Integrated Smart Govt. Fair Price Shop Invoice System

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Abstract— The Government Fair Price shop is a place which is always been known to mishandle the correct quantity distribution of food supplies for every common and Below Poverty Line People. To resolve this and implement a fair practice in the Fair Price Shops, we are developing a new integrated system to make the supplies a righteous and faultlessness practice which will help the Government to provide the necessary food supplies. We have developed an integrated system which uses AWS server, Bio-metric, Face recognition, Aadhaar API, Raspberry Pi, RFID, HD Camera, and Weigh Scale. Our System will be useful to carry out justifiable supply distribution by generating the invoices based on real time measures and authentication. Every person will be registered using his/her unique Identification Number provided by UIDAI, Smart cards are used to store all the necessary details of a buyer. The buyer swipes his smart card and requests for the items, the fair price shop owner selects the item requested, and the weigh scale machine integrated with the system will measure the quantities of the items and then, the system calculates and generates the Invoice for all the items bought by the buyer and authenticates the buyer using Facial Recognition, once done invoice is generated, printed and also updated over the server. A 4 level hierarchy of Buyer/Public, Fair Price Shop Owner, Government Office users and System Admin is used in the system.

Key words: Fair Price Shop, Formatting, Style, Styling, Insert

I. INTRODUCTION

Fair Price Shop (FPS) means a shop which has been licensed to distribute essential commodities by an order issued under section 3 of the Essential Commodities Act, 1955, to the ration card holders under the Targeted Public Distribution System. FPS are mandated to make a lot of disclosures such as opening and closing stock, sample quality of grains sold, retail price details etc. Often we see that, commodities don't reach the right ration holder for the retail price, the inputs are manually recorded and, no proper invoices are generated. Also there are high chances of tampering the quantities of the commodities.

Touch of the modern technology is required for the FPS, so as to provide fault tolerant, transparent and reliable system. We have developed a well-defined comprehensive interface system to replace the current distribution mode. The developed system provides a concrete interface for the maintenance of transparent and righteous disbursal of supplies to consumer. The data will be reviewed on the Amazon Web Server. The design and implementation of this system is to generate the invoices at government FPS and avoid misuses at all possible points.

II. PURPOSE

It's always seen that the government is unaware of how exactly the food supplies are reaching the common person and its quantity. There is although a substitute system there doesn't exist a concrete system to make it fault tolerance to track all the food supplies distributed. Maintaining a record of supplies distributed to each individual can help the government and public to eradicate the malpractices carried out. This system aims to provide factual and tangible solution to the above problem.

III. SCOPE

The project/system is aimed to bring a substantial solution in equal, principled and trustworthy distribution of supplies to common people. This project can be further improvised for the Government to categorize between the BPL/Normal consumers and fix the prices and quantity accordingly to each category.

IV. LITERATURE SURVEY

This paper [1] proposes a clear and highly scalable Ration Distribution (Food Distribution) system with biometric identification with face and fingerprint Biometric for card Holder. each time ration is collected by the family is logged into the smart card. the information work system is connected with cloud to keep up a centralized inventory across the state. Biometric knowledge of 1 member of the family is additionally logged within the card. on every occasion before ration collection, the approved person must bear the verification part. Once verification is finished, amount that he collects is also logged into the system. Therefore not only false and dummy card ration assortment is avoided however at the identical time a correct log of amount par product acquired by the card holder is additionally tracked. This design replaces the standard paper ration book with RFID based mostly sensible card.

In this project [2] the manual work done in the distribution centers is replaced by sensible measuring machine-driven device with the assistance of Arduino microcontroller that measures the products accurately and updates the data in knowledge base periodically. Here, to own access to the data and data relating to the stock a main knowledge base is formed, which can be accessed by each common shoppers of that particular vicinity and by the government main stream invigilators for distribution centers from their head workplace. It ensures corruption free ration centers operating system which is able to conjointly enhance the direct communication of the shoppers with the govt. and can rebelliously offer transparency.

RFID primarily based automatic ration system is an approach in public distribution system helpful for a lot of efficient, correct and automatic technique of ration distribution. the standard ration distribution system has drawbacks like inaccurate amount of products, low process speed, massive waiting time and material larceny in ration search. in this paper, proposed an Automatic Ration Materials

Distribution supported GSM (Global System for Mobile) and RFID (Radio Frequency Identification) technology rather than ration cards. to induce the materials in ration retailers have to show the RFID tag into the RFID reader, then controller check the client codes and details of amounts within the card. once verification, these systems show the quantity details. Then client have to enter they needed materials by using keyboard, after receiving materials controller send the data to government office and customer through GSM technology.[3]

Vikram et al. [4] has projected sensible card System. The smart card is changed as a wise card by coding micro chip chip present in it consistent with the need. The smart card contains distinctive barcode. once the buyer visits the ration shop, he should show this card in front of barcode reader. Dealer verifies the smart card & consequently delivers ration.

The projected concept [5] is to switch the manual work in public distribution system. The The ration distribution system is automatic by using controller, which is similar to the ATM. As soon as the input is Given via keyboard, the product are obtained from the automatic ration shop and therefore the amount is taken from the The bank account of the actual person. The controller is preprogrammed in such the way to perform the similar Operations. during this automatic ration shop government have management over all transactions that happens in ration shop.

Automatic Ration Materials Distribution primarily [6] uses GSM and RFID. To avail the advantage of government user must scan the code using the reader to fetch the details of items allotted to the user, then the microcontroller of system checks user's details and quantity allotted to user. the quantity details are shown after authentication. Then customer got to choose the required materials by using interface. after receiving order, controller sends the data to authorities and customer through GSM technology.

The smartcard contains the details of the citizen. citizen will read the full amount of the stock accessible. after every and each transactions the stock get reduced in board conjointly the} citizen receives the sms and email from government with the purchased time and range of product bought with the product id and also uploaded within the main database then and there. The cards are verified based on the citizen's fingerprint. to examine whether or not he's smartcard holder, every and each person's finger print in a family are collected during card requesting and consequently items are allotted.[7]

The proposed system [8] uses Low cost biometric solution which does not require costly sensors like that of fingerprint sensors. It mainly comprises of three different software which are best for the respective selected processing the system provides security to both the distributor as well as the user. The adopted Face Recognition system is Pose and Light Invariant. Voice Biometric system can detect even the tempered voices. Also the cards are capable of storing the images also which provides human level visual security Card Information is protected with password and cannot be retrieved by unknown and intruding persons. This provides a unique secured ration distribution system which if adopted can practically change the black-marketing associated such a system.

An embedded face recognition authentication system with a unique structure, that consists of the RFID card used to store the face eigen data and also the face recognition unit based on S3C6410. The hardware was designed and delineated, and therefore the recognition algorithmic program was presented completely. With the fictional system, experiments were applied for finding out the authentication performances including the accuracy and interval. The results exhibits that once the most eigen vector variety is taken as thirty, the authentication accuracy may be up to 86.5 %, and the response time for the recognition method is merely concerning 57 ms. Comparisons between the system based on the proposed novel authentication structure and the system supported information reveals that the interval is greatly shortened with a similar authentication accuracy.[9]

V. SYSTEM ANALYSIS

A. System Requirement

− Unique Identification Number Registration: Every buyer will be registered using their unique Identification Number provided by UIDAI. All the necessary details are obtained from the portal and stored in our database after the authentication from each individual using the REST API service provided by the UIDAI department.
− Radio-Frequency Identification (RFID): This uses a RFID module to write the data and other details of the consumer to the smart card before the issuing the same to the consumer. When the consumer goes to Govt. Fair Price shop to buy the food supplies he produces the smart card issued to him and the same modules reads the data stored in it and gets his information from our server to proceed for purchase of needs.
− Weight Scale Input: In the existing system the measure of weights are seen and entered manually which give way for high faultiness and tampering the exact quantity bought by the consumer. Our Raspberry pi and USB-TTL interface reads the data from the weight scale and sends the measures directly to the Invoice. Which saves lots of incorrect measure entered when invoices are generated.
− Facial Recognition Authentication: This is one of the advantage in our system to authenticate each consumer by recognizing his face provided to UIDAI dept. which easily erases and avoids the duplication of consumer to hold more than one smart card at different places. Each time the consumer comes to buy the supplies it makes sure that the right person is receiving the facility provided by the government.

B. Methodology

This system contains the following modules analogous to their unique functionality.
− Registration Module: Used for registration of consumers using Unique Identification number provided UIDAI.
− RFID module: Uses Raspberry pi and RFID R/W to store and read the data From/To smart cards.
− Admin module: Used to create the user of the system and Government fair price shops and its consumers.

- Login module: Used to login to system based on particular role players to generate invoices and view the data stored.
- Invoice generation module: Used to by shop owners to generate the invoice for the particular buyers using the real time input from the weigh scale for the particular item.
- Authentication module: Used to authenticate the buyer using face recognition/Bio-Metric mode.
- Analysis module: Analysis and Predict the Shortfall/Excess quantity based on real time consumption by the consumers.
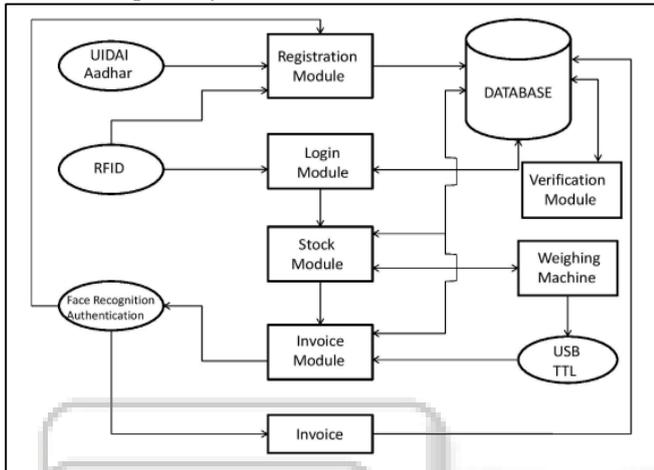

Fig. 1: Framework of the developed integrated fair price shop system.

C. Working of the system

A ration card holder have to register on the web portal of developed FPS system using his/her UIDAI number, and has to upload his/her documents for such as Caste certificate/Income Certificate, also during the time of registration the customer has to give his Facial Recognition to the system and that will be verified by the verification officer. After the registration and verification of the customer details, the system generates unique UIN number for the each registered users, and a temporary password will be generated. The customer can change his/her password. The UIN generated will be merged to the RFID card and that RFID card will be given to the customer.

Now, when customer has a need to buy the ration from FPS, he/she has to carry the RFID card provided to him/her to the shop to login to the system. The FR module in the system authenticates the buyer. The customer can buy the commodities after successful authentication.

The weigh scale machine is integrated with Raspberry pi and USB-TTL interface, that reads the data from the weigh scale and sends the measures directly to the invoice generator. Hence, incorrect measurements are eradicated, and invoice is generated automatically according to the fixed commodity and quantity assigned by the government FPS.

VI. CONCLUSION

The main purpose of FPS in India is to provide food commodities at a subsidized rate to consumers. This purpose is given a digital touch by enhancing the FPS system, by adding a invoice system. The developed system provides a tamper proof, authenticated mode of generating invoice on the purchase of food commodity by the buyer. The system uses facial recognition as an authenticator, this is helpful in finding the right buyer, hence shop owner cannot sell commodities to others without authentication. The system is also useful in analysis of prediction and consumption of food commodities.

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