SMART RATIONING SYSTEM

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ABSTRACT

This paper proposes automation in ration distribution using smart card based on Aadhar card technology. we can achieve secure and interactive approach for automization for ration distribution. Aadhar card contains all related information such as name, contact number, address, bank account details, biometric information and demographic data. Customer details are stored in the central data base which is provided by the government authority. In automated system, we replace the conventional ration card by smart card (RFID based), which contains unique Aadhar identification number of all the family members, card holder type APL or BPL which is used for user authentication to buy their ration. OTP and SMS will be sent to the card holder and after each transaction the government data base will be updated. An alarm is used to alert and notify the government authority during theft. After customer purchases the material amounts get deducted from the registered bank account.

Keywords---RFID, GSM SIM 800L, Finger Print Module R305, AADHAR CARD, ARM7 LPC2148, OTP

INTRODUCTION

Distribution of ration in a country like India is not an easy task. Public distribution involves distribution of the essential commodities to all the citizens of the India for BPL and Reserved catagories. People who are accessing the ration shop for food products will be given subsidy on the cost of food products based on their ration card type. In ration shop, materials such as rice, wheat, sugar, dals, kerosene, oil are provided. Aadhar card contains all related information such as name, contact numbers, Address, bank account details, biometric information and demographic data. Instead of conventional paper based ration card each family is provided with one smart card (electronic ration card) this card is RFID based card containing all information about the family members such as name, address, type of card, number of family members, family member's profession, age, gender, Aadhar number, mobile number, bank details. The ration shop is installed with an automated system having three lines of security. First finger print scanner, second is OTP-ONE TIME PASSWORD (four-digit password), third is RFID card. The smart card, GSM module and display are interfaced to arm processors. The GSM module linked to registered mobile number and government data base. If any unauthorized person tries to

access the system, an alarm is triggered and the authorities are alerted II.
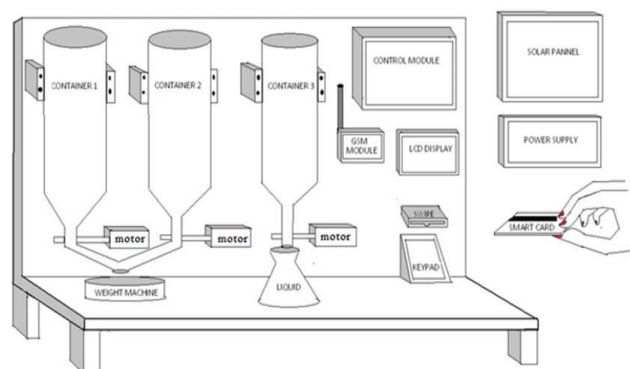

Fig 1: Mechanical Structure of the Proposed System

Fig 1. Depicts the overall functioning of the modules and proposed system that incorporates embedded based automated ration shop. In this prototype model for demonstration of the automatic ration we have two containers: one for solid material say wheat and another for liquid say kerosene. To control the flow of material from container we install two programmable motor controlled valves at the outlet of the container one valve for each container one control module having one display unit, card reader for authentication of customer's RFID card and GSM module to communicate with consumer and authority person is also available. From This standing in long queue's for getting ration is avoided. This system provides Ration material automatically to human making it error free and accurate.

LITERATURE SURVEY

Automatic ration distribution is based on GSM and RFID technology. In this the user has to scan his fingerprint followed by entering the OTP generated and entering that OTP. Then the microcontroller checks the user's details and also the quantity allocated for that particular user. Then it asks to select the items and the user have to select the required items. After this process the controller sends the information to authorities and customer as well through GSM technology. The database stores the records of each users and also the details of the purchased items. Along with this updation of database is also done so that shopkeepers cannot cheat anyone. RFID tag is used for authentication purpose. After the items are taken by the users immediate transaction takes place. After each and every transaction

every citizen will receive the sms from government with the number of items purchased and even that gets uploaded in the database. This paper uses the RFID technique instead of booklet of ration card.

PURPOSE:

The present ration distribution system is an offline one. Due to this it results in corruption. Supply of items at maximum prizes to poor people is also involved which is not justified. There is no transparency and also proper information of the materials between the customers and delears. Hence due to this poor people do not get proper required items as stated in their ration card. Therefore with this automatic ration distribution system all these illegal activities can be eliminated and also manual labour can be redused.

HARDWARE PART:

A. Top Level Design

Figure 2 shows the block diagram of the system. ARM 7 LPC2148 is the heart of this system which performs all computational activities

As shown in the block diagram the microcontroller takes care of the weight issues and it controls the motor to give particular amount of given material to the customer. For specific amount of material, specific delay is given to open and shut the container value.

- x Here we are using ARM7 LPC2148, 32-bit processor with three serial communication ports. First port is used for RFID (to scan smart card), second port is used for FINGER PRINT MODULE(to scan biometrics),third port is used for GSM SIM 800L(to send SMS).

- x 16*2 LCD display is connected to processors, the process going min the processor will be displayed on the LCD.

- x We are using AC motor to demonstrate the liquid items (kerosene and oil) and DC motor to demonstrate the solid items (rice and wheat).
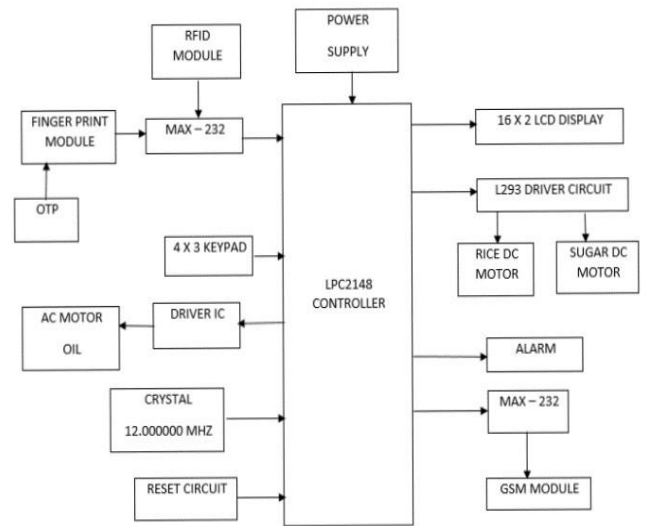- x After scanning finger print, we enter the OTP using 4*3 telephone keypad

Fig 2: Block Diagram of Proposed System.

Figure 3. illustrates general system flow chart. in order to optimize overall system performance, the working algorithm has been divided into 3 parts namely CARD HOLDER authentication, RATION DISTRIBUTION, INTRUDER ALERT. When RFID tag is swapped with the reader, the reader reads the information from the tag and accesses its unique 12-bit hex code. This code is then matched with the data base and if the information of the customer is in the database, then the display system (LCD) will display the name and the amount of ration allocated to this customer. After the delivery, the microcontroller will instruct the GSM module to send the SMS to the registered number of the customer about the delivered as shown in fig 3
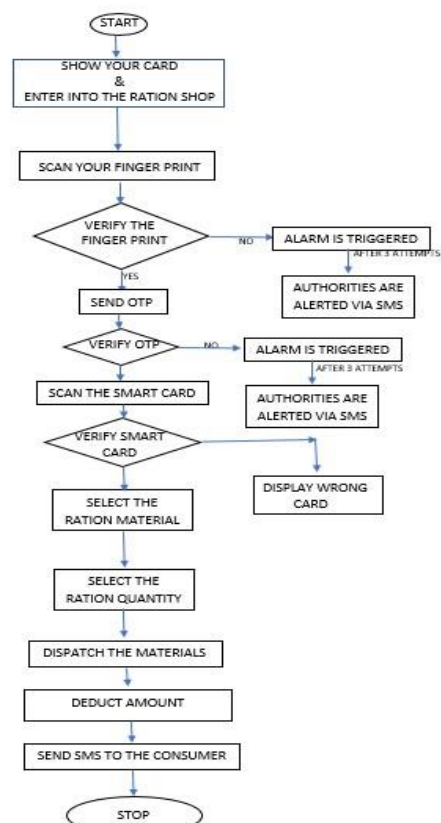

Fig 3: General System Flow Chart.

If either of the security measures i.e., biometrics or OTP is entered wrong three times, then it indicates some intruder and immediately theft alert is indicated by theft alert alarm. If it is first line of security i.e., finger print it notifies the ration distribution authorities .If it is second line of security i.e., then it alerts the customer by SMS notification.

WORKING

When we start our project, first we need to scan the finger print. When finger print is found ration shop data base the GSM will send OTP to the registered number, then we need to enter the OTP, if the OTP is matched then it will ask to scan RFID card, if RFID is also matched then it will give the input to the owner to select rice, sugar, wheat, kerosene etc.

After selecting the material, it will ask for quantity of the material. If in case the finger print is not recognized a buzzer alarm will be triggered. If wrong person or wrong finger is scanned for three times alert message will be to ration shop authority. If the OTP entered is wrong for three times a alert message will be sent to the card holder registered mobile number. If the ration is already taken a message will be displayed saying that "RATION ALREADY TAKEN" and even message will be sent to the card holders registered mobile number. If wrong card shown to the RFID reader, a message will be displayed as "WRONG CARD" and terminates the transaction.

Fig 4: Distribution of rice and oil

Fig 5: Ration Material Distribution Kit.

CONCLUSION AND FUTURE WORK

We can further enhance the entire system by including biometric identification like voice & face identification to add more security and also we can make a web based solution to give a high level accessibility but these additional features may increase the overall cost of the distribution system but yet a powerful approach to make high level distribution system.

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