Smart Medicine Box Using IOT

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Abstract—**Wrong medication may leads to serious diseases which stays for lifetime due to which people have to take the medicines for a lifetime. To avoid such problems' medication or reminder system is needed which will help people to take medicines on time by reminding them. Our smart medicine box will remind people to take medicines on time using alarm, light, and message for old age people or who are suffering with disease like amnesia. Our smart medicine box is based on the concept IOT (Internet of things).This paper describe the overview of smart medicine box which act as assistive device to avoid non-compliance of medicine. It consists of a hardware box of compartments for a week (per day 3 time*7 days of week=21) as well as android application for informing the family member and respective doctor whether patient take medicines or not.**

Index Terms— **smart medicine box, old age patient, real time clock, IR sensor**

I. INTRODUCTION

This project is based on the IOT (Internet of things). Our medicine box is targeted on user who regularly take drugs or vitamin supplements. The smart medicine box is built for the seven days and four different time in a day, so the user can manage to take medicine easily. The provided medicine box is programmable so user can set the time when to take the medicines, name of medicine, and quantity of medicine. After installing medicines into smart medicine box, the box will remind the user through the sound, light and message. Our smart medicine box confirm that user take the medicine or not. If user miss to take medicine the medicine box send acknowledgement message to the respective doctor or family member. Smart medicine box provide flexibility to the user to take the medicines. If your paper is intended for a conference*, please contact your conference editor concerning acceptable word processor formats for your particular conference.*

II. LITERATURE SURVEY

In conclusion, this device can help and give advantage to the all human beings which are faced regular health problems. The main motive for this innovation is to monitor the medicine intake for intrinsic patients. It is practical in the morning and evening as well as used at night. This device is controlled by using sensor and timer system, so the patients does not need to remember the schedule of medicines. This system is a very good to apply in the hospital (where nurses are not provided) as well as homes because it can do the job of nurse which making the patients more comfortable to stay at the homes. Present time will be saved in RTC module. So at the time of taking medicine system generate Notification sound and display the Bright light in certain pill boxes. So, patient can know the specific box from which he has to take out medicines.

Many peoples are forget to take medicines on time. The model of smart medical box is a single board computer based device for peoples who suffer with short term memory loss. It is an alarm based device that helps in reminding patient about their medicine. The use of Internet of Things (IOT) concept and health sensing technology make diagnosis easier and convenient for the doctors as well as the patients [1]. This paper presents overview of a device for monitoring non-compliance of medicine by providing a single platform and a closed loop connection between patients, doctors, and pharmacies. This work gives insight into mechanical design, system architecture and design of android application, and integrating the physical system to cloud. The architecture used is secure one as it uses end-to-end encryption for sending sensor data [2]. This device helps in maintaining one-time medication to the patients, and help increasing the life expectancy.
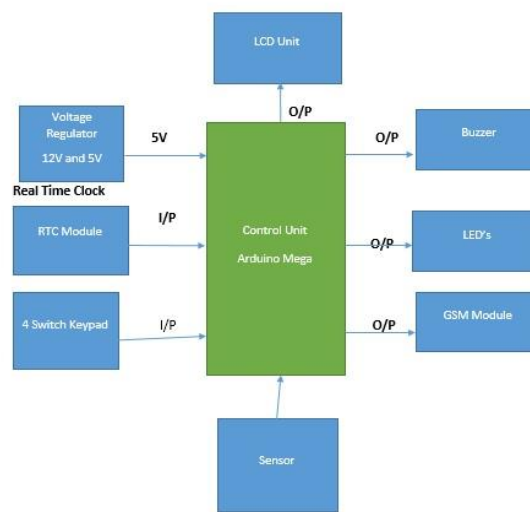
III. SYSTEM ARCHITECTURE

Fig. 1. Smart Medicine Box Architecture

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390

Generally, there are some regular patients who take medicines thrice a day for them it will be helpful to use this smart medication system. Now a day's most of people are not having time from their busy schedule for that purpose, we have developed this system for reminding people about their medicine. In this we have installed the battery for providing Power Supply, and the working flow of the system is like at first the user has to set the timer for taking medicines as per the guidelines by a doctor (twice or thrice a day) and for that there is a keypad. There are 21 Sub-Compartment in the system as 7*3=21 (7 for week days*3 per day). And in each compartment we have installed sensors and small LED's. And at the particular time set by the user the system will start buzzer sound to remind that patient to take the medicines and it will also indicate from which compartment the medicines should be taken by the LED. And the later system checks whether a patient has taken the medicines or not with the help of sensors. If the patient doesn't take medicine system will inform this to the siblings and the doctor of that patient using GSM Module by sending SMS.

IV. COMPONENTS

1) Voltage Regulator

A voltage regulator is an electricity regulation device designed to automatically convert voltage into a lower, usually direct current, and constant voltage. The term may refer to a voltage regulator integrated circuit, which is often found in computers and other electronic devices that are plugged directly into an alternating current wall outlet but require only a small DC voltage. The term can also refer to voltage regulation or power module, such as cell phone and laptop chargers. Some regulators do not increase or decrease a device's voltage, but just ensure output value.

2) Real time clock

A real-time clock is an artillery powered clock that is included in a microchip unit in a computer. This microchip is usually separate from the microprocessor and is often referred to simply as "the CMOS". A small memory on this microchip stores system description including current time values stored by the real-time clock. The time values are for the years, month, date, hours, minutes, and seconds.

3) GSM Module

A GSM module is a circuit that will be used to create communication between a mobile device or a computing machine and a GSM system. .These modules consists of a GSM module used by a power supply and communication interfaces for computer. A GSM modem can be a dedicated modem device with a USB it can be a mobile phones that provide GSM modem efficiency.

4) LED

IT stands for "Light-Emitting Diode" An LED is an electronic device that emits light when an electrical current is passed through it. Early LEDs produced only red light, but Recent LEDs can produce several different colours, including red, green, and blue (RGB) light. Latest advances in LED technology have made it possible for LEDs to produce white lights as well.

5) Buzzer

A buzzer is an electrical device that is used to make a sound. For example, to attract user's attention.

6) IR Sensor

An infrared sensor is an electronic device which emits in order to sense some object of the surroundings. An IR sensor can measure the heat of an object as well as detects the motions. These types of sensors measures only infrared lights, rather than emitting it that is called as a passive Infrared sensor.

7) Ultrasonic

An ultrasonic sensor is a device that measures the distance to an object using ultrasonic sound waves. An ultrasonic sensor uses a transducer to transmits and receive ultrasonic pulses that relay back data about an object's proximity. High-frequency sound waves reflect from boundaries to produce unique echo patterns.

8) Proximity

A proximity sensor is an electronic sensor that can detect the presence of objects within its zone without any physical contact. In order to sense thing, the proximity sensor emits a beam of electromagnetic radiation, usually in the form of infrared light, and senses the reflection in order to determine the thing's proximity or space from the sensor.

9) Hard ware requirement

1. RTC(Real time clock)
2. LCD 16x2
3. LED's
4. Keypad
5. Buzzer
6. GSM Module
7. IR Sensor's
8. Register
9. Capacitor

10) Software requirement

1. Operating System:- Windows 7 or more
2. Technology:- C/C++
3. IDE:- Arduino IDE

V. CONCLUSION

The goal of our project is to offer an assistive device to the people who take regular pills. This device helps the people to take the pills as per the medicine course properly. This gives easy connectivity between doctor and patient.

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