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# RATION VENDING MACHINE USING RFID

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*Abstract :* Indian government is distributing grains to the poor people at affordable price. The ration distribution system is also referred as public distribution system. The existing system works on manual distribution system, which makes inaccurate measurement in quantity of materials. In this system involves a human errors, corruption and illegal smuggling in commodities. To avoid this problem we are using MASTER KEY method and finger print authentication process. The finger print authentication process involves user One Time Password valid for few minutes. In this paper MASTER KEY method is introduced, the MASTER KEY is mainly to initiate the process. This method also involves tracking and maintains the database. The master key is nothing but user Password which is shared only to government authorized person. The government officer will place the finger on the finger print sensor to scan. The authorized finger print is stored in the database. If finger print matches system will send a user Password to start the dispensing materials. Every family card holders details and with respective finger prints is saved in the database. To get the commodities customer need to scan the finger for verification and security process. In this proposed system human intervention is not present due to automatic system and reduces the corruption using finger print sensor.

*Index Terms* - Vending Machine , LCD , DC MOTOR , Arduino Nano, EM18 etc

***Introduction :*** Public Distribution System Provides Food For The Below Poverty Section At Low Price, Which Is Distributed By The Indian Government. Each Family Is Using This Benefit As Per The Card. Different Food Grains Like Wheat, Rice, Finger Millet And Sugar Is Fixed Quality For Every Month Based On The Total Number Of People In Each Family. The Indian Government Offering Different Facilities For Poor People By Providing Ration. Due To More Corruption In Ration Distribution System Such Facilities Do Not Reach Up To Poor People. Every Family Had Valid Ration Card To Buy The Commodities From The Ration Shops. This Commodities Is Collected At Once In Every Month At Ration Shop. The Commodities Will Distributed By Shopkeeper Through The Weighting System With The Help Of Human Intervention. In Such Cases We Can Noticeable Drawbacks Which People Can Suffers, Firstly The Inaccuracy In Imprecise Weighting Of Commodities Due To Human Errors And Then Secondly, Sometimes Consumer May Miss The Commodities, Such Commodities Will Misuse By The Shopkeeper When There Is No Monitoring Of Such Commodities. Then The Shopkeeper Will Sell The Commodities In The Market And Make A Profit Without Intimation To Government And Consumers. Shopkeeper Acts As Bridge Between Government And Consumer.

## I. COMPONENTS USE IN MAKING MACHINE

1..LCD - (Liquid Crystal Display) screen is an electronic display module and finds a wide range of applications. A 16x2 LCD display is a very basic module that has 2 controllers with 16 Pins which is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi-segment LEDs as they are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations. The status of the system is displayed using LCD.

2.Arduino Nano - Arduino Nano circuit board with Arduino IDE is capable of reading analog or digital input signals from different sensors, activating the motor, turning LED on/off and do many other such activities. The Arduino board also includes Power USB, Power (Barrel Jack), voltage regulator, crystal oscillator, voltage pins (3.3v,5v,gnd,vin), A0 to A5 analog pins, icsp pin, power led indicator, tx and rx leds, 14 digital input/output pins, Aref, and Arduino reset.

3. EM18 - It is an inexpensive solution for this RFID based application. The Reader module comes with an on-chip antenna and can be powered up with a 5V power supply.

There are three types of RFID readers based on their frequency ranges, low frequency, high frequency and ultrahigh frequency.

The Reader module comes with an on-chip antenna and can be powered up with a 5V power supply. Power-up the module and connect the transmit pin of the module to recieve pin of your microcontroller. Show your card within the reading distance and the card number is thrown at the output.

4. DC MOTOR - An electric motor is an electrical machine that converts electrical energy into mechanical energy. Most electric motors operate through the interaction between the motor's magnetic field and electric current in a wire winding to generate force in the form of rotation of a shaft. compression and pumped-storage applications with ratings reaching 100 megawatts. Electric motors are found in industrial fans, blowers and pumps, machine tools, household appliances, power tools and disk drives.

## II. Working Of Ration Wending Machine

## Concpets Of Working -

1. Every consumer is provided with a RFID card which is registered and linked to the PDS and Government database.

2. At the time of ration distribution at ration shop, either consumer scans the RFID card or enters the 12-digit AADHAR NUMBER.

3. User is prompted to enter the unique 4-digit {IN for validation which is sent via SMS on the registered mobile number updated in the Aadhaar Card / RFID reader.

4. OTP is verified. Password of consumer is verified with the database provided by the Government authority which is stored in the microcontroller.

5. Once verification is successful, User ID is displayed on LCD, consumer is asked to select the material required (1. Grains 2. Edible Oil 3. Kerosene) through keypad.

6. Based on type of product chosen, the consumer is asked for the amount or quantity to be entered through keyboard.

7. Meanwhile, Database is updated with the current transaction. If the asked quantity is not within Allowable Amount, Transaction fails.

8. Otherwise, the Solenoid valve and level sensor is activated for Kerosene and whereas the Solenoid valve and load cell is activated for Grains, Sugar and edible oil pouches.

### ALGORITHM

STEP1: START
STEP2: Read consumer ID
STEP3: Validate consumer ID. If true go to step6 otherwise go to next step
STEP4: Print “Invalid Entry”
STEP5: Go to step2
STEP6: Read commodities list & quantities
STEP7: Differentiate the commodities list(Grains, Oil, Packet, Etc.)
STEP8: Read conformation signal (ready for receiving commodity) & Read the limiter counter from consumer
STEP9: Check both conformation signal; if true then go to next step otherwise go to step12
STEP10: Open the tap(Set delay)
STEP11: Go to step8
STEP12: Close the tap
STEP13: Print receipt
STEP14: Send data to corresponding registered mobile number
STEP15: STOP

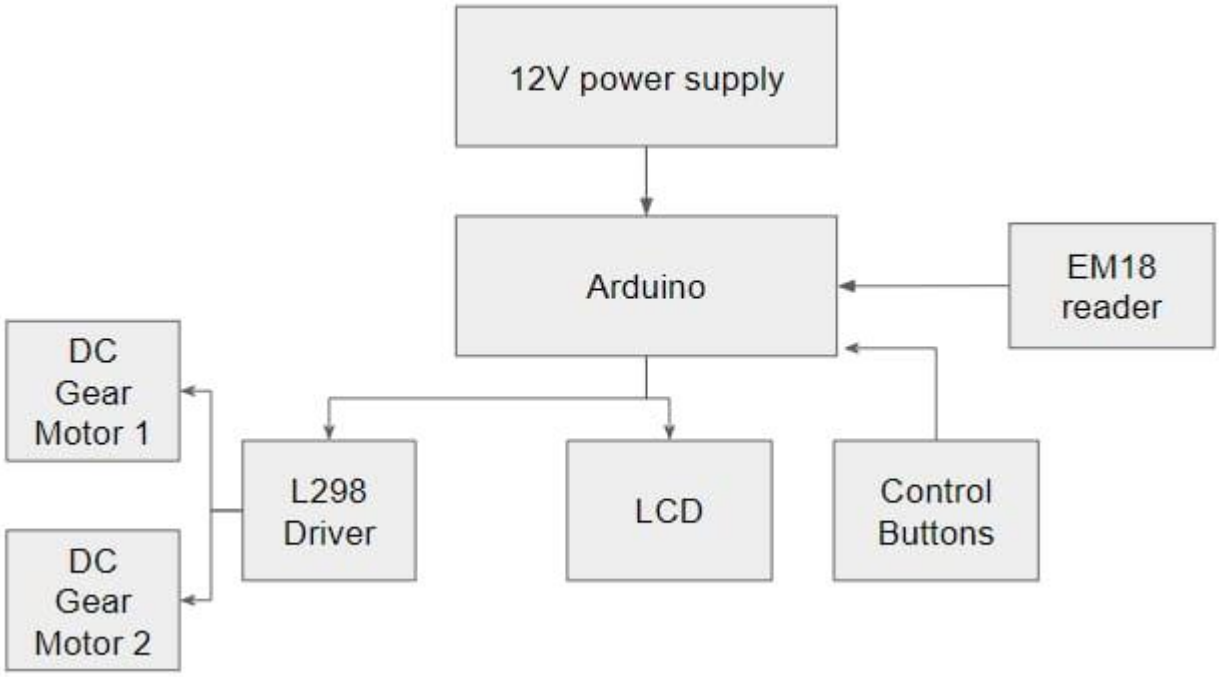


**Fig No.1 Block Diagram Of Machine**

**III.ADVANTAGES**

- Useful in providing transparency to both government and customer.
- Reduce paper work Of Billing
- User friendly.
- Small business idea
- Reduce corruption.
- Access to authorized person only
- Active contribution step towards Digital India.
- Way To Support New India.

**IV.APPLICATIONS**

- It is concerned on automation of process involved in ration shops which are the part of public distribution sectors (PDS).
- It can be implemented in all the ration shops to help people not be cheated.
- This new technology gives solution and this research work will make a great change in PDS.
- Provides benefit to the government by sending current stock information

**V. Results**

Through this Project is introduced a technology which helps to remove the wrongs of the existing system and also has its own advantages which are useful for other applications. It acts as an anti-corruption tool as it reduces corruption to a great extent, which was one of the primary reasons researchers thought of while coming up with this idea. This project focuses majorly on increasing convenience for and benefitting a large number of people of the society, especially the financially weaker sections of it. A pre-fixed quantity of rice & water is dispensed and this removes any chance of cheating by shop vendor and will benefit the government in many ways. A database of who has withdrawn may also be maintained using this technology.

**VI. Conclusions**

In this project, we have tested an Automatic Ration Materials Distribution Prototype based on RFID technology in place of paper-based ration cards. The existing system has two major drawbacks, first one is weight of the material may be inexact due to human error and secondly, if not buy the materials at end of the month, they will sale to others without any hint to the government and customers. These drawbacks can be rectified by this method. Using this proposed system,

we can improve the working of the ration distribution system. Government can have indirect check on the availability of the ration to the beneficiaries. It is transparent and has control over prices of some commodities in the open market. System helps to modernize traditional rationing system and fight corruption up to a great extent.

This project focuses on design and implementation of the fair price shop automated vending machine design using RFID technology, and removes major drawbacks of conventional ration system namely, the in-appropriate quantity of products and making of fake entries, material hijacking, card piracy, black market and human errors. This project is low cost, low power consumption and more accurate suited for real time implementation.

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