

ANDROID APPLICATION FOR LIBRARY AUTOMATION

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Abstract— The paper titled Android Application For Library Automation is management software for monitoring and controlling the transactions in a library. In this we are creating a Virtual Private Network (VPN) for Library that will exist only between College Library and the Students studying in the same College. Here in this network the Server will be the PC in the Library i.e. Admin PC and Client will be the Students who will be interacting with the Server through their Mobile Phones. The software on the Server Side will be scripted in PHP and Student's Side will be an Android Application. The paper Android Application For Library Automation mainly focuses on the basic operations in a Library like view total books, view available books, updating information, searching books and a facility to request, reserve and return books. The System is an Android Application written for smart phones, designed to help users to maintain and organize Library Management System. This software is easy to use for both beginners and advanced users. It will allow fast transaction flow and will make easy to handle issue and return of books from Library without much intervention of manual book keeping which benefits by adding security.

Index Terms—Virtual Private Network, Android Application, Library Automation

I. INTRODUCTION

The source of knowledge in an Institution is Library. Library provides resources like books, journals, CDs etc. to support learning of student. There are different actions done by the Librarian such as adding new student, book data, date of issuing books, entering details of all relevant information about books, etc. For this the student has to wait for his/her turn as Librarian enters data student by student. It is very time consuming process. It is worthwhile to take advantage of the technology to support so as to improve Library services. As information changes according to time, it becomes difficult task for the Librarian to go hand in hand with the dynamic data. The basic objective of Library Management System is to manage the entire transactions of the Library. The software keeps the track of all the information about the books in library, their cost, their complete details and total number of books available in Library and as well as keeps the complete details of the registered members.

II. EXISTING SYSTEMS

Ashutosh Tripathi & Ashish Srivastava proposed the paper "Online Library Management System" in Feb2012 [1]. The paper for Online Library Management System is developed in java which mainly focuses on basic operations in library. This proposed system provides facilities to the student to search for required books and this allows the Librarian to Issue and return the books to student. The proposed system is a windows application written for 32-bit windows operating systems, designed to help users maintain and organize library. Advantages for this is to provide user friendly interface for both beginners and advanced user, so easy and fast access to use for beginners and advanced users. A Disadvantage is to managing the library by manually at librarian side.

C. Srujana, B. Rama Murthy, K. Tanveer Alam, U. Sunitha, Mahammad D.V, P. Thimmaiah proposed the paper "Development of RFID Based Library Management System" in June2013 [2]. RFID is a Radio Frequency Identification, it is an automated identification technique used for the fast transactions of books and journals. This system is based on the high frequency DLP RFID1 Read/Write having the frequency range is up to 13.5Hz. The database for this system is maintained with MySQL using MATLAB, which is which stores detailed information about the books. The advantages are provides intelligent and effective services to both librarian and student such as Reminders for due dates allows patrons to submit borrowed books and other materials in time. This RFID technology also provides Patrons will spend less time waiting in checking out lines by using Self Check in Check out systems. A Disadvantage is to High initialization Cost and difficult to handle and operate.

Shane Curran proposed the paper "Libramatics" on July2012 [3]. Libramatics is basically a Cloud-based library management service provider based in Dublin, Ireland. Libramatics retrieves books information such as its cover arts, title, author, publisher and an even abstract automatically based on its ISBN codes. Libramatic turns a Smartphone's camera or by using USB barcode scanner, allowing librarian to loan books, pull up author information, and locate specific titles on their shelves without having to squint or type in any numbers by hand. Advantage is to use of online library

management system has increased drastically since the rise of the “Cloud” technology and also it allowing librarians to circulate books based on an ISBN. A Disadvantage is To import their student lists, libraries need to email Libramatic file with the name of their students, which some libraries may not feel comfortable doing for privacy reasons.

CERN Document Server Software Consortium proposed the paper “Invenio” in November 2012 [4]. Invenio is an open source free software package suite enabling and providing the tools for management of own digital library on the web. A Digital Library is a special library can vary immensely in size and scope, and focused on the collection of digital objects. The Digital Objects include visual material, electronic media formats and these electronic content may be stored locally, or accessed remotely via computer networks, it is a type of information retrieval system. Advantage is to it is web based and written in Python programming language. A Disadvantage is to Lack of Security and trying to find particular book consumes lots of time.

Verus Solution implemented the paper “NewGenLib” in March 2005 [5]. NewGenLib, stands for New Generation Library is an Integrated library automation system. NewGenLib was declared Open Source Software under GNU GPL Licence by Verus Solutions. The functional modules are completely web based and Uses Java Web Start™ Technology. Every user’s Smartphone becomes his/her own circulation desk. Users can Check-out and Check-in their books using their Smartphone. Advantages are The NewGenLib is platform independent and can be installed on Linux and Windows operating systems. Also provides No Restriction on use and Low Cost. A Disadvantage is to Time Consuming and no more than one user can access the information at same time.

III. PROPOSED SYSTEM

A. Basic Structure

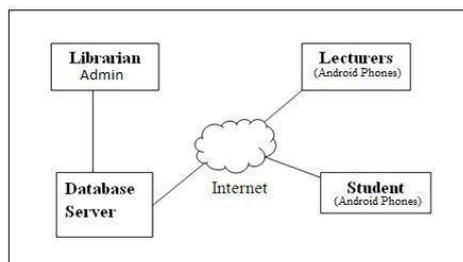


Figure 1: Basic Structure

Basic structure consists of librarian and student/lecturers where librarian is directly connected to database server. Students have their android phone on which library management application is installed through which they interact with book database without going to library.

Library Automation system allow student as well as college staff to access library activity via android application.

It is highly feasible because student can access library data from anywhere anytime excluding librarian involvement. It avoids time wastage of student for searching of books in book shelves. As system is automation, it minimize work load of librarian, it assigns books to student without involvement of librarian. Student need not to wait for his/her turn for issuing books. And inquiry about book/journals/CD/etc can be done via application

B. Android Application

The Mobile software application developed for use on devices powered by Google's Android platform. Android apps are available in the Google Play Store (formerly known as the Android Market), in the Amazon Appstore and on various Android App-focused sites, and the apps can run on Android Smartphone's, tablets, TV and other devices[6]. Android apps are written in the Java programming language and use Java core libraries. They are first compiled to Dalvik executables to run on the Dalvik virtual machine, which is a virtual machine specially designed for mobile devices. Developers may download the Android software development kit (SDK) from the Android website. The SDK includes tools, sample code and relevant documents for creating Android apps [7].

C. Database

The Library Database contains all the necessary information about student, book, and college staff. Application retrieves information stored in the library database through the library server. All the registered student / staff information should be present in database. Registered student are given login ID and password via which they can login through android application to view database. Book database contain information such as its account number, title of the book, author, category ,publisher, year of publication ,book edition ,availability of book in library, etc Just like book database , it also include database about accessories like software CD, DVD, magazine, journals, etc. Student database include student registered ID, name of student, department, current class year ,semester ,gender, email ID, mobile number, date of birth, address, etc.

D. Librarian

Librarian registered all student and staff and provide login ID and password. Main activity of librarian is to keep the database up to date. Like if any new s available in library, librarian should notify all students about this so that student can able to issue it. Beside registration of students and college staff, librarian also registers about book / magazine/CD/DVD/ journals, etc.

E. Student/College Staff

With the help of login ID and password, student will be able to login through their android mobile phones. Student can send a request for issuing book. Each student can request/issue two books at a time. If book request is accepted the student

has to collect the book within 24 hours, otherwise the request for book will be cancelled and student has to again send the request for that book.

[5] Verus Solution, “NewGenLib”, March2005.

[6] http://www.webopedia.com/TERM/A/android_app.html

[7] <https://www.techopedia.com/definition/25099/android-app>

IV. WORKING MODULES

A. *Login through Android*

Only the registered students/staff can login. During registrations students are given an ID along with password through which they can login through their respective android phones. Student first has to login through the registered password. After first login they can change their password.

B. *Login through Server*

Librarian needs to enter username and password to login. Only Librarian can login the server and access the database

C. *List of Books*

List contains different category of book, author name along with their edition, publication year, number of copies available in library, etc information about book. After selecting the type of book student click on request button if they want to issued that book.

D. *Issued Books*

It will list down all the books that student has issued. It also consists of renewal button, just in case student wants to renew the book.

E. *Fine*

If student fails to return the book before return date, then student will be charged with the fine of 2 rupees per day.

F. *Notification*

If new book is available in library, then librarian send the notification message to all the student and staff. Each student gets the notification about their last date of book return.

G. *Accessories*

Just like book, student can request for accessories such as CDs, magazines, journals, etc.

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