

# Vend-X

Ajmal Naseer<sup>[1]</sup>, Farhan S<sup>[2]</sup>, John Mathew Philip<sup>[3]</sup>, Rojiya V R<sup>[4]</sup>, Jisha Jamal<sup>[5]</sup>

B.Tech students<sup>[1], [2], [3] & [4]</sup>, Asst. Prof.<sup>[5]</sup>

KMEA Engineering College, Aluva  
APJ Abdul Kalam Technological University  
India

## ABSTRACT

This paper describes the design and implementation of an automated machine called Vend-X that provides the necessary medicines to the required sicknesses using RFID technology (For payment). Payment methods are optimized using RFID thereby avoiding card and cash transactions. RFID card is swiped prior to payment using the unique RFID number integrated to the card. An amount is initially input to the respective RFID card and is continually used for repeated transactions and usage, the specific purchase amount is deducted from the RFID. Here we aim to install this machine in colleges where students can make use of it.

**Keywords:-** Medicine Dispenser, Arduino UNO, LCD display, RFID, Motor driver (L293). .

## I. INTRODUCTION

Vending machine is an automated machine which provides snacks and beverages to consumers after the money, a credit card or specially designed cards is inserted into the machine. When a customer approaches a machine and becomes interested in making a purchase, he must first insert money to pay for his item. If the machine accepts paper money, the money is pulled in using rollers. The machine then uses a digital scanner to identify the bill's denomination before storing the bill away in a cash box. Once sufficient money is inserted, the customer informs the machine of which product he would like to purchase. Once the selection is made and has been paid for, the machine must dispense the product. After the product falls, the customer simply retrieves the item from the bin

Most of the vending machines are placed in public and directly contact with the ultimate user- potential buyer. In order to optimize payment costs and to enable contactless payment methods we use a much more simplified and easier method of vending machine. In this project the system will contain four medicines which are available as first aid and without prescription. In this paper we aim to give the required medicinal products with the help of a dispensary machine. Here we focus on four illness namely fever, vomiting, headache and body pain. This machine is developed in small scale. The keypad or touch pad is provided to the used to select the medicines from the list. In this version we use RFID technology. We have ask the users to swipe the RFID card with a unique password that is given to the users at the time of registration. This unique password will identifies the users as an authorized one or not. If the user is

authorized one then the machine will deliver right medicine otherwise not.

The automatic medicinal vending called Vend-X is technically feasible to the peoples. It is mainly based on micro-controller. It gives available medicines to the users all the time. It is very helpful for the peoples and give ease of access also.

## II. EXISTING SYSTEM

“Microcontroller based medicine dispense and reminder” the main objective of the project is to remind and dispense the medicines at right time to the right person automatically from the simple machine. The medical dispensers which are available today are expensive and there is less availability of products that are a combination of a reminder and a dispenser. The product can be used by an individual as well as multiple patients. The major goal is to keep the device easy to use and economic. This can be a boon for the elderly as well as the poor sector of the society.

“Any time medicine vending machine” where the device can send out of the medicine. The device can fetch the medicine automatically based on the symptoms for free cost, and the medicine provided by the machine are only for the timely relief and in emergency case, where the person has to meet the doctors future. The aim of the project is that people would be able to access the drugs via patient kiosks in public places such as malls, drug stores, railway station or bus, on highways, areas where medical stores are limited.

“Automated medicine dispensing machine” is designed specifically for users who take medications without close professional supervision. It relieves the user of the errorprone tasks of administering wrong medicine at wrong time. 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.

1) “Design of automated medicine vending machine using mechatronics techniques” medicine vending machine with a self-contained on-site pill dispensing mechanism and a storage facility for the plurality of pills that can be dispensed based on the user requirement. The inventory monitoring system also keeps track of the expiry date of each batch of medicine and sends alert to refill the storage when the pills run out. It also holds an inbuilt system to receive money from the user for the drugs that are dispensed. The machine can be viewed as an automated pharmacy placed on a commercial scale so that infinite number of user will be able to access it anytime.

2) “Health automatic vending machine” is the device can fetch out the medicines automatically for the basic common symptoms for free of cost, and the medicines provided by the machine are only for the timely relief and in emergency case, where the person has to meet the doctor further. People at rural places cannot get access to medicines that are providing to them freely by the government.

The aim of this project is that people would able to access the drug via patient kiosks in public places such as drug stores, malls, bus or railway stations, on highways, areas where medical stores are limited. Regular replenishment can help in not only tracking usage pattern and thus taking precautionary measures but also ensure availability of drugs 24x7. The device is designed taking under concern, such as lack of poverty and illiteracy in India.

### III. COMPONENTS USED

#### A. Arduino UNO

It is an open source microcontroller board based on the microchip ATmega328P microcontroller. The board is equipped with sets of digital and analog input/output pins that may be interfaced to various expansion boards and other circuits. The board has 14 digital pins, 6 analog pins and programmable with the arduino IDE(integrated development environment). It can be powered by a USB cable or by an external 9V battery.



Figure 1: Arduino Uno

#### B. Motor Driver (L293)

The L293 is an integrated circuit motor driver that can be used for simultaneous, bidirectional control to small motors. The pins of L293 motor driver IC are connected to the connectors. A good quality general purpose PCB is used for mounting the L293 motor driver

#### C. RFID

Radio Frequency Identifier (RFID) uses electromagnetic fields of automatically identify and track tags attached to the objects. The tags contain electronically stored information. RFID is one of the method of Automatic Identification and Data Capture (AIDC). Contactless payment systems are credit cards and debits cards, key fobs, smart cards, or other devices including smartphones and other mobile devices, that uses radio-frequency identification (RFID)



Figure 3: RFID

#### D. LCD Display

Liquid Crystal Display (LCD) is an electronic display module and finds a wide range of applications. A 20\*4 LCD display is very commonly used in various devices and circuits. LCD's are economical; easily programmable; have no limitation of displaying special and even custom characters. A 20\*4 LCD means it display 20 characters per line and there are 4 such lines. In this LCD character each character is displayed in 5\*7 pixel matrix. This LCD has two registers namely Command and Data. This is standard HD44780 controller LCD.



Figure 4: LCD display

#### E. Push Button

A push button is used to control the actions in the machine. Metal buttons are used to select options from the machine's screen module



Figure 5: Push Button

#### F. Medicines

Medicine is the science and practice of establishing the diagnosis, treatment and prevention of diseases. Medicines are the integral part of this project, which are to be dispensed according to the users input. The medicines can be consumed on the appearance of symptoms without any prescriptions. Examples include stomach upset, fever, vomiting, cough etc.



Figure 6: Medicines

### IV. WORKING

The device consists of four compartments for four different medicines. The number of compartments can be increased further based on the usage. Only medicines that can be consumed without prescriptions can be used by the machine as anything else would be illegal as it would require a genuine license of a medical practitioner. Examples include common cold, indigestion, vitamin tablets for deficiency, stomach upsets, cough etc.

The working of the machine is controlled by a MC, RFID and the motor driver. The motor driver will get the command which will initiate the action of the same. The motor movement will be equal to the number of medicines to be dispensed. The belts are rotated as per the command given to dispense one medicine at a time.

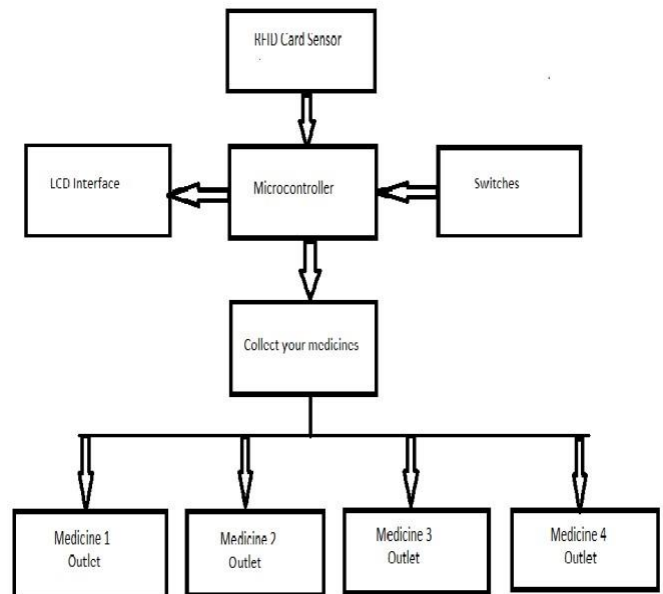


Figure 7: Block diagram

In the LCD interface the user is asked about his/her ailment. Here the machine displays four illness, namely fever, vomiting, headache, body pain. Once a certain illness among the four is selected, user is further asked four more questions concerning the formerly chosen option. This is done to confirm the chosen sickness option.

Five push buttons are used out of which four are used for the selection process and one is used for confirmation. Based on the user's choice commands are sent to the MC following the medicine dispensing.

Four conveyor belts arranged in series are used to dispense the medicines and each of them are connected to their respective motor. Motors are rotated in such a way that one medicine is dispensed at a time from each section. Payments are made using RFID technology. Here each student possess an rfid card which he/she has to swipe prior to purchase.

A fixed amount of money is deposited first to the rfid account which contain a unique id for each student. This unique id identifies the users as an authorized one or not. If the user is

authorized person then the machine will deliver the right medicine otherwise not. Each user can have their own RFID card along with a unique id. This unique id consists of 8 or 10 numbers which are given to the users at the time of registration in college and this RFID card can be protected by using a password

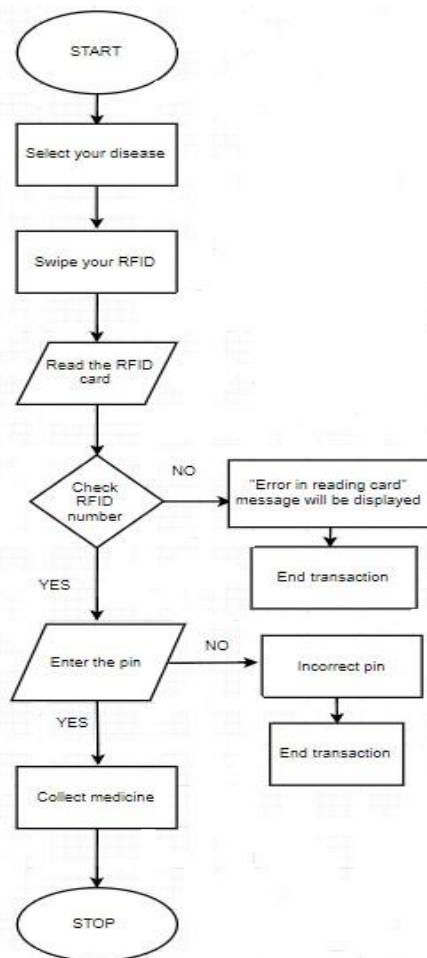


Figure 8: Flow chart

## V. ADVANTAGES

- Simple to use and easy to operate
- Contactless payment
- User-friendly
- Decrease cash management cost
- Improve price flexibility

## VI. FUTURE SCOPE

This study focuses on the design and implementation of an automated vending machine called Vend-X that can

dispense different medicines through the machine. The different medicines can be dropped through the machine by taking the reference through the keypad. There are different types of medicines that can be found on the machine. The dispensing of medicines can be done through RFID technology, which is a contactless payment which will not accept any other types of money such as credit cards, debit cards, paper money, etc. Once the RFID tag has been detected, the machine automatically dispenses the right medicines. The machine is user-friendly and simple to operate.

By implementing the automatic medicinal vending machine, simple medical problems will be diagnosed easily. This system is further improved to diagnose the health problems of the patients. A central platform can also be provided in the machine for patients to interact with doctors who were experienced in different medical fields through video conferencing. Another development of an automated vending machine is that when the RFID card is inserted into the machine, the whole body of the user will be scanned and the problems will be detected and the rectification suggestions will be given to the patients. If it is unable to identify, then the specialist doctors will be connected through video conferencing.

An automated vending machine called vend-x can also be implemented in rural areas, hostel areas, airports, etc. Implementation of this system reduces manpower and also reduces time consumption.

## REFERENCES

- [1] "Automatic Vending Machine" by Sarika Oundhakar
- [2] "Microcontroller based Medicine Dispenser and Reminder" by Kunal Jagdale UG Scholar Dept. of Electrical Engineering SVITS, Indore, India. Siddhartha Rao UG Scholar Dept. of Electrical Engineering SVITS, Indore, India. Raman Hora UG Scholar Dept. of Mechanical Engineering SVITS, Indore, India
- [3] "Automatic medicine vending machine" by Shrikant Bhange, Kaveri Niphade, Tejshri Pachorkar, Akshay Pansare.
- [4] "Design of automated medicine vending machine using mechatronics techniques" in IOP Conference Series Materials Science and Engineering 402(1):012044, September 2018.
- [5] "Automatic Medicine Vending System- Medical ATM by M Sangeetha, T V Janardhana Rao, Ch S Rama Gowri.
- [6] "Automated medicine dispensing machine" by Shraddha Kadam, Aishwarya Kale, Punam Nimase, Sheela Padwal, Shobhit Khandare.
- [7] "Any time medicine vending machine" project reference no: 38S1135.
- [8] "Health automatic medicine vending machine", project reference no: 41S\_BE\_1216