
Library Management System with Smart Book shelf

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Abstract: As the quantity of libraries utilizing Smart library³ the board framework is expanding step by step, there should be appropriate security for insurance of books from robbery and abuse. Most libraries use either RFID¹ or standardized tag in their backend. The login method to the library is mostly by means of RFID which can be effectively altered. Other route is through secret key based setup from PC. By utilizing a blend of RFID¹ and unique mark, the security of the library can be expanded by a few dimensions. This paper exhibits a manner by which how the consideration of fingerprints will make the library increasingly secure.

Keywords: RFID¹, Shelf², Library³, RASPBERRY PI⁴

I. Introduction

A library is fundamentally an immense gathering of books or any wellspring of data material. Security is of most extreme significance in school or college libraries as various private research papers are likewise kept in them. Additionally dominant part of understudies flop in restoring the issued books. The instances of burglary is likewise present. In this manner it is important to screen the section to the libraries. Most libraries utilize a mix of standardized identifications for recognizing books and RFID cards as understudy login. The utilization of just RFID as a method for validating is the real pass in security framework. Most Smart administration frameworks

utilize frail security conventions in their RFID card and they can be effectively skimmed to another card, therefore caricaturing the personality of another client and can get access to the framework. Regardless of whether one library does not contain any private research papers which are available just by few staff for understudies, understudies can abuse it numerous different ways.

II. Problems

[1] The root problem of all our institutions is growing corruption population is the major concern in today's world, and hence an improvement in many sectors is of growing importance. Transport management is a huge issue in densely populated countries. The ways adopted by the commuters is certainly outdated. People involved in this business usually rely on extreme measures. It is crisis management rather than transport fleet management. Transportation business is extremely feasible but due to man practices problems in Pakistan the business is running in loss. Cities are not properly structured. As people, in developed countries live close to their work.

III. Literature Review

Library can be considered as the brain of any institute. Library Management System (LMS) supports the general requirement of the library like acquisition, cataloguing, circulation. An LMS usually consists of a relational database, software to interact with that database, and two graphical user interfaces (one for patrons, one for staff). Most LMS systems separate software functions into discrete programs called modules, each of them integrated with a unified interface. Before the digital era, library functions were performed manually and independently from one another. People used to order materials with ordering slips, cataloguers manually catalogued items and indexed them kept on a single index card, and users signed books out manually, indicating their name on cue cards which were then kept at the circulation desk. Early mechanization came in 1936, when the University of Texas began using a punch card system to manage library circulation.

IV. Proposed Algorithm

The system is completely automated, with web access to the library database for every user. This system includes smart book shelf² for an advanced and effective book issue management system. The presence of books in the book shelf is consistently monitored by the system and it automatically logs the issue and returns of the respective books.

Multiplexers³ are used for detecting the presence of a book in a specific slot. Atmega328 Microcontroller acts as a slave device which monitors the Bookshelf and RFID system associated with it. Raspberry Pi⁴ acts as a Master which handles all the tasks of User authentication, User & Books Database Management, User Book issue Record Maintenance & User Interface of the system.

Online Search & Pre-booking of books, Anti-Theft Alert, Solenoid operated doors for Book shelf, RFID based user Authentication are the main features of the system.

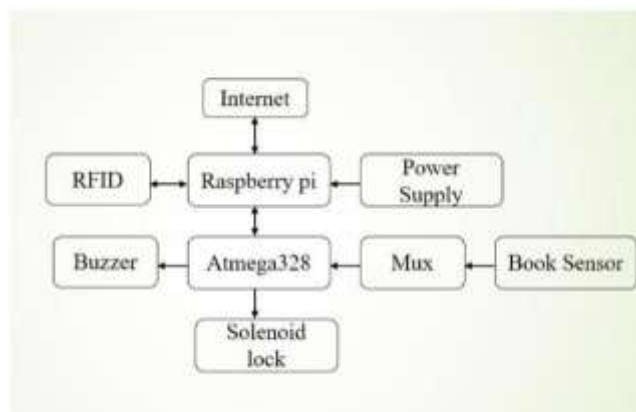


Figure 1. Flowchart

V. ADVANTAGES

- The system is automatic.
- Simple, compact and easy to handle.
- Continue update of change in availability of books.
- System is realtime.
- Visual Output.
- Simple, Compact and easy to handle.
- Sensors have long life and less Cost.
- Reduces Labor cost.
- Sensors are easily available.

VI. Business Potentials

Our proposed system benefits both ways, the librarian and the students of the University can save more time and Colleges will be benefited through this modernized Library Management system is accompanied by advance technologies which includes RFID card, Master for handling and Sensors. Our project will be aimed at developing sensors and controllers based solution for fleet management and monitoring for educational use. Our aim is to minimize the problems and mismanagement in library management and handling it electronically.

VII. Conclusion

In this project we have proposed the idea of solving the traditional method library system to transform into innovative and smart computerized process. The software helps all the users to issue and return and also manage the process of library without actually physically travelling library for it. It will also help the users to virtually view the information of availability and reservation of book through cloud computing.

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