



# AUTOMATED RATION DISTRIBUTION USING RFID

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**Abstract:** Ration Distribution System means allocation of essential goods to a large number of people. It's done by the government. Public Distribution System is one of the extensively controversial issues that involves high situations of corruption like inaccurate dimension of commodities, large waiting time, and material theft in ration stores. Hence, an effective, accurate and automated approach of ration distribution (innovative path in PDS) grounded on RFID technology is made. In this scheme, the proposed system replaces the man-made work in the public distribution System. The main ideal of the designed system is the automation of ration stores to give transparency by using RFID technology. This automated ration system replaces the standard ration card system by RFID tag, the government authority provides the customers database stored in microcontrollers. The client needs to scan the tag to the RFID anthology, and also the microcontroller checks the client's details with a stored database to apportion the material in the ration store. After successful authorization, the consumer needs to access the type of material as well as the amount of the material using the keypad. Therefore, our proposed system is veritably simple, accurate and consumes low power. It enables the user to easily collect his/ her ration from time- to- time in an royal manner.

**Index Terms – Arduino Mega 2560**

## I. INTRODUCTION

The ration distribution system is one of the largest government's profitable programs in India. Its main ideal is to supply food grains( sugar, wheat, rice, kerosene etc.) to the people at affordable rates. This distribution of ration is controlled and covered by the central government, along with the state government. But it has so numerous limitations. The dealer may not give a sufficient quantum of food grains to consumers. utmost of the time people aren't apprehensive of the availability of ration in ration shops. The dealer may vend ration at advanced rates than recommended by the government. utmost of the ration shopkeepers keep fake ration cards with them. Due to fake ration cards, the dealer receives the redundant ration from advanced authority and he sells it into the open request. In this way, in the current situation we're facing a problem of corruption in the public distribution system. The being ration distribution system has a high position of corruption like inaccurate dimension of goods, large waiting time and material theft. Hence to address these issues, we've come up with the design " AUTOMATED RATION DISTRIBUTION SYSTEM USING RFID " which is useful for the effective way of ration distribution. This system is designed to minimize the man-made intervention in the process of ration distribution, so that further transparency & effectiveness can be maintained.

Our project focuses on the design and performance of Automation of Ration Shop. In this design, the proposed conception is to replace the man-made work in the public distribution system. The ration distribution system is automated by using ATMEGA2560. RFID acts as ration card and other purposes similar as RC book, insurance details, service details etc. Radio- frequency identification( RFID) based access- control systems allow only authorized or responsible persons to get the accoutrements from ration shops. An RFID system consists of an antenna or coil, a transceiver( with decoder) and a transponder( RF tag) electronically program with unique information. In this automated ration store government have control over all sale that occurs in ration store. substantially in this design we're distributing rice and wheat.

To replace the man-made work of the Public Distribution System( PDS) by RFID technology to automate the Ration Shop System. To make sure the correct person is exercising the ration by scanning RFID. To give secure authentication and enhance user experience.

### 1.1 Objective

To replace the manual work of the Public Distribution System (PDS) by RFID technology to automate the Ration Shop System. To make sure the correct person is utilizing the ration by scanning RFID. To provide secure authentication and enhance user experience. Write a program using Arduino programming language for the working of RFID.

### 1.2 Literature Survey

The literature sources give precious perceptivity into the design, perpetration, and benefits of RFID-grounded smart and secure ration systems using Arduino UNO. They talk over the advantages of RFID technology, the integration of Arduino UNO for data processing, and the implicit impact of similar systems on perfecting translucency, effectiveness, and responsibility in ration distribution processes. The authors present a prototype system and estimate its performance in terms of delicacy, security, and scalability .The authors discuss the integration of RFID markers with Arduino UNO and the use of biometric authentication for enhanced security. The paper discusses the system framework, perpetration challenges, and implicit benefits of the proposed system. This system is fully homemade and hence the probability of losing the document is more and detention in announcement. It's lower secure and consumes further time. Because of this we've proposed an automatic ration distribution system based on RFID technology to overcome it . The author presents the system framework, design considerations, and evaluation of the enforced system in terms of effectiveness and security

### 1.3 RESEARCH METHODOLOGY

The main ideal of our designed Automated Ration store system is to give translucency and check malpractices by the use of RFID technology. User needs to scan the label to the RFID reader, and also a microcontroller checks user details in the stored database to apportion the material. For security purposes, the user is asked to scan the label with his/ her RFID card. After successful authorization, the user needs to enter the type of material using drive button. Make a circuit using an Arduino mega, pushbuttons, RFID, servo motors and TV. Write a program using Arduino programming language for the working of RFID. Integrate the circuit and program to produce a performing automated ration system. Test the system completely to insure it works as intended

### 3.1 Block Diagram

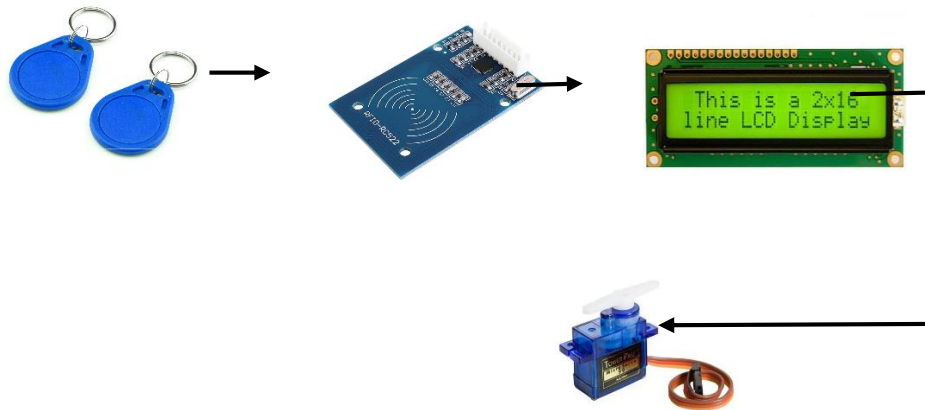


Figure 1

The conception is to automate Ration Distribution System, A Govt. Of India action Process in which a fixed quantum of ration is handed yearly to the people by the distributor. The apparatus we're designing is cost effective and can prove helpful to Government of India Ration Distribution System and to colorful other disciplines. In terms of feasibility it's a vast conception and an interesting task to perform and completely feasible in all aspects specialized as well as other. At ration shop we're using RFID card and RFID anthology for identification. Then regulator will overlook the database to check that the RFID card is valid or not. Using keypad client has to enter the product's corresponding periodical number they want to buy . The system has a one pump and one stopcock for the purpose of giving oil and grains independently. It'll take lower time to give the people and separate person can took any time like ATM machine.

### 3.2 Components Description

**Radio Frequency Identification (RFID):** RFID refers to a wireless system comprising two factors labels and readers. The reader is a device that has one or further antennas that emit radio swells and admit signals back from the RFID label. labels, which use radio waves to communicate their identity and other information to near readers, can be unresistant or active

**Liquid Crystal Display (LCD):** The liquid-crystal display( LCD) is a flat- panel display or other electronically modulated optic device that uses the light- modulating parcels of liquid crystals combined with polarizers.

**Servo motors:** The servo motor is a type of motor that can rotate with great perfection. Typically this type of motor consists of a control circuit that provides feedback on the current position of the motor shaft, this feedback allows the servo motors to rotate with great perfection.

**Arduino Mega 2560:** The arduino Mega 2560 is a microcontroller . It has 54 digital input/ output legs( of which 15 can be used as PWM outputs), 16 analog inputs, 4 UARTs( hardware periodical ports), a 16 MHz demitasse oscillator ,etc.

**Push buttons:** A drive button switch is a mechanical device used to control an electrical circuit in which the driver manually presses a button to actuate an internal switching medium.

**PCB Board:** A PCB (Printed Circuit Board) is a flat board made of insulating material, usually fiberglass, that is used to mechanically support and electrically connect electronic components using conductive pathways or traces etched from copper sheets.

**Arduino IDE:** Arduino IDE (Integrated Development Environment) is a software development tool used to program and develop software for Arduino boards. Arduino is an open-source electronics platform based on easy-to-use hardware and software, designed for anyone interested in creating interactive projects.

**Libraries:** Arduino IDE comes with a set of libraries that provide pre-written code to perform common tasks. These libraries make it easy to interface with hardware, such as sensors and displays, and to perform various operations, such as reading and writing data, communicating with other devices, and controlling motors.

### 3.3 Flow Chart

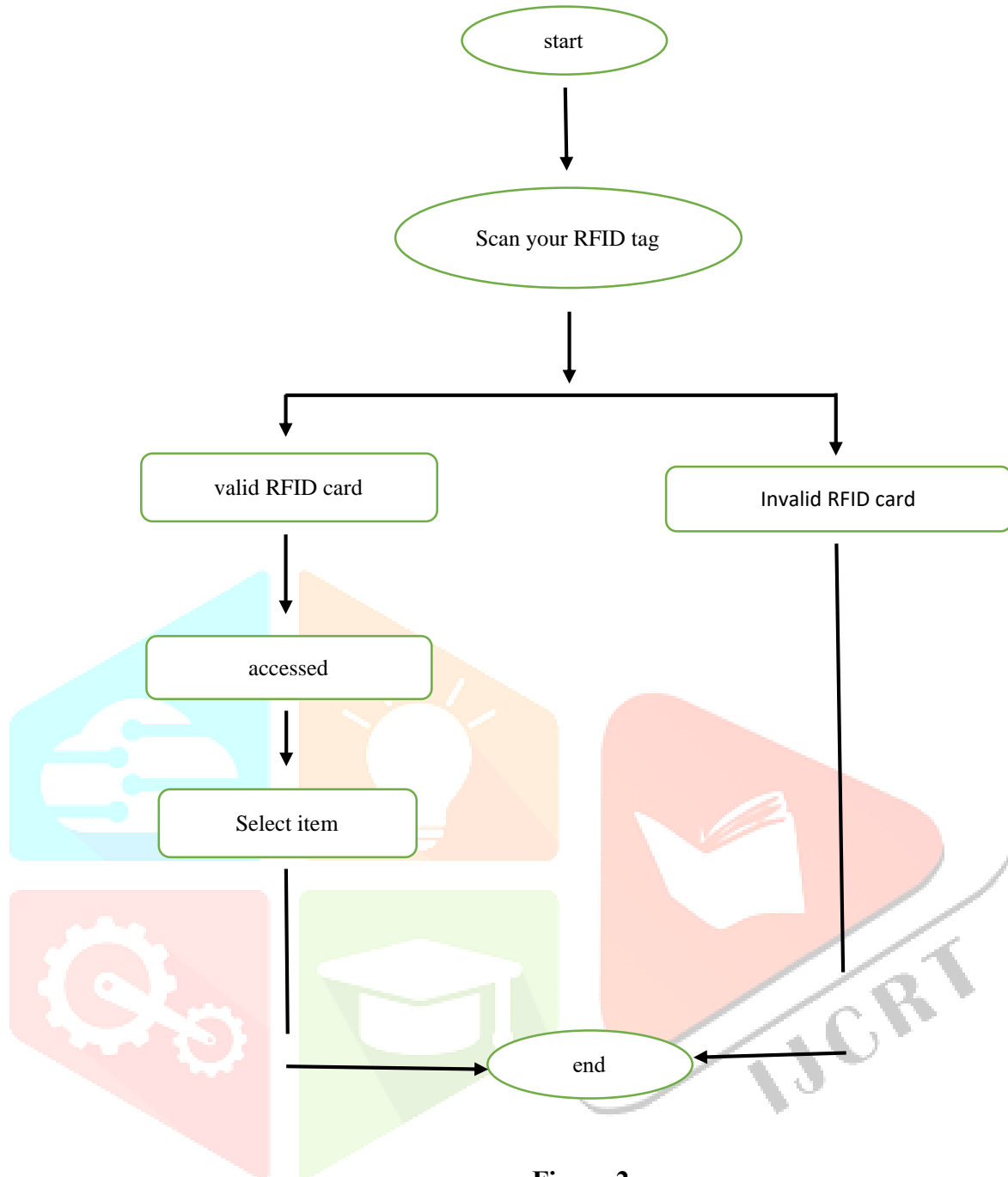
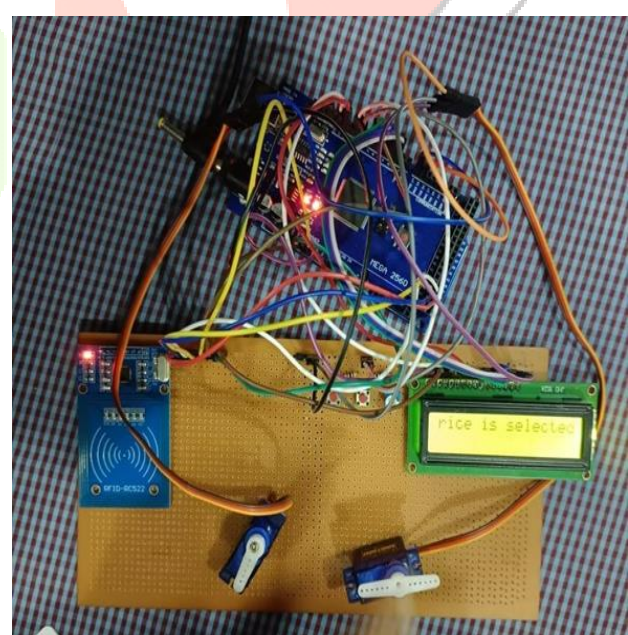
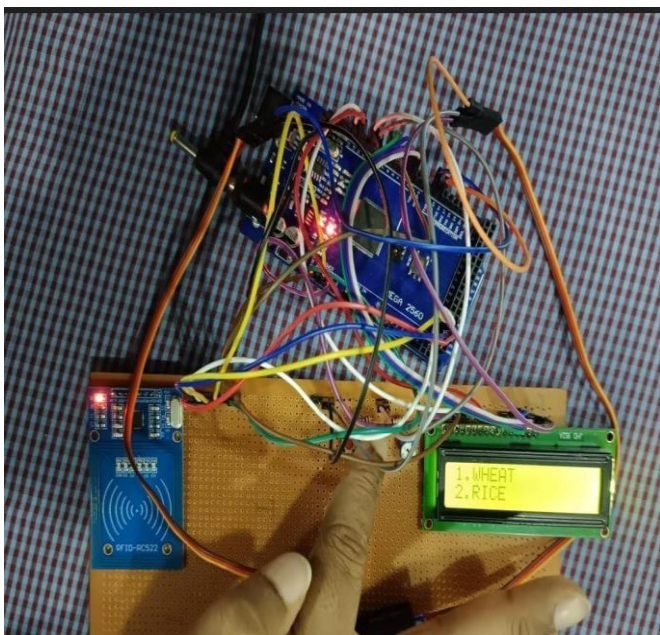
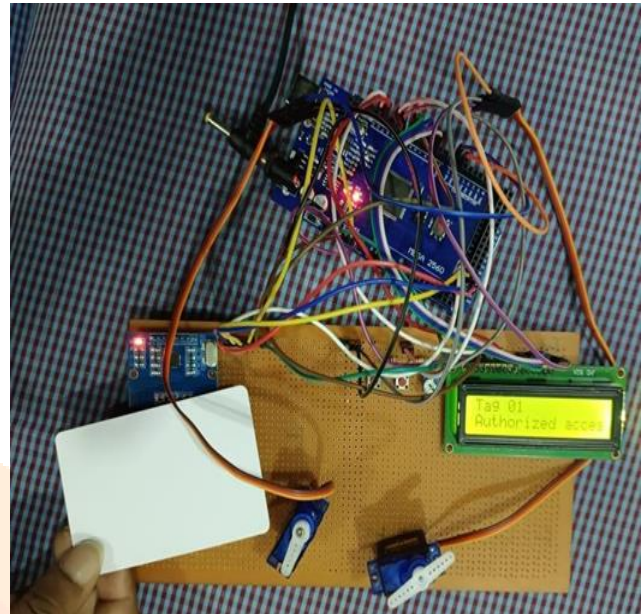
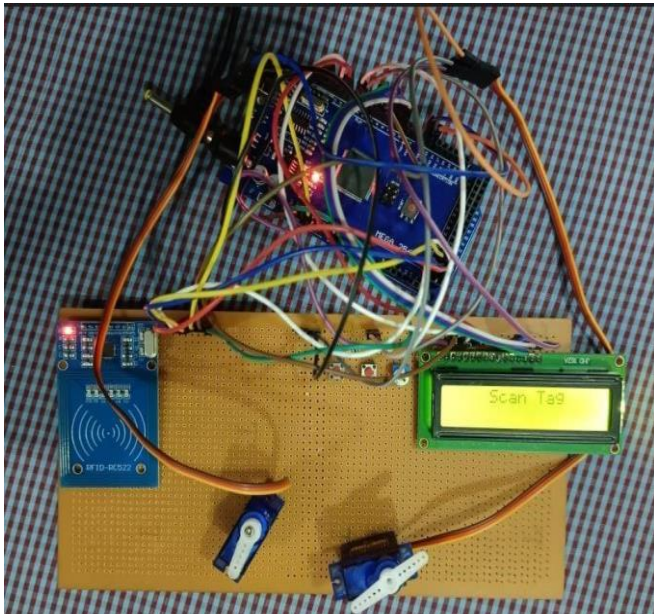


Figure 2

## IV. RESULTS AND DISCUSSION

### 4.1 Results

The design work “ Automated ration distribution system using RFID ” is designed and developed successfully. For the demonstration purpose, a prototype module is constructed; and the results are set up to be satisfactory. Since it's a prototype module, a simple module is constructed, which can be used for numerous operations like largely nonpublic areas or where high- position security is needed



### 4.2 Conclusion

The increased need for sequestration and security in our day-to-day life has given birth to this new area of wisdom. These devices are here and are present around us far and wide in the society and are then to stay for a long time to come. Indeed, it'll be fascinating to watch the unborn impact that they will have on our day- to- day lives. The design work “ Automated ration distribution system using RFID ” is designed and developed successfully. For the demonstration purpose, a prototype module is constructed; and the results are set up to be satisfactory. Since it's a prototype module, a simple module is constructed, which can be used for numerous operations like largely nonpublic areas or where high- position security is needed.

### 4.3 FUTURE SCOPE

In future we can improve the system by adding a GSM module to provide more safety via providing the OTP option. With GSM we can also send the message to the authorized user about the ingredients selected and the total money to be paid.

### 4.4 APPLICATION:

- Ration shops
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## II. References

- [1] [https://www.researchgate.net/publication/307662553\\_Automatic\\_Ration\\_Material\\_Distributions\\_Based\\_on\\_GSM\\_and\\_RFID\\_Technology](https://www.researchgate.net/publication/307662553_Automatic_Ration_Material_Distributions_Based_on_GSM_and_RFID_Technology)
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