Smart Trolley System using RFID card and Arduino

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ABSTRACT

Now a days interest in looking malls is wide increasing among individuals. individuals get daily necessities from looking malls. there's associate rising demand for straightforward and fast payment of bills in looking malls. Shoppers are annoyed at locating the things on the looking list when looking in looking malls and once no help is accessible in looking. To eliminate these issues, every product within the store is supplied with a RFID tag, to spot its kind. [one] every handcart is enforced with a Product Identification Device (inflammatory disease) that contains a microcontroller, an LCD, RFID reader and a ZIGBEE transmitter. RFID scanner can read the getting product info on the looking cart and the knowledge concerning the merchandise is displayed on LCD that is interfaced to the microcontroller, [2] . At the asking counter, the full bill is transferred to laptop at the counter facet by victimization ZIGBEE module. [three] during this project, AT89S52 microcontroller is hooked up to associate RFID reader and a barcode reader. because the user puts things within the self-propelled vehicle the reader on the self-propelled vehicle reads the tag and sends an indication to the controller. The controller then stores it within the memory and compares it with product ID. [four] matches, it shows the name of item on LCD and additionally total quantity of things purchased. Once the looking is finished, the client can press a button on the self-propelled vehicle send the full quantity spent on the merchandise to the asking counter section victimization ZIGBEE wireless communication module. [5] . during this project, there's an opportunity to revert back the merchandise in keeping with our want and budget. Once you're taking back product from the self-propelled vehicle, a similar card are once more scan by the RFID reader, then the controller can deduct he same quantity associated to it product, from information superhighway bill quantity. The bill quantity can be received by the ZIGBEE receiver.

*Keywords***:** *Arduino Uno, NRF24l01, LCD, Bluetooth*

Module, RFID Tag, RFID Reader, Etc.

1. INTRODUCTION

1.1 Benefit to the customers
This system provides on spot scanning of the merchandise and shows its worth details on liquid crystal display. this enables customers to check the full worth with the budget within the pocket before charge. Whenever a client is completed with his/her looking and around the charge counter, the info from the liquid crystal display goes to transfer to the charge counter pc through NRF24l01. By this manner, it'll save the time of the purchasers further.

1.2 Benefit to the mall
This system works just for those customers that square measure having the identity card of the mall. this is often enforced by victimisation RFID Tag and RFID Reader. Customers need inserting the identity card that is additionally a RFID Tag and inserts to an area wherever RFID Reader is gift. Once RFID Reader detects the presence of RFID Tag solely then it'll permit the looking tramcar or basket to become sensible. Otherwise, it'll act as a straightforward tramcar.

1.3 Arduino Benefit
We designed the system victimization the Arduino Development Board. It provides complete access to functions of microcontroller or microchip prefer to program the controller, to use the input/output pins, to speak. The system victimization Arduino is a smaller amount large and it will simply transfer from one place to a different. It needs less power offer and that we will simply improve the system, if needed, as a result of its simple programming.

1.4 Cost efficient and userfriendly
Since we tend to designed this method exploitation Arduino and user sensible transportable act as Barcode Scanner, this method needs less price to style. this method needs less power provide and it displays the overall quantity to the user thus this method is easy.

1.5 Overview

In today's ever quick growing world of boom the entire world is experiencing a quick growth. All the basic facilities also are growing. One such place wherever folks will buy virtually everything is that the mall. because the malls have accumulated therefore has accumulated the no. of individuals visiting the actual mall. these days folks got to wait inqueue for the charge of their purchasedproduct. this could} be very inconvenient as may folks square measure in an exceedingly hurry and it's a sheer waste of your time. during this project we tend to square measure creating wireless charge system for malls. the most objective of the project is to scale back the time taken throughout the charge (no queues) since the charge is finished wirelessly. additionally, to scale back the person power required is a smaller amount so reducing the overhead price of the system. Rfid is that the special sort wireless card that has integral theembedded chip along with loop antenna. the integral embedded chip represents the twelve-digit card variety.

Rfid reader is that the circuit that generates a hundred twenty-five kilocycle per secondmagnetic signal. This magnetic signal is transmitted by the loop antenna connectedtogether with this circuit that want to browsethe rfid card variety**.**

1.6 Design Methodology

The main objective of this project is to alert the driver at danger zones and to activate the braking system, if it's required. this might be done just byvictimization RF communication system. The RF transmitter sections square measure placed at each and every zone like college zones, ordinance areas and hospital areas etc. The RF receiver sections unit of measurement placed every and every vehicle. The RF Transmitter and receiver will communicate by victimization magnetism waves in free area medium. The Transmitter section contains the knowledge of limitations of specific space and it transmits the knowledge signals in to the air. The transmitter section consists of switches ,encoder, RF transmitter . The Rx receiver section consists of Rf receiver, micro controller, dc- motor, Show |LCD| displayalphanumeric display} display, buzzer. a pair of those sections' unit placed in vehicles, once the vehicle enters in to the transmitter region Thesesections unit placed in vehicles, once the vehicleenters in to the transmitter region it receives theinformation signals.

2. HARDWARE DESIGN

Arduino Uno: Arduino Uno is open supply; microcontroller board supported the ATmega328P. It performs its functionalities withits fourteen digital input/output pins, six analog inputs, a sixteen-rate quartz, a USB affiliation, aninfluence jack and a button. we will merely connect it to a pc with the assistance of a USB cable or we will use battery to induce started. we will conjointly power it with AN AC to DCadapter. we tend to need 2 Arduino Uno. One is atthe transmitter that is connected to the trolley carand another is at the receiver at which pc at charge counter is gift.

NRF24L01: Once the shopping is done, the data transfer from the trams to the pc at the asking counter is completed through NRF24L01. The NRF24L01could be a half-duplex transceiver within which knowledge the info the information} will transfer in each the directions however at thesame time data transfer in each the directions can't be attainable. The NRF24L01 could be a straightforward chip that is intended forwireless applications and it operate low power. It operates on belief band (Industrial, person and Medical) at two.400-2.4835 GHz. we have a tendency to use this module for a way communication solely. It suggests thatknowledge goes to transfer from tram to pc atthe asking counter.
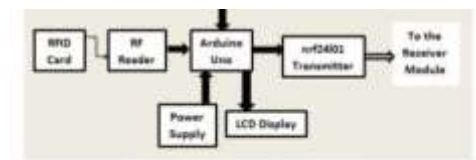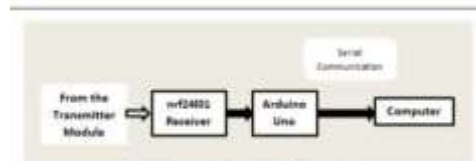

Figure 1: Block diagram of trolley system.

Figure 2: Block diagram of receiver side.

16×2LCD display

A liquid-crystal show (LCD) may be a flat showthat is employed to show the outline of the merchandise. twenty*4 suggests that we are able to show total 20 characters at any instance of your time and that we have total four rows and, in every row, we are able to represent twenty characters. we have a tendency to show the merchandise item's name and worth on the liquid crystal display. The liquid crystal display is hooked up to the self-propelled vehicle. code style Arduino programming will be written in C or C++ programming language for the compiler that converts the programming language to binary computer code for the target processor. Least Arduino C/ C++ programs encompass 2 performs: setup function that is employed to initialize variables and alternative libraries required within the program. we are able to additionally initialize the input and output pinmodes. once setup perform, we've loop perform within which perform loop is dead within the main program within the repeatedly manner [1-3].

3. RESULT AND CONCLUSION

In sensible trolley car System, currently there's no want for the shoppers to attend within the queue and look ahead to his/her flip for the scanning of the merchandise things. particularly throughout weekends or festivals season, there's not time wastage in waiting within the queue. The client must do solely request at the request counter and solely those customers will use the sensible trolley car United Nations agency square measure having identity card wherever RFID Tag is inserted in it. So, supermarkets or hypermarkets use this idea as their business strategy to draw in a lotof variety of consumers.

4. FUTURE SCOPE

We have to update the main points of the merchandise things within the memory unit oftrolley car time to time. we tend to take the assistance of net of Things and a few softwaresystems with the assistance of that all info aregoing to be updated often. Also, with the assistance of optical detector, motors, and motor drivers, we are going to create trolley car in such the way that it'll follow the client that buying things and it maintains the safe distance between client and itself.

5.REFERENCES

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