
Electronic Implementation of PDS with Dual Authentication of User with PC Interface

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ABSTRACT

SMART CARD based automatic ration shop is novel approach in Public Distribution System (PDS) useful for more efficient, accurate, and automated technique of ration distribution. Public distribution system also called rationing distribution system is one of the widely controversial issues that involve malpractices. The present ration distribution system has drawbacks like inaccurate quantity of goods, low processing speed, large waiting time, material theft in ration shop. The proposed system replaces the manual work in ration shop. The main objective of the designed system is the automation of ration shop to provide transparency. The proposed automatic ration shop for public distribution system is based on Smart card that replaces conventional ration card. Customer's database is stored in microcontroller which is provided by government authority. Customer needs to scan smart card reader, and then microcontroller checks customer's details with stored to distribute material in ration shop. After successful verification, customers need to enter type of material as well as quantity of material using keypad. After delivering proper material to consumer, the microcontroller sends the information to customer as well as PDS authorities.

Keywords-Smart Card; Public Distribution System; Database; Dispenser System;

I. INTRODUCTION

India's Public Distribution System (PDS) is the largest retail system in the world. Public distribution system provides a ration card issued under an order or authority of the State Government for the purchase of essential consumer materials like rice, wheat, kerosene and oil. State Government issues distinctive ration cards like yellow ration card, saffron ration card, and white ration card depending on family annual income. The consumer material is supplied to ration card holders in the first week of every month by ration shopkeeper.

Public Distribution System is one of the widely controversial issues that involve malpractice. The manual intervention in weighing of the materials leads to inaccurate measurements and/or it may happen, the ration shop owner illegally uses consumer materials without prior knowledge of ration card holders.

The proposed system aids to control malpractices which are present in ration shop by replacing manual work with automatic system based on SMART CARD. Every consumer i.e. family head provided SMART CARD which acts as ration card. The SMART CARD has unique identification number. The consumer scans the card on SMART CARD reader which is interfaced with microcontroller kept at ration shop. Once consumer is validated by password, the system asks the consumer to select appropriate material and quantity of material through keypad.

II. LITERATURE SURVEY

Nowadays, most of the people have Ration cards. To buy the materials from the ration shop, one needs to submit ration card to the ration distributor. After verifying the information on the card, the distributor gives the material according to the requirement but as per the allotment given by the government. They will sign on the ration card depending on the goods issued by the consumer with the help of weighing system which is done manually.

III. THE PROPOSED SYSTEM

The consumer scans the card on SMART CARD reader which is interfaced with microcontroller kept at ration shop. Once consumer is validated by password, the system asks the consumer to select appropriate material and quantity of material through keypad. Based on material chosen by consumer, appropriate circuitry will be activated and consumer gets material. The proposed SMART CARD based automatic ration shop system would bring transparency in public distribution system.

The microprocessor is under a gold contact pad on one side of the card. Think of the microprocessor as replacing the usual magnetic stripe on a credit card or debit card or used for the security systems. The

microprocessor on the smart card is there for security. The host computer and card reader actually "talk" to the microprocessor. The microprocessor enforces access to the data on the card. If the host computer read and wrote the smart card's random access memory (RAM).

Programming in VB is a combination of visually arranging components or controls on a form, specifying attributes and actions of those components, and writing additional lines of code for more functionality. Since default attributes and actions are defined for the components, a simple program can be created without the programmer having to write many lines of code.

Microsoft Access stores data in its own format based on the Access Jet Database Engine. It can also import or link directly to data stored in other applications and databases. Access is supported by Visual Basic for Applications, an object-oriented programming language that can reference a variety of objects including DAO (Data Access Objects), ActiveX Data Objects, and many other ActiveX components. The MAX232 is a dual driver/receiver and typically converts the RX, TX, CTS and RTS signals.

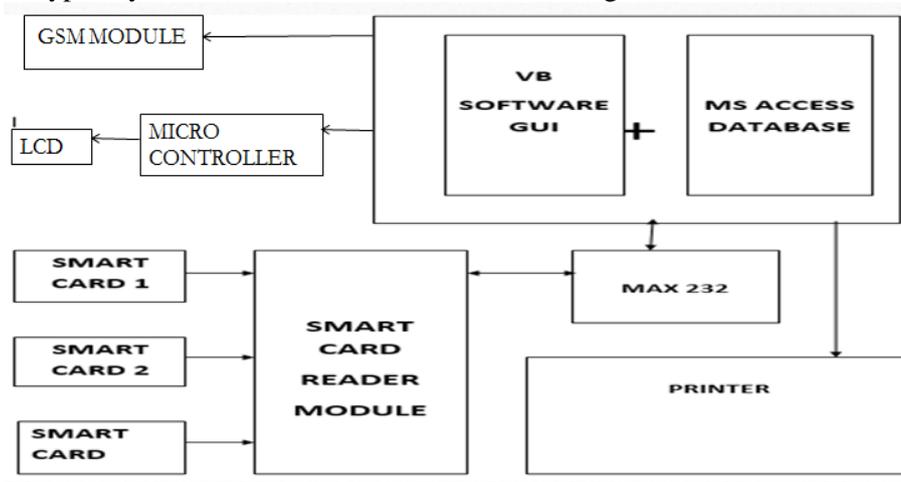


Fig: Smart Card based E-Rationing system

IV. COMPONENT INTEGRATED

1. Microcontroller

A micro controller is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. Program memory in the form of Ferromagnetic RAM, NOR flash or OTP ROM is also often included on chip, as well as a typically small amount of RAM.

Microcontroller used in this project is ATmega328p. The Atmel 8-bit AVR RISC-based microcontroller combines 32 kB ISP flash memory with read-while-write capabilities, 1 kB EEPROM, 2 kB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts. The device achieves throughput approaching 1 MIPS per MHz.

2. LCD

Various display devices such as seven segment display. LCD display can be interfaced with microcontroller to read the output directly. In our project we use a LCD display with 16 characters each. LCD – Liquid Crystal Display displays temperature of measured element, which is calculated by the microcontroller. CMOS technology makes the device ideal for application in hand hold, portable and other battery instruction with low power consumption.

LCD Display used in our project is 16*2 LCD.

3. GSM Module

This is a plug and play GSM Modem with a simple to interface serial interface. Use it to send SMS, make and receive calls, and do other GSM operations by controlling it through simple AT commands from micro controllers and computers. It uses the highly popular SIM300 module for all its operations. It comes with a standard RS232 interface which can be used to easily interface the modem to micro controllers and computers.



4. Smart Card

A smart card resembles a credit card in size and shape, but inside it is completely different. First of all, it has an inside -- a normal credit card is a simple piece of plastic. The inside of a smart card usually contains an embedded microprocessor. The microprocessor is under a gold contact pad on one side of the card. Think of the microprocessor as replacing the usual magnetic stripe on a credit card or debit card or used for the security systems.



Photo courtesy of
MagTek, Inc.



Fig : Smart Card

5. MAX 232

Features of MAX 232:

- MAX232 offers an intermediate link between the Microcontroller and your PC.
- The transmitters of this IC will convert the TTL/CMOS input level into RS232 voltage levels.
- The receiver pins are capable of taking input around -30V to +30V.
- The IC is capable of supplying RS232 standard voltage logic levels by means of a single 5V power supply.
- It is a method (or protocol- an agreed standard) that defines how to transfer data between two devices using a few wires.
- It uses a serial transmission method where bytes of data are output one bit at a time onto a single wire.

V. FLOWCHART OF THE PROPOSED SYSTEM

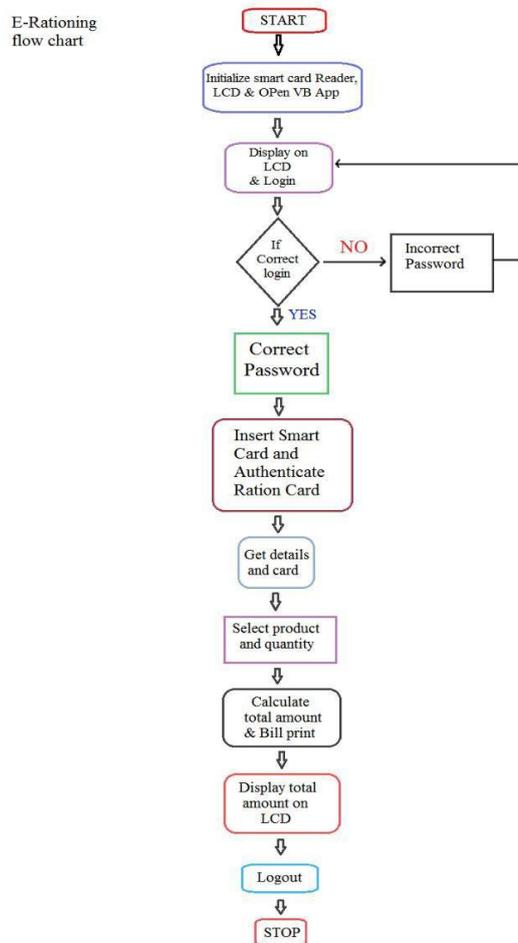


Fig. 4.1 Flowchart of Process

PROCESS OF PROJECT

1. The stock is received by the shop is acknowledged by the subscriber through the GSM module.
2. A sms is sent to every customer in the respective locality
3. The customer's information is stored in the database.
4. The customer is provided with the smart card.
5. The basic information of the customer stored in the database and the smart card is same. The customer inserts the card authentication of the customer is done.
6. If the card is white the customer is not allowed for the ration.
7. If the card is yellow or orange then only the customer is allowed.
8. The values of the products are entered and the total is calculated.
9. Then bill is then printed and provided to the customer with the product.

VI. ADVANTAGES

- The system facilitates proper utilization of rationing material distribution with optimum technological resources.
- This will help in advancement in the field of food distribution which will help in health development campaigns in our country.
- The proposed system reduces the manual work at the ration shop.
- The system reduces the time consumption.

VII. FUTURE SCOPE

The future scope of our project involves the technique mentioned as follows:

1. **Face Recognition:-** In this technique we can use the face of customers to recognize and identify the customer. Database can be used to store the image of the individuals.
2. **Biometrics technology:-** In this technique we can use the finger prints of the customers to recognize the customer .Database can be used to store the fingerprints of the individuals.

VIII. CONCLUSION

The proposed system aids to control malpractices which are present in the ration shop by replacing the manual work with automatic system based on smart card .The main objective of the designed system is the automation of the ration shop to provide transparency to the consumers and the government and maintains the record of the previous transaction of the consumer. Thus, we have developed a regulatory system for the advancement in the field of rationing systems.

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