AUTOMATIC MEDICINE VENDING MACHINE

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ABSTRACT

Although looking towards the requirement, need of medicine . This vending machine provide medicine 24*7. This machine will store medicine into it and according to user requirement it will dispatch the medicine. It include major components such as Atmega16 controller, ESP8266 , DC Motor, IR sensor, Motor driver IC (L293D) and container to dispatch medicine. Our vending machine can store different types of medicine such as pain killers , cold , cough , fever, dizziness etc . DC Motor will rotate and accordingly it will dispatch the medicine. IR sensor will sense the dropping count of medicine . Action of DC motor are controlled by motor driver IC . All these systems are controlled by central ATmega16 controller, which is programmed to receive input from the user via ESP8266 wifi module and to perform and control all the necessary components required to dispense the medicine requested by the user. To place order user have to select the medicine from the webpage . Webpage will introduce different section such as to select medicine, quantity of medicine required , order confirmation and payment section . After user successful payment on the webpage order of the medicine will be communicated to the controller through ESP8266 wifi module. ESP8266 wifi module can work both as access point (can create hotspot) and as a station (to connect wifi ). Main purpose is to provide medicine in remote area , rural area where medical stores are not within reach . So this medicine vending machine can be viewed as an automatic medicine vending machine to place the order on large scale so that infinite number of user will be able to access it anytime.

Keywords: Atmega16, ESP8266, Medicine, Webpage, Motor driver(L293D).

I. INTRODUCTION

As medical stores are not available at all circumstances, we can set up this machine at any place. Vending machine have the mobility, they are portable and continue to deliver the services. Customers can easily access the medicines in cases of emergency or whenever required and to avoid faulty distribution of medicines to customers . There are a lot of people in India die due to lack of diagnosis in first place and non-availability of medicine on time . This type of trouble arise when need of some medicine is urgent and medical stores are not open , especially during night time. In remote areas and rural areas where population is less, the patients have to face issue for absence of medicines . These are some of the main issues that are being faced by the society in present scenario. To solve this problem automatic medicine vending machine will provide medicine 24*7 anytime, anywhere.

It provide user-friendly environment to the user to have contact less payment method and delivery of medicine. This make the system easy to use . All the order are placed on webpage which is easy to access and payments are done from (open source) payment gateways . System will also show the availability of medicine to user . all the data regarding payment, medicine stock can be access by owner of machine easily. All the updation can be done by owner itself into the machine . In the case of payment fail or medicine not dispatch the user can easily contact to owner regarding any query and problem will be solved from owner side itself . looking towards increasing demand of medicine we can place more vending machine so it will be more helpful to user to access it. This machine can be use in offices, schools, railway stations , and many more public places . An automatic medicine vending machine with a inbuilt pill dispensing mechanism and a storage facility for the heaps of pills that can be dispensed based on the user requirement. These machines can enhance the efficiency of medication distribution. Automated dispensing machine improve patient safety.
II. LITERATURE REVIEW

- **ATM (All Time Medicine) Counter For Medicine Self-Dispensing**: All Time Medicine (ATM) is a machine which delivers the medicine in emergency cases and ensure availability of medicines 24x7 and hence the name “All Time Medicine”.
- **Automatic Vending Machine For Medicines**: Accessibility to basic healthcare is an important part of development towards building a healthy future. Medicines play an important role in human’s life. Therefore Medicine ATM will be very useful.
- **Automatic Medicine Vending System Medical ATM**: This Medicine ATM is the one stop integrated electronic machine which provide medicine anytime and anywhere. It is a convenient, faster and safest with medicine at anytime and anyplace.
- **Any Time Medicine Vending Machine**: The aim of this project is that people would be able to access the medicines via patient kiosks in public places such as medical stores, malls, bus / railway stations, on highways, areas where medical stores are limited.

III. DESIGN METHODOLOGY

**Fig 1**: Block Diagram

In the above figure of block diagram we can see different blocks such as ATmega16 controller, with the help of the motor drivers, drives the concerned medicine cabinet having the medicine that the user needs. These motor drivers control the rotation of the motor that dispenses medicines from the medicine cabinet. ESP8266 wifi module will help in communication between controller and webpage. IR sensor sense medicine dropped. LCD Display show IP address of webpage.

**IV. WORKING PRINCIPLE**

**4.1 CIRCUIT DIAGRAM:**

From the fig given below we have build the circuit diagram on proteus software. We are storing 5 different medicines such as pain killer, cold, cough, fever, dizziness. In this circuit diagram we have used 5 IR sensors to detect the count of medicine. We have also used DC motors to dispatch the medicine. Motor driver IC will provide sufficient current to the DC motor for the operating purpose. LCD will display the IP address on its screen that will be access by user.

The purpose of ESP8266 is to provide serial communication between user and controller. We have provided 5v and 3.3v power supply to the circuit.
ATmega16 controller: We use this controller to control all the necessary components. ATmega16 microcontroller is manufactured by Atmel corporation and comes under RISC family. It consists of 40 pins. ATmega16 has programmable watchdog timer with separate on-chip oscillator. It consists of four 8-bit ports such as port A, port B, port C, port D. It also has some necessary peripherals like ADC, USART, SPI and analog comparator. It consists of two 8-bit timer/counter and one 16-bit timer/counter.

ESP8266 wifi module: We use esp8266 for serial communication between user and controller. It is a very user-friendly and low-cost device to provide internet connectivity to the projects. This module having very powerful onboard processing and storage capability that allows it to be integrated with the sensors. To communicate with ESP8266 module, microcontroller needs to use set of AT commands.

IR Sensor: It detects the count of medicine. IR sensor is an electronic device, that emits the light to sense the object of its surroundings. It also measures heat of an object as well as it detects the motion. It has 2 types of active infrared sensors and passive infrared sensor. The basic concept of IR sensors is used to detect the obstacle.

LCD Display 16*2: We are using LCD display to display the IP address. 16*2 LCD is named because, it has 16 columns and 2 rows. It mainly operates on 4.7-5.3 volts. Basically it uses liquid crystal to produce a visible image. It consists of 2 registers namely, command and data register. We use 4 data pins (D4-D7) it is connected to the controller pin (PB4-PB7). This display is basically preferred for multi-segment light-emitting diode and seven segments.

4.2 MEDICINE STORAGE MECHANISM
As we can see that we are having stack, shaft and motor. As we can see stack in the fig we are storing medicine in the form of stack as we have 5 different medicine for a single medicine we are using one complete stack for it to store medicine. We use rotating shaft is used to drop the medicine towards outlet. We are using motor to rotate the shaft. By using this mechanism we can drop the particular medicine in required amount successfully.

V. SELECTION OF COMPONENTS

- ATmega16 controller
- 6 – DC Motor
- 3 – Motor Driver IC (L293D)
- 5 – IR Sensor
- Wi-Fi module (ESP8266)
Timeline:

- LCD 16*2
- Copper clad board (PCB)

Software used:

- Proteus (CKT DIAG)
- EasyEDA (PCB LAYOUT)
- Embedded C (ESP 8266)
- AVR C++ (MAIN PROG)
- Nodejs (WEBPAGE)

VI. WEBPAGE

We have designed a webpage with webpage IP address 192.168.43.89:5050. By using the webpage, users can place an order for the medicine they require.

Fig 3: View of webpage

In the above figure, you can see the webpage accessed by entering the IP address in a web browser. In the Medicine section, users can select the medicine they want, and in the Quantity section, they can enter the required quantity.

Fig 4: Order Medicine

In this figure, you can see the list of medicines ordered by the user. After selecting the medicine and quantity, the user will click on the Add button to create a list. Again, the user will select the next medicine and click on Add. In this way, users can create their order list. After creating the order list, users will place the order by clicking on the Order button. After this process, the order will be placed successfully.
In the above fig we can see payment page. After placing order webpage will direct user to the payment section where user have to make payment of order given. When the payment will be done successfully the machine will dispatch medicine. If payment fails the medicine will not dispatch from the machine.

VII. APPLICATION

1. The concept is very much useful in day to day life for common people.
2. This can be implemented everywhere such as shopping malls.
3. It can be implemented on National Highways.
4. It can be installed in Railway stations.
5. This medicine vending machine is mostly used in healthcare field.
6. In providing the medical facility at the doorstep to the required one.
7. It will be useful in providing medical facilities in busy areas such as Railway Stations, Airports, markets etc.
8. Provide facilities to people during their journey as this can be installed in the aircrafts, rails and ships.
9. This system can be used by the defense organization such as military, air force etc.
10. It will help rural India to get better medical facilities at much lower costs.

VIII. RESULT ANALYSIS

This paper has presented to our knowledge about vending machines present all over the world. The desired outcome of the project is achieved as per the user’s requirements in the form of medicines dispensed by the machine. It becomes easier for people to obtain medicines from vending machines rather than waiting in queues for long hours. We also learned about the functioning of various instruments. This includes the functioning of ESP8266, Microcontroller ATmega16 controller, Motor drivers, IR Sensor, DC Motor, LCD Display.

IX. CONCLUSION

From this concept we are conclude that, the automatic medicine vending machine is technically feasible to the peoples. It is based on ATmega16 controller provide service. It gives availability of medicines all the time, also in rural areas. it is very helpful and it gives e

Automated medical ATM system plays its major role in hostel areas, railway platforms, airports, and rural areas. Implementation of this system reduces man power 24 hours availability service and also reduces time consumption of access also.

X. REFERENCES


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