SMART TROLLEY FOR MALLS
(Domain: Smart and Advanced Trolley Based on Wireless Network)

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Abstract— Radio Frequency Identification (RFID) is a technology for wireless information exchange over short distances. Even though the technology itself was invented about 40 years ago, recent development in the field of low cost RFID devices began to finally show its potential. The possibility of adding (minimal) computing capabilities to every day's objects will support the development of ubiquitous computing in the near future. Applying RFID transponders to consumer goods will be common, creating an ever present computing environment spanning all parts of every day's life. Today RFID commerce already constitutes a vital and ever expanding market. Judging by evidence from recent years, RFID industry will continue its rapid growth during the following years. In such a developing market security and privacy become increasingly important. They define security as a composite of the attributes confidentiality, integrity and availability (also called CIA). In this context, confidentiality means the absence of unauthorized information disclosure. Integrity describes the absence of improper (meaning unauthorized) system and underlying data alteration. Availability in the security context is defined as continued readiness for authorized actions. Hence, a system with appropriate security should maximize the balance of the three attributes' concurrent existence. Moreover, privacy is defined as a subset of confidentiality and integrity. In other words, consumers have the right to be sure that their data is not disclosed. It is becoming increasingly difficult to ignore the importance of security and privacy aspects in research and industrial appliance of RFID. There is surprisingly few literature review on RFID in a security and privacy context.
Numerous reviews on security and privacy concerning health care, e-commerce and data-mining. The latter two are especially interesting, as essential privacy questions in these fields, LIKE" WHAT data is collected?" AND" HOW is data secured during transmission?" apply to RFID as well. The central factor underlying these topics in e-commerce is trust, a topic that can easily be anticipated in an RFID context. When RFID tagged objects hit the end-user market at a large scale, consumers' willingness to provide data will likely depend on individual perceptions of trustworthiness, just as it does in e-commerce. Such perceptions will be directly based on the security and privacy provided.
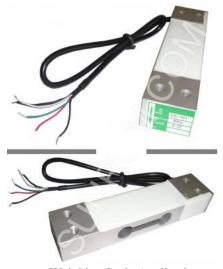
Keywords—

1. **RFID based technology**

2. **Weight sensor**

3. **Wireless system.**

I. RFID

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. The technology requires some extent of cooperation of an RFID reader and an RFID tag. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of an RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using several meters away and beyond the line of sight of the reader radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

II. WEIGHT SENSOR

Weighing Scale Application

A load cell is a transducer that is used to convert a force into electrical signal. The most common use of this sensor is in weighing machine. Every weighing machine which shows weight has a load cell as sensing element.

This conversion is indirect and happens in two stages. Through a mechanical arrangement, the force being sensed

deforms a strain gauge. The strain gauge measures the deformation (strain) as an electrical signal, because the strain changes the effective electrical resistance of the wire. A load cell usually consists of four strain gauges in a Wheatstone bridge configuration. Load cells of one strain gauge (Quarter Bridge) or two strain gauges (half bridge) are also available.

The electrical signal output is typically in the order of a few millivolts and requires amplification by an instrumentation amplifier before it can be used. The output of the transducer is plugged into an algorithm to calculate the force applied to the transducer.

Load cells are used in several types of measuring instruments such as weighing scales, universal testing machines.

III. WIRELESS SYSTEM

CC2500 RF Module is a Trans receiver module which provides easy to use RF communication at 2.4 GHz. It can be used to transmit and receive data at multiple baud rates from any standard CMOS/TTL source. It works in Half Duplex mode i.e. it provides communication in both directions, but only one direction at same time (not simultaneously). This switching from receiver to transmitter mode is done automatically.

RF Module can be used for applications that need two-way wireless data transmission. It features high data rate and longer transmission distance. The communication protocol is self-controlled and completely transparent to user interface. The module can be embedded to your current design so that wireless communication can be set up easily.

A. FEATURES

• Supports Multiple Baud rates (4800/9600/19200/38400).
• Supports Multiple Channel Selection (CH0/CH1/CH2/CH3).
• Works on ISM band (2.4 GHz) which is reserved internationally so no need to apply for license.
• No complex wireless connection software or intimate knowledge of RF is required to connect your serial devices.
• Designed to be as easy to use as cables.
• No external Antenna required.
• Plug and play device.
• Works on 5-9v DC supply.
• Standard UART Interface.
• In this project we are making wireless billing system for malls.

IV. WIRELESS BILLING SYSTEM :-

The main objective of the project is to reduce the time taken during the billing (no queues) since the billing is done wirelessly. Also to reduce the man power needed is less thus reducing the overhead cost of the system.
We have 2 main units: -
1. Trolley unit
2. Billing unit

TROLLEY UNIT:-

In this unit the μc is attached to RF /barcode reader. The user has to put the items in the trolley as the user puts the items in the trolley the reader on the trolley reads the tag and sends it to the μc. The μc then stores it in the memory and compares it with the lookup table. If it matches then it shows the name of item on LCD, also the total amount of shopping is displayed on LCD.

BILLING UNIT:-

As soon as the shopping is over the user comes near the billing section and sends the total bill wirelessly to the billing pc. The billing pc has the vb s/w which then collects the data from the receiver and displays the bill.

CONCLUSION

The progress in science & technology is a non-stop process. New things and new technology are being invented. As the technology grows day by day, we can imagine about the future in which thing we may occupy every place. This project is used in shopping complex for purchase the products. In this project RFID card is used as security access for product. If the product is put in to the trolley means it will shows the amount and also the total amount. But in this project RFID card is used for accessing the products. So this project improves the security performance and also the speed.
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