FULLY AUTOMATED RATION DISTRIBUTION SYSTEM

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ABSTRACT

A fair price shop (FPS) involves corruption and prohibited smuggling of goods. All this happens because every job in the ration shop involves manual work and there are no exact hi-tech technologies to automate the job. This concerns the illegal entry in the registers of the shop about the amount of goods given to the consumers. The second apprehension is the weight of the goods that are given to the people. Further, there is always difficulty for the verifying officials go through the stocks available and the commodities given in a register and find out the irregularities. The project proposes an approach to automate all the above said manual jobs and the whole thing from data entry to weighing to hammering is prepared by machines and the people have no hand in that. This provides high reliability and there brings a sense of truthfulness to the people. Further, as all the data allocation is prepared by the computer and it can keep track of all the data and the entire process of data maintenance is taken care of by the PC and hence no possibility of mistakes and practically no manual work. Here instead of a Ration card, a Smart Ration card will be used for the purpose of authorizing and subsequently the person’s finger print will be matched for authentication. After that the consumer to select the materials and then dispense the materials based on ARM controller. After dispensing the materials the government head office receives the delivery Report from the PC with the help of GSM.

Keywords: Smart ration card, finger print, PC, LPC2148, GSM module, ISIS schematic capture

1. INTRODUCTION

The PDS is recognized by the Government of India subordinate Ministry of Consumer Affairs, Food, and Public Distribution. This scheme was launched in India on June 1997. The fair price shops are mainly used to distribute the goods with low cost or free of cost. It is a concern of India's public distribution System implanted by Government of India, which distributes rations at a subsidized price to the poor. In India approximately 500000 fair price shops are available. Here the Major commodities distributed include essential food grains, so much as wheat, rice, sugar, and kerosene, through a network of public distribution shops constituted in several states across the country. The central and state governments joint the responsibility of regulating the PDS. While the central government is obligated for procurement, storage, conveyance, and majority allocation of food grains, state governments holds the province for distributing the aforesaid to the consumers through the ingrained network of Fair Price Shops (FPSs). State governments are also responsible for functional obligation, including allotment and identity of families below the poverty line, issue of ration cards, superintendence and monitoring the functioning of FPSs. The Indian ration card is the authority of the Indian peoples. This is mainly used for buying supported food and fuel (LPG and kerosene). It is an important livelihood tool for the misfortunate, providing proof of personal identity and link with government databases. India's public distribution system (PDS) runs based on the ration card, including its purpose of identification, eligibility, and entitlement. Ration card has three categories – extreme poverty level (AAY), below poverty line (BPL) and above poverty line (APL). The poverty lines are identified depends upon the annual income of that particular family. Depends upon the family incomes the ration card color is decided. The different colors of ration cards are navy blue (BPL), white (APL) and orange (AAY). A below poverty line (BPL) correspondence bearer should be collected 35 kg of food grain and the card holder above the poverty line should be collected 15 kg of food grain as per the norms of PDS. Up to the age of 12 years, a half unit ration materials are issued and full unit ration materials is issued in case of age more than 12 years. In fair price shops presently the peoples are facing so many problems like corruption, wastage of time and no proper material distribution…. etc. to overcome this problem here we proposed to dispense all the materials automatically and also maintain the stock details properly.
2. RELATED WORK

Kashinath Wakade, Pankaj Chidrawar and Dinesh Aitwade [1] develop the median ration shop into the “smart ration distribution and controlling”. Here subscriber has to utilize the RF based ID card to collect ration from the dealer. With the help of PDA device the ration shop worker will collect amount easily after selection of quantities. Lastly GSM used to send the bill details and quantity details to the consumer. In “An overview of automatic rationing system” Jaid Rahul, A, Kadam Chetan K and Kokare Aniket S [2] bring in RFID based smart card instead of a conventional ration card for the purpose of secured material distribution. This system is mainly used to reduce the manpower and also to avoid the corruption. Here AVR microcontroller is used to distribute the materials automatically. Ashwini Lanjudkar, Pooja Mhalaskar and Pallavi Shinde [3] are planned the “intelligent government rationing system” for the intention of shell out materials properly. This system used Aadhar card for authentication. At this time Aadhar card is used to show the user details like name, address and bank details, etc. and web camera is used for face identification and security purpose. After that GSM sends message to consumer. In “Mechanized government rationing system” Priyanka V. Mane and Urosa Hippargi [4] improved the normal ration shop with the automatic billing process. Here instead of ration card an Aadhar card will be used for security function. If customer scan the Aadhar card means the processor will display the consumer’s details and to verify the user with the help of fingerprint. Then the user will select quantities and pay the amount. After the material distribution, GSM sends message to consumer phone. Smitha R. Jagdale et al. [5] recommended “microcontroller based efficient ration distribution system” for automatic material distribution. This system uses the RFID card instead of a traditional ration card. Here RFID card provides all the details of the user and easily identifies the quantity details of that particular consumer. Here ATMEL microcontroller is performed to distribute the materials and GSM module used to link the PDS shop database to the government database. Suraj V. S. et al. [6] propose the normal PDS into the “automatization of rationing system”. This system used to replace the manual work in public distribution system with the help of RFID card. This RFID card is used for authentication and identifies the consumer’s details easily. User to select the materials and collect the goods automatically. Then GSM is used to update the stock details and to alert the consumer regarding the arrival of goods. M. Elizabeth Sherine and Shimit Sadeyeone [10] declare “NFC based stock maintenance and billing system with auto alert to customers”. This method used to maintain the stock details automatically and also intimating the customers on arrival of new stock in the stores. At this time NFC tag is used to communicate with the customers and distribute the materials automatically. Subsequently GSM sends message to customers. S. Vennal Venkattraman [11] initiates “ration whiz” to automate the ration distribution system using the PLC module. This automated ration system replaces the conventional ration card by food card. This system used to distribute the materials automatically. At this time stock details connected to the government database through GSM modules, which sends the up-to-date collection to the government and the consumer. S. Deepika et al. [12] formed “A prevention and automation of PDS using RFID and facial recognition camera”. Here RFID card is given to all the users instead of a traditional ration card. This card is to identify the consumer’s details easily and facial recognition is used for authentication. After the person enters the shop holding a card the camera identify the image of the person with the information on the PC. If the image matches the necessary goods are delivered. Then stock details send to the government via GSM. A. N. Madur et al. [13] suggested “replacing traditional PDS with smart PDS” with the help of RFID card. This card easily identifies the user’s quantity details. User to select the materials with the help of keypad. After that ARM controller used to distribute the materials automatically. At that time the updated stock details are move to the user mobile based on GSM module.

3. SYSTEM DESCRIPTION

![System Module](image)

This smart ration distribution system mostly performed to reduce the corruption and reduce the wastage of time. Because in our system the goods are distributed automatically without any manpower. Fig.1 explains the basic module of automatic materials distribution and stock maintenance based on smart ration card.
technology. This system consists of the ARM processor, smart card, motor driver, LCD and GSM. The proposed system expresses sharing of grains as well as liquids.

4. SYSTEM DESIGN

4.1 Smart Ration Card

First the user gets the smart ration card instead of a traditional ration card for secured ration materials collection. This card used to easily identifies the user's details. In a smart card corner the designer will print the serial number based on family details. Depends upon this serial number the user collect the materials. The shop worker provides the schedule to the user. On that day only the user buys the materials. The last two days per week are allotted for distributing the materials to all users. This process is regularly reducing the user's time wastage; reduce worker's stress; proper maintenance...etc.

4.2 Finger Print Recognizer

Finger print recognizer is used for high secured purpose. If user insert the smart card into the smart card reader means the PC provides the user's details with the help of Database. Subsequently the user thumbs
our finger print into the finger print recognizer. If the recent finger print and saved finger print are matched means PC shows the user’s quantity details.

4.3 Commodities selection

After verifying the user’s details the PC displays the particular user’s quantity details. Then the user selects the goods with the help of the keyboard.

4.4 Debit card swipe machine

With the help of this, the user will pay the amount automatically after the selection of materials. Here consumers use the debit card for secured payment.

4.5 Material distribution

The payment process success means the PC sends commands to ARM micro controller recording the material distribution. If user select Rice or Sugar means commands passed to motor driver circuit and they control the stepper motor. Stepper motor rotates clockwise to distribute the rice. For distributing sugar, stepper motor rotates anti clockwise. If the user selects liquid item means the controller sends commend to relay circuit. At this time relay switch ON and pass commands to the solenoid valve. The valve will be open and distribute the liquid items.

4.6 Weight sensor

Here weight sensor is used for calculating the material's weight exactly and dispense the materials properly. They are primarily executing the correct quantity of materials.

4.7 IR sensor and Liquid Flow Sensor

The IR sensor is one type of object detection sensor. This is very useful for distributing the materials correctly. The sensor senses the object and gives the instructions to the controller. Then only the controller distributes the materials.
At this time liquid level sensor is used for calculating the liquid levels and distributing the liquids accurately. If the liquid level low or high means the buzzer will on automatically.

4.8 GSM module

After material distribution the PC maintains the stock details and intimates the stock details to the government head office with the help of GSM. For this kind of process, we reduce the corruption and avoid the fake stock entry.

5. RESULTS AND DISCUSSION

In this process we use the KEIL Version4 software to run the coding and build up the code into the controller. Subsequently the ISIS schematic capture is to simulate hardware modules and provide the output.

Here virtual terminal is control both the motor and LCD. If any problems occur in machine means the buzzer automatically ON. With the help of the LCD the user easily identifies the process.

6. CONCLUSION

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 automatic ration shop 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 GSM module. Here all the works are done automatically without any manpower. 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.

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