

SMART RATION CARD USING RFID AND IoT

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ABSTRACT

In the present days many immoral activities are taking place in ration shop, which are meant to distribute the commodities to the people who are in below the poverty level, because the distribution process is operated by hand and thanks to which it consumes a many time. In this report RFID tags are introduced, the RFID card are used rather than ration cards, which consists of all the small print about the cardboard holder like family details, type of card and its validity etc. In this report we are getting to discuss differing types of automatic ration distribution system implemented for the automated ration distribution

Keywords: - RFID reader, RFID tag, Arduino, smart card, GSM, Sensors.

I. INTRODUCTION

India's Public Distribution System is that the largest retail system within the world .State Government issues distinctive ration identity cards like Yellow card, Saffron (Orange) card and White card relying on family annual income. The buyer material is feeding to card holders within the primary week of every month by ration shop keeper. System of Public Distribution is one among the widely disputable issues that involve malpractice.

The manuscript intervention in weighing of the materials results in incorrect measurements and/or it's going to happen, the ration shop owner illegally uses consumer materials (Rice, Wheat, Kerosene) without previously knowledge of card holders.

In urban areas, Kerosene is supplied to card holders within the primary week of every month and thus the ration shop

Keepers are taking keen steps to distribute Kerosene to Cardholders a minimum of three or four day's week. This Automated ration system replaces the normal card system by RFID card. RFID act as card and other purpose like RC book, insurance details, service details Etc. GSM used to communicate the knowledge between the two people or quite two persons to update the knowledge depends on the requirements. Radio-frequency identification (RFID) based access-control system allows only authorized or responsible persons to urge the materials from ration shops. Global system for mobile communication (GSM) could also be a globally accepted standard for digital cellular communication. The embedded controller is pre-programmed in such the way to perform the operations. During this automated ration shop government have control over all transaction that happens in ration shop. Mainly during this project we are distributing rice and kerosene. Rice is stored during a container on the table.

In our project, we shall design a sensible card which may prevent the fraud happening at ration shops. For avoiding this, we move to smart card using RFID. Every customer has given an RFID tag which acts because the ration In our project, we shall design a sensible card which may prevent the fraud happening at ration shops. For avoiding this, we move to smart card using RFID. Every customer has given an RFID tag which acts because the card.

This RFID tag contains all the knowledge of the customer. The customer possesses to point out this RFID tag to the RFID reader, which is attached to a microcontroller, which reads the knowledge within the tag and accordingly instructs the shopkeeper to offer this much amount of ration there to cardholder

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II LITERATURE SERVEY

In the block diagram above, we see that an Arduino Controller is used in the project. The controller controls the bluetooth,LCD, and ,RFID Reader, Motor modules. If the customer need to buy any ration material, he has got to show the ration RFID tag card to the RFID reader kit.

The user are going to be having a singular number & the reader will recognize it. The recognized RFID number are going to be given to the microcontroller, which compares the input number with the database. are programmed within the controller will recognize the info coming from RFID by comparing it with the database. Once the user is identified, the microcontroller will check whether the user had already bought the ration item of thereto month. If not, then the ration item to be dispensed are going to be displayed on the LCD screen. The user has to enter the details of the item he wants to purchase, then motor mechanism will be start to dispense the items.

In this system the transmitting pin of the RFID reader is connected to one of the receiving pins (RX0) of the Arduino. One transmitting pin (TX1) and one receiving pin (RX0) of the Arduino is connected to the receiving pin and transmitting pin of the Wi-Fi shield respectively. Wi- Fi shield is used for connecting the system to the AWS via internet. Even if you are running applications that share photos to millions of mobile users or you are supporting the projects of your business, a cloud services platform enables access to low-cost IT resource.When you make a capacity decision before deploying an application, you regularly find yourself either sitting on expensive idle resources or handling limited capacity. With cloud computing, these problems go away. You can access the maximum amount or as little capacity as you would like , and proportion and down as needed with only a couple of minutes' notice. And a 20x4 LCD display is connected to the Arduino for displaying information. A 4x4 keyboard is connected to the Arduino for giving input data when required. The Arduino requires 12V, 1A dc supply, so we are using a 12V, 1A dc adapter as power supply. The RFID module also works on 12V, 1A dc power supply.The block diagram of the system is shown in fig.1

RFID reader has its own unique id. Once the RFID reader isswapped by customer. It will invite the customer user id and OTP (will generated automatically) given by the state government. If customer successfully login then he/she can enter the material whatever he/she wants with the help of keypad. After successful entered material all the info is stored in to the database.

III BLOCK DIAGRAM

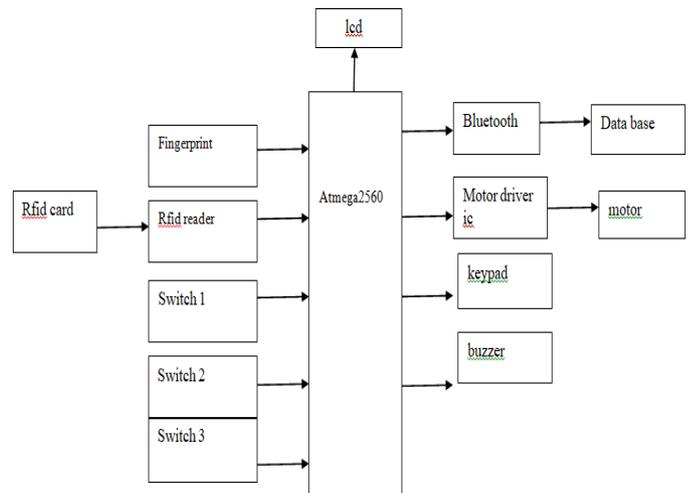


Figure .1.Block diagram showing all components with connections.

IV WORKING

In the block diagram above, we see that an Arduino Uno Controller is used in the project. The controller controls the bluetooth,LCD, and ,RFID Reader, Motor modules. If the customer need to buy any ration material, he has got to show the ration RFID tag card to the RFID reader kit.

The user are going to be having a singular number & the reader will recognize it. The recognized RFID number are going to be given to the microcontroller, which compares the input number with the database. Name, address details, date of expire of card etc. are programmed within the controller will recognize the info coming from RFID by comparing it with the database. Once the user is identified, the microcontroller will check whether the user had already bought the ration item of thereto month. If not, then the ration item to be dispensed are going to be displayed on the LCD screen. The user has to enter the details of the item he wants to purchase, then motor mechanism will be start to dispense the items.

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services platform owns and maintains the network-connected hardware required for these application services, you provision and use what you would like via an internet application .When you make a capacity decision before deploying an application, you regularly find yourself either sitting on expensive idle resources or handling limited capacity. With cloud computing, these problems go away. You can access the maximum amount or as little capacity as you would like , and proportion and down as needed with only a couple of minutes' notice. And a 20x4 LCD display is connected to the Arduino for displaying information. A 4x4 keyboard is connected to the Arduino for giving input data when required. The Arduino requires 12V, 1A dc supply, so we are using a 12V, 1A dc adapter as power supply. The RFID module also works on 12V, 1A dc power supply.The block diagram of the system is shown in fig.1

Flow Chart

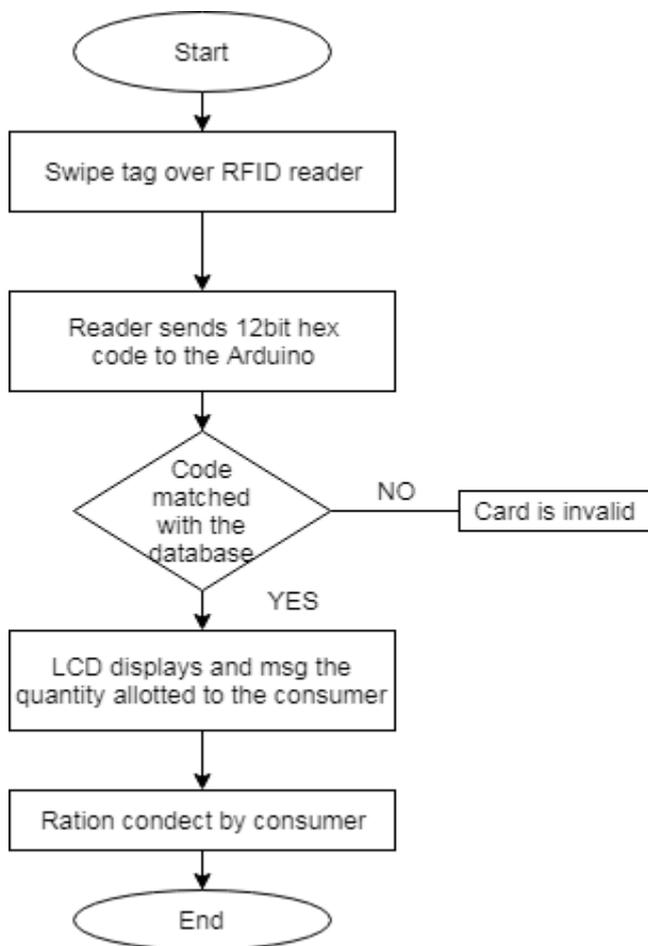


Fig.2.-Flow Chart

When RFID tag is swiped over the RFID reader module, the reader reads the information from the module and the

unique 12bit hex code is accessed. This unique code is then matched with the database and if the consumer's information is found in the database then the quantity of the ration allotted to the customer is displayed on the LCD display.

A. Input : When the Smart Ration Card in the form of RFID tag is swiped over the RFID reader the reader transmits the unique 12bit hex code of the tag to the Arduino. The RFID reader generates electromagnetic waves and radiates them. When the tag comes in contact with these waves, some part of the waves containing unique hex code is reflected back to the reader

B. Processing : Processing work is done by the Atmel Atmega 2560 microcontroller present on the Arduino. Arduino matches the hex code scanned by the reader with the database. Arduino is connected to local server via Wi-Fi. The database contains all the information about consumers such as the quantity of subsidized items, current subsidized rates etc.

C. Displaying Information : The 20x4 LCD is used for displaying the information to the consumer. If the consumer is found to be authentic then the items and quantity available to the consumer with their rate is displayed on the LCD display.

D. Data Input: A 4x4 keypad is used for entering required data in the system. In the final step the consumer have to confirm the purchase using the keypad. ration content to the consumer.

V HARDWARE

1. RFID Tag
2. 16x2 LCD
3. RFID Reader
4. Keypad Matrix
5. DC Motor
6. Finger print Sensor
7. Atmega2560

The component used are explained as follows:

1. RFID Tag:

RFID tags are made from a minimum of two main parts. The first is an antenna, which receives frequency (RF) waves. The second is an microcircuit (IC), which is employed for processing and storing data, also as modulating and demodulating the radio waves received/sent by the antenna.).

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RFID Tag Specifications:

1. Passive Tag
2. No inbuilt Battery

2. 16x2 LCD

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation.

LCD Specifications:

1. Character LCD 16x2
2. 5x8 dots includes cursor

3. RFID READER

RFID tags are made from a minimum of two main parts. The first is antenna which receives frequency waves. The second is microcircuit used for processing and storing data.

RFID Reader Specifications

1. RFID EM18
2. Operating frequency is 125KHz
3. Power Consumption is low
4. Cost is low

4. Keypad Matrix:

Keypad Matrix is used for entering data, the required amount or quantity.

5. DC Motor

An electric motor is an electrical machine which converts electrical into Mechanical energy.

DC Motor Specifications:

1. Maximum current specification of a 9V DC motor is 115mA.
2. Standard 130 Type DC motor.
3. Operating Voltage: 4.5V to 9V.
4. Recommended/Rated Voltage: 6V.
5. Current at No load: 70mA (max)

6. Finger print Sensor

Fingerprint scanners generate an image of the ridges and valleys that make up a fingerprint. Fingerprint Specifications

1. Optical
2. Resolution 500Dpi/256 gray
3. Sensing area 16x18mm

7. ATMEGA 2560:

Microcontroller is a controlling device for monitoring the project. This Microcontroller collects the data, reads and sends the data through the Wi-Fi network to the cloud computing web page. In this paper, the Microcontroller is

programmed using embedded C language using Arduino 2560. The Mega 2560 may be a microcontroller board supported by the ATmega2560. It has 54 digital input/output pins – 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz quartz oscillator, a USB connection, an influence jack, an ICSP header, and a reset button [3]

The Arduino Mega 2560 board is firstly interfaced with LCD to display the cardholder information like their name, monthly withdrawal information, etc. The Solenoid valve and Servo motor is interfaced with Arduino board, the Solenoid valve is controlled by the relay circuit and it is used to distribute the liquid like Kerosene oil.

Public distribution system is an automation system and it is a recompense over the present fair price shops. It eliminates fake ration card holders and protects the interest of the common people ensuring the country's food security. By means of its performance, corruption level will come down. Selecting the commodity and quantity will make the system more smart and robust. It will help the country's economy to reach new heights. The automated PDS is straightforward to implement and requires much less diligence in comparison to the opposite system. Using this system one can avoid the malpractices because there is no manual operations and also all information are stored in the database. So this system will be really helpful to the people. As there's no manual data stored in books or register, all the info is stored in database hence it's easy for higher authority to cross check the info at any point. So implementing this will be really helpful to targeted people.

V. RESULTS

In ration shop several drawbacks are there like material robbery, corruption, malpractices, long waiting time to gather materials, low processing speed. To overcome above problems the mechanized rationing scheme is required. Here the smart card concerned open-end credit and controller for distributing the materials. At this point card is modified by open-end credit and send the stock details to government head office using internet. So this proposed system used to avoid the corruption, goods theft, forgery and also they reduce the user waiting time. This system also suggested maintaining the stock details properly and updating the small print easily. They provide a secure, safe and efficient way of fair price shop.

VI CONCLUSION

Public distribution system is an automation system and it is a recompense over the present fair price shops. It eliminates fake ration card holders and protects the interest of the common people ensuring the country's food security. By means of its performance, corruption level will come down.

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Selecting the commodity and quantity will make the system more smart and robust. It will help the country's economy to reach new heights. The automated PDS is straightforward to implement and requires much less diligence in comparison to the opposite system. Using this system one can avoid the malpractices because there is no manual operations and also all information are stored in the database. So this system will be really helpful to the people. As there's no manual data stored in books or register, all the info is stored in database hence it's easy for higher authority to cross check the info at any point. So implementing this will be really helpful to targeted people

VII ADVANTAGES

- o Useful in providing transparency to both government and customer.
- o Reduce paper work.
- o User friendly.
- o Reduce corruption.
- o Access to authorized person only.
- o Active contribution step towards Digital India

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