

Library Management System

What is Library Management System?

There were days when libraries were considered as a storehouse of books. Today Libraries are much more than that. Libraries are now looked upon as information centers, where information is gathered, stored and disseminated to its members. With the ever-increasing sea of information, this modern function of the library is becoming very complex and tedious to handle manually. The librarian has to devote most of his time to handling such functions of the library. He does not get time to guide the people to the right books for their information needs. Library Automation System is designed to meet the needs of all information seekers. Academic researchers can search the world's library collections using a seamlessly integrated client. For the librarian, Library Automation System provides simple interfaces to catalog new books, manage patrons, create reports and control budgets and acquisitions.

Why Library Management System is required?

RFID is a technology that is sparking interest in the library community because of its applications that promise to increase efficiency, productivity and enhance user satisfaction.

Globally emerging knowledge-based societies of the twenty first century will need information to sustain their growth and prosperity. With intellectual capital as investments, knowledge and information have become wealth generators. In this scenario, who can deny the importance of libraries, which are repositories of reference resources?

A library stacked with books and other information dissemination processes, has a physical presence. A library is an institution of knowledge acquisition and learning; it provides invaluable service to its members, patrons and to a wider local community.

Current library management systems use barcode technology and security strips. Using barcodes, a library management system can keep records of lending, borrowing and shelving status of items such as books, audio or video tapes, CDs, DVDs, etc. Security strips on library items tag their movements.

But barcodes and security strips (electronic article surveillance or EAS) have their limitations. They are slow to read and are prone to sabotaging by thieves. All these lead to irreparable loss to a library and its valuable inventory stock. This is where RFID technology can come to the aid of library managers and users.

Many libraries are switching over to RFID applications, for example, the Vatican Library. With its priceless, ancient collections of 2 million books and manuscripts, the Vatican Library is now using RFID to track, manage and secure its assets. The main problem these ancient libraries face are thefts, non-returns and miss-filed items. It is expected that by adopting an RFID solution the Vatican Library will be able to control misuse of its library and at the same time provide its users the best possible facilities and access to rare manuscripts.

RFID technology is not just there to tags books and other library assets; it will provide a comprehensive route for enhancing all library services and upgrade operations for everyone concerned with the library.

Functional details:

For a library, smart labels have several added advantages over barcodes. One of the major benefits of an RFID system in a library is the ease of check-in and check-out of library items. Patrons can self check-in and check-out library items, saving themselves valuable time.

In a library, an RFID system consists of:

- A smart label
- A reader or a hardware for interrogating the smart label
- A software for controlling the hardware and decoding the responses from smart labels

Since RFID tags do not have line of sight requirements:

- Many items can be read simultaneously even whilst stacked
- Items do not have to be opened and scanned one at a time
- Items in multiple formats like books, CDs, etc. can be read at the same time

Automated counters, which read RFID signals, can help patrons:

- To self check-in/out of items from a height adjustable counter (may be placed anywhere suitable within the library)
- To quickly renew their issued out items
- To obtain a receipt of the transaction

These automated self check-in/out counters are suitable for children and persons with physical disabilities.

After a check-out operation, the same RFID system disables the security requirements so that patrons can take the books, CDs, videos, etc. outside the library.

Many libraries have found that with RFID technology inventory and scanning of items:

- Take only 10% or less time as compared to conventional systems
- Misplaced books and other materials can be found easily – the reader can hone in on misplaced or wrongly shelved items quickly
- Find cataloguing errors and replace incorrect spine labels

Besides these incredible technological advantages, an RFID system in a library can offer the following as well:

- RFID tags are safe for magnetic media such as CDs, DVDs, etc.
- Some RFID tags are rewritable. If, for example, a cataloguing error occurs, it can be rectified quickly
- Less manual handling of items hence better preservation
- RFID 'smart' membership cards can give members: access control in certain areas, make payment (fines or fees) easy, lets them use fee-based library facilities such as the photocopier, internet, etc.
- Staff has more time from routine chores and can therefore provide better service to patrons
- Staff schedules can be made flexible
- Tags last longer than barcodes as reading is contact-less

Bill of Material

With RFID applications in libraries, all the library assets, namely books, manuscripts, CDS, DVDs, videos, audio cassettes, etc. have to be embedded with RFID tags. The RFID readers and antennas are placed conveniently where library users will have maximum access. In addition there has to be computers that are managing and controlling all the library activities.

Thus, in a library, an RFID system consists of:

- A smart label which can be attached to or concealed within a library item – it contains a memory chip and RF antenna to send and receive data and can be programmed
- Hardware for interrogating the smart label
- Software for controlling the hardware, programming the tags and decoding the responses from smart labels in the interrogation zone

The three main system components can be further separated into five more sub-components:

- A smart label or a tag
- A reader
- A middleware
- An application software
- A host system or a server

Middleware: RFID middleware is a software layer that connects data coming in from tags (on library items such as books, etc.) and readers, to the library management system. Middleware provides a coherent and stable interface between RFID hardware operations and flow of data elements such as membership number, catalogue number, etc. into the library database. RFID middleware solutions provide messaging, routing, and connectivity features required to integrate RFID data into existing library management system.

Server: A server is the heart of an RFID application system. It is the communications gateway among the various components of the system. It receives the information from one or more of the readers and exchanges information with the library databases.

Application software: The applications software would have the APIs (API: Applications Programming Interface) necessary to interface the RFID system with the server, etc. so as to achieve automated library system.

Benefits of Library Management System

A library RFID system consists of several components: tags, tag readers, tag programming stations, sorting equipment, tag inventory wands, etc. A tag microchip is programmed with distinctive information about the item (for example, barcodes) which can be directly imported from an integrated library system (ILS) at the tag programming station. Thus the new technology can be easily merged with the existing ILS.

RFID application in libraries will benefit all persons involved in managing, running and using their facilities.

Benefits to library management:

- Uncompromised security within the library
- Efficient collection management system Uncompromised collection security
- Flexible staff schedules
- Labor saving methods free the staff to help customers
- Higher customer/patron satisfaction levels
- Improved inter-library cooperation
- Better preservation of inventory because of less handling by staff
- Same security and labeling formats for all items such as books, CDs and DVDs, hence better management of databases

Benefits for library staff:

- Time saving devices free them to help customer better
- Labor saving devices free them from doing repetitive, physically stressful tasks
- Can have flexible working schedules

Benefits for library patrons:

- Self check-in and self check-out facilities
- Check-in and check-out of all types of items (books, audio tapes, video tapes, CDs, DVDs, etc.) at the same locations
- More staff available for assistance
- Quicker service such as payment of fees, fines, etc.
- Better inter-library facilities, more efficient reservation facilities, etc.
- Faster and accurate re-shelving means patrons can find items where they should be, hence quicker and more satisfying service
- Height adjustable self check-in/out tables are liked by children and physically disabled persons who use the library.