International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 05 | May-2018 www.irjet.net p-ISSN: 2395-0072

RFID - BASED AUTOMATIC RATION VENDING MACHINE TO AVOID CORRUPTION AND MALPRACTICES AT RATION SHOPS

ABHIRUP KAR

DEPARTMENT OF ELECTRONICS AND COMMUNICATION, SRM INSTITUTE OF SCIENCE & TECHNOLOGY

ABSTRACT: *Our project focuses on implementation of automatic distribution system in a ration shop. Civil Supplies Corporation is the major public sector which manages and distributes the essential commodities to all the citizens. In that system various products like Rice, sugar and Water are distributed using conventional ration shop system.*

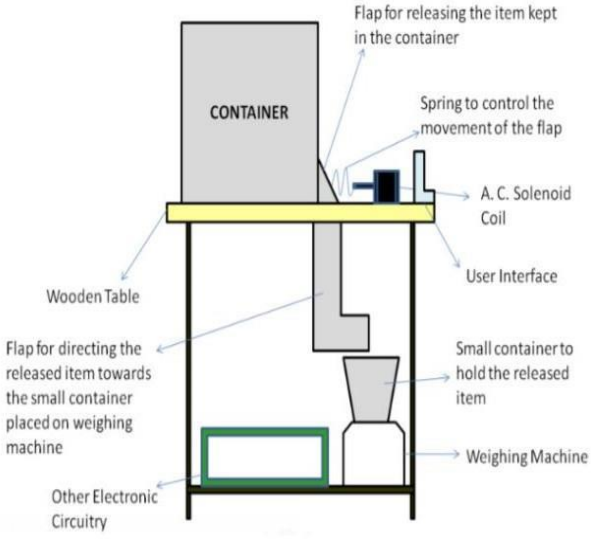
There is a chance for the illegal usage of products in the conventional ration system; the materials may be robbed by making wrong entries in the register without the knowledge of the ration card holder. Due to that large amount of money given by government gets wasted.

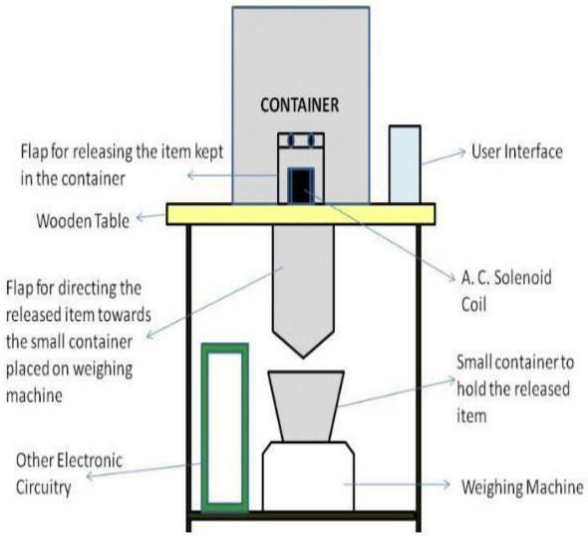
To overcome these problems we go for the automation of the ration shops using Embedded C. In our project we designed the hardware for two commodities namely Rice and Water. These two commodities are stored in reservoir tanks and they are measured and supplied to the user as and when required. Motorized gate valves are used for the delivery operations. It consists of a reader component and two reader tags (for rice and water) and when the reader tag is placed on the reader component, the motorized gates will be opened or closed.

INTRODUCTION :

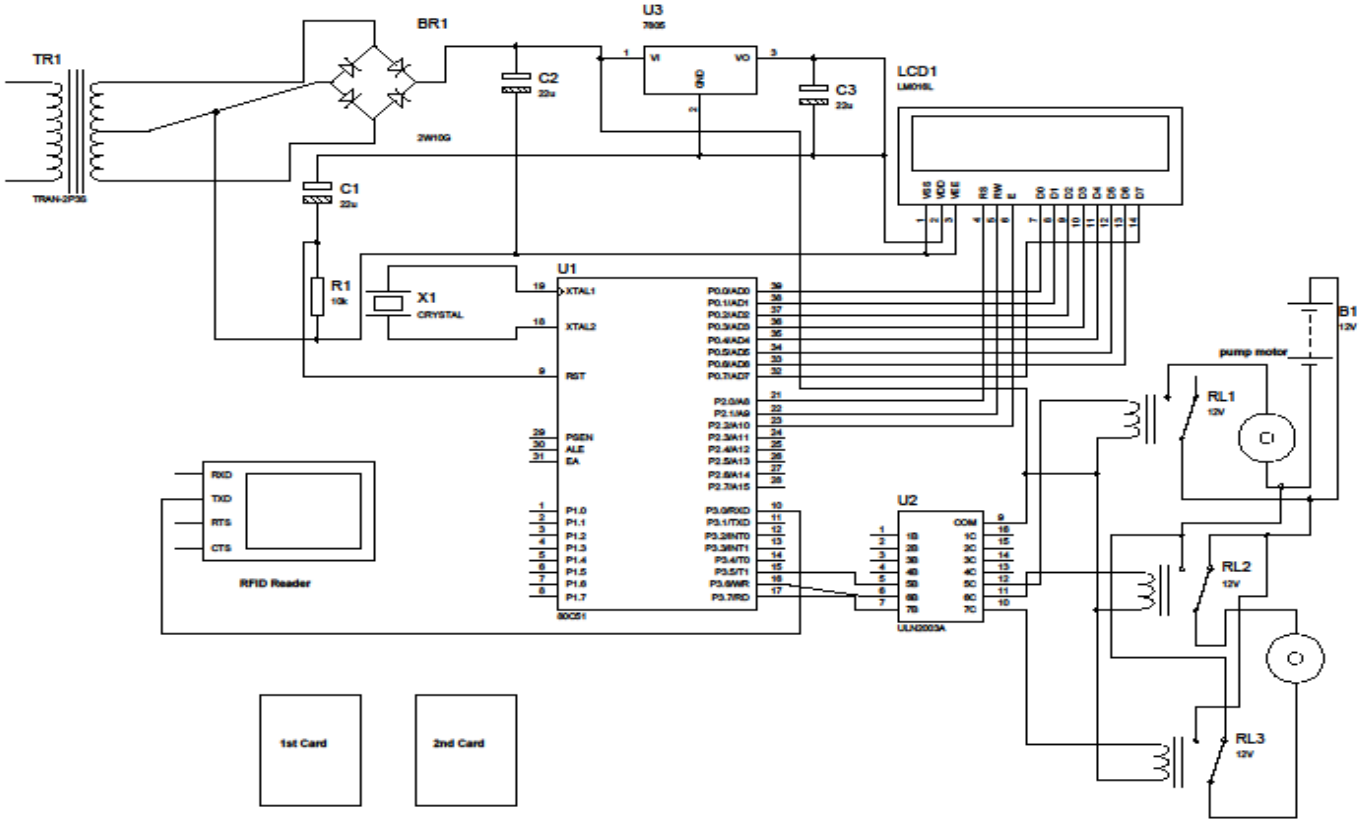
According to The World Bank, in 2015, 12.4% of the total Indian population, or about 172 million people were poor, taking the poverty line as $1.90. As a result, the government is forced to provide subsidized ration to a large number of people through Public Distribution System (PDS).This system has been around for more than 7 decades now and it's still manual labor- based. This leads to different types of malpractices in ration shops and many other errors and corrupt practices too. Anything which reduces human effort is a machine and, on the same lines we propose an automated ration vending machine.

The proposed system here reduces malpractices at ration shop, eases data maintenance, reduces paper work, saves time and is a cost-effective approach. 'AUTOMATION' is key for smooth running today. Many attempts have been made by researchers to get this to be effective. But due to various flaws, they have been considered impractical .At the end of the day, stock availability of each fair price shop can be collected & theft of the materials therefore can be averted.

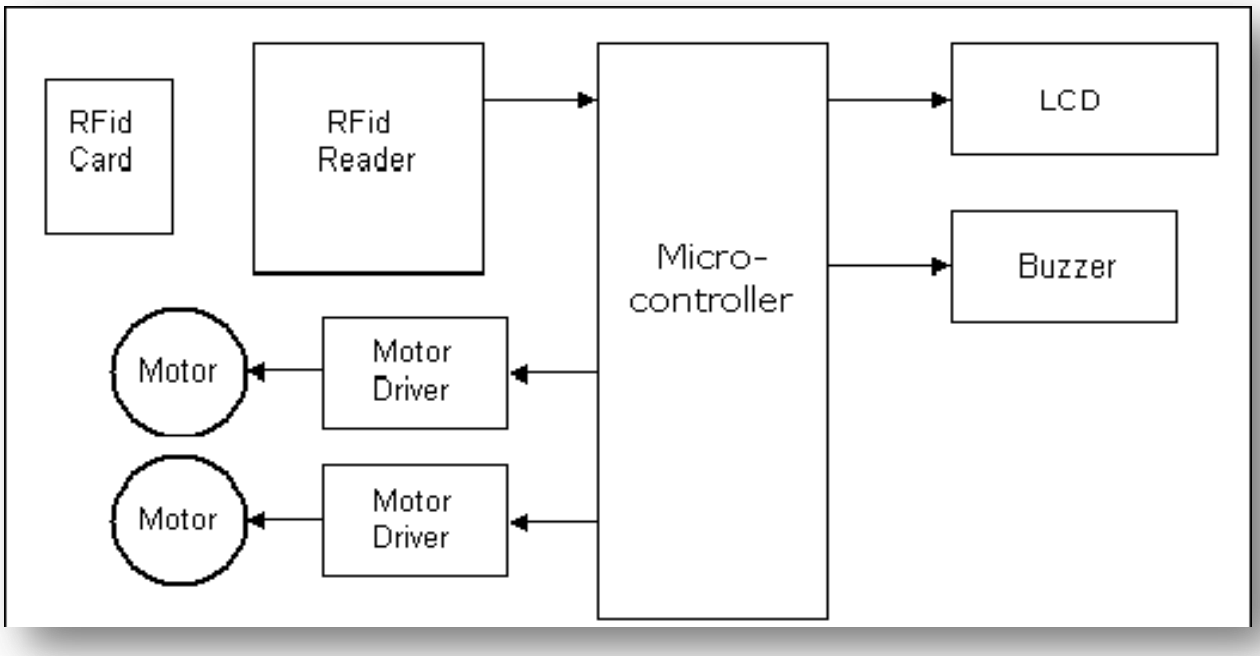




CIRCUIT DIAGRAM:



BLOCK DIAGRAM:



Working of Ration Vending Machine:

- The transformer TR1 which we are using for the purpose of the power supply is connected to the bridge rectifier BR1 it is been used to rectify the supply, the BR1 is connected to the PIN 9 of the motor driver IC (L293D).
- The voltage regulator U2 is being used for regulating the voltage, the input pin is being connected to the BR1, the output pin is connected to the PIN2 of the LCD and the GND pin is connected to the ground.
- The LCD screen is used for displaying the text, the PIN 7-14 is connected to the PIN 39-32 of the microcontroller and the PIN 4-6 is connected to the PIN 21-23 of the microcontroller.
- The PIN 1&3 of the LCD is connected to the power supplier TR1, PIN 2 is connected to the VO of the voltage regulator.
- The crystal oscillator X1 is used for controlling the timing of the opening and closing of the valve, it is connected to the PIN 19 & 18 of the microcontroller.
- The card reader module (RFID Reader) is used for reading the two tags, one for rice and one for the water.
- The transmitting PIN of the reader module is connected to the PIN 10 of the microcontroller.
- The L293D driver motor IC is used for driving the motor, which is controlling the opening and closing of the valve in the rice tank .The PIN 5-7 of the L293D is connected to the PIN 15-17 of the microcontroller.
- PIN 12, 11 and 10 of the motor driver IC is connected to the Relay 1(RL1), RL2 and RL3 respectively.
- The Relay 2 and 3 is used for controlling the opening and closing of the valve of the Rice tank.
- Relay 1 is used for the controlling the pump motor in the water tank.
- The relays are being powered by the 12V battery.

RESULTS & DISCUSSION :

Through this Project, our group have made a purpose to introduce 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 we thought of while coming up with this idea.

Our 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.

Approximately 330 ml of water and 25 grams of rice is dispensed using this prototype of ours.

CONCLUSION:

- 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.

- Some of the limitations of conventional ration shop system are due to the manual measurements. The user can not able to get the accurate quantity of material and the dealer may sale ration at higher rates than recommended by the government or he may make wrong entries in register,etc. Through our project we overcome these problems. This

method can provide safe, secure and efficient way of public distribution system. Using this modern system we can have Better management of the ration distribution.

- In this project, we have implemented and tested an Automatic Ration Materials Distribution Based on RFID technology in place of ration cards. But in the existing system having 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. The above drawbacks rectified by this method. Using this proposed system we can improve the working of the ration distribution system. Govt. 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. Dealer will not be able to keep duplicate ration cards with them. System helps to modernize traditional rationing system and fight corruption up to a great extent.

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