SMART MEDICINE BOX

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Abstract: Elder people are mostly depend on medicines in their day to day life. Taking medicines irregularly and taking wrong medicines can cause their life. So it is very important to take medicines on time without anyone's full assistants. Poor eyesight is a major problem for medicine mis dosage. Our paper is Arduino based programmable pill box which gives a indication to elder and blind people through alarm and LED indicators. It reminds people to take correct medicine at a specific time programmed by their family members. It consists of three different boxes so that pills can be specified for three different times of day.

Index terms: Pill Box, Mis Dosage, Remainder, Arduino.

I. INTRODUCTION

The medications you have been prescribed are more likely to be effective if you follow your doctor's exact instructions on when and how to take them. Your doctor has prescribed a particular medication because he or she feels it will treat your condition in a specific way. .However. This medication is more likely to be effective if you follow your medication course as prescribed. Failure to do so could, in some circumstances, have life-threatening consequences Common medication mistakes done by Elderly people that they need to take several tablets each day and if they are living on their own they may not always remember. It may be difficult for them to remember the prescribed schedule, particularly when taking multiple medications at different times of the day or having to take a medication on a different schedule, such as once a week. Many people are not sure what to do if they miss or skip a dose of the medication. The proportion of the world's population aged 60 years or over increased from 8 per cent in 1950 to 12 per cent in 2013. It will increase more rapidly in the next four decades to reach 21 per cent in 2050. With this, independent living has become a commonplace for the elderly. There are a few problems which have been identified with regards to this issue which are memory loss and poor eyesight especially among the senior citizens. Hence, the objective of this research is to develop a Medicine box which track Number of dosage need to take at a particular time for senior citizen patients.

II. LITERATURE SURVEY

According to World Health Organization, over 80% of the people above the age of 60 years are prescribed medicines that are to be administered 2 - 4 times a day with the increase in Cardio vascular diseases and Diabetes among the peer group regular medicine administration has become a necessity. But among this another 40-60% is having the issues related to forgetting the taking of medicines at right time. The current common techniques used in market for the reminder includes the normal alarm with a pill box. But this does not check for overdose and wrong dosage among the patients. It only uses a clock, which on passage of a set time generates an alarm.

Moreover the timely alerting for the re-felling of the pill box to user is also absent resulting often in breaks in the course of therapy. The sensing of slots of the pill box can be done by both Load Sensing methodology and by Light based sensing. The advantages of the slot based sensing is that individual moment sensing is possible for detecting over dosage problems and incorrect dosage issues. The survey for various modes of sensing the slots has been

performed both analytically and practically and comparisons between the modes have been performed.

III. Existing Medicine Tracking & Dispensing System

We found several different pillbox products available in the market. The cheapest one was the traditional pillbox, which contained seven boxes for seven different days of a week. Such pillbox normally cost around 200 INR. However, user had to load the pills to the boxes every week. We also found another type of pillbox, which had the sound reminder, and was able to remind the user to take medicine at user specified time. However, the users still have to put different kinds of pills in the same box, and reload the boxes every week. Additionally, it could only remind the user to take pills once a day. The average costs of this type of pillbox were about 1000 INR, Therefore, we think it was necessary to build a cheap and functional smart Medicine box that could bring more convenience for the user. We then defined the specifications of our device based on the user needs. From the literature cited, the research proposed an idea of Smart Medicine Box that will adapt the features of time tracking and alarm triggering Additionally, as compared to the existing system, It will remind the user to take medicine not for once per day but thrice per day along with that user does not need to refill the box every week.

IV. PROBLEM IDENTIFICATION

Medicines at proper time is very important for being healthy but failure of that can cause a health issue. This problem is most common in elder people and blind people who have poor eyesight. Therefore they have problem in keeping track of their medicines. They finds it troublesome to read the instruction by doctor and identifying right dosage of medicine. Along with this, memory loss is most common in old age people which makes them forget to take medicines on time. Hence this Smart Medicine Box will keep track of their dosage and will inform their caretakers about their health routine.

V. SMART MEDICINE BOX FUNCTIONS

1. Reminder to user on daily basis.

2. Keep the count of number of pills in each sub-box.
3. Displaying all the information on LCD.
4. Easy to Setup and use.

VI. BLOCK DIAGRAM
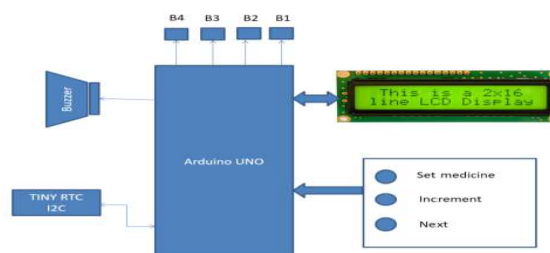
Arduino UNO: The Arduino UNO is an open source microcontroller based on microchip ATmega328P microcontroller. The board is equipped with sets of digital and analog input/output pins that may be interfaced to various expansion boards and other circuits. The board has 14 digital pins,6 analog pins. The software used for Arduino devices is called IDE(Integrated Developed Environment) which is free to use and required some basic skills to learn it.It can be programmed using C and C++ languages. The board comes with all the features required to run the controller and can be directly connected to the computer through USB cable. Apart from USB,battery or AC to DC adopter can also be used to power the board.
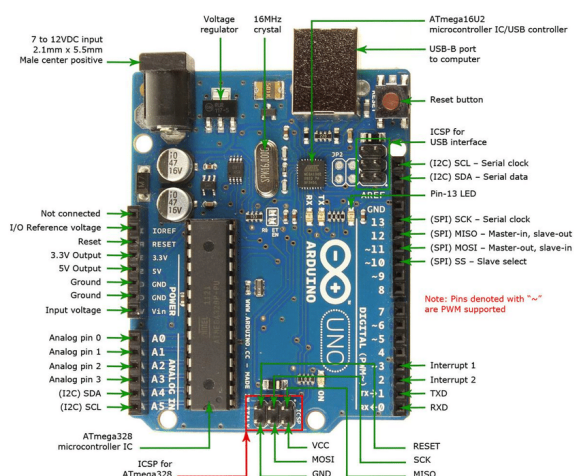
LCD INTERFACING: A Liquid Crystal Display commonly abbreviated as LCD is basically a display unit built using liquid crystal technology. The most commonly used one is 16*2 LCD module which can display 32 ASCII characters in 2 lines.
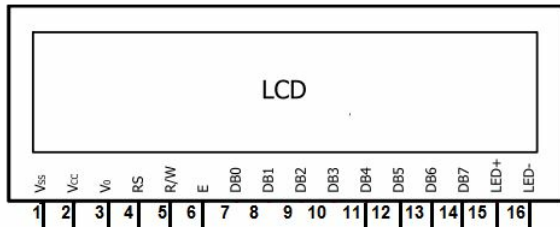
RTC MODULE: This handy module keeps accurate time for years using a tiny coin-cell, and is very simple to connect to Arduino.

- Set or read accurate time and date from Arduino.

- Keeps time without power using a CR1632 coin cell battery backup.

BUZZER:A Buzzer is an audio signaling device or alert. Extremely compact 9.6mm magnetic audio indicator buzzer is used.

LED:A Light Emitting Diode is a semiconductor light source that emits light when current flow through it.LEDs create light by electroluminescence in semiconductor material.3 LEDs are used to indicate 3 pill boxes.

VII.WORKING:
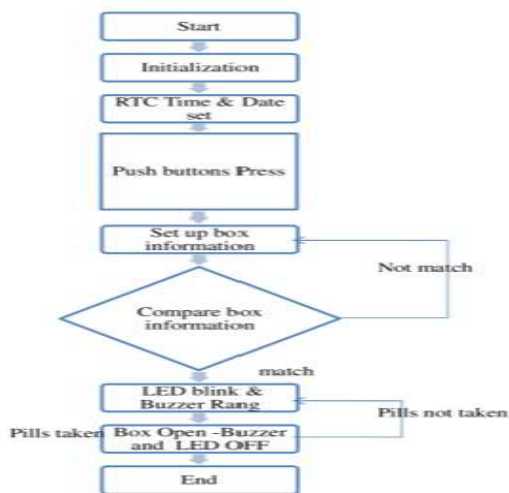
As we once finish programming for the pill box the current time and date is updated in RTC module and displayed in LCD. User have to set alarm timing by programming. A speaker/buzzer is connected to Arduino UNO board which needs a playback voice for alerting the user. For storing playback voice a SD card module is also connected to Arduino board. The time finished by user for alarm is compared with the current time displayed in LCD by RTC and once they match, an interrupt is generated and the LED inside that particular time pill box will glow and Audio signal is also generated to alarm the user.

VIII. CONCLUSION

This project is useful for senior citizens and blind people who live independently or who don't have personal caretaker to assist them in taking right amount of medicine at the right time. This medicine box which is a sort of semi-automatic is not only useful for geriatrics but instead it is can prove useful and a user friendly tool for all of us. Embed provides a greater efficiency to our project. It helps it to be cost efficient also. The advantage of this box is that it is small in size and complexity is less and it updates health information to their caretakers. Firstly we can add BLE feature for remote access to this box secondly we could use Raspberry pi for this box so that patient does not need to connect it to pc for setup purpose. Mechanical design can be improved by adding some mechanical structures to it.

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