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POLYTECHNIC

Chembur, Mumbai -71

SINCE 1962

Automatic Medicine Reminder System using Arduino

A PROJECT REPORT

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In partial fulfillment for the award of the degree

DIPLOMA

IN

ELECTRONICS & TELE-COMMUNICATION ENGINEERING

UNDER THE GUIDENCE OF

MS. Deena Shah

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2022-23

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION

Certificate

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Name and Signature of guide: Mrs. Deena Shah

……

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To

Mrs. Deena Shah

HOD, EJ Department,

VES Polytechnic,

Chembur, Mumbai-71

Subject: - Sponsorship Letter

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We will be happy to help your students for the completion of project in all respect.

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PRINCIPAL
VIKRANT JOSHI

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We would like to thank all the faculties, Lecturers and Non- teaching Staff of our college for supporting us to complete this project successfully.

Abstract

In the contemporary day life style people have no time to spend with their family. In such a busy life it's difficult to keep an isolated day out of their busy schedule for the doctor for consistent medical check-up and taking medicines at time.

There is a necessity for new idea and technology which helps in saving their time. The proposed model enables users to improve health related risks and reduce healthcare costs by reminding to take medicines at time, collecting, recording and analysing data in real time efficiently. With the help of this proposal the time of both patients and doctors are saved and doctors can also help in emergency scenario as much as possible. This will help for Alzheimer people to take medicine at time. The proposed outcome of the project is to give proper and efficient medical services to patients by reminding them when to take medicines.

CONTENT

CHAPTER 1

INTRODUCTION

1.1 Introduction…… 1

1.2 Background of user-based problem…… 2

CHAPTER 2

LITTERATURE SURVEY

2.1 Literature survey…… 3

2.2 Components description…… 6

2.2.1 Arduino UNO…… 6

2.2.2 RTC DS3231……6

2.2.3 16x2 LCD Display……7

2.2.4 Buzzer…… 7

CHAPTER 3

SCOPE OF PROJECT

3.1 Boundaries of this Project…… 13

3.2 Expectation of this project…… 13

3.3 Impact of project on the society…… 13

3.4 Goal of the Project…… 13

3.5 Achievement of the project…… 13

3.6 Total cost of the project……14

CHAPTER 4

METHODOLOGY

4.1 Proposed methodology…… 15

4.1.1 IOT Based Medicine Reminder System using Email…… 15

4.1.2 Arduino based medicine Reminder and vending machine…… 16

4.1.3 Microcontroller based medicine dispenser and reminder…… 17

4.2 Block diagram of the project…… 18

4.3 Block diagram explanation……18

CHAPTER 5
DETAILS OF DESIGNS WORKING AND PROCESS

5.1 Introduction…… 20

5.2 Circuit diagram…… 20

5.3 Circuit explanation…… 21

5.4 PCB design in grand prototyping…… 22

5.5 Layout of the circuit…… 23

5.6 Software description…… 24

5.7 Coding…… 24

CHAPTER 6

RESULTS & APPLICATION

6.1 Result……25

6.2 Applications…… 25

CHAPTER 7

FINALN PROJECT & OUTPUT

7.1 Conclusion……26

7.2 Future scope……..

REFERANCE

APPENDIX B…… 28

APPENDIX C…… 30

List of Figure

Figure 1.1 Taking Medicine…… 3

Figure 2.1 Reminding medicine…… 5

Figure 2.2 Arduino Uno ……6

Figure 2.3 RTC Module……6

Figure 2.4 16x2 Display…… 7

Figure 2.5 Buzzer…… 7

Figure 4.1 Medicine Reminder with email alert……13

Figure 4.2 Arduino based medicine reminder & vending machine……..14

Figure 4.3 Microcontroller based medicine dispenser and reminder……15

Figure 4.4 Block Diagram…… 16

Figure 5.1 Circuit Diagram…… 18

Figure 5.2 Actual Output…… 19

Figure 5.3 Block Diagram with explanation……20

Figure 5.4 Layout of Project…… 20

List of Table

Table 1. Total Cost of Components……12

CHAPTER 1

INTRODUCTION

1.1 Introduction

Patient monitoring and management in critical care environments such as the ICU‘s, SICU‘s and ANCU‘s involve estimating the status of the patient and reacting to events that may be life threatening. It is impossible to keep a tab on every patient throughout the day. New solutions are needed in this field to help the doctors and the nursing staff to monitor the patients. A critical element of this is the medicine administration and monitoring. This has been achieved by the patient medicine reminder system. This system consists of Arduino, Buzzer, 16x2 display and RTC Module. The logic for the processing is built into the C++ program to initiate the alert through an audio alarm. Not only does it have an alarm system, but also gives indication when medicine is not taken at the reminder time on display.

1.2 Background of User based problem

The effect of a patient not taking medicine at the right time can have several negative consequences. Here are some potential effects:

1. Reduced effectiveness: Taking medication at the wrong time may reduce the effectiveness of the medication. This is because certain medications need to be taken at specific times to be fully absorbed by the body and provide maximum benefit.

2. Increased risk of side effects: Not taking medication at the right time may increase the risk of side effects. For example, taking certain medications on an empty stomach can cause nausea or stomach upset.

3. Missed doses: Not taking medication at the right time may lead to missed doses, which can reduce the effectiveness of the treatment.

We used the Medication management concept to propose a medication reminder system where pharmacists or patients can set the schedule time and the number of pills of up to eight medical doses. Based on an RTC (Real Time Clock) interfaced to the Arduino UNO, the programmed time and number of pills for a medicine is displayed on the LCD along with a buzzer sound to alert the patient about taking the appropriate medicine.

Figure1.1

CHAPTER 2

LITERATURE SURVEY

2.1 Literature survey

Good health has been a major concern since the inception of mankind whilst for some people attaining good health requires taking prescribed medicines or pills routinely. It's Very Important for Patients as General and Specially Patients Who Must Have Their Medication Permanently (Diabetics and Hypertension Ect.) Sometimes They Need To Be Reminded, This Frequent Observation Shows That People Give More Interest To Their Work And Other Stuff Than Taking Care Of Their Health. It Is Important to Design and Implement Low Cost Useful Programmable Reminding System. To Help Those Patients. This System Has an Ability to Remind People about Dose Time, Dose Amount of Medication The main concept of this project is to create a low-cost affordable health monitoring system for people in remote locations where availability of specialist doctors is not possible. This system is automatic remind patients . Low cost and can be easily operated by anyone with limited knowledge.

Figure 2.1

2.2 Component Description:-

2.2.1 Arduino Uno

Figure2.2: Arduino Uno

Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. The project's products are distributed as opensource hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassemble form, or as do-it-yourself (DIY) kits.

2.2.2 RTC DS3231 Module:

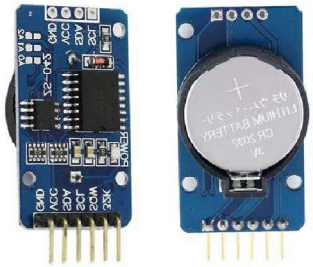

Figure2.3: RTC DS3231 Module

A real-time clock (RTC) is an IC that keeps an updated track of the current time. This information can be read by a microprocessor, usually over a serial interface to facilitate the software performing functions that are time dependent. RTCs are designed for ultra-low power consumption as they usually continue running when the main system is powered down. This enables them to maintain current time against an absolute time reference, usually set by the microprocessor directly. Figure 1 depicts the typical internal workings of a simple RTC.

2.2.3:- 16x2 LCD DISPLAY

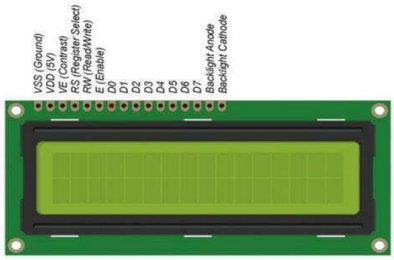

Figure 2.4 16x2 LCD Display

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

2.2.4:-Buzzer

Figure 2.5: Buzzer

An audio signaling device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate different sounds like alarm, music, bell & siren Buzzer Pin Configuration. The pin configuration of the buzzer is shown below. It includes two pins namely positive and negative. The positive terminal of this is represented with the '+' symbol or a longer terminal. This terminal is powered through 6Volts whereas the negative terminal is represented with the '-'symbol or short terminal and it is connected to the GND terminal.

CHAPTER 3

SCOPE OF THE PROJECT

3.1 Boundaries of this Project:

An automatic medicine reminder system using Arduino can be a useful tool to help people remember to take their medication on time. However, it is important to understand the limitations and boundaries of such a system to ensure its effectiveness and safety. Here are some considerations:

Accuracy of timekeeping: Arduino relies on an internal clock to keep track of time. However, this clock can drift over time, resulting in inaccurate timekeeping. To address this issue, the system may need to be calibrated periodically to ensure that the reminder alarms are triggered at the correct times.

Battery life: Arduino systems typically run on batteries, which can limit their lifespan. The system may need to be designed to minimize power consumption, or the batteries may need to be replaced or recharged frequently.

User compliance: The effectiveness of the system depends on the user's compliance with the reminders. Some users may still forget to take their medication even with reminders. It is important to ensure that the system is designed to motivate users to comply with their medication schedules.

Medication compatibility: The system should be designed to accommodate different types of medication schedules and dosages. Some medications may require specific instructions, such as taking with food or avoiding certain foods or beverages

Safety considerations: The system should be designed with safety in mind. For example, it should not provide reminders for medications that have already been taken, and it should not allow users to override reminders for critical medications.

3.2 Expectation of this project:

An automation medicine reminder using Arduino can be a very useful tool for individuals who need to take medication regularly. The Arduino can be programmed to sound an alarm or turn on a LED light to remind the person to take their medication at the scheduled time.

Improving medication adherence: One of the primary expectations of an automatic medicine reminder system is to improve medication adherence. By providing timely reminders, users are more likely to take their medication on schedule, which can improve their health outcomes.

Reducing medication errors: Another expectation is to reduce medication errors, such as taking the wrong dose or forgetting to take medication. The system can provide alerts for incorrect dosages or remind users to take medications they may have forgotten.

Customization: Users may expect the system to be customizable to meet their specific medication needs. The system can be designed to accommodate different medication schedules

and dosages, as well as provide personalized reminders based on the user's preferences.

Easy to use: The system should be user-friendly and easy to use, especially for older or visually impaired users. The interface should be simple and intuitive, with clear instructions on how to use the system.

Flexibility: Users may expect the system to be flexible enough to accommodate changes in their medication schedules or dosages. The system can be designed to allow users to make changes to their schedules or dosages as needed.

Reliability: Users expect the system to be reliable and accurate, with timely reminders that are triggered at the correct times. The system should also be designed to function properly under different conditions, such as power outages or network disruptions.

Cost-effective: The system should be cost-effective and affordable, especially for users who may have limited financial resources.

3.3 Impact of Project on the society:

An automatic medicine reminder system using Arduino can have a significant impact on the lives of people who rely on medication to manage their health conditions. Here are some ways in which the system can have a positive impact:

Improved medication adherence: The system can help improve medication adherence, which is the extent to which patients take their medication as prescribed. This can result in better health outcomes and reduced healthcare costs.

Reduced medication errors: The system can help reduce medication errors, such as taking the wrong dose or forgetting to take medication. This can improve patient safety and reduce the risk of adverse drug events.

Better disease management: By improving medication adherence, the system can help patients better manage their health conditions, resulting in better disease management and improved quality of life.

Reduced healthcare costs: By reducing medication errors and improving medication adherence, the system can help reduce healthcare costs by reducing the need for hospitalizations, emergency department visits, and other healthcare services.

Improved patient satisfaction: The system can help improve patient satisfaction by providing patients with a tool that helps them manage their health conditions more effectively and efficiently.

3.4 Goal of the Project:

The goal of an automatic medicine reminder system using Arduino is to help individuals remember to take their medication on time and in the correct dosage. The system typically consists of an Arduino microcontroller board, sensors, and a display unit.

3.5 Achievement of the Project:

The automatic medicine reminder system using Arduino achieves several benefits, including:

Improved Medication Adherence: The primary achievement of the system is that it helps individuals take their medication on time and in the correct dosage. This ensures that they receive the full benefits of their prescribed treatments and reduces the risk of complications due to missed doses or incorrect dosages.

Customization: The system can be customized to meet the individual needs of the user. For example, the reminders can be programmed to be more frequent or less frequent based on the medication regimen, and the system can be programmed to alert the user when they need to refill their prescription.

Ease of Use: The system is easy to use, and the reminders are displayed on a clear and simple screen.

Cost-Effective: The system is relatively inexpensive compared to other medication reminder systems on the market. This makes it accessible to a wider range of individuals who may not be able to afford more expensive options.

3.6 Total cost of the components:

Sr.No	Name of the Components	Quantity	Cost of the Components
1	Arduino UNO	1	800₹
2	RTC DS3231 Module	1	210 ₹
3	16x2 LCD Display	1	120 ₹
4	Buzzer	1	20 ₹
5	LED	1	5 ₹
6	Breadboard	1	60 ₹
7	Push button	4	50 ₹
8	10k potentiometer	1	10 ₹
9	10k,1k Resistor	5	20 ₹
10	Jumper wires	As per require	40 ₹
Total			1,335₹

CHAPTER 4

METHODOLOGY

4.1 Proposed Methodology:

Method We can combine ways depending upon the need. To keep things simple here we made a Medicine. Reminder using Arduino which reminds us to take medicines 1 or 2 or 3 times a day. The time slot can be selected using push buttons. Also, it shows the current Date and Time.

4.1.1 IOT BASED MEDICINE REMINDER SYSTEM WITH EMAIL ALERT:

-

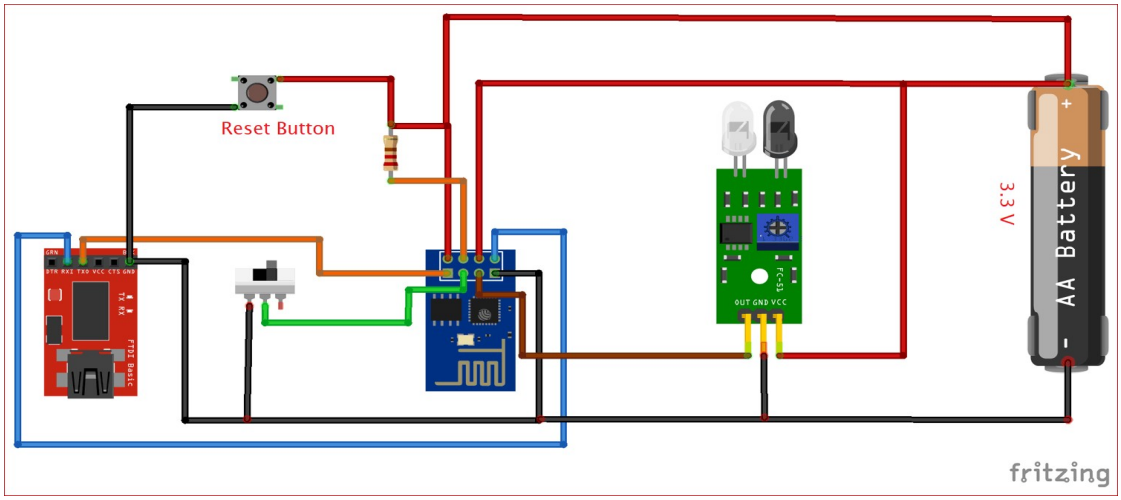

Figure 4.1: Medicine Reminder with Email Alert.

Automatic Medicine Reminder which alert the patient either by sending email/SMS or by triggering some alarm. In this tutorial we will build an IOT Medicine Reminder Project using ESP8266-01 board which will get the time from internet (NTP Server) and send email as a reminder to take medicine according to the schedule of medication.

4.1.2 Arduino based Medicine Reminder and Vending Machine.

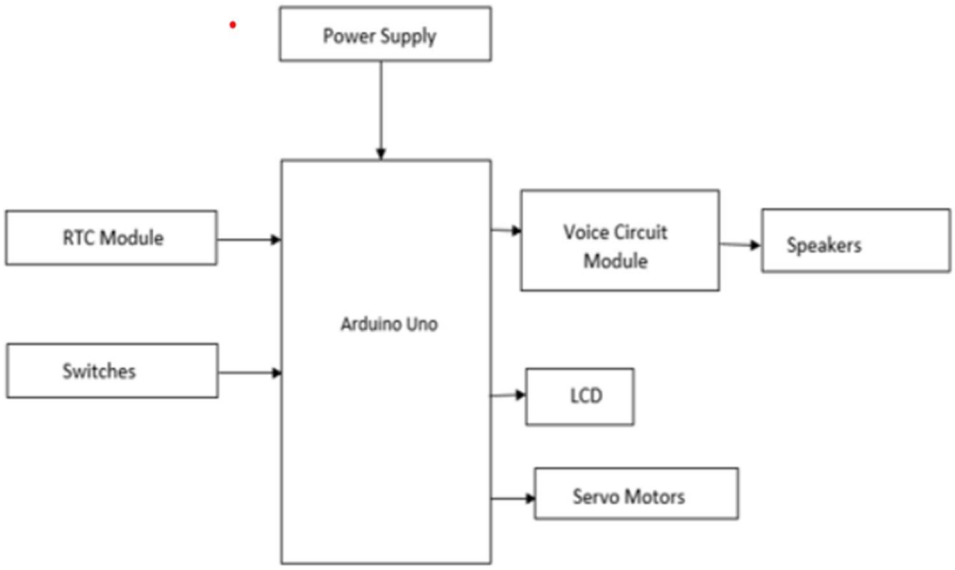

Figure 4.2 Arduino based Medicine Reminder and Vending Machine

Medicine Reminder and Vending Machine has developed. Many old people have the tendency of missing the medicine or taking the medicine at the wrong time. The device develop is capable of delivering medicine at prescribed time in which caretaker of the patient can store medicine in small boxes (Doses) which will drop-out according the time entered. Arduino IDE software platform and Arduino UNO Along with RTC, Server Motor, LCD, Voice circuit module, push button as hardware are used to build this project.

4.1.3 Microcontroller Based Medicine Dispenser And Reminder

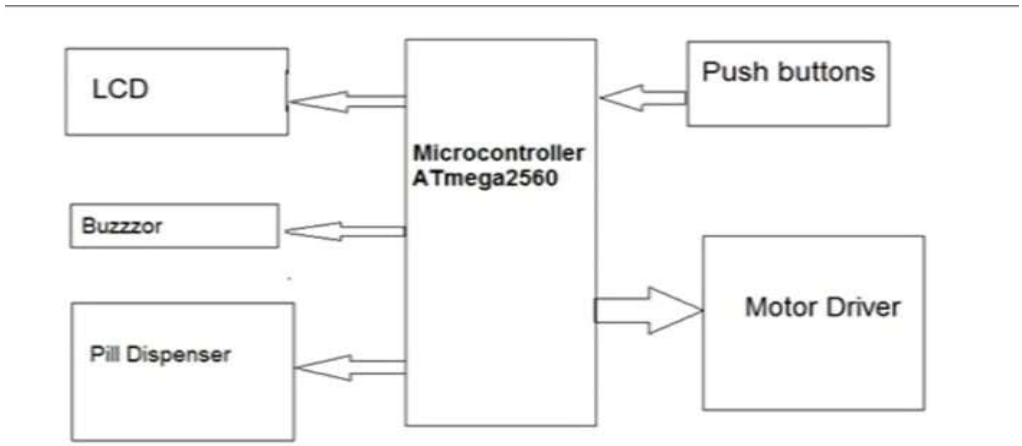

Figure 4.3: Microcontroller Based Medicine Dispenser And Reminder

The working of the medicine dispenser can be simply explained. It can be easily handled with the help of three button that are Set button, Increment button, and Next Button. The device consist of four compartments for four different medicines a number of compartments can be increased according to the prescription the working of this is controlled by a microcontroller, RTC, and the Motor driver. The motor driver gets the command which will initiate the motor action. The number of times meter will rotate will be equal to the number of medicine to be dispenser.

We finally concluded to make a project based on Automatic Medicine Reminder Using Arduino

4.2 Block diagram of the project:

Figure4.4: Block Diagram of the project

4.3 Arduino UNO:

Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.

4.4 RTC module:

A real-time clock (RTC) is a computer clock (most often in the form of an integrated circuit) that keeps track of the current time. Although the term often refers to the devices in personal computers, servers and embedded systems, RTCs are present in almost any electronic device which needs to keep accurate time.

4.5: Buzzer:

An audio signaling device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound.

4.5: LCD 16x2 :

The 16x2 LCD modules are popular among the DIY community since they are cheap, easy to use and most importantly enable us to provide information very efficiently. With just 6 pins, we can display a lot of data on the display. The module has 16 pins.

CHAPTER 5

DETAILS OF DESIGN, WORKING AND PROCESSES

5.1 Introduction:

Patient monitoring and management in critical care environments such as the ICU‘s, SICU‘s and ANCU‘s involve estimating the status of the patient and reacting to events that may be life threatening. It is impossible to keep a tab on every patient throughout the day. New solutions are needed in this field to help the doctors and the nursing staff to monitor the patients. A critical element of this is the medicine administration and monitoring. This has been achieved by the patient medicine reminder system. This system consists of Arduino, buzzer and RTC Module. This system is driven by a program that inputs predefined parameters which is processed based on the input variables entered via a user interface device such as the PC. The logic for the processing is built into the C++ program to initiate the alert through an audio alarm.

5.2 Circuit Diagram of Automatic medicine reminder system using Arduino.

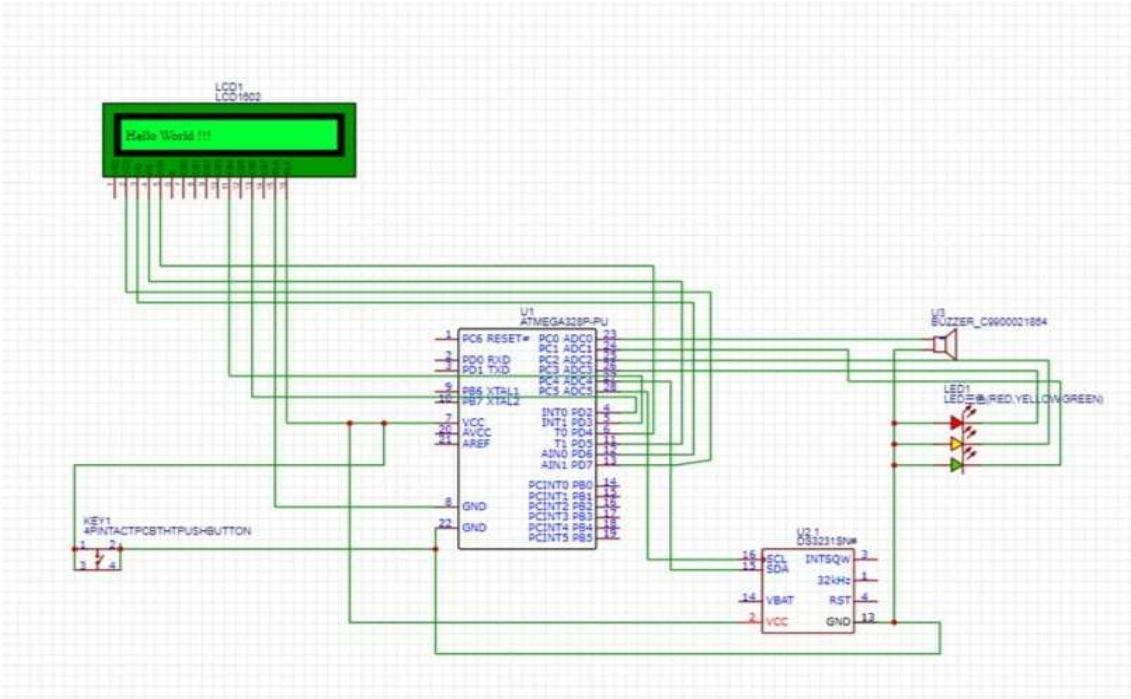

Figure5.1: Circuit Diagram

5.3 Circuit Explanation:

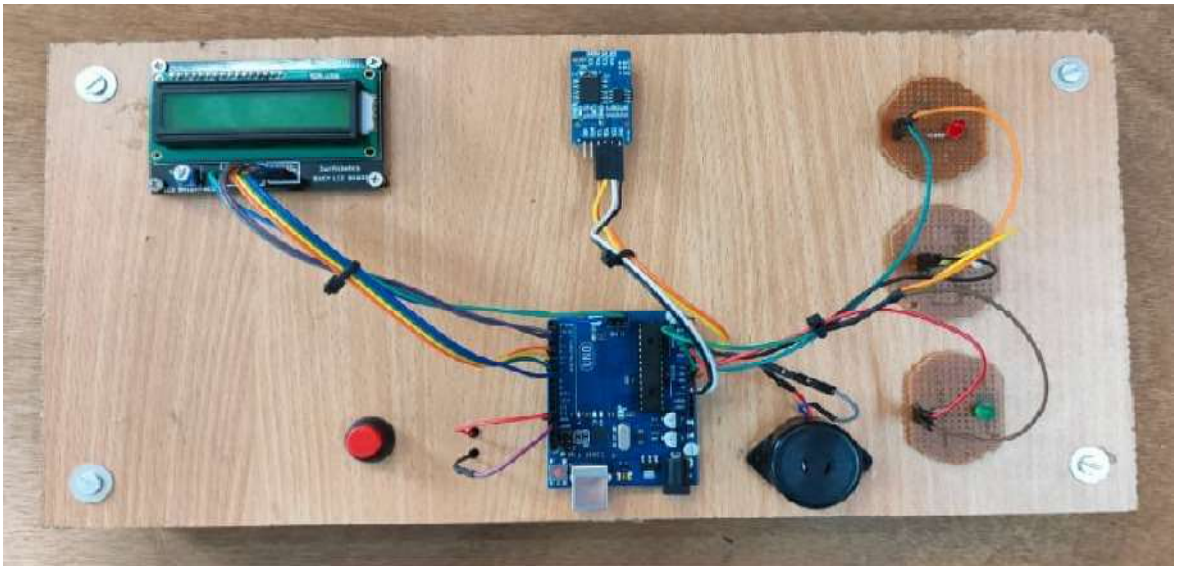

Figure 5.2

The Pill Reminder Alarm is powered using 5V supply. When it first boots up, it shows a welcome massage as “Stay Happy”. The LCD screen is set to cycle in three screens. The 1st screen shows message as “Stay Healthy, Get Well Soon”. The second screen is a help screen which tells to press select push button to select any one time-slot to remind (once/twice/thrice in a day). The time slot is changeable in program and can be configured accordingly. Right now we have fixed this into three durations i.e. 8am, 2pm, and 8pm. We have divided time slots into three modes. Mode 1 selects to take medicine once/day at 8am when user presses 1st push button. Mode 2 selects to take medicine twice/day at 8am and 8pm when user presses 2nd push button. Mode 3 selects to take medicine thrice/day at 8am, 2pm and 8pm if user presses 3rd push button. When user selects desired slots by pressing push buttons, the user input is recorded and the time is taken from RTC. When time is matched with selected time slot then the buzzer starts buzzing. User can stop the buzzer by pressing STOP button. The same process continues for the next slot reminder.

5.4: Flowchart

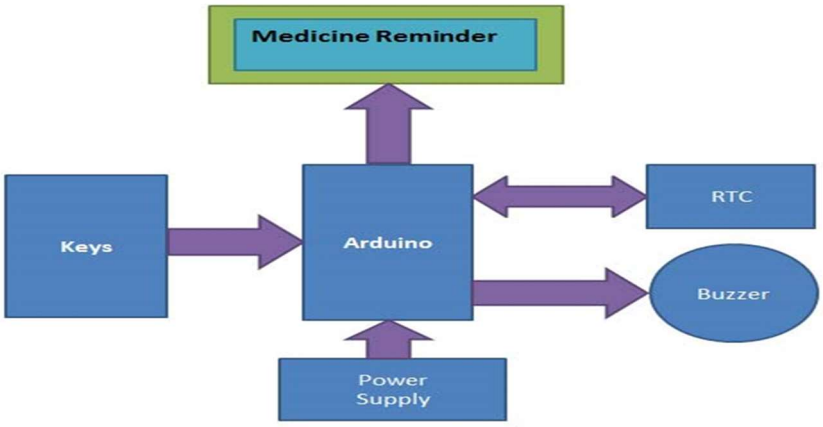

Figure5.3: Flow chart

5.5 Flowchart Description:

In this system we have used Arduino for controlling the whole system. Working of this project is very simple. In this system. When we start this system real time clock runs the time on 16×2 LCD. And if we want to set alarm time for medication we have to press set mad buttons which is connected with pin number 8 of arduino. After pressing this button LCD shows Set Time 1. And then we can select the time as we want to set for medication by using INC and Next button which is connected to pin 9 and 10 respectively of arduino. After set time 1, LCD shows set Time 2. Now using previous process set the time again. And after second time set, LCD shows again set time 3. And set this time like previous. In this system “Group medicine” indication (take group 1 medicine, take group 2 medicine and take group 3 medicine) is used instead of medicine name. When any alarm occurs, LCD indicates Group medicine 1, Group medicine 2, Group medicine 3.

5.6 layout and circuit

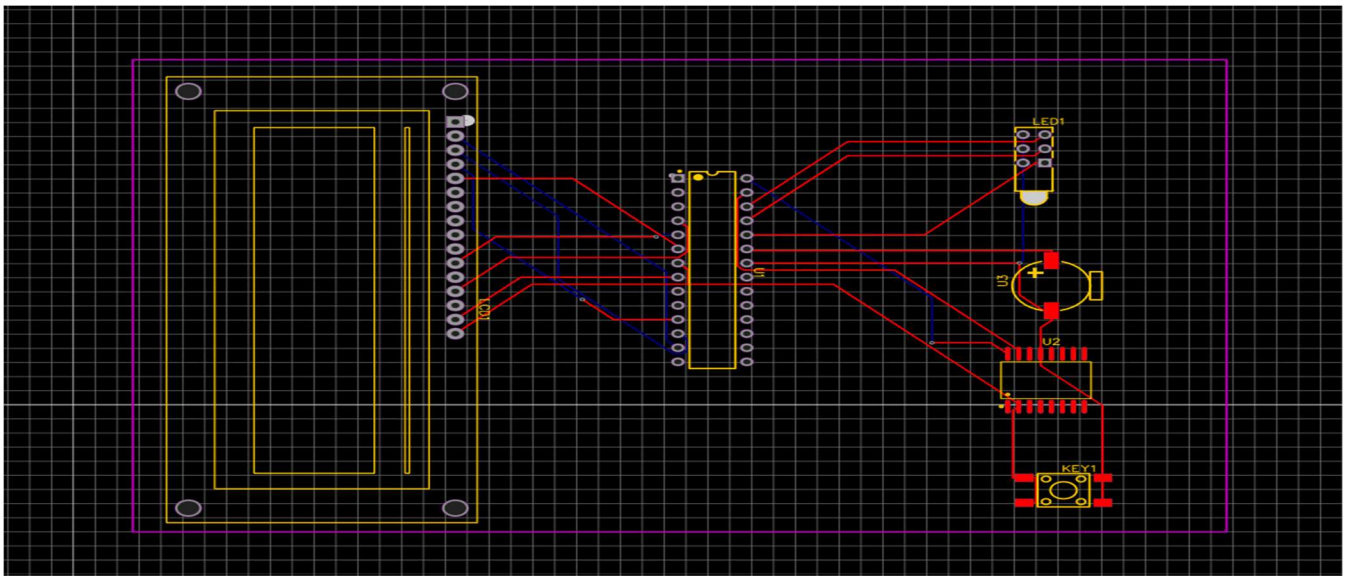

Figure:5.4

5.8 Software description:

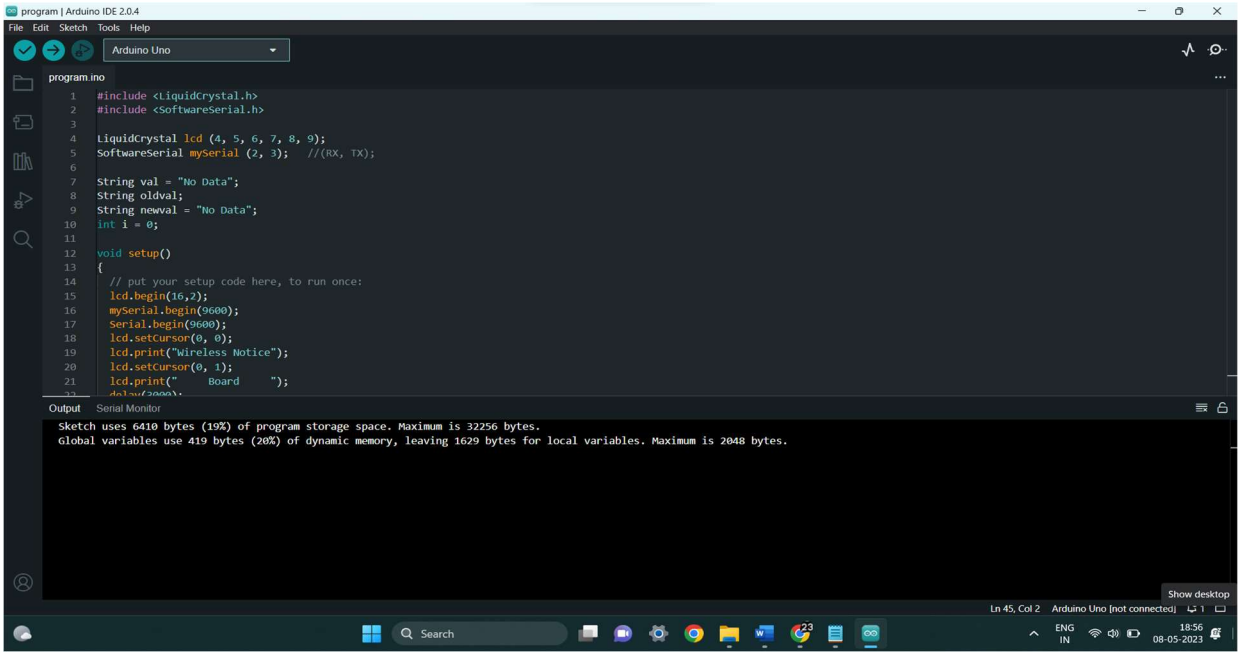

Figure 5.5

To program an Arduino board using the **Arduino IDE**, follow these basic steps:

- Download and install the Arduino IDE software from the official Arduino website.
- Connect your Arduino board to your computer using a USB cable.
- Open the Arduino IDE software.
- Select the correct board and port from the "Tools" menu. In the "Board" submenu, select the type of Arduino board you're using (e.g. Arduino Uno, Arduino Nano, etc.). In the "Port" submenu, select the port that the Arduino is connected to (you may need to check your computer's device manager to find this information).
- Write your program in the Arduino IDE editor. The editor consists of a text area where you can write your code, and a toolbar with buttons for compiling and uploading your code to the Arduino board.
- Verify and compile your program by clicking the "Verify" button on the toolbar. This checks your code for syntax errors and makes sure it's ready to be uploaded to the board.
- Upload your program to the Arduino board by clicking the "Upload" button on the toolbar. This sends your code to the board and programs it to do what you've written.
- Once the upload is complete, you can disconnect the Arduino board from your computer and use it for your project.

5.9 Source Code:

```
#include <DS3231.h>
DS3231 rtc(SDA, SCL);
Time t;
#include<LiquidCrystal.h>
LiquidCrystal lcd(2, 3, 4, 5, 6, 7);
void setup() {
  rtc.begin();
  Serial.begin(9600);
  lcd.begin(16, 2);
  pinMode(A0, OUTPUT);
  digitalWrite(A0, LOW);
  pinMode(A1, OUTPUT);
  digitalWrite(A1, LOW);
  pinMode(A2, OUTPUT);
  digitalWrite(A2, LOW);
  pinMode(A3, OUTPUT);
  digitalWrite(A3, LOW);
  pinMode(13, INPUT_PULLUP);
}

void loop() {
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Time:   ");
  lcd.print(rtc.getTimeStr());
  lcd.setCursor(0, 1);
  lcd.print("Have a Nice Day ");
  t = rtc.getTime();
  if ((t.hour == 9) && (t.min == 5) && (t.sec == 0))
  {
    lcd.setCursor(0, 1);
    lcd.print("DOLO-650 2 PILLS");
    while(digitalRead(13)==HIGH)
    {
      //digitalWrite(8, LOW);
      digitalWrite(A0,HIGH);
      digitalWrite(A1,HIGH);
      delay(200);
      digitalWrite(A0,LOW);
      digitalWrite(A1,LOW);
      delay(200);
```

```
  }
 // digitalWrite(8, HIGH);
}
if ((t.hour == 9) && (t.min == 7) && (t.sec == 0))
{
  lcd.setCursor(0, 1);
  lcd.print("IBUPROFIN 1 PILL");
  while(digitalRead(13)==HIGH)
  {
   // digitalWrite(9, LOW);
    digitalWrite(A0,HIGH);
    digitalWrite(A2,HIGH);
    delay(200);
    digitalWrite(A0,LOW);
    digitalWrite(A2,LOW);
    delay(200);
  }
 // digitalWrite(9, HIGH);
}
if ((t.hour == 18) && (t.min == 37) && (t.sec == 0))
{
  lcd.setCursor(0, 1);
  lcd.print("DISPRIN 2 PILLS ");
  while(digitalRead(13)==HIGH)
  {
    digitalWrite(A0,HIGH);
    digitalWrite(A3,HIGH);
    delay(200);
    digitalWrite(A0,LOW);
    digitalWrite(A3,LOW);
    delay(200);
  }
}
delay(1000);
    }
```

CHAPTER 6

RESULTS AND APPLICATION

6. 1 Result:

It is very easy to write program once you have thought of the ways to remind taking the pills. Here it will show the reminder on display, buzz a buzzer and indicate it using LED. It also have option to select three time slots (once/twice/thrice per day) and when time will reach it start alerting the patient by buzzing the buzzer. Then the whole system will look like following

6.3 Application:

Home use: The system can be set up at home, and programmed to remind the patient to take their medication at specific times of the day. This can be especially helpful for elderly patients who may forget to take their medication on time.

Hospital use: The system can be installed in hospital rooms to ensure that patients take their medication on time, which can reduce the risk of complications and improve patient outcomes.

Long-term care facilities: The system can be used in long-term care facilities to help staff keep track of medication schedules and to remind patients to take their medication. This can help reduce medication errors and improve patient safety.

Mental health facilities: The system can be used in mental health facilities to help patients with memory and cognitive issues remember to take their medication on time. This can improve treatment outcomes and reduce the risk of relapse.

CHAPTER 7

Conclusion and Future scope

7.1 Conclusion:

Automatic medicine reminder system using Arduino can be a valuable tool for individuals who need to take medication regularly. It can help patients remember to take their medication on time, which can lead to better treatment outcomes and reduce the risk of complications. This system can be used in a variety of settings, including at home, in hospitals, long-term care facilities, and mental health facilities. The system can also be programmed to track medication adherence and send notifications to healthcare providers if a patient misses a dose or stops taking their medication. This can lead to early intervention and better patient outcomes. Overall, an automatic medicine reminder system using Arduino can improve medication management, reduce medication errors, and improve patient safety.

7.2Future Scope:

The future scope of automatic medicine reminder systems using Arduino is vast, and there are several potential areas for development and improvement. Here are a few potential future directions:

1. Improved connectivity: One potential area for improvement is to enhance the connectivity of the system, allowing it to communicate with other devices and healthcare providers. For example, the system could be linked to a patient's electronic health record, allowing healthcare providers to monitor medication adherence remotely.

2. Artificial intelligence integration: Another potential area for improvement is to integrate artificial intelligence (AI) into the system. An AI-powered reminder system could learn from a patient's behavior and adjust the medication schedule accordingly. This could improve medication adherence and reduce the risk of complications.

3. Mobile app integration: Another potential area for improvement is to integrate the system with a mobile app. Patients could receive reminders and notifications through the app, and the app could also track medication adherence and provide personalized medication management recommendations.

4. Sensor-based systems: A sensor-based automatic medicine reminder system could be developed that uses sensors to detect when a patient has taken their medication. This would eliminate the need for manual input and further improve medication adherence.

5. Wearable technology integration: The system could be integrated with wearable technology, such as smartwatches or fitness trackers, to provide patients with more personalized reminders and notifications.

APPENDIX B

Evolution Sheet (ESE)

For

Capstone Project Planning

Name of Students: Arshdeep S, Dignag P, Tanushree S, Umair K, Furqan K

Name of Programme: Electronic & Telecommunication Egg. **Semester:** 6th

Course Title: Capstone Project Planning. **Code:** 22058

Title of Capstone Project: Automatic medicine reminder using system Arduino.

A. POS addressed by the Capstone Project (Mention only those pre-dominant POS)

PO1. Basic knowledge: Apply knowledge of basic mathematics, Science and Basic engineeringto solve the broad-based Electronic and Telecommunication engineering problem.

PO2. Problem analysis: Identify and analysis well defined engineering using codified standard methods

PO3. Design / development of solutions: Design solution for well-defined technical problem and assist with the design of system of component or processing to meet specified needs.

PO4. Engineering Tools, experimentation and testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

PO5: Engineering practices for society , sustainability and environment: Apply appropriate technology in context of society ,sustainability, environment and ethical practices.

PO6: Project management : Use engineering management principles individually , as a team member or a leader to manage project and effectively communicate about well - defined engineering activities

PO7: Life - long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

B. COS addressed by the Capstone Project (Mention only thosepredominant POS)

1. Implement the planned activity individually and/or as team.
2. Select, collect and use required information/knowledge to solve the identified problem.
3. Take appropriate decisions based on collected and analyzed information.
4. Ensure quality in product.
5. Incorporate energy and environment conservation principles.
6. Consider the ethical issues related to the project (if there are any).
7. Assess the impact of the project on society (if there is any).
8. Communicate effectively and confidently as a member and leader of team.

C. Program Specific outcomes (PSO) addressed by the capstone project.

PSO1. Electronics and Telecommunication System: Maintain various types of Electronics and Telecommunication engineering specific industry soon after the diploma program.

PSO2. EDA Tools Usage: Use EDA tools to develop simple Electronics and Tele-communication engineering related circuits.

D. Other learning outcomes achieved through this project

1. Unit Outcomes (Cognitive Domain)

a) Identify power electronics device in circuit.
b) Use various types of transducer and sensor to measure quantities.
c) Use phase controlled rectifier in different application.
d) Use Diode in different application.

2. Practical Outcomes (in Psychomotor Domain)

a) Interpret the working of junction transistor in electronic circuit.
b) Maintain control circuit consisting of power electronic devices.
c) Interpret working of various types of sensor and transducer.
d) Troubleshoot specified application various linear ICs

3. Affective Domain Outcomes

a) Follow safe Practices.
b) Demonstrate Working as a leader / a team member.
c) Maintain tools and equipment.
d) Follow ethical practices.

PROGRESSIVE ASSESSMENT (PA) SHEET		
Sr.No	**Criteria**	**Marks**
1	Project Proposal / Identification	10
2	Punctuality and Overall Contribution	
3	Project Diary	
4	Execution of Plan During Sixth Semester	20
5	Project Report Including Documentation	15
6	Presentation	05
Total		50

PROGRESSIVE ASSESSMENT SHEET (PA)								
Name of student	**Roll no.**	**Project Proposal / Identification (2)**	**Punctuality and Overall Contribution (2)**	**Project Diary (6)**	**Industrial survey/Literature review (20)**	**Report Writing (15)**	**Presen Tation(05)**	**Total (50)**
Arshdeep	12							
Dignag	39							
Tanushree	40							
Umair	41							
Furqan	42							

Name and designation of the Faculty Member: Mrs. Deena Shah (HOD-EJ)

Signature_____

Appendix C

SUGGESTED RUBRIC FOR ASSESSMENT OF CAPSTONE PROJECT

SR NO.	Characteristic to be assessed	Poor Marks (1 - 3)	Average marks (1 - 3)	Good Marks (1 - 3)	Excellent Marks (1 - 3)
1.	Problem/ Task Identification (Project Title)	Relates to very few POs Scope of problem not clear at all	Related to somePOs Scope of Problem / task vague	Take care of at least there POs Scope of Problem / Task not very specified	Take care of more than Three POs Scope of Problem/ Task very clear
2.	Literature Survey/ Industrial Survey	Not more than tensources (Primary and secondary) ,very old reference	At-least 10 relevant sources,most latest	At-least 15 relevant sources,most latest	About 20 relevant sources, most latest
3.	Project Proposal	Methods are not appropriate, All steps not mentioned, Design of prototype notstarted (if applicable)	Appropriate plan but not in much detail. Plan B for critical activities not mentioned. Time line is not developed. Design of Prototype is notcomplete. (if applicable)	Appropriate and detailed plan withPlan B for criticalactivities mentioned, but clarity is not there in methods,time line is givenbut not appropriat Design of Prototype is notdetailed	Appropriate and detailed plan with Plan B for critical activities mentioned, clarity in methods with timeline, detail design of prototype(if applicable)
4.	Project Diary	Entries for most weeks are missing. There is no proper sequence and details are notcorrect.	Entries for some weeks are missing. Details are not appropriate, not signed regularly by the guide.	Entries were made every weekbut are not in detail. Signed andapproved by guide every week	Entries were madeevery week in detail, signed and approved by guideevery week

5.	Final report Presentatio n	Very Short, Poor quality sketches, detail about methods, material, precautions and conclusion omitted, some details are wrong	Detail, correct and clear descriptions of method, materialsand precautions	Conclusion, sufficient graphic description	Very Detail, correct, clear description of methods, materials, precautions and conclusions. Enough tables, charts and sketches
6.	Presentatio n	Major information is not including, Information is notwell organized	Include information but not well organized and notpresented well	Includes major information and well organized but not presentedwell	Well organized, include major information, wellpresent
7.	Question and Answer session	Could not reply toconsiderable number of questions	Replies to considerable number of question but notvery properly	Reply properly to considerable number of questions	Reply to most of the questions properly.

Reference and bibliography:

1. https://circuitdigest.com/microcontroller-projects/arduino-medicine-reminder

2. https://www.engineersgarage.com/medicine-reminder-using-arduino/

3. https://github.com/Sriharshitha842/Automatic_Medicine_Remainder-

4. https://projecthub.arduino.cc/ashraf_minhaj/12ffd45e-f8e2-408f-9d34-f228b1f9fec5

5. https://www.tinkercad.com/things/jENYNpAPsIr-medicine-reminder-using-arduino

6. https://github.com/rahulvit32/Medicine-Reminder-Using-Arduino

7. https://1000projects.org/smart-medicine-pill-reminder-project-using-arduino.html