Automated Ration Distribution Using Embedded System

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***Abstract*- The resources in the world are finite and though the desire for resources is infinite. One of the largest retail systems in the world is India' s public distribution system. The manual work involved and lack of automation, makes this system inefficient. The conventional ration card system is replaced by automatic rationing system. This system uses authenticated finger print detector to provide products to the users. When the input is provided, the products are obtained from automatized ration shop. This system provides products with accurate weight and unnecessary selling of goods can be avoided. The ration shop is connected to government via GSM to prevent irregularities in ration distribution.**

Index Terms- GSM module, fingerprint sensor, microcontroller Arduino Uno, mechanical setup

I. INTRODUCTION

The conventional system has drawbacks-malpractices, low speed, long waiting time & manual theft. We propose a system with embedded technology to distribute the materials. More secure with GSM & cost effective, also we can maintain data properly. One of the largest retail systems in the world is India public distribution system with four lakhs fair price shops. These shops provide sugar, rice, wheat, kerosene etc to the customers at affordable rates. The automatic ration distribution system uses finger print technology to automatize the public distribution system thereby minimizing the corruptions. In this system, the manual work is replaced by automated system. The smart card replaces the ration card by including all user information. This system is much more secured and easy to use. This method can eradicate corruption in public to a great extent.

II. LITERATURE SURVEY

[1] Multi-modality biometric assisted smart card based ration distribution system by yogesh Kumar Sharma,(IJAIEM),vol3,june 2014 .This paper proposes a transparent and highly scalable ration distribution system with biometric authentication with face and fingerprint sensor. Some of advantages are Two step authentication, Highly secure ,Less time consuming etc., [2] fingerprint based automatic ration distribution system by Anjali raj,Ayana asokan International research journal of engineering and technology(IRJET) vol 05,April 2018.This system uses authenticated finger print detector to provide products to the users. When the input is provided, the products are obtained from automatized ration shop. This system provides products with accurate weight and unnecessary selling of goods can be avoided. The ration shop is connected to government via GSM to prevent irregularities in ration distribution. This system eliminates man power thereby increasing efficiency and accuracy of the consumables. [3]Real time automated ration material distribution system by Pranjal Pedwal, (IJCSMC), vol.5, mar 2016.It uses RFID tag-RFID reader that provides information of the consumer - insert the material requirement details in keypad distribution process-automatically. Some of the advantages are it Reduces manpower, Real time application, Cost effective, Maintains data properly etc.

III. REAL TIME APPLICATION

The inputs are given by the consumer and select the products by the consumer itself in the touch screen. From the touch screen inputs are given to the microcontroller unit, which are given to the PLC module and the products are obtained from the automated ration shop. Further to prevent irregularities in distribution of ration, government can supply various products (like rice, wheat, kerosene, sugar etc.) to rationing shops in the form of sack

stored in the container. Central database would be updated immediately after every transaction made by the users. The proposed system aids to control malpractices which are present in ration shop by replacing manual work with automatic system based on Finger print and GSM.

III. OBJECTIVES

To automate the task of distribution of items efficiently and implement a system for social application with

- Transparency
- Accuracy
- Anti-corruption

IV. SYSTEM ARCHITECTURE

A. System Description

An embedded system is a special-purpose computer system designed to perform one or a few dedicated functions, often with real-time computing constraints. It is usually embedded as part of a complete device including hardware and mechanical parts. In contrast, a general-purpose computer, such as a personal computer, can do many different tasks depending on programming.

Serial communication is basically the transmission or reception of data one bit at a time. Today's computers generally address data in bytes or some multiple thereof. A byte contains 8 bits. A bit is basically either a logical 1 or zero. Every character on this page is actually expressed internally as one byte. The serial port is used to convert each byte to a stream of ones and zeroes as well as to convert a stream of ones and zeroes to bytes. The serial port contains a electronic chip called a Universal Asynchronous Receiver/Transmitter (UART) that actually does the conversion.

B. System Block Diagram

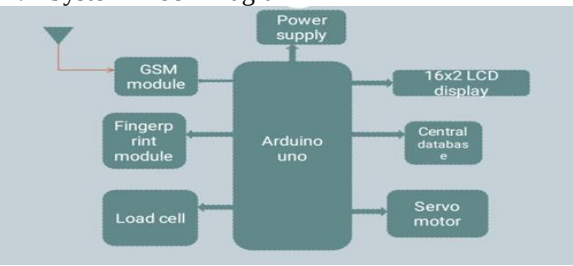

Figure 1 block diagram

C. Circuit Diagram

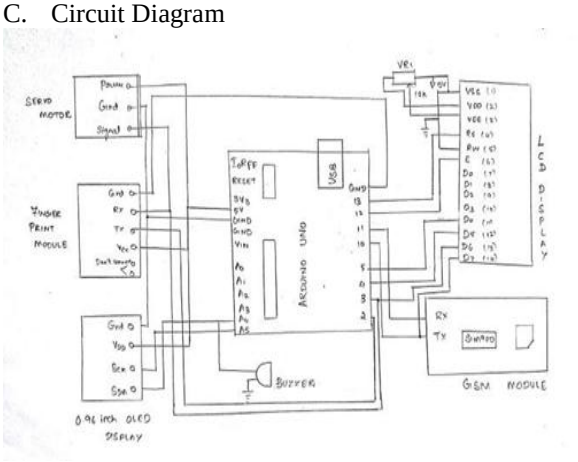

Figure 2 circuit diagram

D. Working

The method of finding match between two human finger prints refers to finger print identification .It involves enrollment, searching and verification. Enrollment captures finger print from sensor. The most commonly used algorithm for finger print recognition is minutiate based algorithm. The power supply unit of the system consists of a step down transformer, rectifier, filter and a regulater. the step down transformer steps down the main voltage into required level. The output of the transformer which is AC is converted into its DC value by a bridge rectifier.

The finger print of users will be scanned and stored in a data base. If a user places his finger in the fingerprint module, it checks the matching with the ones stored in data base.

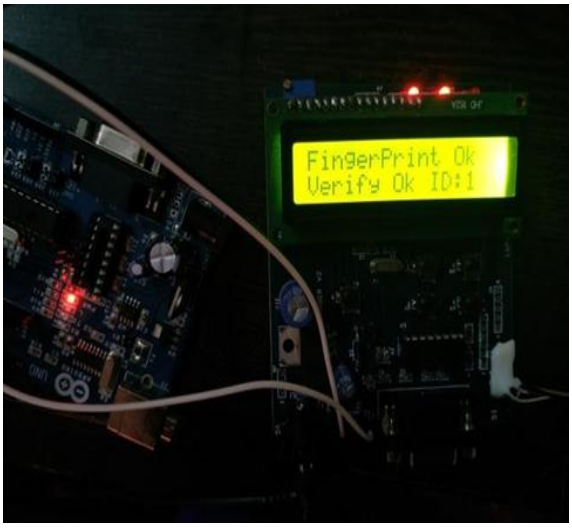

Figure 3 verifying fingerprint

If the fingerprint matches the information about the user will be displayed in lcd.Using five keypad the amount of products required is fed on to the system. Ones the input is fed the valves open to provide the corresponding product. Two separate valves are used one for solid and another one for liquid.

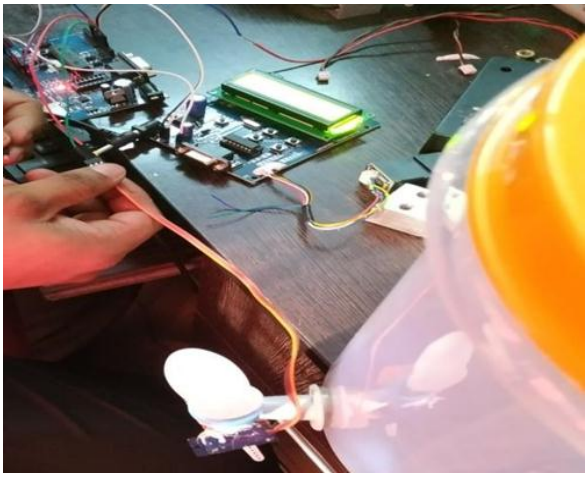

Figure 4 complete setup

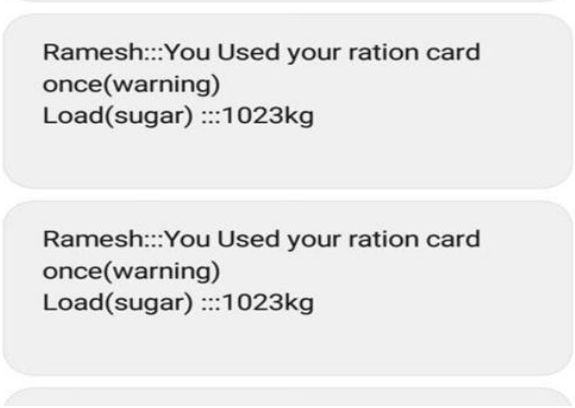

Figure 5 message sent

E. Result

After the fingerprint is detected, the customers detail will be displayed in the monitor. With the help of servo motor ration materials will be distributed to the customer. After the distribution of the material the message will be sent to the customer with the help of GSM Module.

V. ADVANTAGES

- Transparency
- Accuracy
- Cost effective
- Anti-corruption

VI. FUTURE WORK

To further enhance this proposed system, a web interface where consumers can log in and check there past transactions will be developed. For better authentication, biometric accesing such as eye ball movement is used. Also better quality of service is provided with image prosessing.

VII. CONCLUSION

This system can provide a safe, secure and efficient way of public distribution system. In this system the labour dependent work in the ration shop is replaced by the automated embedded system. The government's funding and people's time is saved by this project. The people below the scarcity line are greatly benefited by this system. The database can be maintained for long years easily without any illegal deeds.

Government can have indirect check on the accessibility of the ration to the pensioner. It is transparent and has control over prices of some commodities in the open market. Dealer will not be able to keep duplicate ration cards with them. System helps to modernize traditional rationing system and fight corruption up to a great extent.

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