

Simulation and Results of Automatic Rationing for Public Distribution System (PDS) and Technique to Inform People about Various Facilities Provided by Government to Them

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Abstract: In a article published in Times of India it was given that " To prevent the smuggling of goods provided under scheme of public distribution system by government to poor people at rationing shop the government launched a scheme. Under this scheme the group of rationing shops are formed. For each group of ration shop a committee got appointed. This committee contains 25 members which include School principal, Social worker, Tasildar, police inspector, postmaster etc of that local region. Under this scheme when government send foods for the people at ration shop simultaneously send the message about this to the respective committee members. Now committee members job was to keep watch over distribution so that smuggling to be prevented. Even there was corruption and smuggling of goods carried on. "

Now need arise to make the system automated so that human intervention and manual work avoided and create the transparency in system. In this paper we propose the concept about to replace manual work in public distribution system (rationing distribution system) by automated system which will be install at the ration shop. 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. This prompted us to interface smart card reader (RFID Based) to the microcontroller (AT89V51RD2) and PC via RS232. Government should have control over all transaction happen at ration shop, to involve government in the process we connected the system which is at ration shop to the government database via GSM module (SIM900D) and RS232. There will be a Smart card based ration card which will be used to identify the user by machine placed at ration shop. There are two main objective of this project one is to create the transparency in public distribution system and second is to inform the people about new scheme launch by government.

Keywords:

AT COMMANDS , GSM MODULE , RFID READER , SMART CARD.

1. INTRODUCTION

The government having the UID number called "AADHAR" number and all related information such as contact number, bank A/C related information etc of every resident in india. Using the AADHAR number and contact details the government will send a message(SMS) to respective person, before sending the products allotted to him/her in the respective ration shop. The message contains the information about the quantity and quality of the product which government provided for particular person in the ration shop. People who accessing the ration shop for subsidies rationing products will be given the smart card based ration card. This card is RFID based card in which all the details about the users are given such as AADHAR number, name of family members ,their profession, age etc. The system which installed at the ration shop having three subsection i.e smart card interfacing to microcontroller, microcontroller and disply, GSM module interfacing to microcontroller as well as government database. The person have to swap the card on the system placed at ration shop. After that the system will ask for the Password for user authentication. The user have to enter their respective Password and press enter, as soon as the user press enter the GSM module send signal to government database for user identification. The user will be valid If it's Password get match with respective AADHAR number. Once user is valid then respective detail information will be send by government database to the system placed at shop. This information contains the detail about quality and quantity of product that government allotted for that particular person. In this policy government send product (rice, wheat, kerocin, palm oil etc.) to rationing shop in form of seal packets instead of the sack. The packet size of 1Kg,2Kg,4Kg,8Kg,1Lit,2Lit,4Lit,8Lit etc. If user is valid then shopkeeper provide the product allotted to him/her by government.

The government launches various schemes for the different categories people, to serve these schemes and inform about these schemes to people are also a objective of this project.

2. COMPONENT OF AUTOMATED THE SYSTEM

The Entire automated system can be divided basically into three parts:

1. RFID Module
2. Microcontroller Unit
3. GSM Module

The hardware of this project divided into three parts:

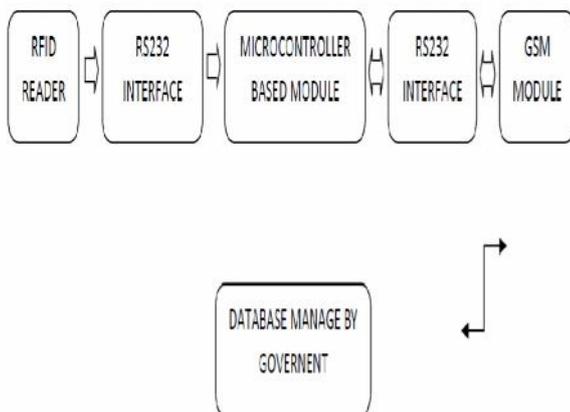
1. The smart card reader interfacing with microcontroller(AT89V51RD2) and PC: The RFID based smartcard reader is connected to microcontroller and PC via RS232.
2. Microcontroller system and PC: This is the assembly which placed in between smart card reader and GSM module.It is used to establish the communication between smart card reader and GSM module.
3. GSM module interfacing with microcontroller:Here the GSM module is used to exchange the information in form of SMS between microcontroller assembly and government database.This exchange of information is required for user authentication and for other details.

The software demands of this project are:

1. The smart card reader should send the command to microcontroller when there is smartcard detected.
2. On receiving command from smartcard reader the microcontroller should send command to GSM module to send message to the government database.
3. To receive the message from government database and send to microcontroller using GSM module.

3. BLOCK DIAGRAM AND SPECIFICATIONS

3.1 BLOCK DIAGRAM



3.2 BLOCK SPECIFICATIONS

1. RFID READER: It is block which detects the RFID TAG when user present and send the user Password to microcontroller module for further processing. The serial interfacing is setup to transfer the data to microcontroller unit. When the smart card arrive in vicinity of RFID reader module the password data will be get saved in the array define in the microcontroller .When all bytes of password received then further processing gets start.

The RFID READER used having following specification:

Parameters	Value
Input voltage	9 to 15 V AC/DC
Data speed(Output)	9600 BPS 8 bit data No parity bit One stop bit
Signal level(Output)	Level define by RS232
Detection Range	25 to 30 cm.
Tag indication	By LED AND BUZZER

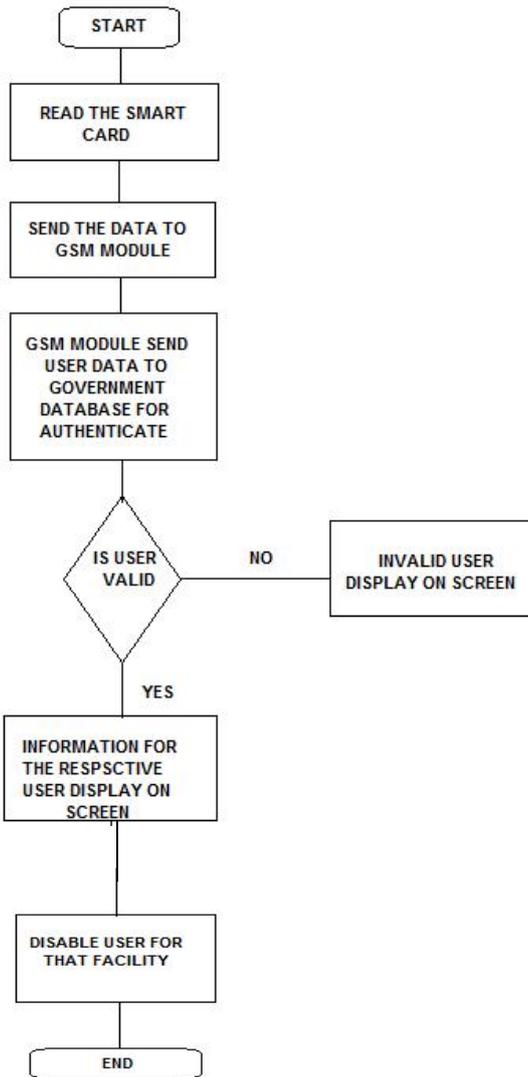
2. RS232: This module provides the required interfacing between RFID reader–microcontroller and GSM module–microcontroller.

3. GSM MODULE: It is the block which serves in order to exchange of information between microcontroller and government database.

The GSM MODULE used having following specification:

Parameters	Value
Datarate	9600 baud CSD
Service Support	GSM data transmisson, SMS
Status indicator	1 LED,Alarm
Antenna Impedance	50 ohms
Digital I/O Output	8 TTL outputs, 8 TTL inputs w. 10K pull-down
Operating temperature range	Operating temperature range

4.PROCESS FLOW



5. AT COMMANDS FOR GSM MODULE

After connecting the GSM module to microcontroller, it can be control by sending instructions to it. The instructions which controls the GSM module are called AT commands. Commands are to controlling sending and receiving of SMS messages.

The following table lists the AT commands that are related to sending and writing of message:

AT COMMANDS	MEANING
+CMGS	Send message
+CMSS	Send message from storage
+CMGW	Write message to memory

+CMGD	Delete message
+CNMI	SMS alert
+CMMS	More message to send

6. RFID INTERFACING WITH MICROCONTROLLER

Each transponder tag contains a unique identifier (one of 2⁴⁰, or 1,099,511,627,776 possible combinations) that is read by the RFID Card Reader and transmitted to the host via a simple serial interface. It means no two tags are same. Each tag has different value. This value if read by reader. When the RFID Card Reader is active and a valid RFID transponder tag is placed within range of the activated reader, the unique ID will be transmitted as a 12-byte printable ASCII string serially to the host in the following format:

StartByte (x0A)	Unique ID Digit 1	Unique ID Digit 2	Unique ID Digit 3	Unique ID Digit 4	Unique ID Digit 5	Unique ID Digit 6	Unique ID Digit 7	Unique ID Digit 8	Unique ID Digit 9	Unique ID Digit 10	Stop Byte (x0D)
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The start byte and stop byte are used to easily identify that a correct string has been received from the reader (they correspond to a line feed and carriage return characters, respectively). The middle ten bytes are the actual tag's unique ID.

For example, for a tag with a valid ID of 0F0184F07A, the following ASCII data would be sent 0F0184F07A Same data in HEX bytes can be interpreted as: 0x0A, 0x30, 0x46, 0x30, 0x31, 0x38, 0x34, 0x46, 0x30, 0x37, 0x41, 0x0D. All communication is 8 data bits, no parity, 1 stop bit, and least significant bit first (8N1). The baudrate is configured for 9600 bps, a standard communications speed supported by most any microprocessor or PC, and cannot be changed. The RFID Card Reader initiates all communication. This allows easy access to the serial data stream from any programming language that can open a COM port.

6.1 Connecting to PC

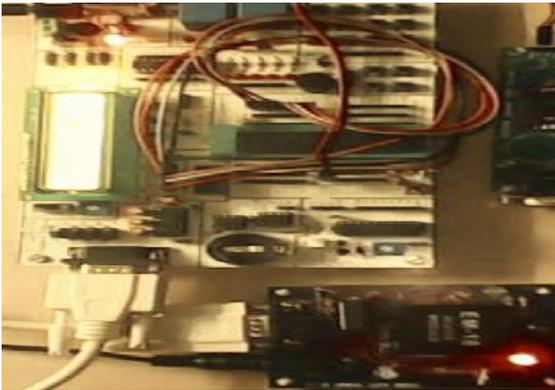
Use the supplied serial cable to connect to PC's serial port. Use Hyperterminal software which comes with Windows XP or use any other Terminal software with following settings.

Data Rate: 9600, Data Bits: 8, Parity: None, Stop Bit: 1, Flow Control: None

7. GSM MODULE INTERFACING WITH MICROCONTROLLER

For interfacing of GSM module with microcontroller one first needs to know the GSM modem create an interfacing environment between microcontroller and government database for exchanging message. The GSM module can accept GSM network operator SIM card and act just like a mobile phone with its own unique phone number. To connect GSM module to microcontroller(PC) the RS-232 is required.

8.PROJECT PROTOTYPE



9. CONCLUSION AND FUTURE WORKS

Government launches various schemes for those people who are financially poor. To get the updates of that schemes to people is the main objective of this paper. A system will be there which identify the person by their Aadhar (UID) number and then serve them accordingly.

In this paper the identification and reception of users information from database manage by government and placed at remote distance are explain. This project create the transparency in public distribution system as much of the work becoming automatic. With help of this it is possible to make public distribution system efficient.

9.1.FUTURE WORKS:

- The same system with existing components can also be used for keeping employees record in multibranch organizations. It is possible by creating common database for multibranches.
- It can be also carried out for various remote security application as hardware requirement is same, the difference is that some relay and sensors need to be attached.

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