ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

INTELLIGENT PDS USING ARM 7 AND .NET

K.Aravindhan[1], M.Mohammad Faheem[1], T.R.Jagannath[1], S.Saravanan[2]

UG Studens[1], Dept. of ECE, Jansons Institute of Technology, Coimbatore, Tamil Nadu, India

Assistant Professor[2], Dept. of ECE, Jansons Institute of Technology, Coimbatore, TamilNadu, India

ABSTRACT-- Public Distribution System (PDS) means a food distribution security system followed in india. Since lot of problems are prevailing in the existing manual system, this research paper has proposed a concept to replace the manual work in ration shop. The Public Distribution System is automated using Arm 7, computer running .NET program. In this smart rationing system RFID card replaces the conventional ration card. Unique four digit password is given to the customer, which is entered in the display screen once the card is verified. If the user is authenticated, the next process is giving input in the screen. After input, bill is generated and once the cashier/operator gives confirmation, the products are obtained from the automated ration machine. The ARM 7 processor and computer is pre-programmed in such a way to perform the similar operations. In this smart ration system, government can monitor all transaction that occurs in the ration shop. For involving the government in the system, the ration shop system is linked to the government database with the help of GSM modules, which further sends the up-to-date information to the government and billing message is sent to the customer.

I.INTRODUCTION

India's Public Distribution System (PDS) with a network of 4.78 Lakh Fair Price Shops (FPS) is perhaps the largest retail system in the world. Public Distribution System within the country nowadays supports over forty crore Indians below the poverty level with provide food grains at sponsored price[1].

Sale of commodities to card holders is achieved through government approved honest value retailers. Public distribution system is one in all the wide disputed problems that involves corruption and prohibited importing of products. One reason of this to happen is as a result of each job within the ration search involves manual work and there's no specific technology concerned in automating the job[6]. During this planned system we have planned an Automatic Ration Materials Distribution supported embedded and RFID Technology to avoid the drawbacks occurring as a result of manual work. The smart rationing machine, installed on the ration shop has three interfaces namely display screen, billing printer interfaced to motherboard of PC and GSM interfaced to the ARM 7

II.LITERATURE SURVEY

CONVENTIONAL PDS SYSTEM:

Both the central and state governments share the responsibility for regulating current PDS. While the central government is chargeable for procurance, transportation, storage and bulk allocation of food grains, state governments has the responsibility of distributing the materials to the shoppers through truthful worth retailers (FPSs) that area unit established as a network. State governments are chargeable for operations like allocation and identification of families that are below personal income, issue ration cards, supervising and watching the functioning of truthful worth retailers [5].

Under PDS theme, every family below the personal income is eligible for thirty five weight unit of rice or wheat each month, whereas a social unit higher than the personal income is entitled to fifteen weight unit of food product on a monthly basis. A BPL card holder ought to tend 35 weight unit of food product and also the card holder higher than BPL ought to tend 15 weight unit of food product as per the norms of PDS. However, there are concerns about the efficiency of the distribution process.

Total Plan Outlay for the 11th Five year Plan for the Department was Rs. 694 crores. The Total Expenditure during the first 4 years of the 11th Five year Plan is 231.93 crores[2].

The classical system of Public Distribution System (PDS) established by the Indian government has various ration shops to provide commodities like

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

food grains, oil, kerosene etc. The employee manually measures it and gives it to the customer; billing is made manually by the employee for the commodities purchased. The purchased commodity details will be written on the ration card by the employee[7].

The Planning Commission had the subsequent to mention on the PDS system in its 2005 report. several general challenges that plague the PDS system these days "For each Rs 4 spent on the PDS, solely Rs one reaches the poor" ."57% of the PDS foodstuff doesn't reach the meant people"[2].

MAIN issues within the typical RATION SYSTEM

i) prohibited Usage
ii) Cannot ready to get the correct amount of provides
iii) Over crowd
iv)Cannot ready to get the fabric at any time
v) process speed is slow
vi) choice of households – Targeting
vii) imitative cards
viii) Hijacking of ration cards
ix) Poor quality of provides
x) quite the prescribed rates are charged[3]

III.PROPOSED METHOD

COMPONENTS USED:

Some of the major components used in this system are:

1) *The smart card reader (MFRC522):* The RFID based smartcard reader is connected to microprocessor unit (MPU) via RS232.
2) *Microprocessor unit (LPC2148) and PC*: This is the assembly which placed in between authentication and execution. It is used to establish the communication between various modules.
3) *GSM module:* Here the GSM module is used to exchange the information in form of SMS between microprocessor assembly and consumer.
4) *Printer*: It is connected to the PC via RS232, used to print the billing information
5) *Load cell:* the 10KG load cell is connected to the MPU. Used for measuring the quantity of rice to be dispatched.
6) *Flow sensor:* This is connected to MPU, used for measuring kerosene quantity.
7) *Voice playback module:* Connected to MPU, used to provide voice assistance at each step.

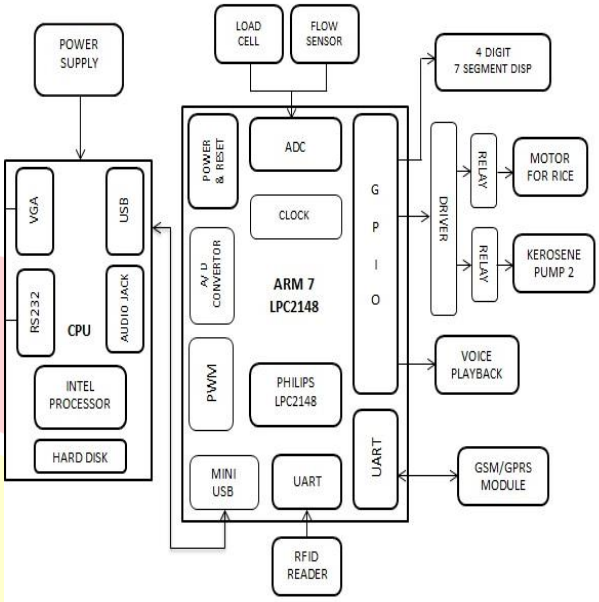
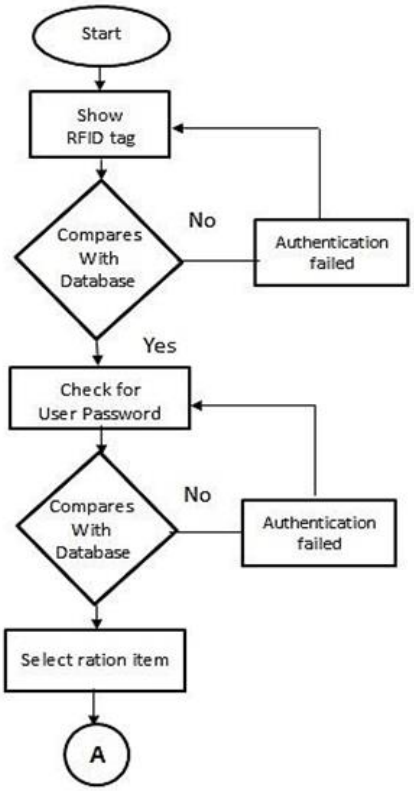


Figure 1. Block of the project

The block diagram of smart ration card is shown in the fig 1, which describes the overall functioning of the module and proposed system that employs embedded system based automated ration shop.

FLOW DIAGRAM



ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

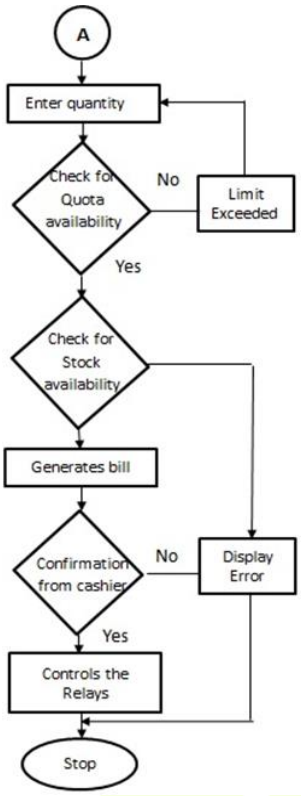


Figure 2. Flow chart of the proposed system

The flow chart of operation involved in the proposed system is shown in fig 2.

This RFID tags has all the information of the customer, needed for taking the ration from the Ration shops. The RFID reader MFRC522 connected to the ARM 7 board reads the data from the RFID tag and compares with the database which is stored in hard disk, followed by password verification.

Once the authentication process is completed successfully, the PDS machine prompts to select the ration item, enter the quantity required. When the quantities are entered, it checks for the quota availability and also performs stock check. Once these processes are completed the bill is generated.

After cash payment, the cashier gives the confirmation and a signal is sent to ARM 7 LPC2148 MCU. Based on the signal, the ARM 7 controls the relays, valves, LCD matrix. The quantities are dispatched accurately with the help of load cell (for sugar, rice) and flow sensor (kerosene).

IV.ALGORITHM

1. START
2. Initialize all the devices Display, RFID reader, Finger print module, Thermal printer, GSM modem, DC motor and sensors.
3. Show RFID card.
4. Check the validity of card and status X indicates validity of card.
    a. If X=0, turn on the buzzer & go to step 3.
    b. If X=1, go to the next step.
5. Enter the password.
6. Check the database and status X indicates validity of password.
    a. If X=0, display error in screen & go to step 5.
    b. If X=1, go to the next step.
7. Check for the input from touch screen
8. Select ration item.
9. Enter the amount of product grain in kg, oil in litre and kerosene in litre.
10. Check the information about the quota availability and status Y indicates availability of material.
    a. If Y=0, go to step 8.
    b. If Y=1, go to the next step.
11. Check the stock availability and status Z indicates availability of material.
    a. If Z=0, go to step 8.
    b. If Z=1, go to the next step.
12. Turn on respective valve. According to the amount entered,
    a. Turn on the valve for kerosene.
    b. Turn the dc motor ON for rice up to the timer is on.
13. Send data to PC and message will be sent to customer, updates database. Go to step 3.

V.WORKING

Initially the customer has to show their RFID card to the RFID reader on the PDS machine. The RFID reader reads the data from the card and sends it to the ARM 7 board which compares the data with existing database. Once the RFID authentication is over, the next step is password matching. The CPU reads the password and compares with the database created using .NET.

When the password matches with the database authentication is given to the customer, the machine prompts to select the food, quantity. Once availability check is completed and successful (both Quota availability and stock availability), payment should be made to the cashier. After his confirmation, the control signal is sent to relays.

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

If there is no stock in secondary storage (in the machine) the processor activates the relays of Bucket elevator (to load rice) and fuel pump (to load kerosene) correspondingly, which loads the respective item from the primary storage.

To distribute rice the relay which controls the motor controlling the valve of rice storage is activated. Thus the valve is made open, rice is sent out. The load cell is used to weight the rice, once the quantity entered in the screen is reached the valve is closed. Similar process is carried for kerosene where instead motor, mini fuel pump is used and load cell is replaced by flow sensor.

The quantity distributed is displayed on the 7segment LCD display in front panel of the machine. After distribution a message is sent to the customer mobile number, the bill receipt is printed using thermal printer, the database gets updated.

VI.CONCLUSION

Efforts have been made to design this system which will overcome all the drawbacks present in Current Public Distribution System with high security, accuracy, reliability, speed. The two step user authentication and Hi-tech security from theft and other malpractices makes it more reliable. As there is no manual data stored and all information is stored in database, the higher authority can check the details as and when it's necessary through the use of servers.

In this system, the power is in system's hand rather than any human being so that the occurrence of fraud can be removed easily. The proposed rationing system is devoid of the requirement of Govt. appointed ration shop owner, maintenance of receipts and ration card and also the possibility of hoarding. Also uneducated or illiterate people can also easily work with the audio assistance provided. People can take the ration goods easily and securely by using this mechanized system. This system has greater scope in future.

VII.REFERENCES

[1] S.Sukhumar, K.Gopinathan, S.Kalpanadevi, P.Naveenkumar, N.Suthanthira Vanitha "Automatic Rationing System Using Embedded System Technology", International Journal Of Innovative Research In Electrical, Electronics, Instrumentation And Control Engineering Vol. 1, Issue 8, November 2013, pp. 39-342

[2] A.N.Madur, Sham Nayse, "Automation in Rationing System Using Arm 7", International Journal Of Innovative Research In Electrical, Electronics, Instrumentation And Control Engineering, Vol. 1, Issue 4, July 2013, pp. 168 -171

[3] Mohit Agarwal, Manish Sharma, Bhupendra Singh, Shantanu, "Smart Ration Card Using RFID and GSM Technique", 5th International Conference- Confluence The Next Generation Information Technology Summit 2014, pp. 485-489

[4] S.Valarmathy, R.Ramani, "Automatic Ration Material distributions Based on GSM and RFID Technology," International Journal of Intelligent Systems and Applications Oct 2013, vol 5, pp. 47-54.

[5] Sakshi Balani's analytical report "Functioning of the Public Distribution System", December 2013 pp. 5-15

[6] Abdul H. Ansari, KetanG. Badgujar, Monali R. Rathi, Shital R. Tambe, "Automation in Rationing system using GSM and RFID technology", AR Digitech International Journal Of Engineering, Education And Technology, volume 3, Issue 2.

[7] Jinali Goradia, Sarthak Doshi, "Automated Ration Distribution System" , International Conference on Advanced Computing Technologies and Applications (ICACTA-2015), pp. 529-528

BIBLIOGRAPHY

ARAVINDHAN .K is pursuing, Bachelor of Engineering in the discipline of Electronics and Communication Engineering in Jansons institute of Technology, Coimbatore, under Anna University Chennai, India.

MOHAMMAD FAHEEM .M is pursuing, Bachelor of Engineering in the discipline of

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

Electronics and Communication Engineering in Jansons Institute of Technology, Coimbatore, under Anna University Chennai, India.

JAGANNATH .T.R is pursuing, Bachelor Engineering in the discipline of Electronics and Communication Engineering in Jansons Institute of Technology, Coimbatore, under Anna University Chennai, India.

Mr.S.Saravanan received his Bachelor of Engineering degree from Anna University Chennai in 2008. He receivedhis Master of Engineering degree from Anna University of Technology, Coimbatore in 2011. He is currently pursuing PhD in Anna University. His research interest includes VLSI, Embedded Systems. He has published articles in international Conferences and journals