

IOT BASED RATION DISTRIBUTION SYSTEM

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ABSTRACT

By digitizing India's largest network that is widely accessed by the people, the standard of the ration shops will be elevated and it will also create a gateway that allows for future development in the country. Due to covid situation, now people are habituated to use internet and mobile, so let us make positive use of this habit for needy people. Ration distribution system i.e. (targeted public distribution system). Under the Minimum Common Program of Government of India, the poor families in the State were provided 10 kg. of food grains at half the rate of normal rate w.e.f. 1st June, 1997. The quantum was raised to 20 kg. of food grains w.e.f. 1.4.2000. Now the quantum for BPL and APL beneficiaries has been enhanced to 35 kg. and fixed 15 Kg. respectively w.e.f.1.4.2002 National Food Security Act, 2013 (NFSA) came into force from 1st February, 2014 in the State. As per the Act, beneficiaries are grouped into two groups. i.e. 1) Antyodaya 2) Priority House Hold. Antyodaya group beneficiaries are entitled to get 35 KG. of food grains per card per month and PHH beneficiaries are entitled to get 5 Kg. of food grains per person per month. This whole process is done manually due to which malpractices are involved in larger amount, due to which poor's are suffered and also the Gov. This corruption and illegal practices can be abandon by terminating the classic method which involves customer to tell the person handling the ration shop outlet, the amount of the commodity he/she needs and the type too. The person working then measures the commodity and gives it to the customer. In our version of the system, we have developed an IOT based Embedded system where the consumer have to insert his aadhar card (Note: If aadhar card is linked with ration card) or Ration Card into machine and input the amount he/she requires and the system made will automatically collect that much amount in a container. It is a new concept which takes into account the various social, economic and general aspects relating to technical as well as day to day disciplines.

Keywords: Embedded system, IOT system, Automation, TPDS

INTRODUCTION

The Internet of things (IoT) describes the network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. IOT based Embedded systems control many devices in common use today on internet and data transfer is done over the internet. Embedded systems are controlled by one or more main processing cores that are typically either microcontrollers or digital signal processors (DSP). Our proposed system, i.e. The IOT Based Automated Ration Distribution System, is an IOT based embedded system as it includes a perfect share of hardware and appreciable share of software which can communicate over internet. It, like many other system our system consists of program source code, inbuilt Wi-Fi module microcontroller, a circuit with which the microcontroller is interfaced along with the computer, serial communication connection, A touchscreen where whole GUI will be interfaced, detection and identification circuit to identify the apl and bpl using aadhar card and ration card basis, other peripheral circuits, power supply. IOT based Ration Distribution System, the name itself suggests an important and new concept which will help resolve the various fallacies involved in the classical system. This makes the system fully automated and close loop system.

II.PROBLEM WITH EXISTING SYSTEM:

The Public Distribution System (PDS) established by the Indian government is the manual classic system to provides food security to the people. There are many local allotted shop-keeper who give the people various commodities like food grains, oil, kerosene etc. The customer has to go the ration shop and ask the employee to give the commodity and the amount he needs. Shopkeeper then manually measures it and gives it to the customer. This transaction also needs to be added in to the ration card. This is the total interaction which takes place. This system faces with various problems. As there are many ration shops and the customers coming to buy from ration shops are normally believed to be below poverty line and illiterate, the customers are fooled to a large extent. There are complaints related to the quality of the product they receive, the quantity they receive is many a times less than the quantity demanded by them as the employees steal from it. Moreover, they end up paying more for the quantity they receive. Also the quantity which is added in the ration card is wrong. So they cannot buy more the next time they need. So there is a lot of cheating and fooling of the customers that takes place.

- The details of the purchases are manually updated hence the employee may go wrong with the details or intentionally fool the consumers.
- Due to manual updation of the details and measurement of the goods, public have to wait in a long queue.
- The commodities may not be available all the time • Many FPS employee have been found to sell foods in open market.
- Numerous malpractices make nutritious food in accessible and un affordable for the poor.
- Limited working hours.

III.PROPOSED SYSEM:**A.FRONT-END:**

Keeping in mind illiteracy and poverty we are building such a system which is more pictorial, easy to understand and whole system to be transparent we are using iot based system and automating whole system this is our first priority. When the costumer comes, firstly for the identification he/she is asked for their finger print (if aadhar card it is linked with ration card), if the aadhar card is not linked with ration card for identification ration card can be used they have to put ration card for scanning, and till the process completes and entry is done in ration card the card will be inserted. After identification whole details will be shown on the screen i.e. the available quantity that can be bought by the costumer, the costumer details and the price tags of every commodities. Next, process of distribution, Here costumer gets Graphical, easy to understand and pictorial interface in which commodities chart is placed and price chart is placed just by clicking on the commodities and entering the amount they need to buy they will be able to get the commodity.

Eg :- If the costumer clicks on wheat and rice , put their amount respectively. Here solenoid valve will be activated by this wheat will be passed on to the weighting machine after the perfect digital weighting then the container carrying wheat will be brought out and handed to the costumer and after putting back the empty container on to the machine same process will be repeated for rice this whole will be done after paying for the commodities i.e. firstly after clicking on to the commodities they have to pay their bill and then this whole process is done.

BACK-END:

This system backend is handled on cloud and through iot this whole entries and data fetched will be put on the private server of government and this can be accessed by central using the government site. Identification is also done by the data base provided by the government. This transparency is provided by our system. This makes the system fully automated and close loop system.

IV.BLOCK DIAGRAM OF PROPOSED SYSTEM:

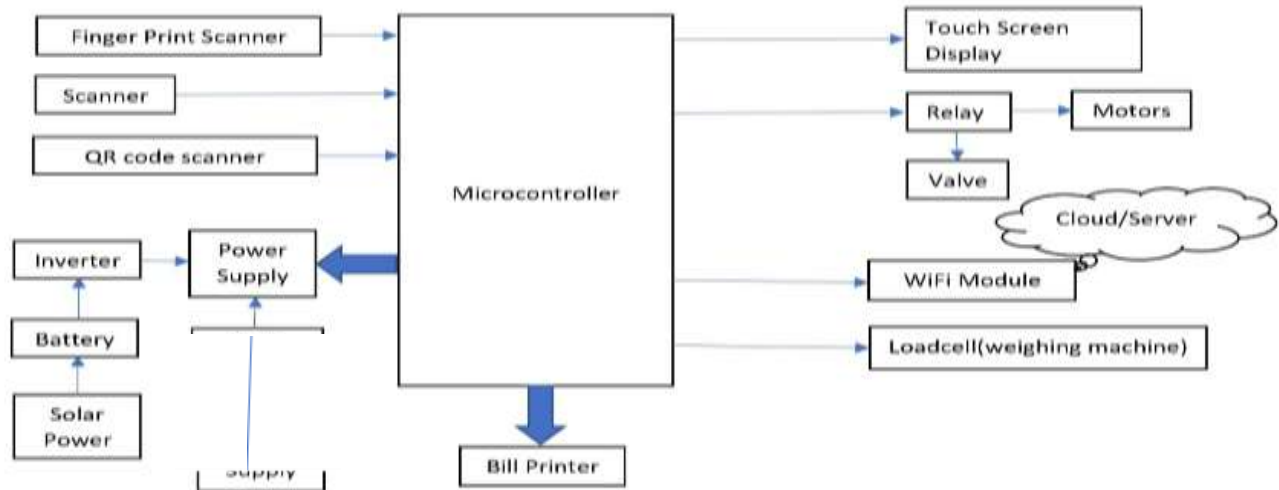


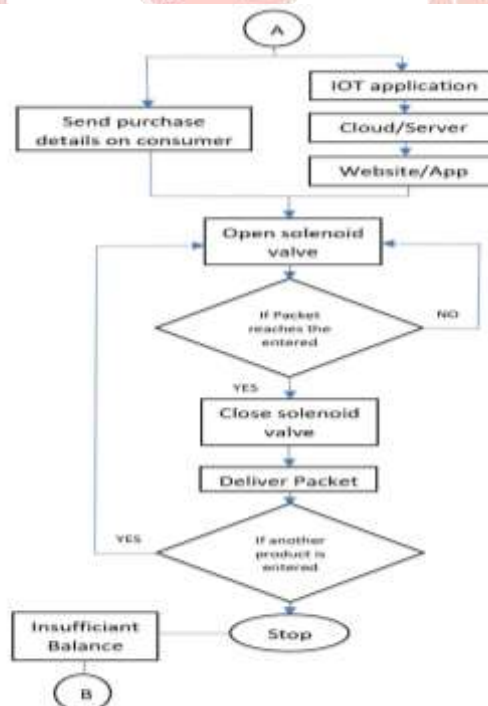
Fig1. Block Diagram

Function of each block is as follows :

1. Microcontroller: The microcontroller has played a fundamental—I would even say dominant—role in the technological revolution that has shaped modern life. It is the heart of the system. Which controllers every action in this case this is powered by power supply. This controls whole system.
2. Finger Print Scanner: A fingerprint scanner is a type of technology that identifies and authenticates the fingerprints of an individual in order to grant or deny access to a computer system or a physical facility. Here we use to get the details of costumer through adhar card.
3. Scanner: A scanner is an input device that scans Document(Ration card in our case). When a document is scanned, it is converted into a digital format. This creates an electronic version of the document that can be viewed and edited on a computer. From this we can identify the costumer.
4. QR code scanner: This scans the QR code of aadhar card and identify the costumer if ration card is linked with aadhar card.
5. Power Supply: A power supply is a hardware component that supplies power to an electrical device. It receives power from an electrical outlet and converts the current from AC (alternating current) to DC (direct current), which is what the computer requires. It also regulates the voltage to an adequate amount, which allows the computer to run smoothly without overheating. Here we have used hybrid Power supply it works on solar and also on AC supply.
6. Touch Screen Display: A **touch pad**, or **touch screen**, is both an input and output device and normally layered on the top of an electronic visual **display** of an information processing system. The **display** is often an **LCD** or **OLED display** while the system is usually a laptop, tablet, or smartphone.
7. Relay: A Relay is an electromechanical device that can be used to make or break an electrical connection. It consists of a flexible moving mechanical part which can be controlled electronically through an electromagnet, basically, a relay is just like a mechanical switch but you can

control it with an electronic signal instead of manually turning it on or off. Again this **working principle of relay** fits only for the electromechanical relay.

8. Motor: A motor converts electrical energy into mechanical energy. It is estimated that nearly half of the world's energy consumption is consumed by motors. Therefore, increasing motor efficiency is expected to have a significant impact on the global energy crisis. Here we will explain the operating principle of motors, beginning with the basics.
9. Solenoid valve : A solenoid valve is an electrically controlled valve. The valve features a solenoid, which is an electric coil with a movable ferromagnetic core (plunger) in its center. In the rest position, the plunger closes off a small orifice. An electric current through the coil creates a magnetic field. The magnetic field exerts an upwards force on the plunger opening the orifice. This is the basic principle that is used to open and close solenoid valves.
10. Wi-Fi Module: The ESP8266 Wi-Fi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.
11. Load Cell for weighing machine: A load cell works by converting mechanical force into digital values that the user can read and record. The inner working of a load cell differs based on the load cell that you choose. There are hydraulic load cells, pneumatic load cells, and strain gauge load cells. Strain gauge load sensors are the most commonly used among the three. Strain gauge load cells contain strain gauges within them that send up voltage irregularities when under load. The degree of voltage change is covered to digital reading as weight.
12. Bill Printer: This prints the bill which is obtained after purchase of the costumer. This is installed in the machine and this automatically prints the bill.This makes the system fully automated and close loop system.



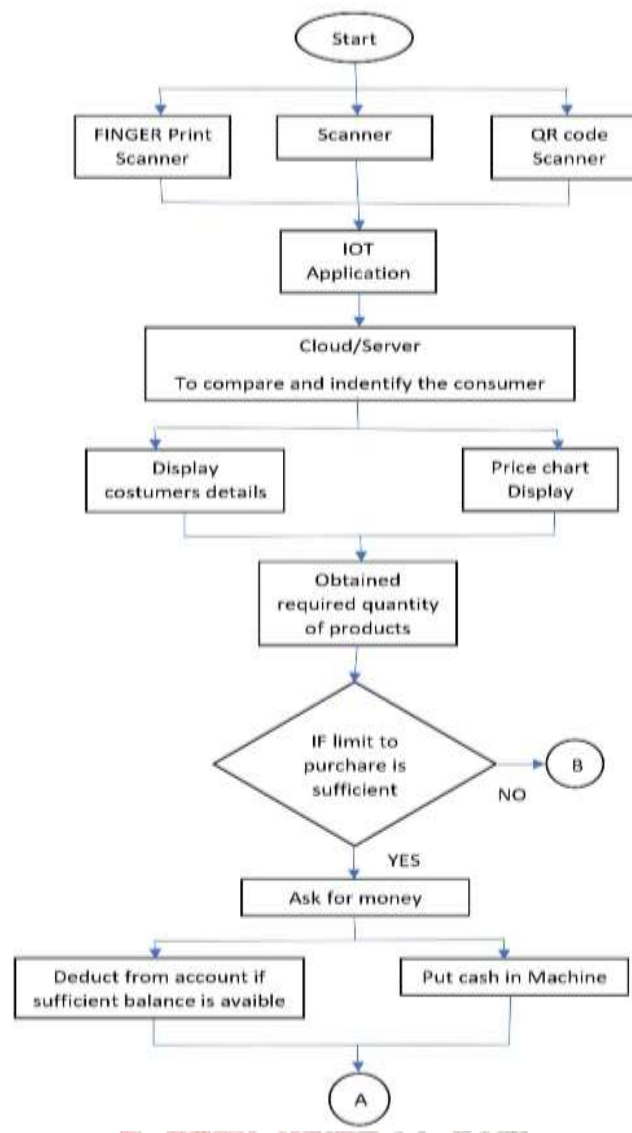


Fig 2 Flow chart

V.FUTURE SCOPE

Currently the project does have a lot of scope of improvement. Using robotics efficiency can be increased to 50%.Robotics can play a major role in automation and designing this Smart IOT based system. Using image processing for identification it can increase accuracy in right costumer detection. Building automatic quality monitoring system can help citizen to lead healthy life.

VI.LIMITATION

This is fully automatic system working on major electronics parts decides functionality of system. Due to unavoidable problems with these electronic parts may cause syste malfunction or fail, so it should be operated with proper guidelines and care.

VII.RESULT

The proposed system delivers goods in an uninterrupted manner and eliminates the 50% waiting time of the users. It improves 60% to 70% standard of the rations shops by providing accurately measured quantity of goods to the public and the third person between the fair price shops and the public is eliminated so that the material theft can be abolished. Microcontroller increases 60% to 80% efficiency of the system.

VIII.CONCLUSION

India is a developing country that strives to be a world power one day. These ration shops will be a means to realize this dream come true, a fully “DIGITAL” India. In india we have more than half a population in below poverty line and in this main concern should be about ration distribution, Looking at the loopholes in Ration Distribution and the corruption caused we need to make a system to be automated. Ration should be distributed on the right quantity and quality without any interruption of third parties who try to take benefits by manipulating the existing distribution systems. As an Indian citizen this is my small contribution towards progress of india.

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