

An Iot Based Intelligent Medicine Box Using Vending Machine-Medical Atm

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ABSTRACT

Medicines play a vitally important role for well-being of a person, it helps to prevent illness and heals diseases. This paper helps to get acquainted with Any Time Medicine is a machine which delivers required medicine in emergency cases and ensures availability of 24x7. It can provide medicines for basic common health issues like fever, cold and cough, etc. First aid can be done easily using this system. Medicines provided by this machine are only for timely calmness and in emergency case and the person has to consult doctor later on. ATM will be functional in saving life in remote areas, rural areas and where the medical stores aren't aired over in case of emergency. This paper shows the use of advanced RISC machine which controls the other sub systems like RFID reader. When card is inserted, features of particular user are read by RFID reader and will be displayed.

Once after the recognition of valid person, list of medicines will be displayed on LCD, there after user can select the required medicine, Give inputs for quantity using keypad. After confirmation amount will be calculated accordingly and will be deducted from RFID card. Transaction details will be sent to the user through GSM. Medicine dispenser which is the storage part of the machine will deliver the selected medicines automatically after deduction of payment.

Keywords- Medicines, RFID Reader, LCD, GSM, ARM Controller (LPC2148)

I INTRODUCTION

In our country many people lose life owing to lack of diagnosis and absence of medicine on time. Foremost issues springs up in a case, need of some medicine is intense and required medicine isn't available in stock

or the stores is closed during night times. Also it's been a major issue in remote areas, Highways, Rural areas and of course where the public is less. To get control of difficulties like these, ATM can be used and help people to get required medicine all day and all night. The device designed considering poverty and illiteracy in our country[2]. This machine will help the administration healing centers; for example, AIIMS in presenting the aid for public folks living in various regions including provincial India by introducing ATM.

Automated dispensing machines have almost withdrawn medication distribution system that provide computer controlled storage and dispensing. Tracking of medications is put forward as one potential structure to upgrade its efficiency and patient safety, they are now widely employed in hospitals. Punctual administration of medications care units has been distinctly crucial in emergency departments and intensive care units [3]. Nearly all of the hospitals is still practicing a poor stock system due to periodic dose changes and need for immediate access. Automated dispensing machine will strengthen rest dose at fingertips and makes smoother administration of medications.

II OBJECTIVE

Main intention of this paper deals with processing a system to furnish medicine 24x7 to the people. The machine can deliver principally over the counter (OTC) drugs, painkillers, first aid products etc., so that it will be helpful to the people. Concurrently availability of medicine has a major influence excluding the factor about complete cure [5]. The main motive of this prototype is that temporary relief is to be issued to people for a better chances of resisting the health from going down before they are able to reach doctor.

III METHODOLOGY

The purpose of this paper is to develop a structure to grant prescription all day and all night to the general population. The machine can provide majorly OTC drugs, torment executioner, first aid items and so on. So it will be immensely precious to the general public. To begin with the client needs to enroll in a specific approved focus with recommended drugs. At that point client will be furnished with RFID Tag and secret word. Amid exchange client must first swipe the card and enter the Personal Identification Number (PIN), so that lone approved individual can utilize the machine. Ask for the required. Prescription ought to be made by the client by looking through the menu showed on the screen. The machine will scan for the asked for medication in allocator. In the event that the prescription is available in the machine then the installment must be made for the asked for/accessible amount of the drug. At last the solution is gathered.

IV LITERATURE SURVEY

This chapter describes current difficulties that the people are facing. Under Medicines Legislation, General Sale List (GSL) medicines (those that may be brought from common retail outlets like supermarkets) may be traded across using a vending machine. Living will become a bit easier if people could buy medicines from vending machine that dispenses medicines. End users will be able to buy OTC Medicine at all times. Sometimes, minor sickness in the middle of night when the medical stores are already closed will make people nervous. As we know that OTC drugs can be traded directly to a customer without any prescription. Even during night times people an access to medicines using this machine

V BLOCK DIAGRAM

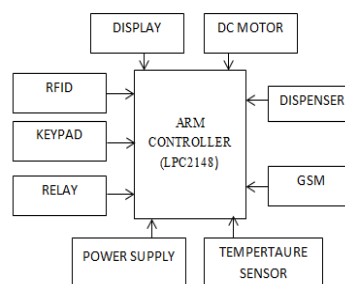


Figure 1: System block diagram

ARM CONTROLLER

LPC2148 microcontroller board based on a 16bit/32-bit ARM7TDMI-S CPU with real-time emulation and embedded trace support that combine microcontrollers with embedded high-speed flash memory ranging from 32kB to 512kB. A 128-bit wide memory interface and unique accelerator architecture [3] enable 32-bit code execution at the maximum clock rate. For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30% with minimal performance penalty. The meaning of LPC is Low Power Low Cost microcontroller. This is 32 bit microcontroller manufactured by Philips semiconductors (NXP).

TEMPERATURE SENSOR

The LM35 pin diagram is shown in the fig1. The temperature sensor in the circuit will read the temperature from the surroundings and shown the temperature in Celsius (degrees). The LM35 is a low voltage IC which uses approximately +5VDC of power [2]. This is ideal because the arduino's power pin gives out 5V of power. The IC has just 3 pins, 2 for the power supply and one for the analog output. The output pin provides an analog voltage output that is linearly proportional to the Celsius temperature. Pin 2 gives an output of 1millivolt per 0.1°C (10mV per degree).



Figure 2: Temperature sensor [Courtesy]

RELAY

The coil of a relay passes a relatively large current, typically 30mA for a 12V relay, but it can be as much as 100mA for relays designed to operate from lower voltages. Hence a CB amplifier is used to achieve the current rating of the relay. Transistors and ICs must be protected from the brief high voltage produced when a relay coil is switched off. The diagram shows how a signal diode (e.g. 1N4148) is connected 'backwards' across the relay coil to provide this protection. Current flowing through a relay coil creates a magnetic field which collapses suddenly when the current is switched off.



Figure 3: Relay [Courtesy]

GSM

This GSM modem is a highly flexible plug and play quad band SIM900A GSM modem for direct and easy integration to RS232 applications. It Supports features like Voice, SMS, Data/Fax, GPRS and integrated TCP/IP stack. To be connected to a cellular network, the shield requires a SIM card provided by a network provider. Here through this GSM, the details of the amount which are being detected in the RFID card will be sent to the user. Also the available balance will be known and recharge facility for the card will also be provided through a network.



Figure 4: GSM [Courtesy]

RFID

RFID (Radio Frequency Identification) is an automatic identification method, based on the concept of storing the data and remotely retrieving data using devices called RFID tags or transponders which contain silicon chips and antennas to detect the transmitter signal. The RFID here is used to read the user id and enable the service to the particular user. If the identity does not match then automatically message will be sent to the user that someone has accessed your id number.



Figure 5: RFID [Courtesy]

DISPLAY AND KEYPAD

The fundamental capacity of the show is to demonstrate the enlisted medicines accessible in the ATM machine and with the assistance of keypad the client can enter the name of the required prescription.

MEDICINE DISPENSER

It is the capacity part of the machine which stores every one of the pharmaceuticals. It is made up of number of drawers which stored the medicine and drawer moves with the help of stepper motor. In drawer spring mechanism is used to come medicine strips forward therefore it very easy to buy a medicine for a customer and it is safe.

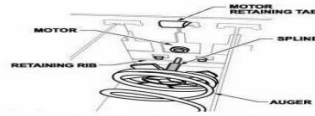


Figure 6: Medicine Dispenser [Courtesy]

DC MOTOR

A DC motor is a brushless DC electric motor that divides a full rotation into a number of equal steps. The motors position can then be commanded to move and hold at one of these steps without any position sensor for feedback, as long as the motor is carefully sized to the application in respect to torque and speed



Figure7: Dc motor [Courtesy]

VI FLOWCHART

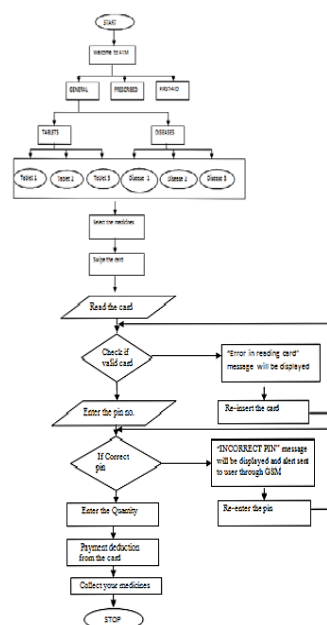


Figure 8: Flow chart

VII RESULT



Figure 9: Project model

By this method the medicines dispenses through dispenser box by selecting the appropriate medicines with keypad which will be displayed on the LCD, swipe the RFID card, later amount will be deducted from

RFID card and the deducted amount message is sent to the user through GSM, this vending machine is used for time relief.

VIII APPLICATIONS

- Its main application area will be healthcare field. It will help in increasing the network of good organization worldwide and in providing the medical facility at the doorstep to the required one.
- This idea is very much useful in day to day life for common people. It can be implemented on National Highways, Railway stations, Colleges, and Hostels.
- This system can be used by the defense organization such as military, air force etc.
- Greatest application used is no big queues, no time consuming distance, and no issue of unavailability at late night.

IX CONCLUSION

The idea that was discussed in the introduction about creating a machine called Automatic Medicine Vending Machine is been implemented in small version. We have implemented three general illnesses such as Fever, Cold and Headache. The vending mechanism is developed in small scale. The keypad/Touchpad is provided for the user to select the medicine from the given list. In this version we have asked the user to swipe a card with unique password that is given to the user while registering. This password identifies the user as an authorized one.

From this concept we conclude that, the Automatic Medicine Vending Machine is technically feasible to the people. It is based on ARM micro-controller. It gives availability of medicines all the time, also in rural areas. It is very helpful. It gives ease of access also. It is sales person-less service which is based on smart card.

As Result of this paper the people would be able to access the ATM 24*7. This machine can be installed at bus stations, railway stations and streets of the city. Drugs can be made available in affordable rates. Each person accessing the machine would be given a unique ID using which the user can be identified.

X FUTURE SCOPE

The working scope of a fare described medicine vending machine can be further improved by expanding the database adding more functionality. The controller capacity can be increased and it can be programmed to work like a doctor i.e., the machine will be able to take all the vitals like body temperature, blood pressure and other necessary details from the patient through the sensors interfaced with the machine.

One more development is that to provide automated e-emergency diagnosis and pharmacy for patients who can be meant that at the ATM, when a card being inserted the whole body of the user will be scanned and the problem will be identified and rectification suggestions will be given. If it is unable to identify, then a specialist will be connected through video conference.

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