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Biometric Ration Card Dispensing System

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Abstract*— Ration card is very important for Family identification for family member's details. Ration card is used for the family address proof. In India any documentation process ration card is required like income certificate, domicile certificate, caste certificate etc. Ration card can used to getting the grain and kerosene. Today ration dispensing system is manualbecause it has more corruption and bogus ration dispensing process. This system has less accuracy in distribution process due to human mistakes. Manualration dispensing system has more number of fault that can be eliminate through the Biometric System Technology. In this paper biometric system is used instead of ration card. All the family members details and finger print is save into the data base. To get the material in ration shop that time family member can only scan the finger for authentication process, if authentication process is ok then person can take ration automatically. In this system has human interface not present all the process of grain and kerosene dispensing is automatic.*

Key words: *ARM-7 Microcontroller, Finger print module, Dispensing Unit, PC for data base.*

I.INTRODUCTION

In proposed system we have automated the ration dispensing system. In this one has to scan the thumb first for authentication purpose by means of thumb scanner .The units of grains will automatically attached to it [6].Whenever one go for purchasing the ration one has to show thumb first on the scanner provided, the unit of grains will be displayed automatically of which one can select the things if required otherwise by checking currently available stock the thins will be ready for dispensing automatically. Then one has to pay the cash and proceed for next dispensing unit [3]. These all record about ration shop will send to thegovernment .this system eliminate corruption and eliminate bogus ration card. Government provides the subsidy to economic backward class people. By using this system we can found the exact authorized people, unauthorized people, people who take the ration in this month [1]. We send the amount of used grain in this month and we send the how many users take ration in this month.

II. LITERATURE REVIEW

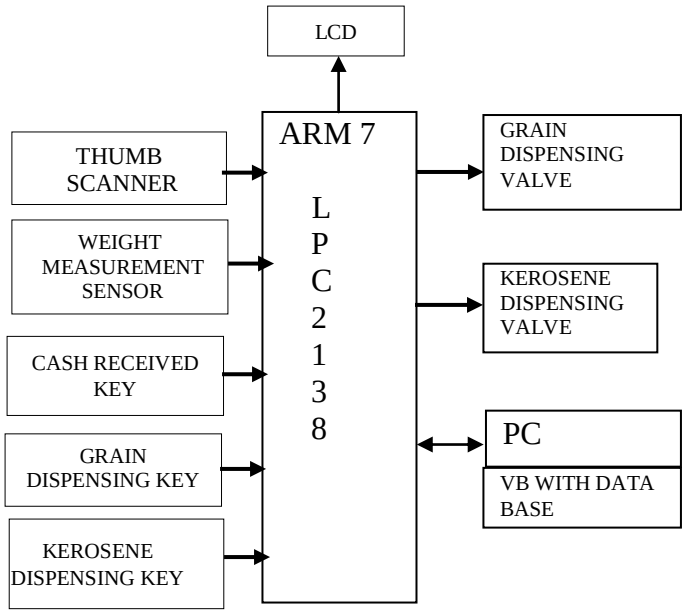
The first and foremost criterion in choosing an ARM is that it must meet task at hand efficiently and cost effectively [3]. In this report, the project is introduced with a system block diagram followed by literature review that investigates the previous work done regarding the project. The methodology covers the technical explanations about the sensor circuits, main board and the significant components of the project. Programming related software, flow chart and source codes are also elaborated for better understanding. The report continues with the results that show the completed circuit boards that able to function as designed[4]. The project achieved its aim and can be implemented in any rationshop, to eliminate corruption and Accurate targeting of state subsidy. [2] K.Gopal 1. On (June 2012) has proposed computerized ration shops equipped with biometric customer card. In this system various sensors are used to measure and dispense commodities.

III. WORKING PRINCIPLE

In this system all process is automatic. The person can go to the ration shop for taking the ration. The person scan finger using the finger print module and that person's finger is compare to the saved database. After authentication process is complete then person pay the cash for the ration, if it is authorized. Person should to pay the cash then it give the grain and kerosene through the valve. If user is unauthorized then the process is failed then that person can't get the ration. In grain dispensing unit there are used load cell for weight measurement and for kerosene dispensing there are calibrated the 1 liter kerosene required the time and through program set the delay. ARM 2138 sends the command to the relay to on & off the process of dispensing.

IV.HARDWARE SYSTEM

PROPOSED SYSTEM:



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1. ARM7-LPC 2138:

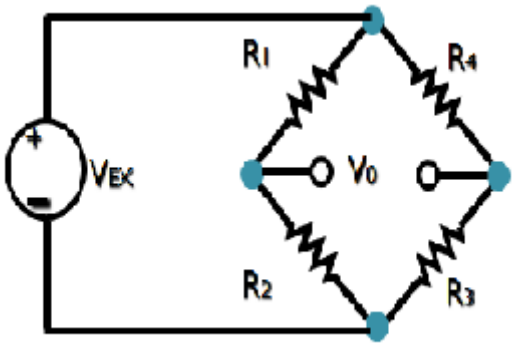
The LPC2138 microcontrollers is the heart of the ration distribution system. The circuit is built around 32 bit ARM7TDMI-S CPU with RISC type controller. It has high code density and supports 16 bit thumb instruction set as well as 32 bit enhanced instruction set. There are low power real-time clock with 32 KHz clock input. There are multiple serial interfaces including two UART, two fast I2C-Bus and SPI .In this controller 512KB flash and 32KB RAM.

2. Fingerprint Sensor with Interface Board Model (1125): [6]

The fingerprint sensor is combination of R305 FP+PIC MCU board that can read different fingerprints and store in its own flash memory. The sensor can perform three functions namely Add (Enroll), Empty Database or Search Database and return the ID of stored fingerprint. Any of three functions can be called simply by making the pin low of the sensor or pressing onboard three switches. The response is either error or ok which is indicated by onboard LED. The response is also returned as single serial data byte. The return byte is a valid ID or error code. The response byte is a single byte at 9600 bps thus making whole sensor very easy to use. We have provided indicating LEDs and function switch already so it's ready to use when you receive it. Just give power and start using the sensor using onboard switches. Then you can move on making external application using these functions.

3. LOAD CELL:

In load cell resistors are acts as active elements. When force applied on the load cell, there is change in resistance value of load cell. To measure this resistance value we use the Wheatstone bridge circuit.



This is the Wheatstone bridge is an electrical circuit which is used in a load cell to measure an overall change in resistance. The formula for measure the resistance is given by,

V0= {[R3/(R3+R4)]-[R2/(R2+R1)]}*Vin.

4. SOLENOID VALVE:

Solenoids are electromagnetic devices which converts electrical energy into mechanical motion.

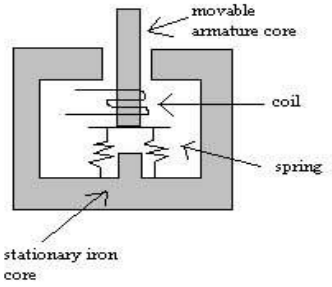


Fig. 1 A solenoid.

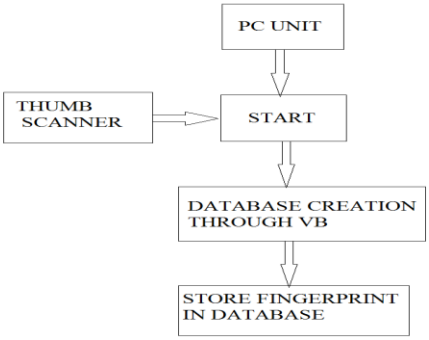
A solenoid usually consists of a coil and a movable iron core called the *armature*. Here's how it works. When current flows through a wire, a magnetic field is set up around the wire. If we make a coil of many turns of wire, this magnetic field becomes many times stronger, flowing around the coil and through its center in a doughnut shape. Like all magnets, the magnetic field of an activated solenoid has positive and negative poles that will attract or repel material sensitive to material. When the coil of the solenoid is energized with current, the core moves to increase the flux linkage by closing the air gap between the cores. The movable core is usually spring-loaded to allow the core to retract when the current is switched off. The force generated is approximately proportional to the square of the current and inversely proportional to the square of the length of the air gap.

5.LCD:

A liquid-crystal display is 16*2 used for display the system information. LCD is used to display the authentication processes is ok or not. If the authentication process is ok, then display the grain dispensing weight and also display the kerosene quantity. All the process of the system can see through the LCD.

V. Software Development

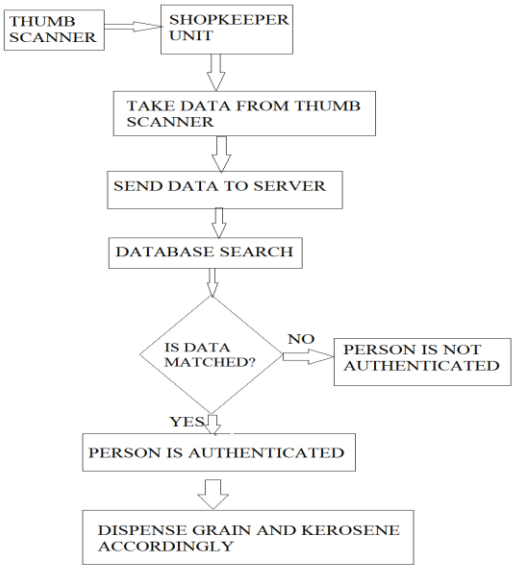
ALGORITHM FOR STORE THE FINGERPRINT:



ALGORITHM FOR STORE THE FINGERPRINT:

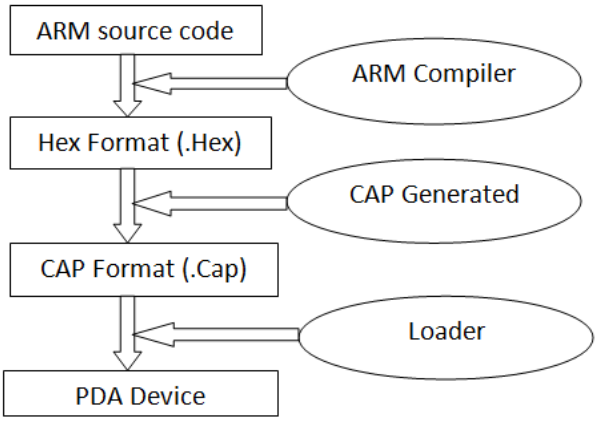
1. Start.
2. Put your thumb on fingerprint module.
3. Creation of database through VB.
4. In database store the fingerprint and information of user like
5.user name, mobile number, addhar card number and allocation quantity of grain and kerosene.
6. End.

FLOWCHART FOR STORE THE FINGERPRINT:



Application Development Flow:

Initially code is written in an embedded C for ARM 7 controller. It is nothing but ARM source code. This source code is compiled using compiler named ARM developer suit V 1.2. Before compiling object files corresponds to each 'C' file get created. These object files must be removed. As an output .Hex file get created. For security purpose, this .Hex file is encrypted using CAP generator. CAP stands for "Certified Application Program." Thus .Hex file get converted into CAP file. This CAPfile is downloaded into device by using the loader. Loader is the software which is used to download application into the device. When an application is downloaded in device, it is unauthorized. To authorize it authentic data can be downloaded in it.



The heading of the acknowledgments section must not be numbered.

VI .CONCLUSION

Using this proposed modern system we can have Better management of the ration distribution system.Government. can have indirect check on the availability of the ration to the beneficiary. It is transparent and has control over prices of some commodities in the open market. Dealer will not be able to keep fake ration cards with them. System helps to modernize traditional rationing and combat corruption up to a great extent.

VII. FUTURE SCOPE

In future we can implement this project by using face and voice identification of user for more security. In future we can use satellite for report to government. Using GSM message alert service is also provided to user.

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