ISSN No:-2456-2165

Smart Ration Shop Using RFID and Biometrics

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Abstract:- In this paper, we have proposed a system named smart ration card using RFID and Biometrics to prevent the ration forgery. RFID tag is used to carry the details of family member details. And the customer has to show his tag at the ration shop. If the user is found authentic then the quantity of ration is given to the customer according to the total number of family members. And the details are displayed on the LCD display. The main aim of this smart ration shop is to free from theft and forgery. If any forgery is done at the stage of delivery and the details are sent to government directly.

Keywords:- *Arduino Nano, RFID, ARM-7, LCD, GSM, Load Cell.*

I. INTRODUCTION

The ration card is mainly used for delivering the ration to the people. The present ration card distribution system has many drawbacks such as inaccurate quantity of goods, large waiting time, in accuracy in providing at in time. Most of the time ration dealers indulge in forgery by providing false names, in the names of ineligible people, dead people, and duplicate names from other areas. Ration dealers provide the wrong data to the higher authorities. To eliminate this we need to propose a new system.

II. PROPOSED SYSTEM

The main aim of our proposed system is eliminate the corruption by using the RFID and BIOMETRIC.RFID tag acts as ration card and the person has to bring every time. Fingerprint scanner is used to verify the users as the biometric details are unique for each and every person. The RFID tag will contain all details of user and his family. This card is provided to all the registered users. Every ration shop will have the RFID reader and the user needs to show the RFID tag at the reader. Whenever a user swipes the card it will check in the database whether the user is valid or not. When a valid user will swipe throughthe RFID scanner, the system asks for the fingerprint.

If the user is found authentic then the quantity of ration to be given to customer according to the total number of family members will be displayed on the screen. If any forgery has done then the alert is directly sent directly to the authority. The amount of ration taken by him will be displayed on LCD display and also deducted from his monthly ration . Further, all the details are updated in government database.

III. LITERATURE SURVEY

A. Automatic Ration Dispensing System:

MASTER KEY is mainly to initiate the process, which is nothing but user password valid for few minutes, it is only given to government officers. The government officer needs to provide his fingerprint. After that he will enter the details and the corresponding ration is provided to the customer. In the above proposed model, if the MASTER knows the details of the customer, there is a chance of forgery. So, to overcome the above problems the educated people have developed new technologies. In which they have used RFID and Finger print sensors to eliminate the MASTER.

B. Smart Ration shop using RFID Biometrics and SMS Gateway:

In this they used RFID technique and biometric technique to eliminate the ration dealer. RFID tag is used to carry family member details and the customer has to show this tag at the ration shop. Then the system asks for the fingerprint. If the user has verified then the quantity of ration is given to the customer according to the total numbers in their family. Then details are displayed on the LCD display. In this system there is a drawback of ration forgery. Because there is no perfect weighing machine in this system. And also there is no updation of data in any server.

C. Smart Ration Card Using RFID and IOT:

In this report RFID cards are used rather than ration cards, which consits of all the small print about the cardboard holder like family details, type of card and its validity etc. In this report we have a Bluetooth technology to upload the details in the data base which is present their. In this system if there is any fault detection the buzzer will on. But there is no intimation about the alert. To overcome all the above drawbacks we are going to develop the system, Which consists of RFID and Biometric techniques.

- *Working*

In this system, user has to register at government office. He has to give all details about his family and also their thumb impressions at the government office. After verified by the government, every user is provided with a RFID card as a Smart Ration Card.

RFID card contains details of each family member and also their thumb impressions. User needs to show the RFID card to reader which is present at each ration shop. RFID reader reads the data from the card and verifies with government database and displays an appropriate message on LCD screen that whether user is valid or invalid

ISSN No:-2456-2165

After providing the ration to the user the transaction details are sent to government database through GSM. If any one indulge to forgery ,SMS is sent to that the higher authorities.

IV. BLOCK DIAGRAM OF THE PROPOSED SYSTEM

Below information gives brief knowledge about architecture diagram and detailed working of the proposed system.

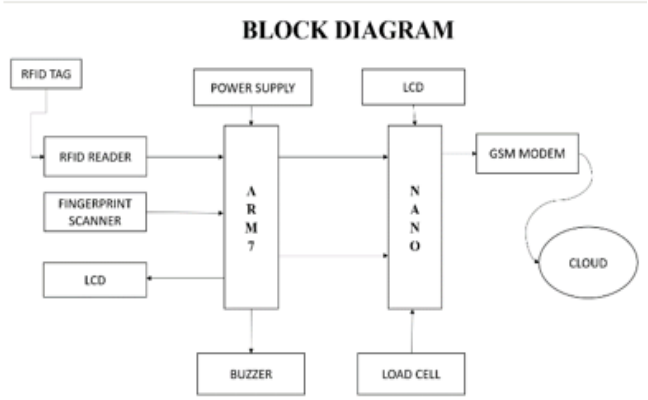

Fig 1

➢ *Hardware Components*

- *ARM-7*

The LPC2148 microcontroller was developed by NXP Semiconductor with several features & peripherals. Due to these reasons, it will make more reliable as well as an efficient option for an application developer. LPC2148 is a 32-bit microcontroller based on ARM7 family. It has has 512-kB on-chip FLASH memory and 32-kB on-chip SRAM. Also, this microcontroller support up to 2kB finish point USB RAM.

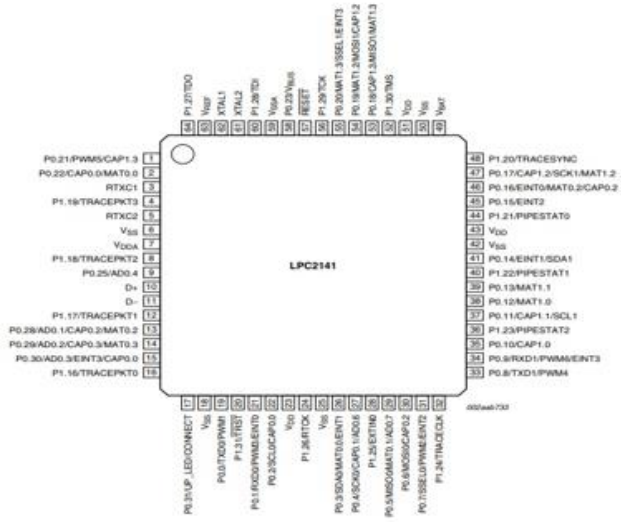

Fig 2

- *RFID Reader*

There are two types of RFID readers active and passive. A magnet is present in the RFID reader , whenever we place the card on the reader the magnetic flux is generated and card number will be read by the reader. We are giving the 5v power supply to it. For the active tag we have certain time limit, we need complete our task in that time limit only, but in the case of passive reader we don't have any time limit.

Fig 3

- *RFID tags*

The RFID cards are of two types active and passive . the rfid tag has a unique number which is present inside the card. we can't see the card number. It has a magnetic coil which generates magnetic flux when place on the reader and reads the card number. This card will be accessed at the reader with that particular application. It is used for the security purpose.

Fig 4

➢ *Fingerprint Module*

R307 is a Fingerprint Module which consists of optical fingerprint sensor with a resolution of 500DPI. It has a memory to store the fingerprints in it. when ever the Finger is placed on it will search for that particular biometric in its storage.If it is authentic it will provide access to the particular action.

Fig 5

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➢ *Arduino Nano*

Arduino Nano is a small board belongs to the Arduino family and functions same as Arduin UNO. It is sustainable small and more efficient .It consists of mini USB for transferring the code from the computer. It does not have power supply jack.We need to provide the supply through the USB.

Fig 6

➢ *GSM*

GSM(Global system for mobile communication) is used to transmit mobile data as well as voice services. It was developed using Time Division Multiplexing(TDMI) for communication purpose.It has the data rates of 64Kbps to 120Mbps.

Fig 7

➢ *LOAD CELL*

Load cell consists of a transducer which is used to convert force or pressure in to electrical output**.** The force is directly proportional to the electrical output. It consists of a strain Guage which deforms when pressure or force is applied on it. This effective deformation causes restive changes and produces a corresponding electrical output. The below figure shows a bar load cell

Fig 8

➢ *LCD*

Liquid crystal Display (LCD) is a display which is made up of millions of pixels. It is 16x2 display with an operating voltage of 5v.It has two registers data register and command register. It is generally used in embedded applications.

Fig 9

➢ *Website*

ThingSpeak is an open-source software which was written in Ruby language. which enables the users to communicate with internet enabled devices. It facilitates the data access, retrieval and logging of data by provided by an API to both the devices and social network websites.

V. RESULT

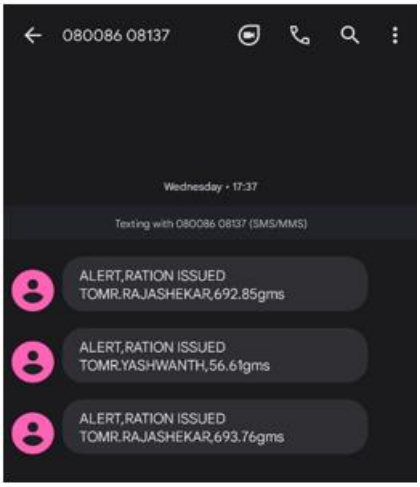

Fig 10

Fig shows the alert message arrived at the higher authority due to forgery.

Fig 11

Fig shows the total distributed details at the server

ISSN No:-2456-2165

VI. CONCLUSION AND FUTURE SCOPE

The present system is a new approach to digitalize the ration shop. Due to continuous monitoring and data collection the system will play an important role. Implanting a automatic solar charger for providing the power supply in case of power failure.

ACKNOWLEDGEMENT

We express our deepest appreciation to the Department of ECE,and our guide ‘Ms.J. Nirmala Bai Jadala Asst professor Department of, ECE“ ,for giving us all the support and the guidance we needed.

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