Modern Public Distribution System for Digital India

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Abstract - - *Biometric based public distribution system is novel approach in public distribution system (PDS). The biometric based system we propose in this paper involved an automated system which replaces manual work. Manual work based ration card system leads to various problems like corruption malpractice as it involved manual weighing machines which gives faulty results .For the own benefit, shopkeeper sales fair price grain which is allotted by government for BPL people to outside. All this drawbacks are overcome by using smart ration card system. With the involvement of biometric, the system becomes specific, accurate and in whole it increases the security of the system.*

***Key Words*: GSM, Finger Print Scanner, Raspberry Pi, Atmega 328,**

1. INTRODUCTION

In this paper, we have proposed an Automatic Ration Materials Distribution Based on GSM and BIOMETRICS Technology to avoid the drawbacks. In this system, only authentic person can be recovered ration materials from ration shops based on the amount available in the data base. The traditional PDS is used to distribute grocery items to India's poor people who are valid ration card holders. The validity and the allocation of the ration cards is monitored by the state governments. It contains separate record for each family which includes details like no. of members in family, names of the members, head of the family, permanent address, present living address, and phone number.The main reason for using this Biometric system and making this process computerized is to remove the drawbacks of the present way of issuing products based on ration card. The main drawback in the current system is that the PDS has been criticised for its urban bias and its failure to serve the poorer sections of the population effectively.The targeted PDS is costly and gives rise to much corruption in the process of extricating the poor from those who are less needy. Also many retail shopkeepers have large number of bogus cards to sell food grains in the open market. Many FPS dealers resort to malpractice since they acquire less salary. Most of the times Users do not get their rightful entitlement in terms of quantity.

What's meant for them or the farm produce procured by the FPS's is diverted to the open market. So in order to avoid all these drawbacks we are going to use the Biometric base Smart ration card which will help us to avoid the corruption in PDS if not eradicate it.

2. BLOCK DIAGRAM

Fig 1. Shows the system block diagram based on BIOMETRIC technology. System consists of microcontroller-Atmega-328 , Raspberry pi, GSM, servo motor, solenoid valve, IR sensor, weight sensor, LCD and keypad.
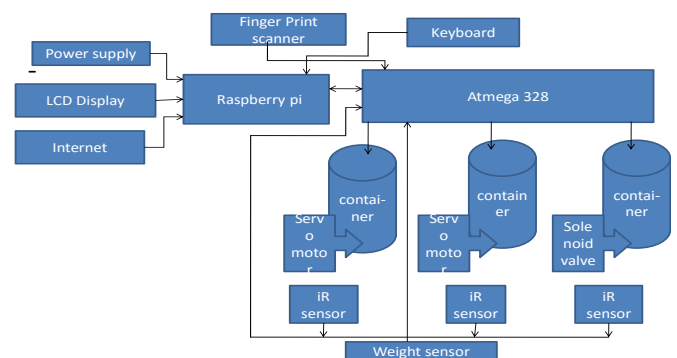
Fig1: Block Diagram of Biometric PDS

The proposed system demonstrates distribution of solid as well as liquid consumer materials that is grains (wheat/rice) and kerosene. , Finger print scanner, keyboard and power supply acts as inputs to system and LCD is used for displaying ration stock and related activities. The microcontroller-Atmega-328 outputs are used to drive motor and solenoid valve.

3. PROCEDURE

The biometric based PDS is installed at the ration shop which interfaces display, mouse, keyboard, raspberry pi, atmega328, IP sensor, servo meter, weight sensor and containers. This system consist of the figure print sensor on which the finger print of the customer is scan if the finger print of the customer doesn't match with the data in the data based it again asked to the customer for his/her finger print is match. Once the figure print is match with the data in the data based it displays the message "ENTER THE GROCERRY ITEMS" once the required grocery is enter it again display the another message as "ENTER THE AMOUNT OF GLOCERRY" once the amount of grocery enter it asked to place the pot and the pot is place then particular rally of the servo motor or solenoid valve get ON ,then it match the weight of the grocery in pot with the entered weight once the enter weight is equal to the weight in the pot the particular relay of either servo motor or solenoid valve get closed . Then it displays the bill on display board and uploads the data base and process gets stop.
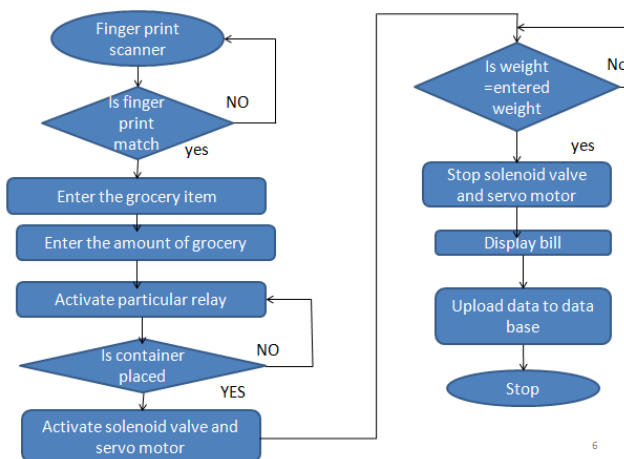

Fig2: Flowchart

2. DATABASE MAINTENANCE

As we have already stated that we will have two databases for two different categories i.e. one for the card holder information and the other one to store the details of the items (products) that are being distributed to the people below poverty line. So every time the distribution has been made there is a necessity of updating and maintaining the database to avoid the miscalculations

4. CUSTOMER DATA BASE

For maintaining this database we have to collect all the related information and have to store it in the database. Every time if there is any change in the details provided by the customer It should be immediately updated in the respective database. When the distribution of the products (items) is made then the credits will be deducted from the customer's account so the dealer should make sure that it is updated in the following database and the credits are deducted from his/her account.

4.HARDWARE DESCRIPTION

AT mega 328 Microcontroller : At mega 328 is a 28 pin IC .It is use for driving the servo motor and the solenoid valve. There are used various application such as automatically controlled products, automobile engine control systems, to control medical devices, remote controls, printer, scanner, office machines, appliances, power tools, toys and other embedded
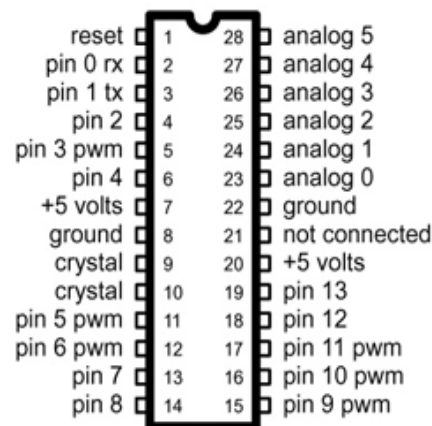

Fig3: Atmega 328

Raspberry Pi: Raspberry pi is the heart of the ration materials distribution system. Raspberry pi is a mini computer which is designed in a single board with the entire essential component required for running and operating system

- 4 USB port
- 40 GPIU pin
- Full HDMI port
- Ethernet port
- Combine 3.5 mm audio jack and composite video
- Camera interface
- Display interface
- Micro sd card slot
- Video core IV 3D graphics core

Fig4 : Raspberry Pi

Finger Print Scanner: Finger print scanner is use to scan the finger print. Finger print scanner having the 250 storage capacity having operating voltage of 3.6 volt ,Current is 90mA.
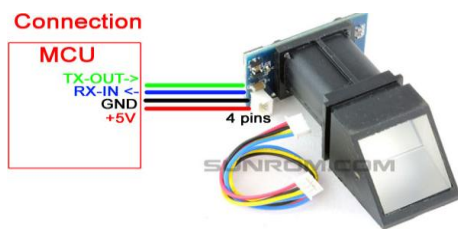

Fig5: Finger Print Scanner

Display: A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. The LCD is used in a wide range of applications including computer monitors, televisions, instrument, aircraft cockpit displays, and signage. The most common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones, and have replaced cathode ray tube (CRT) displays in most applications. The LCD

Fig6 : Display

Solenoid Valve : A solenoid value is an electromechanically operated valve. The valve is controlled by an electric current through a solenoid, in the two-port valve the flow is switched on or off, in the three-port valve, the outflow is switched between the two outlet ports. Multiple solenoid valves can be placed together on a manifold. solenoid valves are the most frequently used control elements in fluidics. Their tasks are to shut off, release, dose, distribute or mix fluids. They are found in many application areas. Solenoids offer fast and safe switching, high reliability, long service life, good medium compatibility of the materials used, low control power and compact design

Fig7: Solenoid Valve

Servo Motor: Servo motor is rotary actuator or linear actuator that allows for precise control of angular or linear position , velocity and acculturation. It consist of a suitable motor coupled to a sensor for position feedback it also required a relatively sophisticated control ,often a dedicated modal design specifically for use with servo motor. Servo motors are not a specific class of motor although the term servo motor is offending user to refer to a motor suitable for use in a close loop control system. Most mobile servomotors are design and supplied dedicated control modal from the same manufacturer. Controller may also be developed around microcontroller in order to reduce cost for large volume application.

Fig8: Servo Motor

IR Sensor: It is non-contact sensor having following characteristics:

- Does not require physical contact
- Requires less maintenance
- Faster operation
- Flexibility in application

IR Sensor work by using a specific light sensor to detect a select light wavelength in the Infra Red spectrum.by LED which produces light at the same wave length as what the sensor is looking for .When an object is close to the sensor, the light from the LED bonuses off the object at in to the light sensor . This result in large jump in the intensity which we already know can be detected using a threshold.

Fig 9: IR Sensor

Power Supply: The power supply is one of the most important factor and part of the circuit as it provides required supply to different block of circuit input 230v AC. The main block include transformer, rectifier circuit, capacitor,resistor and regulated circuit.
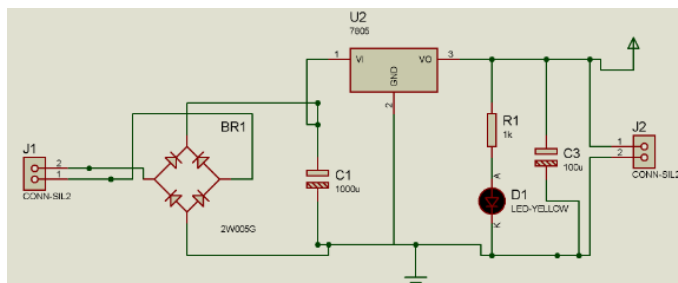

Fig9: Power Supply

5. SOFTWARE DESCRIPTION

 Proteus : It is the best ever simulation software for different arrangement with microcontroller and it is most famous as any. Due to availability of almost all microcontroller in it so it so sophisticated handy thinks to text program and embedded design for electronics hobbyist. We can arrange the program of the microcontroller in the proteus simulation software. After the simulating the circuit in the proteus software we can directly make the PCB design with it, so it should be the complete pack of performance for the learner

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Processing Software: It is the software which is use for communication between   microcontroller, aurdino and raspberry pi
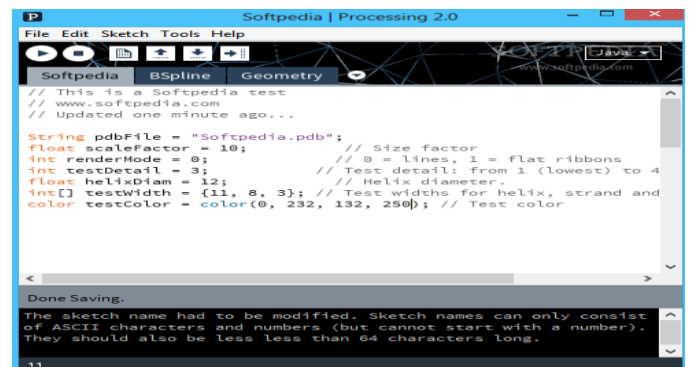
6 . ADVANTAGES

a. The ration items will be effectively delivered to the valid ration card holders who are below poverty line

b. The main advantage here is that the customers get their rightful entitlement in terms of quantity. What's meant for them cannot be diverted to the open market because of maintaining the database correctly and generating bills properly.

c. Ration shops do not open every day. Nor do they keep regular hours. So to avoid discomfort to the customers a system generated message will be delivered to their mobile when the stock is available and the shop is opened so that it does not cause any trouble to the customer

d. The government services are reached to poor people effectively and also the corruption in PDS and FPS can be reduced or avoided to a great extent.

7. CONCLUSIONS

This paper depicts the computerized version of the Public Distribution System (PDS) and its advantages over the present ration cards. Using this technique or method we can reduce the corruption level and can mostly eradicate it from the above mentioned system which will help the country's economy to reach new heights. The Biometric base PDS is simple to implement and requires much less hard work when compared to the other system. So implementing this will be really helpful to the people below poverty line

8. ACKNOWLEDGEMENT

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