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Automation in Ration Product Distribution

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ABSTRACT: Public Distribution System (PDS) [i.e.] ration product distribution is established by the government of India to distribute grocery items at fair price. The controversial issue in this system is smuggling of goods and late delivery of goods. This is because in the existing system all the work is done manually. In order to overcome this, we have proposed an idea to automate the distribution of product in the ration shop. A database maintained by the government which is accessed by the proposed system. The database contains the details of people in a locality and the quantity of product allotted to them. Due to this illegal entries are avoided. When the product arrives at the ration shop it is updated in the database and the system sends an alert message to the people using GSM. The people can get the product by inserting a smart card and authenticating using finger print. The LCD will display the customer details and the list of product available for them. On selecting the product the load cell will automatically weigh the product and dispatch the product. All these are automated using ARM8. Due to this manual work in the ration shop is replaced by the automated embedded system. The software output is obtained by simulation using KEILµVision4 IDE.

I. INTRODUCTION

The ration distribution system is established by the government of India under Ministry of Consumer Affairs, Food, and Public Distribution to distribute grocery items to poor people at fair price[2]. The existing conventional ration card system has numerous problems. These problems ranges from the basic issues of renewing the ration card every year by pasting excess leaves which has to be done manually by the employees to the malpractices done by the ration store dealers like diverting food grains to open market to make profits[4]. There is another problem of irregularity in opening shops and false announcements of deficit in food grains.

In the proposed system, the advanced ARM8(Advanced RISC Machine) processor is used and it is the heart of the system that controls all sub systems like sensor modules, database systems, connected across it. The embedded advanced processor is a flash type reprogrammable memory which has some peripheral devices to play this project as efficient. The user details are stored in database and accessed using RS232 from the PC. The user authentication is provided by smart card. When the ration product is arrived at the ration shop a message sent to the people about the arrival of the product and the quantity allocated to them using GSM module.

The user can collect the product without human intervention from the system. Smart card is used to authenticate the user. When it is flashed the details of the user is displayed in the LCD and the products are also displayed. The user can select the product using keypad. The selected product is weighed using load cell and dispatched using DC gun. All these work are automated using ARM8 processor.

The main objective of this paper is to automate the product distribution in the ration shop without employee intervention using embedded system.

By using this system the major problems like bribery, irregular distribution and other difficulties faced by the poor people. Illegal activities in the ration shop can be greatly reduced by this method. The product arrival is intimated to the people so it helps the people to save their time by not waiting in front of the ration shop. The distribution process is automated using microcontroller and so the government facilities reach people properly. The corruption and bribery is the major problem in ration product distribution which can be avoided using this system. The computerized database maintained avoids wrong entry of the product by the officials and provides authenticated transportation and distribution

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II. LITERATURE SURVEY

DhanashriPingale [1] et al in this paper described a Centralized Web Enabled Ration Distribution and Corruption Controlling System is the project that will allow a smooth and easy ration distribution. This paper explains the concept of ration distribution and controlling. This system enabled the distribution of food equally among poor people. The commodities are stored in storage tank. When goods are inserted in the ration shop, then that quantity of goods is updated in web server. That website can be accessed by the collector whenever he requires the ration from respective ration shop.

Shivabhakt [2] et al described the concept to automate the PDS, A Government of India initiative process in which a fixed amount of ration is provided monthly to the people by the PDS stores. The increased corruption in the market sector can be prevented if the system becomes automated, increase adulteration can be prevented as well, the hoarding done by the officials and laborers of Govt. There will be two units. Main control unit from where all the registration process is done. Second unit is placed at the ration shop, which will completely control the activities at shop like customer identification, grain distribution and database updating.

S.Sukhumar [3] et al described in this system overall functioning of module and proposed system that incorporates PLC based automated ration shop. Using AADHAR number and contact details government can send a message to the individuals, containing information regarding quantity of products allotted to a public in a respective ration shop. The smart card and finger print scanner is used for identification. PIC microcontroller is programmed in such a way that the above mentioned processes are done automatically without any manual interface. Power supply is solar based power supply.

III. EXISTING SYSTEM

Fig.1 Existing Manual Raton Shop

In the existing system, works like product distribution, ration card entry, product weighing, product delivery are done manually.

IV. PROPOSED SYSTEM

In order to overcome the above problems in the existing system, an automated embedded system is proposed. In the proposed system an ARM8 processor is used to automate the product distribution with proper alert to the people and authenticated access to the system. The processor operates at low voltage and it consumes less power and it can be easily altered and number of devices can be connected according to the input and output ports.

A database of the people is created using C# and accessed by the system using RS232.The system is connected to the PC using RS232 and the details of the consumer are displayed in using LCD. For the authentication purpose RFID card

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reader is used. The user is provided with a smart card (RFID card) which is a replacement to the traditional ration card. The consumers can flash this card to obtain authenticated access to the system.

In the case of solid material, the product is weighed automatically using load cell from the storage tank and the controller uses relay circuit operate the DC GUN to release the product. For liquid product the solenoid valve is opened and closed using relay. The valve is programmed to open for certain time such that the required quantity of product is released.

All these operations are controlled using ARM8 processor and it is programmed using KEIL IDE software. The model of the system is simulated using ECLIPSE and implemented using UTLP. The embedded software is programmed using KEIL and the simulation result is displayed in the UART of the KEIL.

V. BLOCK DIAGRAM

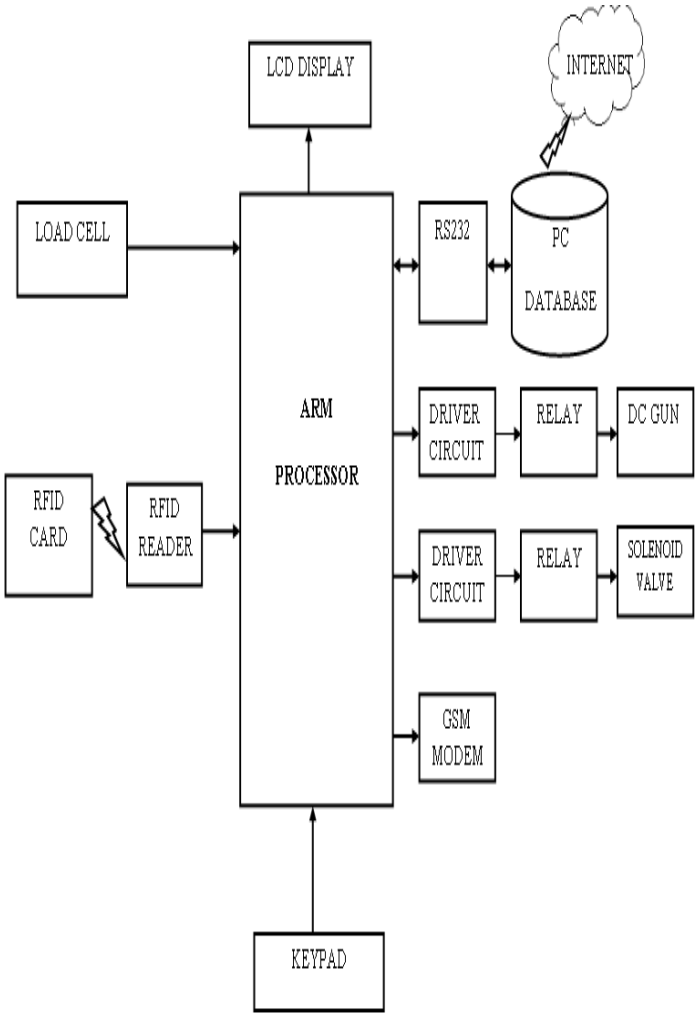

Fig.2 Block diagram for proposed system

5.1 METHODOLOGY

In this project, the methodology used here are ARM8 processor based on the real time embedded system. By using the UBUNTU and Eclipse software, the system model is generated and the database is accessed. The details are displayed in the LCD. KEIL IDE is used and the software for embedded system is created which is programmed to automate the operations like authentication using smart card, updation using GSM and product dispatch using valves.

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VI. RESULTS AND DISCUSSION

6.1 KEIL simulation output

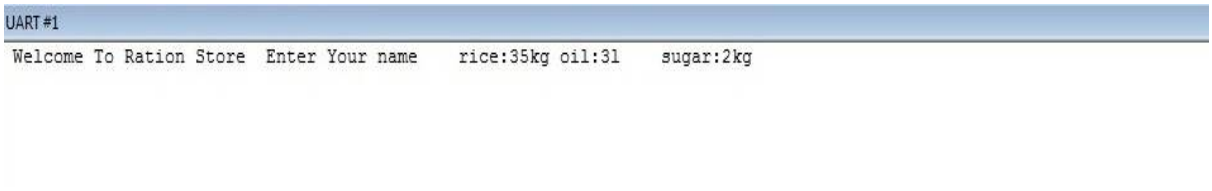

Fig.3 Output for above poverty line

6.2Eclipse simulation output

Using Eclipse and UTLP kit simulation is done for two conditions. People are divided into two category as below poverty line and above poverty line.

Fig.4 Output for below poverty line

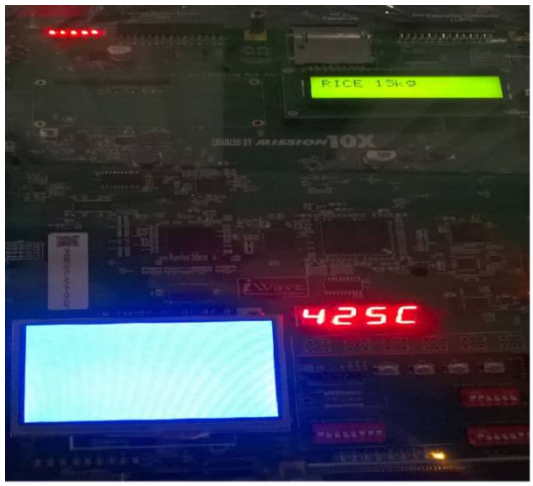

Fig.5 Output for above poverty line

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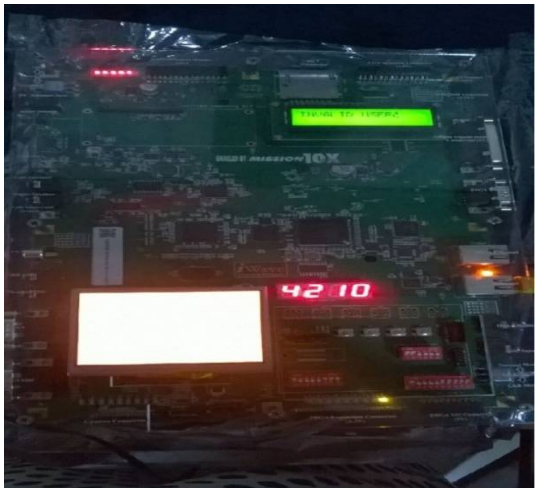

Fig.6 Output for invalid user

When the people enter the password if they belong to below poverty line it will be indicated by green colour using GLCD and their name, product details will be displayed in the CLCD. They can choose the product from their list. The same operation is repeated for the people belong to above poverty line it will be indicated using blue colour in GLCD.

5.3 DISCUSSION

By comparing the hardware and software results, the user details can be displayed automatically. If the user is below poverty line or above poverty line, it can be displayed by using the GLCD. GLCD (Graphical Liquid Crystal Display) is used to represents the variations in the colour format.

If the user is below poverty line, it indicates the green colour in GLCD and the consumer's name, product details are displayed in LCD. If the user is above poverty line, it indicates the red colour in GLCD and the consumer's name, product details are displayed in LCD. By using KEIL software, all these details are simulated and displayed in the UART. So by creating database and simulating it using KEIL and ECLIPSE it is easy to maintain database and display details using ECLIPSE. Also it is easy to maintain database using KEIL.

VII. CONCLUSION

In this project manual work in the ration shop is replaced by the automated embedded system. The government money and people time is saved by this project. Poor people are greatly benefited by this system. The database can be maintained for long years easily without any illegal activities. The user details are created and part of the system is simulated using KEIL and ECLIPSE.

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