

AUTOMATED VENDING MACHINE USING WIRELESS TECHNOLOGY

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Abstract— Vending machines have become an increasingly important distribution channel in public and private sectors. In Shopping malls and offices cool drink vending machine is of great importance. This System proposes a microcontroller based vending machine that dispatches different brands of products using the RFID card which represents as a ticket to get that product. The users can select the required item by using simple switches and amount is collected using RFID card. The system is divided into two parts, the first part deals with the scanning of RFID card which provides cashless payment. The second one is the selection unit which is implemented using RF transmitter.

To get a product, one has to select using switches placed near RF transmitter. Second part is to provide the RFID card to deduct the amount and if the sufficient amount is available then only the beverage will be served using motor. The 16x2 LCD is to display information an embedded system based vending machine is designed to achieve a low cost, accurate, and portable machine that can sale the stationery items automatically.

Keywords— Microcontroller, RF Module, RFID tags, DC motors.

I. INTRODUCTION

As the technology is increasing day by day even the humans are more attracted to the new technologies. Different types of vending machines are used for different objects but the basic problem with the vending machines is that there may be a chance of getting fake notes and even have a problem of stuck coins in the machine when it is overloaded. To overcome this problem we are using RFID card through which the payment can be done. As the technology is increasing in this project we are giving input through RF technology which can be done wirelessly. By this we can even attract the customers.

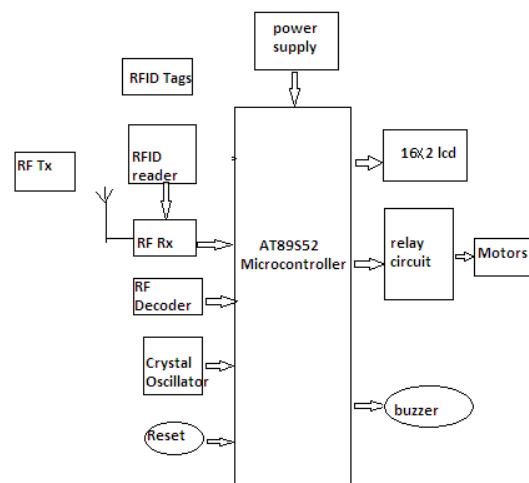
Thus, it is proposed in this project to design and fabricate an advanced user interface vending machine for production, so as to reduce the time taken and the human effort taken to deliver the product to the customer in required time and also meet the higher demand for product at the peak time, such as at road side areas when a person met with accidents during examinations at educational institutions and almost everlasting demand near offices when a person fall sick.

II. RELATED LITERATURE

Ben Ammar Hatem, the paper titled as” Bus Management System Using RFID In WSN” which describes a novel

approach to integrate RFID (Radio Frequency Identification) in WSN (Wireless sensor network). WSN is used to support RFID identification process by extending the read range of an RFID system. Besides, by the use of the WSN we can monitor the environment of an object and optimize RFID reader’s performance and energy. Then methodology to integrate RFID technology, wireless sensor network to form an intelligent bus tracking application is studied. The proposed system can monitor bus traffic inside spacious bus stations, and can inform administrators whether the bus is arriving on time, early or late. This information is then displayed on the different wireless displays inside and outside the bus station.

A. Block diagram



The following block diagram shows the automated vending machine using wireless technology system. The parameters as discussed in the block diagram are the commands wirelessly and send to the microcontroller. According to the instruction the amount/product is displayed on the LCD and motor is on for few seconds. To implement the commands and data transfer from Control unit and receiving section we use RF transmitter and receiver. Experimental results will be carried over motors connected using RF receiver.

B. Working Principle of the proposed system

We proposed system consists of following components:

- Microcontroller
- RF module
- DC power supply

- d) Relay
- e) DC motors

All this components are interfaced with AT89S52 microcontroller. This System proposes a microcontroller based vending machine that dispatches different brands of products using the RFID card which represents as a ticket to get that product. The users can select the required item by using simple switches and amount is collected using RFID card. The system is divided into two parts, the first part deals with the scanning of RFID card which provides cashless payment. The second one is the selection unit which is implemented using RF transmitter.

C. Flowchart of the proposed system

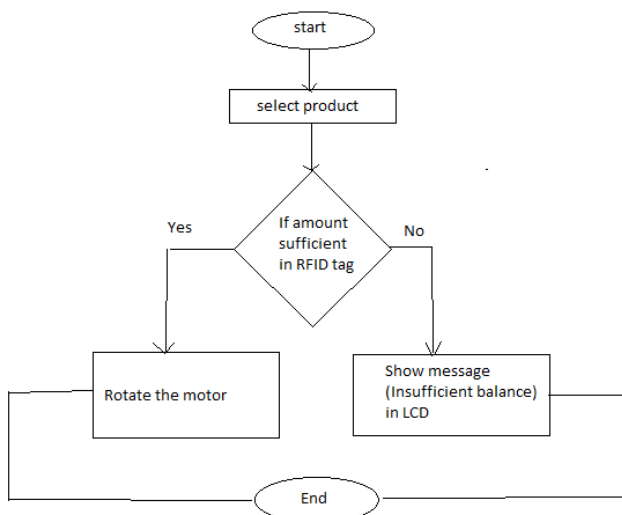


Fig. 1. flowchart of automated vending machine using wireless technology

In this RFID tag place towards RFID reader for authentication purpose. Select the product using RF transmitter then place the RFID tag for checking the amount, if sufficient amount there in the RFID tag then only particular motor will rotate for respective object.

D. Applications

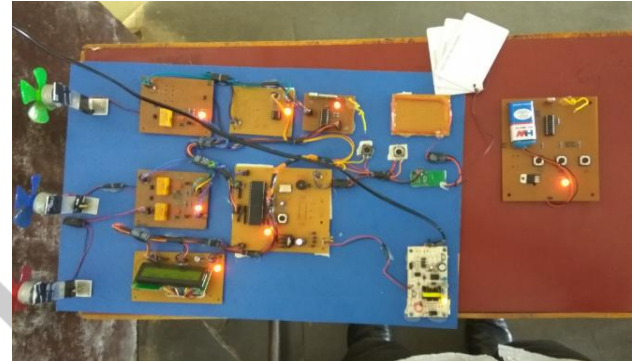
1. This system can be used as news paper vending machine.
2. This system can be used in Educational institutions for stationary purpose, and in Bus stations for ticket issuing purpose.

E. Scope for future work

- 1. Implementing as a machine which have touch screen, so that user can easily interact with it.
- 2. To make vending machines more interactive with the advent of technology many of the future trends will make vending machine more interactive.
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F. Result

The project “Automated vending machine using wireless technology” was designed such that the commands are given wirelessly and send to the microcontroller. According to the instruction the amount/product is displayed on the LCD and motor is on for few seconds. To implement the commands and data transfer from Control unit and receiving section we use RF transmitter and receiver. Experimental results will be carried over motors connected using RF receiver.



III. CONCLUSION

The intelligence implemented in the vending machine can be achieved by compiling and feeding all the proposed theories and algorithms for RFID and other sensing technologies into the system. The ability of the system to act on its own can reduce the man power required at the centre. The experimental results show that the system is intelligent enough to operate the entire system.

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REFERENCES

- [1] Ben Ammar Hatem Hamam Habib ,” Bus Management System Using RFID In WSN”,European and Mediterranean Conference on Information Systems 2010(EMCIS2010) April 12-13 2009, Abu Dhabi, UAE
- [2] Ana Monga, Balwinder Singh, “Finite State Machine based Vending Machine Controller with Auto-Billing Features” in 2012 International Journal of VLSI design & Communication Systems (VLSICS) Vol.3, No.2, pp 19-28.
- [3] William Bolton., Mechatronics, a Multi-disciplinary approach, Micro controller & ADC control PG 339- 465
- [4] HajraChawdry, Manufacturing Technology, fabrication techniques. ISSN: 2278 – 7798 International Journal of Science, Engineering and Technology Research (IJSETR) Volume Issue 9, September 2016 2901 All Rights Reserved © 2016 IJSETR
- [5] Pugazhendhiran., Electric motors and Drives Control., EDC sixth edition.Ollivier M., (1995) “RFID- a new solution technology for security problems”, European Convention on Security and Detection, 408, pp. 234- 238
- [6] Yi-Chih Hsieh et. al. (2014), “An Application of Immune Algorithm for the Periodic Delivery Planning of Vending Machines” Journal of Computers, Vol. 9, No. 7. pp 1525-1529