



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## LIBRID

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**Abstract- LIBRID is an Android application based on the Library Management system and uses RFID. The app is used to help students and the library to manage Library activities with this app. A good way to store, organize and manage countless books is to use this app where the app will have an account for each new book added, released or returned. You can get books instantly, borrow / return books quickly and manage all student data efficiently using this app and application. The purpose of the Android application for Library Management is to provide quick and accurate information about books and notes to the user and thus save a lot of time and effort.**

### I. INTRODUCTION

RFID is now widely used in many applications. When used in industry or stores it usually has the cost of the good. Also, at a grocery store the leftovers are less likely to return. This does not happen when you are in the library, as the books are released and given for a certain period of time when the book needs to be returned. The same letter can be taken several times depending on the need and requirement of users.

In Library ID, our app, users are also provided with a unique identification code that will be unique to each user. Users can use the library multiple times, so the reader will have to scan the same card more often.

RFID tags and readers will provide important and unique security. It will be used to keep track of each user present in the library as well as secure access for each user.

### II. SYSTEM DESIGN

#### A. The concept

Each user will sign up for the program and will receive an RFID that they will use to install the library. Each time they log in using an ID, the administrator will receive a notification and a list of who has signed in and out of the library.

If the user wants to issue a letter, they must first scan their ID to mark their login, then scan the QR code in the book using their personal program, and the application will be sent to the control panel to give credit to creditors. If permission is granted, the user will receive one week's time to keep the letter and must return before the due date. If they fail to do so, the late payer generator will run and every time a user enters the library the control panel will know about the return of the book and may take action against the user.

#### B. Components

The program has the following componenets:

- **RFID READER:** Links to RF channel tags to identify details. Depending on the type of tag, the connection may simply be ping or may be complicated in a circular process.

In an enviornment with multiple tags available the user must create a sequence of collision rules to ensure that communication conflicts do not occur.



RFID READER

- **RFID TAGS:** These are tags with magnetic coils inside them and used to produce radio frequency frequencies. They are synthetic, that is, they can be read up to a minimum distance of 10-15 cm leading to greater security with the static system. RFID battery-free tag; power provided by the student. An integrated antenna with a marker creates a magnetic field. Marker draws power from it, enabling circuits in the tag. Mark and send information included in tag memory. The marker is too expensive to make. All tags have a unique identifiable number (15 characters long) that is usable and can be restarted



RFID TAGS

## C. Getting started

### 1 System setting

Whenever a new book is displayed in the library, the QR code is attached to the book with the appropriate details about the book, such as name, author, publisher, branch, etc. Detailed information is stored in the database. The website also stores information about the user, their name, number, year, date of

birth, phone number or more. The database data in the database is about the library directory, extracted books and returned books.

### 2. The registration process

Each user must install the app on their android phones, if installed they will be redirected to the log page and if not registered by the user, they will be asked to register first.

The registration page will ask the user, to enter the required information and data and once installed they will send a request with their details to the management panel who will review the submitted information and provide RFID and register the user in the database in their unique identification code.

### 3. Control Panel

The request will be made to the administrator panel when the new user registers. Admin then has to give permission to the new user and also provide RFID to the new user.

Once, an ID will be provided to the user who will be registered in the database and the user will be able to access the library and borrow / return books.

### 4. User Registry

When a user logs into the library using an ID, their login will be marked on a list that will be provided each day. User register is nothing other than a reference to the library who's logged in at what time

It can also be used to mark student movements.

### 5. Book publication

If a student wants to download a new book, he or she must find the book he or she wants and select the release book on the mobile app that will open the scanner, with which they will have to scan the QR code in the book.

Once the QR code is scanned, the Administrator will receive a new book problem request that will show them which letter the student / user is requesting. They can also determine if the user has exceeded their book release limit or whether he has a book to return or paid late.

### 6. Book return

Similar to the book issue, the user has to open the book retrieval tab in their app and it will open a scanner. The user then has to scan the QR code and again the Admin will receive a request to retrieve the letter. Once the Regulator has reviewed and confirmed the status of the letter, they can return the letter and grant permission to return the letter.

### 7. Good calculation

From the time the user releases or borrows the book, a reminder will be set on the system for up to a week. If the book is not returned on time, the app will generate a recurring amount of each amount over 25 hours from the same issued time and each time a user enters the library after scanning the

card, the administrator will be notified the user book will be refunded.

### III. REQUIREMENT ANALYSIS

#### Admin Panel Requirement-

- I. Hardware Requirement: windows or any other OS, 4GB RAM minimum, i3 minimum.
- II. Software Requirement: Browser.

#### Android Application Requirement-

- I. Android version 8 or higher.
- II. Minimum 4 GB Ram and 32 GB storage

### IV. ISSUES AND CHALLENGES

While creating a system for library management, the following issues can arise:

1. Getting adequate hardware, the compatibility between tags and readers is important.
2. Constructing the RFID circuit
3. Sensing/reading tags via the reader and to get output.
4. Compacting both hardware and software to get an user friendly and accurate device.
5. Linking the databases to the other interfaces i.e. Admin panel and mobile application.
6. Ensuring there is less of data redundancy in the database and hence need to properly design it.

### V. CONCLUSION

With the use of RFID and Android application, we can digitalise the process of issuing a new library ID as well as issuing and returning a new book. Being a digitalised process, there will be no use to have hardcopies of data, such as student information and even book lists. Everything will be stored onto the database and can be accessed whenever needed.

### VI. RESULT

RFID based Library Management System is a unique system to be implemented in libraries to manage the books automatically and efficiently. It will be used by the user to issue and return books as well as by the Admin to keep a record of the users and the books as well.

### ACKNOWLEDGEMENT

We have great pleasure in presenting the report on Stock Prediction using Sentiment Analysis. We take opportunity to express our sincere thanks towards our guide Dr. K. K. Tripathi Department of Computer for providing the technical guidelines and suggestions regarding the line of work. We would like to express our gratitude towards his constant encouragement, support and guidelines through the development of the project. We thank Prof. P.R.Rodge Head of Computer Department, for his encouragement during progress meeting and providing guidelines to write this project. We thank Dr. Uttara Gogate BE project coordinator, Department of Computer, for being encouraging throughout the course and for guidance. Lastly, we would like to thank our college principal Dr. J.W.Bakal for providing lab facilities and permitting us to go on with our project. We would also like to thank our colleagues who helped us directly or indirectly during our project.

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