Smart Ration Shop using IOT

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Abstract— Ration shop also called as the fair price shop is used for supplying goods like Rice, wheat, oil and other required items for human survival. These goods are supplied for fair price for the poor people and so the name. The people in the nearby area are not aware of the presence of the goods which are provided at a particular day due to improper communication and also some people who are in far places from the shop are unaware of the working time of shop. Because of this, they are standing in queues in case of more rush and some people come at times when the shop is closed. In order to avoid this, we have found a new solution. The people will get the details about the stocks which are supplied for a particular day and also the working time. These messages reach them through normal messages in mobile phones. These are done by sending the messages to the customer's mobile phone by using Internet of Things (IoT) with the help of GSM Module. The Arduino UNO is used to connect the data's to GSM and also collect the data's and send it as message through IoT. These messages are sent to the higher officials in order to avoid any malfunctioning that may occur. By using this technique, they can minimize their precious time by standing in queues and the people will know about the product which is provided at a particular moment or a day.

Keywords: GSM Module, Message, Internet of Things, Arduino UNO

I. INTRODUCTION

Ration shops are available for providing products in fair price. A big difficulty which is faced by the people is they are unaware of the product that is sold in the ration shop and the working time at a particular day. They are uninformed about the stock which is coming from the government. This leads to theft in the stocks and some ration shop in charge may steal the goods and sell it without the knowledge of government. This may prevent the people from getting their required needs. Most of the time the people are unaware of the working time of shop. This leads to waste of the precious time of the customers by standing in queues and also results in wastage of money due to travelling.

The Existing system can provide the materials in artificial manner [(i.e.) the goods are provided without human help] and the customer's requirements are given only with the help of mobile application. As we know that the ration shop is useful for the poor people some of them are unaware of the use of mobile application. This may cause some difficulties. Also, the current system sends only the bill to the customer through normal message

Our Proposed system mainly aims to build an automatic and convenient system which helps people to gain knowledge about the working time of ration shops, the availability of stocks at a particular day through normal message. By using IoT, the information from ration shop is interfaced with the GSM Module which is then transferred to customer's mobile phones. Thus the people who use basic set of mobile can be benefited from using this system. Thus the precious time and money of the customers will be preserved. By using this, even the theft of the goods can be avoided and the common people get awareness about the products supplied at a particular day without any difficulties.

II. METHODOLOGY

A. Architecture

The proposed system is simple and user friendly. It uses Arduino UNO board which is simply a microcontroller for getting the input from the user. The GSM is generally called as Modem (Global System for Mobile Communications). This is used to transfer the information to the customers. The Block diagram of the proposed system is given in Figure (1).

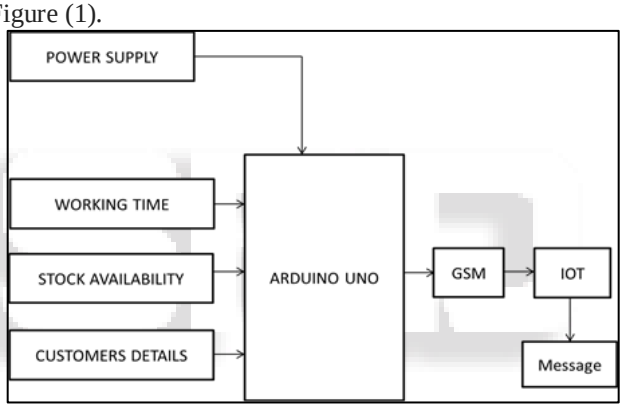

Fig. 1: Block Diagram of Proposed System.

B. Components Used

The Arduino UNO Board which is simply a microcontroller is used as a transferring medium for collecting the data's from the service provider and transferring it to the customer through a medium. The Arduino UNO board which is used for our system is given in Figure (2).

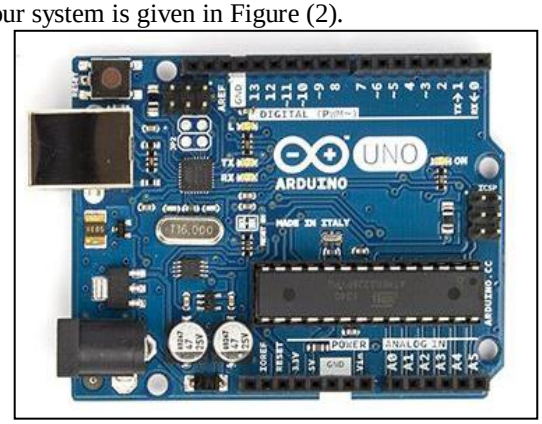

Fig. 2: Arduino UNO Board

This consists of ATmega328P microcontroller whose operating voltage is 5V.This consists of 14 digital I/O pins and 6 analog input pins. The SRAM memory is 2 KB and the EEPROM memory is 1KB.

The Power Adapter is used in order to provide power supply to the Arduino UNO board.

The GSM is used to transfer the information to the customers. The Figure (3) represents the GSM module.

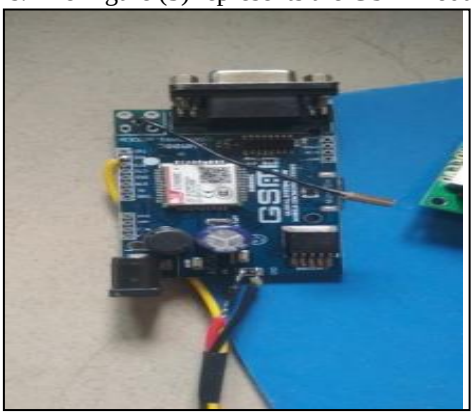

Fig. 3: GSM Module.

This is called as Global System for Mobile Communication (GSM) which can be serially connected or it can be connected with the help of Bluetooth and is used for transferring the information in the sms format which reaches the customer.

C. Process Overview

Primarily, the customer's details like phone number, their required items are obtained from each individual who are living in that particular area. Then the working time and the stock availability are obtained from the service provider as the input. The obtained details from the service provider are sent to all the customers through GSM module and the message is also sent to the higher official by feeding his number. This is done in order to prevent the theft of things that may occur during selling of products. The flowchart for our process overview is given in Figure(4).

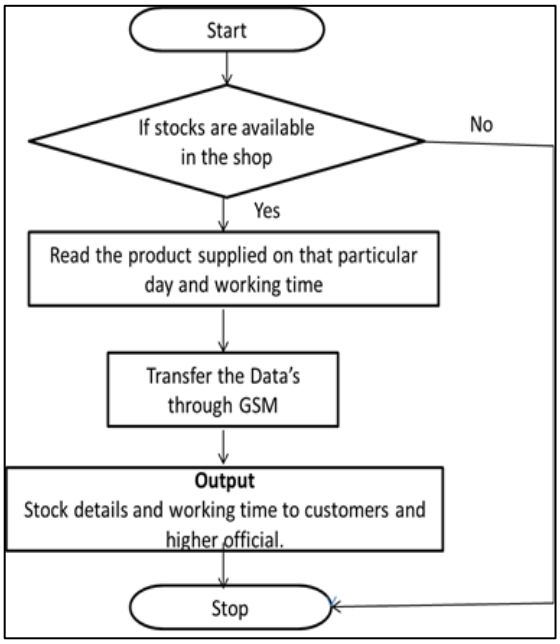

Fig. 4: Represents the process overview

The process functions only if the stocks are available in the shop.If the stocks are not available then there will not be any need for the people to go the ration shop and wait for goods.

III. OUTCOME

The expected result of our system must contain the customer details which are obtained, the stock availability and the working time to the customer and about the delivery status to the service provider.

1) Step 1: Getting the details about the ration shop.

2) Step 2: Getting the details of the customer.


```
----------<<Ration Shop Auto Alerting System>>----------
First name      : Ration - 001
Last name       : Salem
Mobile number   : 9943341608
Email           : ration001@gmail.com
Last Updated    : 02/28/2020
-----------------------------------
\ Status         : Critically Low \
\ Wallet Balance : 16             \
\ Estimated Txt  : 81             \
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1. Display
2. Stock update
3. Add
4. Message Center
5. Exit
Enter the Value : 3
----------<<Add>>----------
1. Add Personal details
2. Add material
3. New customer
4. Exit
Enter the value : 3
----------<<Add Customer>>----------
Enter the customer name : Kumaravel
Enter the mobile number : 9876567890
```

3) Step 3: Providing the details about the stock and quantity available.

```
1. Personal Details
2. Material Details
3. Customer Details
4. Delivery Status
5. Graph
6. Exit
Enter the value : 2
----------<<Material Details>>----------
Message Delivery Report
S.no   Materials          Quantity   Unit   Price/Unit   Last updated
1      Rice               1000       Kg     1            01/19/2020
2      Wheat              693        Kg     1            01/19/2020
3      Urad dal           43         Kg     23           1/24/2020
4      Split gram Lentil  23         Kg     17           1/15/2020
5      Sugar              100        Pkt    35           1/7/2020
6      Kerosene           76         Litre  16           1/14/2020
7      Oil                93         Pkt    13           01/19/2020
8      Salt               15         Pkt    0            01/18/2020
```

4) Step 4: providing the delivery status to the service provider.

```
1. Personal Details
2. Material Details
3. Customer Details
4. Delivery Status
5. Graph
6. Exit
Enter the value : 3
----------<<Customer Details>>----------
S.no  Name          Mobile Number
1     Dhayananth    9943341608
2     Gowtham       6382332805
3     Kumaravel     6382332805

1. Personal Details
2. Material Details
3. Customer Details
4. Delivery Status
5. Graph
6. Exit
Enter the value : 4
----------<<Delivery status>>----------
S.no  Mobile Number   Request Id      Status       Date         Time
1     994334160 ...   p9hycdq814wmn70 Successfull  01/18/2020   10:07:49
2     994334160 ...   wclvxzdji7tghy9 Successfull  01/18/2020   18:11:21
3     994334160 ...   409             Error        01/18/2020   18:18:52
4     994334160 ...   409             Error        01/18/2020   18:19:44
5     994334160 ...   j89a5ge0t3d1lms Successfull  01/18/2020   19:35:17
6     994334160 ...   4956zrgehm81fvn Successfull  01/18/2020   19:55:24
7     994334160 ...   17t0w4325xi9ear Successfull  01/18/2020   19:56:16
8     994334160 ...   411             Error        01/18/2020   19:57:29
9     994334160 ...   shri8mgja6lwqcx Successfull  01/18/2020   19:57:50
10    994334160 ...   sbgy7tz2fxd84no Successfull  01/18/2020   23:55:26
11    994334160 ...   i45p7tbzwxsrcdo Successfull  01/19/2020   00:02:55
12    994334160 ...   pab8xt23r91syjd Successfull  01/19/2020   00:05:02
13    994334160 ...   36h89olwtslkcqg Successfull  01/19/2020   00:07:27
14    994334160 ...   411             Error        01/19/2020   00:09:19
15    994334160 ...   k8gy9016rbt4xin Successfull  01/19/2020   00:10:28
16    994334160 ...   he2yrocj9fitlgx Successfull  01/19/2020   11:34:33
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IV. RELATED WORK

Iot based inventory system for stock management [1] which is about utilization of load cell for measuring the weight of grocery items in home and if the grocery items in home get reduced then an indication is given to the user through message. Smart Retailing Using IOT [2] which is about maintaining information about the inventory and also indicates customer regarding the features and availability of product in a particular shop. IoT based Ration card system using Bluetooth technology [3] this is based on linking the ration card number with the aadhar number which prevents the illegal selling of goods in black market. This prevents the theft of goods that take place. An Integrated IoT enabled On-demand Grocery Shopping and Delivery Cloud System using MTComm at the Edge [4] which aims in checking the stock availability and if it is less then ordering of goods are done automatically through cloud and autonomous mobile

robots are used for delivering the goods. IoT based Grocery Monitoring System [5] which is based on IoT based prototype to monitor the grocery levels at homes and supermarkets using wireless sensors. Smart Ration Card and Automatic Ration Material Distribution System Using IOT [6] in this the ration card is replaced with the RFID tag and the details of the customer is fed into microcontroller. The customer can get their requirements through RFID tag. Smart Automatic Rationing System [7] in this instead of manual work, a machine takes all the work of providing the goods to customers by using finger prints. IoT applications on Secure Smart Shopping System [8] this deals with the automatic billing system in the trolley, which avoids customer standing in queues for settling the bill. The Arduino UNO board basic programming and functioning is done from [9].

Smart GSM based Home Automation System [10] this deals with the control of home appliances from mobile through GSM.

V. CONCLUSION

This paper deals with how to update the details about the working time of the ration shop and also about the availability of the stocks at a particular day. To address this, we presented Arduino and GSM, which gets the data from the service provider about the customer's mobile number and transfers the details to the given mobile number in the form of SMS. This is mainly designed to provide the available information to all the people in an easy manner which helps the users for further decision making regarding the shopping details. This is efficient as it does not require any kind of user name and password for the user to handle.
As the future work, we plan to concentrate on how to detect weight of the goods that come from the government. This is then updated to the concerned customer and also to the higher official in the government. This is achieved by measuring the weight of the stock continuously with the help of load cells and updating it by using Internet of Things technology. By doing this, the theft occurring in the shop can be prevented and the transparency will be created between public and government.

REFERENCES

[1] Bandhan Nagaria, Parv Shroff, Rajat Mehrotra "Iot based inventory system for stock management" in International Research Journal of Engineering and Technology, 2018.
[2] Santosh H. Kalange, Dipti A. Kadam, Asmita B. Mokal ,Avinash A. Patil "Smart Retailing Using IOT ",In International Research Journal of Engineering and Technology,2018.
[3] Neha Sharma, Ayushi Gupta, Vinod Ghadge, Mayank Harwani "Iot based Ration card system using Bluetooth technology", In International Journal of Engineering and Computing,2017.
[4] S M Nahian Al Sunny, Xiaoqing "Frank" Liu, Md Rakib Shahriar. "An Integrated IoT enabled On-demand Grocery Shopping and Delivery Cloud System using MTComm at the Edge" in IEEE International Conference, 2019.
[5] Hardi Desai, Divya Guruvayurappan, Mustafa Merchant, Smeet Somaiya, Hetal Mundra. "IoT based Grocery Monitoring System" in IEEE International Conference,2019.
[6] Sneha Ingale, Payal Paigude, Sneha Gaikwad, Reshama Ade, Prof. Rupali.M.Dalvi. "Smart Ration Card and Automatic Ration Material Distribution System Using IOT", In International Journal for Research in Applied Science & Engineering Technology,2018.
[7] Rutuja Gorapwar,Anuja Bhargue, Smita Gaikwad, Sneha Zagade, Prof.G.S.Bhange. "Smart Automatic Rationing System" in International Journal of Innovative Research in Science,Engineering and Technology,2019.
[8] Ruinian Li, Tianyi Song, Nicholas Capurso,Jigo Yu;,Jason Couture, and XiuzhenCheng. "IoT applications on Secure Smart Shopping System" in IEEE Internet of things Journal,2017.
[9] https://www.arduino.cc/en/Tutorial/HomePage.
[10] Rozita Teymourzadeh, CEng, Salah Addin Ahmed, Kok Wai Chan, and Mok Vee Hoong, "Smart GSM based Home Automation System" in IEEE Conference,2013.

