

A Framework for the Study of Library System and Services in Dhar District of Madhya Pradesh

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ABSTRACT: *This paper aims to provide a basic prototype design for rural library services in the central region of India and make it scalable to accommodate the designs for the modern rural village libraries in India within this context. The information and data feed for this paper comes from a number of different impact studies, including one research study of several global regions. The target libraries are located in the Dhar district of Madhya Pradesh of Central India.*

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1. Introduction

In a system thinking from a new perspective, a library can be viewed as a system emerging from various requirements. The user in the library has a book or information need, a publisher needs to distribute a book, and a library needs information resources. It can match the users with their requirements. The interplay of these needs creates a system, and fulfilment of these needs then sustains that system. Libraries can thus be viewed as a system emerging from a need and serving different needs. [1]

Rural library system development is a challenge. Libraries in rural regions have to interlink with local communities and organisations for existence and extended services. As traditional, current, and emerging information systems, libraries in the rural region should change themselves for the storage and access of new and combined service types and be amenable to the ever-widening base of user types: consequently, they would evolve to become the “modern library.” The rural libraries leverage the discrete room from the socially-networked system to allow each user to find a spot ideally suited for their application. They need to create a structure that can facilitate both activity and services, helping to bridge the gaps between knowledge storage, access, and application.

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Dhar, the medieval historic town of Dhara Nagari, is located in the Malwa region of western Madhya Pradesh, 908 ft. above sea level. It is picturesquely situated among lakes and trees surrounded by barren hills and possesses many interesting buildings besides its old walls. [2] This area is predominantly an agricultural region where most people cultivate wheat, gram, soybean, cotton, maize etc. The region is scantily industrialised, with a few industries based on automobile components. Several educational institutions are offering higher education, whereas most of the institutions are government ones. Developing modern libraries in this kind of region is a challenging task. To do so, we can initially develop a basic scalable framework and based on the basic design, it is possible to extend it in future to accommodate emerging developments.

2. Existing Literature

Several studies have proposed frameworks for libraries, information services and information management. The class diagram concept was used in [3], which is comprehensive and includes all activities.

Information service system provides often very comprehensive, flexible and convenient features, that permit information organisers to maximise time and efficiency. The information system provides detailed information about students, staff and books. It will monitor how many books are available in the information system and books issued to the end-users. The system is capable of showing popular and highly visitable information collection to the users. The system can enable us by indicating all the internal activities, information access, search and retrieval and use or downloads. Finally, the system can generate MIS reports, use reports and link data records for arriving at various managerial decisions. Samuel and his colleagues have developed customisable software for any library requirement. [4].

Winata and his colleagues listed and briefed various university library services in Indonesia in the new-normal era using literature and documentary reviews as models. The data for the work is collected from webpages, blogs, social media, newsletters and specific journals organised by university libraries. The survey was carried out by involving many university librarians incorporated in the University Libraries Forum. It highlighted the current conditions of university libraries and the most appropriate practices of information services in the new-normal era. [5]

3. Aim

In this work, we intend to develop a model framework for library services in the Dhar Dist. of Madhya Pradesh, the central region of India. This framework will be generic in nature and permits scalability to other regions.

We list and describe the functions of the various classes and components of the model. We aim to generalise the model to any rural setting in the country.

4. Proposed Framework

4.1. Basic Model

As books are the core of the library system and services, the database normally contains information about them and their authors. The ideal method is to create two tables: book and author.

Figure 1 provides a simple structure of non-complex data handling model for the basic things. This figure also reflects the data-entering activity in the tables. We first create a library database model when planning to develop a software application to manage a local library! The database developer needs to gather information requirements from the user and decide what data needs to be stored and how.

The next step is data modelling. In this process, we develop our application of building a diagram that represents the data model [6]

We do the framework by categorising the services as an Object-Oriented model. The principal information centre normally represents different objects in a system, the attributes, functions, and relationships among objects. These building blocks are created and termed as Class Diagrams in the design of the information service framework.

Class diagrams are generally used for conceptual flow and relations exhibition and provide a holistic view of a design application

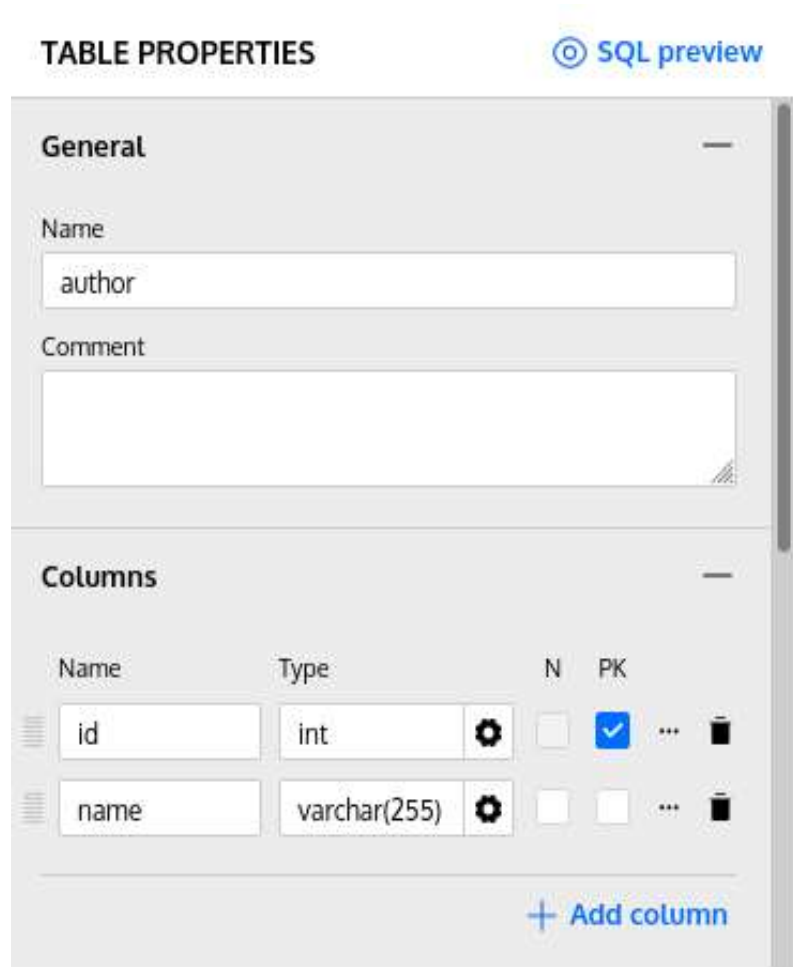


Figure 1. Basic data elements and its structure

and for modelling the activities in a detailed way. When developing or constructing a framework, a class diagram can help us represent the concepts, their relations, and the relations among activities. These elements are also deployed in data modelling. The represented components show classes, relationships among them, interface, association, functions and other related works. Class in a class diagram is a blueprint of an object. It enlists, describes and explains different types of objects in the system and the different types of relationships between them.[7]

4.2. Class Diagram for Library Management System

Clustering and Multiplicity are two important points that need to take into consideration while designing a Class Diagram. Let us understand in detail.

4.2.1. Clustering

Clustering in the framework reflects a relationship where one class can exist independently of another. This activity helps to create or compose different activities to define a class. Clustering is represented as a part of a relationship in the class diagram. The diagram shows that Clustering is represented by an edge with a diamond end pointing towards the superclass. The “Information Management System” is a superclass comprising various classes.

The classes identified in our framework are User, Book, Information Records, Library System and Information Professionals, as shown in Figure 2. Moreover, for the “Account” class, “User” is a superclass. All of these classes share a relationship, which is known as cluster relationships.

4.2.2. Multiplicity

Multiplicity refers to the number of class elements associated with another attribute. These relations can be one-to-one, many-to-many, and many-to-one or one-to-many. For denoting one or more elements, we provide options to select any requirement; many users are associated with many books denoted, representing a many-to-many type of relationship. One user has only one account, representing a one-to-one type of relationship.

3. Many books are associated with one librarian, representing a many-to-one or one-to-many relationship. All these relationships are shown in the diagram.

Class Diagram for Library Management System describes the structure of Library Management System class, attributes, methods or operations, and relationship among objects.

4.3. Classes of Information System Design

- Information Service System class – It manages all operations of the information service of a local library. It is a central part of the organisation for which software can be developed.

- User Class – It manages all activities of users.
- Professional Class – It manages all operations of the Librarian.
- Book Class – It manages all activities of books. It is the basic building block of the system.
- Account Class – It manages all operations of the account.
- Information Database Class – It manages all activities of the information database.
- Professionals Class – It manages all operations of the professionals.
- Student Class – It manages all activities of students.

Attributes of Information Service System

- Library Information Service Attributes – UserType, Username, Password
- User Attributes – Name, Id
- Information Attributes – Name, Id, Password, SearchString
- Book Attributes – Title, Author, ISBN, Publication
- User Account Attributes – no_borrowed_books, no_reserved_books, no_returned_books, no_lost_books fine_amount

• Information database Attributes

List_of_books

- Staff Class Attributes – Dept
- Student Class Attributes – Class

Methods of Information Service System

- Information Management System Methods – Login(), Register(), Logout()

- User Methods – Verify(), CheckAccount(), get_book_info()
- Professional Methods – Verify_librarian(), Search()
- Book Methods – Show_duedt(), Reservation_status(), Feedback(), Book_request(), Renew_info()
- Account Methods – Calculate_fine()
- Information database Methods – Add(), Delete(), Update(), Display(), Search()

4.4. Class Diagram of Information Service System

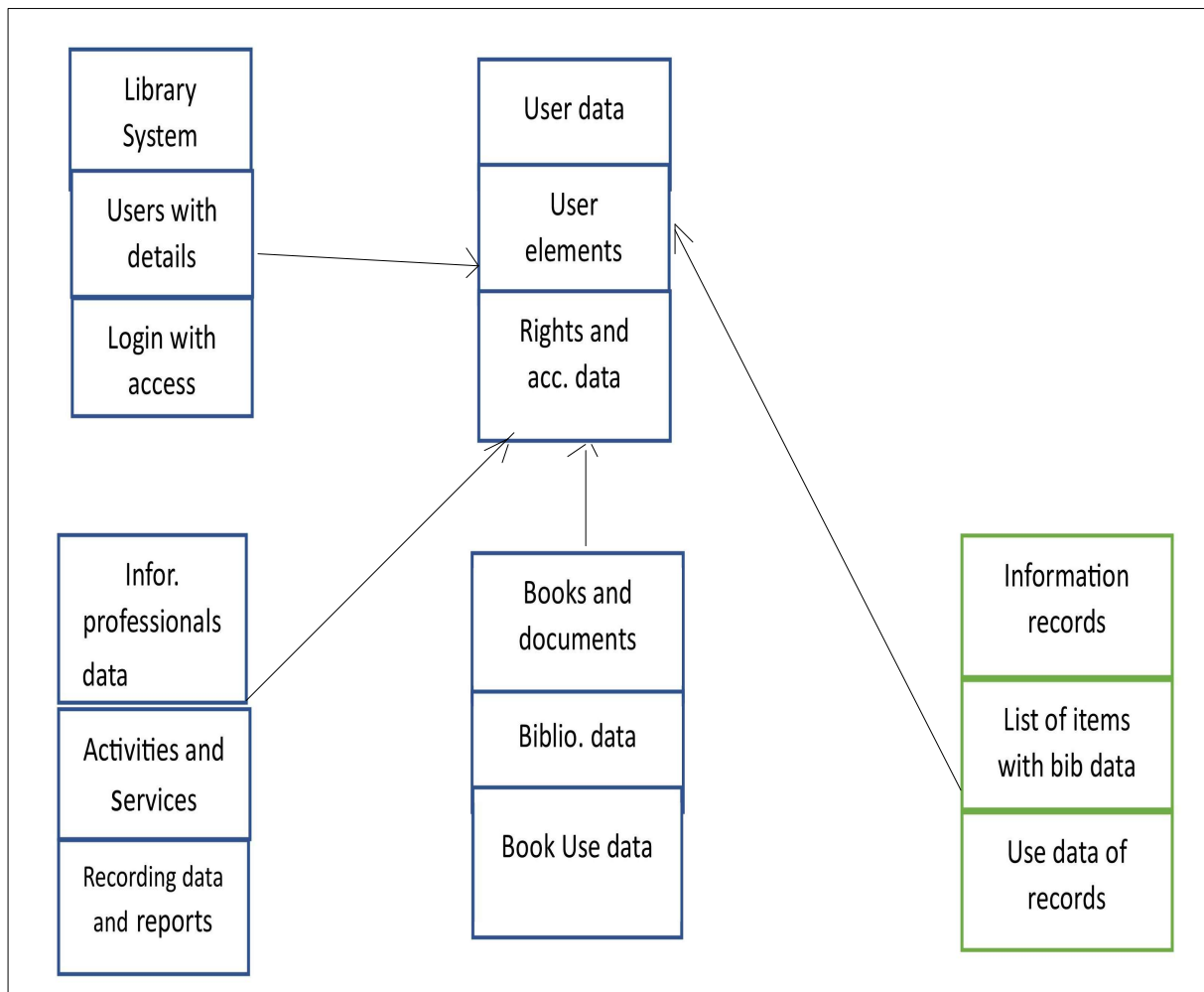


Figure 2. Class Diagram with the flow of activities in the design

5. Summary and Discussion

In this work, we have created a prototype model for the information services and systems of a rural library system. We hope that the system can be expanded in future if necessary. While implementing any information service system, creating a model and defining the components is imperative. This process may serve as a better equation between propositions and reality. We intend to prepare more specific detailed systems in the future period. This type of design shows the most appropriate library service practices and challenges in the new-normal era, useful for current and future possible development.

6. Conclusion

When scalable, the prototype design of a basic library permits it to expand to suit new developments. We, in this work, have advocated a generic and basic design. When libraries based in rural areas follow a principle of design, it can lead to the form of a modern library. The local community services will be enhanced if a systematic growth plan is executed. The studied Dhar region has potential and can lead to forming of a new kind of library soon.

References

- [1] Afzal, W. (2012) Management of information organizations, 2012 Chandos information professional. *Series*, 35–77.
- [2] https://www.jatland.com/home/Dhar_Madhya_Pradesh.
- [3] Madhurihammad Class diagram for Library Management System, Geeksfor Geeks. <https://www.geeksforgeeks.org/class-diagram-for-library-management-system>.
- [4] Samuel, A., Godfred, A. & He, X. (2018) Design and implementation of Library Management System. *International Journal of Computer Applications*, 182, 18–25.
- [5] Winata, A.P., Fadelina, R. & Basuki, S. (2021) New normal and library services in Indonesia: *A case study of university libraries*. *Digital Library Perspectives*, 37, 77–84.
- [6] <https://vertabelo.com/blog/database-for-library-system>.
- [7] Gower, S. (2020) Library design tips to promote social distancing throughout your spaces. demcointeriors.com. Available at: www.demcointeriors.com/blog/library-design-tips-for-social-distancing/, 28 May.