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# SMART LIBRARY MANAGEMENT SYSTEM USING IOT

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**Abstract- This project aims to build a library management system that will eliminate the tedious job of library management system using registers or manual way of keeping records of books and fine payments. In general practice students are unaware of available seats in the library. Therefore through this system students can interact with the library server to check the availability of seats in the library and also the can check whether books are available or not and can get information of all books. Through this system student can pay for the fine amount using QR code scanner using app. This will save time of the students using cashless transaction.**

## I INTRODUCTION

In this project based seminar on Library Management System gives the complete information about the library. We can enter the records of new books and retrieve the details of books available in library. We can issued the books to the student and maintain their records and also check how many books are issued and stock available in the library. In this system we can maintain late fine of students who returns the issued books after due date. In this system we also manage seating arrangement in library using IOT. And also gives the report of entries in the library day by day.

## II LITERATURE SURVEY

1. Nisha Patil, Pallavi Karande, Jayshree Desai, Sheetal Pereira, ``Internet of Things for library Management System" International Journal of Engineering Science and Computing, April 2017

The Internet of Things defined as interconnection of uniquely identifiable embedded computing devices within the existing infrastructure. In the near future the world will be overlaid with communication of embedded devices creating a “Smart World”. The world is drenched in the internet and now the Internet of Things is also gaining a lot of attention. But the application of the internet technology in library Management is at its infancy. Though barcode or RFID based library management system has emerged successfully in the recent past, it has its own limitations. The proposed system is based on the NFC technology where NFC tags are embedded on the books and on the user cards and NFC readers are used to read these tags for proper, efficient and theft controlled operation of libraries. This system uses user’s own smart phone along with separate hand held reader to view the entire book information available on a PC. The library data can be used while sitting from home via IoT.

2. Mrs. Vandana C. P., ``Library Management system based on IoT" Volume-3, Issue-4, April,2017 Paper-17
3. Internet of things is an emerging technology which can and will lead to a better and dreamed future where maximum efficiency could be achieved with least efforts.The idea of the proposed system is provide an easy and user friendly library system to the users and at the same time to ensure a systematic approach towards library management so as to efficiently utilize the time and energy of the employees. Automation of library system is a convenient approach, as all the library devices can be managed from one place by implementing Internet of things (IOT).You are allowed to tap into high-tech functionality and luxury that wasn’t possible in the past in RFID Chetan J. Jadhav, Shivani S. Jadhav, ``Smart Library Management System Using Rfid Technology" International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 05 May - 2017

Radio Frequency Identification (RFID) means a system that transfers the information wirelessly, using radio frequency waves. It is automatic identification technology. This paper is about RFID based Smart

Library Management System (SLMS) that allows fast transaction flow and will make easy to handle the activities like issue and return of books from the library without much manual intervention. This system is based on RFID readers and passive RFID tags that are able to store the information electronically which can be read by the RFID readers. This system will make users to issue and return of books via RFID tags very easy and also calculate the corresponding fine associated with the period of time the absence of the book from the library

4. Mohammed I. Younis Computer ``a smart library management system based on an RFID technology"

Library staff handle a tedious task involve sorting, lending, returning, tagging, eyeing of books. In addition, library users encounter problems for finding, borrowing, localising, renewing the borrowing, queuing, and so forth. To overcome these obstacles, this paper proposes a smart library management system based on an RFID technology. Using low-cost passive tags in libraries reduces the cost of modernisation significantly. As such, integrating RFID into library management system makes both the library users and staffs task easy, smart, convenient, and practical.

## III PROPOSED SYSTEM

• The proposed method for IoT based Smart library system is shown in figure1 and it is used to automate the library and reduce time of librarian. In this proposed system Microcontroller and IR sensor are used.

• In every book QR code is generated so student can easily scan QR code and borrow book.

• In this system student first check availability of chair on android mobile phone after that he/she can book chair.

• If student not submit book on time then he/she can pay fine.

## IV MODULES-

•**Admin:** Add seat, view student details, view seat availability and check payment status.

•**Student:** Student first register to the system then login after that he/she can search book, view seat availability and pay amount.

- **Library:** In this module QR code generate for all books so user can easily scan QR code and allocate book.
- **IR Sensor:** check for seat availability empty or full and send information to microcontroller.
- **Microcontroller ESP8266:** get information from IR sensor and process information send it to the server

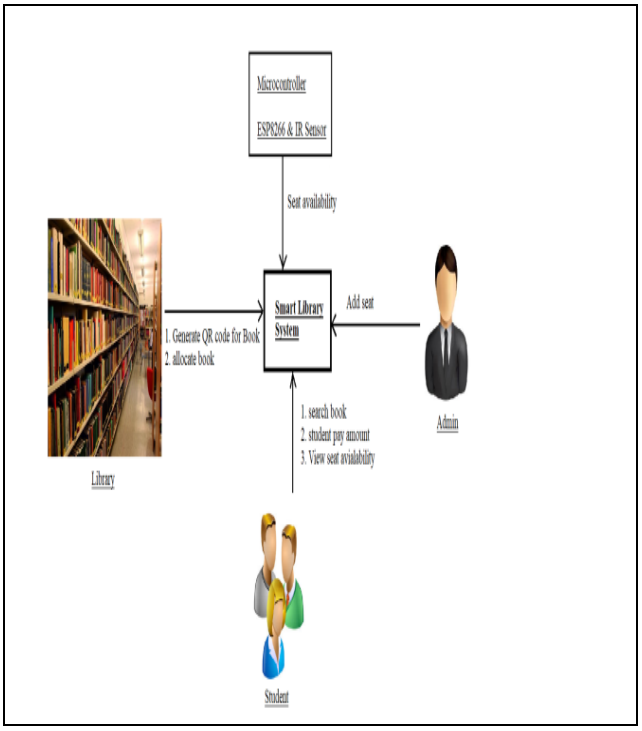


***Figure 1: System Architecture***

## V ALGORITHM

K-Nearest Neighbor

**Input :** In, input matrix or a portion of the input matrix;
$n_{chunksize}$, dimension of the sub-matrix (chunk);
k, number of nearest neighbors;

**Output:** The *k*NN graph stored in Gk;

```
create Gk;
Gk[i].weight ← float_max, for i← 0...(n_row − 1);
initialize (segments, n_GPU);
foreach segment ∈ segments do
    create D;
    create Gk′;
    host → device (In, D, Gk′);
    initialize (splits, segment);
    create Maxk;
    foreach split ∈ splits do
        initialize Maxk;
        host → device (Maxk);
        initialize (chunks, split);
        foreach chunk ∈ chunks do
            Call Distance Kernel <<<grid1, block1>>> (In, n_chunksize, split, chunk, b);
            Call kNN Kernel<<<grid2, block2>>>(D, n_chunksize, split, chunk, Maxk);
    device → host (Gk′);
return Gk;
```

## VI APPLICATIONS

- The application of the system is:
- School
- College

## VII ADVANTAGES

- Improved student's services.
- Reduce noise in library hall.
- Reduce time of students and staffs.
- Cataloging Benefits.
- More details of the book.
- Availability.
- Automatic fine fees calculation.

## VIII RESULT

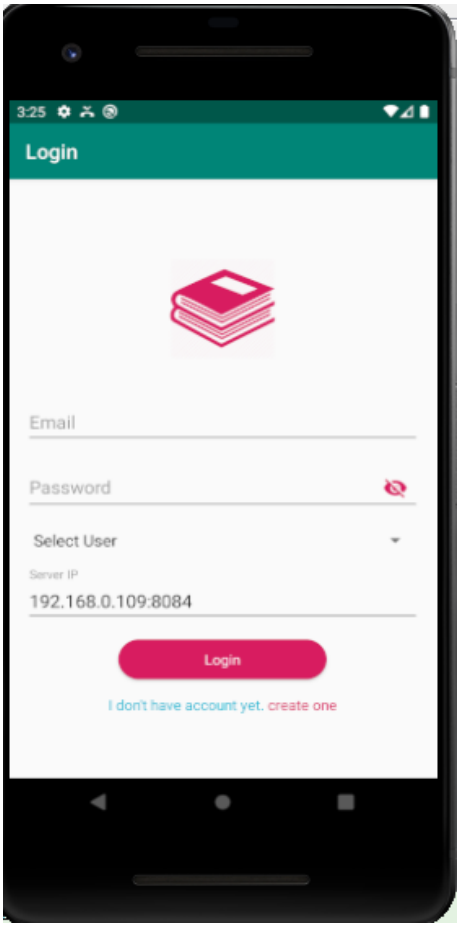


*Figure 2 : Login Page*

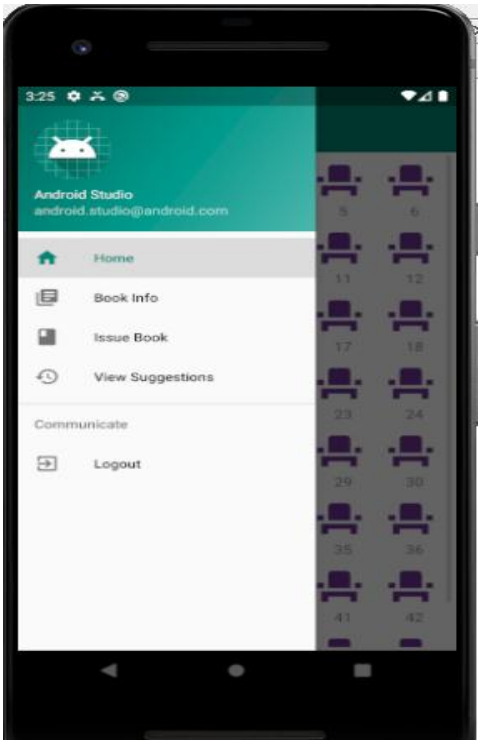


*Figure 3: Home Page*

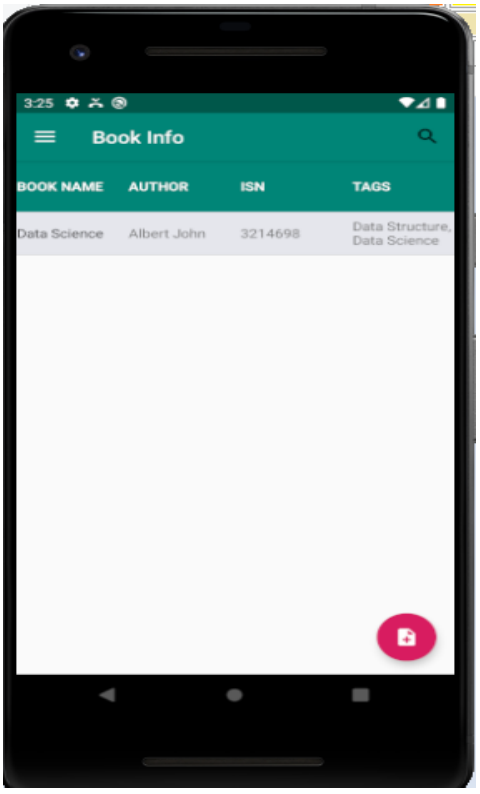


*Figure 4: Book Information*

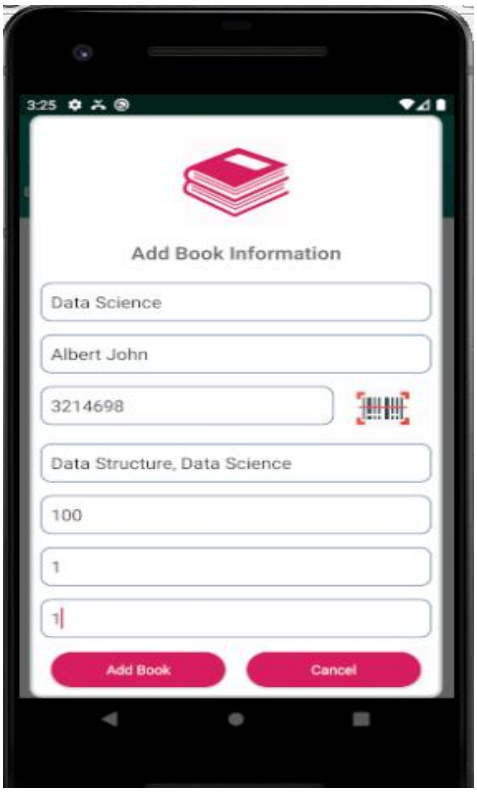


*Figure 5 : Book Information*

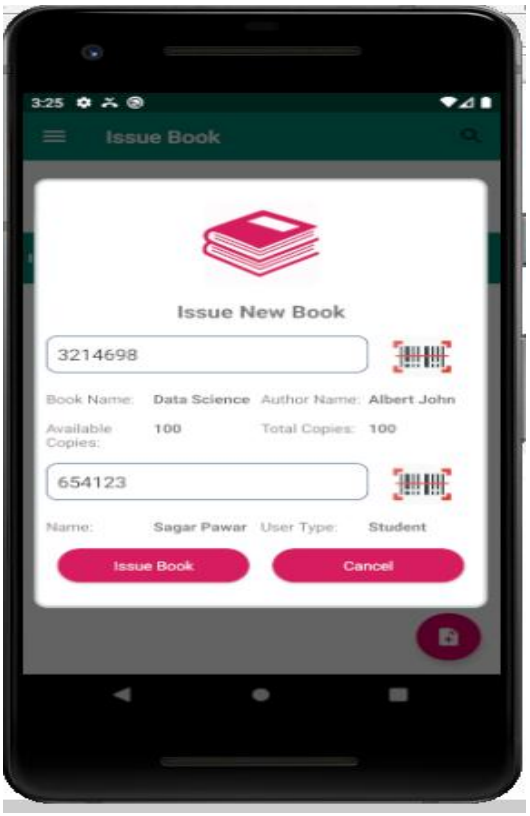


*Figure 7: Issue Book*

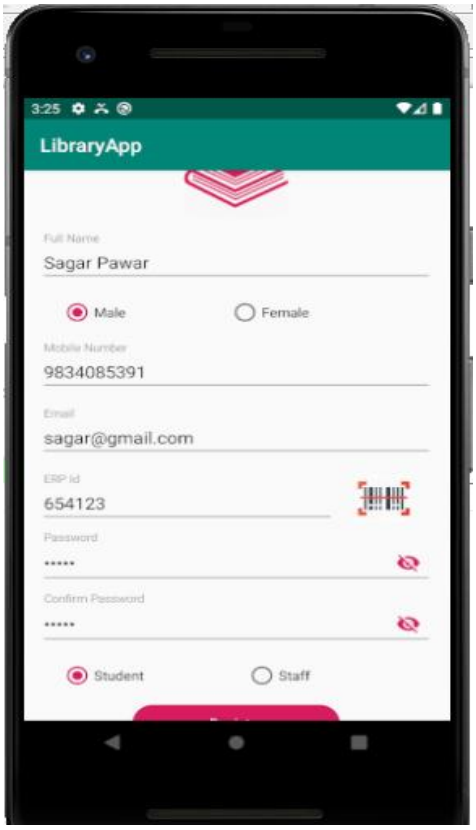


*Figure 6: Student Details*

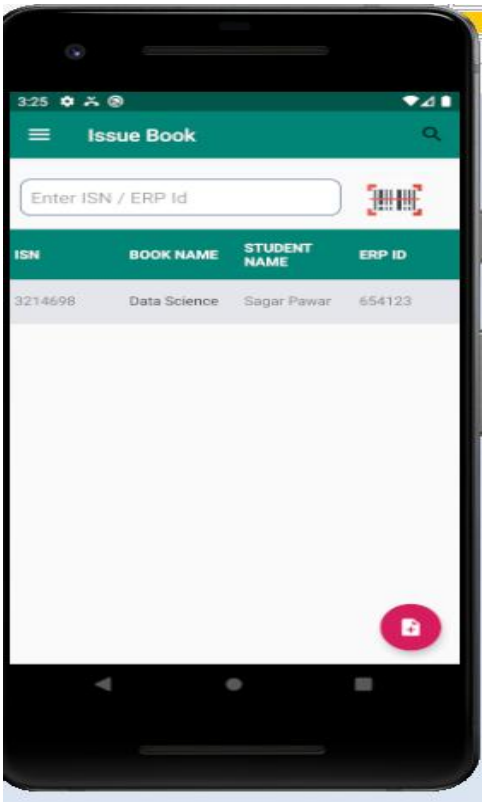


*Figure 8 : Issue Book*

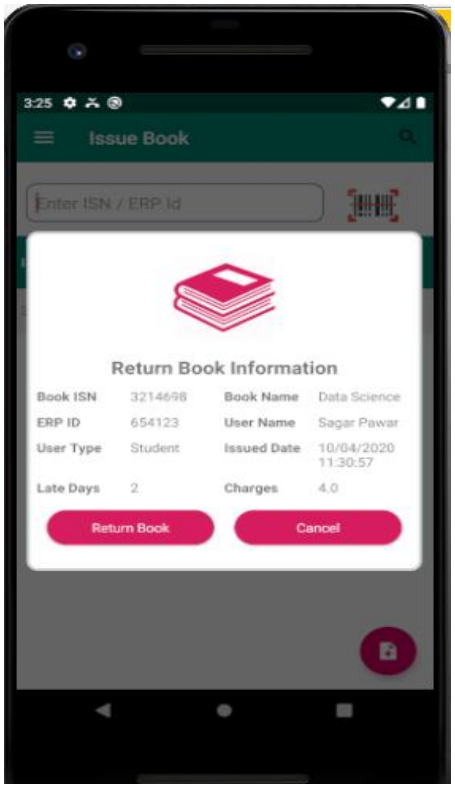


*Figure 9 : Return Book*


*Figure 11: Alert Message*

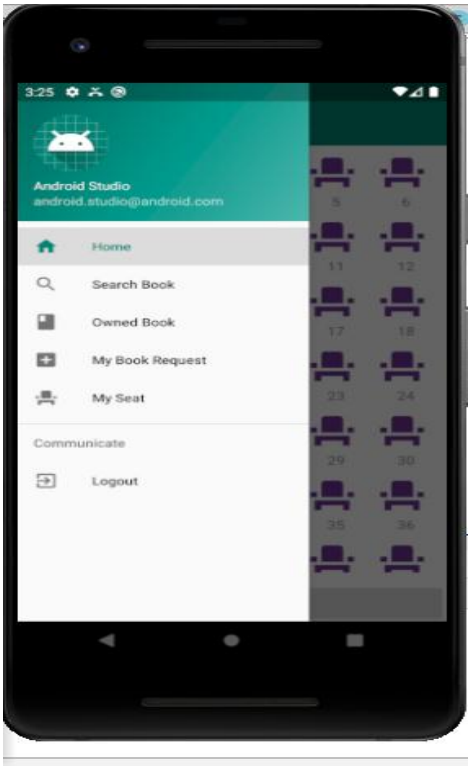


*Figure 10: Home Page*

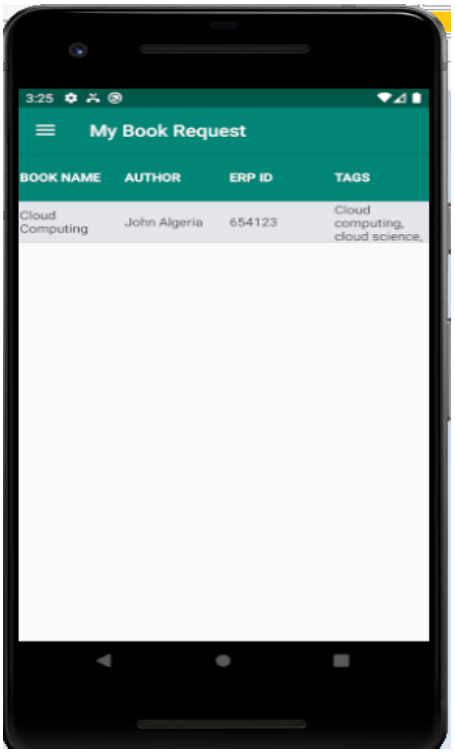


*Figure 12: Book Request*

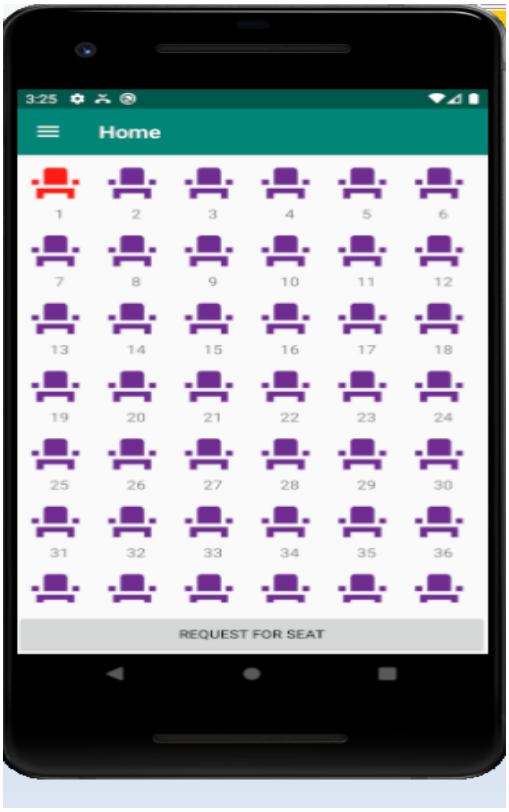


*Figure 13: Request For Seat*

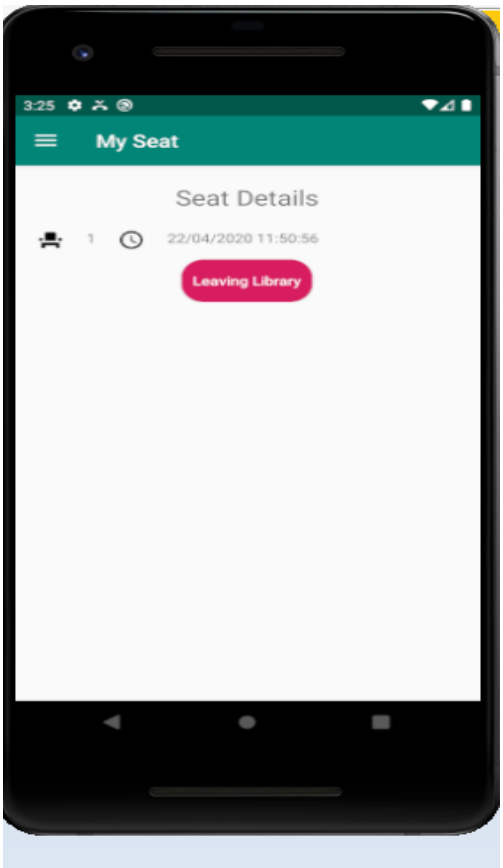


*Figure 14: Seat Details*

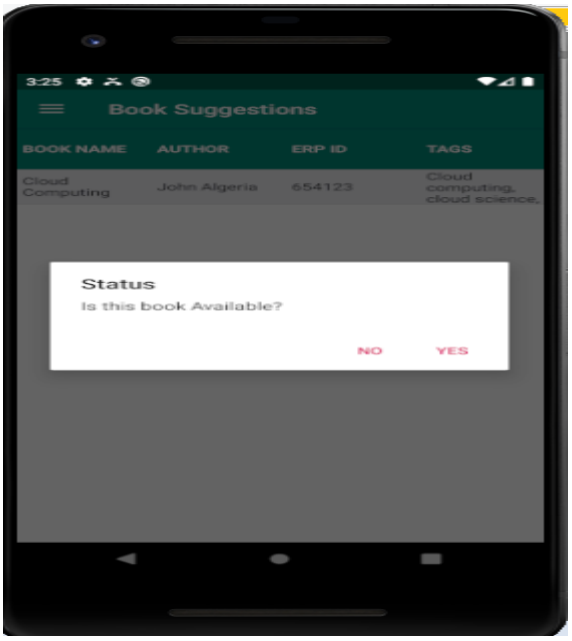


*Figure 15: Book Status*

## IX CONCLUSION

- The proposed system is very efficient in terms of technology and easy to use, consumes less time and automate the library and reduce the workload of the librarian. The availability of the books is checked on the android phone hence the users need not to go to library to check the availability of the book and view seat.
- The main advantage of this project is that all the activities such as issue, renewal and return of the books are digitalized and all these actions are automatically updated in the database. This framework also provides the information about the misplacement and antitheft of the books.

## REFERENCES

1. Nisha Patil, Pallavi Karande, “Internet of Things for library Management System” International Journal of Engineering Science and Computing, April 2017
2. Mrs. Vandana C.P, “Library Management system based on IoT” IJRDO - Journal of Computer Science and Engineering
3. CHETAN J. JADHAV, SHIVANI S. JADHAV, VIJAY M. SANCHETI, “SMART LIBRARY MANAGEMENT SYSTEM USING RFID TECHNOLOGY” International Research Journal of Engineering and Technology (IRJET)
4. Mohammed I. Younis, “A smart library management system based on an RFID technology