Smart Medicine Reminder Box

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Abstract

Our project's main aim is to make a Smart medicine box for those users who regularly take medicines and the prescription of their medicine is very long as it is hard to remember to patients and also for their care giver. Also Old age patients suffer from problems of forget to take pills on proper time which causes certain health issues for patients having Permanent diseases like diabetes, blood pressure, breathing problem, heart problems, cancer diseases etc. We saw these problems in hospitals & people around us who have such kind of diseases and thus based on these two problems we made smart medicine box which solve these problems by Setting up time table of prescribed medicines through push buttons as given in prescription. Present time will be saved in RTC module and notification time will be saved in EEPROM. Therefore 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 number of box from which he has to take out medicines. All pill boxes are pre-loaded in the system which patient needs to take at given time. And our system has quality that it can sense if the patient had taken out pills from the box or not. Another advantage of our system includes of Sensing capability if the patient tries to postpone the time of taking medicine by suddenly opening and closing the medicine boxes to stop the sound. Compare to other devices available in market are capable to generate sound at one time and afterwards it stops. Thus, final result of our system provides fast curing of patient health by using our advantageous system.
Keywords: Smart medicine box, Old age patients, Permanent diseases, Setting up time table, Bright light, Notification sound, Sensing capability

I. INTRODUCTION

In day-to-day life most of the people need to take medicines which was not there in past couple of years and the reason behind this is diseases are increasing in large amount. So sooner or later many people come in contact with these diseases. Some diseases are temporary diseases while many are permanent life threatening diseases. Life threatening diseases gets mixes with the human body in such a way that they can't leave the body ever and they increases in rapid time. Life span of humans became less because of such diseases and to overcome or to live a better life we need to take medicines regularly and also in large amount. We need to be in advice of Doctor who tells us to take desired pills in desired way so that patients face problems like forgetting pills to take at right time and also when Doctor changes the prescription of medicine patients have to remember the new schedule of medicine. This problem of forgetting to take pills at right time, taking wrong medicines and accidentally taking of expired medicine causes health issues of patient and this leads to suffer from unhealthy life. Our project is to made Arduino-Uno based Smart medicine box which uses Real time clock. The new awaited feature in our project is our system is sensible that patient has taken medicine or not and thus the patient can't postpone the time on which he needs to take pills. It is compulsory for the patient to take pills from the box at the right time otherwise our systems continues to make large sound until the medicine is taken out from the box. This notification feature adds life years to the patient and thus this thing is not available in any device which is the necessity for present days.
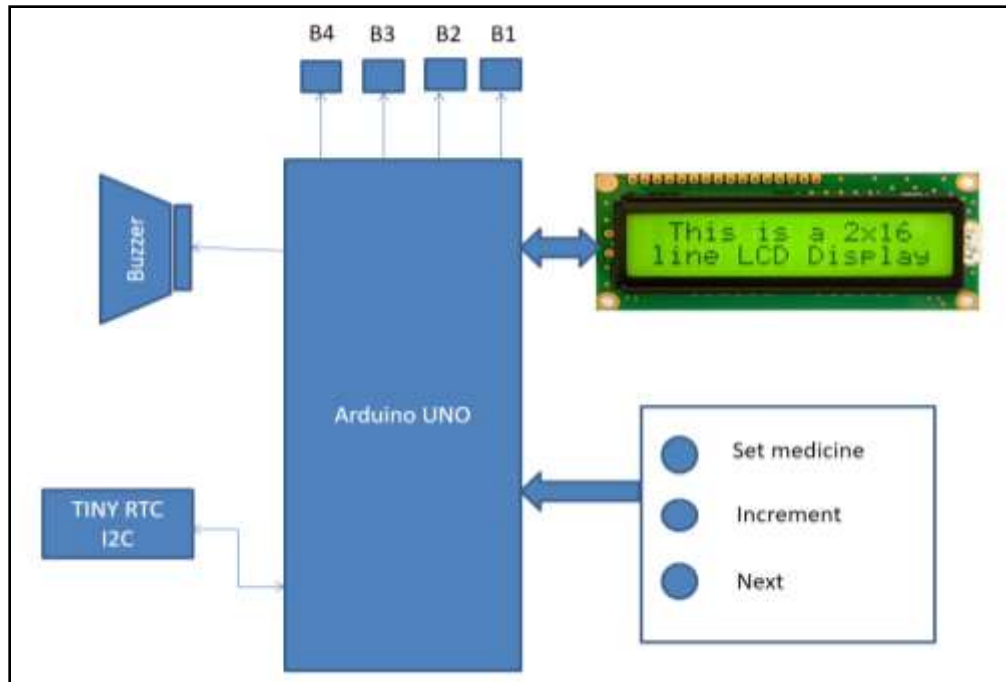
II. BLOCK DIAGRAM

Fig. 1: Block Diagram of System

A. Explanation of Block Diagram

1) Arduino UNO:
We are using Arduino UNO because it use 8 bit microcontroller ATmega328P and it has 32KB flash memory. These features are beneficial in our project and that's why we used Arduino UNO. Arduino UNO board is connected with all other modules also it controls all other modules & made the interfacing easier. It also has internal EEPROM which stores real time data in it.Our project is based on embedded system we are using Arduino Uno for interfacing all things In that Arduino is an open-source which is easy-to-use hardware and connected software. So Arduino is path between hardware and software. Arduino boards read inputs from a press a button- and turn it into an output, turning on an LED and buzzer, you can tell your board what to do by sending a set of instructions to the microcontroller of Arduino. To do so you use the Arduino programming language , and the Arduino Software (IDE), based on Processing. The programming platform is Arduino IDE and programming language is standard C. we made program for all different module that we are using in our project. Like RTC module, LCD module 16*2 so firstly we have to add library in Arduino IDE software and after that we made programming.

2) LCD interfacing:
We used 16*2 LCD module in our project which is connected to Arduino UNO through a LCD interface IC or directly to its address and data bus and few control pins. LCD shows the current time and date which RTC sends the data to LCD module.

3) RTC module:
We used Tiny RTC I2C module which uses I2C protocol and it is useful in our project. RTC module has internal CMOS cell so it does not needs external power supply to update time and date.

4) Buzzer:
Buzzer will ring at proper time when pills have to be taken.

5) LED:
We have 7 boxes having an LED in each box which blinks to show us the specific box from which the pills needs to be taken at given time.

6) Pushbuttons:
We used 3 push buttons from which first one is used for setting medicine, second one is used for increment and third one is used for next. First button takes us to the menu of setting medicine, second button is used to increment the number of hour and minute which we needs to set and third button takes us forward from hour to minute and from minute to the next time.
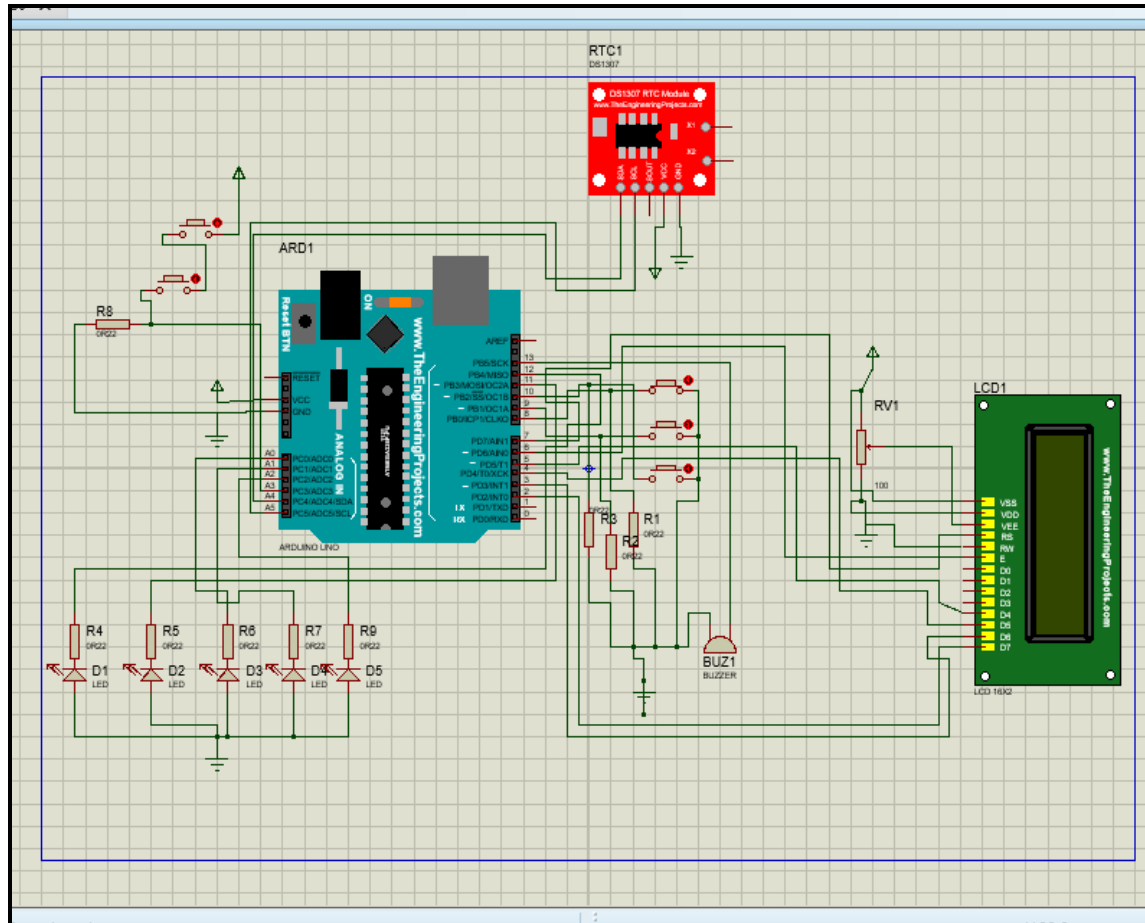
III. WORKING OF SCHEMATIC

Fig.2: Schematic Diagram

Table -1
List of Pin Work:

SR NO.	PIN	WORK OF PIN
1	A3	Inputs
2	11,12,13,A0,A1,A2	Output
3	A5,A4	RTC
4	8,9,10	Push Button
5	5V	Vcc
6	Gnd	GND

A. Operation of Schematic

We made schematic in software PROTEUS 8 and will check simulation in it. Firstly we add all part from library of Arduino, LCD and RTC module. We also add other part registers, LED, Buzzer etc. Power supply is applied to the Arduino module. All modules including RTC, LCD, Buzzer, LED, etc are connected with Arduino. We used Arduino Uno in system. RTC is always working whether external power supply is applied to it or not. RTC module contains a 3V CMOS cell. We also connected certain boxes in which user will load the pills. When system gets started time and date will show on LCD module. Through push buttons we can enter in the menu of setting time of pills prescription. Using another push buttons names increment and next we can set the time of prescription of medicine. At the time we set, buzzer will rang and LED's will blink in the desired box notifying the user to open that box and take out pills from that box in which LED blinks. Buzzer and LED will turn off when user opens the box otherwise buzzer and LED will continuously notify until the time is passed of taking medicine. If the user open and closes the box immediately, system once again starts generating loud sound and forces the user to take pills again.
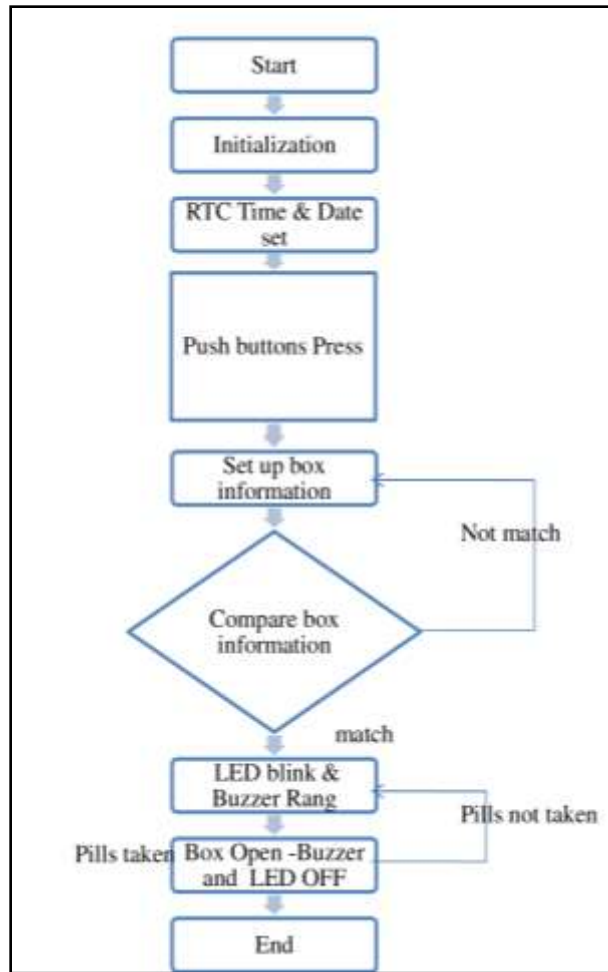
IV. FLOWCHART OF SYSTEM

Fig. 3: Flowchart of System

As shown in flowchart when time & date are set through push buttons, devise will continuously compare the real time & set time. If the time is matched, LED will blink & buzzer will ring. It then senses the box is opened by the user or not. If box is opened, LED & buzzer stops and if it is not opened, LED will continuously blinks & buzzer will continuously rings.

V. ADVANTAGE

A. *Cost efficient:*

Our product cost is affordable compare to other product available in market.

B. *User friendly:*

User can set time table of medicine by himself.

C. *Highly reliable:*

Good in quality and performance; able to be trusted for patients & old age people.

D. *Provide comfort and health:*

Comfortable for old age people and provide healthy life for patients who are regularly take medicines.

E. *Long-Lasting:*

The product can be used for long time.

F. Easy to use and manufacture:

It is very easy to use and manufacture.

G. Accurate result:

Alarm will ring at proper time which is set by user previously.

H. Easy to maintain:

It need less Maintenance. It is one time investment afterwards it can be used continuously.
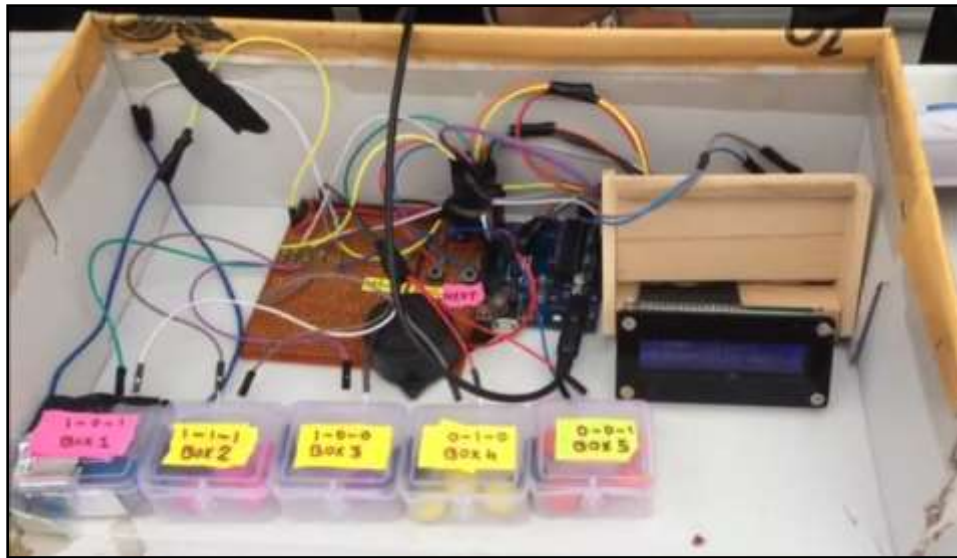
VI. RESULT

Fig. 4: Result of our Project

We made our project as useful for the patient who needs this and all related users. We conclude result that our project is useful for those people who are taking pills regularly, prescription of medicine is very long and hard to remember for those users. Our product is so useful that it can cure those patients illness and there will no need of taking care of these types of patients so caregiver has no tension about their health and they will live healthy and tension free life.

VII. CONCLUSION

The goal of our project is to provide healthy and tension free life to those users who are taking regularly pills and to provide this product at affordable cost also. Our project is also reusable by exchanging those other medicine box that has only alerting system and are non-usable or unaffordable compare to our product.

ACKNOWLEDGMENT

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