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Automated Ration Shop

Harshikesh Nikam[1], Harshad Sawant[2] , Hrutikesh Sawant[3] , Ameya Purandare[4]

(Electronics and Telecommunication Engineering/ VIVA Institute of Technology/ University of Mumbai, India)

Abstract: *The important aspect for every family in India is a Ration card which is also required to buy commodities provided by the government. In our country Ration card is also used as address proof it plays a major role in household details like getting a gas connection, etc. It contains family members' details.PDS(Public Distribution scheme) under this scheme the government provides food grains and commodities at an affordable price to people. The main reason behind this corruption is manual work and lack of high-tech technology which can use to automate this PDS system. In our project we have replaced the manual work done in the distribution centers by smart measuring automated electronic devices with the help of Arduino microcontroller which measures the goods accurately and updates it in the database periodically about the availability of goods and information regarding the transactions done in a digitalized manner. Therefore, this project ensures a corruption free ration centers working system which will also enhance the direct communication of the consumers with the government and will definitely provide transparency.*

Keywords*:- Registration of Consumer, OTP Verification, Accurate Measurement of Material, Web Portal*

I. INTRODUCTION

1.1. Importance of project :-

The Public Distribution System (PDS) is mainly classified as a system of management of scarcity through distribution of food grains at affordable prices. Over the years, PDS has become an important part of the Government's policy for management of the food economy in the country. PDS is supported for poor and needy people and is not intended to make available the entire requirement of any of the commodities provided under it to a household of the society. PDS is jointly operated under the responsibility of the Central and the State/UT Governments. The Central Government, operates through Food Corporation of India (FCI), has assumed the responsibility for procurement, storage, transportation, and bulk allocation of food grains to the State Governments. The responsibility of operation, including allocation within the State, identification of eligible families, Issue of Ration Cards, and supervision of the functioning of Fair Price Shops (FPSs), etc., rests with the State Governments. Under the PDS, mainly distribution of the commodities like wheat, rice, sugar, and kerosene are being allocated to the States/UTs for distribution. However, PDS, with its focus on the distribution of food grains to needy and eligible consumers in urban as well as rural areas, had emanated from the critical food shortages of the 1960s.

1.2. Motivation:-

To distribute ration goods more efficiently we are presenting an Automated Ration Shop which consists of an advanced and automatic system. The aim of the project is to minimize the manual intervention in the process of ration distribution to make it more transparent & efficient. Our project focuses on the design and implementation of fully Automatic Ration Shop. In recent scenarios, all the public and private sectors are implementing automation in their process. Civil Supplies Corporation of India is responsible for the major public sector which manages and distributes the essential commodities to all the citizens. In that system various products namely Rice, sugar and kerosene are distributed using the conventional ration shop system. Some of the limitations

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of the conventional ration shop system are Due to the manual measurements in the conventional system, the user is not able to get the accurate quantity of material. Also there is a chance for the illegal black marketing of our products in the conventional system. i.e. the materials are robbed and sold in black by making wrong entries in the register without the knowledge of the ration card holder.

II.   METHODOLOGY

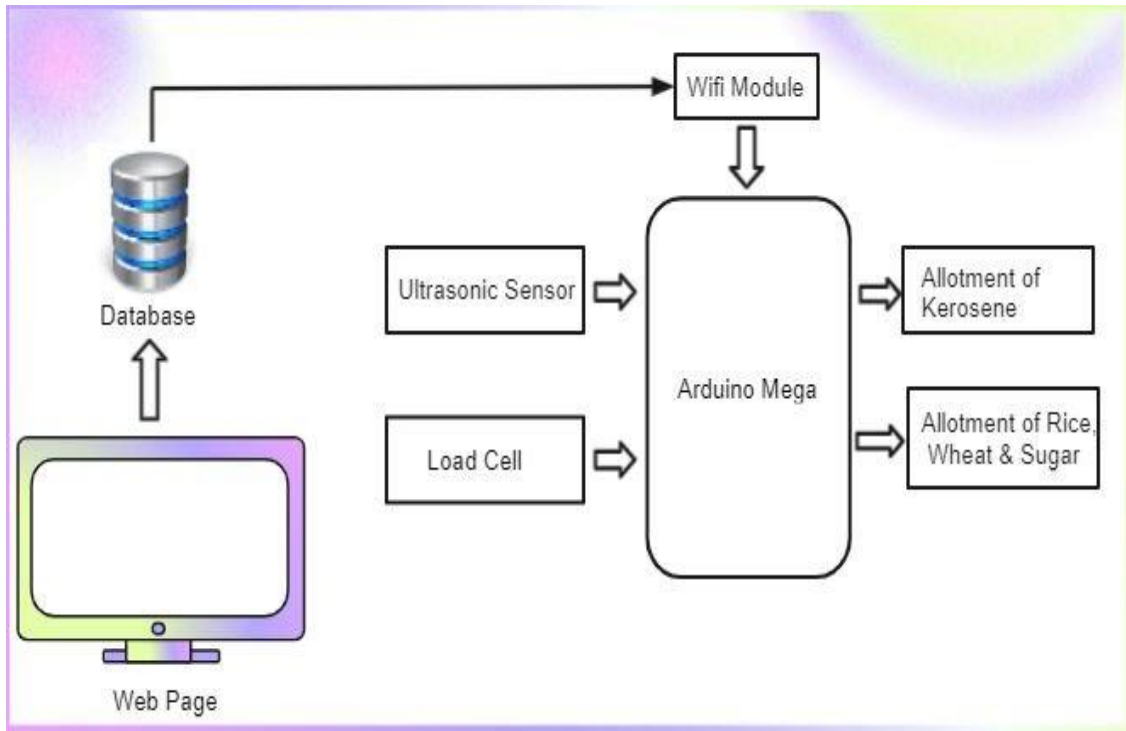**2.1. Block Diagram & Implementation**

Fig 2.1. Block Diagram

The Design methodology will reduce the errors occurring in conventional Public Distribution Systems. The designed system is secure and smart, this will overcome the malpractices in the ration distribution system. The whole system consists of the Software part and Hardware Part. The software part is basically a webpage, Where the frontend part of the web page is created using HTML (Hypertext Markup Language), CSS (cascading style sheet), JS (JavaScript). The backend part where user data will be stored is created using MySQL (Structured Query Language) and PHP (Hypertext Preprocessor). The software part which is a web page is consist of Various services like Registration of user where user have to fill a registration form with some basic details like name, contact number, ration card number, card type or color, Information about users monthly material, Notifications about the user collected their monthly material or not, OTP verification is provided to identify bogus cards, Sometimes a user may receive poor quality of goods so for that we are providing complaint facility, Token allocation is also done by the system to handle the crowd, Here user will receive token about at what date and time user have to collect his material. The actual machine which consists of hardware components is fully automatic. All the inputs will be given as per the user's data which is stored in the database. The user will get the material by analyzing his data. Here the distributor's work is to provide OTP (one-time-password) to the registered mobile number of the user and verify it on the web page. After successful verification, users automatically get the material with accurate weight through a designed machine.

2.2. Tools & Technologies:-

2.2.1 Hardware and Software Used:

Sr. No	Hardware and Software tools	Information about tools
2.2.1.1	**Xampp server and MySQL Database**	• Xampp is a web server platform which helps developers to create and test programs on local web servers. It helps to verify the working of projects based on Apache, Perl, MySQL database, and PHP. • MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. • Both these tools help us to create a webpage and store the date of the user.
2.2.1.2	**Arduino Mega 2560**	• Microcontroller having 54 digital pins and 16 analog pins 4 UARTs which is a hardware serial port. • The whole system is running on this microcontroller.
2.2.1.3	**Load Cell & HX711**	• Strain Gauge load cell is a device which measures strain and converts it into electrical signals which show measurement of objects. • HX711 is a load cell amplifier which reads the changes in calibration which helps to get accurate measurement. • Both these components are used to measure the material like wheat, sugar,rice, etc.
2.2.1.4	**Submersible Water Pump & 6V DC Relay**	• This is a low cost water pump which is operated on 3 to 6V power supply. This water pump is used for circulation of liquid material like Kerosene. • The relay is used to control the device which requires a high current like a water pump. This relay behaves like switch between controller and water pump
2.2.1.5	**NodeMcu 8266 Wifi Module**	• NodeMcu is a development board having ESP-12E wifi chip. It also has 16 GPIO pins i.e. input/output pins. • This board is used for controlling Hardware process through generated web page.
2.2.1.6	**16X2 LCD Display**	• This Liquid Crystal Display is 16X2 i.e means it can display 16 characters on one line and display contains two such lines. • This Display is used to show measured quantity of distributed material.

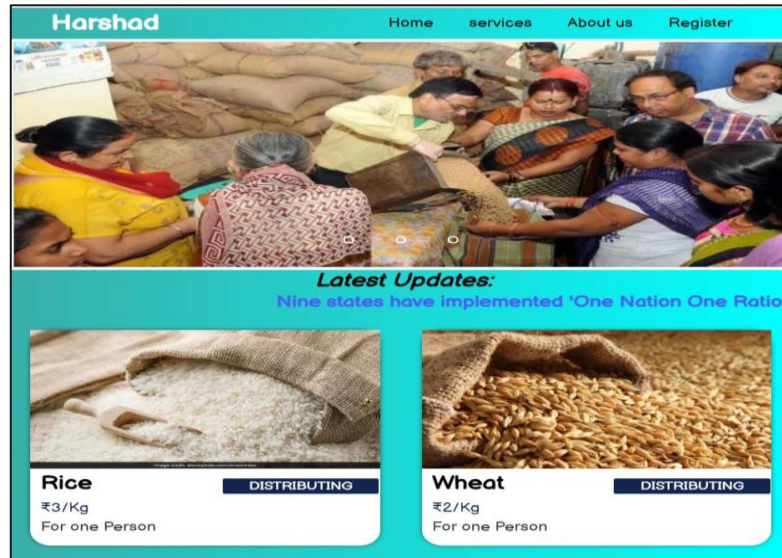VIVA Institute of Technology
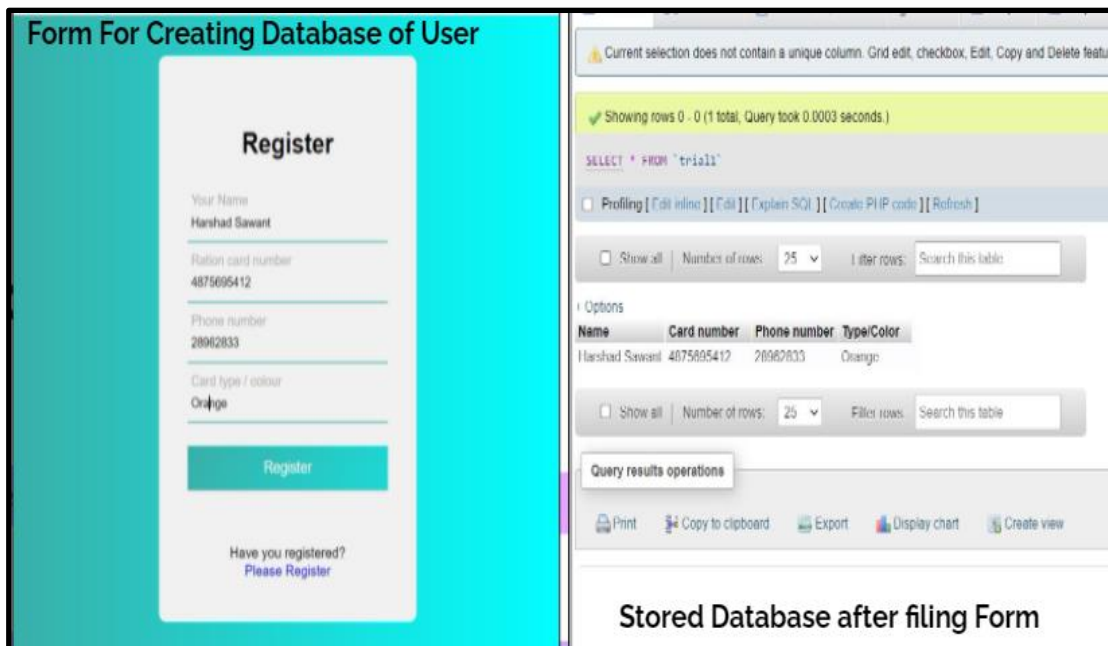10th National Conference on Role of Engineers in Nation Building – 2022 (NCRENB-2022)

III. RESULTS

Fig 3.1 Home page of Website

Fig 3.2 Registration form to store user (consumer's) data

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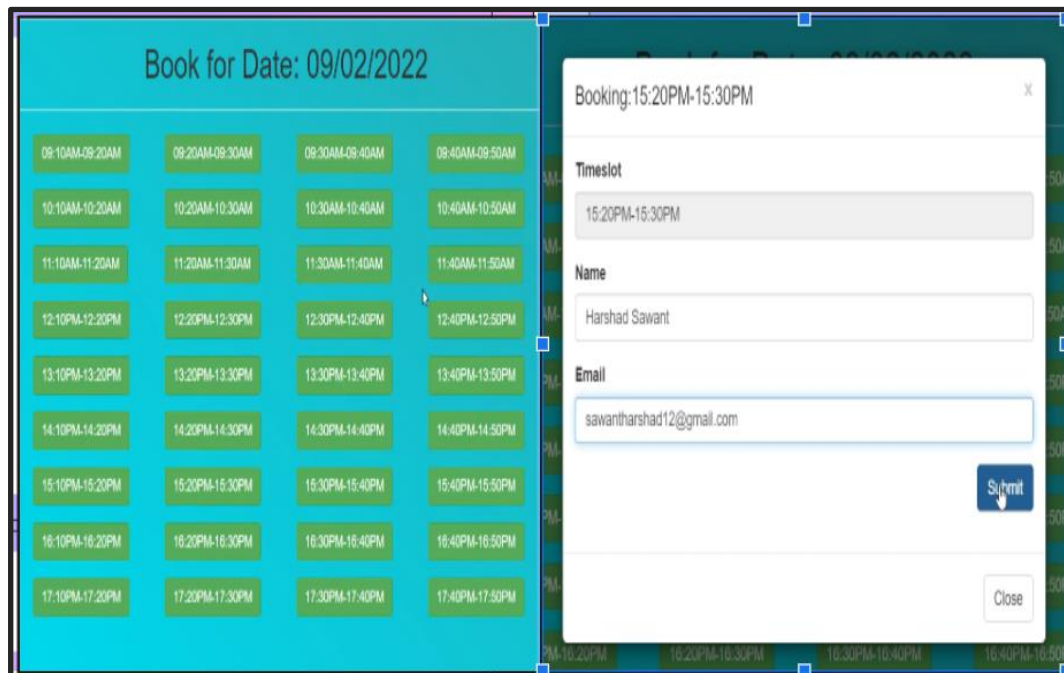
Fig 3.3 Slot booking to get the material
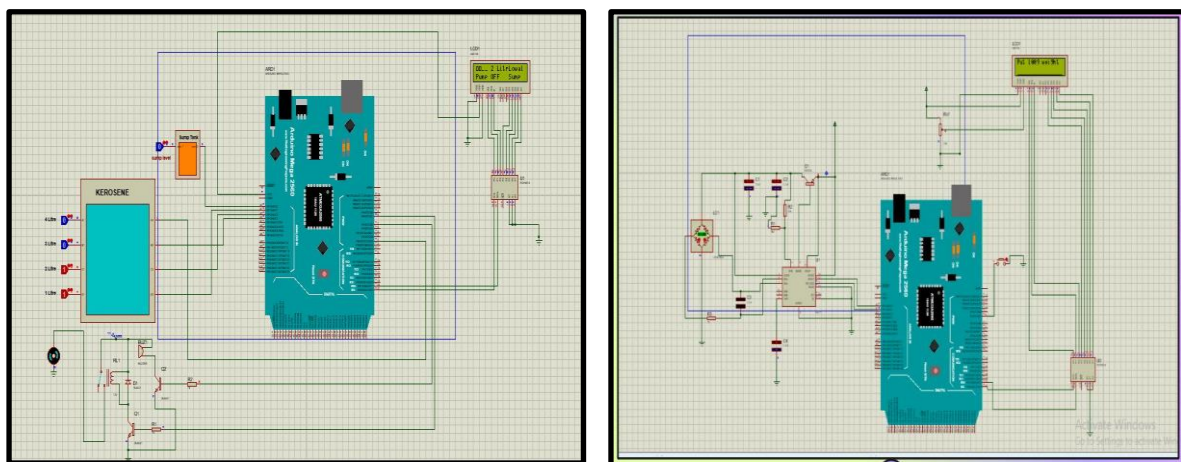
Fig 3.4. Circuit Diagram

IV.   CONCLUSION

Automated ration material distribution is designed to reduce the intervention of humans so that transparency and efficiency can be achieved. The main aspect of this project is to avoid corruption and to increase the system genuinely in the distribution of ration materials. This proposed system will ensure that the common people get their basic needs without any malpractice in the supply of the goods. Therefore, the entire distribution system is made smarter and secure along with eliminating the issues involved in the traditional ration. This system successfully eliminates the errors due to manual monitoring of ration data as all the data is automatically updated in the database. Also, this system enables the government to keep track of the consumers and their transactions in an efficient way. Although the system is full-fledged and reduces the security issues and malpractices present in the current PDS the starting cost of the system is high.

Acknowledgements

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