

# Smart Ration Card Using RFID and Biometrics

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## ABSTRACT

India's Public Distribution System (PDS) is the largest retail system in the world. Public distribution system provides a ration card issued under an order or authority of the State Government for the purchase of essential consumer materials like rice, wheat, kerosene and oil. State Government issues distinctive ration cards like yellow ration card, saffron ration card, and white ration card depending on family annual income. The consumer material is supplied to ration card holders in the first week of every month by ration shopkeeper. Public Distribution System is one of the widely controversial issues that involve malpractice. The manual intervention in weighing of the materials leads to inaccurate measurements and/or it may happen, the ration shop owner illegally uses consumer materials without prior knowledge of ration card holders. The proposed system aids to control malpractices which are present in ration shop by replacing manual work with automatic system based on RFID. Every consumer i.e. family head provided RFID card which acts as ration card. The RFID card has unique identification number. The consumer scans the card on RFID reader which is interfaced with microcontroller kept at ration shop. Once consumer is validated by details, the system shows customer's product and cost. Based on material chosen by consumer, appropriate circuitry will be activated and consumer gets material through dummy Payment gateway. The proposed RFID based automatic ration shop system would bring transparency in public distribution system and become helpful to prevent malpractices.

**Keyword:** - RFID Reader, RFID Tag, Thumb Scanner.

## 1. INTRODUCTION

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 a week. The Indian ration card is mainly used for purchasing capitalized food and fuel for example fuel. It is an important livelihood tool for the poor people, providing proof of identity and a connection with government databases. The present ration distribution system has drawbacks like inaccurate quantity of goods, low processing speed, large waiting time, material theft in ration shop.

The proposed system replaces the manual work in ration shop. RFID means Radio Frequency Identification technique is used to prevent the ration forgery. Now a day this process is online which comes as blessing for the applicants who hate standing for long time in queues for filling the application form and then go to the office again to know the status. In this each user will be having RFID based ration card which contain user information including Bank details. These cards having unique numbers. Whenever user want to buy some grocery he must show his RFID based ration card to shopkeeper.

Each ration shop contain RFID reader which reads RFID ration card, RFID reader used to check user valid or not. The biometrics will be used in this system. It works for an identification of user. It stores fingerprints of users to database. This new produced system will cover the human efforts and also the fraud is detected in that system and the forgery is also removed.

## 2. LITERATURE SURVEY

In this proposed system, we briefly discuss the existing works about Public Distribution System. In this automated system conventional ration card is replaced by RFID (smart card) in which all the details about users are provided including their bank details which is used for user authentication. This proposed to use smart card instead of manual ration card with Biometrics for unique authentication.

### 3. PROPOSED SYSTEM

Main objective of the propose system is to reduce forgery from ration shops and users will get their grocery in easy way. Also to reduce manual work. In the proposed system we will develop the smart ration card system based on the RFID and the BIOMETRICS, in which the user can fill their data online. And also the manual working is not there. When user wants a ration, he/she comes with the Smart ration card, then the card is swiipe and check whether the user is valid or not. The fingerprints of that user also check and the allocated ration is distribute to that particular user, changes of adding and issuing of ration is done automatically in the government database.

In the proposed system the card will swap and then the RFID will read the tag ad then for the valid user the finger prints will take and then check for the valid or the invalid user. If user is not valid then exit or the user not able to take the ration and if valid then the list of grocery will display on screen and then the distributor will distribute the grocery and then pay a money and then exit. Bank details are present on RFID, after swapping the card particular amount of grocery is deducted from account and message will be sent to user.

### 4. SYSTEM DESIGN

#### 4.1 Architecture Diagram

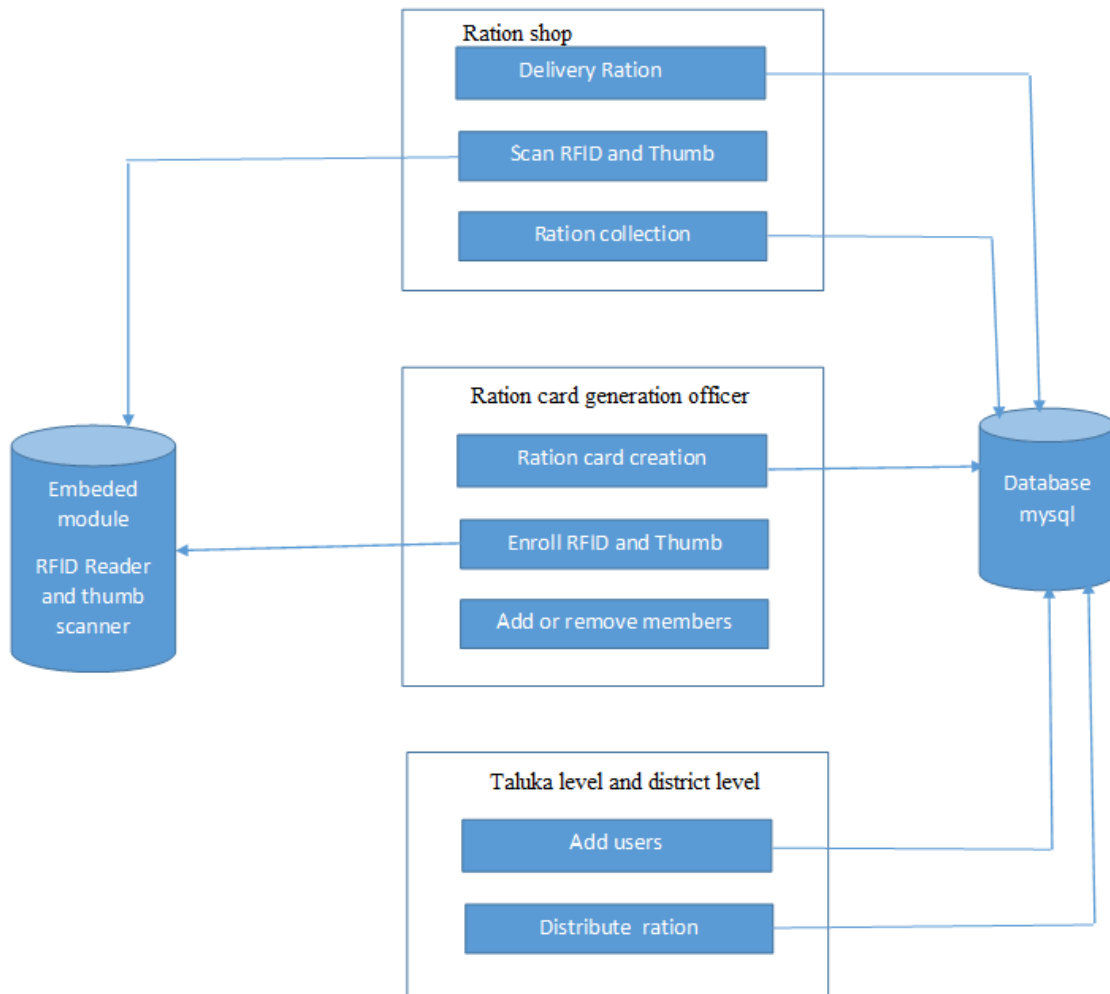


Fig 1. Block diagram of smart ration card system

**4.1 Technologies To Be Used:**

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There are four users in the system:

1. District level admin.
2. Taluka level admin.
3. Ration card registration officer.
4. Ration shop user.

System uses **RFID** and **Biometrics** techniques for verification and validation of users.

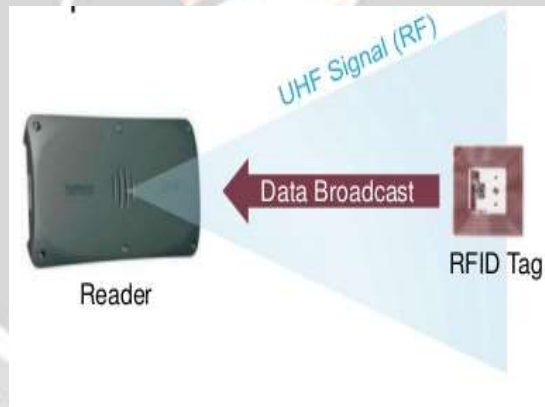
**RFID:** Radio Frequency identification is a technology for non-contact and automated identification. It is a concept in which unique items are identified by using radio waves. RFID systems are built up of three components:

1. Readers (interrogators)
2. Antennas and
3. Tags (transponders) that take the data on a small microchip.

Now a day's RFID technology is used in many applications, including security and access control, transportation and supply chain tracking etc. Many types of RFID exist, but at the highest level, The RFID devices are divided into two broad classes: Active and Passive.

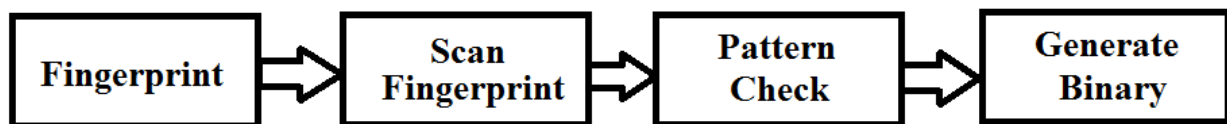
- Passive tags are not embedded with and its working distance can reach up to 1 mile.
- Active tags are embedded with batteries its working range can reach as far as several hundred miles.
- The other one is called Semi-passive tag, and its working range can extend up to 10 miles.

Two types of chips are available on RFID tags, Read-Only and Read-Write. Read only chips are fixed during the manufacturing process with unique information stored on them. The information which is on read-only chips can never be changed.



**Fig 2. Passive RFID tags**

**Biometrics:** Biometrics refers to technologies that measure and analyzes human body characteristics. Biometrics authentication is used in computer science as a form of identification and access control. In our project we will use biometrics to analyze a fingerprint and also the security will be provided by this technique. In this proposed system we will use the biometrics for security purpose, because of that chances of fraud will get reduced.



**Fig 3. Biometrics**

**AES Algorithm:** The Advanced Encryption Standard or AES is a symmetric block cipher used protect classified information and is implemented in software and hardware throughout the world to encrypt sensitive data.

## 5. CONCLUSION

The proposed system is more secure and transparent than the normal existing system. Influence of fraud data entry in the ration database can be maintained simply with the use of this smart ration card system. Only authorized person (shopkeeper) can maintain the database. Customer can be authenticated using RFID swapping and thumb detection. In the plan, it is expected that the proposed system will be more transparent, reliable than the existing ration card system.

## 5. ACKNOWLEDGEMENT

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