International Journal of Research in Advent Technology (IJRAT) (E-ISSN: 2321-9637)
Special Issue
National Conference "CONVERGENCE 2016", 06th-07th April 2016

Automatic Rationing System by Using Controller

Manoj Zagare[1], Gopal Bodade[2], Bhagwat Padghan[3],
Gopal Pendharkar[4], Sandip Borul[5], Prof. N. R. Khanzode[6]
Electrical Engineering Electronics and power, SGBAU
Email: Manoj Zagare[1]:-*manojzagare@gmail.com*, *Gopal* Bodade[2]:-*gopalbodade94@gmail.com*,
Bhagwat Padghan[3]:-*bhagwatpadghan95@gmail.com*, Gopal Pendharkar[4]:- gopalpendharkar93@gmail.com,
Sandip Borul[5]:- sandipborul367@gmail.com, Prof. N. R. Khanzode[6]:- *neharkhanzode@gmail.com*

Abstract- In this paper, the proposed concept is to replace the manual work in public distribution system. The ration distribution system is automated by using controller which is similar to the ATM. As soon as the input is given via keyboard, the products are obtained from the automated ration shop and the amount is taken from the bank account of the particular person. The controller is preprogrammed in such a way to perform the similar operations. In this automated ration shop government have control over all transaction that occurs in ration shop.

Index terms: GSM module, RFID reader, LCD, Arduino (UNO), etc.

1. INTRODUCTION

Our aim is to avoid corruption at ration shop. Because of too much corruption is taking place in government sector, the facilities given by government are not reach to the deserving people. Our main motive is to make all facilities must reach to the every deserved people without any malfunction in quality and quantity.

In present situation the facilities given by our government is not reaching properly to the deserved people due to the human involvement and interface. Especially this problem is while the time of distribution of food grains to the people, so by this project we can eliminate human involvement in food grains distribution process. By this process we can eliminate malfunction in quality and quantity. In this automated system we replace the convectional ration card by smart card in which all the details about users are provided including their "AADHAR" number which is used for user authentication. There will be a Smart card based ration card which will be used to identify the user by machine placed at ration shop.

The project consists of a User Card; based on a card as user card & an automated system interfaced with material dispensing mechanism. The project is also equipped with a microcontroller unit for the ease of message display and for easy future enhancements in the project. The Coded Card Security System is a novel approach to modern automated security management. This system helps in the field of Security Automation, by monitoring and managing the security of an industry, financial institution,

Commercial complex, hospitals, banks, storage rooms, military base, etc.

2. LITERATURE REVIEW

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 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 update the account of the customer. The updated account information is send to the customer's mobile using GSM module. 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 bysmartcard 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.

S.Valarmathy,R.Ramani [3] "Automatic Ration Material Distributions Based on GSM and RFID Technology", proposed to use RFID and GSM technology based Ration cards by showing the RFID tag into the RFID reader. Then the controller checks the customer codes and details of amounts in the card. After verification, these systems show the amount details. The customer need to entered the required materials by using the keyboard, after receiving the materials controller send the information to government office and customer through GSM technology. In this system microcontroller is used for executing the process.

K.Balakarthik [4]" Cloud-Based Ration Card System using RFID and GSM Technology", Presents an efficient method for the user to buy the products in the ration shop by just flashing the card at the RFID reader at the ration store. 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. Here the user can check their purchase details in a dedicated website.

Dhanojmohan,Rathikarani,Gopukumar [5],"Automation in ration shop using PLC'',proposed a methodology for ration shop automation using embedded PLC. Further the updation to the government database about the stock available and the customer details were not carried out. 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.

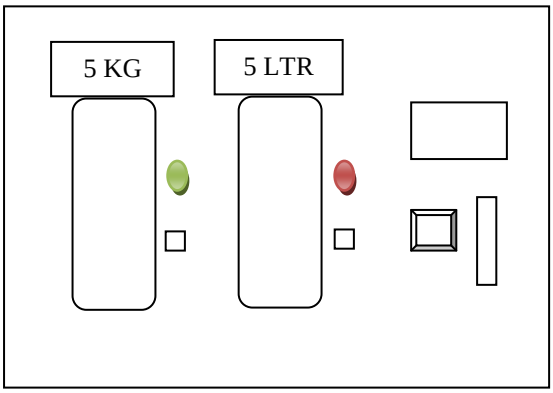
Palak Parikh, [6], "Automation in rationing system" means distribution of essential commodities to a large number of people through a network on a recurring basis in an automated way. The Concept is to automate the Public Distribution System (PDS), A Govt. Of India initiative Process in which a fixed amount of ration is provided monthly to the people by the PDS stores. Because of the increased corruption in the market sector can be prevented if system becomes automated, increased adulteration can be prevented as well, the hoarding done by the officials and labourers of Govt. Super Bazaars (PDS Stores) which in turn leads to price hike can be prevented using this system. The apparatus used for designing is cost effective and can prove helpful to Govt. of India's PDS System and to various other disciplines.

Josphineleela. R and Dr. M. Ramakrishna, [7] During this same period, The RAND Corporation, working under a national grant, published The Criminal Investigative Process(Greenwood et al., 1975), a comprehensive study and critique of the process by which crimes get solved-or do not. Generally critical of traditional methods used by detectives, the study placed any hopes for improvement on physical evidence in general and latent prints in particular. In a companion study, Joan Petersilia concluded that: No matter how competent the evidence technician is at performing his job, the gathering of physical evidence at a crime scene will be futile unless such evidence can be properly processed and analyzed. Since fingerprints are by far the most frequently retrieved physical evidence, making the system of analyzing such prints effective will contribute the most toward greater success in identifying criminal offenders through the use of physical evidence."

John W.Webb prentice [8] Timers are output instructions that are internal to the programmable controller. They are capable of providing timed control of devices that they activate or deactivate. Timing operations are used in many industrial applications. PLC timers perform various functions such as delaying an action, causing an operation to run a predetermined period of time, or recording the total accumulated time of continuous or intermittent events. They can also operate as stable or one-shot multivibrator The timers count seconds or fractions of seconds by suing the internal CPU clock. They permit delay of the time of certain control operations. The present value of a timer is the delay period required and is typically set in the range 0.1 – 999 seconds in steps of 0.1 seconds. Figure 2.8 shows the symbol of the timer that has been used by PLC Omron

3. PROPOSED METHODOLOGY

In this project, we are using arduino controller. It required low power i.e.5V. RFID reader, GSM module, keypad and LCD, each component required 12V and also are connected to the controller arduino ATMEL mega 328. The analog pins of arduino are connected to the LCD display. Some digital pins are connected to the keypad, the arduino having 14 digital I/o pins and 6 analog pins. Some analog pins of arduino is connected to keypad and also relay are connected to arduino the terminal of Relay are connected to solenoid valve of container.



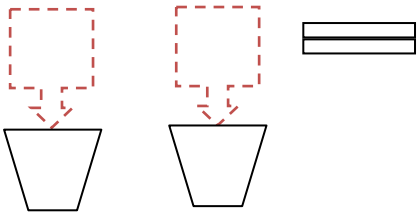


Fig.1: - proposed methodology of Automated Ration shop

The inputs given by the consumer are collected in the automated machine in one by one basis. The first input given by the consumer is rice means, the green light indicates that the rice is coming out from the machine first. Object sensor is placed in the collector side in order to avoid the wastage of products. If the bucket/ object are sensed in the collector side by the object sensor then only the process takes place by pressing the start button. If not alarm circuit turns on, which alarm us to keep bag. Then by pressing the start button solenoid valve opens and the product is collected in the bag. As soon as the first input is collected then it checks it for the second input and the same process takes place for next input and so on. After all the inputs given in the touch screen by a consumer are collected, with the help of GSM module. The up-to-date information is send to the government and the receipt will come from the bill counter automatically. In order to make the automated system more advantage, power supply is also obtained from the solar panel.

4. WORKING PRINCIPLE

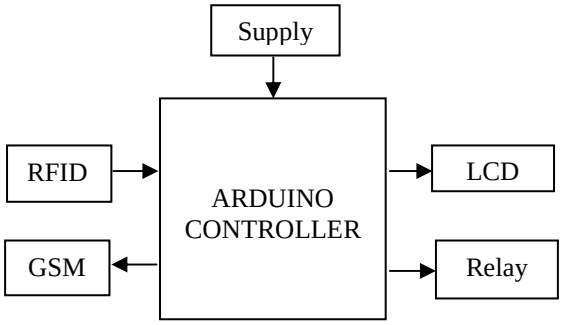


Fig.2: - Automatic Rationing System Using Arduino

The main functions of each component in Automatic Rationing System are as follows

4.1 Arduino Controller:

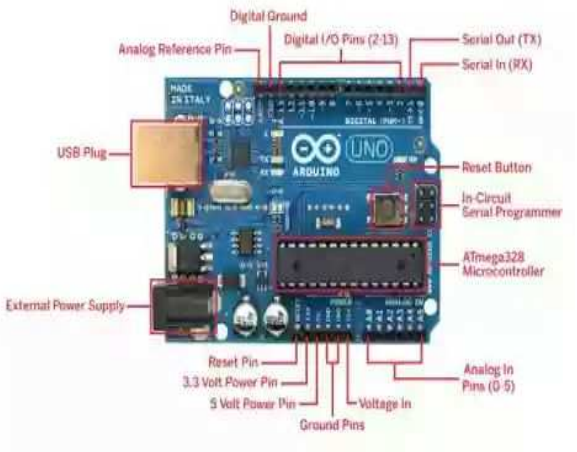


Fig.3:- Arduino Controller

It is an open source prototyping platform based on easy to use hardware and software. Arduino boards are able to read inputs and turn it into an output.

4.2 GSM Modem:

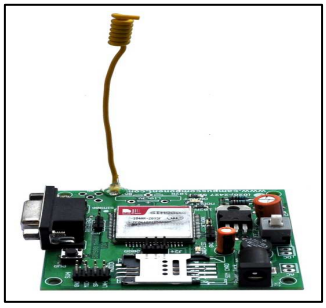


Fig.4:- GSM Modem

GSM modem is a wireless modem that works with a GSM wireless network. It is used to automatically update the account information to customers mobile. GSM modem have low power consumption of 0.25 A during normal operations and around A during transmission. Operating voltage required for GSM is 7-15V Ac or Dc.

4.3 RFID Inserter: Whenever Customers ID card touches the data receiving plate or RFID reader, the whole data or information about customer is already stored in programming and customer easy to take out Ration from Automatic Rationing System and also all transaction is done with the help of RFID tags.

4.4 LCD: It is use for the display purpose only. Whatever the output is displayed on LCD.

4.5 Relay:

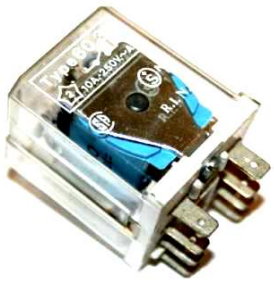


Fig.5:- Relay

There are two relays are use in an Automatic Rationing System. If customers choose solid items then that time relay1 is sensed and operate the motor for discharging the solid items. in other hand when customer select liquid items then that time relay2 sense and operate the solenoid valve for discharging appropriate liquid.

The Automatic Ration Shop Using Controller Systems works as follows: Whenever Customers ID card touches the data receiving plate or RFID reader, the Menu driven software present in the Computer navigates throughout the process. User can retrieve the stored information such as ID Number, this Month's ration is taken or not, if taken how much [quantity] etc. If this month's ration is not taken then system allows taking prescribed amount of ration deliberately. Operator has to enter the quantity of the item viz., rice, sugar and kerosene. If customers select the solid items then that time relay sense and operate the motor, in other hand when customer select liquid items then relay sense and operate the solenoid valve. Then the Dispenser section comes into action and respective items vending motor turns ON for prescribed time [depend upon the quantity] and respective message is displayed on the LCD Module through Microcontroller chip for customer's information. Also all the transaction related to the Ration shop will be forwarded to each customer through GSM.

5 ADVANTAGES

1. A communication environment can be shaped simply and at low cost.
2. Reduces heavy antennas and receiver like devices to carry.
3. Reduces many terms like illegal usage, hijacking of ration cards, over crowd, using bogus cards etc.
4. Easy to operate because processing speed is slow.
5. Reduces material theft at Ration shop.

6 DISADVANTAGE

1. Not valuable unless many people accept it.

7 CONCLUSION

This proposed method can provide a safe, secure and efficient way of public distribution system. By using this technique Microcontroller based automated ration shop; it solves the problem of manual process in public distribution system. This new technology gives solution and this research work will make a great change in public distribution system and provides benefit to the government by sending the current stock information to the government database via GSM and reduce the manpower.

REFERENCES

[1] A.N.Madur, Sham Nayse, "Automation in Rationing System Using Arm 7," International journal of innovative research in electrical, electronics, instrumentation and control engineering ,vol.1, Issue 4, Jul 2013.

[2] Rajesh C. Pingle and P. B. Borole,"Automatic Rationing for Public Distribution System (PDS) using RFID and GSM Module to Prevent Irregularities," HCTL Open International Journal of Technology Innovations and Research, vol 2,pp.102-111,Mar 2013.

[3] S.Valarmathy,R.Ramani,"Automatic Ration Material distributions Based on GSM and RFID Technology," International Journal of Intelligent Systems and Applications, vol 5,pp.47-54, Oct 2013.

[4] K.Balakarthik,"Closed-Based Ration Card System using RFID and GSM Technology,'' vol.2, Issue 4, Apr 2013.

[5] Dhanojmohan,Rathikarani,Gopukumar,"Automation in ration shop using PLC," International Journal of Modern Engineering Research, vol.3,Issue 5,Sep-oct 2013, pp 2291-2977,ISSN:2249-6645.

[6] Palak Parikh, "Distribution System Automation".

[7] Josphineleela. R and Dr. M. Ramakrishnan, An Efficient Automatic Attendance System Using The Fingerprint Reconstruction Technique, International Journal of Computer Science and Information Security, Vol. 10, No. 3, March 2012

[8] Programmable logic controller principles and applications by john W.Webb prentice hall of india