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Automated Library Management System

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Abstract-Radio Frequency Identification (RFID) is a new idea used in library automation and is becoming very popular nowadays. RFID finds large scope in industries, shopping malls, institutions and departmental stores. The current library system faces some drawbacks like security issues and excess manual work like searching and maintaining records for users and administration respectively. The use of RFID technology can play a vital role in automation of library operations. It modifies existing system towards self service operations and allows fast transaction of information. The proposed system thus tries to overcome above drawbacks and introduce to a turning point in working fashion. This project implements RFID tags that are embedded on books as well as user issue card. These tags are scanned by the RFID readers and the data is send serially to microcontroller that undergoes processing. This processed data is stored in personal computer that displays the whole information and can be retrieved later if necessary.

Index terms – GSM, RFID tag, RFID Reader

I. INTRODUCTION

RFID is abbreviation of Radio Frequency Indentificationthat uses Radio waves for communication and is rapidly gaining importance to boost the existing systems.

The current library system are based on barcode technology but it's not the best option. The barcode system used in libraries is very time consuming and labour intensive. In the opposite,the RFID system provides a solution to effectively collect, manage and distribute books. In contrast to barcode technology, RFID systems do not require line-of –sight access to the tag in order to retrieve.

The RFID is an automatic identification technique used for the fast transaction of books or journals using RFID tags and readers. The RFID technology helps in fast issuing, returning and reissuing of books. The technology helps in direct transaction of information from the tags to the Personal computer of the librarian and in automatic updation of transactions in users account. The RFID tags can be programmed unique code. This code gets read when passing through the RFID reader. When a tag crosses the reader, the reader recognizes the unique code and updates the account of user. Modern readers have the capability of reading up to 15 tags at a time[2].

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II. Literature survey

Radio-frequency identification (RFID) is an automatic identification method, which can store and remotely retrieve data using devices called RFID tags.[1] The technology requires cooperation of RFID reader and RFID tag.The RFID tag can contain identifying information, 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.

The concept [3][4] of RFID can be viewed as an extension to electronic barcode[5], which can be used to identify, track, or detect holdings in the daily maintenance of library. This system, consist of smart RFID tags, that provides libraries with more effective way of managing their collections while providing greater customer service to their users. Thetechnology works on small and thin tags, which allows it to be placed on the inside cover of each book in a library's collection. The tag consists of an antenna and a tiny chip which stores small amount of data to identify each item. These tags are applied directly on library books and can be read with a RFID Reader. Line of sight is not essential for reading the tags with the reader, therefore, the books require much less human handling to be read and processed. Server software integrates the reader hardware with the Library Automation Software for seamless functioning of book keeping. The information contained on microchips in the tags affixed to library materials is read using radio signals regardless of item orientation or alignment. It provides a wireless data link, without need for line of sight. In addition to tags, an RFID system requires a means for reading or "interrogating" the tagsto obtain the stored data and then some means of communicating this tag data to library information system. RFID tag's listen for a radio query from the reader and respond by transmitting their unique ID code. When the data stored in the chip inside the tag is transmitted to the reader, the reader stores this data in a log file. This log file is read by theServer's Library Automation Software and this data is, in turn, stored in the database that resides in the server.

III. BLOCK DIAGRAM

Fig- 1 shows the block diagram of Automated library management system based on RFID technology.

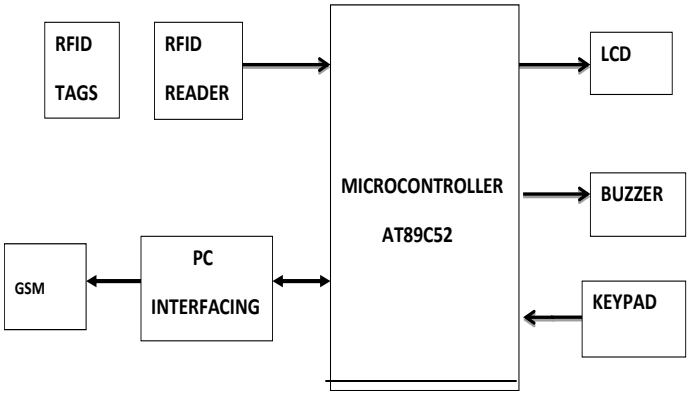

Figure 1.Block diagram

Components used:

1) Microcontroller AT89C52
2) RFID Tags
3) RFID readers
4) LCD
5) Personal computer
6) GSM

IV. Proposed System

The RFID system used to automate the library management overcomes the drawbacks of barcode technology. The proposed system along with existing RFID system is advanced with GSM technology. This technology helps to inform the user via text messagethe due dateand the fine if books are not returned on given due date.

V. CONCLUSION

The RFID is an intelligent library management system which creates better service qualities like book searching, issuing and returning. This project can lead to significant

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saving of labour cost and constant updating of records. The initial cost of implementing the project in libraries is high but in future the maintenance and time consumption is reduced. This is applicable for small departmental library as well as vast university library.

VI. REFERENCES

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