Smart Ration Card System

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Abstract- *Today's ration dispention system faces many problems and lots of issues like take illegally and fraud of goods happens in the ration dispention centers in India. These controversies include uneven measurement of the goods, wrong entries in the manual stock register. Other times the actual goods provided by the administration for the dispention does not reach the common people. In our project we have replaced the manual work done in the dispention centers by smart measuring automate d electronic. With the help of Arduino microcontroller which measures the goods accurately and updates it in data base periodically about the availability of goods and information regarding the transactions done in a digitalized manner. Here, to have access to the information and data regarding the stock a main data base is created which can be access by both common customers of that particular locality and by the administration main stream invigilators for dispention centers from their head office. Therefore, this project ensures fraud free ration centers working system which will also enhance the direct communication of the customers with the administration and will defiantly provide clearity.*

Keywords- Arduino Microcontroller, Digitalization, Smart Measuring.

I. INTRODUCTION

This project is to build a smart automated ration dispention system. Which, we believe will suit the Needs and necessity of the future modern world and people. Most of the people using ration shop to buy their Monthly goods from the administration use ration cards. Which, they use as a record to register the amount, Quantity and type of goods purchased by them .Then, they get their items through weighing systems the Whole process involves manual work and requires manpower therefore, found to be time consuming which is an Exhausting process. This usual process that we follow at present has a few drawbacks for example, the constant Issue faced by the common people is about the unavailability of goods which usually happens due to the illegal smuggling of the goods by the ration shop workers and dealers of that particular locality. And, also the in accurate measuring of the goods by the ration shop workers knowingly or unknowingly i.e., human mistakes. In which the items needed by the people does not reach them in a proper way. This proposed project known as Automatic ration machine helps people using ration shops to buy their monthly household items in an Enhanced manner by making the whole process smart, efficient, reliable, easy to use and most importantly Prevents fraud, forgery and smuggling of goods by the dealers and workers of the ration shop.

II. METHODS AND MATERIAL

Objective:

The objective of the project is to automate the task of distribution of items efficiently. The project is aimed to stop corruption and discrepancies created in distribution shops. Here the system must perform the following:

- Validate the ration smart card of the beneficiaries.
- Validate the right beneficiaries.
- Avoiding irregularities in distribution of grains.
- Stock maintenance in the distribution center.

Problem Statement:

In the existing system, tasks like product distribution, Ration Card entry, product weighing and delivery of the product are carried out manually by FPS agent. However a present system has diverse drawbacks involved, developing irregularities in the system. Some of the irregularities include replacing actual products dispensed by the government with meager quality products and supplying the same for the beneficiaries, diverting food grains to open market to make profit, false entries in the stock registers that FPS agent needs to maintain and false announcement of deceit in food grains.

Block Diagram:

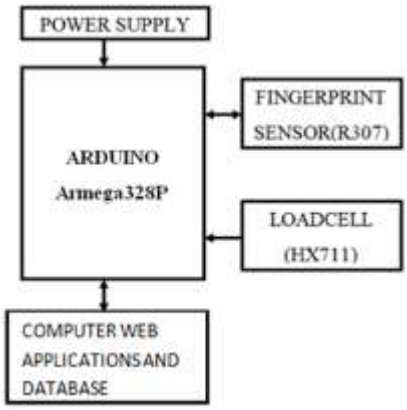

Fig 1. Block Diagram

The proposed system replaces the manual work in FPS. The main objective of the designed system is the automation of FPS to provide transparency. The proposed automatic FPS for public distribution system is based on biometric authentication technology that replaces conventional ration cards. Beneficiary information along with the finger print impression of the head of the family and one of the family members is stored in the centralized database which is only updated or accessed by the government authority.

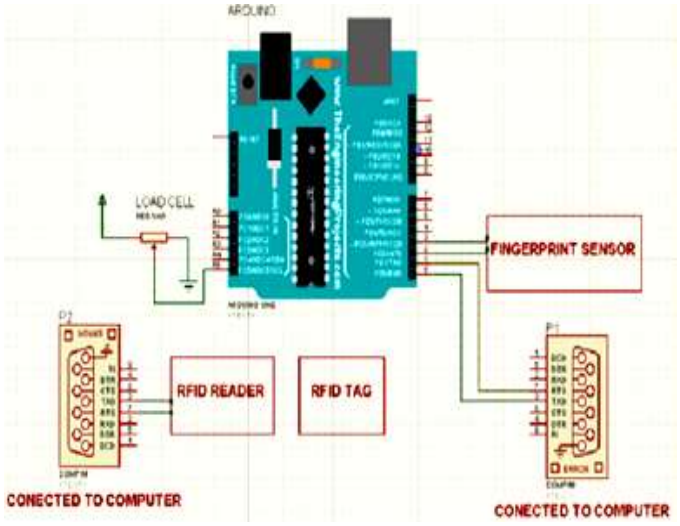

Fig 2. Block Diagram

Beneficiaries have to scan the fingerprint of his/her thumb against biometric, and then an appropriate fingerprint id checks for valid beneficiary information in the database, after successful verification of the beneficiary, information is fetched onto the main interface, and beneficiary needs to enter type of commodity. The quantity of commodity using load cell.

Hardware used:

Ardunio Uno: The ATmega328 provides the following features: 4/8/16/32K bytes of In- System Programmable Flash with Read-While-Write capabilities, 256/512/512/1K bytes EEPROM, 512/1K/1K/2K bytes SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three exible Timer/Counters with compare modes, internal and external interrupts, a serial programmable USART, a byte-oriented 2-wire Serial Interface, an SPI serial port, a 6-channel 10-bit ADC (8 channels in TQFP and QFN/MLF packages), a programmable Watchdog Timer with internal Oscillator, and five software selectable power saving modes.

A sensing system is also made that generates an equivalent voltage corresponding to the amount of water used by the consumer.

Fig 3. Arduino UNO board

The ADC Noise Reduction mode stops the CPU and all I/O modules except asynchronous timer and ADC, to minimize switching noise during ADC conversions. USART, 2- wire Serial Interface, SPI port, and interrupt system to continue functioning. The Power-down mode saves the register contents but freezes the Oscillator, disabling all other chip functions until the next interrupt or hardware reset. In Power-save mode, the asynchronous timer continues to run, allowing the user to maintain a timer base while the rest of the device is sleeping. In Standby mode, the crystal resonator Oscillator is running while the rest of the device is sleeping. This allows very fast start-up combined with low power consumption.

Fingerprint Sensor: Fingerprint scanners are security systems of biometrics. They are used to unlock doors and in other security applications. During the 2010s fingerprint scanners became commonplace on mobile phones. People have a pattern of ridges on their fingers.

Fig 4. Fingerprint Sensor Module

This fingerprint cannot be removed or changed. Every fingerprint is different from any other in the world. Because there are countless combinations, fingerprints are much used for identification.

Load Cell: A load cell is a transducer that is used to create an electrical signal whose magnitude is directly proportional to the force being measured.

Fig 5. Load Cell.

The various load cell types include hydraulic, pneumatic, and strain gauge.

Flowchart:

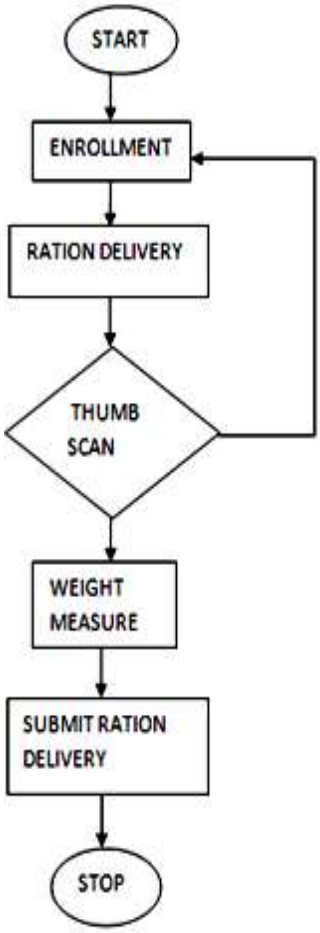

Fig 6. Flow chart.

This is flow chart of ration delivery system process start with thumb scanning if thumb is authorized then with help of load cell weight measure n delivered to right person and data will store on admin panel. If the thumb is unauthorized it will go back to the enrolment process.

III. RESULTS

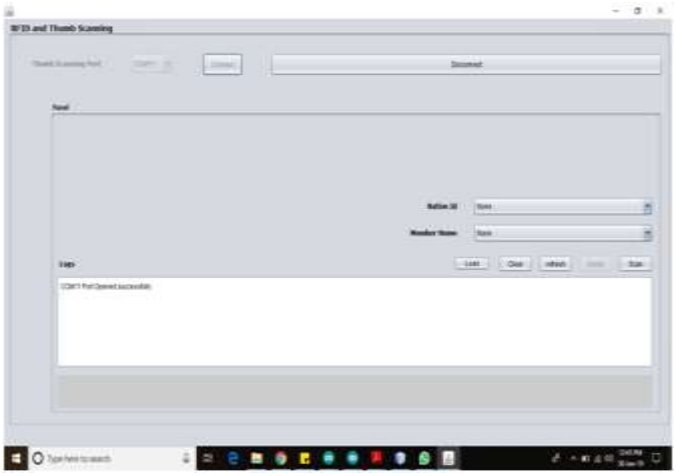

Fig 7. Working GUI of Project.

We have also tested our system. The results of the same are good. On this panel finger print will scan if person is authorized then it will show information which will stored in admin panel. If fingerprint unauthorized then person should enrol his/her details through enrol option. When person wants to measure the quantity of grains, load show the quantity.

FUTURE SCOPE & ADVANTAGES

Future Scope: Project can be further extended by making the payment to the purchased commodities can be done online. Thus it will make system more automatic. Distance of communication between server and client can be increased using internet.

Advantages:

- Simple and efficient.
- Avoid corruption.
- Time saving.
- More Secure

CONCLUSION

Ration forgery is one of the most difficult challenges faced by the food distribution department. There may be chances where ration is delivered to the beneficiaries and false records are noted down, regarding the delivery by commission agent. Therefore, the proposed system is more secure and transparent then the normal existing system. Entry of fallacious data in the ration database can be avoided with the use of smart cards and additional security is provided by the biometric authentication.

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