RFID Based Smart Trolley System

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ABSTRACT

We are designing a project called RFID based smart trolley system in which we are using RFID and ZIGBEE technology. This system is implemented to eliminate the drawbacks of barcode scanning based billing system. In old system people suffer from time wastage by standing in the long queues.

I. INTRODUCTION

In the proposed system we are attaching RFID reader to every trolley. When a product is placed in a trolley it reads 12 digit ID number from RFID tag .After that it sends data to the central billing system w.r.t. to code implemented on the IDE.

Existing System:

In the Existing system the barcode scanner is used to scan barcode of each and every product by the seller at one place. The customers wait in a long queue for billing of the products

Disadvantages:

- Time wastage
- Hard to place the Product in exactly in between Sensors to identify.
- Difficult to identify the Product.

Proposed System:

In the Proposed System we have implemented the system efficiently to transfer the Data Successfully to the Billing Session. In this System we are using RFID Reader and Zig-Bee to Data Transferring.

II. BLOCK DIAGRAM

Transmitter circuit:

![Figure 1]

Hardware requirement:

Arduino:

The Arduino Micro Controller is a open source platform which has on chip controller with power supply jack, serial port, crystal oscillator with frequency 16 MHZ.

It has 6 analog pins,14 digital pins and some supply pins. They are different boards like Arduino Nano, Arduino Uno, Arduino mega etc...
ATMEGA328P FEATURES:

- Elite constancy, Low Power use with 8-Bit Microcontroller.
- Advanced Reduced Instruction Set Computer (RISC) Architecture which has the going with parts as takes after
  - It has 131 Strong Instructions.
  - Most executable instruction is single clock cycle.
  - It escort totally static operation
  - It has senior non-whimsical Memory Segments
  - It has 32 KB In-scheme self-designed Flash memory
  - It has 1KB EEPROM
  - It has 2KB Intramural static RAM
  - facultative boot code territory with self-deciding jolt bits which has both In-System planned by on-chip boot loader program and absolute read while create operation
- The program can bolted with the help of the item security.
- A segment of the periphery components are according to the accompanying
  - There are two 8-bit clocks counters with free re-scale and consider mode
  - There are two 8-bit clocks/counters with independent re-scale and think about mode
  - It has consistent counter with detached oscillator work
  - It has six pulse width modulation channels
  - It has 10-bit analog to digital converter in TQFP and QFN
  - An arrangement of 10-bit ADC in Plastic DIP
  - A USART for serial communication
  - There are two-master slave SPI linkup's
- Special features of the microcontroller are detailed:
  - It was reset when power on.
  - It has on chip internal Oscillator
  - An extra 6 sleep modes are available, stand-by mode is also available
  - It has 28 Input and Output lines in plastic DIP
  - It was operate in 1.8 - 5.5 Volts

POWER SUPPLY:

It is a circuit which converts AC to DC. It is very essential circuit required for any electronic gadget like mobile, laptop, etc...

Some Basic components used in Power Supply:

Transformers

Transformer is an electrical component which transfers electrical energy from one circuit to another circuit by changing its voltage strength.

Here we are using step down transformer for reducing 230 V to 12 v.
It doesn’t change voltage strength.

Capacitors:
Capacitors are used to convert pulsating DC to smooth pure DC. It filters small AC components.

Voltage regulators:
Voltage regulator is used to regulate constant voltage. Here we are using 7805IC. This can output 5 V DC.

RFID:
Radio Frequency for Identification (RFID) which is used for authentication of any object or a person. This module consists of RFID reader and tags. Each and every tag has unique 12 digit ID number. RFID reader is used to read 12 digit number.

LCD:
LCD (Liquid Crystal Display) screen is a digital display module and discover a vast hodgepodge of employments. A 16x2 LCD show is fantastically basic module and is commonly used as a piece of numerous gadgets and circuits. These modules are supported more than seven elements and different multi segment LEDs.
ZIGBEE MODULE
ZigBee Module is a wireless communication module which is cost effective. Its main function is to act as both transmitter and receiver. It is used in limited area application only.

Software Description:
Arduino IDE:
The Arduino IDE is a open source programming platform where we can found collection of examples for different modules. It used to interface different new modules with predefined functions easily.

III. WORKING OF THE PROJECT

In this project, we use following components are arduino, RFID reader and tags, zigbee. RFID reader is used to read ID number and display the cost details of the product on the LCD. By using zigbee modules the data is transferred to Personal computer. After completing shopping, it displays total cost.

APPLICATIONS:
- Easy shopping
- Super markets
- Industries

ADVANTAGES:
- Easy Handling
- Smart Usage
- No Waiting

IV. CONCLUSION

In this project, we have developed a system for shopping by using RFID and zigbee technology

V. REFERENCES

[5]. Mr.P.Chandrasekar, Ms.T.Sangeetha, "Smart Shopping Cart with Automatic Central Billing System through RFID and ZigBee", 2014 IEEE