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Library Management System Using RFID Technology

Prof. Prachi Admane, Mr. Akshay Patil, Mr. Ajay Rathod , Mr. Suraj Patil, Mrs. Aishwarya
Dept. Of E & TC
Genba Sopanrao Moze College of Engineering,
Balewadi, Pune.

Abstract-Radio frequency identification (RFID) is a rapidly emerging technology which allows productivity and convenience. Radio Frequency Identification (RFID) is a new generation of Auto Identification and Data collection technology which helps to automate business processes and allows identification of large number of tagged objects like books, using radio waves. This paper proposes RFID Based Library Management System that would allow fast transaction flow and will make it easy to handle the issue and return of books from the library without much intervention of Manual book keeping which benefits by adding properties of traceability and security. The proposed system is based on RFID readers and passive RFID tags that are able to electronically store information that can be read with the help of the RFID reader. This system would be able to issue and return books via RFID tags and also calculates the corresponding fine associated with the time period of the absence of the book from the library database.

Keywords- RFID, library database etc.

I. INTRODUCTION

Radio-Frequency Identification (RFID) devices have importance in our daily life and they will become appearing in the near future. There is a tremendous growth in the industry to use RFID technology in the recent years. Research and development in this field has made thistechnology to be used in supply chain management, attendance management, library management, automated toll collection etc. RFID is an electronic technology where by digital data encoded in an RFID tag is retrieve utilizing a reader. In contrast to bar code technology, RFID systems do not require line-of-sight access to the tag In order to retrieve the tag's data. Passive RFID is sure to replace bar codes in library applications. The bar-code system used in libraries is very time consuming and labor intensive.

The RFID based LMS facilitates the fast issuing, reissuing and returning of books with the help of RFID enabled modules. It directly provides the book information and library member information to the library management system and does not need the manual typing.

The RFID tagca contain identifying information which is unique, such as a book's title or code, without having to be pointed to a separate database. The information is read by an RFID reader, which replaces the standard barcode reader commonly found at a library's circulation desk.One step is to decide on which kind of RFID reader and tag is used for library automation. The importance of reader are what kind of tag it reads, its operating frequency, capability of near reading, writing inside the tag ,connection type with computer The reader has two main functions: the first is to transmit a carrier signal, and the second is to receive a response from any tags in proximity of the reader.

A tag needs to receive the carrier signal, modify it in some way corresponding to the data on the card, and retransmit the modified response back to the reader. Further, tags which are located in book are binding with the specific Id. In modern passive RFID devices; the tag consists of a small integrated circuit and an antenna. The benefit of passive RFID is that it requires no internal power source; the circuit on the tag is actually powered by the carrier signal. Thus, the carrier signal transmitted from the reader must

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be considerably large so that the response can be read even from the card.

In practical applications of using RFID technology, a tag is attached to an object used to identify the target, when the target object pass through the area that the reader can read, the tag and the reader builds up the radio signal connections, the tag sends its information to the reader, such as unique code and other data stored on, the reader receives thoseInformation and decodes them, and then sends to a host computer so as to complete the whole information processing.

II. PROBLEM STATEMENT

RFID Based Library Management System that would allow fast transaction flow and will make it easy to handle the issue and return of books from the library without much intervention ofManual book keeping which benefits by adding properties of traceability and security.

III. OBJECTIVES

The main objectives of this project proposed in the paper are:

- Issue and return of books with help of RFID reader and tags.
- Search the books available in the library.
- Track the history of books issued and returned by students.
- Maintenance of Students and books details
- With help of ARDUINO and rfid

IV. BLOCK DIAGRAM

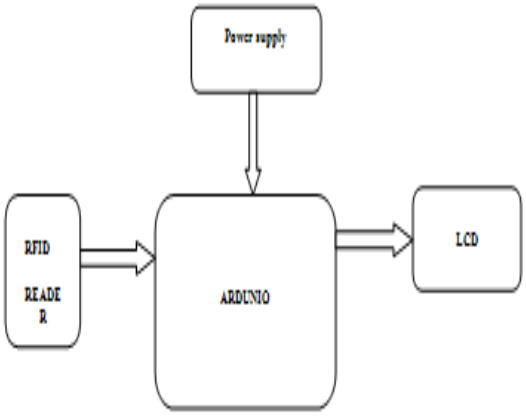

Fig 1. Block diagram of project.

V. CIRCUIT DIAGRAM

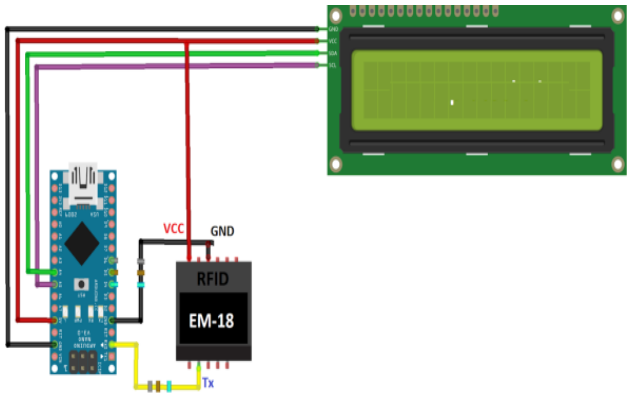

Fig 2.Circuit diagram of project.

1.Components Used:

- Arduino Nano
- Rfid Reader
- Rfid Tag
- Lcd Display

2. Software Used

Arduino IDE Ver. 1.6.5

VI. CONCLUSION

RFID in the library speeds up book borrowing, monitoring, books searching processes and thus frees staff to do more user-service tasks. To yield best performance, RFID readers and RFID tags to be used must be of good quality.

The efficient utilization of the technology also depends upon theinformation to be written in tag. These applications can lead to significant savings in labor costs, enhance customer service, lower book theft and provide a constant record update of new collections of books.

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