a smart pill box. The schedule data/configuration data is send to the pill box through Mobile app. The smart pill box contains Node MCU, OLED display, LEDs, buzzer, buttons.

The OLED are used to display the commands in pill box by Node MCU. Node MCU is inbuilt with Wi-Fi module. The Wi-Fi module is configured as PILL BOXAP, such that the IP address is generated in local network.by pairingthe IP address generated by PILLBOXAP to the Mobile App. The configuration data is send to the smart pillbox when the configuration is in ON mode. The concerned LED glow with buzzer at schedule time

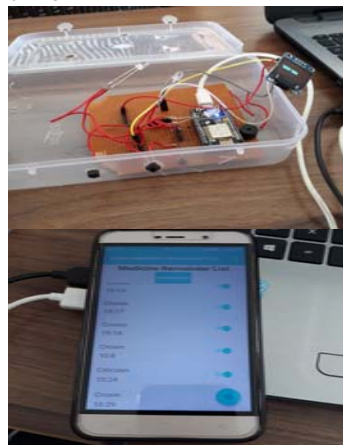


Fig 2: pill box with hardware connections

The configuration data from Mobile App is send to the EEPROM with an IP address and to cloud platform. The configuration data checks with the automated time and matching data will respond to the glow of LED and buzzer. By resetting the button the tablet details are uploaded to the cloud platform and excel sheet is provided to know the consumption detailed number of tablets consumed by a person. If the person or elderly people doesn't reset button at schedule time the alert/SMS is send to the user.

HARDWARE MODULES

- Pill box
- Node MCU
- OLED display

- buttons
- LEDs
- Buzzer

Node MCU (ESP8266-12E)

ESP8266 is an impressive, low cost WiFi module suitable for adding Wi-Fi functionality to an existing microcontroller project via a UART serial connection. The module can even be reprogrammed to act as a standalone Wi-Fi connected device—just add power! The feature list is impressive and includes: 802.11 b/g/n protocol Wi-Fi Direct (P2P), soft-AP Integrated TCP/IP protocol stack.



Fig 3: ESP8266-12E board Description

SOFTWARE MODULES

- ARDUINO IDE
- Android Studio(Mobile App)

ARDUINO IDE

ARDUINO is an open-source prototyping platform based on easy-to-use hardware and software. The ARDUINO Integrated Development Environment - or ARDUINO Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the ARDUINO and GENUINO hardware to upload programs and communicate with them.

Android Studio

Android is a software platform and operating system for mobile devices, based on the Linux kernel, and developed by Google and later the Open Handset Alliance. It allows developers to write managed code in the Java language, controlling the device via Google-developed Java libraries. The unveiling of the Android platform on 5 November 2007 was announced with the founding of the Open Handset Alliance, an association of 48 hardware, Software, and telecom companies devoted to advancing open standards for mobile devices.

RESULTS



Fig 4: Indication of Slot in Medbox



Fig 5: Detailed no of tablets consumed by a person in cloud



Fig 6: messages for emergency and after tabulate taken

ADVANTAGES

- Monitoring of health statistics Medicine, alarms and medication non-compliance control.
- Emergency and medical management services.
- Wireless identifiable Embedded healthcare systems.

CONCLUSION

Integrating of Hardware modules Node MCU, ,OLED display, Buzzer, push Button and Mobile application to PILL Box and every module has been placed carefully to give reasonable output, thus contributing to the best working of the unit. This system assures the safety of the people and also prevents the wrong dosages. It reduces the effort in remembering medicine and people will get the schedule of the medicine containing medicine name timing and give the information if person is emergency.

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