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Automatic Medicine Vending System

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Abstract— **An automated medical system is introduced to reduce the search time. It is similar to an ATM through which we get the required money at any time and 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(Radio Frequency Identification) card is inserted, the details of the particular user are read and displayed. After the identification of the valid person, list of medicines will be displayed on the LCD(Liquid Crystal 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.

Keywords— Liquid Crystal Display(LCD),

Global System of Mobile Communication(GSM),Direct Current(DC),Integrated Development Environment(IDE).

I.INTRODUCTION

To reduce the human effort number of electronic devices and gadgets were developed .Once such system is an electronic ATM machine. It is a convenient, faster and safest with drawl at anytime and anyplace. With this concept , another system regarding health monitoring is developed. Before going to health monitoring a simple step to put over before developing a proposal system i.e. an ATM machine which yield the pharmaceuticals which is the proposal towards medical domain where health is the main concern for any human being before money. So a medical ATM is established where instead of money, medicines will be delivered.

The main motive of creating such ATM is to use at various places like hostels, railways and rural areas where people can go for any emergency required tablets for fever, vomiting or any first aid requirements like cotton, bandages.

An automatic medicine vending system with a self contained on site pill dispensing mechanism and a storage facility for the pills that can be dispensed based on the user requirements. Major components of the machine are a input from the user, a system that includes man power. The operator receives money from the user. The inventory vending system dispense the tablets automatically. It includes transaction method using RFID card. It is safe and secure. There is no man power needed. A list of medicines are displayed on LCD and user can select the required number of medicines by using buttons. It sends message to the user about money deduction through GSM Module. It is more time efficient.

It will help in increasing the network of good organization in worldwide and in providing the medical facility. It will be useful in providing medical facilities in busy areas such as Railway Stations, Airports and several areas. It provide facilities to people during their journey. The process of selecting a product or the process of obtaining product after purchase. The most important type of user interaction with a trading device is the payment process of the selected product. The large number of payment methods significantly expands the contingent of users. The simpler the process of payment, the faster the customer is serving. From the point of view of the user, a simple method of payment is cashless payment. In addition, says that cashless payment is one of the main directions of development of vending in the world. From the point of view of the vending company, non-cash payment solves problems with encashment and change, and with acceptance of various denominations banknotes.

This paper is devoted to the consideration of the developed device for non cash payment "one touch" for purchases in vending machines.. It is necessary to take into account as many ways of interacting with the potential buyer as possible in order to increase the probability that the user will acquire the product or service. The realization of simple interaction scenarios reduces the maintenance time of one user and increases the number of serviced users per unit time. First of all, the vending machine is a means of profit; all vending companies are trying to reduce the downtime of every vending machine, because the downtime of vending machine involves losses for a vending company . The major role in minimizing the downtime of the vending machine have played not only by the timely detection and elimination of problems connected with the functioning of the machine, but also by the presence of several variants for user interaction with the vending machine.

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II.BLOCK DIAGRAM AND DESCRIPTIONS

A.Module 1

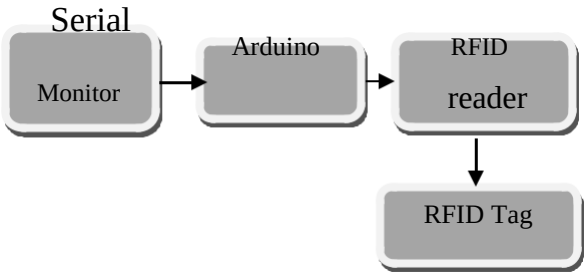

Fig. A.Image of module1

B .Module 2

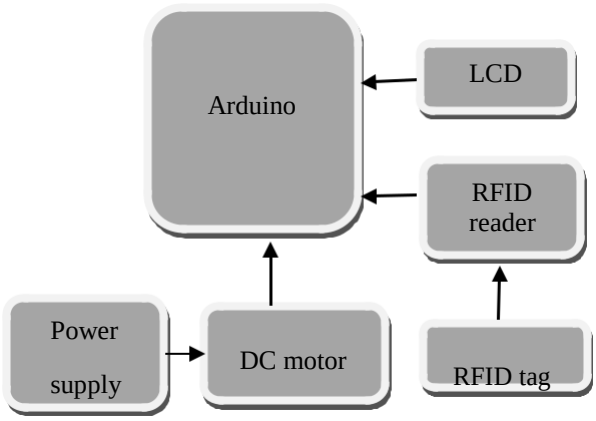

Fig. A.Image of module2

C .Arduino(AtMega328)Microcontroller

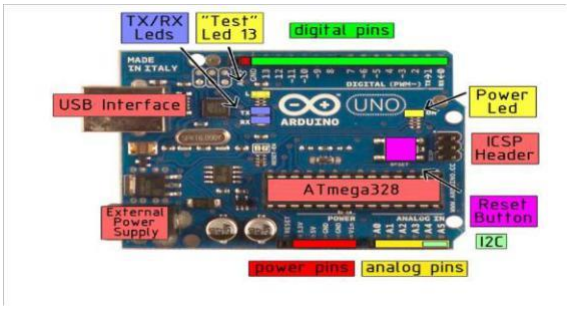

Fig. C.Image of Arduino

Arduino is a tool for making computers that can sense and control more of the physical world than the desktop computer. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can communicate with software running on the computer (e.g. Flash, Processing) The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free.

D. RFID TAG

Radio frequency identification (RFID) is a form of wireless communication that uses radio waves to identify and track objects. RFID takes the barcoding concept and digitizes it for the modern world providing the ability to: Uniquely identify an individual item beyond just its product type. RFID tags are so small and require so little power that they don't even need a battery to store information and exchange data with readers. This makes it easy and cheap to apply tags to all kinds of things that people would like to identify or track.

D. DC Motor

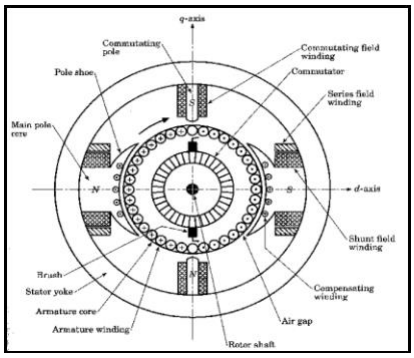

Fig. D.DC Motor

A DC motor is used to drive a mechanical load. In this lab, a separately excited DC generator provides the load. The load on the motor is adjusted by varying the generator field current. By increasing the field current of the DC generator, the load on the DC motor increases and thus the armature current increases. In general, DC motors are characterized by their torque-speed curves as shown in Figure 9.1. Since the measuring equipment for shaft torque is not available in the lab it is necessary to use alternative means of characterizing the DC motor. One alternative is to plot shaft speed versus armature current since torque is directly proportional to the armature current with a constant field current supplied to the motor. Shaft speed is also a function of the field current in a DC motor while maintaining a constant armature voltage as field current is directly proportional to the direct axis flux produced in the machine

E.LCD Display

Fig. E. LCD

A Liquid Crystal Display (LCD) is a flat panel based or other electronically modulated optical device that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in monochrome. LCDs are available to display arbitrary images or fixed images with low information content, which can be displayed .

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F. GSM Module

Fig. F.GSM Module

GSM (Global Sytem for Mobile communicatios) is a standard to describe the protocols for second generation digital cellular networks used by mobile devices such as mobile phones and tablets. It has become the global standard for mobile communiction with over 90% market share,operating in over 193 countries.The GSM standard decsribed a digitl,circuit switched network optimized for full duplex voice telephony. This expanded over time to include data communications,first by circuit switched transport,then by packet data transport via GPRS (General Packet Radio Service) and EDGE (Enhanced data rate for GSM Evolution). GSM was intended to be a secure wireless sytem.

G. UART Cable

Fig. G.UART Cable

A UART is usually an individual (or part of an) integrated circuit used for serial communications over a computer or peripheral device serial port. UARTs are now commonly included in microcontrollers. A dual UART, or DUART, combines two UARTs into a single chip. An octal UART or OCTART combines eight UARTs into one package. The universal asynchronous receiver/transmitter (UART) takes bytes of data and transmits the individual bits in a sequential fashion. At the destination, a second UART re-assembles the bits into complete bytes. Each UART contains a shift register, which is the fundamental method of conversion between serial and parallel forms. Serial transmission of digital information (bits) through a single wire or other medium is less costly than parallel transmission through multiple wires.

III.DISCUSSION

A. Software Description

The Arduino IDE(Integrated Development Environment) is a cross – platform application(for Windows, macOS, Linux)that is written in language java. It is used to write and upload programs to Arduino compatible boards, but also with the third party cores, other vendor development boards. The Arduino IDE supports the languages C, C++ using special rules of code structuring .The Arduino IDE supplies a software library frm the wiring project, which provides may common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop that are link with the program

B. Hardware Description

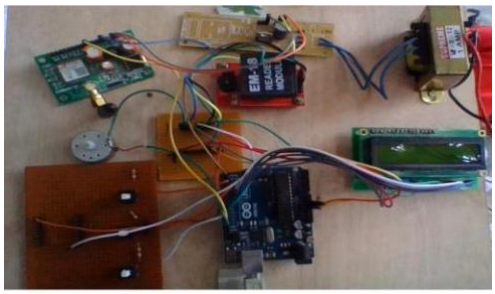

Fig. B. Hardware kit

A button, DC motor, GSM module, RFID reader, LCD display, Relay and serial port are connected to Arduino. The Step down transformer is connected to relay that convert AC voltage to DC voltage. The serial port is used to provide an additional voltage.

Fig. B. Amount debited

After transaction using RFID card, it displays the amount of money debited from the person. The selected medicine is also displayed.

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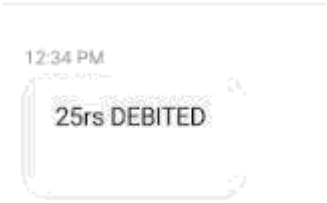

The amount of money debited is received as message to the registered person's mobile number.

IV.RESULT

The idea that is discussed in the introduction about creating a system called Automatic Medicine Vending System is been implemented in small version. It has been implemented with 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 the user is asked to swipe a card. Each user is given a separate card. This card is used to identify the user as an authorized one.

V.FUTURE SCOPE

By implementing medical ATM, simple medical problems will be diagnosed with an easy teach. This system can be further improved to diagnose the health problems also. A central platform can be provided for patience to interact with specialists of fields through video conferencing i e .to provide a health ATM service. One more development is that to provide automated e-emergency diagonisation and pharmacy for patients which can be meant that at the health 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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