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Microcontroller Based Hand Gloves Dispenser Machine

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ABSTRACT— The rapid growth of the Internet of Things (IoT) changes human's life into a smart world. Physical objects connected with smart sensors provide data to make people's life easier. We present a case study of the smart Hand gloves dispenser is with the aid of RFID sensor, IR sensor, and Atmega328 is built to assists the users and the hand gloves suppliers by tracking the amount hand gloves used in day to day activity. The smart hand gloves dispenser measures the quantity of the available hand glove in the dispenser and pops an alert when the hand glove in the dispenser is about to finish. It measures the pushes notifications to the user about hand gloves consumption. Here we put forward a fully automated RFID based hand glove dispenser system using Atmega328 and Motor driver. The system is capable of fully automated hand glove dispensing using Dispenser motor and sensors. The system also senses if glass is placed at the counter to avoid hand glove spoilage if there is no glass placed at the counter panel. The system uses IR sensors to detect presence of hand and then the sensors send a signal to the microcontroller. The microcontroller now processes the information sent by the sensors to determine if hand is present. The system has RFID Reader that is used to read particular tags and send information to microcontroller about valid tags. On detecting a valid tag the system now sends a signal to the controller who checks if hand is present and the it starts the motor to pour hand glove in users hand using motor as long the hand is present. If hand is removed during the process, system stops the hand gloves supply until users hand is encountered. Thus we here put forward a smart hand gloves dispenser system with hand gloves saving feature.

Keywords—Atmega328, Servo, Motor Driver.

I. INTRODUCTION (*HEADING 1*)

Every dimension or institution whether its business or health or any industry related has to improve as technology grows. Many innovations have come up and the health and safety section has not been left behind in this advancements. There are various hand gloves 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 hand gloves vending machine for hand gloves which are used in medical or industrial areas. 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 dispensAs the world becomes more smarter, people replaces the automatic systems instead of manpower system. The automatic machines become an important role in our life. Nowadays, the shops use the automatic system such as automatic selling system also called vending machine. A vending machine is an automated machine that provides items such as snacks, beverages, cigarettes and lottery tickets to consumers after money, a credit card, or specially designed card is inserted into the machine. The first modern vending machines were developed in England in the early 1880s and dispensed postcards. e.

II. EASE OF USE

A. Necessity

It is necessary to provide medication to the infected people in this pandemic situation on the time. So automatic medication dispenser is designed specifically for users who take medications without close professional supervision . It also uses to keep distance between infected people and un-infected people.

B. Need of Project

The project initially planned to provide pills to a number of patients who had been admitted into hospital due to affected by the COVID-19 virus, By keeping distance between them and the un-infected people. As in pandemic Situation it necessary to take the medicine on the given time, so our system help to give medicine automatically on the user define time.

III. LITERATURE SURVEY

1. RFID technology: Beyond cash-based methods in vending machine

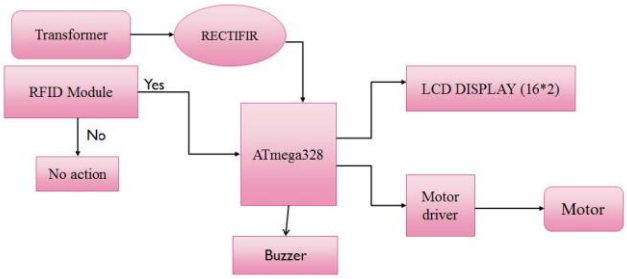
This paper characterizes the design, implementation and employment of cashless and secure payment system in vending machine by using radio frequency identification technology, to improve the traditional cash-based payment system that involved lot of problems and risks i.e., hacking, auditing, storing, currency and material of coins and notes. RFID is achieving momentum in a multiple sectors like retail, security, transportation, pharmaceuticals, defense, healthcare etc., and a host of other fields, and now vending machines. Our proposed methodology consists of passive RFID identification cards and reader for consumers, Arduino Mega microcontroller, SPI protocol for RFID and Arduino interfacing, keypad for password protection, liquid crystal display (LCD) for displaying consumer name and current balance, and SMS is sent for notification using GSM module. Spiral coil architecture is supported by DC motors powered by relays in mechanical structure of vending machine. It also describes how such product-oriented RFID card based vending machine can maximum facilitates the system engineering.

2. Automatic Vending Machine For Medicines

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. Design Approach

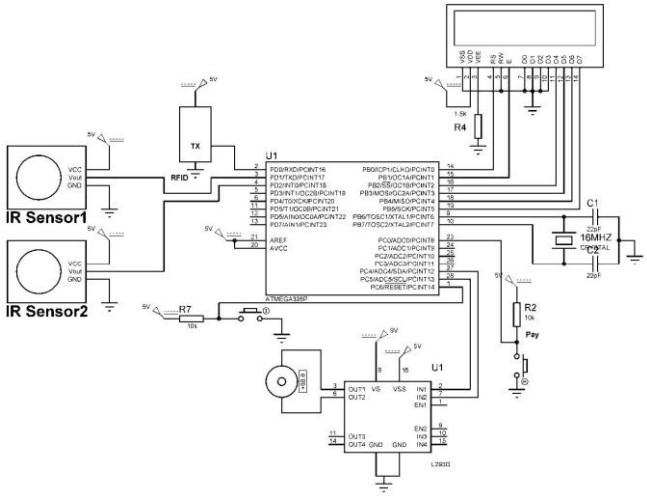
A. Block Diagram



B. Diagram Description

- RTC Module: this module is used to monitor the current time and fed to the microcontroller block.
- IR Sensor Module: this block is used to sense the direction of line to rich patient or base station
- Microcontroller: this is main block of project to control the whole process and do the main tasks sequence.
- 16X2 LCD Display: This block is used to display all the process and current time to the observer.
- Servo Motor: this motor is used to dispense the handgloves.
- Pump Motor: this block is used to dispense the drinking water to patient.

C. Circuit Diagram



D. ATMEGA328P

ATMEGA328 is high performance, low power controller from Microchip. ATMEGA328P is 8 – bit microcontroller based on AVRRISC architecture .It is the most popular of all AVR controller used in ARDUINO boards.

E. LCD Display

An LCD (Liquid Crystal Display) screen is an electronic display module and has a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. The 16 x 2 intelligent alphanumeric dot matrix displays is capable of displaying 224 different characters and symbols. This LCD has two registers, namely, Command and Data.

F. IR sensor

IR Infrared Obstacle Avoidance Sensor Module has a pair of infrared transmitting and receiving tubes. When the transmitted light waves are reflected back, the reflected IR waves will be received by the receiver tube. The onboard comparator circuitry does the processing and the

green indicator LED comes to life. The module features a 3 wire interface with Vcc, GND and an OUTPUT pin on its tail. It works fine with 3v3 to 5V levels. Upon hindrance / reflectance, the output pin gives out a digital signal (a low-level signal). The onboard preset helps to fine tune the range of operation, effective distance range is 2cm to 80cm.

G. RFID Module

RFID is short for Radio Frequency Identification. Generally a RFID system consists of 2 parts. A Reader, and one or more Transponders, also known as Tags. RFID systems evolved from barcode labels as a means to automatically identify and track products and people.

H. Servomotor

A servo motor is a rotary actuator or a motor that allows for a precise control in terms of the angular position, acceleration, and velocity. Basically it has certain capabilities that a regular motor does not have. Consequently it makes use of a regular motor and pairs it with a sensor for position feedback.

I. IC L293D

The L293D motor driver is available for providing User with ease and user friendly interfacing for embedded application. L293D motor driver is mounted on a good quality, single sided PCB. The pins of L293D motor driver IC are connected to connectors for easy access to the driver IC's pin functions.

CONCLUSION

In this system, the user need to insert a RFID card and press a button of user choice and the vending machine will dispense the corresponding item for user. This RFID based Vending Machine is majorly using four Hand gloves, hard wares, Sanitary pads, etc. in the hardware which are: Arduino Uno(Atmega328), one continuous rotation DC motor, LCD, RFID card and 12V power supply. One button is for Recharge. LCD displays the messages and instructions to operate the Machine. This system is portable, affordable, consumes less power and can be made easily available so that the user can use this system whenever and whatever

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