BOOK MANAGEMENT SYSTEM USING IBEACON TECHNOLOGY

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***Abstract*— Now a days the scale of library is expanding and quantity of books is increasing. Locating book rapidly and accurately has become a crucial part of our modern Library. Usually librarian need to pick the book and give up it to the one whom the books are being issued. A human takes more time and effort for issuing the book. Currently RFID technology is used for library management but there are some issues in current system such as it required radio frequency and need special reader. To overcome this issues system uses iBeacon sensor and Floyd algorithm. iBeacon is an upgrade for RFID. In the cost side, RFID will cost more expensive than iBeacon which can also be more practical since beacon can be detected through smartphones. In proposed system when user comes in the range of iBeacon then user will get information about the book and give the rack number that will be helpful to find particular book where it is present in our library. Even in some of the cases books are theft by student that can't be prevented. Proposed system uses sensor to track and control book range in particular area, so if book goes out of that area that will be identified.**

***Keywords*: Wireless Communication, iBeacon(BLE)technology, Indoor Location, Tracking, Smart Phone**

I. Introduction

Library Management System is an application which refers to library systems which are generally small or medium in size. It is used by librarian to manage the library using a computerized system where he/she can record various transactions like issue of books, return of books, addition of new books, addition of new students etc. Books and student maintenance modules are also included in this system which would keep track of the students using the library and also a detailed description about the books a library contains. With this computerized system there will be no loss of book record or member record which generally happens when a non-computerized system is used. In addition, report module is also included in Library Management System. If users position is admin, the user is able to generate different kinds of reports like lists of students registered, list of books, issue and return reports. All these modules are able to help librarian to manage the library with more convenience and in a more efficient way as compared to library systems which are not computerized.

II. Motivation

In this 21st century, smartphones have become a necessity for many people throughout the world. Todays smart phones are capable of not only receiving and placing phone calls, but also storing data, taking pictures, and even being used as walkie talkies, to name just a few of the available options. One of the key feature inside the phone is app. App is! a short term of application software, which is a computer program designed to run on smartphone or tablet. Those innovative and creative app reddened the abilities of the phone. In tradition library system so many problem arises We are then inspired by the Apple iBeacon indoor location technologies. We come up with the idea of using iBeacon to locate the book.

III. Objectives

- Requirement gathering
- Model design strategy
- Interface design
- Take a book list of any library
- Search book
- Send request for reservation of book
- Accept request
- Remove iBeacon

IV. Existing System

RFID [Radio Frequency Identification] Technology. Existing System having bar code system which required direct line of sight, using laser Technology. Scanning Reading at one bar code which having time consuming. Human intervention required to handle bar code hardware. Hardware having less read range hold fixed and limited data. Existing system based on bar code, whose operation process complicated. Bar code has a short life and breaks easily. It can't provide accurate location of book. RFID will cost more expensive. RFID needs more hardware such as tags, readers, reader controls, etc.

V. PROPOSED SYSTEM

To find particular book and arrange them in specific section according to category it takes large manpower and time. By using proposed system this time can be reduced that will be helpful to and particular book where it is presenting our library. Even in some of the cases books are theft by student that can't be prevented. So in this concepts we are using sensor to track and control book range in particular area, so if book goes out of that area that will be identified.

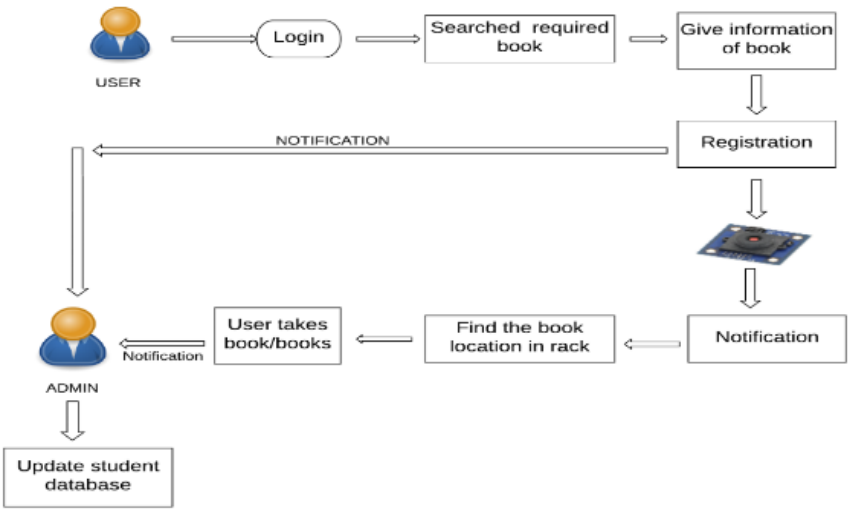

Fig1. Proposed System Architecture

A. **Features of Proposed System**

1. Improvement in control and performance: The system is developed to come up with the current issues and problems of library. The system can add user, validate user and is also bug free.

2. Save cost: After computerized system is implemented less human force will be required to maintain the library thus reducing the overall cost.

3. Save time: Librarian is able to search record by using few clicks of mouse and few search keywords thus saving his valuable time.

4. Save Manpower: This system save manpower online book issue.

5. Request column for librarian for providing new books.

6. A separate column for digital library.

7. Student login page where student can find books issued by him/her and date of return.

8. A search column to search availability of books.

VII. Implementation

Algorithm:

a) Floyd algorithm:

Is a procedure, which is used to find the shortest paths among all pairs of nodes. It does not contain any cycles of negative length which used to find distance between student & Book available in rack with min range.

b) Collaborative Filtering:

Collaborative filtering systems try to predict the utility of items for a particular user based on the items previously rated by other users. Collaborative filtering filters information by using the recommendations of other people. It is based on the idea that people who agreed in their evaluation of certain items in the past are likely to agree again in the future. Collaborative Filtering uses either a Student-Based approach or an Book item-based approach. In the Student-based approach, the Student performs the main role. If certain majority of the Students has the same reading book again and again then they join into one group.

VIII. Conclusion

The system able to implement book management system using iBeacon technology which is better as compare to RFID. It gives efficient searching of book whenever student comes into the range of iBeacon sensor and also give information to the student

whenever login into website about the book. After student issuing the book, automatically librarian gets updates about that book and reminder also.

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