

Smart Ration Card System Using Raspberry-pi

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Abstract: Ration Card is one of the important documents for every Indian family. Every family is given facility by government to receive food grains against a card. But there is lot of corruption involved in TPDS such as black marketing of the subsidized food grains as many families do not claim their quota of food grains and many families claim the quota of other families. As a solution to above problems this paper proposes a system which is highly scalable Ration Distribution System based on embedded system. The main target of this project was to bring transparency between government and customer, and this transparency is provided by webpage. Here the conventional paper ration book is replaced with RFID based smart card. When any transaction is done by customer he/she will receive a message on his mobile through GSM technology.

Keywords: Raspberry-pi, RFID module, GSM technology, RFID smart card, Embedded Web Server, GUI Screen

I. INTRODUCTION

The Traditional Public Distribution System (TPDS) was introduced in 1997 to benefit the poor and to keep the budgetary food subsidies under control to the desired extent. TPDS is aimed at reducing poverty through delivering minimum requirements of food grains at highly subsidized prices to the population below the poverty line.

Public distribution system involves corruption and illegal smuggling of goods. The main reason of this to happen is that there is no specific technology involved in this system & the system is completely manually handled which causes lots of irregularities. In this project we have introduced a system based on RFID and GSM to avoid these drawbacks. Also the data which was stored registers or was handled manually will be now stored in MySQL database and so that any manipulation in data will not take place.

module and is serially send to raspberry-pi. Raspberry-pi scans the data stored in MySQL database and if the unique number of that card matches with the data stored in MySQL then information of that customer will be displayed on GUI Screen and customer can perform his further process and if the number does not matches with data stored then invalid customer such message is received on GUI Screen. Whatever grains are allotted to customer is displayed on the screen and shopkeeper cannot change this data as he use to do when it was stored manually. Customer now has to give inputs using keyboard of whatever goods he/she has to buy. After all the transaction is finished then that message will be received by customer on his mobile number, similarly same data will be updated on embedded web server which can be used by government servant and customer so that customer will have all the backup of his ration account and shopkeeper cannot lie to the customer. Also in previous system customer has to buy all the goods at same time but know in the introduced he can buy food grains required to him and keep the remaining food grains as it is and can buy them again when required.

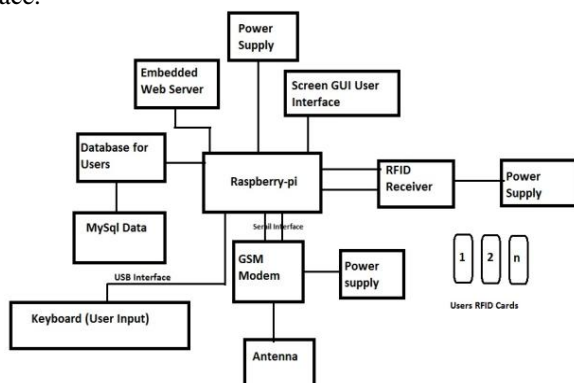


Fig.1 Block Diagram

This system is completely automatized. When customer goes to ration shop he has to show RFID base smart card instead of ration book. Each customer will have a unique number of smart card. This card will be scanned by RFID

II. CONVERSION FROM OLD RATION SYSTEM TO SMART RATION SYSTEM



Fig. 2 Ration book to Smart Card

The conventional ration card which was in the form of book is now in the form of RFID based smart card and each customer will have his unique number of card which will be scanned by RFID receiver when he goes to ration shop.



Fig.2 Data stored in register to data stored in MySQL database

In previous system all the customer data was stored in registers and which was completely manually handled is now stored in MySQL database in which manipulation of data by shopkeeper cannot be done.

```
mysql> select*from Smart;
```

Name	MoNo	UID	CardNo	Rice	Wheat	Sugar
Sakanya Kumavat	8308640639	51002A37F5B9	120015666057	15	10	15
Madhuri Lonkar	7387809986	997526391469	120015666057	15	10	15
Aakanksha Kumbhar	9527734457	306608023665	1200146C8DE5	15	10	15
Shradha Bhende	9931766574	993494661573	51002A37F5B9	15	10	15
Pranjata Toranmal	7507476667	451368528745	12001568620E	15	10	15
Anruta Banode	9665721709	438952314758	1200146A9AC1	15	10	15
Anni Lohar	8978253333	153624875236	51002A37F5B9	15	10	15
Prachi Kshirsagar	8600275002	562894523671	1200146C98F0	15	10	15
Sandhya Raut	7355835310	234815239957	120015078886	15	10	15
Akshata Sonrao	9527742173	136944277489	51002B514613	15	10	15
Anamika Solankar	9960119306	524863175236	NULL	15	10	15
Shankar Dage	9222246975	523684879652	NULL	15	10	15
Pratibha Bhise	9665204033	246398526745	NULL	15	10	15
Mangesh Lonkar	7757842476	253486571201	NULL	15	10	15
Trupti Kare	9683691331	20148033215	NULL	15	10	15
Manisha Kawade	9689226122	504210362014	NULL	15	10	15
Priyanka R. Vadav	9503513947	520413068095	NULL	15	10	15
Priyanka M. Vadav	9890277056	708301486918	NULL	15	10	15
Sangita Kumari	8421102228	203641058620	NULL	15	10	15
Vandana Kumbhar	9522280462	248103489714	NULL	10	7	10
Sanjay Lonkar	9850195729	240146034756	NULL	10	7	10
Kanchan Shejul	9763610035	980236790145	NULL	10	7	10
Nikanti Deshpande	9715020180	201378401462	NULL	10	7	10
Shilpa Bapat	9922345083	503148965230	NULL	10	7	10
Bala Mohite	7776811448	981036402514	NULL	10	7	10
Madhuri Ghawar	7038149057	501239486537	NULL	10	7	10
Mohit Kumavat	9762938996	430582014859	NULL	10	7	10
Omkar Injekar	982280152	201486798852	NULL	10	7	10
Pooja Hamsakar	8247564734	139544383214	NULL	10	7	10
Rohit Kumavat	9595559414	345178345267	NULL	10	5	8

Fig. 3 Database of customers

Fig.3 shows the database of people collected required for this introduced Smart Ration Card using Raspberry-pi system. In this database customer name, mobile number, UID number, smart card number, grains allotted to them is stored and this database is completely handled by the government, shopkeeper cannot manipulate this data.

III.SYSTEM DESIGN

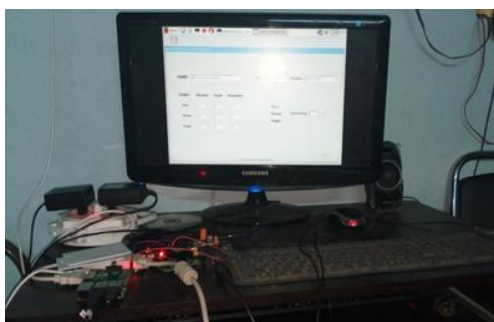


Fig. 4 System Interfacing

Above fig. shows the introduced system. In this system raspberry-pi 2 is used as main controller. RFID module is used to scan the smart card and GSM is used to send message on customer mobile number. Monitor is connected to board using HDMI cable which is used to display GUI screen.



Fig. 5 GSM & RFID Interfacing

RFID is serially interfaced to board and TTL logic is selected on RFID receiver so that card is scanned. GSM should also be connected serially but as there is only one serial port to raspberry-pi so RS-232 to USB converter is used and GSM is interfaced to raspberry-pi through USB ports.

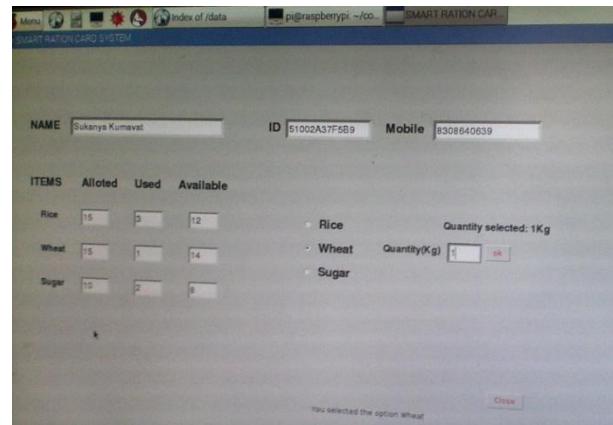


Fig. 6 GUI Screen

When card is scanned and if the number of card is matched with the database the GUI screen shown in above fig. will be displayed on monitor.

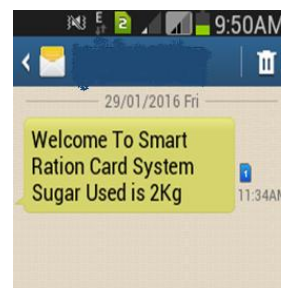


Fig. 6 Message received on mobile

When all transaction is finished customer will receive a message on mobile as shown in fig. so that he has backup of his ration account



Fig. 7 Web Server homepage

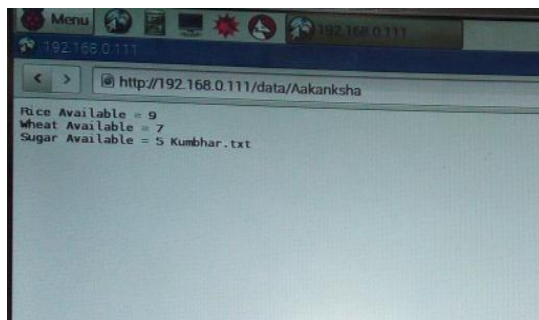


Fig.8 Customer ration web account

Above fig. 7 and fig. 8 shows the images of designed webpage. Apache server is used to design webpage in the form of text document. IP address of main controller i.e. raspberry-pi is used to open the webserver. This webpage can be used by customer and government anytime to see their ration account status.

IV. FLOWCHART

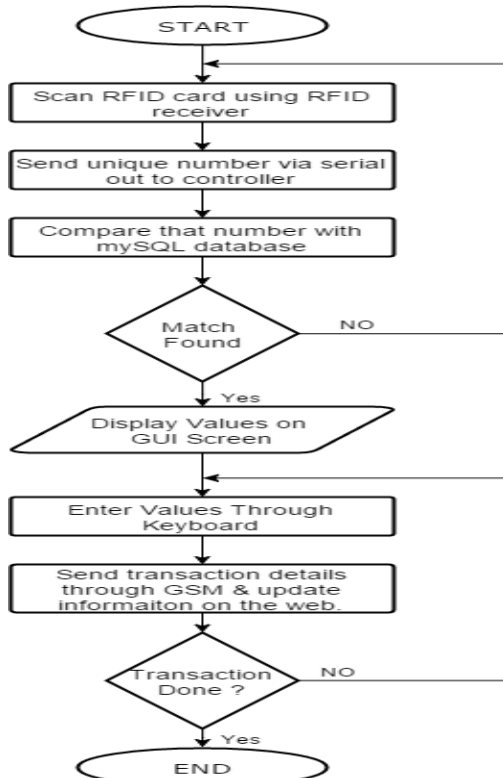


Fig 6 Flowchart of proposed system

V. ADVANTAGES

- Increased corruption government as well as market sector can be prevented if system becomes automated.
- The problem of hoarding at government super bazaars that give rise to price hike can be prevented.
- Customers will not have to pay overcharge of the goods as all the prices will be known by them.
- The customers will get their rightful entitlement in terms of quantity.

VI. CONCLUSION

- Smart Ration card system is based on GSM & RFID instead of ration card. But there are few drawbacks in the existing system, first one is that all the data is handled manually and there is no specific technology involved in the system, secondly if the materials are not bought at the end of month, then they will sell to others without any intimation to customers & government.
- The above drawbacks are rectified by this system. After transaction the controller will send the information to the customer & this same information will be updated on web page.
- By using this system we can avoid corruption in ration/public distribution system to some extent.

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LINKS

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BIOGRAPHIES



Aakanksha Kumbhar, Achievements: Participated in GMRT Science Exhibition on 28th & 29th Feb., 2016, won 2nd prize in B.E. Project Competition in “Electronova 2K16” on 11th & 12th Jan., 2016 at P.C.C.O.E. and participated in Project Exhibition in 8th National Conference On Industry Institute Interaction-2016 on 28th March, 2016



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