SMART CARD BASED MATERIAL DISTRIBUTION USING RFID & GSM

S.DIVYA(divyaselvamani10@gmail.com),T.ELAKKIYA(elakkiyaece@gmail.com),
G.KIRUTHIGA(kiruthigaece2015@gmail.com), M.SANGEETHA(sangeethasara3@gmail.com)
GUIDED BY
G.yasotha M.E assistant professor(yasothaguna@gmail.com)
Department of electronics and communication engineering
BHARATHIYAR INSTITUTE OF ENGINEERING FOR WOMEN

Abstract*—This paper proposed the advanced Ration Distribution System are termed as "Smart Card based material distribution using RFID & GSM". The rationing material distribution system is one of the controversial issues that involve malpractice in existing system. And also chance for the illegal usage of products i.e the material robbed by making wrong entries in register without knowledge of the ration card holder. In this paper implements a PDA device (personal data assistant) is similar to ticketing machine used to swipe the customer smart card & billing the amount. The proposed system replaces the manual work in ration shop to automatic ration shop for public distribution system based on Radio Frequency Identification (RFID) for the purpose of consumer Id verification. By using of Fingerprint should be identify customer to avoid malpractices. After successful verification, the needs of customer material to enter type of material as well as quantity of material using keypad & billing the material using PDA devices. After delivering proper material to consumer, when the microcontroller sends the information to customer using Global System for Mobile Communication(GSM)

Key Terms— GSM Module, RFID Reader, Microcontroller, PDA, Smart Card

I. INTRODUCTION

Planning Commission had followed to say on PDS system in2005 reports. In India, Public Distribution System (PDS) is the largest economic control in a world. This distribution of ration is controlled and it monitored by central government, along by the state government. But it has so many type of limitations. PDS provides an order or authority to the State Government for purchase materials like rice, sugar, wheat, oil, kerosene.

When the state Government issues the ration cards like yellow card, saffron card and white card of ration card in ration shop it will depending on the our annual family income. In yellow card (BPL) card families with an annual income up to Rs.15,000, the government provide the 35kg of grain every month. In saffron card families an annual income upto Rs.15,001 to Rs.1 lakh the government provide the 15kg of grains. In white card families are earn annually over Rs.1 lakh, the government is not entities to food rations. The consumer can scan for finger by fingerprint machine. It will matched, to show the customer details for verification. If thumbprint is not matched the consumer, consumer is not correct so its avoided the malpractice.

Then verify the consumer Id number. Once consumer is validated by ID number, the system asks the consumer to select appropriate material and quantity of material through keypad. Founded on material chosen by consumer, will be activated and consumer gets material. Dc motor or solenoid produce rotary motion.

A Dc motor speed controlled over wide range, using either a variable supply voltage or by current. The ends wire winding are connected to a accumulator. When the electric current passes through a coil in magnetic field, the magnetic force which produces a torque it turns the DC motor. Thermal printer can print the ration materials distribution with the amount among the white or black rolling paper to the consumer for identify of materials.

GSM interface with the PIC microcontroller sends information in the form of SMS to people. The proposed RFID based automatic ration shop system would consumer transparency in public distribution system and its helps to prevent and avoid the malpractices. The various module such as GSM, RFID, RTC, LCD, Keypad and thermal printer are interfached to it form a complete PDA.

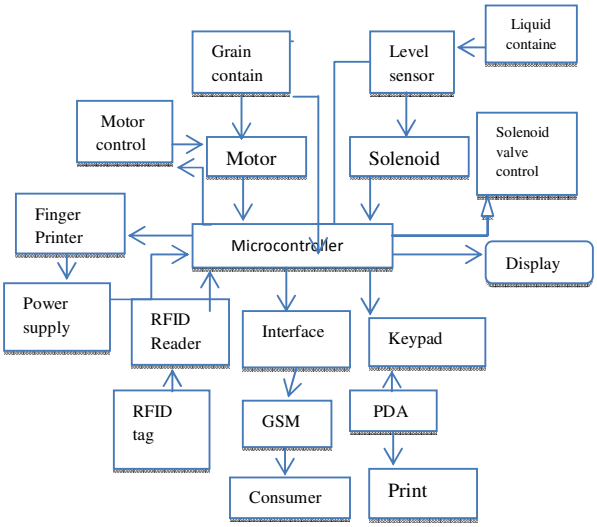
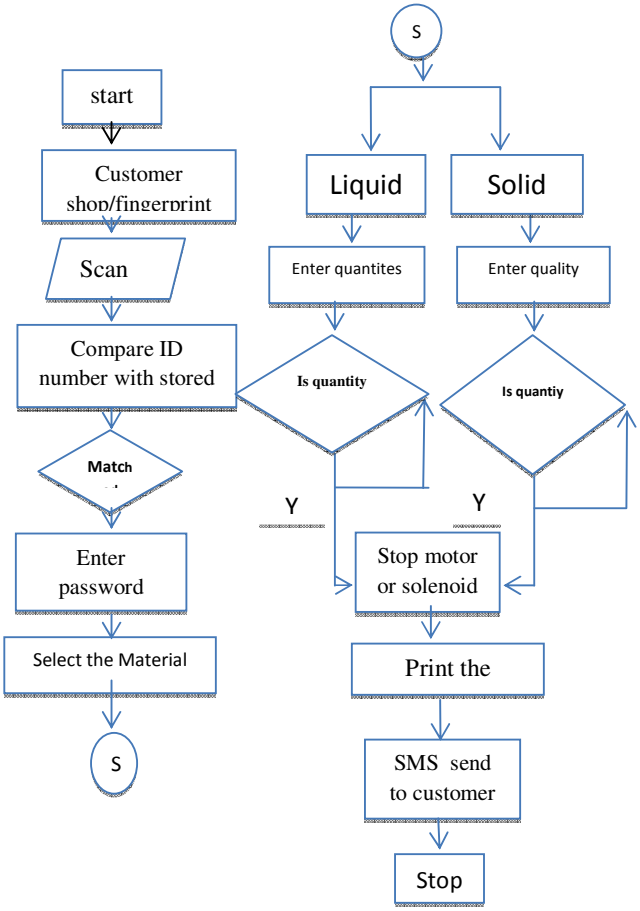


Fig. 1 Automatic rationing System Block Diagram

In Fig. 1 shows the system block diagram based on RFID technology. System consists of PIC microcontroller. RFID, GSM, motor driver, solenoid valve circuitry, Thermal printer, LCD and keypad. The proposed system which demonstrates the distribution of solid materials grains like wheat or rice and liquid material like kerosene. The PIC microcontroller act as flash and EEPROM memory, general purpose I/O pins. RFID reader with RFID tags and keypad, Fingerprint acts as inputs to system and LCD is used for displaying ration stock of materials for distribution. . thermal printer can be used to print the ration materials details.GSM used to transfer the information to consumer. by using GSM can send information of ration material way consumer.

II. WORKING PROCEDURE

Fig 2.shows flow chart shows the public distribution system Rationing material.



PIC Microcontroller- PIC 16F877A

It is the heart of automatic ration shop. The PIC16F877A The PIC has following features:

- Cost effective
- Cost is petty and Widespread avalilability
- USB2.0 full-speed of device manager

SMART CARD

A smart card is a type of chip card, is a plastic card that contains memory or microprocessor. The card data transacted via reader is part of computing system. machine readable card technologies, such as barcode and magnetic stripe are converting the smart card.

RFID

RFID tags come in wide variety of shops and sizes; they may be encased in variety of materials. RFID as wireless technology which used to identify the object. It consists of RFID tag and the reader. RFID devices used to identify in permanent identification .RFID advantages over manual systems or use of bar codes. RFID can read hundreds at a time .the bar codes can only be read one at a time using current devices. The bidirectional communication between the tag and the reader is by the radio frequency (RF) part of the electromagnetic spectrum to carry the information. It does not require the any external power supply for the tag antenna, it which receives the RF signal in the range of 13.56MHz from the reader. This received signal is rectified and applied to the chip it will power it up the tag retransmits the signal to reader. The reader which receives the information. Then the signal sent for further computing of data.

Diagram for RFID card swiping machine

GSM

The GSM (Global System Mobile communication) module which consists of GSM modem. It is used to inform the uses about the exact fidol condition. The information is passed on the user to form of SMS.

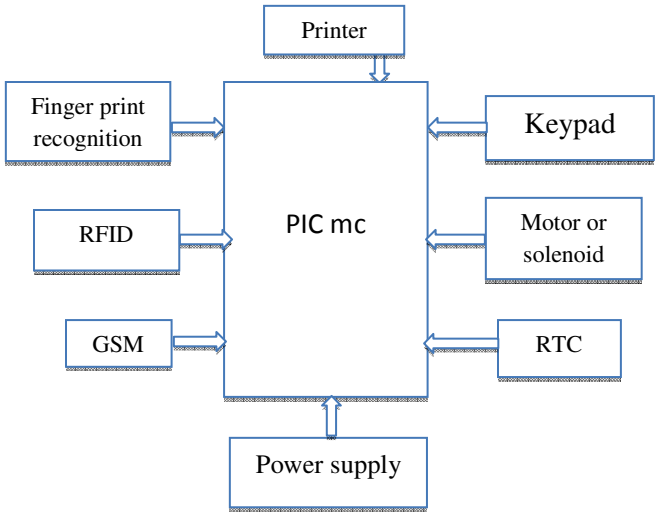
It accepts the SIM cards, and subscription to a mobile worker, just like moveable phones. It uses frequencies between 890-915 MHz UL and 935-960 DL and GSM bandwidth is 25MHz.

Thermal Printer

Thermal printer is a digital printer which produces an impression on thermal paper. The current paper rolls over letterpress head to have an image on it. The thermal paper turns are rotate to print with black in color when it passes over outside of printing machine. Printing can be done using two colors of red and black colors of two different temperatures. Here the system uses direct thermal printer with black color ink to print the receipt for transaction. The thermal printer can be print the quantity of material distribution details and amount of material to be printed.

RTC (real time clock)

The system uses RTC for serial timekeeper chip in 8 pin. The RTC which provides time, date and days information. It can be operated in 24-hour mode. It as several registers to store the consumer information with 8 bit data format. It operates on either 500 KHz or 2MHz to separate clock frequency it will done working though PDA machine in off state. It uses a serial I/O transmission method to interface with PIC controller. PIC controller cost is very low compare to other controller.



PDA device block diagram

Fingerprint Recognition

Fingerprint recognition or Fingerprint authentication refers to the automated, it which refers to the automated method of verifying a match between two humanoid thumbprints. Thumbprints are one of the forms of biometrics used to identify a individuals and verify their consumer.

The algorithm finds the center point in the fingerprint image and centers on that. In a patter-based algorithm, the template contains size, type and orientation of patterns within the aligned fingerprint image. The optical fingerprint imaging involves capturing a digital image of the finger visible light. In order to directly compared with candidate image or certain features must compared.

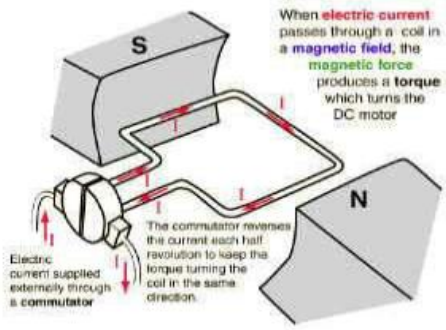
Image for fingerprint recognition

Dc motor

In DC motor classes of electrical machines which converts electrical power into mechanical power. The most common types on motor forces produced by magnetic fields. Nearly all types of Dc motor have internal mechanism.

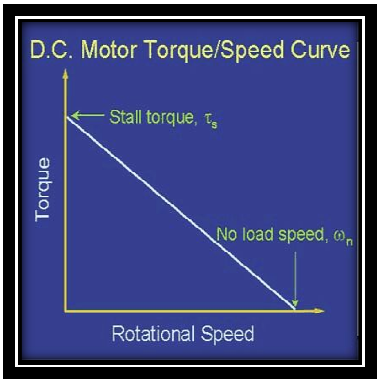
A simple DC motor has a stationary set of magnets like stator and an armature with one or more windings insulated wire wrapped around a soft iron core.

It is based on principle that when a current carrying conductor is placed in magnetic field, it experiences a mechanical force.



Features:

- Metal Gear Box of high torque DC motor.
- Radius 3mm shaft in the thread hole.
- Length of shaft is 15mm.
- No current load, A load upto 7.5A



The universal motor can operate an direct current but a light-weight motor used as portable power tools and appliances .For an stall torque, represents the point on a graph at which torque is maximum, but the shaft is not rotating. For No load torque, is the maximum output speed of the motor or when no torque is applied to the output shaft.

Keypad interfacing

System based on PIC microcontroller for scanning 4x3 matrix keypad. The terminals of switched as 4x3 matrix of keypad are connected to a port pin for four rows and four columns. In each of rows and columns section pulled by high or low among key press.

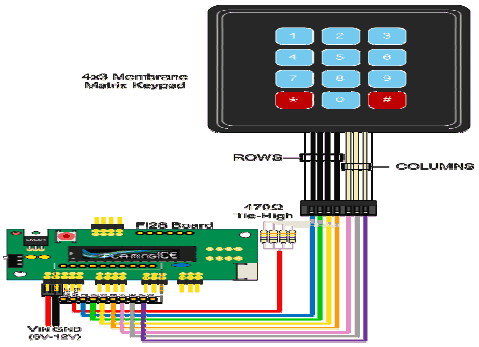
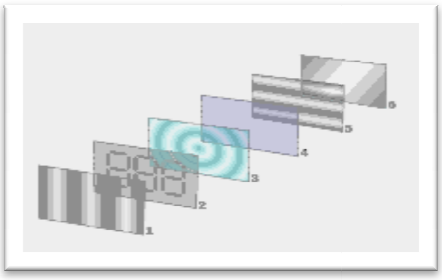


Image for keypad interfacing

When the keypad is interfaced with the PIC microcontroller.

LCD Display

LCD are available to display arbitrary images or fixed images with low information content, such as present words, digits and 7 segments display as in a digital clock. The arbitrary images are made up of a large number of small pixel, while other displays have large elements.LCD used a wide range of applications including computer monitors, television. The consumer devices such a DVD players, clocks, and CRT displayers. Since than CRT and plasma displays and since they do not use phosphors, do not suffer image burn in LCD.LCD has low electric power consumption used in battery-powered electronic equipment is more efficiently then CRTs.



III. PDA Device

Personal Digital Assistant device is also known a handheld Pc. PDA were highly capable smart phones, in particular based on ion and android. Most of PDA devices the internet, intranets or extranets via Wi-Fi, World Wide Area network.PDA not have a touch screen, using softies and directional pad, keypad for inputs.

In Government organizations PDA sometimes known as Enterprise Digital Assistants (EDAs) or mobile computers.EDA have extra features for data capture, such as barcode reader, magnetic stripe card readers or smart card readers.

IV. CONCULSION

The unoriginal system drawbacks are malpractices, low processing speed, waiting in queue for waste of time at ration shop to buy the material. It will reduces the paper work, time convitable and cost effective. As there is no physical data stored and all measurable is stored in database, the higher authority can checkered the details and necessary through the use of attendants. System are proposed by the automatic rationing can be avoid customer be using GSM Technology they system used to store the customer details user ID, accounts ,message ect…its possible to make a public distribution system is more efficient system are proposed system an advantage in cost is very low, time consuming, reducing customer work, reducing that manual work etc.

V. REFERENCES

[1] Yogesh Kumar Sharma.K. B. Shivakumar,"Multi-Modality Biometric Assisted Smart Card Based Ration Distribution System" International Journal of Application or Innovation in Engineering & Management,2014,Vol.3,Issue 6,pp.382-392.

[2] Rajesh C. Pingle and P.B.Boroley, "Automatic Rationing for Public Distribution System (PDS) using RIFD and GSM Module prevent Irregularities" HCTL Open International Journal of Technology Innovations and Research,2013,Vol.2,pp.102-111.

[3] Dhanoj Mohan, Rathikarani, "Automation of Ration Shop using PLC "International Journal of Modern Engineering Research,2013,vol.3,Issue.5,app.2971-2977.

[4] VikramSingh"Smart ration card" ,Volume 4, no.4 April 2013 Journal of Global Research in Computer Science.

[5]Mohan "Automation of ration shop using PLC" , Vol 3, Issue 5, Sept- Oct 2013. International Journal of Modern Engineering Research.

[6] S. Valarmathy " Automation ration material distribution based on GSM and RIFD technology", I.J. Intelligent Systems and Applications.2013,11,11-54 published Online October 2013 in MECS

[7]Nehapardeshi, TruptiDesale, Prajakta Bhagat, RuchaliAhire,:Web Enabled Ration Distribution and Controlling" ISSN: 2277-9477, March 2012.

[8] Rajnish Mahajan; " Bar –coded Ration card & public Distribution System "13th July 2012

[9] Peter Svedberg, "Reforming or Replacing the Public Distribution System with Cash Transfers".