# Radio Frequency IDentification Based Library Management System

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## Introduction

Library Management Systems are systems used to manage all processes handled by a library like adding books, search issues, issuing books and returning them. A lot of problems appear as a result of the used conventional systems from typos in data entry, that result in losing the integrity of data and creating uncertain environment for the librarian, to some possible human mistakes in calculations.

The proposed system which is RFID based library management system handles these processes in a more effective and time saving way. This way is conducted through turning all traditionally processed processes into RFID based ones.

## Proposed project

RFID Based Library Management System.
Which handles the processes done by Librarian and Students as RFID based processes for the sake of efficiency.

These processes include the books' processing like adding and deleting, shelf management, searching and inventory management. These processes are going to be performed using an RFID system with a tag placed on each book and a reader through which the librarian can perform the needed processes.

The general architecture of a typical RFID system is shown in the figure Below. It consists mainly of a reader , a tag and a runnung application.

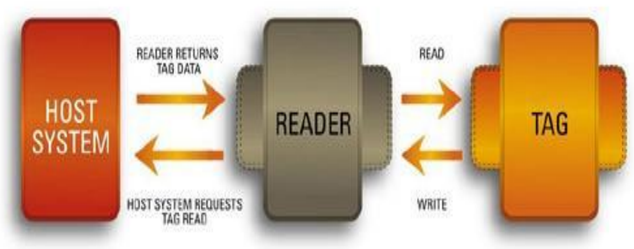


Figure 1: Typical RFID Archeticture

## System Design and Implementation:

The system would be designed using the architecture of any other RFID based system. It consist of the RFID reader which generates the magnetic field, a tag attached to each book in the library and the system application.

Each tag has a unique ID which transmits its ID when a reader is in range to be read. Then the collected ID/ IDs are passed to the application where it is processed in any way to serve the purpose of the desired process. The following g figure shows the library system architecture when its RFID based.

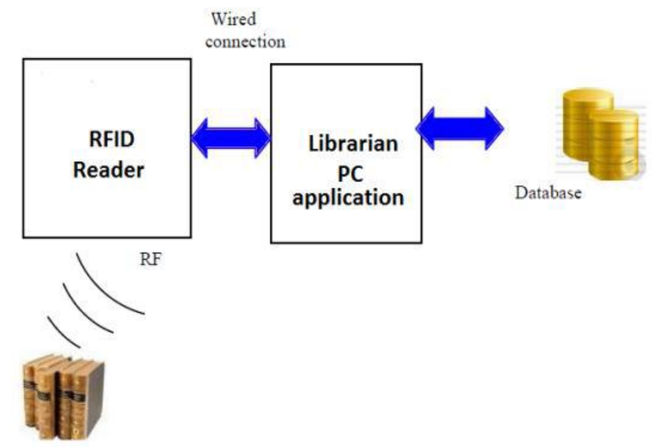


Figure 3: System Architecture

## Project Objectives:

Building a Library Management system that can handle the following processes under the technology of RFID:

1. Checking out books and checking them back in again.
2. Inventory management.
3. Adding items to the library's collection.
4. Shelf management ( Managing lost or Misplaced books on a certain shelf).
5. Searching for a specific books.

## Project Block Diagram:

the Figure below shows the Block Diagram of the system. It shows the main components of the system which are the reader and the tags.

The reader contacts with that tag which is placed on the desired item to be tracked ( book), through a wireless interface. To get the tag's ID upon which the application is intended to process the data and perform the operations.

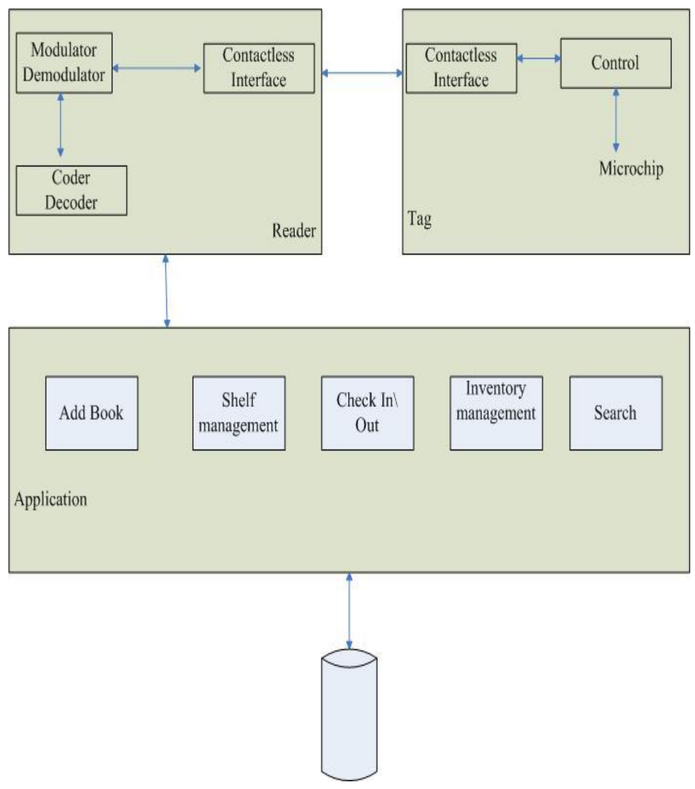


Figure 2: System Block Diagram

The general description of the system processes and the considered scenarios in this system is illustrated in the figure below:

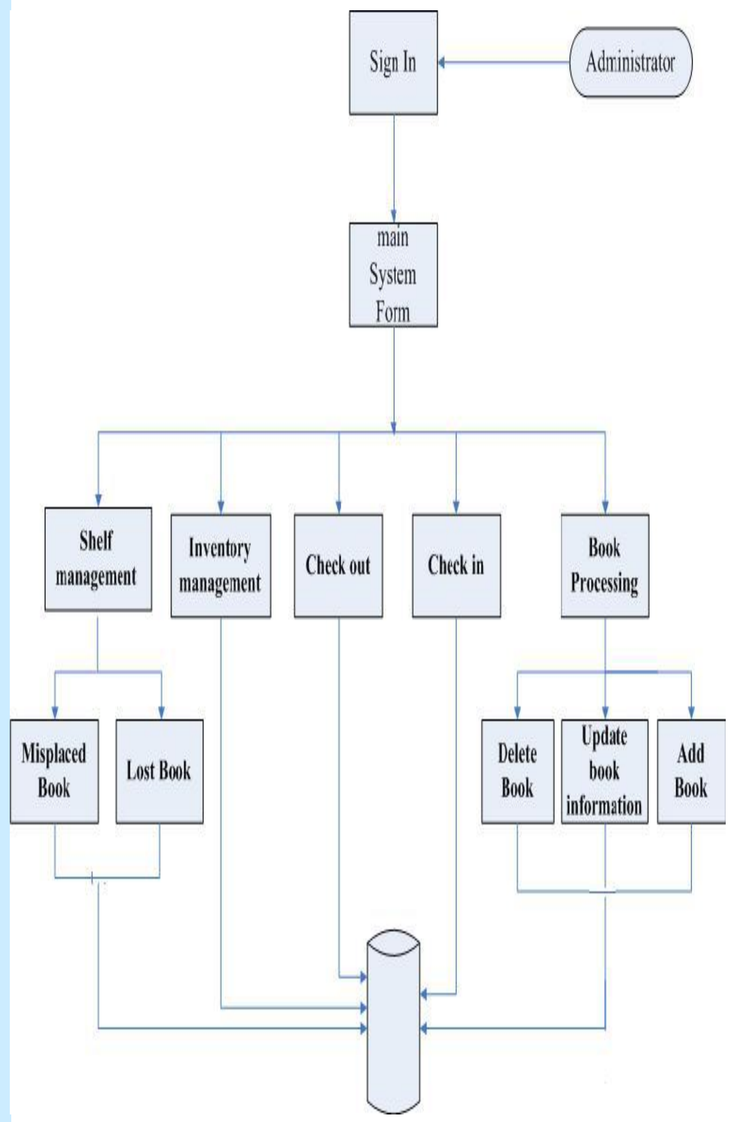


Figure 4: System Main Processes

## Results:

1. RFID as a technology has enhanced some of the processes that are done in a traditional way in the targeted library.
2. The system worked on a number of processes which are adding a book, searching for a book, shelf management and inventory management.
3. The system helps the librarian to manage the librarian an efficient and time saving way.
4. Getting the IDs of the books through the RFID reader ensures the right entry of the ID, unlike the traditional way where typos may result in data loss in many ways.