Smart Ration Card Using Raspberry Pi

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Abstract- *Ration card is important document for every Indian family. Every family is given facility by government to receive food grains against ration card. Quantities of different grain like sugar, rice, wheat are fixed for every month for families depending upon their income. The traditional public distribution system has two drawbacks: - first the shopkeeper who weighted the material can be inaccurate because of his mistake. Second is if the material is not bought at the end of the month shopkeeper will send to others without permission of the government. To overcome this drawback we have proposed in this paper "Automatic Smart Ration Card". RFID & GSM technology is used instead of ration card. The main purpose of this project is to bring transparency between government & customer, and this transparency is provided by webpage. Here ration book is replaced by RFID based smart card. When any transaction is done by customer will receive a message on his mobile through GSM technology.*

Keywords- Raspberry pi, RFID Reader, RFID tags GSM module, Solenoid valve and keyboard.

I. INTRODUCTION

Public distribution system was introduced in 1997 .In our Indian country public distribution system is important provisioning system. Government provides food grains like wheat, sugar, rice, dal in low price to reduce poverty. Ration card includes three categories.

1. AAY(Extreme Poverty Level)
2. BPL(Below Poverty Level)
3. APL(Above Poverty Level)

Ration card colour depends upon family income. Family having annual income less than 15000Rs.comes under BPL category and colour of BPL ration card is navy blue. In AAY category, family income is less than 1 lakh and colour of ration card is orange. And family having annual income is 1 lakh or more than 1 lakh comes under APL category and colour of ration card is white. In public distribution system there are lots of corruptions such as black marketing. Most of the ration shopkeepers keep fake ration cards with them. Due to availability of all ration items these items are present with the ration shop dealer so he can falsify the records and use the items to sell in the market loosely. The dealer then does not provide these ration items to the customers. Many a time's

people are not aware that the items have arrived in the shop. Shopkeeper of ration shop sells remaining food grains on extra charge. In the current situation we are facing problem due to lack in transparency. There is no such good system yet developed through which government gets message of usage of grains by the people

The main reason of this corruption is there is no specific technology in this system and the system is completely manually handled which causes lots of irregularities. To avoid this corruption we create atomized system. This system is based on RFID and GSM. Each customer has unique RFID based smart card. The RFID card consists of unique number. The RFID card is scanned by RFID reader. RFID reader sends unique number to Raspberry pi serially. Raspberry pi scan unique number to data stored in Visual Basic. All information about the every customer is stored in Visual Basic software. If match is found then information of that customer is display on screen otherwise invalid customer such message is display on the screen. As per the requirement of customer he/she enters the value of food grains using keyboard. As per the customer choice withdrawal of food grains is done through solenoid valve. After transaction is done message which contain information about food grain is send to the customer's mobile using GSM technology. And same information is updated on web page which is used by government as well as customer any time to check their ration account status.

II. LITURATURE REVIEW

1) Jaid Rahul, Kadam Chetan, Deore Minal used AVR microcontroller as a main microcontroller in this paper. RFID smart card is used for security purpose in public distribution system. Family information is stored in RFID card. Before ration collection customer card verification is necessary. Invalid card is avoided so that corruption is avoided. For automation purpose level sensor and all for grains and load cell are used. So that proper amount of food grain is withdrawal.

2) S.Kanagasubaraja, Mohesh Viswan proposed system using smartcards for all the citizens. The smartcard contains the details of the citizen. Citizen can view the total quantity of the

stock available. After each and every transactions the stock get reduced in board and the citizen receives the message and email from government with the purchased time and number of products bought with the product id and also uploaded in the main database then and there. The cards are verified based on the citizen's fingerprint. To check whether he is smartcard holder, each and every person's finger print in a family are collected during card requesting and accordingly items are allocated.

3) Kumbhar Aakasha, Kumavat Sukanya, Lonkar Madhuri, used RFID card instead of ration book. RFID reader scans the unique number from RFID card. Raspberry pi scan the unique number to the information stored in MySQL database. If match is found then customer gets allotted food grain. If match is not found then invalid customer such message is display on the screen. Transaction information is sending on customer mobile using GSM & same information is updated on web page.

4) Ahijeet Chimgave, Jidnyesh Patil, Aniket Gotarne, Tushar Numpurkar, Shailesh Jadhav, used LPC2135 microcontroller as main controller in this paper. RFID smart card is used for security purpose in public distribution system. Each customer has unique RFID tag which act as ration card. All information of customer is stored in card. RFID reader read information in the tag. In this system GSM module is used to send message to customer and webcam for analyzing grain quality. To avoid corruption in public distribution System is used.

III. PROPOSED SYSTEM

Fig. Block diagram

In this system we will remove man power to distribute the Ration material like sugar, Rice, Wheat, Dal Etc.

It will take less time to give the customer & respective person can took any time like ATM machine. And also the shopkeeper cannot sell remaining stock. Here, we are designing a system where a person displays his/her valid identity and our system gives the Ration to that customer. The Concept is to automate Ration Distribution System, A Govt. of India initiative process in which a fixed amount of ration is provided monthly to the people by the distributor. The apparatus we are designing is cost effective and can prove useful to Government of India Ration Distribution System and to various other disciplines. In terms of feasibility it is a vast concept and interesting task to perform and totally feasible in all aspects technical as well as other.

1) RASPBERRY PI:

Raspberry pi is the controller of the system. Raspberry pi is small, inexpensive minicomputer. It is the core of the system. The Raspberry pi is a series of credit card sized single board computer developed in the United Kingdom. This model has Ethernet port and Wi-Fi 802.11.

2) GSM:

GSM Module GSM is a digital mobile telephony system. The GSM module is communicate the Raspberry pi with mobile phones through UART. GSM modem interfacing with Raspberry pi for SMS control of industrial equipment.

3) RFID READER:

This reader generates a pulse when any card is scanned and data read from the RFID card is sent to microcontroller. RFID is one of the methods for identifying unique items using radio waves. Basically RFID systems are made of three components like readers, antennas and tags which can carry the data on a single microchip.

4) SOLENOID VALVE:

One solenoid valve is used in the proposed system for the distribution of food grains. The valve will be controlled by solenoid valve controller circuit. The actual withdrawal of materials takes place through the solenoid valve.

5) WEB SERVERS:

A web is a computer system that process request via HTTP, the basic network protocol used to distribute on the World Wide Web.

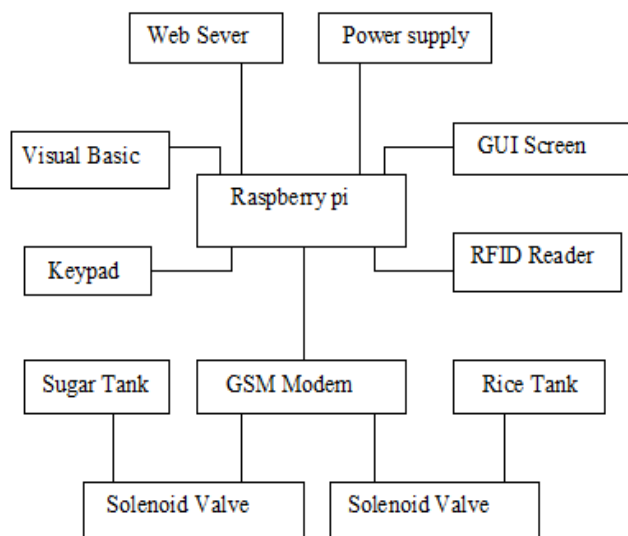### 6) DATABASE MAINTENACE:

In previous system all the customer data was stored in Registers and which was completely manually handled is now stored in Visual Basic database in which manipulation of data by shopkeeper cannot be done. In Visual Basic database customer name, mobile number, smart card number, grains allotted to them is stored and this database is completely handled by the government, shopkeeper cannot manipulate this data. After the distribution has been made there is a necessity of updating and maintaining the database to avoid the miscalculations.

IV. FLOWCHART
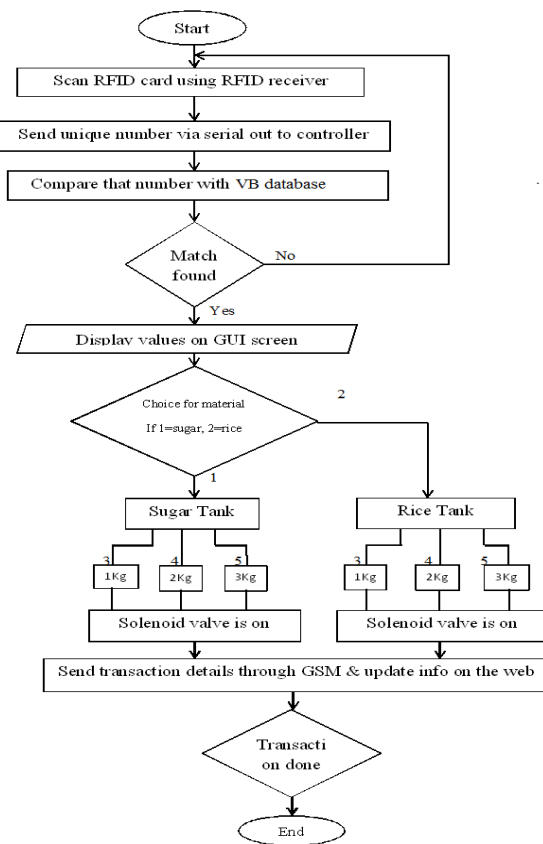
V. ADVANTAGES

1) Increased corruption government as well as market sector can be prevented if system becomes automated.
2) Requirement of manpower is reduced.
3) The customer will get their entitlement in terms of quantity.
4) By using this system shopkeeper cannot sell remaining stock on extra charge.
5) User friendly.
6) Access to authorized person only.
7) Active contribution towards step towards digital India.

VI. APPLICATION

1) Automation of ration shops is the relevant system which can help the people to buy the ration shop things easier; this is the idea that can be used in the government ration shops in all over the India. Here is an advanced system useful for the automatic system. The proposed system focuses on design and implementation of automation of ration shops. The various products like rice, sugar and kerosene are distributed using this automated ration shop system.
2) This system can be used in Automatic Chocolate Vending Machine. An ACVM is used to sell chocolate from which children can automatically purchase the chocolates. The payment is by inserting the coins of appropriate amount in to a coin slot.
3) It can be used in retail market sector such as in shopping complexes, super markets to automate the process to sell items without human intervention.
4) This system is used in Bus for ticket distribution system.

VII. CONCLUSION

Automatic ration system is an advanced ration system that based on RFID technology. This system has greater scope in future. The drawbacks of the existing system are rectified by this method. In this system, ration materials distributed through automatic mechanism without any human errors. This system helps to prevent the corruption.

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