

The Implementation of Library Management System

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Abstract- The tremendous recent involvement of technology in our life generates a lot of advantages and disadvantages. Nevertheless, and to profoundly augment its positive influence, at the expense of the negatives, most technology be deployed to serve humanity and society. Researchers attractive in developing robust and cooperative robotics that capable of solving difficult tasks without any human control. Metal detector robot is one of the robotics principles due to its effectiveness as compared with manually operated and very slow traditional methods. In this article, three main points that are concentrated on a robot which is vehicle- mounted sensors that capable of carries the sensors of the metal and obstacle; Control and management system wirelessly by a computer-based to command the robot functions by several sets of user's rules and manage the robot instructions; and conduct an integrated system that achieving navigated data via metal detector based on online Structured Query Language database registry. Also, discussed a comparison of the previous detector systems and highlights on several merits. The proposed system capable of fully control the robot also, set the robot operator permissions and rules, stored and archived the navigated results and printed reports and stored in an independent database

I. INTRODUCTION

The “Radio Frequency Identification Technology (RFID) has moved from obscurity into main stream applications that help speed the handling of manufactured goods and materials”. Barcode is still the dominant player in supply chain industries and departmental stores. However, RFID is replacing barcode technology and enjoys the major advantage of being independent of line of sight problems and scanning the objects from a distance. It offers the promise of reduced labor levels, enhanced visibility, and improved inventory management. Walmart has been one of the leaders in the large scale adoption of RFID technology RFID tags have a memory capacity of 16 - 64 K Bytes which is far more than the According to “Radio Frequency Identification” Technology.

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The initial step of RFID was during World War II, when the British used it to identify whether planes belonged to “friend or foe”. Some technical problems resulted in the gunning down of allied planes and since then the use of RFID was limited to Defense and armed forces industries due to the cost factors. New advancements in science and technology have enabled usage in commercial applications. Large institutions, such as the US Department of Defense, have since implemented RFID, which is now spreading to other organizations and industries. Walmart is the second- biggest user of RFID and investing significant resources to develop its applications.



Fig.1 Radio Frequency Identification data transfer

Security problems still prevailing about RFID technology is the fear that people can easily build RFID readers with lower costs and can read data from an RFID chip without knowledge and maybe even alter the data. For example, someone could use the RFID reader on an inexpensive product and upload the data to a chip that is on an expensive product, thereby getting the latter for a lower price. Another example is about retrieving data from unsecured RFID enabled mobiles.

RFID applications are very broad and open in nature. First we discuss daily use applications followed by a case study. RFID is used as a medium for numerous tasks including managing supply chains, tracking livestock, preventing

counterfeiting, controlling building access, supporting automated checkout etc. RFID is also used as a means of providing security to differentiate pirated copies of video and audio discs by sticking RFID stickers to the discs. Another widely popular example of RFID application is RFID based tollgates.

II. METHODOLOGY

A detailed description of the Methodology system is been discussed in this section.

Methodology introduction

The attendance system is basically an embedded one. Embedded stands for ‘hardware controlled by software’. Here, the software using a Microcontroller controls all the hardware components. The microcontroller plays an important role in the system. The main objective of the system is to uniquely identify and to make attendance for a person. This requires a unique product, which has the capability of distinguishing a different person. This is possible by the new emerging technology RFID(Radio Frequency Identification). The main parts of an RFID system are RFID Tag (with unique ID number) and RFID reader (for reading the RFID tag). In this system, RFID tag and RFID reader used are operating at 125KHz. The EEPROM used for storing the details has the capability of storing 256 person details at a time.

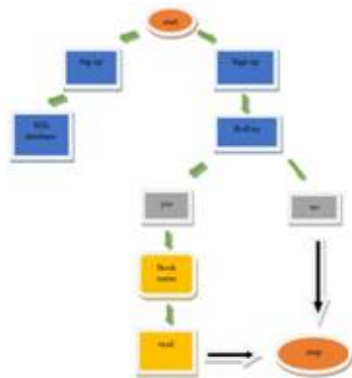


Fig.2 Block Diagram of Data Flow

RDID Module

The term RFID stands for Radio Frequency Identification, as the name defines the operation of the device is based on the Radio frequency signals. The RFID systems consists of RFID Reader and a tag which is normally used in identification and tracking of objects. Before discussing more about the RFID, let’s see the uniqueness of this technology and its general application. Today in most cases barcodes are used for identifying an item in a warehouse or a supermarket

using a barcode scanner, this existing system can be upgraded with the RFID technology.

Similar to barcode, the RFID can also give unique identification number to all products, but the added advantage is unlike the barcode system’s line of sight, this system can detect the RFID tag within its proximity range. Meaning, you do not need a human to search for the barcode and point the barcode scanner on it. With this feature, most of the system can be automated, and human intervention can be minimized because the tag can be scanned and billed automatically when it reaches the RFID reader. RFID door locks and RFID attendance system are very popular now days and many hotels provide RFID tag to their customer to lock and unlock the door.

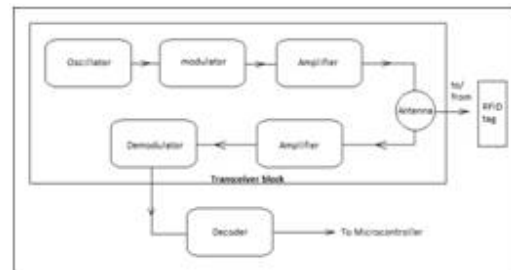


Fig.3 RDID Module

RFID Reader:

It is a device which consists of an antenna, transceiver and a decoder.

Transceiver:

It can be used either as a transmitter or a receiver. It consists of an oscillator to generate a continuous signal which is modulated to a required frequency and then transmitted into air through an antenna.

Antenna:

It is a device which converts the electrical signal into electromagnetic signal which is efficient in propagating the signal in air.

Decoder:

When an RF signal is detected at the antenna from a tag, the decoder helps in retrieving the data. Below are the images of three popular RFID Readers – EM18 RFID Reader Module, RC522 RFID Module and PN532 NFC RFID Module.



Fig.4 RFID Reader

RFID Tag

It consists of 2 components (in case of a passive tag). They are Microchip and an antenna. You can know more about RFID Tags here.

- **Microchip:** It is a semiconductor device which consists of a circuit etched in it with some KB of memory storage, capable of storing data and transmitting it whenever needed.
- **Antenna:** It is used to transmit the data that is present in the chip into air so that it can be detected by a reader. Increase of an active tag it consists of Microchip, battery and an antenna
- **Battery:** In active devices in order to power up the microchip battery is externally used.



Fig.5 RFID Tag

DATA BASE:

In computing, a database is an organized collection of data stored and accessed electronically. Small databases can be stored on a file system, while large databases are hosted on computer clusters or cloud storage. The design of databases spans formal techniques and practical considerations including data modeling, efficient data representation and storage, query languages, security and privacy of sensitive data, and distributed computing issues including supporting concurrent access and fault tolerance. A database management system

(DBMS) is the software that interacts with end users, applications, and the database itself to capture and analyze the data. The DBMS software additionally encompasses the core facilities provided to administer the database. The sum total of the database, the DBMS and the associated applications can be referred to as a database system. Often the term "database" is also used loosely to refer to any of the DBMS, the database system or an application associated with the database.

Data definition

Creation, modification and removal of definitions that define the organization of the data.

Update

Insertion, modification, and deletion of the actual

Retrieval

Providing information in a form directly usable or for further processing by other applications. The retrieved data may be made available in a form basically the same as it is stored in the database or in a new form obtained by altering or combining existing data from the database.

Administration

Registering and monitoring users, enforcing data security, monitoring performance, maintaining data integrity, dealing with concurrency control, and recovering information that has been corrupted by some event such as an unexpected system failure.

DBMS conform to the principles of a particular database model. "Database system" refers collectively to the database model, database management system, and database. Physically, database servers are dedicated computers that hold the actual databases and run only the DBMS and related software. Database servers are usually multiprocessor computers, with generous memory and RAID disk arrays used for stable storage. Hardware database accelerators, connected to one or more servers via a high-speed channel, are also used in large volume transaction processing environments. DBMS's are found at the heart of most database applications.

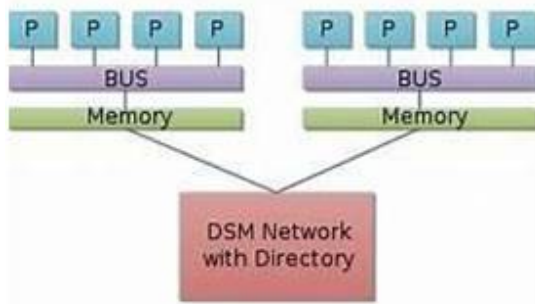


Fig.6 DATA BASE

Frequency Range used by RFID Technology

We know that the Radio frequency range is from 3 kHz to 300 GHz, but the RFID generally uses radio frequencies in ranges within the Radio frequency (RF) band categorized as below:

- Low frequency RFID: Its range is in between 30 kHz to 500 kHz, but the exact frequency used by it is 125 kHz. Its detection range is 10 -15 cm.
- High frequency RFID: Its range is in between 3 MHz to 30 MHz, the exact frequency used by the module is 13.56 MHz. Its detection range is up to 1.5 meters.
- Ultra High frequency RFID: Its range is 300 MHz to 960 MHz, but the exact frequency used is 433 MHz. The detection range is up to 20 meters.
- Microwave RFID: It uses a frequency of 2.45 GHz and the detection range is up to 100 meters far data.

So based on the application and the detection range required, the suitable RFID should be chosen. The detection range varies based on the size of antenna size and tuning.

Types of RFID systems

The RFIDs are broadly categorized into two types mainly based on the type of RFID tag used. The two systems are called Active RFID system and Passive RFID system.

Active RFID system

The Active RFID system has active tags which are powered up with a power source (a battery). So the active tags are capable of radiating their own Radio frequency signals to transmit the data that contains in the microchip, without depending upon the Reader’s signals to power up. The active RFID are typically categorized under UHF RFID, which has detection range up to 20 meters.

IV. CONNECTION PROCESS

Connection Process.

- Filter your HTML form requirements for your contact us web page.
- Create a database and a table in MySQL.
- Create HTML form for connecting to database.
- Create a PHP page to save data from HTML form to your MySQL database.
- Start XAMPP server by starting Apache and MySQL.
- Write PHP script for connecting to XAMPP.
- Run it in the local browser.
- Database is successfully created which is based on the PHP code.



Fig7 Xampp connection with local server

Software Requirements

- XAMPP is regularly updated to the latest releases of Apache, MariaDB, PHP and Perl.
- It also comes with a number of other modules.
- including OpenSSL, phpMyAdmin, MediaWiki, Joomla, WordPress.
- Self-contained, multiple instances of XAMPP can exist on a single computer, and any given instance can be copied from one computer to another.
- XAMPP is offered in both a full and a standard version (Smaller version).

V. RESULTS AND DISCUSSION

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. An RFID system consists of a tiny radio transponder, a radio receiver and transmitter. When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader. This number can be used to track inventory goods. Passive tags are powered by energy from the RFID reader's interrogating radio waves. Active tags are powered by a battery and thus can be read at a greater range from the RFID reader, up to hundreds of meters.

Unlike a barcode, the tag does not need to be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method of automatic identification and data capture (AIDC). RFID tags are used in many industries. For example, an RFID tag attached to an automobile during production can be used to track its progress through the assembly line, RFID-tagged pharmaceuticals can be tracked through warehouses, and implanting RFID microchips in livestock and pets enables positive identification of animals. Tags can also be used in shops to expedite checkout, and to prevent theft by customers and employees.

RFID tags can be either passive, active or battery-assisted passive. An active tag has an on-board battery and periodically transmits its ID signal. A battery-assisted passive tag has a small battery on board and is activated when in the presence of an RFID reader. A passive tag is cheaper and smaller because it has no battery; instead, the tag uses the radio energy transmitted by the reader. However, to operate a passive tag, it must be illuminated with a power level roughly a thousand times stronger than an active tag for signal transmission. This makes a difference in interference and in exposure to radiation.



Fig.8 MYSQL Data Base

However, both frameworks are based on different principles and the use of both frameworks together should be carefully considered. A large amount of money and effort has been invested by companies into establishing their project management environment and processes that follow the classical phased approach where requirements are defined upfront and fixed. But companies want to react more quickly to new global challenges and to the changing business environment. These business requirements then result in the failure of many running projects. Therefore there is a need to enhance the current project management environment so that it is more agile and adoptive to changes. The objective of this paper is to create a conceptual framework that aggregates principles and processes from both frameworks (PRINCE2 and Scrum) with emphasis on their use in web development projects. This paper will discuss the advantages and

disadvantages of using the two abovementioned frameworks. Different groups of readers can benefit from the results of this paper. It will help corporate management to decide how a company should set up its own specific framework for managing agile product development projects. Project managers will have a better understanding of agile development principles and how it fits in the classic project management framework.

VI. CONCLUSION AND FUTURE WORK

RFID is still in a developing phase and more is in the pipeline in terms of new applications. Among applications already developed, RFID tags are being used in clothing for billing and security purposes. RFID tags are embedded inside animals for tracking purposes. RFID tags embedded in uniforms can be used to know the number of hours an employee spends to complete a particular task. There are several associations that are protesting against the use of RFID to track people fearing the impact on people's social life and privacy. Clearly the extent to which use RFID is to be used is still an open debate. A lot of research on RFID tags is ongoing including on embedding these with other devices, especially mobile

RFID manufacturers and users are looking for proper standardization and regulation of RFID. As prices fall further and technological improvements continue to occur, RFID technology is expected to become economically and technically more viable and impact our daily lives as more applications are developed.



Fig.9 local server hosting

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