Gate Register Tool with Koha Library Automation Software

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The article presents an attempt to integrate gate register with open-source software Koha Integrated Library Management System. Using this option, the patron's library card will be scanned by the system during entry and exit at the library gate, and this information will be stored in the new table which we have added to the Koha database. Using this tool various reports can be generated for various library management purposes. In the final phase, we have developed a patch for Koha which has enabled the users of the library to update their profile in Koha without library staff help. This tiny addition to Koha has enabled it toward crowdsourcing mode. The above two tools are tested in the real-time environment and positive feedback has been reeived from library staff and users.

Keywords: *Open Source Software, Koha ILS, Tools, Gate Register, Developing countries.*

1 INTRODUCTION

Over the last two decades, the libraries have witnessed the impact of information technology that has been affecting the structure of the services to a great extent. An automated library is one where a computer system is used to manage one or several of the library's key functions such as acquisitions, circulation, cataloguing, serials control, and the online public accesscatalogue. When exploring the history of library automation, it is possible to return to past centuries when visionaries well before the computer age created devices to assist with their book lending systems. Today we see most of our libraries either fully or partially computerized. It has created

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an Information Technology (IT) environment for libraries to embark upon the new developments in the field. Now just because the world has been blessed with wonderful software solutions that make everything easier to do,doesn'tmean that every library in the universe is using these solutions. Many libraries do not have huge amounts of money and any that they do get usually goes to purchasing additional resources. Khode & Chandel[1] explained on Open Source Library Software (OSLS) provides a wide range of opportunities for libraries to provide better services to their users. It has given rise to serious efforts by the library community towards solving its economic and technical problems with mutual understanding between themselves by forming OSS communities. There are many open source software available in the field of library science like Koha, Evergreen, Open Biblio, PMB, and e-Granthalaya.

In this study, we have tried to integrate and developthe gate register feature for Koha Integrated Library Management System. Because Koha is widely famous library software in the world as well as India. In this study, we have taken Koha ILS for developing and integrate this Gate Register Feature because Koha ILS follows global standard. According to NAAC Guidelines, it is mentioned about library should have a fully implemented automation system. Gate register is one of the parts of library automation and which is not available with Koha.Hence, the need for the present study.

2   LITERATURE REVIEW

Open-source software is proving to be a credible alternative to proprietary software. Several authors advocated the suitability of open source software to libraries, while a fewarticles describe empirical studies of open source ILS. Vimal Kumar& Jasimudeen[2]provide a brief picture on Koha andwhich is the first open-source integrated library software (ILS) in use worldwide by the public, schools, and special libraries which its development was steered by a growing community of libraries and users collaborating to achieve their technological goal. Sheeja[3] identified the extent of adoption of Koha, an open source ILS in libraries around the world through a web-based study.Mandal, Chakrabarti&Maji[4]discussed about integrating the flip pdf book reader with Koha OPAC for better management and retrieval of full-text resources among the users. Anuradha et. al.[5] elaborated the efforts for enabling full-text search features in Koha, by independently integrating it

with two open-source digital library software packages, viz; Greenstone Digital Library Software and Fedora Generic Search Service, and the main aim was to index the full-text documents both in the library automation package (Koha) and digital library software. Barve and Dahibhate[6] share the view on open source software library software i.e. Koha which is used from developed countires to developing countries hence it can be used in all types of libraries.

As can be seen from the studies discussed above, there is no discussion about gate register with Koha. This feature has been discussed in Koha Bugzilla since 2013. At present, there is no development on this feature as per koha Bugzilla. Hence, thepresent study is devoted to developing and integratingthis new feature with the Koha integrated library management system.

3   OBJECTIVES

1 To find the feasibility of integrating Gate register tool with Koha Integrated Library Management Software.

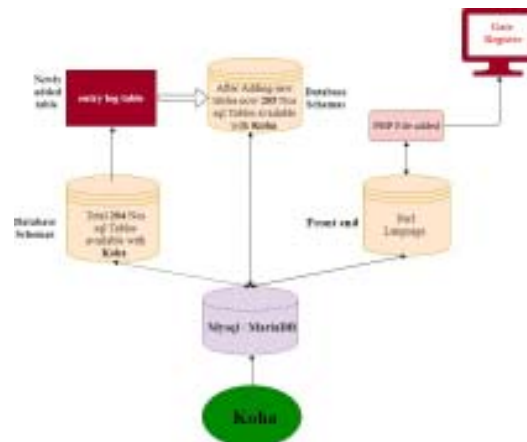2 To develop a Gate register toolwith Koha Integrated Library Management Software.

4   SCOPE

The scope of the present study is to integrate gate register toolwith free open source software Koha. There are different plugins available for gate register toolbut those are not compatible with Koha ILS. For Plugins, users need to install an external Database for Gate Register and need to map with Koha Database. The tool for Gate Entry was created for smooth functioning without creatingan external database or external add-on software.

5   LIMITATION

The limitation of this study that the system can check the validity of the card only but not the person. Hence, any user can enter the library with another person's card. If the *gatekeeper* is available atthe entrance of the library, personal identity can be checked manually only. In the case of a fully automated environment, this is done through biometrics or a face

detection system which is the next level of the study. In this study, the gate register tool with library automation software has been developed for detecting entry and exit of the visitors to the library and to generate various statistics related to such data.

6   GATE REGISTER TOOL WITH KOHA ILMS

In Koha ILS, Patron gate entry allows patrons to initiate registration for a library in & out through the Gate Entry Tool page. In many libraries, daily visits of the members need to be registered to keep track of daily footfall and members using the system. Once you invoke this option on the terminal near the entrance or OPAC terminals of the library, members are supposed to scan the ID card or enter the ID Number manually and use the system. A gate register interface is helpful to get statistics of library visitors. When patrons enter the library by swiping the card patron photo and details are displayedon the monitor. At the same time entry time is saved in the database table.

Till now there is no gate register tool option in the latest stable version (*Version No: 20.11*) of Koha. So that library users need to write all their information in library register. Now with the development of this add on users can scan library cards through a barcode scanner manually and all details will be shown in the gate entry scan. By enabling this option in the library software workload of the library staff will be reduced. Figure 1 shows the architecture of the development with Koha SQL Database.

Figure 1: Architecture of Gate register tool/ Module

First Step: Users need to update and upgrade the Ubuntu package to install the PHP version 7.0, PHP Apache Module, and PHP Memcached in the Server. To get MySQL support in PHP, we can install the php5-MySQL package.

sudo apt-get update

Sudo apt-get upgrade

sudo apt-get install php7.0 libapache2-mod-php7.0 php7.0-cli php7.0-common php7.0-mbstring php7.0-gd php7.0-intl php7.0-xml php7.0-mysql php7.0-mcrypt php7.0-zip

sudo apt-get install php-memcached

Second Step: Create table inside the Mysql or Maria Database of Koha Integrated Library Management software. Before creating the table users need to log in in Mysql/ MariaDB.

sudosu

mysql -uroot –p

Password: Your Database Password

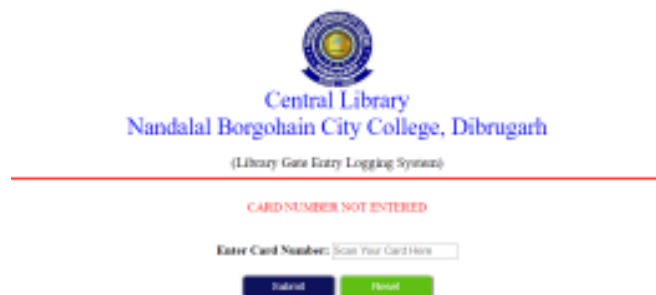After that, create Gate Register table as per below SQL code

create table entry_log(slno INT(30) AUTO_INCREMENT PRIMARY KEY,cardnumber VARCHAR(50),firstname VARCHAR(50),lastname VARCHAR(50),entry_date   VARCHAR(50),entry_time VARCHAR(50),exit_time   VARCHAR(50),entry_time_status VARCHAR(50),exit_time_status VARCHAR(50));

Third Step: Users need to create one Personal Home Page (PHP) file through notepad to access the database through PHP language and the below code will be used for generating Gate Register Home Screen in Koha Integrated Library System. This code helps the users to make a new interface page for Gate Entry and paste the PHP file inside the Koha Library Software (/usr/share/koha/opac/htdocs). Through Local Host or IP can access this page. PHP Code available in the below link: -

https://drive.google.com/file/d/1J9E5kUBWC7Wrex JUve Mf BKqol0n15VV R/view?usp=sharing

Fourth Step: User's need to put Koha ILS database name and password of the database and users details in the php file as per given below php code.

```php
<?php
    $flag=0;
    $hostname="localhost";
    $username="Your Username";
    $passwd = "Your Password";
    $dbname="Your Database Name";
    $entry_date=date("Y-m-d");
    $entry_time=date("h:i:s");
    $entry_time_status=date("a");
    $today_date=date("Y-m-d h:i:s a");
    $conn= new mysqli($hostname, $username, $passwd, $dbname);
```


Figure 2: Gate Entry page in Koha ILMS (Theme Page)

Figure 2 shows the main home page of the Gate register tool. Users can scan his/her Library Barcode card or users can type the identification number of the card in the box when entering or visiting the library.

Figure 3: Gate Entry Page in Koha ILMS After Scanning Library Card.

Figure 1 shows the home screen of gate register tool with a card scanner box. Users need to scan the barcode which is available in the library card or users may type/ her card on the box and users will get a welcome message with patron details like Name, Card No, Date and Time when entering the library (Figure 3). Figure 3 also shows the circulation details below the patron details which helps the users to get information before entering the library. This facility is generally available with RFID based Kiosk Machine which is very expensive according to developing toolries perspective. If users do not borrow any books from the library users will get a message on the Gate Register screen "Currently There is No Book Issued" (Figure 3).

This development also helps the users to see the circulation details before entering the library. Users can check the fine details on the books issued from the library. Users can also get information of particular books i.e. Title, Authors, Barcode, and Issue Date. The gate register toolalso helps the users to get information about the Due Date when users need to return the

particular book (Figure 3). Figure 3 also shows theStatus of the particulars book like "*Due Date is not Over*".

Figure 4: When Card Library Expire or Card Not Found by the System

Figure 4 shows that if users of the library use another card or which was not issued by the library, that card will not be accepted by the system. If the alumni of the institutions or ex-users of the library want to enter the library with the same card, if card validity is expired users will get the message from the system i.e. "No Result Found on this Card. Please Try with other Card Number".

Figure 5: Gate Register Report from Tools Module

Statistical reports can be generated from the Koha Report Module option and there is no need to use exter admin panel for report generation. Reports can be generated either by date, currently logged in members, or by a specific member code. Within one click users will get all users details how many visitors have been to the library (Figure 5). In the report, library staff can

check the details with users card no, first name, last name, entry date and entry time status. Below sql code helps the library to generate report from Koha **Report Module**: select cardnumber, firstname, lastname, entry_ date,entry_ time,entry_ time_ status from entry_log where entry_date>= <<From: yyyy-mm-dd|date>>AND entry_date<= <<To: yyyy-mm-dd|date>>

7   FINDINGS

From the present addition of Gate register tool with Koha, it was found to be very positively accepted by those libraries, which require this particular feature with Koha. After incorporating this tool, we have implemented the same and tested it in real-time environment on a cloud platform as well as local server. This trial was carried out in five libraries in Assami.e. Gargaon College Library (Cloud), Sibsagar Girls College Library (Local Server), NLB City College Library (Cloud), Sibsagar Commerce College (Cloud) and Dimoria College (Local Server). During a telephonic interview with users a positive feedback was received both from the library visitors and library staff. The data captured using gate register tool libraries are in position to generate reports like users' entry and exit time with name, categories, book issue/ return, overdue status in a highlighted colour (See Figure 5). The libraries are in a position to display book loan details while entering into the library using this feature (see Figure 3).

8   DISCUSSION

The tool has been developed keeping in mind its relevance in the Indian context. Though this is a new addition to Koha this particular feature may not be so relevant in developedcountries where libraries are fully automated. The new tool has been implemented and tested in a couple of libraries (**Example:***JagannathBarooah College, NandalalBorgohain City College, and Dimoria College from Assam*) .The study enables the libraries to move towards the automated environment to capture visitor details and display visitor's information like visitor photo, entry/ exit time, holding details, etc. It can be used as an alternate for a biometric system. After this additional feature, the library does not need to use information kiosk machine to know the basic information of the visitors.

9   CONCLUSION

Koha provides a wide scope for adding new features with the existing system on various fronts. The library professionals must be proactive in identifying new tasks that can be incorporated. The use of a new gate register toolwith Koha ILS will solve the problem of manual processing and untimely statistics generation regarding users visit the library. Koha integrated library management system can take a large shape and size with many more accommodative features.

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