

AUTOMATIC VENDING MACHINE FOR MEDICINES

Hema.E¹, Priya.GV², Rakshitha.A³, Rakshitha.V⁴, Shilpa Chippalakatti ⁵

5Assistant Professor, 1,2,3,4, Students

Department of Electronics and Communication Engineering

Sambhram Institute of Technology

ABSTRACT

Accessibility to basic healthcare is an important cornerstone of development towards building a healthy future. Medicines play important role in human's life. Development of technology is taking place rapidly from microelectronics to Nano technologies, one of the invention is "Automatic vending machine for medicinal drugs."

Our idea is to make availability of medicine all the time at affordable prize. As the name suggests it is a vending machine which dispenses medicine required as per the users choice. It allows the user to select the require medicine, pay, the amount after which it verifies the amount verified and dispenses the medicine.

It reduces man power, time and energy. It can also be installed in hospitals and there is no need of maintaining any records of medicines issued as everything will be recorded automatically by the machine using cloud storage, and this helps in restocking of medicine by sending a alert message to authorized person.

I. INTRODUCTION

Every dimension or institution whether its business or health related has to improve as technology grows. Many innovations have come up and the health section has not been left behind in this advancements. There are various medicine vending machines that have been developed to make health care services more efficient and reliable. Over the years, we have seen innovations of vending machines for various products like drinks and other food commodities especially biscuits and cakes. Medical inventors therefore have taken a risk of developing a medical vending machine for drugs.. Issue emerge when need of some pharmaceutical impressing and medication stores are not open or medication is not accessible in stock, particularly amid evening time and in trips. Sometimes in most hospitals especially public hospitals, it is very common to find that issuing of drugs takes quite long and therefore this machine is one way to curb the problem of time wasting. For the machine to work effectively, the patients have to use a unique identification that can prevent confusion between patients and the medicines to take from the device. The architecture of the medicine dispenser is designed carefully and it has sensors so as to identify the number of medicine dispended and when to dispense and how much to dispense.

II. LITERATURE SURVEY

[1]AUTOMATIC MEDICINE VENDING MACHINE

This author proposed that it provides an all-encompassing solution to an individual looking for immediate symptomatic relief for trivial health problems. By relieving small symptoms at work, it can completely eliminate both presentism and absenteeism in the workplace. It can also decrease the current costs of open medicine cabinets. By having an over-the-counter vending machine in the workplace, work sites without clinics or pharmacies can benefit from increased work efficiency and avoid under performance of ill employees. Moreover, it prevents hours wasted waiting in queues at clinics for trivial problems like colds and headaches. This situation gets especially magnified when a location is suffering from a localized epidemic or pandemic.

[2] AUTOMATIC MEDICINE VENDING MACHINE

This author proposed that the system is fully controlled by the 16 bit PIC micro controller. Automated dispensing machines decentralized medication distribution systems that provide computer-controlled storage, dispensing, and tracking of medications have been recommended as one potential mechanism to improve efficiency and patient safety, and they are now widely used in many hospitals. There is no doubt that these machines can enhance the efficiency of medication distribution, but their capacity to reduce medication errors is controversial and depends on many factors, including how users design and implement the systems. Automated dispensing machines provide secure medication storage on patient care

units, along with electronic tracking of the use of narcotics and other controlled medicines. Automated dispensing machines enhance rest-dose availability and facilitate the timely administration of medications by increasing their accessibility on patient care units.

[3] AUTOMATIC MEDICINE VENDING SYSTEM- MEDICAL ATM

This project was introduced to reduce the man power time and energy. It is similar to an ATM through which we get the required money at any time & any place. Medicines for B.P, diabetics, cold, fever, headache, and first aid medicines like bandage, cotton, ointments, and other routinely used tablets can be obtained. When RFID card is inserted, the details of the particular user are read by the RFID reader and displayed. After the identification of the valid person, list of medicines will be displayed on the TFT display, then user selects the required medicines by entering the corresponding number of selected medicines by using the keypad. After entering the required list, the amount will be calculated according to the medicine and their quantity. The amount will be deducted from the RFID card and immediately the transaction details will be sent through GSM to the user. After payment deduction the selected medicine are delivered automatically from the system. For this delivery system the arduino controller uses a slider arrangement with the help of servo motors which provide rotational mechanism.

[4] TOUCH SCREEN BASED AUTOMATIC MEDICAL VENDING MACHINE

This author proposed that the system idea covers the development of a touch screen based medical vending machine intended for use in remote areas

which provides basic medicine on the basis of symptoms and also provides information of availability of nearby hospitals, doctors and ambulance services. This paper describes the design and implementation of vending machine which uses the IR standard touch technology with medicine outlet mechanism using low cost efficient motor. The software used will be like visual basic. The software will be programmed such as when the patient select's a particular option the patient will be served with that required option or service. The circuit would have a feature of ambulance facility, first aid facility, and direct calling facility via GSM, dynamic GPS, smart card facility and restocking medicine alert.

[5] AUTOMATED MEDICINE DISPENSING MACHINE

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.

III. OBJECTIVE

- RFID authentication is used so, it will have data of all the persons taking medicines and also used for transactions.

- Data will be uploaded to the main computer through cloud storage where data is stored to server and accessed through internet.
- Restocking of medicines alert message will be sent to the specified person, if tablets are less than the minimum fixed value then a message will be displayed for the user as press key for restocking.
- Medicines can't be misused as one person will be able to take medicines only for specified number of times.

IV. REQUIREMENTS OF HARDWARE AND SOFTWARE

A. Hardware

- PIC (16f877A) Micro controller
- LCD Display
- Screen Touch key pad
- Relay Driver
- DC Motor
- Wi-Fi module (ESP8266)
- RFID Reader
- RFID Tags

B. Software

- Embedded c programming
- MP Lab IDE
- PIK Kit 2
- Flash Magic

V. BLOCK DIAGRAM OF AUTOMATIC VENDING MACHINE FOR MEDICINES

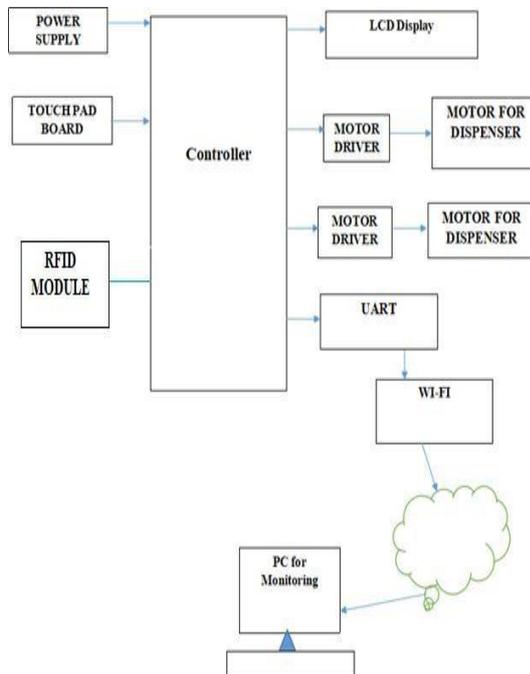


Figure1: Automatic vending machine for medicines

A. Radio Frequency Identification (RFID)

It is a communication technology which allows for defining some unique characteristics of an object or a living being, usually its identification information, by relating it to a numeric serial number within a tag, and ensures that this number is conveyed by using radio waves. RFID provides a communication infrastructure at the radio frequencies between a special tag and reader device that can detect the tag, and allows for establishing communication between devices within the system without any physical contact, or even without seeing each other. In this system, the RFID tag stores individual information of the patient and an RFID reader communicates with the tag in radio frequencies to identify the patient. After the

information of patients has been recorded, and the relevant doctor who is assigned to the patients can read the personal details of the patient reach the server and withdraw relevant health information from database and submit them to the doctor.

B. Microcontroller (PIC16F877A) IC

PIC 16F877A is an 8-bit microcontroller 8K x 14-bit flash program memory, 368 bytes of RAM Extra peripherals like ADC, USART, timers, compare capture and pulse-width modulation modules, and analog comparators. It is based on the reduced instruction set computer (RISC) architecture. The microcontroller processes the sensor output to compute the temperature in degree Celsius. The internal ADC of the microcontroller is used to convert the analog output of the sensor into its digital equivalent value. The channels of analog inputs and gives 10-bit digital output. The above described sensor values has been interfaced with the microcontroller at the ADC ports of the microcontroller and these values are displayed on the LCD(16X2) by interfacing the microcontroller with the LCD.

C. LCD module

A 16 x 2 LCD is used for displaying the temperature, heartbeat and respiration count. The control lines EN, R/W, and RS of the LCD module are connected to pins RB3, Ground and RB2 of Port B of Port B of the microcontroller respectively. The commands and data to be displayed are sent to the LCD module in the nibble mode from Port B of the microcontroller. The higher four bits of the LCD (D4 through D7) are connected to the higher nibble of Port B (RB4 through RB7).

D. DC motor

It is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. DC motors were the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings.

E. Wireless networking

It is known as Wi-Fi or 802.11 networking as it covers the IEEE 802.11 technologies. The major advantage of Wi-Fi is that it is compatible with almost every operating system, game device, and advanced printer. Wireless technology has widely spread lately and you can get connected almost anywhere; at home, at work, in libraries, schools, airports, hotels and even in some restaurants

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. There is also facility of measurement of various parameter.

9. Simple circuit which can easily be understood.

VI. RESULTS

The medicine dispensing machine provides a flexible, simple and robust solution at a very moderate cost to extend basic healthcare to all places. With minimal hardware and software changes, the machine can be customized to suit any type of terrain and climate. This machine will be extended to add an intelligent medicine unit, which sends a refill notification message to the nearest chemist when the number of medicine strips decrease below a certain level.

VII. CONCLUSION

From this concept we are conclude that, the automatic medicine vending machine is technically feasible to the peoples. It is based in PIC micro-controller provide GSM service. It gives availability of medicines all the time, also in rural areas. it is very helpful and it gives ease of access also.

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