

INTELLIGENT PILL BOX: AUTOMATIC AND PROGRAMMABLE ASSISTIVE TECHNOLOGY

Mr M.Srikanth¹, P.Ramya², P.Hari Sai³, T.Naga Chaitanya⁴, P.Sateesh⁵

1.Assistant Professor,Dept of ECE ,Sri Mittapalli College Of Engineering , Tummalapalem,AP

Srikanthmuvva695@gmail.com

2,3,4,5,Student, Dept of ECE, Sri mittapalli College Of Engineering, Tummalapalem, AP ,India

smilyramya10@gmail.com,harisaiPagadala99@gmail.com

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Abstract: In general, most of the patients forget to take the appropriate prescribed medication at the required time. There are occasions when patients remember to take medicines at the stipulated time but forget which pill has to be taken at that particular time. This poses a big problem as it affects the dosage quantum required for the patient that results in not yielding the right recovery result. It is difficult for doctors/paramedics/attenders to monitor patients round the clock. In order to avoid these problems, we have implemented this patient medicine reminder system.

1.INTRODUCTION:

An embedded system is a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general purpose computer, such as a personal computer, an embedded system performs one or a few predefined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded systems are often massproduced, benefiting from economies of scale. Personal digital assistants (PDAs) or handheld computers are generally considered embedded devices because of the nature of their hardware design, even though they are more expandable in software terms. This line of definition continues to blur as devices expand. With the introduction of the OQO Model 2 with the Windows XP operating system and ports such as a USB port — both features usually belong to "general purpose computers", — the line of nomenclature blurs even more. Physically, embedded system ranges from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory

controllers, or the systems controlling nuclear power plants. Wireless Sensor Networks (WSN), sometimes called Wireless Sensor and Actuator Network (WSAN) is a wireless network consisting of spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, humidity, pressure, etc. A WSN system incorporates a gateway that provides wireless connectivity back to the wired world and distributed nodes. To cooperatively pass their data through the network to a main location. The more modern networks are bidirectional, also enabling control of sensor activity. The increasing demand for energy, the continuous reduction in existing sources of fossil fuels and the growing concern regarding environment pollution, have pushed mankind to explore new non-conventional, renewable energy resources such as solar energy, wind energy, etc for the production of electrical energy. Since India receives sunlight all 12 months of a year. Hence utilizing it in the different fields is a wise idea. India is an agricultural country. India ranks second worldwide in farm output. At present, farmer manually irrigates land at regular interval. This process sometimes consumes more water or sometimes the water reaches late due to which the crops get dried. Solar powered smart farming irrigation system not only overcomes this problem but also provide clean source of energy.

2. SYSTEM STRUCTURE:

The system consists of a GSM modem ,buzzer, RTC (real time clock) and 16x2 LCD display .GSM modem is used to send messages .RTC is used to set the exact time.LCD display displays the message.



The system hardware includes Arduino Uno, Micro controller, RTC DS3231 module, 16x2 LCD Display, Buzzer, Bluetooth module ,GSM module.

BLOCK DIAGRAM

3. SYATEM HARDWARE DESIGN:

3.1 BLOCK DIAGRAM:

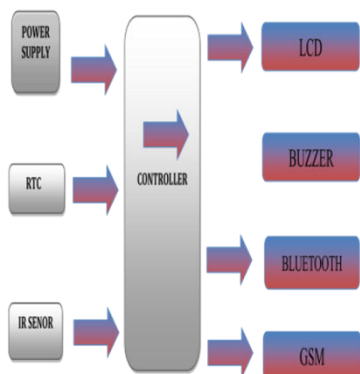


FIG 3:RTC

3.4 LCD DISPLAY:

We used 16*2 LCD module in our project which is connected to arduino UNO through a LCD interface IC or directly to its address and data bus and few control pins. LCD shows the current time and date which RTC sends the data to LCD module.

FIG 1: BLOCK DIAGRAM

This project mainly consists of power supply, Arduino uno micro controller, RTC, Buzzer, LCD, GSM, Bluetooth and IR sensor



FIG 4:LCD Display

3.2 MICRO CONTROLLER:

We are using ARDUINO UNO because it uses 8-bit audio signalling microcontroller ATMEGA328 and it has 32KB device, which may be flash memory. These features..are use full in our mechanical, electromechanical, or piezoelectric project. arduino uno board is connected with other beepers modules also it controls all other modules & made include alarm devices, timers, and confirmation the interfacing easier. you can tell your boards what of user input such as a mouse click or to do by sending a set of instructions to the microcontroller by using arduino IDE Software.

3.5 BUZZER:

Buzzer or beeper is an audio signalling microcontroller ATMEGA328 and it has 32KB device, which may be flash memory. Typical uses of buzzers and beepers modules also it controls all other modules & made include alarm devices, timers, and confirmation the interfacing easier. you can tell your boards what of user input such as a mouse click or to do by sending a set of instructions to the microcontroller by using arduino IDE Software.

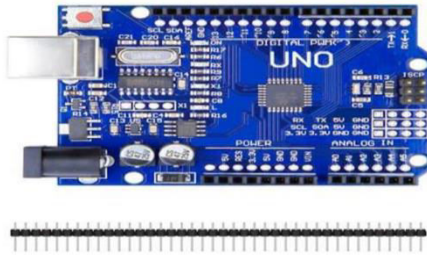


FIG 2:arduino board

3.3 REAL TIME CLOCK(RTC):

We used tiny RTC 12C module which uses 12C

protocol and it is use full in our project .RTC transparent wireless serial connection setup. The module has internal CMOS cell so it does not needs

external power supply to update time and date.

for wireless communication . this serial port bluetooth module is fully qualified bluetooth V2.0+EDR(enhanced data rate)3Mbps modulation with complete 2.4GHz radio transceiver and baseband. it uses CSR bluetooth 04-external single chip bluetooth system with CMOS technology and with AFH(Adaptive frequency hopping feature).

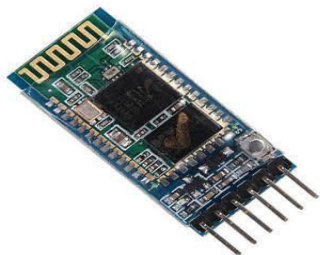


Fig 6:Bluetooth

3.7 IR SENSOR:

We have 3 boxes having an LED in each box which blinks to show us the specific box from which the pills needs to be taken at given time.



Fig 5: Buzzer

3.6 BLUETOOTH:

HC-05 module is an easy to use bluetooth

SPP(serial port protocol)module, designed for

HC-05 bluetooth module can be used in a master or slave configuration, making it a great solution

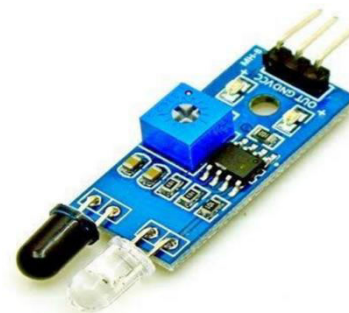


Fig 7:IR Sensor

3.8 GSM:

GSM stands for global system for mobile communication. it is a digital cellular technology used for transmitting mobile voice and data services.GSM operates on the mobile communication bands 900 MHz and 1800MHz in most parts of the world.



Fig 8: GSM

3.9 POWER SUPPLY:

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage. buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke.

4. IMPLEMENTATION:

A lot of people have to take certain medicines regularly. A number of diseases like diabetes, blood pressure or heart problem are nowadays very common and the patients need to take medicines without break to keep such health issues in check. Most of the people are not punctual about taking medicines and often forget one or the other dosage. In this project, a medicine reminder system is designed in which the user can feed the schedule of their medicines and the system alerts them by sending SMS on their mobile if they miss taking a dosage. The user has to feed the type of medicine, its dosage, After or Before Food reminder, doctors name and time of the dosage in the system. At three instants of time - morning (9 AM), afternoon (12 PM) and night (9 PM), the Arduino seeks the confirmation of dosage taken by detecting the press of the confirmation button by the user. If the user does not press the button, after a delay of 2 minutes, the board sends an SMS through the GSM module to the registered mobile number of the user. At three instants of time - morning (9 AM), afternoon (12 PM) and night (9 PM), the Arduino seeks the confirmation of dosage taken by detecting the press of the confirmation button by the user. If the user does not press the button, after a delay of 2 minutes, the board sends an SMS through the GSM module to the registered mobile number of the user.

PROTOTYPE

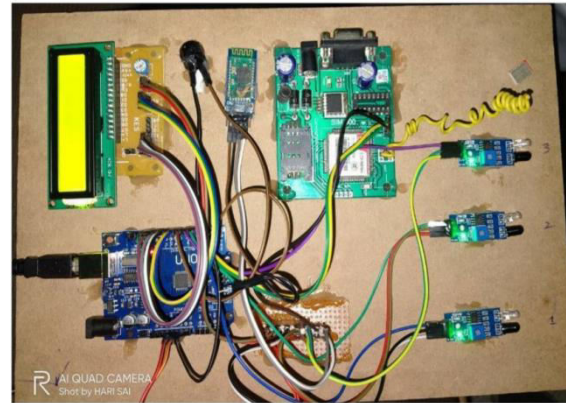


Fig 9: Intelligent pill box

5. RESULT OF THE PROJECT:

We made our project as useful for the patient who needs this and all related users. We conclude result that our project is useful for those people who are taking pills regularly, prescription of medicine is very long and hard to remember for those users. Our product is so useful that it can cure those patients illness and there will no need of taking care of these types of patients so caregiver has no tension about their health and they will live healthy and tension free life.

RESULT



Fig 10: Result in LCD display

6. CONCLUSION:

The report contains a very different mix of studies varying from software to hardware. Vast research is being done in the field of healthcare and patient medicine monitoring. This project has given a basic insight into the bridging of technology and medicine. In addition, if the tablets are empty in the box it sends an alert message to refill it. Find field helps in the locating the box.

7. REFERENCES:

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