BACHELOR OF ENGINEERING

PROJECT REPORT

Automatic medicine reminder

USING
INTERNET OF THINGS

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ABSTRACT

In modern society, busy life has made people forget many things in day to day life. The elderly people and the people victims of chronicle diseases who need to take the medicines timely without missing are suffering from dementia, which is forgetting things in their daily routine. Considering this situation study has been done in this. Paper reviewing the technologies of home health care which are currently used for improving this situation by reminding the scheduled of medicine, which can be done by prescriber through our device.

INTRODUCTION

When it comes to our loved ones, we always want to stay them healthy and fit. But what will happen if they get ill and forget to take medicine on time. We would be worried, right? At hospitals, there are many patients and it is difficult to remind every patient to take medicine on time. Sometimes patients forget to take the medicine at the required time of medicines. And sometimes patient also forgets which medicine He/She have to take at required time. And it is difficult for Doctor/Compounder to monitor patients around the clock. To avoid this problem, we have made this medicine reminder system for patients using Arduino. The traditional ways require human efforts to remind to take medicines on time. The digital era doesn't follow that and we can use machines to do that. The application of Smart Medicine Reminder is very wide and can be used by patients at home, doctors at hospitals and at many other places.

To keep things simple here we made a simple Medicine Reminder Using Arduino which reminds to take medicines once a day. Also, it shows current Date and Time. We will further extend it to sending a email or SMS notification to user.

In this Medicine Reminder Project, the user will feed the decided time through the number pads and that information will be stored throughout till you reset the settings. At desired time buzzer starts beeping until stopped.

RTC DS3231 module is interfaced with Arduino. It also has inbuilt 32kb memory which can be used to store additional data. It is powered through the 3.3V pin of Arduino. A LCD display is interfaced using SPI. 16x2 LCD's data pin D4, D3, D2, D2 are connected with pin5, 4, 3, 2 of Arduino. And command pin RS and EN is directly connected with pin 7, 6 of Arduino. RWpin of LCD is directly connected with ground. A buzzer is used to alert and remind that it's time to take medicine. Buzzer is directly connected with pin number 13 of arduino for medication time indication. The push button is used to stop the buzzer when user has heard the alert.
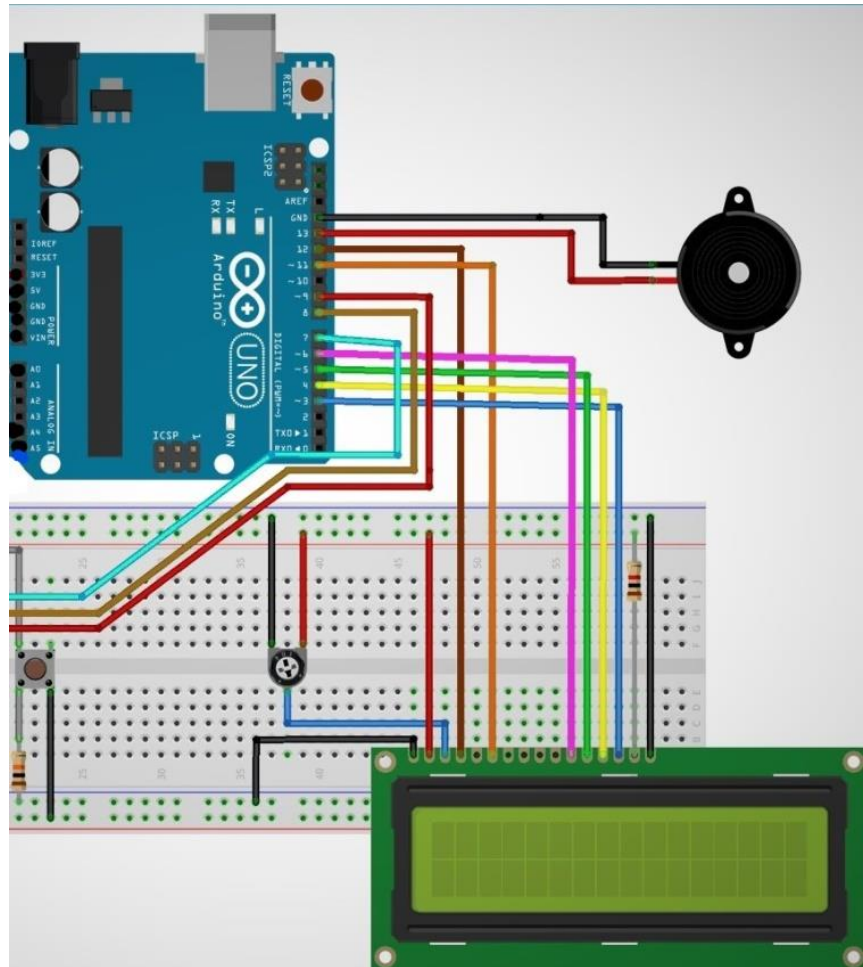
Requirements

- Arduino Uno

- LCD Display
- Buzzer
- Led
- Breadboard
- 10K,1K Resistors
- Jumper Wires

Circuit Diagram

CODE

```c
#include<liquidcrystal.h>
const int rs = 12;
const int en = 11;
const int d4 = 5;
const int d5 = 4;
const int d6 = 3;
const int d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
int h = 12;
int m = 0;
int s = 0;
int flag = 0;
int TIME = 0;
const int hs = A0;
const int ms = A1;
int state1 = 0;
int state2 = 0;
void setup()
{
  lcd.begin(16, 2);
  pinMode(hs, INPUT_PULLUP);
  pinMode(ms, INPUT_PULLUP);
}
void loop()
{
  lcd.setCursor(0, 0);
  s = s + 1;
  lcd.print("TIME:" );
  lcd.print(h);
  lcd.print(":");
  lcd.print(m);
  lcd.print(":");
  lcd.print(s);
  if (flag < 12) lcd.print(" AM");
  if (flag == 12) lcd.print(" PM");
  if (flag > 12) lcd.print(" PM");
  if (flag == 24) flag = 0;
  delay(1000);
  lcd.clear();
  if (s == 60)
  {
    s = 0;
```

```
    m = m + 1;
  }
  if (m == 60)
  {
    m = 0;
    h = h + 1;
    flag = flag + 1;
  }
  if (h == 13)
  {
    h = 1;
  }
  lcd.setCursor(0, 1);
  if (h <= 12 && flag < 12)
  {
    lcd.print("GOOD MORNING  ;)");
  }
  if (h == 12 || h == 1 || h == 2 || h == 3 && flag >= 12)
  {
    lcd.print("GOOD AFTERNOON:)");
  }
  if (h == 4 || h == 5 || h == 6 || h == 7 || h == 8 && flag > 12)
  {
    lcd.print("GOOD EVENING  :)");
  }
  if (h >= 9 && flag > 12)
  {
    lcd.print("GOOD NIGHT  :)");
  }
  state1 = digitalRead(hs);
  if (state1 == 0)
  {
    h = h + 1;
    flag = flag + 1;
    if (flag < 12) lcd.print(" AM");
    if (flag == 12) lcd.print(" PM");
    if (flag > 12) lcd.print(" PM");
    if (flag == 24) flag = 0;
    if (h == 13) h = 1;
  }
  state2 = digitalRead(ms);
  if (state2 == 0)
  {
    s = 0;
    m = m + 1;
  }}
```

RESULTS

For home health care various technology have evolved as considered, in this device, its scheduling have well focused which is beneficial to improve efficiency of prescribed drug and reduce errors of intake time. To improve the existing home health care technique number of monitoring technology has observed which leads to home health monitoring system. The monitoring system can be implemented with sensing element and wireless module which should need to secure so that message containing the health related information should not be corrupt. IOT play a vital role in communicating the two devices, the use of messaging standard and communication protocol we can securely transfer the important messages regarding to health.

After some debugging and adjustment, our prototype reliability was acceptable. The advantages of using breadboards were the ease to assemble the prototype and the possibility of quickly change the circuitry. However, faulty connections were a common problem that could be solved by using printed circuit diagrams.

UPGRADES AND MODIFICATION

The future work of this project is mainly based on the development of the following features which can be easily incorporated in the existing algorithm that has been proposed by us.

- The device assumes that pills are only taken once every day. For example, if the patient has to take a pill every 8 hours, the device is of no use.
- Buttons: More buttons shall be added to our work to make it handier. Some features like reset, power off and more will be controlled by buttons.
- Mobile Application: In future we are planning for a mobile application which would be used as a remote to same.
- Compact case: The device looks complicated and can be confusing for the patient. A case can be used to cover all the wiring. Only display will be above all making it easily visible.
- Pill dispenser capabilities: This would be the next step in automatization. The user could just push a button to receive the pills.
- Detection of empty or near empty bottles: This would make the device more useful by alerting the user when he needs to refill his prescription.
- Frequency: Frequency of the medicine will also be covered in further updates

CONCLUSION

The device build helps in reminding you you're medication time reducing stress to keep it in mind. It doesn't sound like a huge difference with or without this device but on a greater number of patients and less on staff strength it helps a lot. You need not to remind or keep an eye on medication schedule of patient. It is a perfect demonstration of the creative potential of the technology, and it brings a new way in medication routine and also reduces man power in work. An improved version of this can be more efficient and helpful as that would also contain boxes or containers where medicine can also be stored. Now it would not only remind you but also tells you to take medicines and amount of pills recommended by doctors. There is also room for new features such as mobile application control over device. Other sensors could be added to provide the hospital staff that in this room daily dose is not taken by that time.

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