

## Automatic Patient Medicine Remainder Systemby GSM Module

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### Article Info

**Page Number:** 324-332

**Publication Issue:**

**Vol. 69 No. 1 (2020)**

### Article History

**Article Received:**

12 September 2020

**Revised:** 16 October 2020

**Accepted:** 20 November 2020

**Publication:** 25 December 2020

### Abstract

The primary goal of this project is to provide an automatic Patient pharmaceutical remaining system using a GSM module for users who regularly take medications and whose prescriptions are lengthy, making it difficult for patients and their caregivers to remember. Additionally, elderly patients experience difficulty with forgetting to take their medications at the right times, which results in specific health problems for those who have chronic conditions like diabetes, high blood pressure, breathing issues, heart issues, cancer disorders, etc. Our decision to create an autonomous system that will recall was based on these two problems because we observed them in hospitals and in the people who have these conditions nearby. Both the current time and the notification time will be stored in the EEPROM and RTC modules, respectively. Therefore, certain pill boxes emit a bright light and play a notification sound when it's time to take your medication. Thus, the patient can be aware of the precise box number from which he must remove his medications. Push buttons are used to deliver notifications as directed by prescription. In order for the patient to know the precise number of times to take their medication, the system generates a notification sound at the moment of administration and sends messages via GSM to mobile phones and email.

**Keywords:** Arduino Uno R3 Micro controller, LCD Display, GSM Technology, RTC Module.

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## INTRODUCTION

All people fall under the group of patients, including teachers, students, businesspeople, housewives, and kids. We all have demanding schedules as well. Life today is stressful and loaded with duties. People are therefore susceptible to a variety of ailments, so it is our responsibility to maintain our own health and fitness. If the patient stays at home, someone may help care for him or her, but if the patient travels or lives in another city or state away from home, it is difficult for family members to contact and constantly remind them to take their medication as prescribed. To treat their conditions, patients and elderly people must take a variety of medications. It can be dangerous and extremely stressful to monitor these medicines. Our goal will be to assist these people in taking the appropriate measurements at the appropriate times.

The automated medical container structure would be able to remind the patient throughout the day. It will use visual and auditory cues to remind the Patient to take the medication. These warnings will sound when there is a chance to take the medication that the patient adjusted.

The striking issue is that patients frequently forget to take the right medications in the right amounts at the right times. Medication adherence, which is the degree or extent to which a patient follows a doctor's prescription and takes the right medication at the right time, has recently come to light as a serious problem because numerous studies have shown that non-adherence may have a serious negative impact on the patient and increase medical costs. Medication non-adherence is a widespread, expensive, and complex issue that depletes healthcare resources and leads to subpar treatment results. Therefore, in order to help patients, maintain their health and fitness, we are introducing an Android application whose goal is to remind patients of their dosage timings through Alarm Ringing system. This application targets those who frequently fail to take their medications as prescribed. Along with the fields for the date, time, and description of the medicine, it allows users to set an alarm, enabling them to set alarms for multiple medications at various intervals.

### **RELATED WORK, RESEARCH**

GSM is a computing paradigm that transforms lifestyles and may potentially usher in the fourth industrial revolution. Additionally, GSM offers researchers the chance to suggest intelligent systems that can aid individuals in a variety of contexts, including those that can send out reminders to support people in their daily lives at home. For instance, a prototype GSM-based system is presented in to provide voice, light, and sound reminders to elderly persons through a chair. Another project pursuing the same objective is shown in, but it uses a photo frame to emit a series of reminders that were previously set up using a smartphone application. For instance, a smart medicine flask that distributes reminders in accordance with a pre-established schedule is presented in, and a medicine dispenser that proposes in delivering medication intake reminders to smartphones. Other suggestions use lights, noises, or both to remind patients to take their medications through the dispenser. The suggested smart dispensers don't use person detection to determine whether the patient is physically close to the dispenser. Ultrasound and infrared technology are used to detect the presence of patients. These systems do not send users reminders, but instead deliver the medication only when it is necessary after detecting the patient's vital signs.

The dispenser suggested in is designed for independent individuals because the patient must determine the medicine and intake schedule and is in charge of being nearby the dispenser at the appropriate time. Other works cannot guarantee that the right patient is the one who actually takes the medication out of the dispenser. Anybody who is near to the dispenser at the appropriate time can remove the drug. Other works make an effort to identify the user, but the suggested defenses are simple to go around. Fingerprint recognition is used to identify patients, but it necessitates that the user has the necessary knowledge and skills to work with the system.

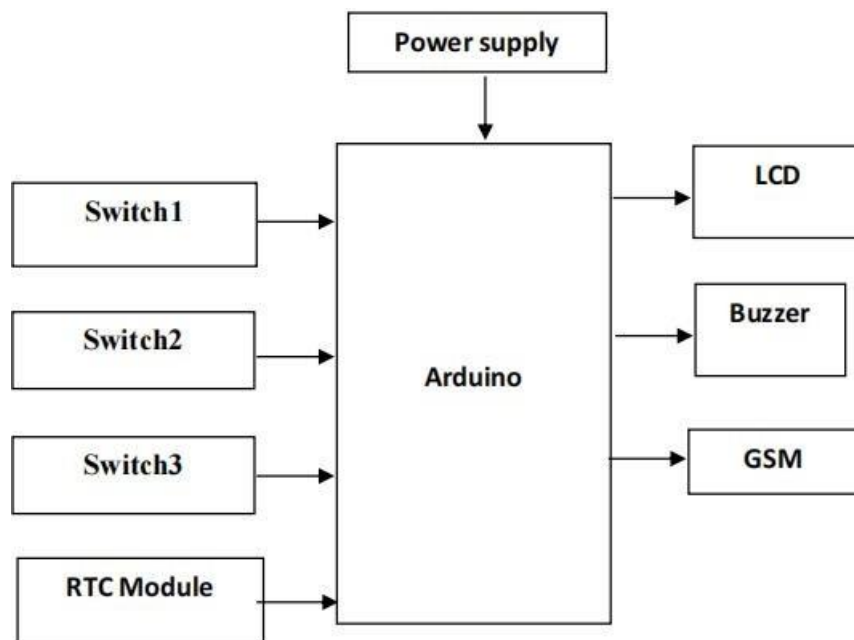
As a result of our analysis of earlier works, we are motivated to suggest a new smart medicine dispenser that can notify both dependents (primarily elderly people) and caregivers, automatically provide the schedule of prescribed medications, ensure user authentication, and provide simple user interaction. By enabling for remote notification, as well as its configuration and management, a mobile application will enhance the dispenser's operation. Additionally, as we'll see in the section after this one, our proposal includes a smart

medication dispenser with Message to Patient capabilities.

### **WORKING OF GSM MODEL**

#### **Proposed Method:**

With various features that are not included in any previous automated dispensers, the suggested Automatic Patient Medicine Remainder System elevates the concept of an automated dispenser. Each patient is given a unique account, and the only people who may access it are the patient and the caregiver if they have been given the appropriate credentials. Additionally, certain statistics are given regarding the medications taken with alarms and the ones that currently exist. Another fantastic element that aided in the project's creation was an online database of people, medications, and associated alarms. An android application can be used to remotely alter and produce the pills utilizing smartphones. There may be many people out there that require constant assistance, including the elderly, family members, and persons with special needs.



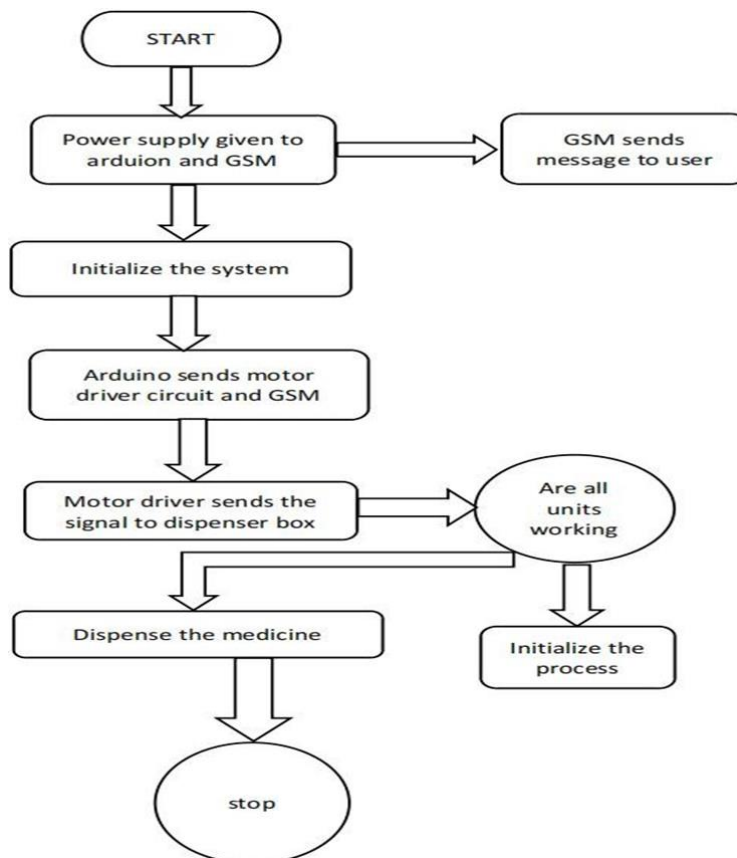
**Figure 3.1: Block diagram of proposed method**

Elders are more sensitive to the timing of a drug's administration than other people, so timing is essential to preventing any dysfunction or disease. But what if the patient has a dementia like Alzheimer's? As with age, decreased eye sight and memory are common. Some people could forget to take their medications at the proper time or to remember what medications they need to take. We had to come up with a simple, transportable, and effective solution to get rid of the aspects that require constant attention, such as nurses, or taking a chance on missing a dose. There are already pill boxes, but the majority of them are either of limited value, inappropriate for elderly people, or perhaps too large to carry around. A really practical smart pillbox needed to be simple to integrate with emerging, sweeping smart technologies.

The ease of use, however, has to be appropriate for the elderly and their limited education and experience. We also had to keep in mind the fact that the items needed to be portable and of a certain size.

The analysis that used this Automatic Patient Medicine Reminder was the least complicated. The information about the right dose of medication at the right time, as advised in the Notification time table, is provided by this Automatic Patient Medicine Reminder. The user of the Automatic Patient Medicine Reminder can first enter the data, such as the drug name and dosage schedule, or even change the framework themselves.

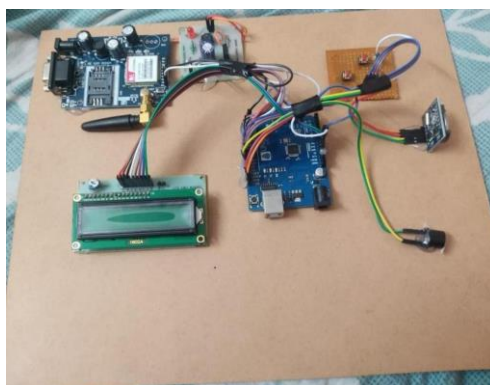
For instance, the doctor or nurse may advise taking your medication at 11 am and under the label headache medicine. All the patient needs to do is visit the doctor or nurse, who will update the ARDUINO and approve the treatment before giving it to the patient. The name of the medicine should be renewed in the programme along with the time in hours, minutes, and seconds. The yield device that is alert of this kit and show framework will get alerted after the method is finished. The signal will sound as indicated by the time entered, the LCD will display the medication's name, and a message can be sent to the user.



**Figure 3.2: Flow Chart of APMR system**

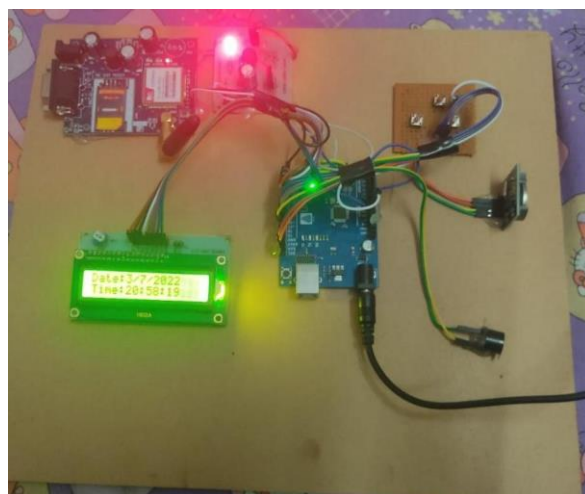
## **RESUTLS**

**Step 1:** Firstly, we have to connect the circuit as per our requirement and then we need to give the power supply to the kit.



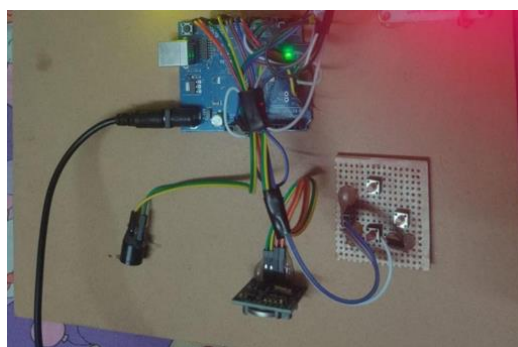
**Figure 4.1: Project prototype**

**Step 2: Next** we need to give the power supply to Arduino and we need to give the input to the Arduino once we give the input to the system. The system displays the output as shown



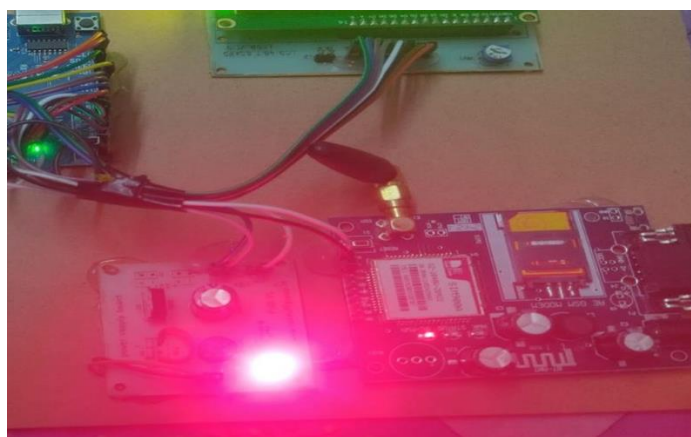
**Figure 4.2: LCD display showing welcome message by giving Power supply**

**Step 3:** Then giving input through the push buttons when the user need to take the medicine



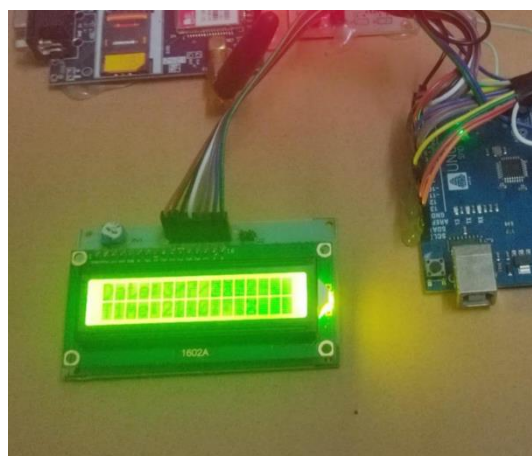
**Figure 4.3: Input giving to the system through push buttons**

**Step 4:** When it's the time to take medicine the GSM sends the notification to the user mobile



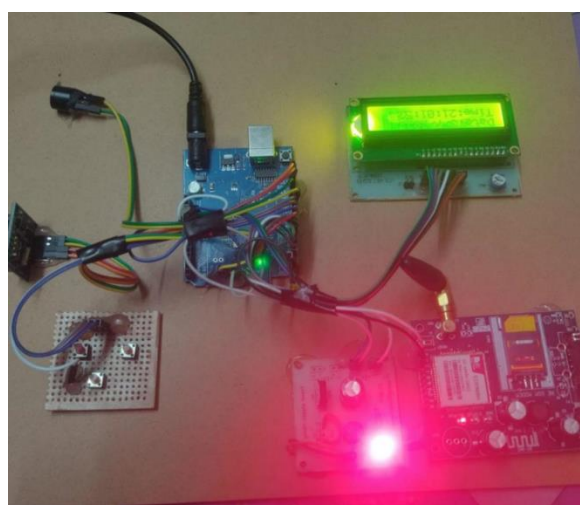
**Figure 4.4: GSM sending alert to user**

**Step 5:** LCD displays the message it's time to take medicine on time on the screen



**Figure 4.5: showing message on LCD display**

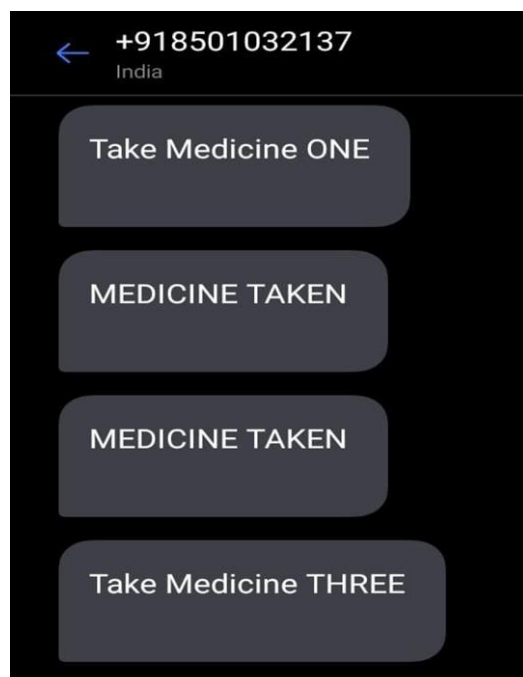
**Step 6:** Alert message sending to the user through GSM technology to the user's mobile



**Figure 4.6: Sending notification to the user**

**Step 7:** Notification sends to user mobile that to take medicine after taking the medicine

taken message



**Figure 4.7: Notification in users' mobile**

## **CONCLUSION**

Medication Reminder Systems have been developed in a variety of forms. Many of these structures call for special equipment devices to remind the patients when to take their medications. Purchasing new equipment and appliances turns out to be expensive and time- and money-consuming. As a result, an effort has been made in the job at hand to actualize a framework that will be sensible, effectively available, and promotes drug adherence. The viability of a treatment will decline due to a persistent medication update framework, which also puts financial strain on systems for providing medical services. The patients will receive a medication calendar that includes a medication depiction, the start and end dates of their medications, a warning through a liquid crystal display (LCD), and a pre-programmed alert ringing system. The type of medication the patient will take at the precise time of the warning will be suggested in the scheduled update.

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