AUTOMATIC RATIONING SYSTEM USING ARM CONTROLLER

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ABSTRACT

Now a day ration card is extremely vital for every home and used for various field such as family members details, to obtain gas connection, it perform as address evidence for various purposes etc. All the people having a ration card to obtain the various materials (sugar, rice, oil, kerosene, etc) from the ration shops. But in this system having two disadventages, first one is weight of the material may be incorrect due to human mistakes and secondly, if not buy the materials at the ending of the month, they will sale to others without any intimation to the government and consumers In this paper, proposed an Automatic Ration Materials Distribution Based on GSM (Global System for Mobile) and RFID (Radio Frequency Identification) technology as a replacement for of ration cards. To get the materials in ration shops require to confirm the RFID tag into the RFID reader, then controller verify the customer codes and entire of amounts in the card. once confirmation these systems illustrate the amount details. Then customer need to enter they required materials by using keyboard, after receiving materials controller send the information to government office and consumer through GSM technology. In this system provide the materials automatically without help of humans.

Keywords:- *ARM7 Microcontroller, GSM, LCD Display, DC motor, RFID tag.*

1.INTRODUCTION

Many peoples in India having their own individual ration card for buying material from the ration shops. To get the material from the ration shop there is requirement to submit ration card and they will issue rationing material by weighting system manually but they are two drawbacks in the system.1.weight of the material inaccurate due to manual mistakes.2.if customer not take their material at the end of month ration shop owner will sale to others without any information to government and to customer. In this project we present an Automatic Rationing System based on RFID system and GSM technology to avoid such kind of drawbacks. In present situation we are facing many transport related problem. RFID technology used in our project effectively used to solve such kind of problem. Here in this proposed system we replace ration card to the RFID system.GSM used worldwide for communication purpose.Here we use GSM to communicate with consumer and to government authority.
RFID system allows only authorized person to get the material from ration shop.RFID system contains an antenna transreceiver, RF tag programmed with unique information. Some of commonly used RFID are low- frequency(30-500khz)and high-frequency(2.4 to 2.5GHZ).

GSM stands for Global System for mobile communication.in this system we use SIM 300 GSM Module in this system only authentic consumer can be get ration material from ration shop by using RFID Card.

1.2. LITERATURE SURVEY

A.N. Madur, Sham Nayse [1] "Automation in Rationing System using Arm 7", this scheme is base on radio frequency identification of consumer. Here each consumer is provide with RFID cards. In this scheme, by using RFID and by incoming the password we can access. First user is genuine, then scheme shows the stability of person. User have to go into the quantity of Kg he want to extract. scheme check his account. If the consumer will have enough balance to extract the current amount, scheme will open the valve. throughout valve grain will come and it will get biased by weight sensor. Once the count reach the enter amount controller mechanically shut down the valve

and update the relation of the customer. The updated account information is send to the customer's mobile using GSM module. In this scheme the data base of customers can be completed with their account details, password etc.

Rajesh C. Pingle, P. B. Borole [2] "AutomaticRationing for Public Distribution System (PDS) using RFID and GSM Module to avoid Irregularities", In this automatic system predictable ration card is replace by smartcard in which all the information about users are provide contain their AADHAR (social security) number which is required for user verification. This prompted us to interface smart card reader (RFID Based) to the microcontroller (AT89C51) and PC via RS232 to expand such a system. with such a scheme, Government would have all necessary control/monitoring over the dealings at ration shop. To engage government in the process we projected connecting the system at ration superstore to a central file (provided by government.) via GSM module (SIM900D) and RS232. Hence it is possible to prevent the corruption and irregularity at ration shop. This would bring the clearness in public distribution scheme and there will be a directly communication between people and Government through this.
S.Valarmathy,R.Ramani [3] "Automatic Ration objects 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 consumer codes and details of amount in the card. After confirmation, these system show the amount details. The consumer need to entered the required material by using the keyboard, after receiving the resources controller send the information to government office and customer through GSM technology. In this system microcontroller is use for executing the process.
K.Balakarthik,[4]" Cloud-Based Ration Card System using RFID and GSM Technology", Presents an capable scheme for the consumer to buy the goods in the ration shop by just blinking the card at the RFID reader at the ration store. The user validation is done by transfer a chance password text to the user mobile which has to be enter in a keypad. The buy is validate by the worker only after the information are entered in a windows application which stores the user's personal and buy information. Here the user can check their buy details in a dedicated website.
Dhanojmohan,Rathikarani,Gopukumar [5],
"Automation in ration shop using PLC", future a method for ration shop mechanization using embedded PLC. Further the update to the government database about the stock available and the consumer details were not

2. PROPOSED METHOD:-

The projected system plan and completion is based on GSM and RFID Technology. In this system, only genuine person could pick up ration supplies from ration shops based on the sum available in the RFID. Additional to prevent irregularity in allotment of ration, Government can provide/supply various products (like rice, wheat, cooking oils etc.) to rationing shops in the form of conserved packets instead of the bag. This would bring the lucidity in public distribution system as there will be a direct communication between people and Government system.

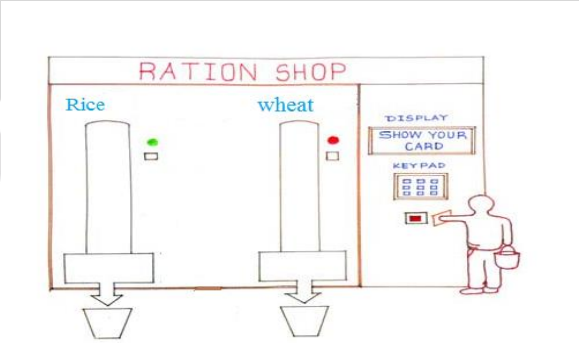

Fig.1 projected system of rationing

3. BLOCK DIAGRAM and DESCRIPTION

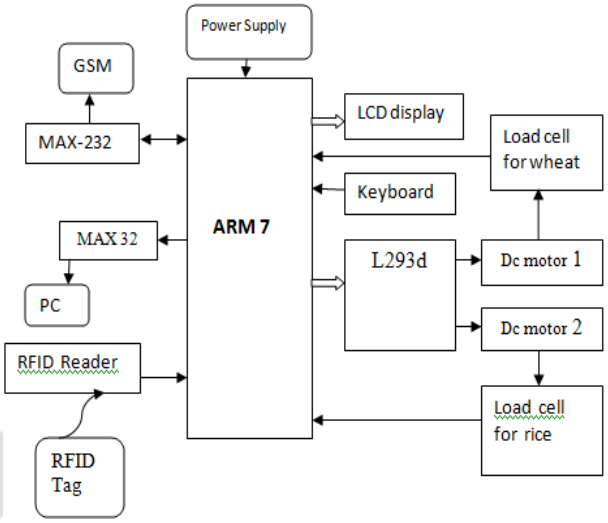

Figure 2. Block Diagram

3.1 Description for block diagram :-

The block diagram of an Automatic Rationing system Based on GSM and RFID Technology is shown in the Fig. 1. This scheme consists of a variety of parts such as RFID, GSM, microcontroller, motor driver, load cell and keyboard.

3.1.1 ARM 7

LPC2138 (ARM7) is authentic processing unit for proposed system. The 12 MHz crystal oscillator is use to present the essential clock signals to the ARM7. It take input from power supply of 3.3V for its process.In the projected development is that, RFID reader reads the record stored in the tag and drive it to ARM7.The record of all the users will be previously stored in ARM7. The data approaching from RFID reader will be harmonized with the store data in ARM7. If it is corresponding with stored data then it will demonstrate the data on display. Then with keypad enter the amount necessary for the user. Then ARM7 will drive the signals to motor driver circuit for the taking out of material. If material is out of stock in the storage pot then ARM7 will drive signal to the buzzer.

3.1.2 POWER SUPPLY

The power supply is most significant for electronic circuits, which offer the necessary power to the ARM7 and additional electronics devices. For this structure we are use +5v power supply for buzzer, LCD, keypad, MAX232, L293D.Also essential 3.3 v power supply for ARM7 which is obtain by LM1117.For DC motor 12v supply is essential which is in use since rectifiers output.

3.1.3 RFID Module

Radio-frequency identification (RFID) base access-control scheme allows only authoritative persons to obtain the resources from ration shops. RFID scheme consists of an antenna or coil, a transceiver plus a transponder electronically programmed with exceptional information. RFID tags consists of a microchip associated to an antenna, which is construct of a tiny coil of wires. Data is store in the IC and transmit throughout the antenna to a reader. Most RFID tags enclose at least two parts. One is an included circuit for storing and dealing out information, modulating and demodulating a (RF) signal, and other specific function. The second is an antenna for receiving and transmit the signal. A reader is essentially a radio frequency (RF) transmitter and receiver, restricted by a microprocessor. The reader, using an attach antenna, captures data as of tags, then passes the data to the microprocessor for dealing out. As the record of the user is store in the RFID tag, it will be transmit from beginning to end antenna to the reader. Reader will entrance the data and drive it to the ARM7.

3.1.4 MAX232

MAX232 IC chips are usually referred To as line drivers. The voltage level of MAX 232 are 0 to +5 volts. The MAX 232 is TTL toward CMOS Converter and also CMOS to TTL converter and as a result making the structure friendly with PC. MAX232 is use for the serial communication among other devices and microcontroller. In projected system MAX232 is Used to join RFID reader in sequence with ARM7.

3.1.5 Keypad

In projected structure 4x4 matrix keypad is use. It is in sequence attached with the ARM7. following presentation the smart card by genuine person, if material is presented in the users account after that with the assist of keypad user be able to take the essential amount of material.

3.1.6 Liquid Crystal Display (LCD)

A liquid-crystal display is an electronic illustration display that use the light modulating property of liquid crystals. A 16x2 LCD way it can show 16 characters per line plus there are 2 such lines. In the projected scheme if the database in the tag get access by the reader after that processing it will be shown on LCD display. following examination the database of the user the balance substance of the user will be exposed on LCD display and it will request to choose the amount required for user. After taking out of material it will inquire to show the card for subsequently user.

Figure *3*: 16x2 LCD

3.2 Output Section

3.2.1 Motor with Driver Circuit

The inner arrangement of a DC motor is planned to tie together the magnetic interaction among a current-carrying conductor and an exterior magnetic field to create rotational motion. In the projected structure we are use motor for the removal of grain and rice. The motor driver circuit is use to give proper toning between motor and circuits.

3.2.2 BUZZER

It consists of piezo crystals among two conductors. while a potential is apply across these crystals, they push on one conductor and pull on the additional. This, push and pull act, consequences in a sound wave. If the RFID tag is unacceptable then ARM7 will drive signal to the buzzer. Buzzer will accept the signal approaching from ARM7 and it will generate some noisy sound.

3.2.3 GSM

GSM stand for Global System used for Mobile communication. GSM is a worldwide received standard for digital cellular communication. GSM digitizes plus compresses data, then send it downward channel among two additional streams of user data, each in its individual time slot. It operate at both the 900 MHz frequency band. GSM modem is a wireless modem that workings with a GSM wireless network following allocation of the material controller drive the information with reference to the sharing of material to government office and customer throughout GSM technology. This would take present the clearness in public distribution scheme as there will be a straight communication among people and Government.

3.2.3 LOAD CELL:

A load cell is a transducer that is used to create an electrical signal whose magnitude is directly proportional to the force being measured. The various types of load cells include hydraulic load cells, pneumatic load cells and strain

Table 1: Load Cell

Weight (in Kg)	Load cell output Voltage	Amplifier Output
No Load	0.59 mV	0.17 V
1 Kg	2.8 mV	0.70 V
2 Kg	5 mV	1.31 V
3 Kg	7.3 mV	1.80 V
4 Kg	9.59 mV	2.22 V
5 Kg	11.8 mV	2.80 V

4. SOFTWARE REQUIREMENT

The drawing of our printed circuit board has been complete with EAGLE. EAGLE software is a whole electronic design automation scheme for PC comfortable computer. It includes diagram and PCB module. The µ Vision IDE as of Keil combine plan management, make amenities, source code editing, program debugging, and complete simulation in one influential surroundings.

5. ALGORITHM

Algorithm of projected system is:

1. Each consumer is supply with a RFID card which is register by the Government authority.
2. At the time of ration allocation at ration shop, first password of consumer is confirmed.
3. User ID confirmed with the record provide by the Government authority which is store in the microcontroller.
4. Once confirmation is doing well, consumer is ask for a choose type of material and amount required throughout push buttons and keypad in that order.
5. Based on kind of material selected, the motor is activate.
6. The load cell is checked for proper quantity.
7. After collect correct amount material motor is disabled.
8. GSM unit will send the information in structure of SMS to the consumer as well as government authority.
9. present store in the ration shop is display using LCD.

6. FLOWCHART:

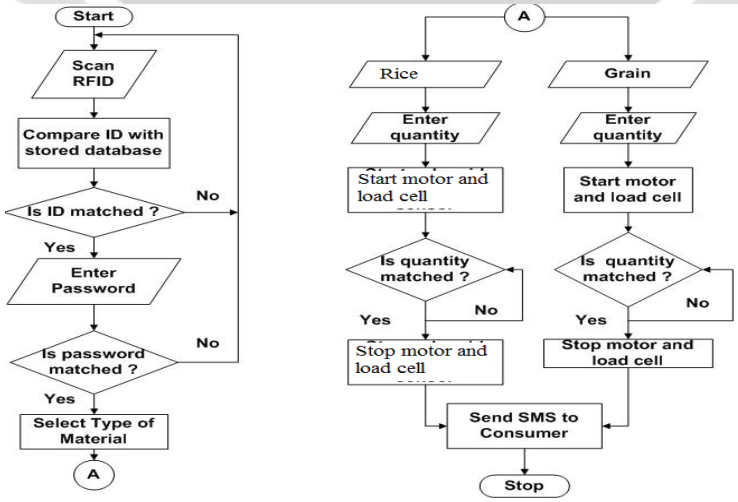

Figure 4: System Flowchart

7. ADVANTAGES

1. Fraud in the Government and market Division can be prohibited if this system Become automatic.
2. Improved corruption in consumables can be banned.
3. Cost efficient approach, Time economy approach, compressed in size.
4. This scheme helps to continue the data correctly.
5. This scheme is extremely precise, simple and low power utilization, which is use for the real time application.

8. APPLICATIONS

1. This projected system can give a safe, Secure and proficient way of public distribution system.
2. New machinery: This gives solution and this research work will make a huge alteration in Public Distribution System and provide advantage to the government by transfer the current stock information.
3. In agricultural.
4. Food bazaar

9.RESULT:

Consumer 1
Card no. 0006814452
Name-Mr. Jirvankar Vinod
Balance substance: Rice- 20kg, wheat-25kg
deliver substance- 2pm, 30/03/2016
Rice- 5kg, Wheat-4kg
Balance substance: Rice-15 kg, wheat-21kg
Consumer 2
Card no. 0006814453
Name –Mr.kale Mahesh n.
Balance substance: Rice- 20kg, wheat-25kg
deliver substance- 2pm, 30/03/2016
Rice- 5kg, Wheat-4kg
Balance substance: Rice-15 kg, wheat-21kg
Consumer 3
Card no. 0006814454
Unacceptable ID
Turn ON buzzer.

In recognized ration card system, customer can get
his allowance by presentation ration card at shop at once, but in this scheme, by using RFID, first user is legitimate, then scheme show the balance of person. consumer will enter the quantity of Kg he want to remove. arrangement check his account. If the user
will have enough balance to take out the current quantity, scheme will open the valve. throughout valve grain will come and it will be put on weight sensor.Once the count will reach to the enter amount controller automatically shut down the valve and
update the account of the customer. We can send this update account information to consumers mobile using GSM module.

Figure 4: Ration Distribution System

10.CONCLUSION-

"67%" of the public distribution system (PDS)rations grain does not get to the intended people". Many drawback of PDS similar to PDS leakage, amount & quality issue, system clearness and responsibility, grievance redressed mechanism are conquer by automationSo we have determined to develop a scheme in which ration material distribution throughout automatic machine without any human efforts .The older scheme of Rationing system in India has drawback like fraud, theft and wastage of expensive time for getting material.

To overcome this AUTOMATIC RATIONING SYSTEM play vital role. This system is fully automatic using RFID and GSM. Our proposed system create transparency in rationing distribution system

As it is fully automatic and corruption free. It reduces paper work and malpractice. in this system sugar,rice,grains,oil,keresone and like that rationing material can be distributed through automatic system without any manual interruption.

11.ACKNOWLEDGMENT-

The authors would like to thanks to our respected professors for giving their valuable guidance for this work.

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