SMART RATIONING SYSTEM

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ABSTRACT

In developing nations like India, the poor are able to meet their basic necessities through the government subsidies for everyday goods such as rice, wheat, sugar oil, etc.. and these products are distributed through the help of Public Distribution System. The Public Distribution System is one of the most important system implemented and run by the government of India. Even though the system is managed by the government it also has some drawbacks. In the existing system the products are distributed to the card holder manually by the person assigned by the government. This sometimes leads to selling goods in Blackmarket, making of Fake entries in the card holders name and selling it to others illegally by the authority. This also leads to cheating in the quantity of the products distributed. Also the card holder does not get the exact information of the availability of the products properly and so there is lack of transparency in the current system. To get rid of such illegal activities we have proposed a Smart Rationing System in which the products are distributed with the help of a Smart card and a Fingerprint sensor for each card holders without the human intervention. The data of the products brought and the amount of the purchase will be sent to the customer through message to the registered mobile number.

Keywords: Goods, Rationcard, Transparency, Sensor, Distribution.

1.INTRODUCTION :

One of the economic measures adopted by the Indian government is the rationing system. Its main objective is to offer the public food grains (such as sugar, wheat, rice, kerosene, etc.) at reasonable prices. To ensure that everyone has access to food, India has a widespread network of ration shops. The state government keeps an eye on the ration cards' availability and distribution. Each family has a unique record on the ration card, which includes information like the number of family members, their names, the head of the family, their permanent address, their current dwelling address, and phone number databases. The ration card serves as the basis for the public distribution system in India and is used for identity, eligibility, and entitlement. The three categories on ration cards include extreme poverty level. The majority of ration store owners carry bogus ration cards around with them. The shopkeeper could make incorrect entries in the register or sell goods at rates greater than those advised by the government. The shopkeeper receives an extra ration from higher authority as a result of the phoney ration cards, and he sells it on the open market. Consumers might not receive enough food from the. Most of the time, people are unaware that rations are available in ration shops. In this way, corruption in the PDS is a problem we are now dealing with. In order to overcome the shortcomings, we have suggested a Smart Rationing System based on RFID and BIOMETRICS Technology in this study. Based on the quantity listed in the database, only authorized individuals are permitted to retrieve ration materials from ration shops in this system. By automating the public distribution system and using finger print technology, the automatic ration distribution system reduces corruption. With this system, automated systems take the place of manual labour. The smart card, which contains all user information, takes the place of the ration card. This solution is considerably simpler to use and much more secure.

2. LITERATURE SURVEY

Swapnil R.Kurkute et.al[1] presented preliminary research based on RFID cards. RFID cards aren't ration cards; instead, they contain the majority of the account holder's details, including personal data, the type of card and its authenticity, etc. The customer checks their RFID card to determine which grains are theirs.

According to Supriya Lokhande et al. [2], the client must sign up for the application in the built framework using the user name and password that are accessible via the email address. The RFID tag should be validated before an RFID scan at the point where the customer enters the proportion store. For the exact weighing of grain and gas, a burden cell and an IR sensor are utilised separately.

Valarmathy, S., et .al[3] In this article, it was suggested to employ GSM and RFID technology in place of ration cards to provide electronic ration products.The RFID sticker must be inserted into the RFID scanner before the manager may access the goods from the ration stores. The manager then scans the consumer codes and descriptions of the amounts in the wallet.

R. Padmavathi et. al's[4] goal is to use smart cards based on the Aadhar card application to streamlinethe distribution of rations. This solution uses a concept device based on an ATM computer. Customers can get a reliable and immersive ration delivery automation plan using this method. The relevant data, including name, phone

number, address, bank account numbers, biometric data, and demographic data, are contained on the Aadhaar card. The centralised database created by the policy authority houses customer records.

Aitwade, Dinesh, and others [1] RFID and GSM-based "e-Ration System" The "Smart Ration Distribution and Controlling" sophisticated rationing system is suggested in this study. Large amounts of government funds are lost due to corruption in the old ration distribution system. This study implements an e-ration card setup in place of a traditional ration card using a simple PDA device (personal data assistant) with RFID tag. This PDA device is comparable to the ticketing machine used by a bus driver or a bank pigmy operator, and the e-ration card is comparable to a swipe card. The Subscriber must use this card in place of a standard ration card to purchase ration from the retailer.

3.BLOCK DIAGRAM:

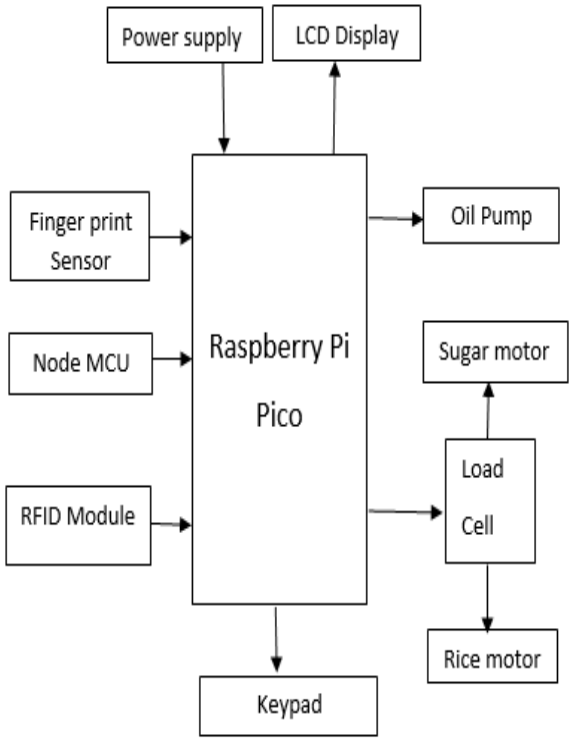
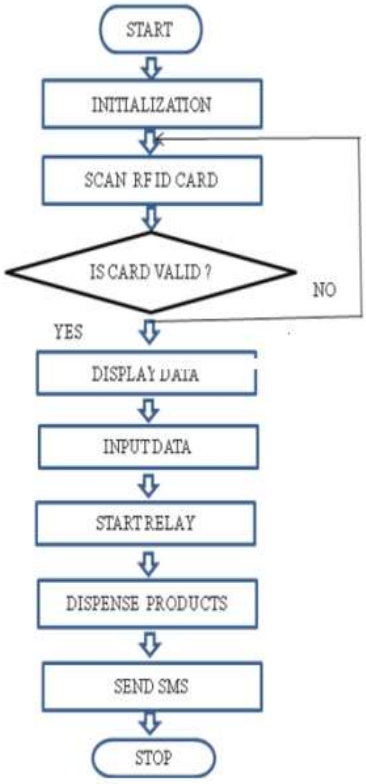


Fig 1: Block Diagram of Smart Rationing System

This Block diagram represents the solution for the implementation of the smart rationing system through which the illegal sales ,selling products in the black market such activities can be prevented.

In this system each and every purchase is sent to the registered mobile number of the card holder with the purchase amount to avoid bogus entries.

4. FLOW CHART



5. MATERIALS and METHODS

5.1 MATERIALS

- Raspberry pi Pico
- Fingerprint sensor
- EM-18 RFID Module
- Node MCU
- Load Cell
- LCD Display

5.1.1 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. The various types of load cells include hydraulic load cells, pneumatic load cells and strain gauge load cells.

5.1.2 RASPBERRY PI PICO

- Raspberry pi Pico is an efficient microcontroller. Microcontrollers are tiny computers with limited
- storage and no external peripherals. A Raspberry Pi Pico, like a Raspberry Pi computer, has GPIO Pins for
- controlling and receiving input from a range of electrical devices.

5.1.3 RFID MODULE

FID Reader is utilized for perusing RFID tag and communicates the data to the microcontroller. A gadget used to speak with RFID Tag. The peruser has at least one receiving wires, which radiates radio waves and get flags

back, from the RFID Tag additionally called Interrogator since it cross examines the RFID Tag.

5.1.4 NODE MCU

The term "Node MCU" refers to the firmware rather than the associated development kits. Both the firmware and prototyping board designs are open source. The firmware uses the Lua scripting language. The firmware is based on the eLua project, and built on the Espress if Non-OS SDK for ESP8266.

5.1.5 FINGERPRINT SENSOR

Fingerprint recognition systems work by examining a finger pressed against a smooth surface. The finger's ridges and valleys are scanned, and a series of distinct points, where ridges and valleys end or meet, are called minutiae. These minutiae are the points the fingerprint recognition system uses for comparison.

5.1.6 LCD DISPLAY

LCD display is used to display the result the kind of disease is affected in plant and the ratio of solenoid valve open and close.

5.2 METHODS

The Node MCU and RFID era, which are primarily the foundation of the smart distribution framework, are used to circulate or distribute the fluid or stable material that is used for ration materials distribution in apportion stores. Instead of percentage cards at first, everyone might receive RFID or brilliant Cards. If the customer wants to purchase any quantity items, they must provide their allocation RFID card to the RFID reader bundle. The reader that is paired with the mission pack will be able to read the RFID numbers shown with the customer's assistance. The microcontroller, which compared the information range and the data set. The regulator can specify the specific RFID scope of the buyer, including buyer information and a breakdown of the materials used.

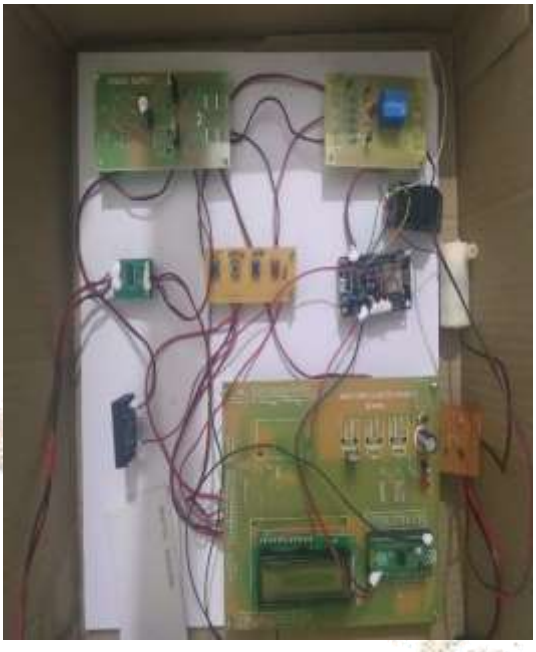
By comparing RFID data with other sources of information, the regulator will be able to gather insights from the technology overall. Once the administration process is in progress, the regulator will make a request to a Node MCU to instruct it to give the customer an SMS with information about the proportion of the item they purchased. Before beginning the approach, the amount of the item to be distributed must be aligned each time, and the best regulator will distribute the appropriate amount of the chosen proportion of object.

6. SOFTWARE REQUIRED

- Arduino IDE

Arduino IDE has many features to compile code, debugging the code, etc.

7.HARDWARE MODEL



8.CONCLUSION:

We can improve the administration of the proportional appropriation framework using the currently presented framework.The government may not have accurate knowledge of the recipient's ability to obtain the allocation. It is simple and has control over how much specific goods cost on the open market.Counterfeit apportionment cards won't be kept by the vendor.Framework aids in generally upgrading battled basement and traditional proportioning.

9. FUTURE SCOPE

1.For better understanding, an interface and website can be made available in different languages (regional languages).
2. For better authentication biometric system can be used
3. App can be developed for the beneficiaries to check the commodities available.
4. Automatic weighing system can be implemented.

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