



## Library Management System Based on Data Mining Using Android Application

Majid Mohammad Asiri

UG Student, Department of Information Technology and Security,  
Jazan University, Jazan, Saudi Arabia.

Email: majidmohammadsari@gmail.com

### Abstract

Android is used in mobile devices and it includes the operating system and other applications. Android application has the large set of cores in the libraries and includes the java programming language. Recently, android has large number of users and it is more popular. In this paper, Library Management System (LMS) based on data mining using android application is presented. It is easy to access the library in mobile application and it also saves the time. LMS is build by using two types of modules they are, admin module and user module. In admin module, the administrator checks the book details and updates the book details and stores the details in database. And in user module, the user selects the book and the token will be generated and saved in the database. Data mining technique is used to build the LMS by using android application.

**Keywords:** Library Management System, Data mining, Android, Modules

### 1. Introduction

An Building of LMS using hibernate model is described in [1]. The LMS uses spring, flex and hibernate frameworks for designing the set of loose coupling, expandable and sufficient flexible. The model diagram consists of book database management, borrow management, reader management and system management to build LMS. Development of robotic LMS is described in [2]. Robotic system in LMS is a combination of software and hardware to manage book handling and library database. It has the records of whole transaction of books available in library. The locations of books are identified by global positioning system.

Credit evaluation system for building open library is presented in [3]. The credit evaluation system for open library has activities such as processing, collection and verifying the credit conditions. Then the credit risk assessment hierarchy model is used to setting the evaluation system of library. Then evaluation set is established for numerous industrial applications in library. LMS model for information resource sharing is discussed in [4]. This system is designed to pass the correct information in every phase at the correct time, place and way. Feasibility analysis is used for the medium-sized and small library to share the model selection.



Realization of network oriented and design of LMS is discussed in [5]. At first, the construction goals and system guiding ideology is designed for the standard universal system with the standardize protocol. Then the function is designed by network topology. The book circulation is made by collection of books, borrow and readers and administrators. Organization information for digital LMS is described in [6]. The aggregation and creation of the digital sources the organizational collection is used. The origination of LMS is made by the creation of submission information package.

LMS based on decision tree is described in [7]. Initially, the decision tree method is used for the classification of inductive learning algorithm. The model of component library is designed using decision tree. The library database is prepared by using the data mining technique. Library management system using data mining is presented in [8]. LMS uses the data mining process to attain the reader's information, library holdings and record of book lending history using queries.

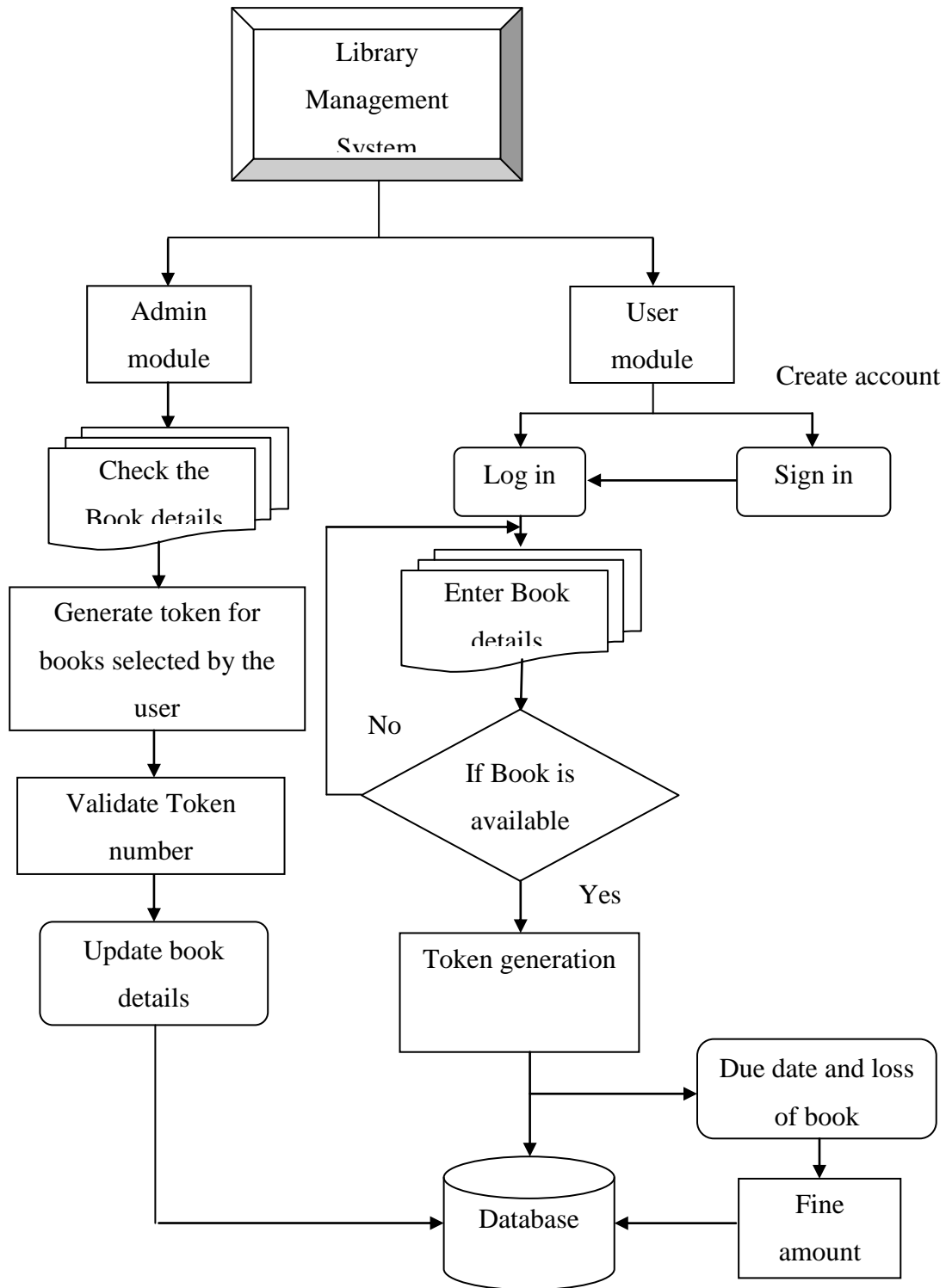
An efficient method for LMS using android application based on data mining is discussed. In section 2 the methods and materials used for the LMS is discussed. The experimental results and discussion is discussed in section 3. The last section concludes the LMS using android application based on data mining.

## **2. Methodology:**

The overall workflow of LMS based on data mining using android application is shown in Figure 1. LMS consist of two modules they are; user module and admin module. These both modules are explained in following sections.

### **2.1. User Module:**

In this module, if the user already has the account, log in to the system by using username and password and enter the book details. If the book is not available in the library database, then the user enters another book name. If the book is available, then the token is generated. Then the notifications for the return date, dues and other details are stored in the library database. If the user does not have a login, then create the account and do the further process.



### Figure 1 Overall workflow of LMS

#### 2.2 Admin Module:

The administrator checks the book details whether the user selects any books. Then generate the token for the selected books and then validate the token number and sends the token number to the user. Then update the book details in the library database. Then admin sends the notification message to the user about the book return date and fine amount to the user. Then save details in the database.

#### 2.3 LMS based data mining:

The hidden patterns of data are identified by the data mining process to obtain useful information, which is obtained from the analysis of common areas like, data warehousing and efficient analysis for decision making in business for the requirements of other information. In this study, the LMS based data mining technique is used to analyze the hidden details of information saved in the database. The datamining technique is generated by the objective function defined by,

$$K = \sum_{m=1}^l \sum_{n=1}^p \|z_n(m) - h_m\|^2 \quad (1)$$

where  $\|z_n(m) - h_m\|$  is distance between two points. In LMS data mining is used to show the hidden details of the LMS database and send the details about the user's information to the administrator.

### 3 Experimental Results and Discussion:

At first, the LMS system application will be downloaded from the browser and the  $n$  number of users can download them through browser. After installing the application in their android device the user gets notification with the current version and updates for the application. Once user login the application it shows the list of books available in the LMS database and user selects the preferred book. The user also checks the due date for the taken book. Then the admin checks the books details in the LMS database then generate and validate the token and sends the token number to the user via notification.

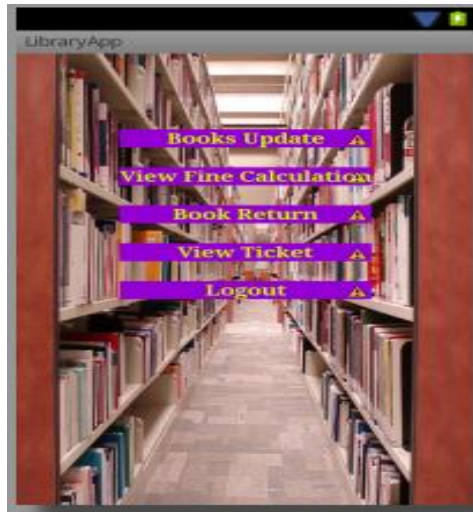


Fig 2.Home page



Fig 3.User Login

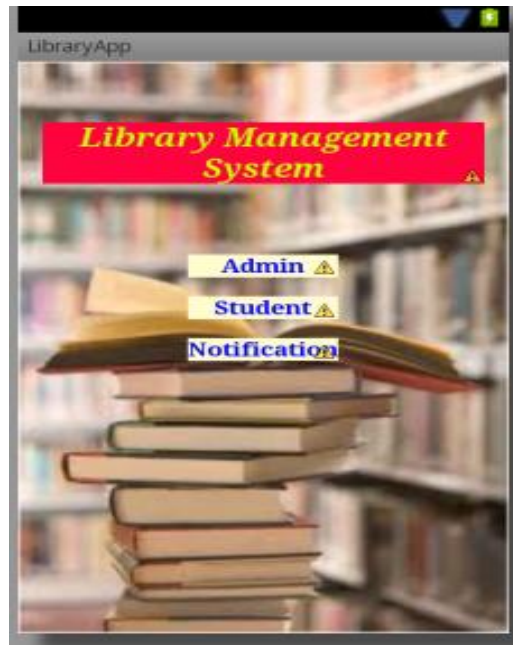


Fig 4.Admin Login

## References

1. Wang, M. (2010, March). The Building of Library Management System Based on Hibernate Model. In 2010 International Conference on Challenges in Environmental Science and Computer Engineering (Vol. 2, pp. 409-412). IEEE.
2. Angal, Y., & Gade, A. (2017, February). Development of library management robotic system. In 2017 International Conference on Data Management, Analytics and Innovation (ICDMAI) (pp. 254-258). IEEE.
3. Chen, S. H. (2012, September). A novel approach for building open library student credit evaluation system. In 2012 International Conference on Management Science & Engineering 19th Annual Conference Proceedings (pp. 416-421). IEEE.
4. Xianyan, W., & Yafei, P. (2012, October). Library management structure model under information resources sharing. In 2012 International Conference on Information Management, Innovation Management and Industrial Engineering (Vol. 2, pp. 159-162). IEEE.
5. Hou, J., Zhu, Z., & Zong, J. (2012, June). Design and realization of network-oriented library management system (LMS). In 2012 IEEE Symposium on Robotics and Applications (ISRA) (pp. 813-816). IEEE.



6. Di Iorio, A., & Schaerf, M. (2014, September). The organization information integration in the management of a digital library system. In Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries (pp. 461-462). IEEE Press.
7. Shao, Y., Zhang, M., & Liang, J. (2010, May). Research about component library management based on decision tree. In 2010 International Conference on Networking and Digital Society (Vol. 2, pp. 18-21). IEEE.
8. Yu, P. (2011, May). Data mining in library Reader Management. In 2011 International Conference on Network Computing and Information Security (Vol. 2, pp. 54-57). IEEE.