# AUTOMATIC RATION SYSTEM USING RFID

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## ABSTRACT:

Ration cards are very significant for every home and are used in a variety of disciplines. They serve as proof of family member information, assist in obtaining a gas connection, and can be used as proof of address for a number of other purposes. People with ration cards can purchase specific foods from the ration shops, including rice, wheat, coconut oil, and other items. The current ration system has two flaws: first, the weight of the material may be off due to human error, and second, if the material isn't purchased until the end of the month, the ration shopkeepers would sell it to others at a higher price without the customers' or the government's knowledge. In this project, we have proposed an Automatic Ration Material Distribution System based on Radio Frequency Identification (RFID) technology instead of traditional ration cards to get ration materials.

**KEYWORDS-** RFID, SOLENOID VALVE, ARDUINO UNO, RELAY, DC MOTOR.

## 1.INTRODUCTION:

Ration card is one of the most important files for every citizen of India. It is used to buy various commodities like rice, sugar, oil, wheat, etc. at a cheaper price in grocery stores that are displayed through the Government of India. This card works as both proof of identity and address. Gift card issuing systems have many risks such as: B. Incorrect quantity of goods, manual work, slow processing speed, long preparation time and useless proofs. As India is the second largest country in the world, food distribution is not an easy task. One of the most important government sectors of India is the ration distribution apparatus. It controls and distributes essential goods to all residents of India, especially to people below the poverty line and certain reserved categories such as the military and the police. Food items can be given based on their ration card type like Antyodaya Anna Yojana. Our proposed device eliminates the risks of current structures by using RFID. RFID uses the EM field to locate and identify objects. Authentication is done by PIN or password. All information of the beneficiary and their circle of relatives can be uploaded to the RFID tag. This card can be issued to any registered consumer to be used as a smart ration card. Each ration distribution store may have an RFID reader that can scan the 12-bit hexadecimal code generated by the RFID tag. Any user who needs a part must swipe their card through the scanner. Whenever a beneficiary presents the card, the database is checked to see if the beneficiary is legitimate.

When the legitimate beneficiary flashes his card through the RFID scanner, the amount of the part he received on the way can be displayed on the LCD, as well as the device received.

## 2.PROBLEM STATEMENT:

The project's objectives are to increase consumer openness and lessen corruption. The current state of corruption in the government includes things like black marketing and ration fraud. The main disadvantage is that there is no transparency regarding the distribution of ration materials, and the weight of the items may be wrong as a result of human error. With the help of the suggested approach, corruption is reduced and goods are delivered precisely to those in need. After dispensing materials, commodities will periodically update in the government portal.

## 3.PREVIOUS RESEARCH AND PROPOSED SYSTEM:

**A.** An overview on some previous rationing system.

Government presents diverse centres to bad and human beings beneath poverty line, however such centres can't be reached to human beings because of corruption gift with inside the chain. One of such facilities supplied through authorities is rationing material distribution. The human being folks that having a ration card they are successful to shop for the diverse rationing substances like (sugar, rice, oil, kerosene, etc.) from the ration shops. These substances ought to be taken from the shopkeeper at one time. If it's far not taken through any cardholder then there may be no tracking of such unused material. So the shopkeepers are doing leave out use of this stuff through promoting with inside the marketplace and doing the fraud. So a principal tracking device is needed that's to be linked with authorities offices, shopkeeper and the ration cardholder. In this challenge, we proposed one such device that's advanced through the use of RFID. Which will take care of all the sports associated to heading off unlawful paintings made through legal human beings and assist to conquer the issues in this problem area.

**B.** Proposed System:

The proposed system is Automatic Ration System Using RFID. We are going to do this project to help people from getting the correct quantity of products from the ration shop. People will get the correct amount of product they needed from the ration shop. We can control the theft of products from the ration shop by the suppliers with the help of this project. They can collect the product from the vending machine directly by keeping the bag under the vending machine.

The RFID is the first step of this system. RFID acts as ration card. RFID card number is stored in data base. RFID scanner identifies the card holder name and ration detail of card. We are here using IR sensor to detect whether we have placed the container/bag to collect the products from the vending machine. If the IR sensor doesn't sense the container/bag it will give information like "PLATE IS NOT DETECTED" in the LCD

screen. After the IR sensor detecting the container/bag we can collect the products from the vending machine.

## 4.OBJECTIVES:

The project's goal is to effectively automate the process of item distribution. The project aims to halt fraud and inconsistencies produced in distribution stores. Here, the system needs to accomplish the following.

- Verify the beneficiaries ration smart cards.
- Verify the appropriate beneficiaries.
- Preventing inconsistencies in grain distribution.

## 5.BLOCK DIAGRAM:
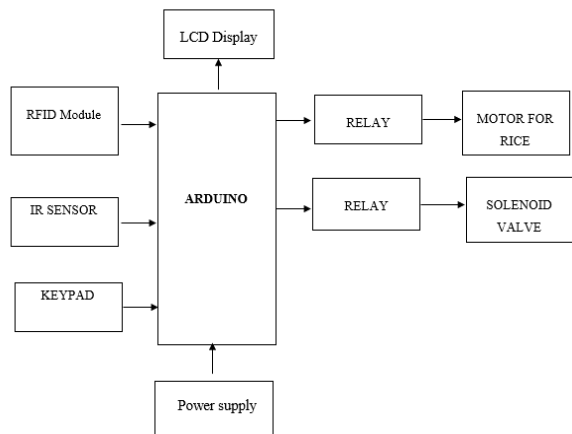


## 6.COMPONENTS USED:

### Hardware requirements:

- ❖ ARDUINO UNO with power supply Unit
- ❖ RFID MODULE
- ❖ IR SENSOR
- ❖ LCD
- ❖ DC Motor
- ❖ Relay
- ❖ Solenoid Value

### Software requirements:

- ❖ ARDUINO IDE
- ❖ Embedded C

### ❖ ARDUINO UNO:

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. Message can be sent to the board what to do by sending a set of instructions to the microcontroller on the board. To do so the Arduino programming language and the Arduino Software (IDE) are used. **ATMEGA328P** is high performance, low power

controller from Microchip. ATMEGA328P is an 8-bit microcontroller based on AVR RISC architecture. It is the most popular of all AVR controllers as it is used in ARDUINO boards.
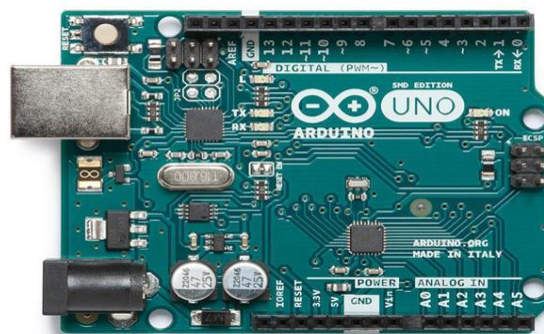


### ❖ RFID MODULE:

The RFID is the first step of this system. RFID acts as ration card. RFID card number is stored in data base. RFID scanner identifies the card holder name and ration detail of card.



An RFID or radio frequency identification system consists of two main components, a tag attached to the object to be identified, and a reader that reads the tag. A reader consists of a radio frequency module and an antenna that generates a high frequency electromagnetic field.

### ❖ LCD:

This project uses a 16x2 LCD screen. The Liquid Crystal Display (LCD) is a very simple display module that is electronic. It has a wide range of programs in the field of electronics. In this project, is used to display the welcome message, details about the user, the weight of units, the amount of liquid and the amount of credit on the card.

this sensor, the photodiode serves as the detector while the IR LED acts as the emitter.

❖ **RELAY:**
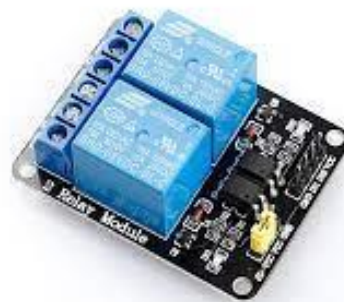
The relay is the device that open or closes the contacts to cause the operation of the other electric control. It detects the undesirable condition with an assigned area and gives the commands to the circuit breaker to disconnect the affected area through ON or OFF.

❖ **SOLENOID VALVE:**

Solenoid valves are the most common controls in hydraulics. Their functions are to cover, release, dose, dispense or mix liquids. They can be found in many fields of application. Magnets offer quick and safe replacement, high reliability, long service life, good material compatibility, low control power and compact design.

❖ **DC MOTOR:**

A DC motor is a rotating electric motor that helps to convert electrical energy into mechanical energy. A DC motor rotates through a motor driver. This DC motor is placed in a container. A DC motor opens the box and closes the wall box. Here we programmed the DC motor to spin precisely and precisely.
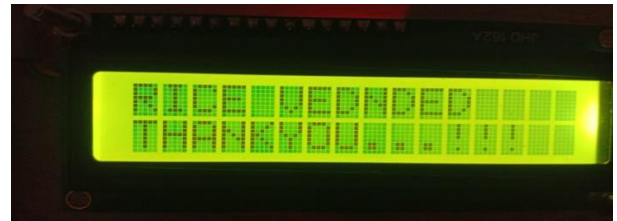
❖ **IR SENSOR:**

The IR sensor, also known as an infrared sensor, is a type of electrical component used to detect particular features in its environment by producing or detecting IR radiation. These sensors can also be used to track or measure a target's motion and heat. The IR sensor circuit is an extremely important module in many electrical gadgets. This type of obstacle detection sensor is comparable to the human visual senses. In

**7.FLOW CHART:**
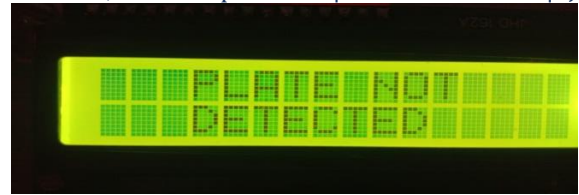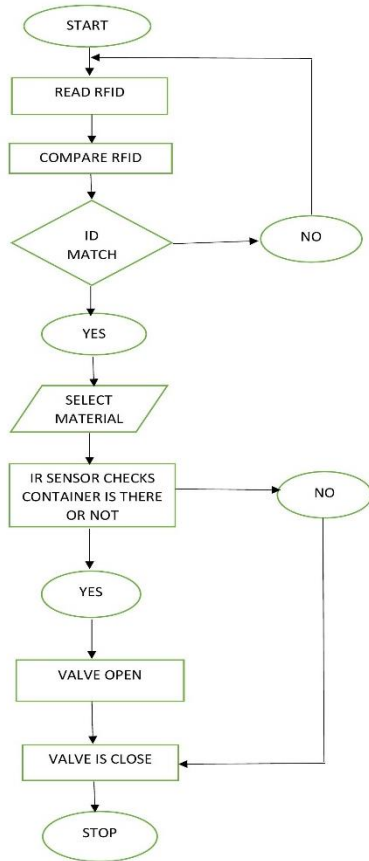




If the IR sensor detected the container/bag then trhe Rice starts falling from the vending machine.



Like the same if we select the Oil in the keypad. The IR sensor first detects whether the container is placed or not. If it detects the container then the oil pours oud from the solenoid valve that is present in the vending machine.

At last after collecting the products it shows THANK YOU in the LCD screen.
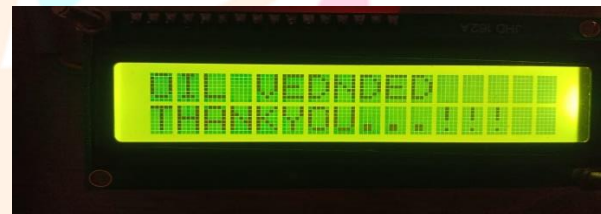


**8.RESULT:**

At first we have to tap the RFID tag on the RFID reader.After reading it shows as WELCOME with the costumers name in the LCD screen.
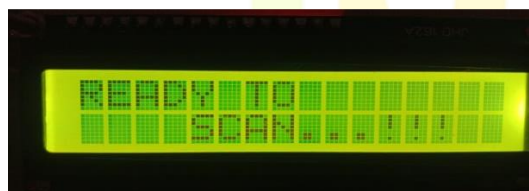




And then we have to select whether we want rice or oil on the keypad by clicking on the button.



If we selected Rice the process starts and then the IR sensors detects whether we have placed the bag or container to collect the rice.

Our Final Product:



**9.CONCLUSION:**

This device eliminates the main drawbacks of the conventional rationing system, including inadequate product amounts, the development of fictitious entries, material hijacking, card piracy, the black market, and human errors. This project is more suitable for real-time execution and is inexpensive and energy-efficient. This product is required to solve all the issues, so we can distribute it around the country with help from the government.

## 10.FUTURE SCOPE:

- Online payments may be made using a pre-charged card or an automated withdrawal from the customer's bank account.
- Delivering goods to the fair shops can be done while tracking a material using GPS technology.
- The automated system is expanded to include other components of public distribution systems.
- Before visiting a ration shop, rations can be reserved online, and each customer will receive a time slot and OTP.
- Consumers have access to information regarding rationing supplies.
- The dispensing of materials and all related data can be pushed to the cloud, and all records can be kept.

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