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RESEARCH ARTICLE

LIBRARY ACCESS SYSTEM SMARTPHONE APPLICATION USING ANDROID

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ABSTRACT: *Android platform has become more popular and it holds a maximum number of Users when compared to all other platform. Before the introduction of the Android Operating System the access to the Library documents was done only by the librarian. This paper suggests a method for the library access to go public that is the public can also access the library database. The Library Access Application helps the patrons to access their required information and queries without computers or the librarians but through their android devices which saves their time and energy. The Application retrieves the information stored in the library database through the library server for example checking whether the books are available in the library or borrowed without intervening anyone. User's access of library will be stored in the database for suggestion during a search for books. Due-date of the borrowed books from a library will be intimated by the app as a notification prior to the deadline. Users are privileged to suggest books for the library and they are notified about their suggestion, by the Librarian. This paper brings a new idea of the public to access the library.*

KEYWORDS: *Android Operating System, SQLite database, Library Access Application*

I. INTRODUCTION

A Library is an organised collection of sources of information which is made accessible to the people of different Community. The Library usually contains the information physically or in a digitized format. In the Olden period the access was usually in the Library room as the Technology grew up the access was made online [1, 9]. Android is

basically an OPEN SOURCE which is based on the Linux Kernel which was introduced by Google. Android operating system is mainly designed for Smart Phone and tablet devices. The Android platform has an embedded feature called the Google Play Store which enables the developers to distribute their applications to the potential users World Wide. A library usually includes books, periodicals, films, maps, cd's, DVD, video tapes, newspaper and so on. The size of the Library usually varies from place to place depending on the items it contains. Initially Computer played a major role in the banking and other sectors latter on the introduction of the Internet made them to go a long way[10].Internet made the Users to access their database 24x7 which was stored centralized. Later emerged the mobile technology [12] and now mobility has become everything. Initially many famous mobility platforms which includes Flash UI, Bada, Symbian etc., later on the introduction of the Android operating System for mobile and other tablet device created a revolution due to its easy User Interface, fast access and response time. Database Technology plays a vital role in business applications which helped us to move from paper work to the query processing. Since the Users Internet activities have shifted from browsers to mobile, there emerged new opportunities to interact with products from online. Library Access App is a retail application which is targeted for Android device (i.e. a mobile operating system which works on Linux kernel and also used in televisions and wrist watches)[3].Which helps the Users to view their Library related Information. This paper describes how the user can find out details about the available books in the Library and also they can view their due dates of borrowed books. The Library Access System Application saves Users valuable time by making complete procedure online. The application developed here is designed for KitKat version. And also the embedded SQLite database which is used to store Library related Information. Only registered users can perform login and access the Library database. Android allows users to customize the home screen with the shortcuts of the application. The Android applications have an extension .apk (i.e. Android Application package which is a package file format used to install application onto the android phones) [3]. Android Operating System is a collection of software components such as Libraries, Linux Kernel, Android Runtime, Application Framework and Applications layer where the user can interact with applications like Contacts, Phone, Browser and so on[3].

II. RELATED WORK

There are several concepts has been made for library management. But this work made our task easier. Some of the other related work that is available to develop for managing the library.

Ashutosh proposed a concept called Online Library Management System. It develop "Library Management System" is in java which mainly focuses on basic operations in a library like adding new books ,new member, searching books, updating new information, and members are facilitated to borrow and return books[12].

RFID Based Library Management System [13] Using MATLAB contributes their work based on the emerging technology called Radio Frequency Identification. This system is based on high frequency DLP RFID1 Read/Writer having the range of frequency is 13.56 MHz. The software is written in MATLAB and MySQL to improve system performance.

Libramatic is a Library Management System based on cloud technology. It was officially launched on july 2012 at Dublin, which allows the librarian to catalogue the books available by scanning a ISBN code by the means of an Smartphone camera or USB bar code reader or Personal Computer [17].

Invenio is open Source software developed by CERN in 2002 which has an inbuilt tool used to manage digital assets in an institutional repository, It is a Web based application written in Python programming Language [18].

NewGenlib is open source software developed by Verus Solution in March 2015.It is an Integrated Library Management System which runs on linux and windows operating system that was written in Java programming language [19].

Koha is open source software developed by koha community its initial release was at January 2000.It is an integrated library system which runs on linux kernel written in Pearl programming Language [20].

VuFind is open source software developed by Villanova University its first version 1.0 was launched on July15 2010. It provided a simple Google like Interface which offered flexible key word searching .The programming languages such as PHP and PEARL was used in this software [21].

OpenBiblio is open source software developed by Dave Stevens in 2002.His main motive was to design an easy to use and easy to install library system. It also had a built in Integrated Library System that is capable of running in cross platform operating system written in PHP programming Language [22].

PMB is open source (Integrated library system) software developed by PMB services its first release was made on October 2003.PMB software was licensed by GNU. It was written in PHP programming language which is capable of running in operating system such as Linux, Windows and Mac. It also provided a User friendly interface to the Librarian [23].

III. PROPOSED WORK

Android [3] is a powerful operating system which was mainly introduced in order to satisfy the market needs. It is an Open Source which runs on a Linux kernel mainly designed for Smart Phones and Tablets. Every Android Operating System uses their own Libraries and also the SQLite Database embedded in them. As the saying "TIME AND TIDE WAITS FOR NONE" this paper focuses on the development of mobile application which can be exploited for the Library purpose. Initially Library Management System [1] required more amount of Man Power and consumed more time in order to access the information. This Library Access System Application provides an easy User Interface and which allows viewing their due dates or holding the available books in the library.

IV. SQLITE DATABASE

SQLite[6] is a Relational Database which is used to store all the data and they are usually contained in the C Programming Library. All the information's are usually stored at the client end for the fast access. It is the most popular and widely used Database in the Mobility Platform. Database once created they are usually accessed by name to any class in the application and it cannot be accessed outside the application or by any other application. It also offers the developers to easily access the database and fully utilise the built in features available in them.

V. ECLIPSE

Eclipse is a multi-language integrated development environment (IDE) which usually offers a base workspace with extensible plug-in systems [4].The Android Applications are usually developed using the programming languages like JAVA and other languages can be used by adding Plug-in.

VI. ANDROID SDK TOOLS

Android Software Development Kit (SDK) consists of a set of development tools. The development tools include Libraries, Debugger, Emulator, Tutorials, Documentation and Sample Codes [7].Eclipse and NetBeans supports the android application development via plug-in. The older tools and platforms are downloadable content which are made online and can be downloaded at any point of the time during the requirement. The android applications are usually packaged file system with an extension .apk [14] which holds the .dex [15, 16] and resource files etc.

VII. DEVELOPMENT TOOLS

The combination of the Eclipse and the Android SDK tools are usually said to be an Integrated Development Environment (IDE) which are used for designing and developing the JAVA based applications[8].

VIII. WORKING MODULES

Initially the Library Access System Application will be loaded in the Google Play Store and 'n' number of users can download them via play store. Once if the user has installed the application in their Android device he/she will be notified with the current version and updates available for that application. As soon the user logs in there appears the list of books available in the Library and the search option is also enabled to look for the desired Book. The Book displayed with its name and they are present in their respective category. The user can also check their Books Taken and also the Due date for the respective Book.

LOG IN

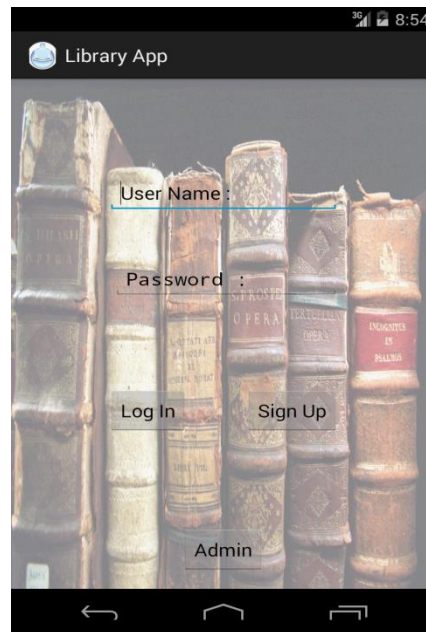


Fig .1 Login module

The Login module is for the user who had already signed up. The login module is mainly added for an authentication purpose if the user enters the wrong details he would not be allowed to enter the application. The login is broadly classified into two types User login and Admin login.

SIGN UP

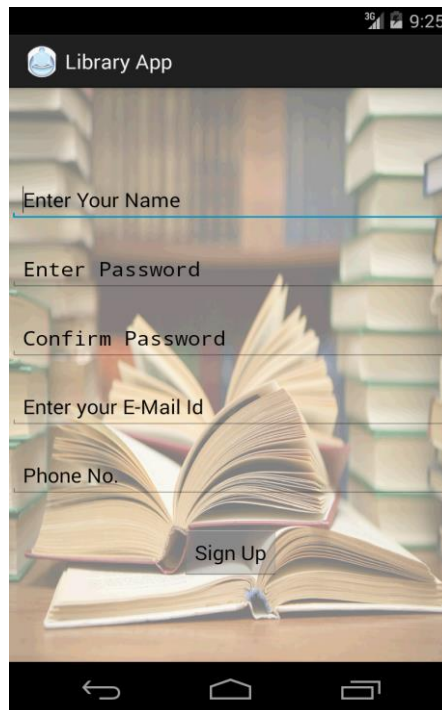


Fig. 2 Signup module

If the user is new to the application he should enter all the appropriate fields given above in order to enter the application. Once if all the required details are filled, the user gives the option sign up which stores all the information in the data base for next time Login Authentication.

USER MODULE

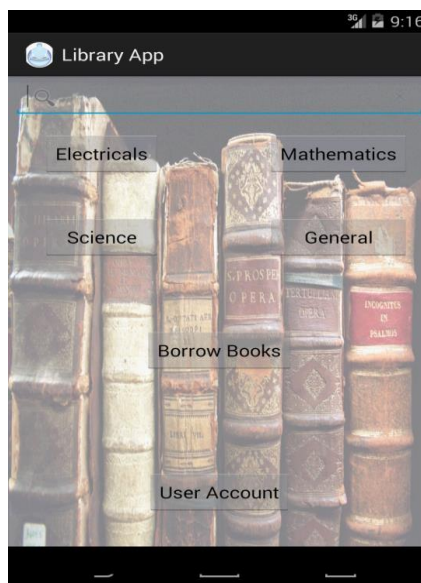


Fig. 3 User module

Once if the user enters the User name and password in the login module if the authentication is successful he will be redirected to the user module where he can search the books available in the library or he can choose the books in

the category available. After selecting the books he can click the button called borrow books in order to borrow it. By clicking on the user account the user will be notified about his book due dates.

ADMIN MODULE

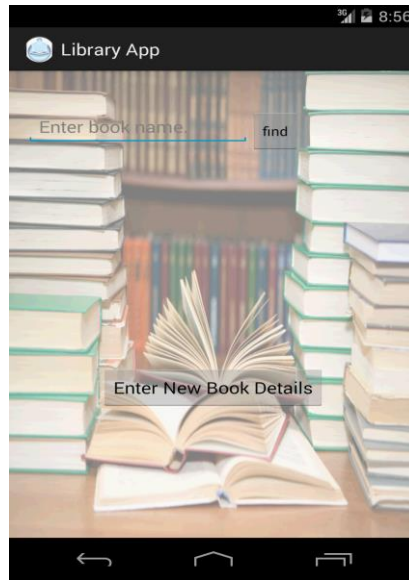


Fig. 4 Admin module

Once if the Admin entered the correct user name and the password he will be directed to the above page. The find button is used to check whether the books are available for other users in the library. The admin can also enter the new book details by clicking on the button enter new book details.

BOOK DETAILS



Fig. 5 Book Details

If the Admin clicks the enter new book details he will be directed to the above screen shot page where he should enter the fields such as book no, book name, category, author name and publication. After entering all the fields he should click the button add to library in order to add the book details in the database and also to make the books available to the Users.

ADVANTAGE

- 1) The main aim of the application is to make people to easily access their library account in order to check the availability of the books in the library.
- 2) This application in android allows the users and library administrators to access library access system through android Smart phone instead of computers.
- 3) The User can suggest to the Librarian if the desired book is not available in the Library.
- 4) The Computers available in the Library can be replaced with the Android Device such as Tablets, phones that saves capital investment.

LIMITATIONS

- 1) Library Administrator should manually update the Details of the Books.
- 2) Only the Android Users can use the Library Access Application.

CONCLUSION

In this paper we have presented a Library Access System Application, developed for Android using SQLite Database. The main aim of the application is to make people to easily access their library account in order to check the availability of the books in the library. The Library Access System Application saves Users estimable time by making complete procedure online. The problem of data storage is solved by storing them in popular open source SQLite database.

FUTURE WORK

The bar code scanner can be used by the librarian in order to borrow the books. In order to improve the efficiency of data processing, cloud messaging can be used.

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