MINIPROJECT

SMART MEDICINE CABINET

Team members

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PROBLEM STATEMENT : FORGETTING TO TAKE MEDICATION AT THE RIGHT TIME.

- Many people have trouble remembering to take their medication on time, which can lead to missed doses, decreased effectiveness, and potential health risks
- Forgetting to take medication
- It's easy to forget to take medication, especially when there are multiple medications to take at different times of the day.
- Taking the wrong medication or dosage
- Confusion can arise when there are multiple medications to take, leading to taking the wrong medication or dosage.
- Difficulty managing medication schedule
- Keeping track of medication schedule can be a challenge, especially if there are multiple medications to take at different times of the day.

OBJECTIVES

- The main objectives of the project are to create a smart medicine management system
- The aim is to enhance the well-being of elderly individuals and their families.
- The goal is to offer a dependable and effective way to organize medication.

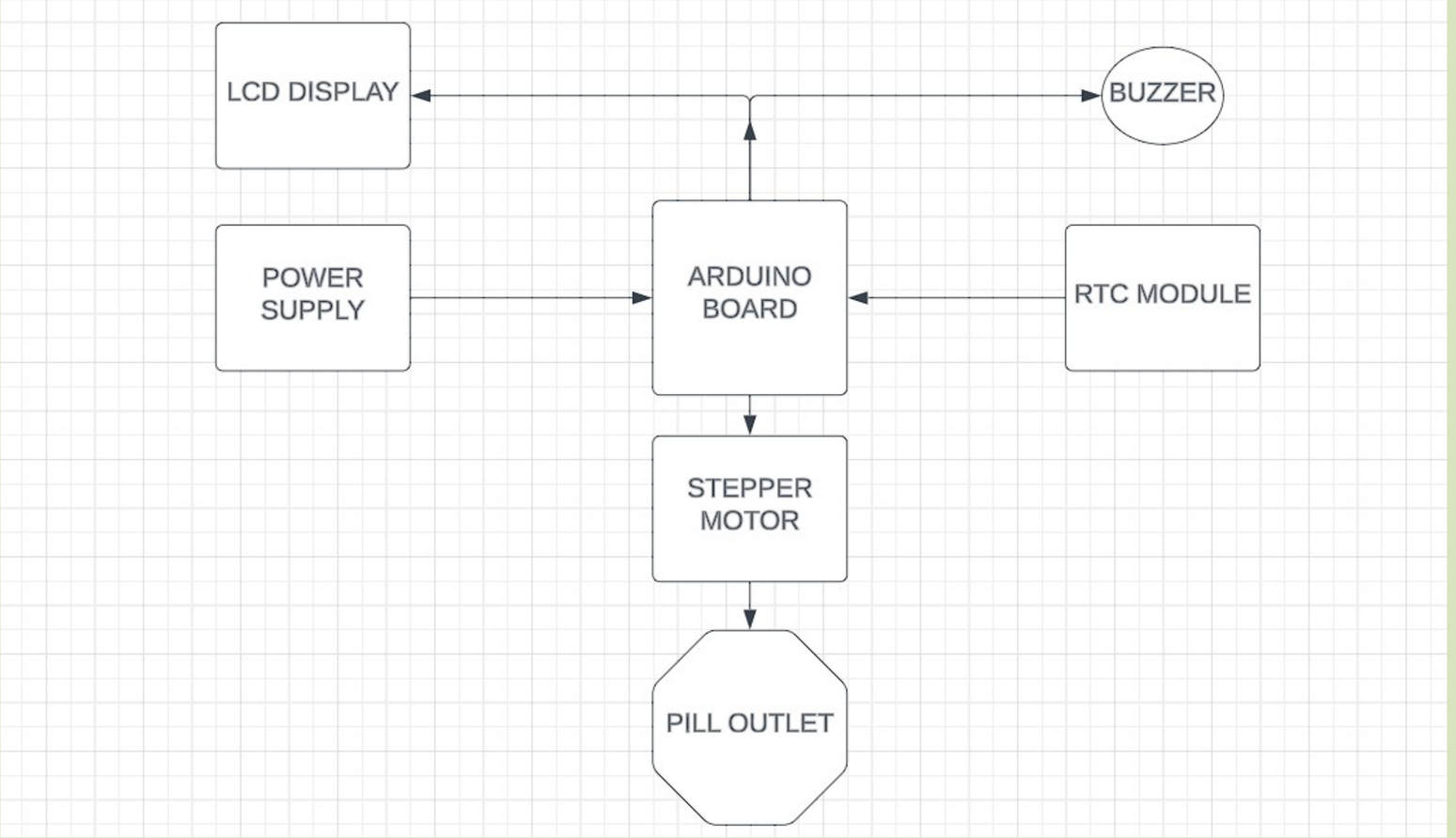
PROPOSED SOLUTION

The solution is to implement a smart pill container system. It allows users to schedule their medicine, which is then automatically dispensed every day at a specific time and also contain a buzzer system to remind users to take their medication.

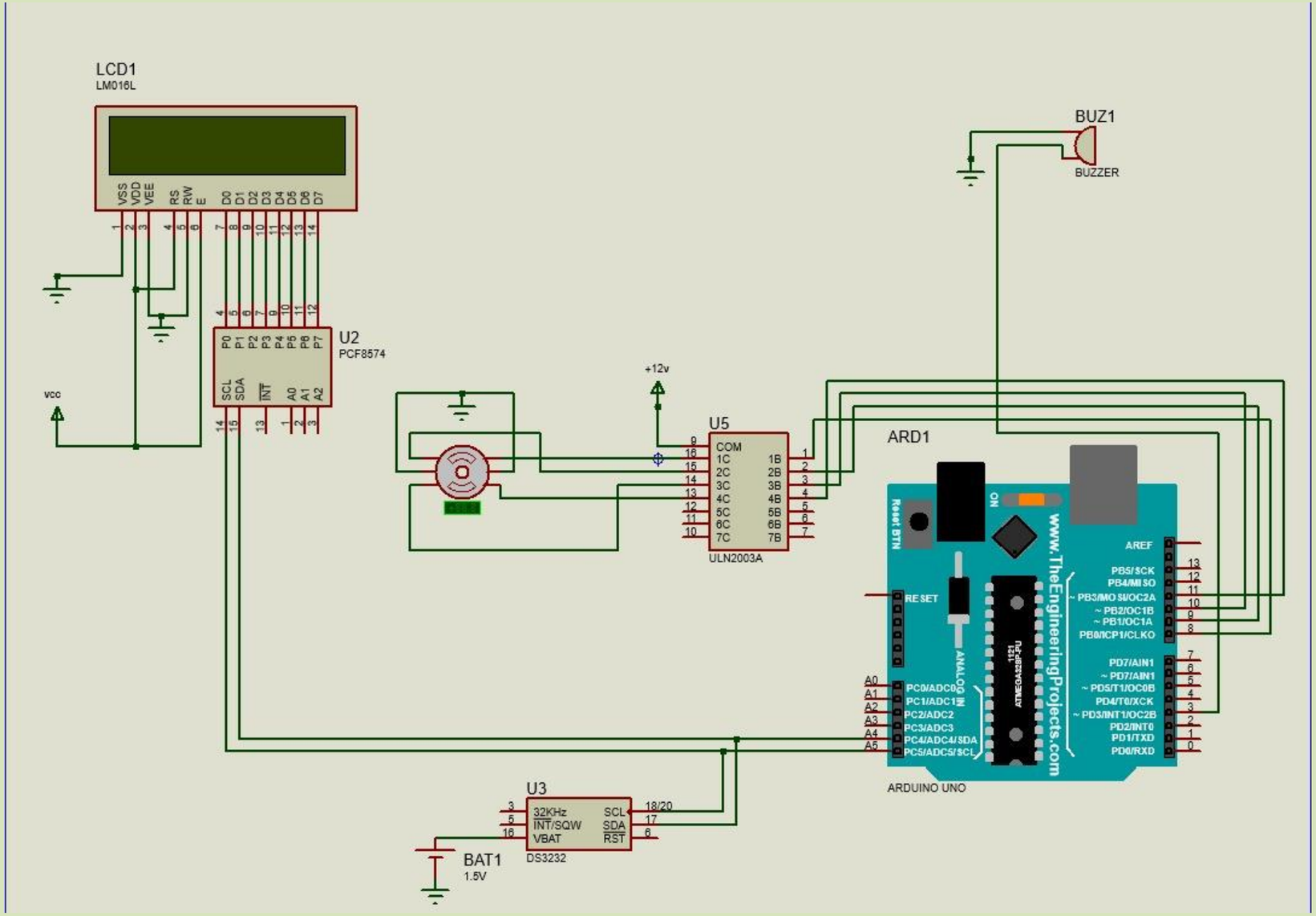
LIST OF COMPONENTS

- *ARDUINO BOARD*
- *LCD DISPLAY*
- *STEPPER MOTOR*
- *BUZZER*
- *BREADBOARD*
- *RTC MODULE*
- *I2C (IIC)*
- *3D PRINT*
- *9v,5v CELL*

BLOCK DIAGRAM



CIRCUIT DIAGRAM



WORKING

Pill Storage: The pills are stored in a cylindrical tube with dimensions modified to accommodate the size of the pills. The tube is designed in such a way that the pills can only pass through a hole located at one end of an arc-shaped quadrant.

Dispensing Mechanism: The dispensing mechanism consists of a motor connected to the pointed end of the quadrant. When activated, the motor rotates the quadrant by 45 degrees. This movement brings the pill along with it, causing it to drop into a funnel or chute for easy collection.

Pill Release and Storage: As the quadrant rotates, the other end of the arc closes the cylinder, preventing the remaining pills from falling through the hole. This closing action ensures that only one pill is dispensed at a time, while the rest remain securely stored within the cylindrical tube.

Real-Time Clock (RTC) Module: The inclusion of an RTC module allows the pill dispenser to obtain the real-time information, such as date and time. This information serves as an input for the microcontroller to determine the appropriate timing for pill dispensing.

LCD Display: The pill dispenser incorporates an LCD display to provide a visual representation of the current time or any relevant information related to the medication schedule. It allows users to view the scheduled dispensing times or any additional notifications.

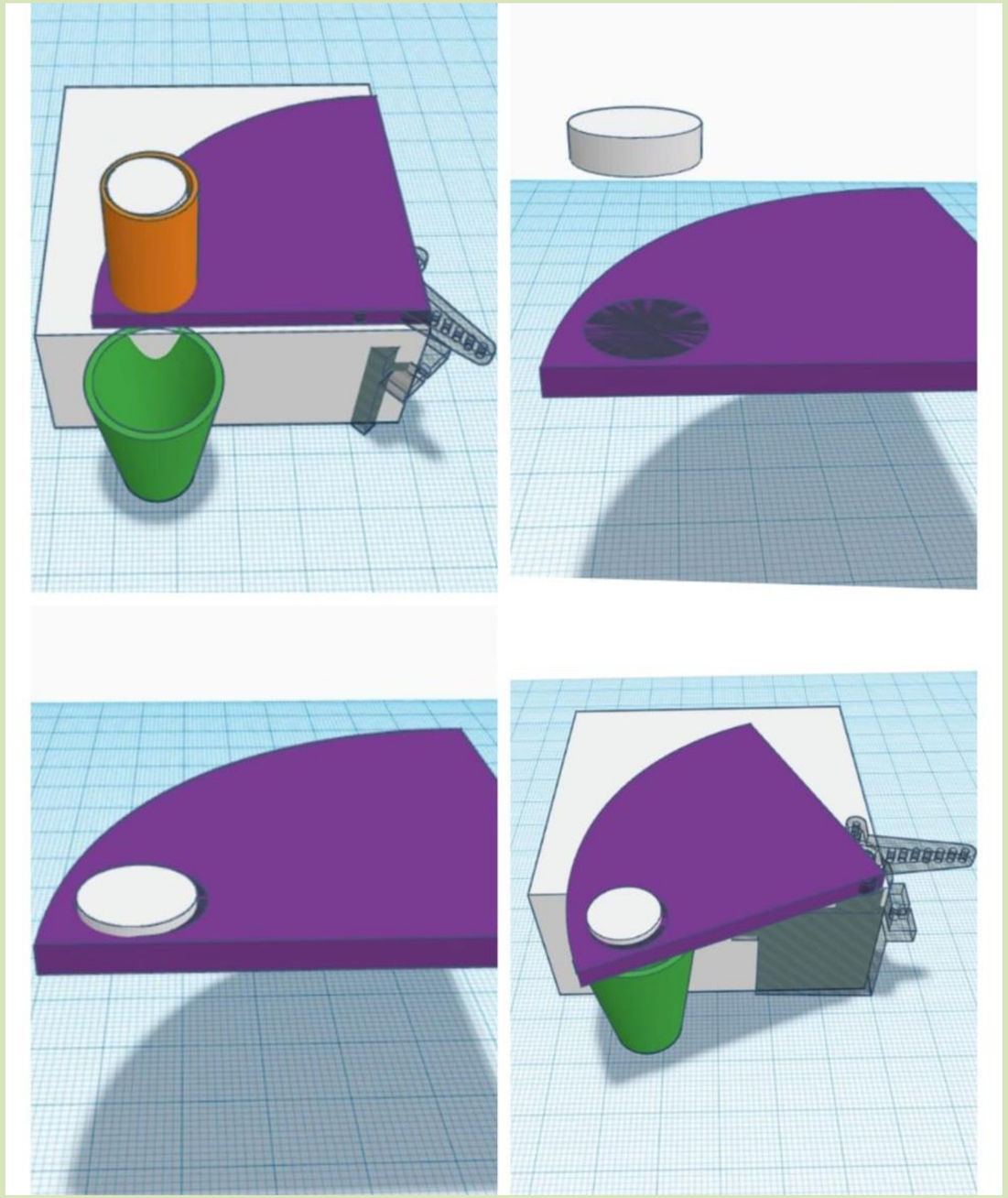
Buzzer Alert: To notify the user when a pill has been dispensed, a buzzer or sound-producing device is employed. When a pill is released and drops into the funnel, the buzzer is activated, providing an audible alert.

Motor Return: After a brief delay of a few seconds to ensure the pill has been dispensed, the motor returns the quadrant to its original position, ready for the next pill dispensing cycle.

TOTAL COST

- Arduino uno- Rs 1500
- RTC module - Rs250
- I2C serial interface adapter - Rs 85
- Breadboard - Rs100
- Buzzer -Rs 25
- Stepper Motor - Rs 280
- 3-D Printing- Rs 2440

3D PRINT DESIGN



CODE

```
#include <DS3231.h>
#include <LiquidCrystal.h>
#include <LiquidCrystal_I2C.h>
#include <Stepper.h>

int styear;
int stmon;
int stdate;
int sthour;
int stsec;
int buzzer = 3;

DS3231 rtc(SDA, SCL);
Time t;
LiquidCrystal_I2C lcd(0x27, 16, 2);
int motorSpeed =10;
Stepper myStepper(2048, 8,10,9,11);
void setup ()
{
 rtc.begin ();
 Serial.begin (9600);
 lcd.init();
 //rtc.setDate(19, 7,2023);
 //rtc.setTime (14,14,00) ;
 //rtc.setDOW (WEDNESDAY) ;
 lcd.backlight();
 pinMode(buzzer,OUTPUT);
}
void loop ()
{
```

```
lcd.clear();
 lcd.backlight();
 t=rtc.getTime () ;
 lcd.setCursor(0, 0);
 lcd.print ("Date:");
 lcd.print (t.date);
 lcd.print ("-");
 lcd.print (t.mon);
 lcd.print ("-");
 lcd.println (t.year);
 lcd.setCursor(0, 1);
 lcd.print ("Time:");
 lcd.print (t.hour);
 lcd.print (":");
 lcd.print (t.min);
 lcd.print (":");
 lcd.println (t.sec);
  delay (1000) ;
  if(t.hour==20 && t.min == 40 && t.sec==0)
 //if(t.sec%10==0)
 //(t.hour==19 && t.min == 11 && t.sec == 0)
 //t.hour == 7 && t.min == 30|| t.hour == 19
 //t.date == 20 && t.hour ==7 && t.min == 30
 {
  digitalWrite(buzzer,HIGH);
  rotatStepper();
  delay(1000);
  digitalWrite(buzzer,LOW);
 }


 }
 void rotatStepper()
```

```
{


myStepper.setSpeed(motorSpeed);
 myStepper.step(256);
 delay(1000);
 myStepper.step(-256);
 delay(1000);
}
```

CONCLUSION

Our medication reminder system is a useful resource for those who need technological help in completing or need help in working through day-to-day tasks and taking care of their health. It is a smart and organized system that is designed with helping the elderly people in our homes, but we have not put any restrictions that stop an everyday user from using the system. Anyone can need medical attention and normal people forget taking their prescriptions as well. The STC will help them out in regulating their medications and can also help a working person with a busy schedule. It is a cost efficient, user friendly device upon which one can rely on for timely intake of medicines. Accurate and automatic dispense of pills is carried out by the combined action of the Arduino board, the alarm system and the dispensing unit.

FUTURE SCOPE

As of now, Smart tablet cabinet can only dispense pills at preprogrammed time slots. To make it more user friendly, we may introduce a system where the user can set the medication time using their smartphones from anywhere. For this purpose we need to use a Wi-Fi module. Features to indicate that it is time to refill the pills can also be included. It is even possible to extend this system into a robo-doc. Like these, many functions can be added to the dispenser to improve its user friendliness and effectivene.