Real Time Automatic Ration Material Distribution System

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Abstract

Now a day ration card is very significant for every home and used for various field such as family members details, to get gas connection, Domicile certificate, Bank account , It act as address proof for various purposes etc. All the people having a ration card to buy the various materials (sugar, rice, oil, kerosene, etc.) from the ration shops. But in this system having two disadvantages, first one is weight of the material may be imprecise due to human mistakes and secondly, if not buy the materials at the end of the month, they will sale to others without any intimation to the government and customers. In this paper, proposed an Automatic Ration Materials Distribution Based on GSM (Global System for Mobile) and RFID (Radio Frequency Identification) technology instead of ration cards. To get the materials in ration shops need to show the RFID tag into the RFID reader, then controller check the customer codes and details of amounts in the card. After verification, these systems show the amount details. Then customer need to enter their required materials by using keyboard, after receiving materials controller send the information to government office and customer through GSM technology. In this system provides the materials automatically without help of humans.

Keywords: Microcontroller, GSM, RFID, Motor, Solenoid Control Circuits, Mechanical Part

I. INTRODUCTION

The most of the people having a ration card to buy the materials from the ration shops. When get the material from the ration shop, first need to submit the ration card and they will put the sign in the ration card depends on the materials. Then they will issue the materials through weighting system with help of human. But in this system having two draw backs, first one is weight of the material may be inaccurate due to human mistakes and secondly, if not buy the materials at the end of the month, they will sale to others without any intimation to the government and customers. In this paper, we have proposed an Automatic Ration Materials Distribution Based on GSM and RFID Technology to avoid the drawbacks. Today we are facing a number of transport related problems. RFID technology effectively used to solve some of them. RFID is act as ration card and other purpose such as RC book, insurance details, service details etc. GSM used to converse the information between the two people or more than two persons to update the evidence depends on the supplies.

Radio-frequency identification (RFID) based access-control system allows only authorized or liable persons to get the materials from ration shops. An RFID system consists of an antenna or coil, a trans receiver (with decoder) and a transponder (RF tag) electronically programmed with unique information. There are many types of RFID systems available in the market. RFID classified based on their frequency ranges. Some of the most commonly used RFID kits are low-frequency (30-500 kHz), mid-frequency (900 kHz-1500MHz) and high-frequency (2.4-2.5GHz)[1]. the passive tags are lighter and less expensive than active tags [2]. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is a common European mobile telephone standard for a mobile cellular radio system operating at 900 MHz In the current work, SIM300 GSM module is used. The SIM300 module is a Triband GSM/GPRS solution in a compact plug in module featuring an industry-standard boundary. It delivers voice, data and fax in a small form factor with low power consumption [3, 4].In this paper, we have designed and implemented an Automatic Ration Materials Distribution system Based on GSM and RFID Technology. In this system, only authentic person can be improved ration materials from ration shops based on the amount available in the RFID.

A Ration Card is a document distributed under an order or authority of the State Government, as per the Public Distribution System, for the purchase of essential commodities from fair price shops. State Governments issue distinctive Ration Cards to Above Poverty Line, Below Poverty Line and Antyodaya families and conduct periodical review and checking of Ration Cards. It is very problematic and old procedure so now the time is for some change hence we represent Real Time Automatic Ration Material Distribution System.

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II. LITERATURE REVIEW

The existing predictable ration system has the basic issues of renewing the ration card every year by the employees to the malpractices done by the ration store dealers like diverting food grains to open market to make profit. To tackle this problems K.Balakarthik proposed the "Cloud-Based Ration Card System using RFID and GSM Technology" [1], presents an efficient method for the user to buy the products in the ration shop by just irregular the card at the RFID reader. The user authentication is done by sending a random password text to the user mobile which has to be entered in a keypad. The purchase is validated by the employee only after the details are entered in a windows application which stores the user's personal and purchase information. The current PDS involves corruption and illegal smuggling of goods because of manual work. A.N. Madur et.al. Developed the "Automation in Rationing System using Arm 7" [2],S.Valarmathy et.al. Proposed the "Automatic Ration Material Distributions Based on GSM and RFID Published in A R DIGITECH A R DIGITECH International Journal Of Engineering, Education And Technology (ARDIJEET) www.ardigitech.in ISSN 2320-883X, VOLUME 3, ISSUE 2, 01/04/2015 3 Technology" [4]. Here each customer is provided with RFID cards. In this system, first user is authenticated, and then system shows the balance of person. User have to enter the amount of Kg he want to withdraw. If the user will have sufficient balance to withdraw the current amount, system will open the valve. Through valve grain will come and it will get weighted by weight sensor. Once the count reached the entered amount controller automatically shut down the valve and updates the account of the customer.

The updated account information is send to the customer's mobile using GSM. Rationing distribution is one of the widely provocative issue that involves wrong entries in stock register of shop containing wrong stock information of the products that is supplied to the public, so Rajesh C. Pingle et.al. Suggested the "Automatic Rationing for Public Distribution System (PDS) using RFID and GSM Module to Prevent Irregularities" [3], in this automated system conventional ration card is replaced by smartcard in which all the details about users are provided including their AADHAR number which is used for user authentication. To involve government in the process we proposed connecting the system at ration shop to a central database (provided by government.) via GSM and RS232. Hence it is possible to prevent the corruption and irregularities at ration shop. The existing PDS system causes congestion at ration shop due to manual work so S.Sukhumar et.al.

Proposed the "Automatic Rationing System Using Embedded System Technology" [5], in this the ration distribution system is automated by using PLC. This automated ration system replaces the conventional ration card system by smart card. The proposed ration shop system is connected to the government database via GSM modules, which further sends the up-to-date information to the government and the consumer. So we suggested the "e– Ration Shop: An Automation Tool for Fair Price Shop under the Public Distribution System" [6], this paper discusses strategy adapted in using ICT to control diversion and leakage in the delivery device and its successful application in computerization of food grain supply chain.

A.N. Madur, Sham Nayse [1] "Automation in Rationing System using Arm 7", this system is based on radio frequency identification of customer. Here each customer is provided with RFID cards. In this system, by using RFID and by entering the password we can access. First user is authenticated, then system shows the balance of person. 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, system ISSN (Online) 2321 – 2004 ISSN (Print) 2321 – 5526 INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN ELECTRICAL, ELECTRONICS, INSTRUMENTATION AND CONTROL ENGINEERING Vol. 1, Issue 8, November 2013 Copyright to IJIREEICE www.ijireeice.com 340 will open the valve. In this system the data base of customers can be made with their account details, password etc. Rajesh C. Pingle, P. B. Borole [2] "Automatic Rationing for Public Distribution System (PDS) using RFID and GSM Module to Prevent Irregularities", In this automated system conventional ration card is replaced by smartcard in which all the details about users are provided including their AADHAR (social security) number which is used for user authentication. This prompted us to interface smart card reader (RFID Based) to the microcontroller (AT89C51) and PC via RS232 to develop such a system. Using such a system, Government would have all required control/monitoring over the transactions at ration shop. To involve government in the process we proposed connecting the system at ration shop to a central database (provided by government.) via GSM module (SIM900D) and RS232. Hence it is possible to prevent the corruption and irregularities at ration shop. This would bring the transparency in public distribution system and there will be a direct communication between people and Government through this.

A Social Relevance and Usefulness of the Proposed System to overcome the problems mentioned above in the previous research, the novel PLC based Automation of ration shop plays a vital role [1]. i) Illegal Usage ii) Over crowd iii) Processing speed is slow iv) Selection of households – Targeting v) Bogus cards vi) Hijacking of ration cards vii) Materials theft viii) Mixing of products ix) Poor quality of supplies x) More than the prescribed rates are charged xi) Cannot able to get the accurate quantity of supplies xii) Cannot able to get the material at any time B. Benefits of the Proposed System i) Corruption in the Government and market sector can be prevented if this system becomes automated. ii) Increased adulteration in consumables can be prevented. iii) Cost effective approach. iv) Time saving approach. v) This system helps to maintain the data properly.

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III. PROPOSED WORK

A. Block Diagram:

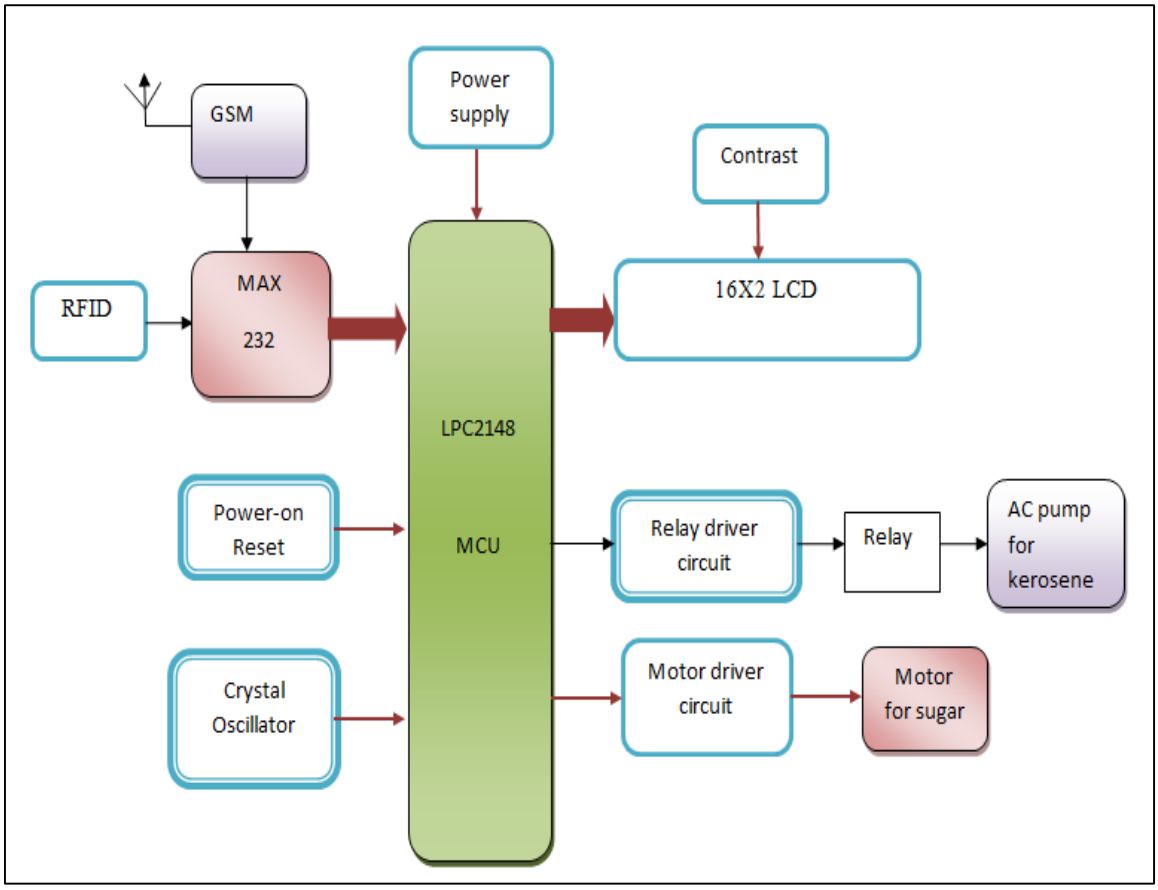

Fig. 1: Block diagram of ration materials distributions system

The block diagram of an Automatic Ration Materials Distribution Based on GSM and RFID Technology is shown in the Fig. 1. This system consists of various parts such as RFID, GSM, microcontroller, motor driver, solenoid control circuits and keyboard. The proposed system demonstrates distribution of solid as well as liquid consumer materials that is grains (wheat/rice) and kerosene. RFID reader, ultrasonic sensor, load cell and keypad acts as inputs to system and LCD is used for displaying ration stock and related activities. The microcontroller outputs are used to drive motor and solenoid valve.

B. Algorithm:

Algorithm of proposed system is:

1) Every consumer is provided with a RFID card which is registered by the Government authority.
2) At the time of ration distribution at ration shop, first password of consumer is verified.
3) User ID verified with the database provided by the Government authority which is stored in the microcontroller. 4. Once verification is successful, consumer is asked for a select type of material and quantity required through push buttons and keypad respectively.
4) Based on type of material chosen, the motor or solenoid valve is activated.
5) The load cell or level indicator is checked for proper quantity.
6) After collecting proper quantity material motor or solenoid is disabled.
7) GSM module will send the information in form of SMS to the user as well as PDS authority.
8) Current stock in the ration shop is displayed using LCD.

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C. Flow Diagram:

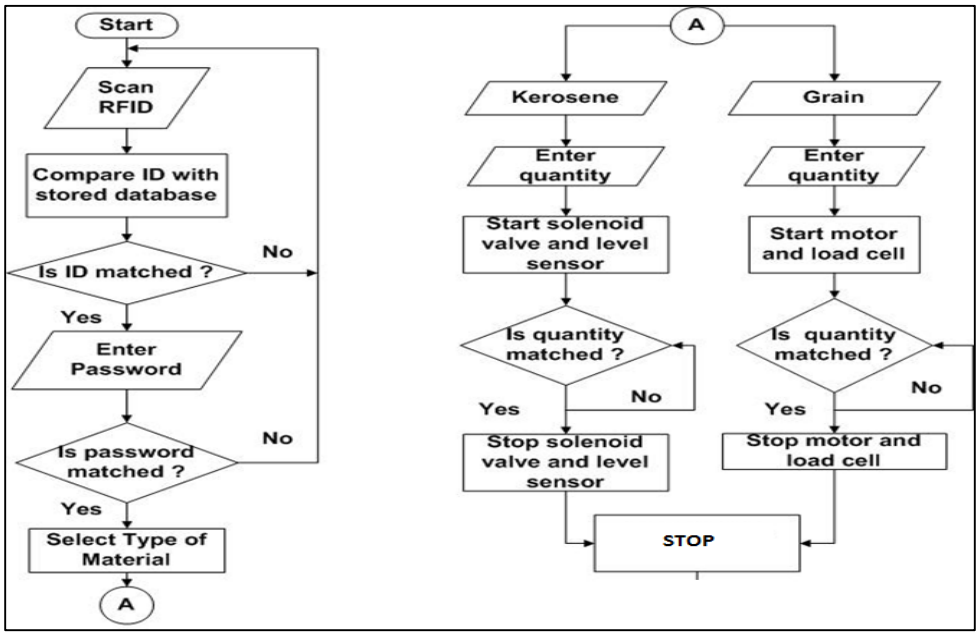

Fig. 2: Shows flow chart of the proposed public distribution system

IV. CONCLUSION

The conventional Ration Materials Distribution system has drawbacks like weight of the material may be inaccurate due to human mistakes, low processing speed, long waiting time at ration shop to get material and material theft in ration shop. If materials are not buying at end of the month by consumer, they will sale to others without any intimation to the government and consumer. To overcome above problems, automatic ration shop played important role. The automatic ration shop involved RFID as well as GSM technology to distribute the kerosene or grain material. Ration card is replaced by RFID and information is sent to consumer using GSM module. The proposed system creates the transparency in public distribution system as the work becomes automatic. In this system, ration Materials (sugar, rice, oil, kerosene, etc) distributed through automatic mechanism without any help of humans. With the help of this system, it is possible to make public distribution system efficient and free from malpractices. After receiving the materials, controller sends the information to government office and customer through GSM technology. The proposed system has advantages like it is helpful to prevent malpractices at ration shop, maintain data properly, reduces paper work, time saving approach and cost effective.

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