

Smart Ration Card System using RFID and Embedded System

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Abstract— In the present days many immoral activities are taking place in ration shop, which are meant to distribute the commodities to the people who are in below the poverty line, as the distribution process is manually operated and due to which it consumes a lots of time. To overcome this problem we one can use RFID technology. In this report RFID tags are introduced, the RFID card are used instead of ration cards, which consists of all the details about the card holder like family details, type of card and its validity etc. In this report we are going to discuss different types of automatic ration distribution system implemented for the automatic ration distribution.

Keywords- RFID reader, RFID tag, Microcontroller, Actuators, controllers, Sensor.

I. OVERVIEW

There are two main objective of this project one is to create the transparency in public distribution system and second is to inform the people about new scheme launch by government. Government launches various schemes for those people who are financially poor. To get the updates of those schemes to people is the main objectives of the report. A system will be there which identify the person by their Aadhar Card (UID) number and then serve them accordingly. In this report the identification and reception of user's information from database manage by government and placed at remote distance are explain. This project creates the transparency in public distribution system as much of the work becoming automatic. A Smart Ration Card System is to bring the transparency between the government and user. In this system, a RFID tag is used which contains the family member details or information.

II. NTRDUCTION

India's Public Distribution System (PDS) is the largest retail system in the world. System of Public Distribution System provides a ration card issued under an order or authority of the state government for the buy of essential consumer materials like Rice, Wheat, Kerosene and Oil .State Government issues distinctive ration identity cards like Yellow ration card, Saffron (Orange) ration card and White ration card depending

on family annual income. The consumer material is feeding to ration card holders in the first week of every month by ration shop keeper. System of Public Distribution is one of the widely disputable issues that involve malpractice. The manuscript intervention in weighing of the materials leads to incorrect measurements and/or it may happen, the ration shop owner illegally uses consumer materials (Rice, Wheat, Kerosene) without previously knowledge of ration card holders.

आवक व नि. क्र.	वस्तु	मात्रा
१	अन्नादव	२-००
२	सबुल	३-००
३	मै पी. एल.	५-००
४	सबुल	६-००
५	ए. पी. एल.	७-२०
६	सबुल	९-६०
७	साखर	२०-००
८	अन्नादव-ए.पी. साखर	३३-५०
९	पावसल	३०-००
१०	नुरदाळ	५५-००

Fig.3.1. Material chart in Ration Shop.

People stand in long queues to get Kerosene at ration shop.

- Cardholders in rural areas complain that fuel is not supplied on time and in right quantities.

- In urban areas, Kerosene is supplied to ration card holders in the first week of every month and the ration shop keepers are taking keen steps to distribute Kerosene to cardholders a minimum of three or four days week.



Fig.3.2. This is the condition of outside the ration shop.



Fig.3.4. Ration Cards.

TABLE: Ration Card types and respective schemes.

No .	Card Type	Category	Food Grain	Prize in Rs./Kg.	Monthly quantity distributed/family's
1.	Yellow	AAY	Wheat	2	35Kg.
			Rice	3	35Kg.
		BPL	Wheat	5	35Kg.
			Rice	6	35Kg.
2.	Orange	-	Wheat	7	15Kg.
			Rice	9	15Kg.

Fig.3.3. Ration cards types and respective schemes.



Fig.3.3. This is the condition inside the ration shop.

Ration Card Types:

- Yellow Card
 1. Below Poverty Line (BPL)
 2. Antyodya Anna Yojna (AAY).
- White Card
- Orange Card

In the existing system, tasks like product distribution, Ration card entry, product weighing and delivery of the product are carried out manually by FPS (Fair providing service) agent. However a present system has diverse drawbacks involved, developing irregularities in the system. Some of the irregularities include replacing actual products dispensed by the government with measure quality product and supplying the same for the beneficiaries, diverting food grains to open market to make profit, false entries in the stock registers that FPS agent needs to maintain and false announcement of deceit in food grains.

The proposed system aids to power control malpractices which are present in ration shop by superseding manual work with automatic system based on RFID. Every consumer i.e. family head provided RFID radio frequency identification card which acts as ration identity card. The RFID card has unique (rival) identification number. The consumer scans the card on RFID radio frequency identification reader which is faced with microcontroller kept at ration shop. Once consumer is validate by details, the system shows customer's product and cost. Based on material chosen by consumer, appropriate correct circuitry will be activated and consumer gets material. The proposed

RFID based automatic ration shop system would bring transparency appropriate in public distribution system and

Becomes aids helpful to prevent malpractices.

III. LITERATURE SERVEY

In present days most of people having their ration card. To buy the materials from the ration shop first need to submit the ration card to the ration distribute. After verifying the information on card that distributor gives the material according to requirement but as per the allotment by government. They will put the sign on ration card depend on the material taken and will issues the material through weighing system with the help of human but there are two drawbacks weight of materials may be inaccurate due human mistakes and secondly if any card holder not buy the material end of the month then shopkeeper sell to other and doing deception.

The current public distribution system involves corruptions and illegal activities of goods during manual ration distribution process. This is one of the widely controversial issues that grip the wrong information about utilization of material allotted for the card holder.

K. Balakarhik presents an efficient method for the user to buy the products in the ration shop by just flashing the card at the RFID reader at the ration store and the user can check their purchase detail in a dedicated website. The paper proposed web site functionality by accepting requests from the user's browser and responds by sending back HTML documents (Web pages) and files. Database creation and GUI design and provides the details of centralized management and updating of database through web [1].

Rahul J. Jadhav, Dr. Pralhad, K. Mudalkar, the structure of e-PDS system, software requirements and implementation is mentioned in the paper and it proposed to create different database table as well as GUL including different login pages. It also defines the role of administrator as well as ration distributors [2].

IV. SYSTEM ARCHITECTURE

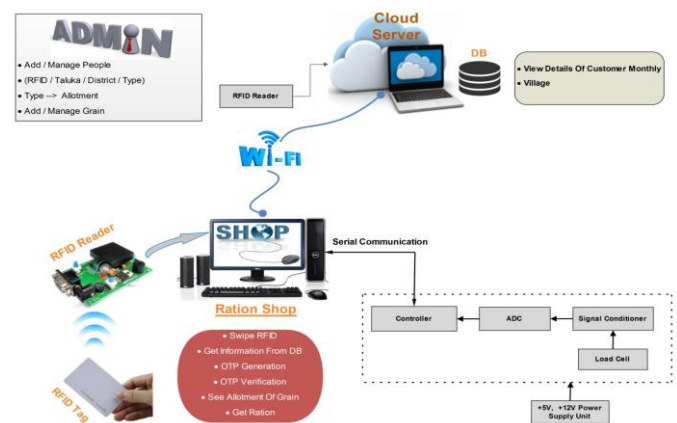


Fig.4.1. Block Diagram.

The Ration Shop cannot able to meet the requirement of the user due to over population of our country, so the processing speed is low. As a result, there is always crowd of people in the ration shop. Also there is a chance for the illegal usage of our product in the regular system, i.e. the materials are robbed by making wrong entries in the register without this insight of the ration card holder. Doe to that large amount of money given by government gets wasted. Hijacking is the main problem in the user ration card. Hence, we have developing a smart ration card system using RFID & Embedded System.

In this system, the user profile will contain the information n about their family members, the materials which are available and has been received and their price list will also be displayed. By using this they can buy their stuff in their corresponding ration shop. The ration shop admin will upload the details which has been delivered to the respective user as shown in the Fig.4.1. Block diagram.

Using this customer able to following steps:

- Swap RFID Reader
- Get information from database
- OTP Generation
- OTP verification
- See allotment of Gains
- Get Ration (Food)

In this every customer is provided the RFID reader. Each RFID reader has its own unique id. Once the RFID reader is swapped by customer. It will ask for the customer user id and OTP (will generated automatically) given by the state government. If customer successfully login then he/she can enter the material whatever he/she wants with the help of keypad. After successful entered material all the data is stored in to the database.

V. HARDWARE AND SOFTWARE RECUIREMENT

1. Hardware Requirement :

1. Microprocessor (89c51/8051/PIC)
2. Load cell sensors
3. Actuators

4. RAM (2 GB)
5. 100 GB (Hard Disk)

2. Software Requirement :

1. Language : JAVA
2. Scripting Language : JAVA Script
3. Database : My-Sql

VI. LIST OF MODULE

I. Login Module:

The concept of a user id and password is a cost effective and efficient method of maintaining a shared between a user and a computer system. In this module, the system registers beneficiaries details that includes their name, address, date of birth ,age, contact number, count of family members and category of the card to which the family belong, with all the information being uploaded in the database.

II. Purchase Module:

We are atomizing the distribution system at the ration shop as well as we are maintaining the database at one main control station and updating the database so that the shopkeeper do not cheat the poor people.

User have to enter the amount of Kg. he want to withdraw. System checks his account. If the user will have sufficient balance to withdraw the current amount. Once authenticated, the beneficiary should select the list of commodity he/she wishes to purchase. The system display the total quantity of the commodities and also the amount of quantity a beneficiary is permitted to buy. Once after he/she confirms the commodities, payment is done and beneficiaries are given a receipt in form of a SMS. A beneficiary is permitted to take only those subsidies on products appropriated to him/her by government according to the available database inventory.

III. Alert Module:

Direct interconnection with Mobile Network Operators (MNO) is a very high cost approach due to the high charges imposed by the MNOs. A GSM gateway provides mobile voice and SMS connectivity to the mobile carrier's GSM network.

A SMA gateway API serves the purpose of sending bulk messages to its users; here in this project it plays a role for intimating the beneficiary about the recent transaction made by him/her by sending him/her the message on his/her registered number.

IV. Stock Module:

In this system they are storing the grains in the tank, and when the ration is inserted into the shop then that quantity is updated in the web server. The food department will send the stock to the respective distribution centres and also automatically update the stocks of the respective distribution centre in the

database. In this module the system maintain the detail of incoming stock, distribution and remaining stock.

V. RFID Card Verification Module:

RFID based Smart Card verification module consists of two prime components, they are interrogator and transponder. The interrogator (RFID reader) is needed to broadcast the signals through its antenna and the transponder (tag) will be activated after it receives the signals from the interrogator.

VII. ADVANTAGES

- Useful in providing transparency to both government and customer.
- Reduce paper work.
- User friendly.
- Reduce corruption.
- Access to authorized person only.
- Active contribution step towards Digital India.

VIII. FUTURE SCOPE

- We will do android application.
- It can be also carried out for various remote security application as hardware requirement is same, the deference is that relay and sensors need to be attached.
- After storing database with the help of GPS the SMS will be send to the related people and authorized people.

IX. OUTCOMES

In ration shop several drawbacks are there like material robbery, corruption, malpractices, long waiting time to collect materials, low processing speed. To overcome above problems the mechanized rationing scheme is needed. Here the smart ration card concerned smart card and controller for distributing the materials. At this time ration card is changed by smart card and send the stock details to government head office using internet.

So this proposed system used to avoid the corruption, goods theft, forgery and also they reduce the user's waiting time. This system also suggested maintaining the stock details properly and updating the details easily. They provide a secure, safe and efficient way of fair price shops.

X. CONCLUSION

Using this proposed system we can avoid the corruption in rationing system to a large extent by providing transparency at each level. As there is no manual data stored in books or register, all the data is stored in database hence it is easy for higher authority to cross check the data at any point. So implementing this will be really helpful to targeted people.

XI. ACKNOWLEDGEMENT

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