International Journal of Technical Research and Applications e-ISSN: 2320-8163,
www.ijtra.com Volume 4, Issue 3 (May-June, 2016), PP. 73-76

AUTOMATED MEDICINE DISPENSING MACHINE

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Abstract— **It is necessary to provide medication to the aged in time. Automatic medication dispenser is designed specifically for users who take medications without close professional supervision. It relieves the user of the error-prone tasks of administering wrong medicine at wrong time. The major components of this medication dispenser are a microcontroller interfaced with an alphanumeric keypad, an LED display, a Motor Controller, an Alarm system, a multiple pill container and dispenser. The user is required to press a button to get the pill. The major objective is to keep the device simple and cost efficient. The software used is reliable and stable. Elderly population can benefit from this device as it avoids expensive in-home medical care.**

Index terms- **Dispenser, microcontroller, motor controller.**

I. INTRODUCTION

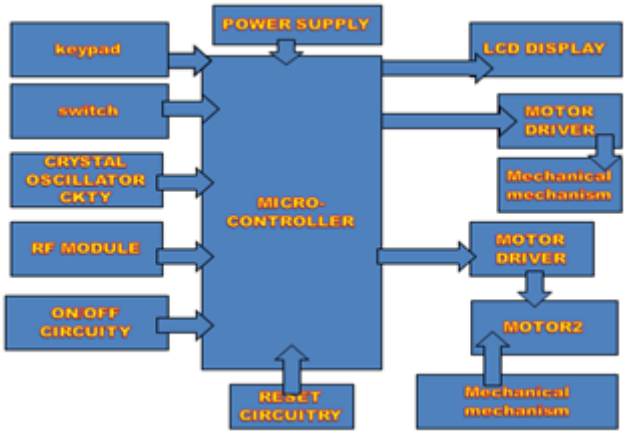
Caring of the aged is of a serious concern in the developing countries. Family members are responsible for the care and management of the old. In the modern age it is difficult for family members to be available all the time to support the aged. Today, in our society most families are nuclear. Elderly would prefer to remain independent and their desire for independence in natural, but it is a worry for their children. Sometimes despite their best effort, the aged fail to remember to take their medication on time.

Automatic Medication dispenser is one such approach to help them take their medicines efficiently. As the cost of in-home medical care rises, it has become more and more incumbent among individuals to opt for a device that effectively takes care of their medications. The automatic medicine dispenser serves the purpose

II. LITERATURE SURVEY

There are a large variety of medication administration assistance devices for non- professional users. Most of them are manual, providing multiple compartments called pill trays. The pill tray has a number of compartments that can be filled with medication. Each compartment can hold different sizes and combination of medicines. The user is required to take the medicine from each tray each day for a maximum of 28 days. It does not provide any alarm to indicate the time of taking the medicine [1]. Pill-Mate-Medicine reminder is a gadget that uses both visual and audible signals to remind user. It reminds at a pre-set time to take medicines or attend certain events [2]. A smart phone application is designed to help patients to avoid mistakes. It reminds its users to take correct medicines on time and record the in-take schedules for later review by healthcare professionals [3].

III. BLOCK DIAGRAM



DESCRIPTION:-

The microcontroller is the heart of the project. first the user or patient have RFID tag, then person have to put the tag in front of machine RFID reader then it will detect the RFID code of the person. When the code of both the tag matches then it will ask for quantities of the tablet or pills, then user have to put number for the pills .this machine is basically offer for quantity of 2 tablets. when person enter the 1 or 2 pills quantity then motor driver will drive the two motors and from the pill box pills will come out.

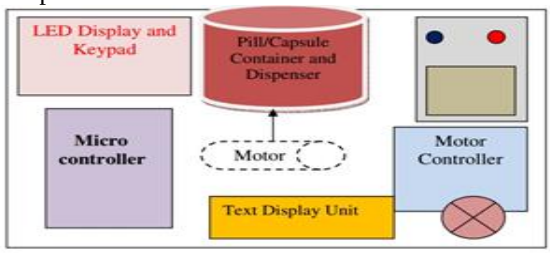
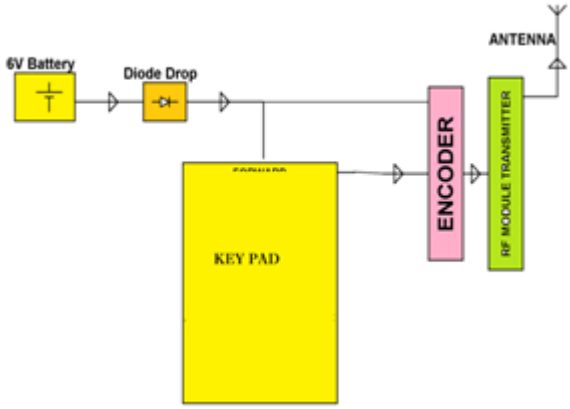


Figure 1 Block Diagram of Medication Dispenser

ACTIVE RFID TAG



The active RFID tags have their own source of power. They can transmit stronger signals over long distances and can operate in rugged environment for many years. Because of the on- board source of power they are larger in size and

expensive. Then too Active RFID and Real- Time Location solutions (RTLS) are

Saving millions of dollars for enterprises around the world. The low power active tags usually look like a deck of playing cards.

	(before) RFID	(after)RFID
Prescription	Manual	paperless
Drug Similarity	Easy to confuse	With light indicator
Syringe control	Easy to expire	Monitored by RFID
Restrict medicine	Book keeping	Automated Safety record
Healthcare advice	Limited time to do	More time to give advice
Dispensing	Error inevitable	More inspections by pharmacist
Accuracy	Patient detection	RFID Pre-warning

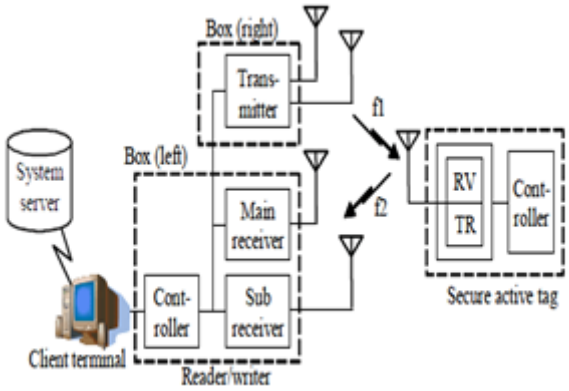


Figure: Block Diagram of Active RFID Active RFID tags are basically miniature radio flares and contain both a radio transmitter and a radio receiver circuit. An Active RFID tag consists of three main parts: tags, readers and servers.

The tags consist of an antenna and IC's. The reader in their range communicates with the tags in accordance with the protocol (standard/ proprietary) that they follow. The readers can collect information from multiple tags at the same time. The readers then pass this information on to the servers through Serial ports (e.g. RS-232), USB, Ethernet or wireless means. The servers have software running on them which uses the information sent by the readers to carry out tasks such as locating the tag.

The recent Active RFID tags use 2.4 GHz as their operating frequency because this frequency range is available worldwide. Although these tags require transmitting power, the time duration of transmitting radio signal is very short. So most of the time, they remain quiescent. Because of this steady state mode, they control the battery life of the tag. The normal lifespan of the battery is approximately one year. There is no need for the RFID reader to transmit a large amount of power as the active RFID tag has an onboard powers source. The advanced Active tags can also form ad hoc peer networks with each other. some tags have their own specialized reader specially for the asset tracking system, while others are compatible with existing standards based on Wi-Fi (802.11) networks. Some tags only offer basic long range presence detection, while others use some algorithm such as RSSI or TDOA to determine location in real time.

IV. COMPONENTS

MICROCONTROLLER

AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 4K bytes of In System Programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry- standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with In-System Programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded

control applications. The AT89S52 provides the following standard features: 4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, two 16-bit timer/counters, a five-vector two-level interrupt architecture, a full duplex serial port, on- chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next external interrupt or hardware reset.

MOTOR CONTROLLER

All motors have a control device called a motor controller to start and stop the motor called a motor controller. It is the actual device that energizes and de-energizes the circuit of the motor so that it can start or stop. The design of the motor controller will be determined by the current requirement of the stepper motor selected. The motor controller takes logic inputs from the microcontroller and supply enough current to the stepper motor to meet maximum torque requirements.

DISPLAY

Various display device such as seven segment display. LCD display, etc can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.

LCD

Liquid crystal Display (LCD) displays temperature of the measured element, which is calculated by the microcontroller. CMOS technology makes the device ideal for application in hand held, portable and other battery instruction with low power consumption.

GENERAL SPECIFICATION:

Drive method: 1/16 duty cycle Display size: 16 character * 2 lines Character structure: 5*8 dots.

Display data RAM: 80 characters (80*8 bits) Character generate ROM: 192 characters Character generate RAM: 8 characters (64*8 bits)

Both display data and character generator RAMs can be read from MPU.

Internal automatic reset circuit at power ON. Built in oscillator circuit.

MOTOR DRIVER

Motor Driver will drive DC motor depending upon signal received from microcontroller. Motor driver IC can drive maximum 2 motors.

The L293 is an integrated circuit motor driver that can be used for simultaneous, bidirectional control of two small motors.

The L293 is limited to 600mA,

The L293 comes in a standard 16-pin, dual- in line integrated circuit package. The pinout for the L293 is the 16 pin.

DISPLAY:

Various display device such as seven segment display. LCD display, etc can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.

Excellent price/performance Maximum Rating: 24 VDC, 30 mA.

Operating temperature: 32 to 122 °F Dimensions

Keypad, 2.7 x 3.0 in (6.9 x 7.6 cm)

Cable: 0.78 x 3.5 in (2.0 x 8.8 cm

V. ADVANTAGES

1. As all operation is controlled through software human interfacing is minimized.
2. As human interfacing is minimized maintenance is lowered.
3. Give more accuracy, works continuously & gives consistency.
4. It is a Autonomous device.
5. The system used is microcontroller based. 6.Too little space is required for it to set for any operation at any location.
7. LCD display which makes very easy to understand the operation taking place.
8. Reset button is available for resetting the system.
9. There is also facility of measurement of various parameter
10. Simple circuit which can easily be understood. 11.Moderate price.

VI. CONCLUSION

RFID medical dispensing systems are in demand because they fulfill a number of daily needs from providing added security to the patient drug supply to automating dose recording, patient billing, and replenishment ordering. In Taiwan, patient healthcare is provided by highly trained professionals who are increasingly asked to do more with less administrative support. RFID medical cabinets are being used to automate routine tasks allowing healthcare professionals to spend more time on patient care while simultaneously improving security and safety within patent care facilities.

VII. FUTURE SCOPE

Our project is eco-friendly and does not causes any pollution and it is a new invention many practices are being carried out to make it uses for many fields The following new features may be added to improve performance of the Automated medicine dispensing machine:

1. Video conferencing between doctor and patient can be made using 3G system.
2. High speed Dynamic GPS that can give output in very high speed trains.
3. Interfacing of various biomedical instruments such as BP meter, pulse meter etc.

1.

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