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# A Study of a Voice Based Medicine Remainder System

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Abstract-

The primary goal of our project is to create a smart medicine box for users who routinely take medications and whose prescription is too long for patients and carers to remember. Furthermore, elderly patients experience difficulty with forgetting to take medications on time, causing a variety of health difficulties for individuals with chronic diseases such as Diabetes, high blood pressure, breathing difficulties, heart issues, and cancer, to name a few. We noticed these issues in hospitals and in others with comparable illnesses around us, so we created a smart medicine box that addresses these challenges by putting up a time plan of essential medications by pushing buttons as indicated in the prescription. The current time is saved in the RTC module, and the notification time is saved in the EEPROM. As a consequence, when the drug is administered, the system creates a notice sound. As a consequence, the patient will know exactly how many boxes he needs to take pills from. All pill boxes are pre-programmed in the system, and the patient must take them on time.

Introduction

Many people nowadays have an insatiable desire for medicines. It could be related to inherited disorders, disease acquired from other persons, or blood-borne sickness. Diseases have no age restrictions and can affect persons of any age. The prevalence of sickness is increasing, and the use of antibiotics is increasing.In comparison, technology impresses with agile gadgets. So, in this project, we show a smart pillbox that may assist patients in hospitals or at home who are taking medications unwell by notifying family members, medical shops, or by sounding an alarm at a certain time. As a result, the patient can receive their medication on a regular basis and at the appropriate time.

Literature Review

The natural reduction in physical function that comes with ageing causes an increase in the prevalence of many chronic illnesses among the elderly, making population ageing a potential worldwide issue impacting Taiwan and other emerging nations; Most people with chronic conditions must take drugs for a long period of time in order to stabilise their symptoms. It is

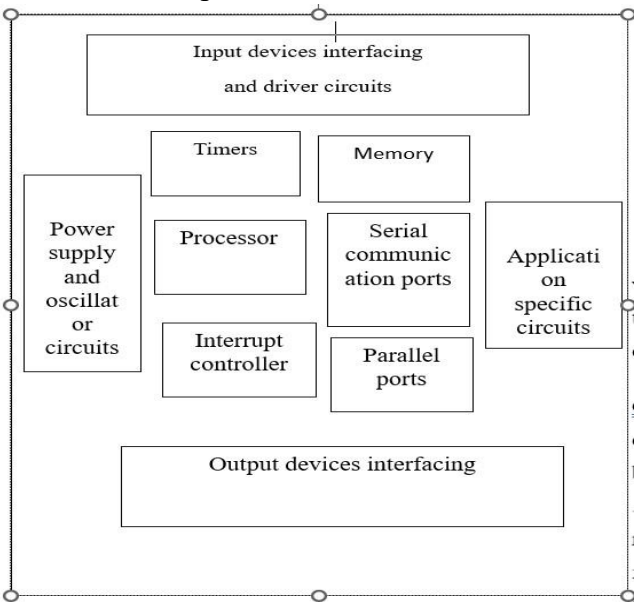
critical to ensure that patients take the correct medication at the correct time. This paper offers a smart pill box with a camera and supports the concept of a medication bag. The Universal Product Code matrix written on medicines luggage is used to communicate with the pill box up in order to execute pill prompt and assure functions. Members of family or patients should manually load the pill box with medications; This is an additional duty for family members of the elderly or patients' families.The bulk of the elderly suffer from chronic illnesses and need on pharmaceuticals to stay healthy.The family should be more involved in the drug safety of the elderly, according to the Pharmacists Association. Most people with chronic conditions must take drugs for an extended period of time in order to stabilise their health. It is critical that patients take the appropriate medication at the appropriate time. Intelligent IoT-based home-based health care platform that fully connects sensible sensors attached to the body for biological monitoring and intelligent medical packaging for daily drug administration. The technology will send prescription reminders to patients on time and will carefully track the kind and quantity of prescribed drugs, preventing pharmaceutical Abuse and misuse. When a patient visits the doctor, his or her information and medicinal script are transferred to an electronic medical record internet server. It is quite convenient for the distant physician to write or alter a prescription for a specific patient.

Table:-

| SL No | Projects | Methodology | Limitations |
|---|---|---|---|
| 1 | The Autonomous pill dispenser | Android app sends signals to device via Bluetooth. Patient needs to flip the unit so that one pill gets trapped in tip of the cone and using vibrator it gets dispensed | Elderly people find this difficult to flip the device and less likely to use android phone. |
| 2 | Pill Dispenser with alarm Via Smart phone notification | They have used the available technology to send notification on the smartphone using instapush application. After receiving the notification user needs to press the dispenser button which is located at pill dispenser unit | Smartphone rarely used by elderly patients. Cannot used by blind people, as it need to press the button on dispensing unit. |
| 3 | Medication Reminder with Medicine Dispenser | Prescription is scanned using image processing. Raspberry pi B+ module is used . No manual setting of dosage of medicine is needed. As system is set automatically can be used by anyone including disabled people as well. | Pi camera gives error sometimes and need to reboot the processor. |
| 4 | Timed Medicine Dispenser(Product) | Gives notification about medication . It has built in alarm system. | In dispenser unit, the pills need to be pre separated first in order to get correct dosage. Cannot be used by deaf person. |

Embedded system: An embedded system is divided into two parts: 1. Hardware and 2. Software.

2. Software Embedded System Block Diagram---->




Bringing software and hardware together for embedded systems: In order to create software that works with embedded systems, we must mix software and hardware. To do so, we must burn our source code onto a microprocessor or microcontroller, which is a hardware component. It handles all actions done by the embedded system according to our code.

We usually write source code for embedded devices in assembly language, but processors only run executable files. Converting your embedded software's source code representation into an executable binary image includes three separate steps:

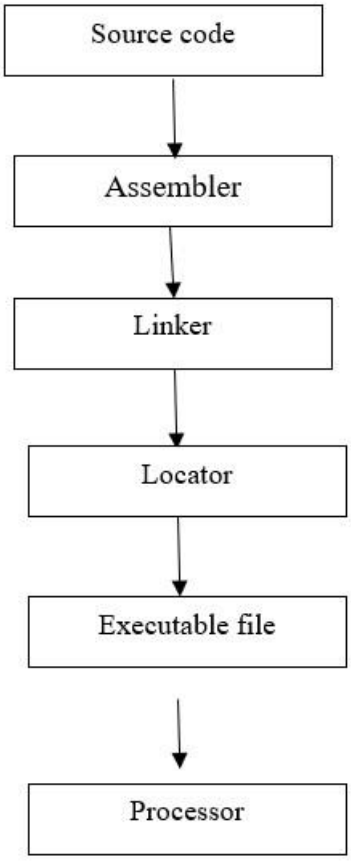
1. Each source file must be compiled or assembled to produce an object file.

2. All of the object files created in the first step must be linked together to generate a single object file known as the relocatable programme.

3.In a method called as relocation, physical memory locations must be assigned to relative offsets inside the relocatable programme.

The last step generates a file with an executable binary image that is ready to execute on the embedded device.

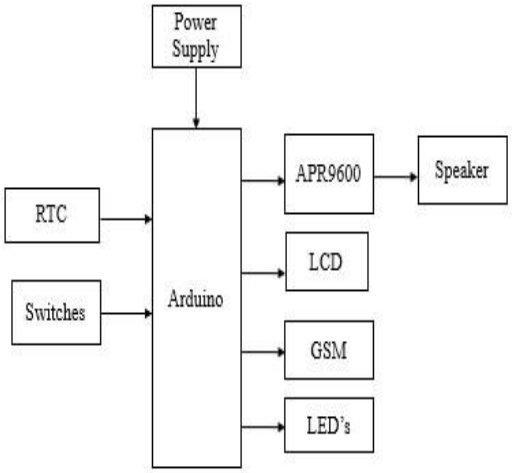
The passage of source code to the processor is being burned.




Proposed Method

Smart medicine box that solves these concerns by establishing a timetable for prescribed medications Employing those push buttons mentioned in the prescription As a consequence, while taking medication, The technology generates a warning tone and lights certain pill boxes. As a result, the patient will know how many boxes to take medicines from. The device has set up all pill boxes, and the patient must take them on time.

BLOCK DIAGRAM FOR PROPOSED METHOD




Objectives

Many people around us are suffering from chronic diseases. The majority of them have diabities. Some people fail to prioritise their health. People are obliged to succumb to regular health-related difficulties due to the lack of an expert system. Utilising the internet of things (IoT), a reminder system was created data analysis and voice assistance. It is meant to assist people who have forgotten to take their meds. The proposed system is made up of an IoT device and a website.Patients will no longer have to be concerned about their daily medication thanks to this website.

When it comes time to take medication, programme will send a message to the medicine consumer's mobile device and to the carer, and it will provide voice assistance reminders.

The website is intended to keep track of medicine specifics and to remind patients about medication schedules. We used an IoT-enabled Arduino gadget to monitor the entire system.

The infrared (IR) sensor on the device can detect whether or not a patient has taken medicine. We attempted to create a system that would assist individuals in appropriately managing their health care.

Methodology

Define the issue: Determine the issue that your medical reminder IoT initiative seeks to address. For example, failing to take medication on time or losing track of medications might have major repercussions for patients.

Create a project plan: Make a project plan including deadlines, milestones, and resource allocation. This strategy should be adaptable enough to account for changes and eventualities.

Prototyping: Begin working on your prototype IoT medical reminder system. This entails developing hardware and software components and integrating them into a functional system.

Choose the following components: Choose project components such as the microcontroller board, sensors, and mobile application development tools.

Evaluation and testing: To ensure that the prototype meets the project objectives and regulatory requirements, test it. Conduct user testing and get input from healthcare professionals and patients to assess the system's effectiveness and usability.

Refine and improve: Refine and improve your IoT medical reminder system based on input from testing and evaluation. This may entail modifying the hardware, software, or communication protocols.

Expected Outcomes

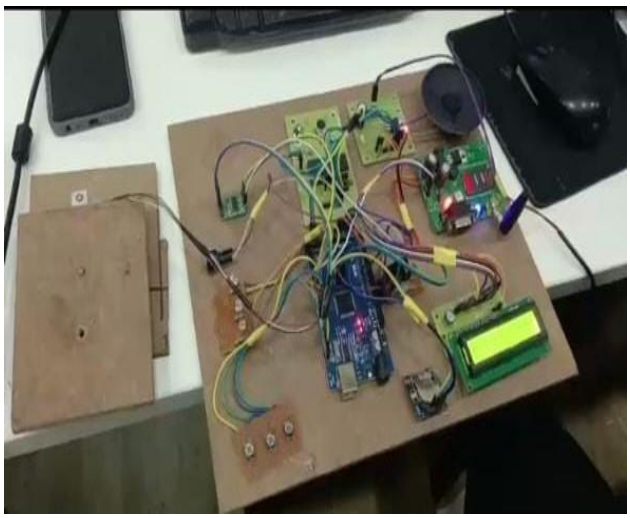
The use of a pill reminder is intended to promote medication adherence and decrease the likelihood of missed doses.

By taking medication as prescribed, individuals can better manage their health conditions and achieve better health outcomes. Some potential benefits of using a pill reminder include:

Improved medication adherence: A pill reminder can help individuals remember to take their medication on time and as prescribed, leading to improved medication adherence.

Better health outcomes: Taking medication as prescribed on a consistent basis can improve health outcomes and lower the risk of problems associated with certain health conditions.

Improved medication adherence can lead to fewer hospitalisations, emergency department visits, and other healthcare expenses associated with poor medication management.



Increased peace of mind: Individuals can have peace of mind knowing that they are taking their pills by using a pill reminder.

Medication should be taken exactly as prescribed, with no missed doses. Blind and dumb people can access easily

Conclusion

The creation of an improved technology-supported pill box known as the Smart pill box contributes to the resolution of this difficulty. This technology was created by integrating two historical experiments from our technological schooling. The pillbox's intelligence is achieved by the use of low-cost slot sensing methods, such as capacitance-based slot sensing. These basic efficient procedures are supplemented by innovations such as GSM technology to bridge the communication gap between the supplier or pharmacist and the consumer or patient, therefore assisting the patient..

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Smart Medicinebox Using IoT Platform Varun Kesav M.N.2, an M.Tech student in the department of ECE at Vidya Academy of Science and Technology, Thrissur, is the author. Ninu P.J.

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