

National University Library System: A Mobile and Web Application Framework for National University Learning Resource Center

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Abstract – The technology continues to progress as it paves way for the creation of a better and meaning life for humanity. The internet has become more popular today than those decades ago. The efficiency of various internet applications overshadows the importance of the library in the community. Nowadays, students prefer to search for information through the web than to go to the library. Librarians are settled with library systems that are bound only with the use of computers and laptops. However, the use of personal computers delimits the capacity of the librarian to work efficiently as he or she is constrained with its use as it is now allowed to move freely. Libraries would be more efficient and timely when the web and mobile application collaborates. The proposed NU Library System will integrate the library process such as circulation, inventory, acquisition, and cataloging into a one web application. The mobile app will help the users to uncover books for a particular topic, borrow books and receive notification regarding due date or penalty.

Keywords – *Library, Mobile Application, Web Application, Inventory, Circulation, Acquisition, Cataloging*

I. INTRODUCTION

Learning is the main reason people enroll in schools. As the civilization continues to develop and be innovative, mobile technologies begun to merge with the traditional process of gaining knowledge and creates learning opportunities for the students to build their interests and explore more about their subjects and goals. The use of technologies becomes a significant part of our daily lives since it begun to help people in collecting data and storing information [4].

Technology continues to provide support for the people for doing most of the work automated and efficient. For the consumers and businesses, digital interactions are necessary today since the widespread information systems and connected devices establish the current networked society. Organizations, companies, and another business-related establishment begin to use information systems to provide a smart service. Using information systems enhances and upgrades their working capacity and progress which reflects in their customer services [1].

One of the systems that are commonly used today is the Integrated Library System (ILS). It is applied in an academic library to support the entire operations of the business in processing and acquiring library resources. It helps the librarians in preserving and making the materials available for the users. ILS is specially created for the library that helps to operate the acquisition, cataloging, selection, and circulation of print collections. As the system continues to improve, ILSs are upgraded by taking advantage of network advancements and cloud computing to offer and allow the library to share data with users or other libraries [11].

Today, not only Integrated Library System (ILS) is being used to support the library services but also the mobile applications such as My Library, Pocket Library, Book Catalogue, FCPL Mobile, Calgary Public Library and Classroom Organizer app. They have an online book database for the users to search for a specific book. The Libib and Barcode Library Scan & Catalog app can manage their catalog. Maximizing the use of the mobile app enables them

to develop an app that has a barcode scanner to be used in searching or inventory process for the users like the app CLZ Books – Book Database. These features tend to help the functionality of the library even better as it correlates with the web system that is already implemented years ago.

The National University Learning Resource Center (NULRC) currently has circulation, cataloging, and Online Public Access Catalog (OPAC) system but it lacks two processes which are the acquisition and inventory. The National University Library System (NULS) will cover all the library processes and integrate both web and mobile application to support all the needs of the library personnel and users. The web application can generate reports regarding the statistics of the library.

Though there are already several library web and mobile application, the NULS web and mobile application have a search by topic feature where the library user can search material in OPAC based on the keyword they had provided. The mobile application would have a notification for the library users which notify them about the library announcements, incoming due dates or penalties of the borrowed materials.

II. REVIEW OF RELATED SYSTEMS

Libraries are focused on providing services that enhance the intellectual and literacy of the people as it focuses on giving proper content for them. Adding to that, there are three main categories in the library; the school library, the academic library, and the public library. The school libraries are aiming for schools with students ranging from Kindergarten up to Grade 12 as it offers general information about the basic subjects. The academic libraries are for colleges and universities as it aims the users that are currently taking a bachelor, master, and doctoral degree. Lastly, the public libraries which are funded by the government, are available in towns and cities as it is open publicly for the community that needs the service [6].

Libraries have four different main processes, and those are the inventory, acquisition, cataloging, and circulation. Inventory is a necessary procedure that is being conducted at least every year in a library. This process evaluates the current condition of the materials if it is already damaged or worn out [10]. An acquisition is a process in which the library gathered a material to be added to their collection and resources. It verifies the requested material if it is already in their inventory and the availability of the material on the vendor [2]. Cataloging is a process that is responsible for all the materials recorded within the library. This process

accurately assigns each material depending on their classifications [9]. Circulation is the process of lending materials to users. It monitors and records the check-in and check-outs of the materials within the library.

Nowadays, library processes are being automated as it increases the efficiency and convenience not only for the librarians but also for the library users. They start to integrate their process in the web and mobile applications. Library Management System is a web application that involves the process of technical implementation and digitization of a large collection of information and documents. With the help of the system, the librarians easily determine the status of the materials such as the checked-in, checked-out, or unreturned materials [5]. Mobile services began to emerge in the libraries knowing that the trend keeps on growing and they need to upgrade as well. Libraries start to offer the most common services in their mobile application such as e-books, text-messaging services, and mobile sites or mobile access to their catalog [3].

Web and mobile applications for libraries can enhance their services using QR code and notifications. QR code is a type of coding system that can retrieve information three times faster and an errorless of 0.03% compared to skilled personnel [8]. Notifications were beneficial to the users as it informs them about different events that are happening within the application. It is convenient to remind users about important things, especially if it is applied properly and appropriately [7]. With the use of these technologies, the library inventory process will be faster than the usual, and the notification spreads the awareness of the library users regarding the policies or events of the library.

III. SYSTEM ARCHITECTURE

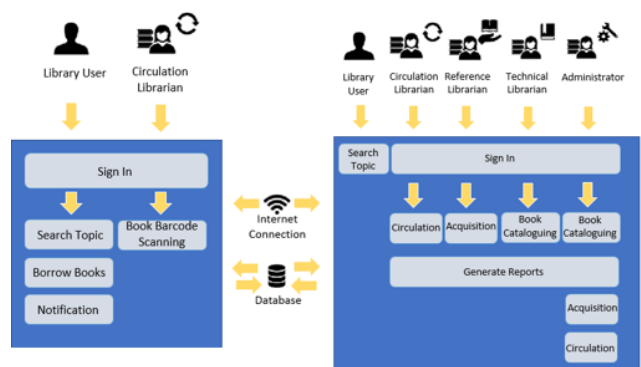


Figure 1. System Architecture

The system architecture of the National University Library System (NULS) is shown in figure 1. It represents the structure of the system and shows the different modules, functions, requirements, and users in both mobile and web

application. Both applications share the same database and require an internet connection to completely function. The users are required to use the NU account to sign-in into applications.

The web application users are the administrator, circulation librarian, reference librarian, technical librarian, and library user. The circulation librarian can access the circulation module; the reference librarian can access the acquisition module, the technical librarian can access the cataloging module while the administrator can access all the modules. Depending on their access level, the librarians and administrators can generate a report regarding the title and copy, circulation, inventory, and catalog to monitor the status and different statistics of the library. The library users can only access the OPAC to search for materials by topic.

The mobile application is for the circulation librarian and library user. The library users can search a topic, borrow books and view the notification log. Library users can search material by providing a specific topic. A notification alerts the user for the due date or penalty of the borrowed material. They can also review the prior notifications by visiting the notification log. The circulation librarian can access the book barcode scanning and have an option to insert the material into the circulation process, add a topic or add remarks to efficiently organized the materials in the library.

IV. CONCLUSION

Web and mobile applications are growing as the modern people begin to adopt and take an interest in these technologies. It becomes effective and useful for different kinds of company and establishment as it improves the quality and progress of the works. Applications continuously try to innovate different ways of making the lives of the people better, comfortable and efficient.

Digital Libraries are being implemented in libraries across the world. It improves the work and services of the library. The information in the library becomes computerized, and the catalogs are easily accessed by the users.

Notification in mobile applications becomes significant to the users as it reminds them of the critical things that needed to taken care. Sometimes notifications are distracting but the usefulness to remember something necessary is much preferred by the people.

QR codes are much popular these days as it can store different kinds of data and can be accessed easily just by scanning it. These codes are used in the various way for the

people to access information more quickly and easily than before.

Having web and mobile application in library nowadays is important not only to bring a quality service to the librarians and library users but also to practice modernization. The NULS is a user-friendly system that provides an efficient and convenient flow of library process to the users when accessing their services.

V. RECOMMENDATION

The proposed system is planned to be tested to check the quality and the resiliency for the end users. There would be a user-training to teach the users on how to operate the system. For implementation, the researchers decided to implement it within the National University Learning Resource Center to be completely useful for the students and librarians of the National University – Philippines.

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