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Automation Tool for Effective and Efficient Ration Products Distribution using Smart Technologies

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Abstract - *In this paper, we have proposed a smart ration card utilizing Radio Frequency Identification (RFID) system, time slot allocation and SMS gateway to keep the ration fabrication. In this system, a RFID tag is utilized that conveys relative points of interest and the client needs to demonstrate this tag at the ration shop by scanning the RFID tag in the RFID reader. In the event that the client is discovered bona fide then the amount of ration to be given to client as indicated by the aggregate number of family part will be shown on the monitor. This shrewd ration card is free from robbery and imitation as the data about the purchased ration will be sent straightforwardly to the administration and client through SMS gateway using GSM modem. We have also proposed the idea of using SMS gateway to eliminate the queue system in ration shops. The clients are requested to come and collect their ration only in that time slot. The algorithm used for slot and re-slot allocation is Round Robin scheduling algorithm. Facility of re-slot allocation is provided for each card holder only once in a month.*

***Key Words*: RFID tag (Radio Frequency Identification), RFID reader, SMS gateway, GSM modem, Slot Allocation.**

1. INTRODUCTION

Ration Card is a stand out amongst the vital reports in India. The Ration Card is mostly utilized as a part of recognizable proof for acquiring financed food stuff and fuel. It is used as a proof for acquiring passport, Aadhar card and other documents as an address confirmation for residents of India. The Ration distribution system has numerous disadvantages, for example mistaken amount of merchandise, manual work, low preparing speed, expansive holding up time and repetitive data [2]. Shopkeepers enjoy in fraud by giving ration under false names, dead individuals and people from other areas [3]. Shopkeepers also sell ration to other shops to obtain profit. Subsequently there is a need to enhance our current Ration distribution system.

Our proposed system kills the downsides of existing system by making utilization of RFID, SMS and allocation method. RFID utilizes electromagnetic field to track and distinguish objects and this method will be utilized to validate the clients [4]. The RFID tag will contain all subtle elements of client and his family. This card will be given to each enlisted clients which can be used as a brilliant ration card. Each ration shop will have RFID reader which can read 12 bit hexa code produced by RFID tag [1]. Any client who needs to buy ration should swipe their card through the scanner. At whatever point any client swipes the card it will check in the database whether the client is legitimate or not. At the point when a substantial client will swipe through RF scanner, the measure of ration taken by him will be shown on monitor screen and further more deducted from his month to month ration portion. Further, all subtle elements will likewise get refreshed in government database at each level. To indicate straightforwardness in the system purchased details will be sent to the client's enrolled phone number by means of SMS with the help of GSM modem. Allocation method is used to allocate the slots to the clients to come and collect their ration on a particular date and time. Since each time slot is allocated for a particular client, only one client can collect the ration at a time. The slot allocation uses the Round Robin algorithm and sends SMS to clients containing the date and time slot allocated for them using GSM modem. This reduces the queue system in the ration shops. If the client does not turn up in his allocated slot, a re-allocation SMS will also be sent to the client using GSM modem.

1.1 Existing System

Ration Distribution System in India for most part enables BPL class to individuals by providing them with nourishments grains, kerosene oil, LPG, sugar and so on at inexpensive rates. This system works in various levels. Shopkeeper get ration from government merchants. At various levels amount of products and other subtle elements are looked after independently. This work is done manually and hence processing speed is low and there are also chances of manipulating the data. Each family is furnished with a ration card which is a book with manual entries. This ration card incorporates every members name, age, sex and connection with family head.

1.2 Proposed System

In our proposed system, at first every client needs to enlist at government database. He needs to give all insights about his family. After confirmation by government, every client is furnished with RFID card as a smart ration card. RFID card contain points of interests of every client's family part. Client needs to swipe the RFID card through RFID reader which is available at each ration shop. RFID reader

information from card checks with government database and presents a message on monitor screen that whether client is substantial or invalid. Subsequent to giving ration to substantial client, amount of things is refreshed at each level-retailer level, taluk level also other larger amounts. Likewise purchased subtle elements sent to client's enlisted portable number by means SMS.

2. ARCHITECTURAL DIAGRAM AND WORKING OF PROPOSED SYSTEM

Below information gives a brief knowledge about architectural diagram shown in fig-1 and detailed working of the proposed system.

Working of the system is divided into three modules:

1. Admin

First duty of admin is to add schemes like APL, BPL and so on. Then he will add sub-schemes for each scheme like BPL 2 member, BPL 3 member and so on. Later he will add the ration shops at different areas and provide user name and password for shop keepers. He will then decide the products to be distributed to different schemes and quantity of those products. He will supply the stock to each shop based on number of people in that area. He also has the provision to see the products stock details of each area. To distribute ration admin will add the card holder (head of the family) and collect the details of the card holder i.e. Aadhar card number, mobile number, image, shop area and give them

Unique card id /password. Then he will add details of family members and assign unique member id. Next to distribute the ration he will allocate the slot for the customers of all the areas by sending SMS which contains the date and time to collect their rations. If some of the customers have not collect their rations then he does re-slot allocation to collect their ration. Admin can also view the report of all the ration shops.

2. Shop Keeper

First duty of the shop keeper is to login using the user name and password provided by the admin. This user name and password is unique for each area. He can register ration card holders of that particular area by taking Aadhar number, mobile number and image. He will register the family members of the card holders of that particular area. He can view the stock details and ration card holder details of that particular area. It is not possible for the shop keeper to modify the product stock.

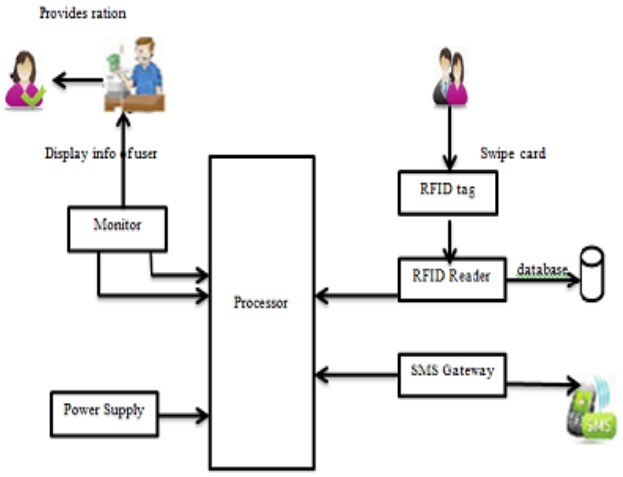

Fig -1: Architectural diagram of proposed system

3. Card Holder/Member

Card holder can access the system through web application and/or window application.

In window application he will prove his identity by swiping his RFID tag which is the first verification. Then he will enter the member id which is the second verification. After this verification he can select the products and their quantities that he wants to purchase. After the successful purchase of products an SMS is sent to the card holder about the quantity and price of the products purchased.

In web application card holder can view his scheme, sub-scheme, price and quantity of products purchased every month by logging in using his user name and password.

2.1 Round Robin Algorithm

Round-robin (RR) is one of the algorithms employed by process and network schedulers in computing. As the term is generally used, time slices are assigned to each process in equal portions and in circular order, handling all processes without priority. Round-robin scheduling is simple, easy to implement, and starvation-free.

The algorithm is used here to send SMS about scheduled date and time for every registered mobile number to arrive and collect the ration based on the order of their registration. If the ration is not collected a re-scheduling will be made only once for those who have not purchased their ration to come and collect their ration.

3. CONCLUSION

In this paper we have proposed a model for smart ration card by utilizing RFID, SMS gateway and allocation. In the present system there is a downside of ration forgery. So, in proposed system we are supplanting the manual sections and in this way decreasing imitation. As we are utilizing RFID card which contains detail data of client there is less opportunity to abuse the ration card. Also the system sends

the allocation and re-allocation time and date to the enrolled portable number through SMS in order to reduce the crowd in front of the ration shop. This system also sends the purchase details to the registered phone number through SMS gateway hence straightforwardness is kept up in the system.

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