MIGRATE FROM LIBSYS TO KOHA IN KRC-CSIR-NEERI: A CASE STUDY

Rajesh Kumar Lohiya*

Abstract *The Knowledge Resource Center, CSIR-National Environmental Engineering Research Institute, Nagpur switching over from LIBSYS 7 to KOHA 3 - Integrated Library Management Software via open source software technology. Propose of this paper is to describe how to CSIR-NEERI implement and what are the steps taken to implement KOHA ILMS in the CSIR-NEERI KRC. The Migration of different data types, processing and depositing the same in KOHA system is also discussed. The use of Open Source Software in libraries is an increasing trend. OSS tools and implementations provide library institutions with access to a dynamic and cost effective solution for servicing user groups, manipulating large volumes of content, and facilitating communications between various institutional and public entities. Experience and conclusions from this installation might influence decisions at other libraries.*

Keyword: *KOHA, Library Automation, OSS, CSIR-NEERI, ILMS*

INTRODUCTION

Library is a growing organism. The traditional methods of maintaining it are no longer dynamic and efficient. For information retrieval, dissemination and better service to users, application of modern techniques has become absolutely inevitable. A well computerized library will help its users with quickly and speedy services. Therefore, library automation means, the application of machines to perform different housekeeping operations involved in the activities and services of the library, such as acquisition of books &periodicals, cataloguing, circulation and report management. Library automation not only for housekeeping activities but it is also provides the current and relevant information to the user, according to their needs. Sometimes the term mechanization and automation looked overlapped. Automation is the name gives to an automation system of working.

Library software has become the most powerful tool for changing the scenario of libraries from tradition to automated, from automated to electronic, from electronic to digital, and from digital to virtual. A number of software packages have been developed for use in the management and dissemination of information in libraries. Some have been developed by commercial agencies, others have been developed indigenously by institutions for in-house use and there is yet another category where customized applications have been generated on the basis of existing software. Some are also the open source, which allows it to be freely modified by everyone (Aute & Ghumare, 2014).

During the last decade, the open source software phenomenon has become a trend in information systems research because of fast-growing number of open source software users and software products in a large variety of domains. Open source software is already being adopted and used as software platform in a number of fields including library and information management. The focus of OSS is freedom. For most proprietary software or closed source programs (such as Windows, Oracle), the source code is not available for user or programmers to alter. Thus, if a user faces any bug or error, he/she will not able to fix it without relying on the software vendor to fix the error. The situation is very frustrating as this can often take a very long time (Crawford). Thus they are totally depending on the software vendor. Therefore, if you are using open source software, the source code is freely available and the availability of the source code allows users to modify and make improvements to it, and such type of input s could come from a diverse talent pool of programmers. This new trend towards the use of open source software in the libraries is also reflected frequently in library literature, conferences and workshops on open source software in libraries, etc (Giri & Sengar, 2011).

The Knowledge Resource Center, CSIR-National Environmental Engineering Research Institute, Nagpur switching over from LIBSYS 7 to KOHA 3- Integrated Library Management Software via open source software technology under 12th Five Year plan project namely CSIR-Knowledge Gateway and Open Source Private Cloud

* Library Officer, Knowledge Resource Center, CSIR-NEERI, Nagpur, Maharashtra, India. E-mail: rk_lohiya@neeri.res.in

Infrastructure (KNOWGATE), coordinated by CSIR-NISCAIR, New Delhi for computerize its entire house-keeping jobs of the library.

ABOUT CSIR-NEERI AND ITS KNOWLEDGE RESOURCE CENTER (KRC)

The CSIR- National Environmental Engineering Research Institute is a premier and oldest institute in India in the field of environmental engineering and science. It was established in 1958 as Central Public Health Engineering Research Institute (CPHRI) under Ministry of Environmental Science and Technology, Government of India with a focus on water supply, sewage disposal, prevention of communicable diseases, and to some extent on control of industrial pollution and occupational diseases. The chemical and biological solutions to address these problems were simple, though challenging. However, slowly worldwide public awareness on the contamination of environment on regional to global scale started attention in 1970's when Shrimati Indira Gandhi, the Prime Minister of India, rechristened the institute as national Environmental Engineering Research institute (NEERI) in the year 1974.

Main research focus areas of NEERI are Indoor Air Quality, Ambient Air Quality, Drinking Water, Water Resources, Wastewater, Industry, Bio/Phyto-Remediation, Energy security and R&D. Thrust Areas are Environmental Monitoring, Environmental Modeling, Environmental Biotechnology & Genomics, Environmental System Design & Optimization, Environmental Impact & Risk Assessment and Environmental Policy. There are about 110 highly motivated scientists working in the core areas of Environmental engineering and science, supported by more than 230 technical and administrative staff (CSIR-NEERI).

The Knowledge Resource Center (KRC) was established as a part of CSIR-NEERI to serve the R & D needs of scientists, research scholars, faculty members and other technical and administrative staff of the Institute. The KRC has a highly selective collection of over about 48,500 books and bound volumes of journals in the areas of environmental science and engineering and management. While print journals/ magazines subscriptions go beyond 135, a number of e-journals are also subscribe through a National Knowledge Resource Consortium mode subscription. There is also good collection of the reference books and Hindi books related to environmental science and engineering.

All the housekeeping operations of KRC were carried out manually until 1994. In the year 1995 KRC installed LIBSYS 3 -Integrated Library Management Software with only one Intel P-3 computers and five user's terminals in KRC. After up gradation of LIBSYS to LIBSYS 4 and LIBSYS 4 to LIBSYS 7 in the year 2005 with one server, 10 P-4 computers for KRC staff and 10 P-4 for user terminals for access of e-journals. Now we are switching over from commercial software (LIBSYS 7) to Open Source Integrated Library System (KOHA 3) for providing effective services to the scientists and researchers of the institute and other user also.

ABOUT KOHA

Koha is the first open source integrated library management system. Koha is web-based multilingual integrated library management system to create to the automation needs of medium to large libraries around the world. In New Zealand and Africa, there is a community called "Maori". "KOHA" is a term of that community means "unconditional gift". Koha is an integrated library management system that was originally developed by Katipo Communications Limited of Wellington, New Zealand for Horowhenua Library Trust (HLT), a regional library system located in Levin near Wellington. In 1999, Katipo proposed development a new system for HLT using open source tools (Apache, MySQL, and Perl) and open source web browser Mozilla Firefox that would run under Linus and use Telnet to communicate with the branches. The software was in production on 3 January 2000, and released under the GNU General Public License (GPL) for other people to use in July 2000. Koha is based on LAMP architecture (Linux OS, Apache, MySQL, and Perl). It is also available in XAMP architecture (Unix/Windows OS, Apache, MySQL, and Perl). There is a high level of interest in KOHA internationally, and it is currently being used in New Zealand, Australia, Canada, United States, India, Thailand, United Kingdom, and France (KOHA-Community).

Koha is most advanced open-source integrated library system in use today hundreds of academic, public and special libraries worldwide. The development of Koha is steered by a growing number of libraries throughout the world. These libraries, either on their own, or collaborating in groups, sponsor the development of new features to support their workflow. Koha's impressive feature set continues to evolve and expand to meet the needs of its sponsoring libraries. Everyone may not use the same features. Thus freedom to pick and choose from features, through the administration of system preferences, offers librarians the opportunity to tailor their Koha instance to match their specific workflow needs.

Since the originally implementation in 1999, Koha functionality has been adopted by thousands of libraries world-wide, each adding features and functions, deepening the capability of the system. With the 3.0 release in 2005, and the integration of the powerful Zebra indexing engine, Koha become a viable, scalable solution for libraries of all kinds. Latest version of Koha 3.18.0 released in 28 November 2014. With its advanced feature set, Koha is the most functionally

advanced open source ILS on the market today (KOHA).

Slant Features of KOHA

- MARC 21 Compatible
- Easy to use
- Source Code is Available
- Z39.50 Search or Federate Search
- Web-based Online Public Access Catalogue (OPAC)
- Web-based Circulation Interface
- Offline Circulation Option
- Patron Records Management
- Online Renewals and Reservations of Item by Users
- Branch Libraries Management and Items Transfers
- Customizable Search
- Advance Search Option
- Book Bag and Virtual Book Shelves
- Multi-lingual OPAC Support
- Barcode and Spine Label Printing
- Printing Function of Patron Card
- Upload Patron Image
- Budget Management
- Customizable Data Entry Sheet
- Reports and Statistics
- All Platform Support: Linux, Windows, etc.
- E-mail and/or txt patron Issue, Return, Reissue, Overdue and other Notices
- Export/Import Bibliographical Details of records
- Fully Developed ILS Functionality Including Courses Reserves, Acquisition, Serial Control, etc.
- Koha is composed by two parts: the OPAC and the interface for the librarian (the staff client). The staff client allows librarians to perform all libraries' typical activities.
- It is free software (Licensed under GNU General Public License)
- No Vendor Lock in
- Active Development Process
- Frequent Software Releases

Modules of KOHA (Version 3.12)

- Multilingual Web OPAC
- Circulation
- Patron Management
- Advance Search
- Cataloguing
- Authorities Control
- Serial Control
- Acquisition
- Report Management
- Administration Control
- Tools
- About KOHA or FAQ

Why KOHA

- Full-featured Integrated Library System
- Library Standard Compliant
- Web-based Interface
- Web-based OPAC
- Free/Open Source
- Dual Databases Design

Aim and Objectives of the Study

The following are the objective of this study:

1. To develop and updated databases of books and other resources of the Knowledge Resource Center (KRC), CSIR-National Environmental Engineering Research Institute (NEERI), Nagpur.
2. To implement Open Source Software KOHA-Library Integrated System for library automation
3. To carry out the check-out and check-in functions of the circulation section and generate the list of books due a particular member and also the overdue charges.
4. To provide various search options to know the availability of books & other documents in the library.

Methodology

The present study attempted to create books and other documents databases of KRC-CSIR-NEERI. The database was developed with the help of the open source software KOHA-integrated library management system. The procedure followed can be divided into the following three phases:

Phase 1

The operating systems used Cent OS 6.4 and after successfully installed operating system in the server, now implementation of open source software KOHA-Integrated Library Management system 3.12 version for library

automation. For Databases used MySQL and for web utility used Apache web server.

Phase 2

The full bibliographical data collected from physically and entered in an excl sheet. Once all data was collected, it was documented in excel sheet. The data was mapped with help of MARC Edit software and converted in the .mrc file.

Phase 3

After that, .mrk file import to KOHA and also collected data related to patrons entered in the koha. Furthermore, the OPAC of KRC-CSIR-NEERI necessary access points to the users for easy retrieval.

Statement of Problem

The present study aims to implementation of library automation for the Knowledge Resource Center, CSIR-National Environmental Engineering Research Institute (NEERI), using Koha open source software.

Plan of Work with Koha

1. Initial investment and recurring expenditure as the maintenance cost of software.
2. Time required for installation of Linux and Koha.
3. Taking the stock of the situation
4. Bibliographical data has been collected from exiting system and converted into the compatible format and import into the Koha.
5. Time required for Customization of software
6. Time required for data validation and new data entry job.
7. Sufficient training for staff.
8. Validation of automation system by the library staff.

Pre-requisite Software Requirements for Koha:

Some prerequisite are needs for installation of Koha:

- Debaian/Ubuntu/CentOS, or another Linux based operating system or Mac or Windows system
- Apache web server
- MySQL database server
- Different Perl packages
- Zebra indexing software

Selecting open source software naturally led us to Linux. Cent OS 6.4 has been preferred for Operation System because of its similarity with windows desktop environment in many ways.

HARDWARE REQUIREMENTS FOR KOHA

Koha can run on any standard desktop or laptop, or server. Configuration of the machine basically depends on the number of records and daily user access to Koha. Another important factor is how many simultaneous users are expected. Beyond the server side requirements, Koha requires only simple devices to work well. It is possible to print barcodes, circulation slip and spine labels with any kind of printer. At least one client computer is necessary for catalogue searching for users and at least one for circulation. The rest depends on particular library needs. Koha supports self-circulation also. Barcode readers or RFID may be used for both circulation systems.

The initial plan was to implement software for operating an integrated library management system for library automation. Thus, before procuring any server and hardware, a detailed analysis of the requirements of hardware for effective functioning of different software for ILMS was done, keeping in view about the present as well as future development issue of software. Thus, the hardware's used for the automation of housekeeping operations of KRC is given Table 1.

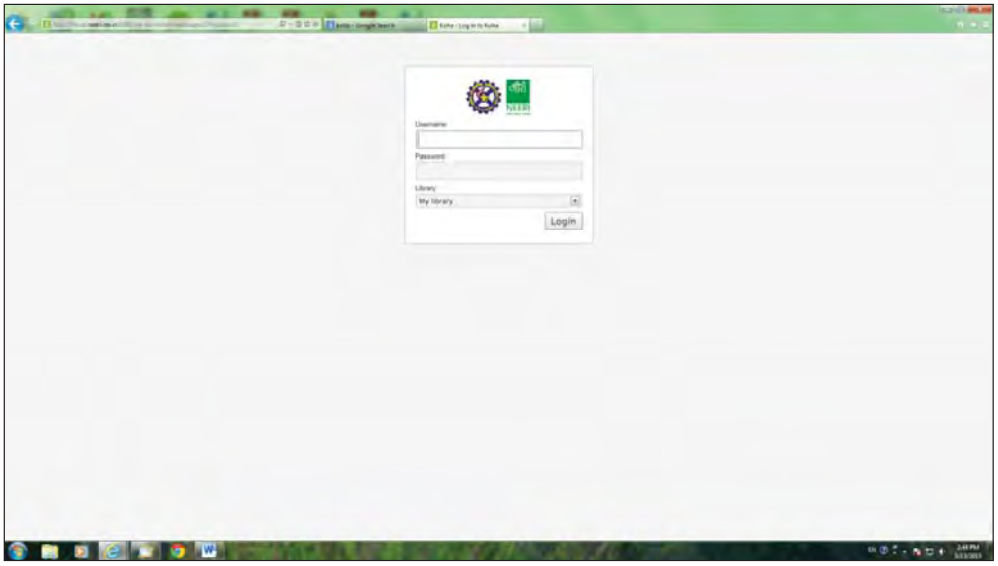
Table 1. List of Hardware's used for the Automation of KRC

Items Type	Specification of Systems	Number
Server	HP ProLiant DL 380p Gen8 Server	1
Computer	HP Pavalian 20a-240IN All-In-One	1
Printers	TSC TTP 244 Plus and HP Laser Jet P2055dn	2
Scanner	HP Scanjet 8350	1
Bar-code Readers	Honey Well MK 5145 – Hand Held	1

Design and Implementation of Koha Software in the Knowledge Resource Center, CSIR-National Environmental Engineering Research Institute:

Koha Login Screen

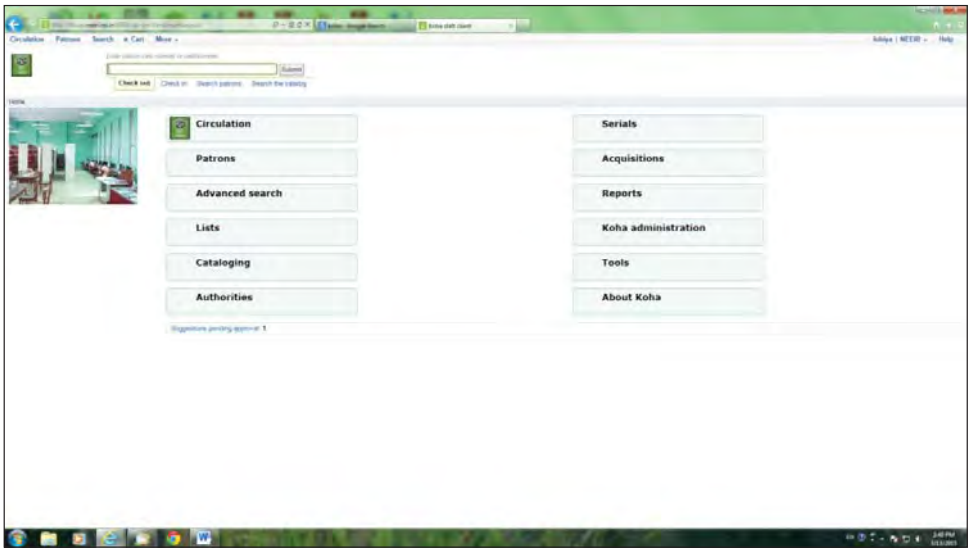
Figure 1: Koha Login Screen



Home Page of Koha

After login in Koha, you will see the home page of CSIR-National Environmental Engineering Research Institute so all the modules are available in this home screen like as Circulation, Patron, Advanced Search, Cataloguing, Administration, Serials, Acquisition, Reports and About Koha.

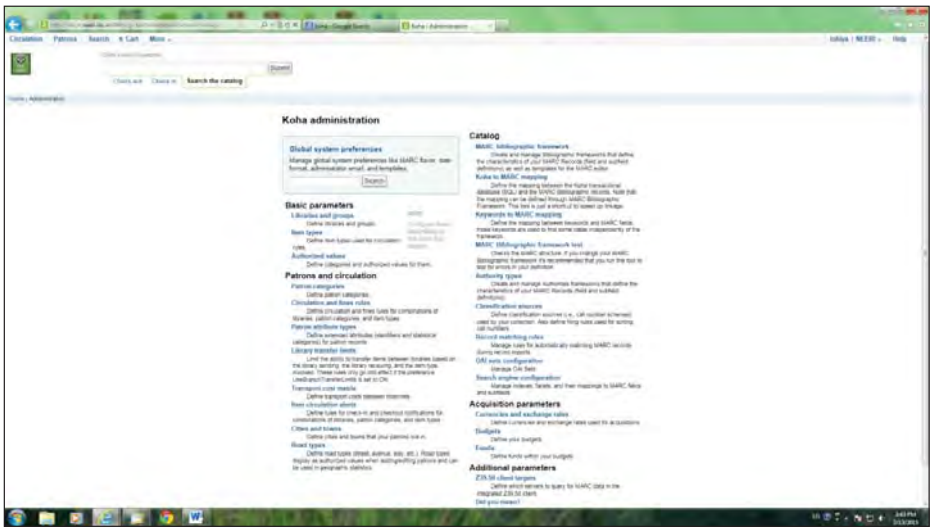
Figure 2: Home Page of Koha



Administration

The administrative module of Koha is very important. It allows us to change various default parameters and you can be defining different parameters for the functioning of Koha. Global System Preferences is the most important module of Koha. It deals with administration and maintenance part of Koha. Only Super Librarian, Administrator or person of similar designation can hold access right to this module.

Figure 3: Koha Administrative Module



Cataloguing Module

Cataloguing is the most important part for creating books and other document databases in the library. Koha maintaining full MARC tags and AACR-II rules for cataloguing. After click on catalogue module, the below screen shown for entering new record in koha.

Figure 4: Cataloguing Module

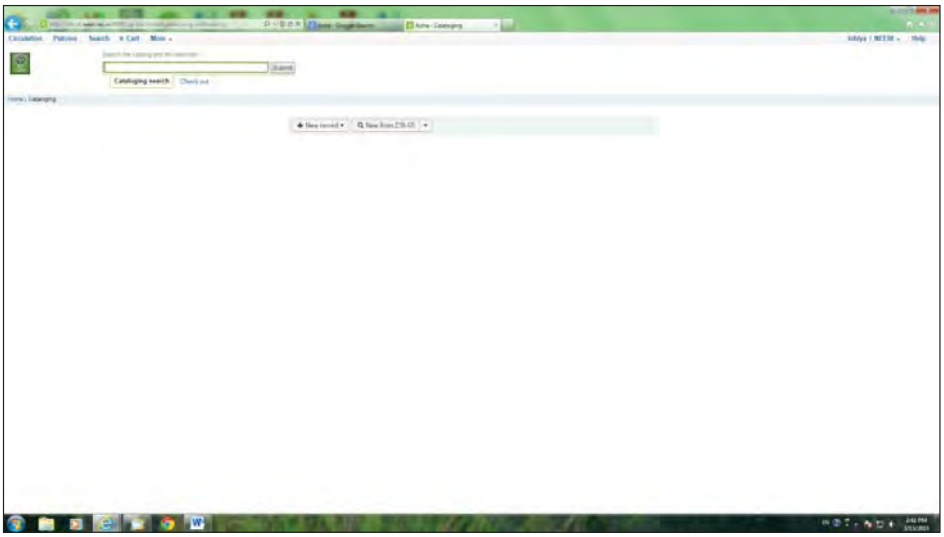


Figure 5 & Figure 6 shown the form of record. Before entering the data you have to select the format of materials.

For easy the data entry work, the one more record is divided into 0 to 9. We can go through respective number to fill into the specific MARC tag. We have to just click on save after filled up all the bibliographical information to their respective MARC tag and the item get added to the list.

Figure 5: Marc Bibliographic Framwork

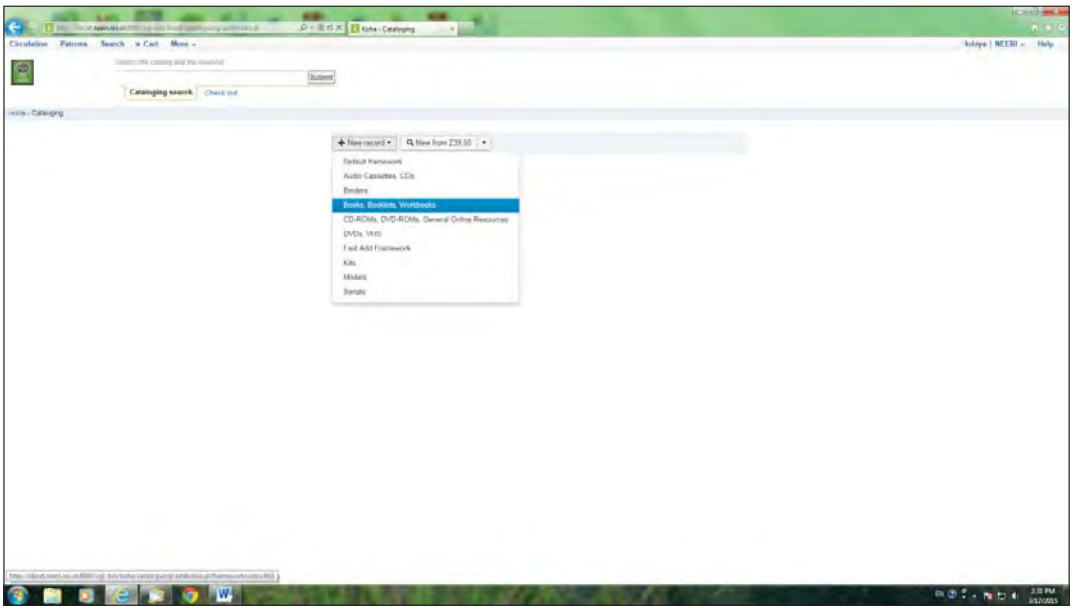
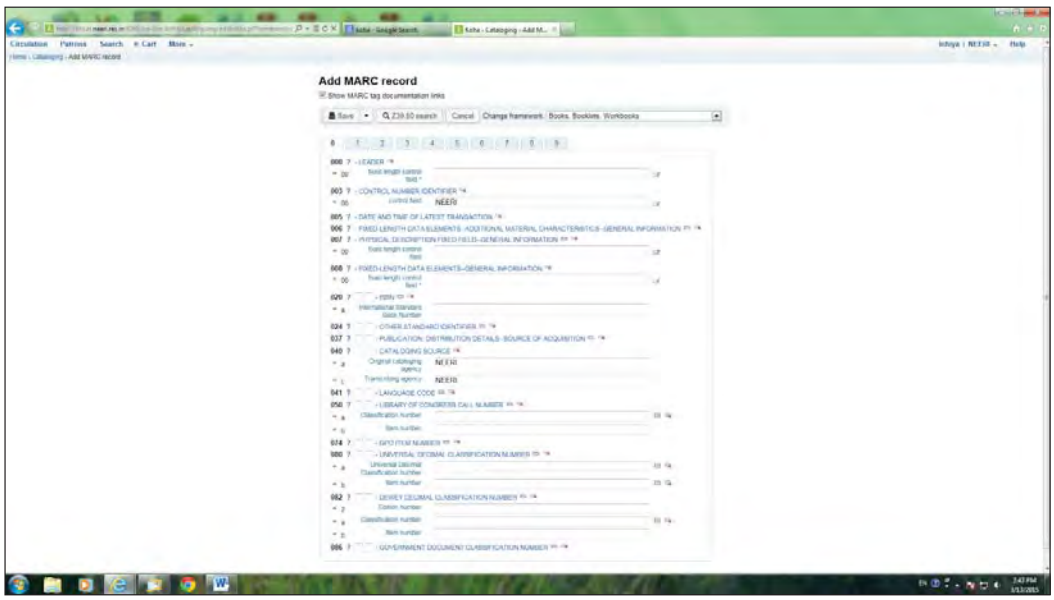


Figure 6: Add Bibliographic Informationin Marc Tag



Patron Module

When we click on the Patron module, then after screen comes up (Figure 7). For adding new patron, click on add patron and select the patron type (Figure 8). After selected patron type the new screen comes up, then the following form will appears which prompts us to fill in the member particulars, then KOHA system automatically allots card number to the patron or you can provide the card number according to your library policy. However it can be changed later if required (Figure 9).

Figure 7: Patron Module

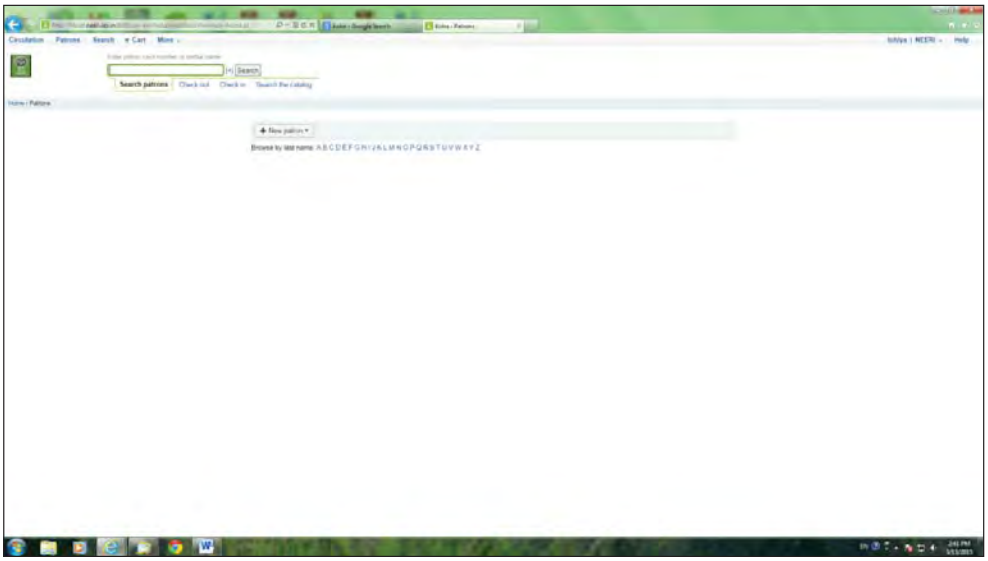


Figure 8: Select Patron Type

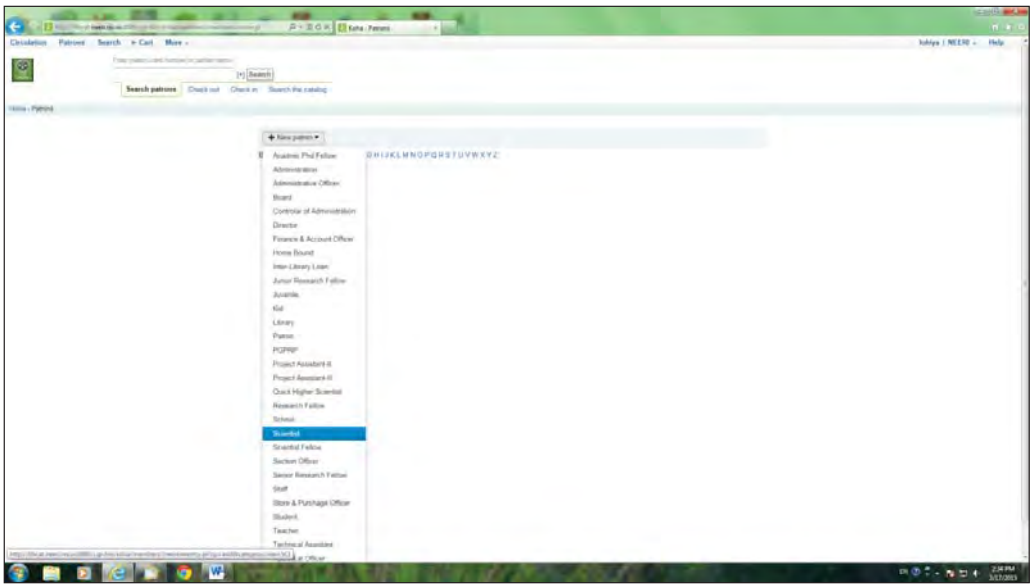
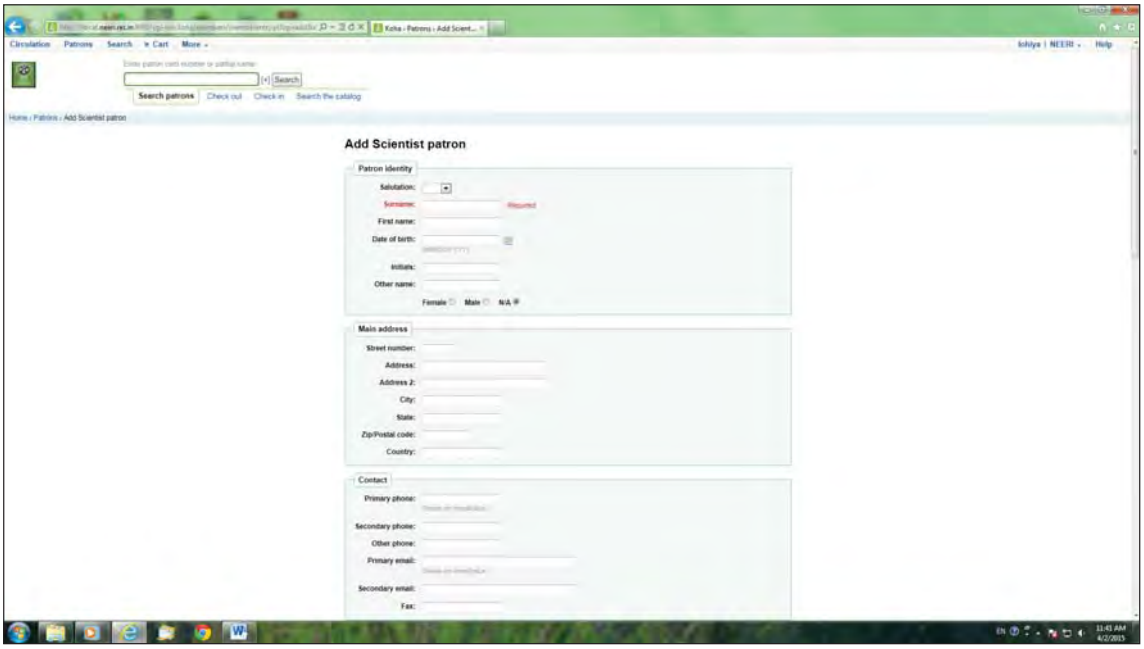


Figure 9: Membership Format for Patron



Patron module allows to search for an existing members or add add new patrons as discussed below (Figure 10). Enter patron card number in search patron block or you can search alphabetically also, then you will see the patron details (Figure 11). These are mainly administrative work and access should be given very carefully to the other staff of the library. Manly Super Librarian or administrator is given access to this module.

Figure 10: Alphabetically list of Patrons

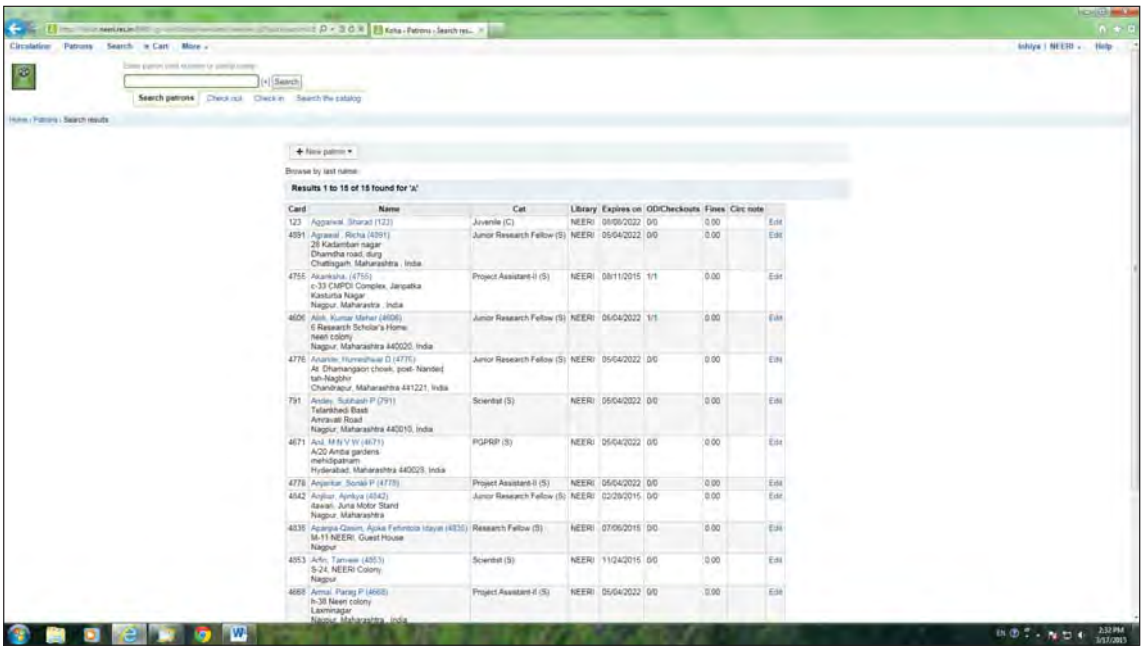
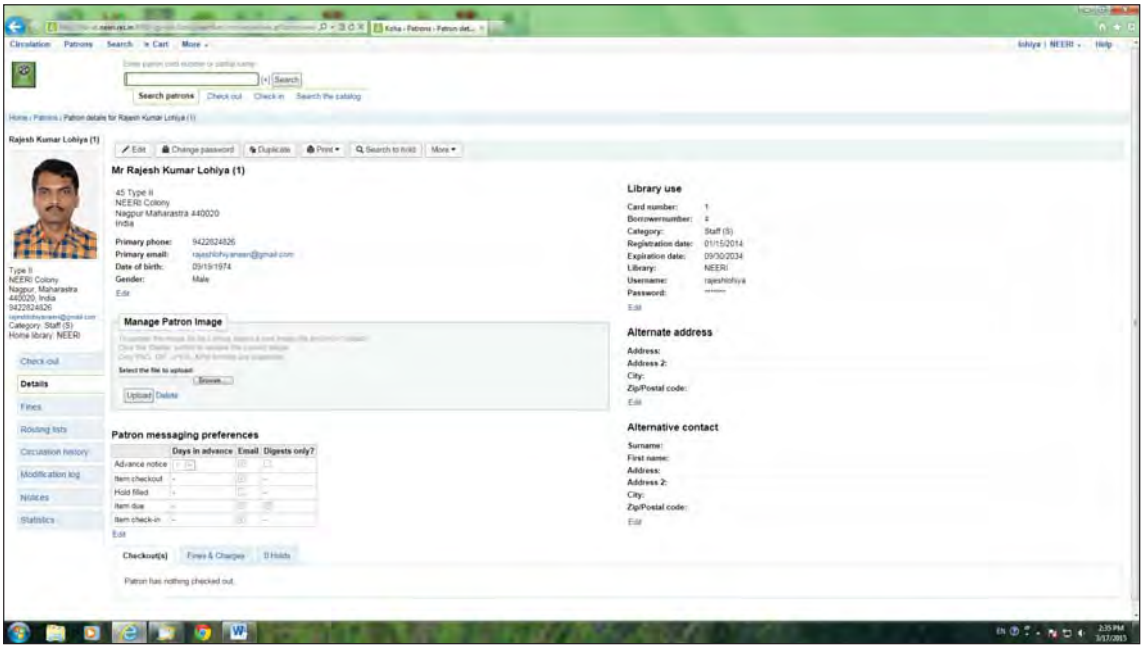
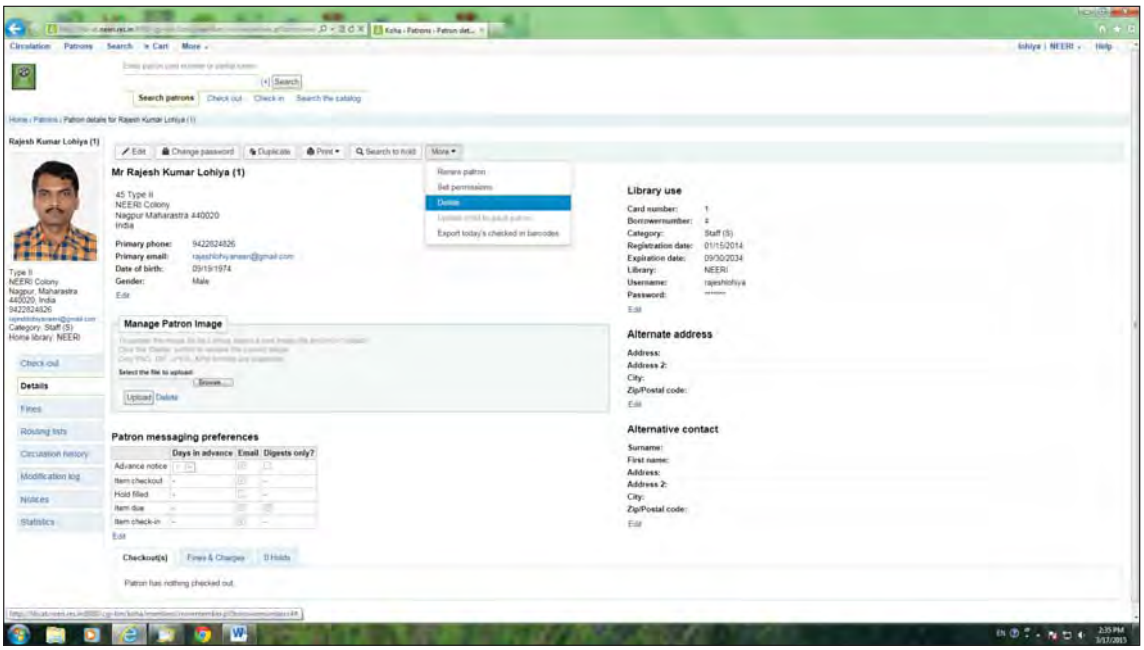


Figure 11: About Patron Information



The Information about the patron can be seen by the librarian through patron module such as the items currently issue under, fines and mail preferences. So that you can find out the information related to particular user, whenever required. On the same screen options are given to modifying details, patron's deleting, changing password and give the permission to the user (Figure 11 & 12).

Figure 12: About Patron Information



Circulation Module

The most important module is circulation module in any library automation software. Its main window looks like below (Figure 13).

In the process of circulation, we have to enter either patron card number or the partial last name of the patron, as soon in below picture (Figure 14).

After entering the above information, it will show the patron

Figure 13: Circulation Module

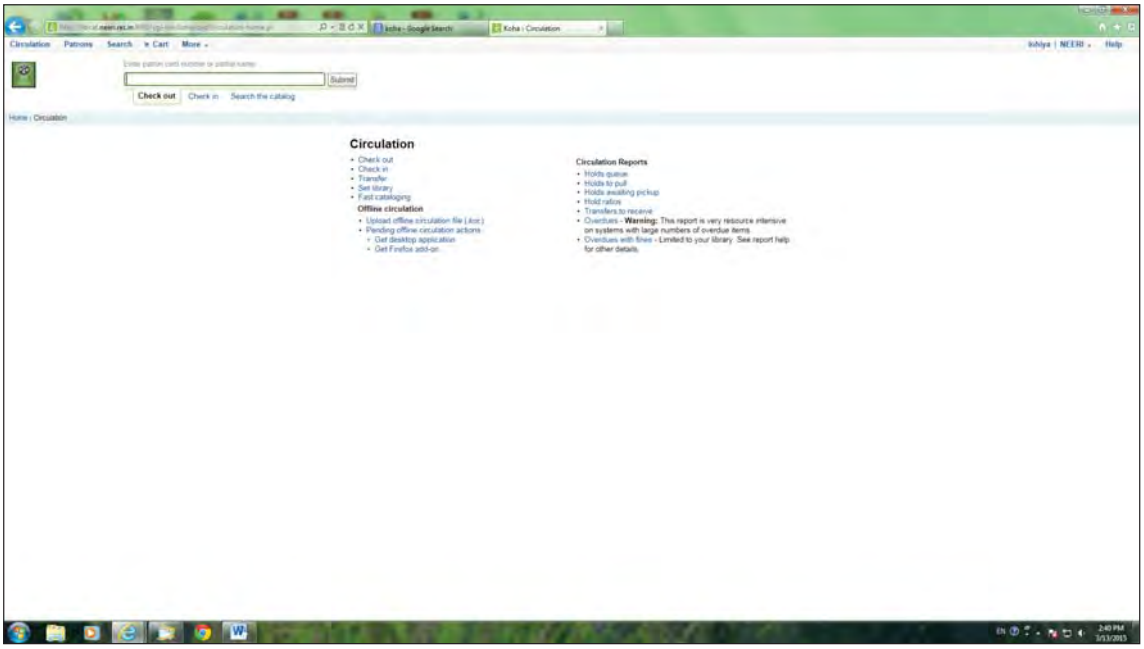
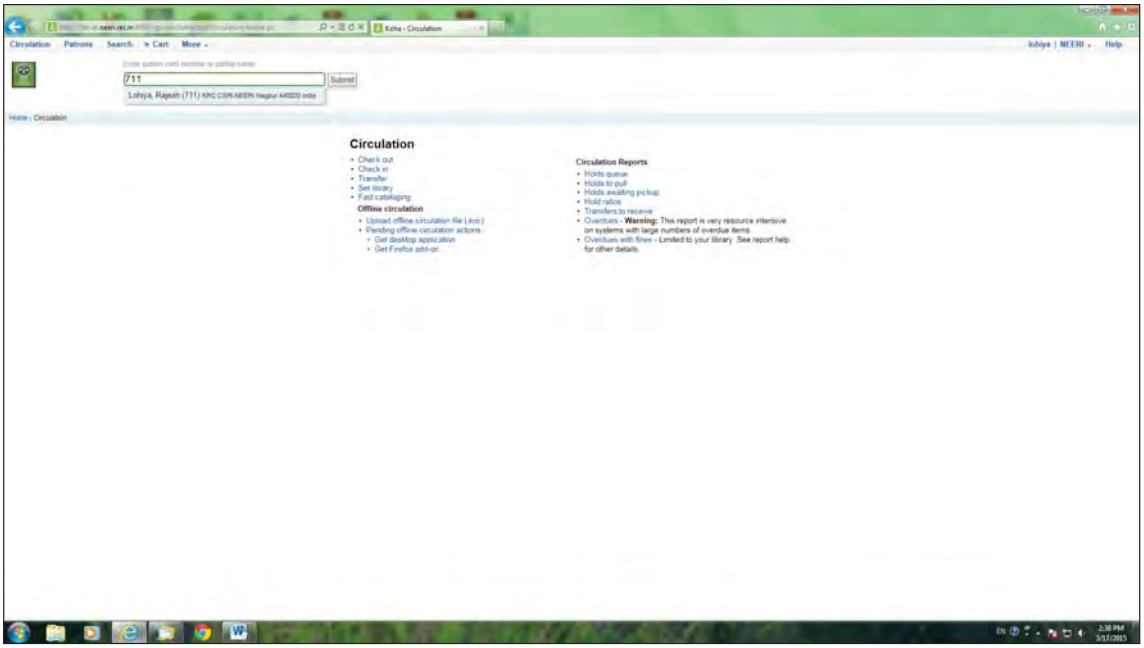


Figure 14: Circulation Module



information. Now if we want to issue any book, then the barcode of the book should be entered in check out box of the patron. Once a valid barcode number is entered and check out button is pressed or press the enter tab (Figure 15 & 16). Here one important thing is due date of the document, you can define or you can set parameter in preferences to all categories, so that date will be automatic come up.

If we can set the parameter for alert massages by mail, after complete above process, it will go automatically to the patron account shown below (Figure 17).

Figure 15: Circulation Module – Book Issue

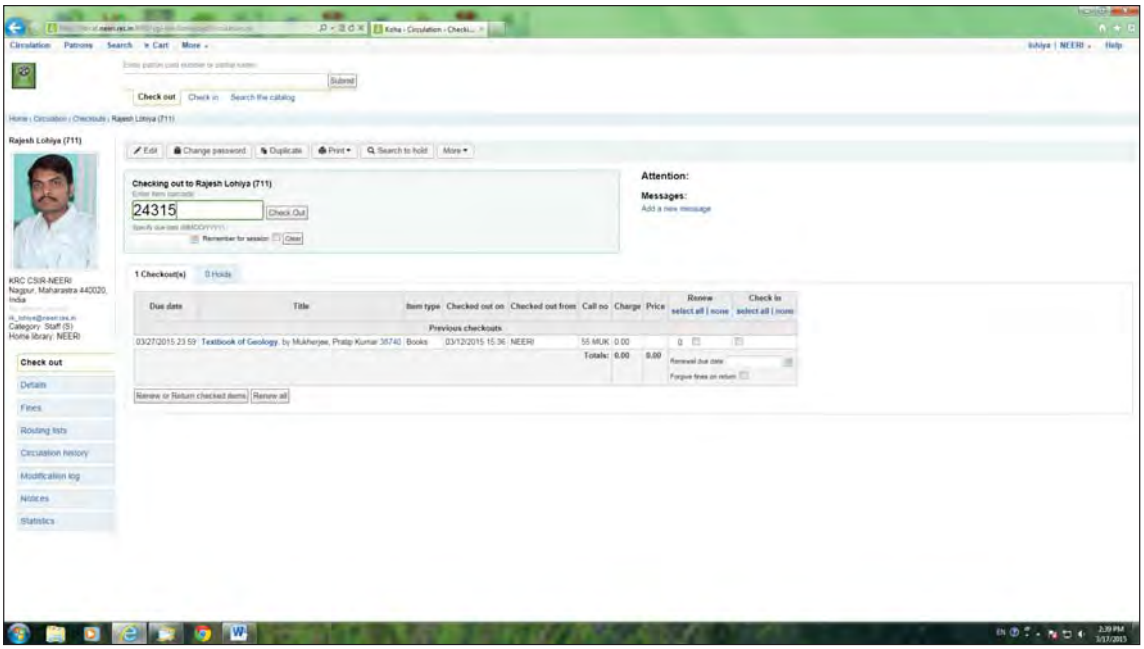


Figure 16: Circulation Module – Book Issue

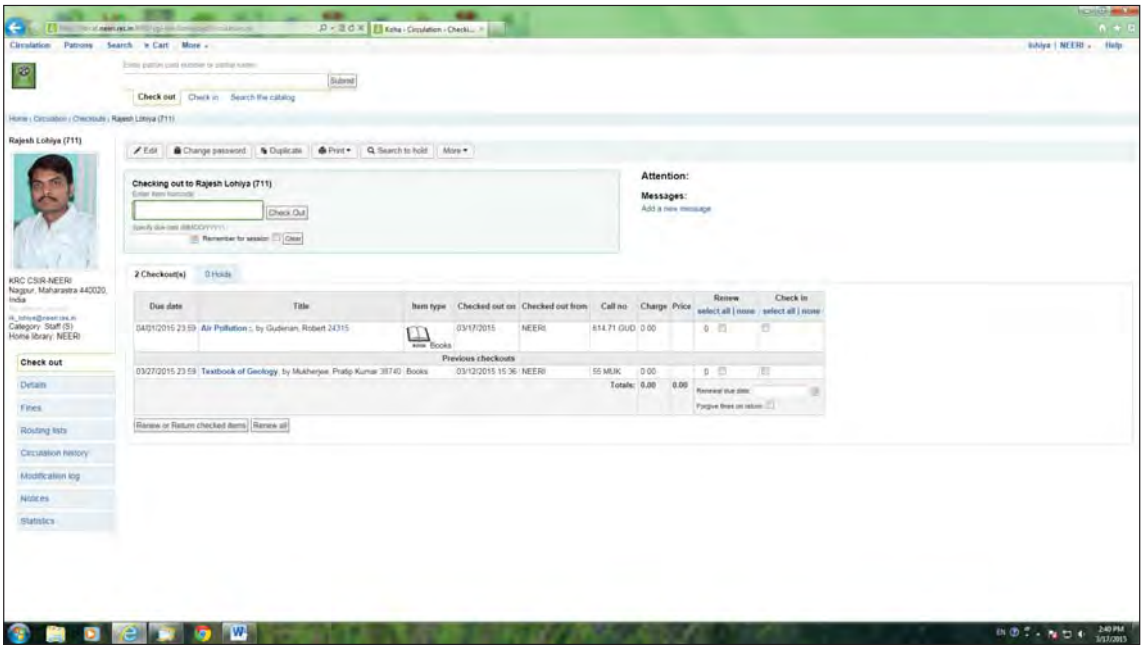
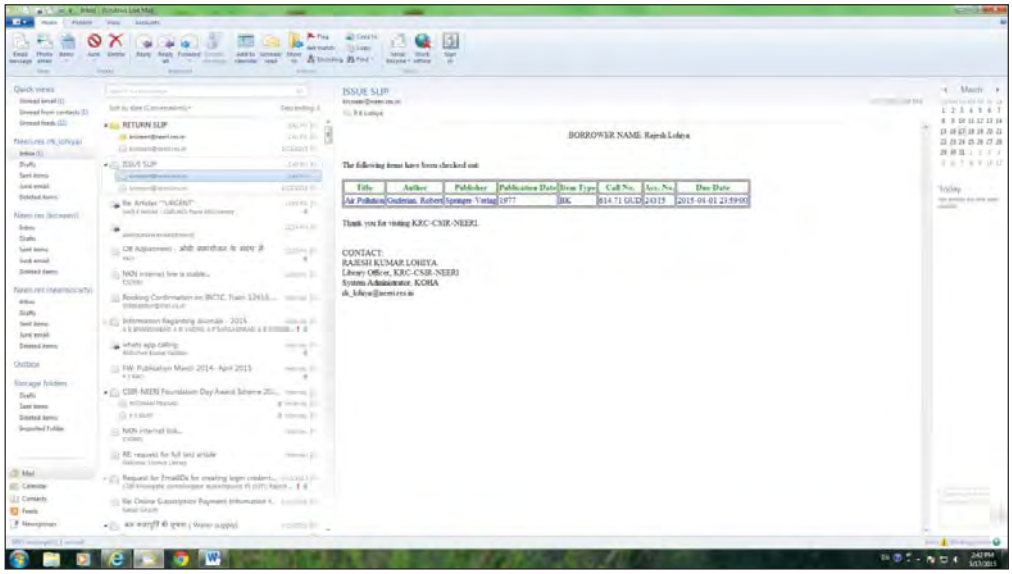


Figure 17: Circulation Module – Book Issued Alert by Mail to Patron



Another important aspect of circulation is returning the borrowed items. The return option in the circulation window, when click it taken us to the above window. Here we give the barcode of the item to be returned. It show the details of the borrowed item and the borrower as well, when the number is given and the enter key is pressed (Figure 18 & 19). If we can set the parameter for alert massages by mail, after complete above process, it will go automatically to the patron account shown below (Figure 20).

Figure 18: Circulation Module – Book Return

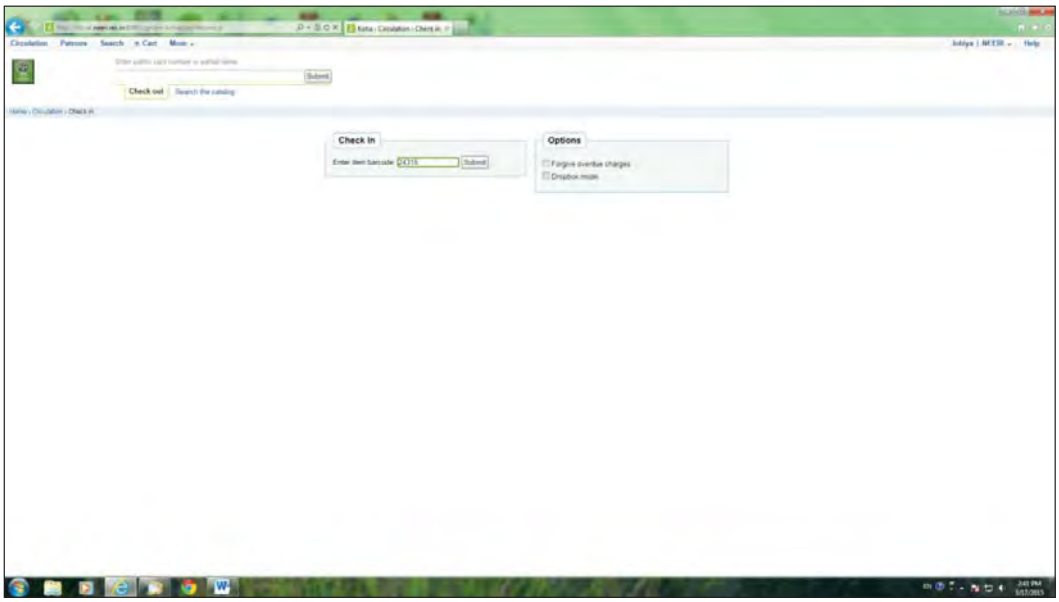


Figure 19: Circulation Module – Book Return

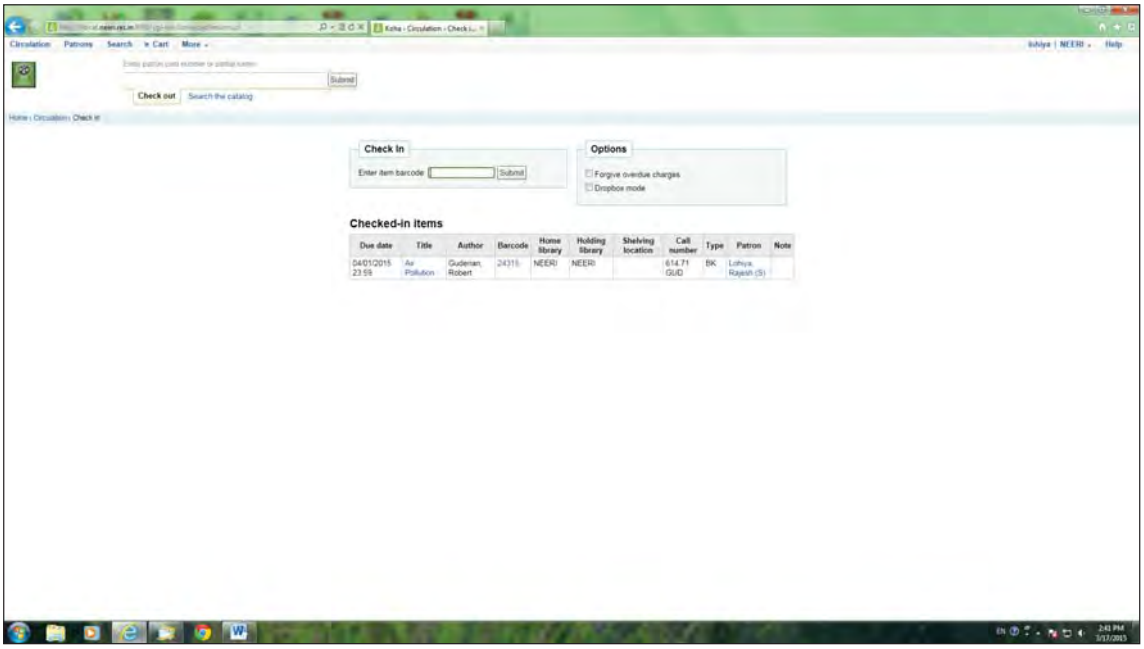
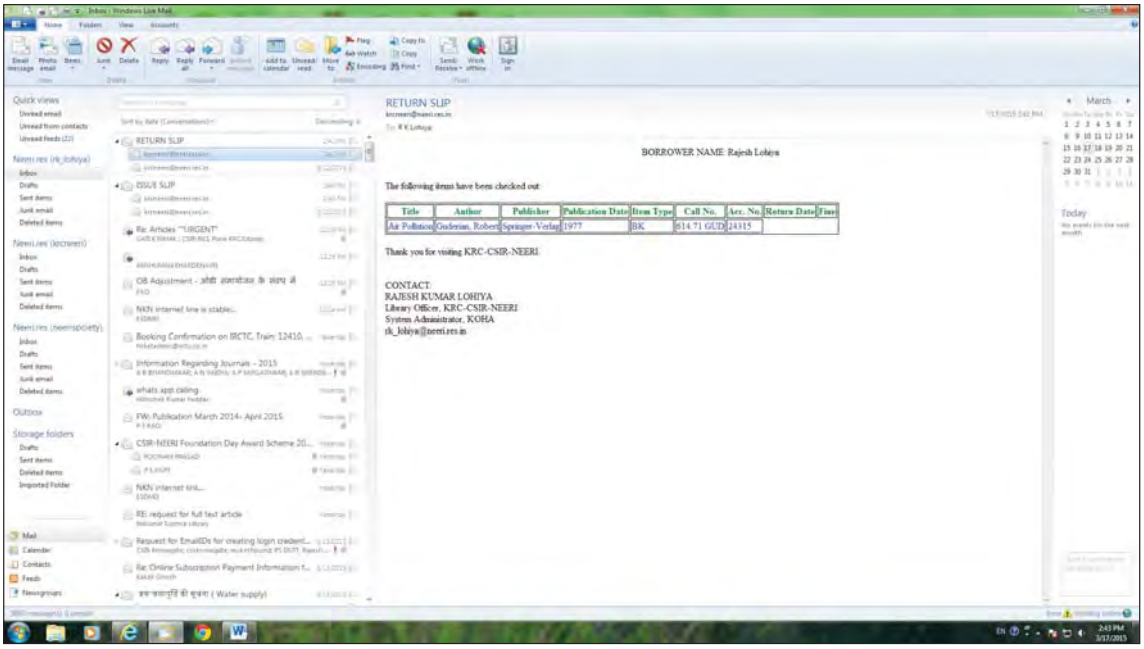


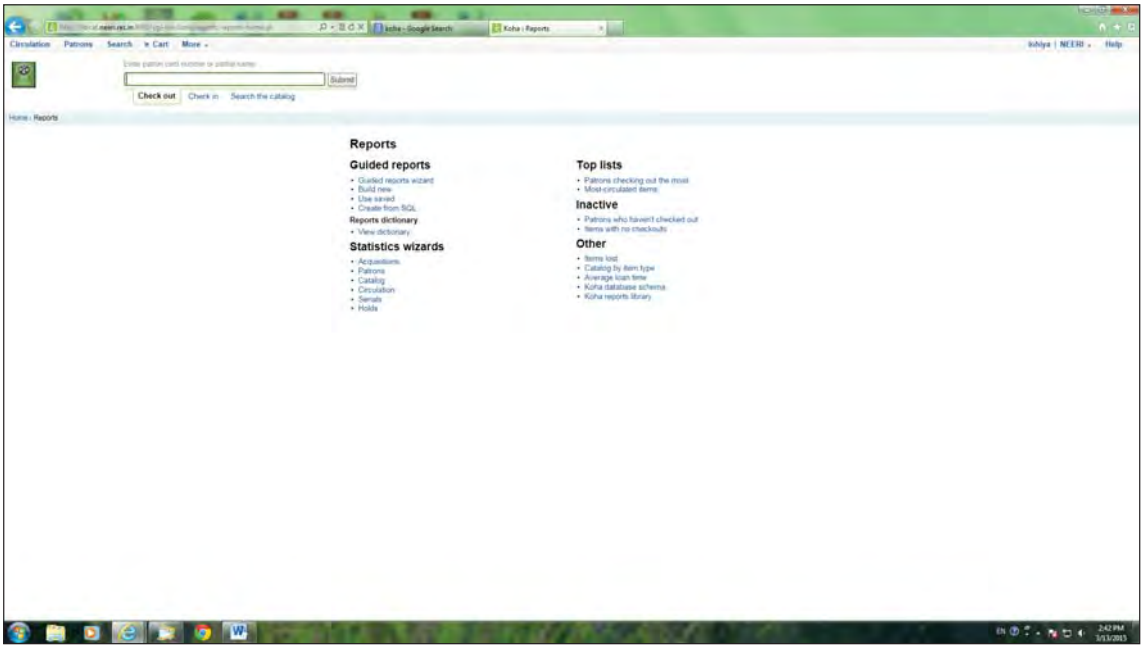
Figure 20: Circulation Module – Book Returned Alertbymailto Patron



Report Module:

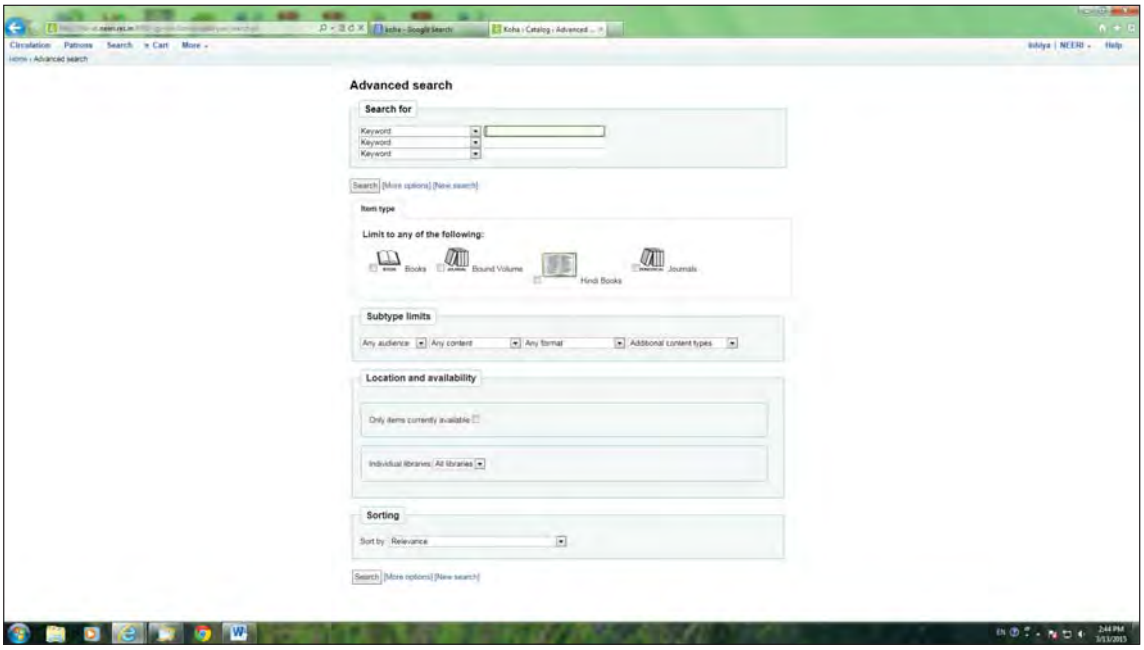
In this module we will generate reports of patron activities pertaining to books, overdue, fines, fines paid, fines due and other reports.

Figure 21: Report Module



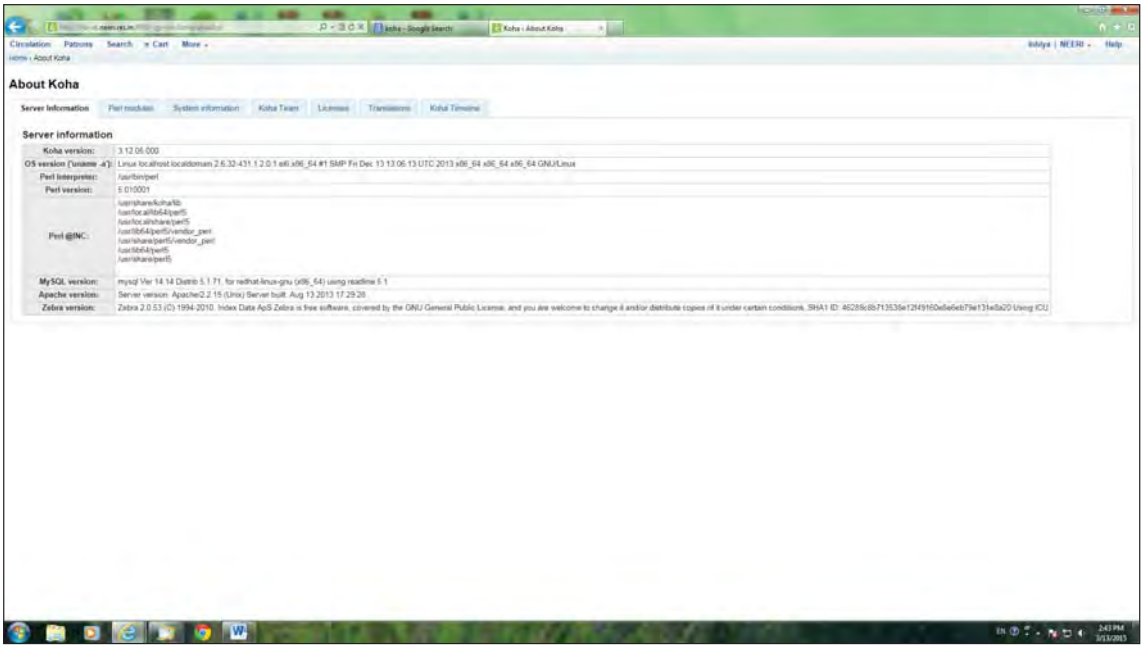
Advance Search Module

Figure 22: Advance Search Module



ABOUT KOHA MODULE

Figure 23: Koha Server Information



OPAC Modules

Figure 24 & 25 shows the details simple and advanced search. Here we can search by keywords, subject, title, author and seven barcode of the document.

Figure 24: Opac Module

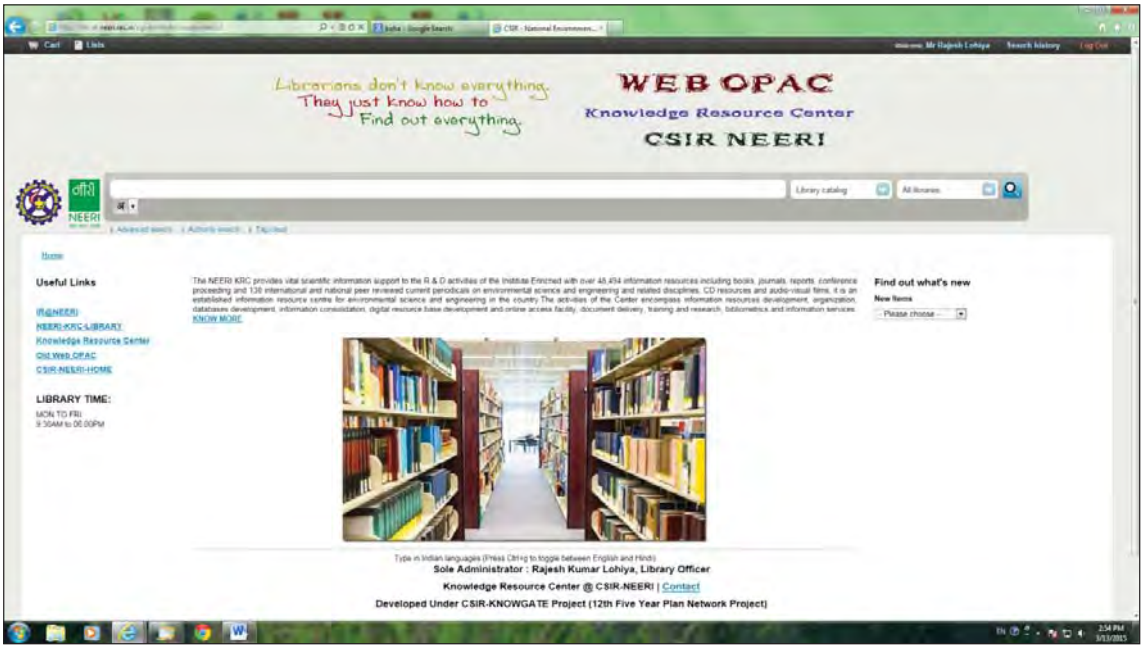


Figure 25: Koha Advance Search

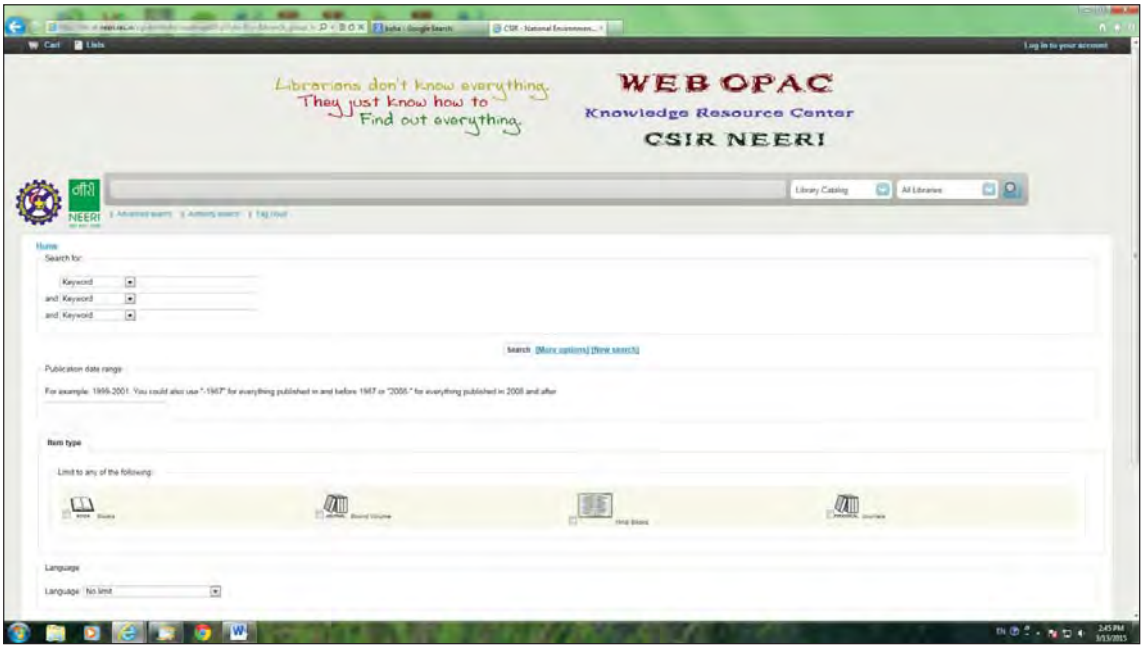


Figure 26, 27 & 28 are shows the information searching for the title and get all information in books. Here we can see title, author, subject and publication and copy available for loan or issued by someone is to be display also.

Figure 26: Opac Particular Title Information

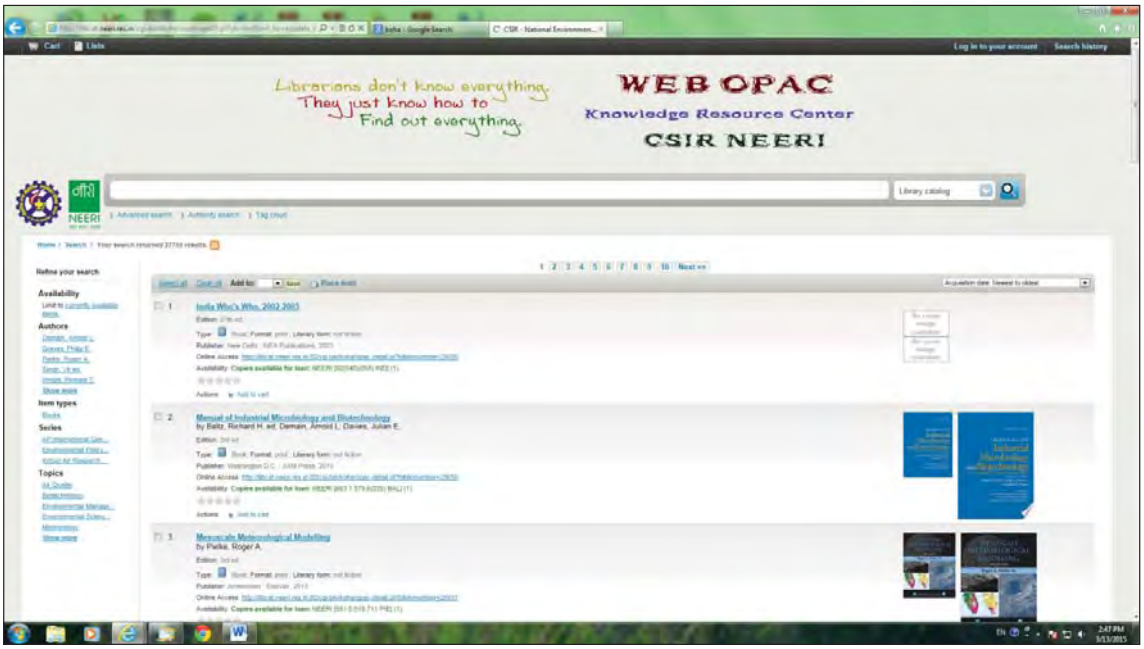


Figure 27: Opac Particular Title Information

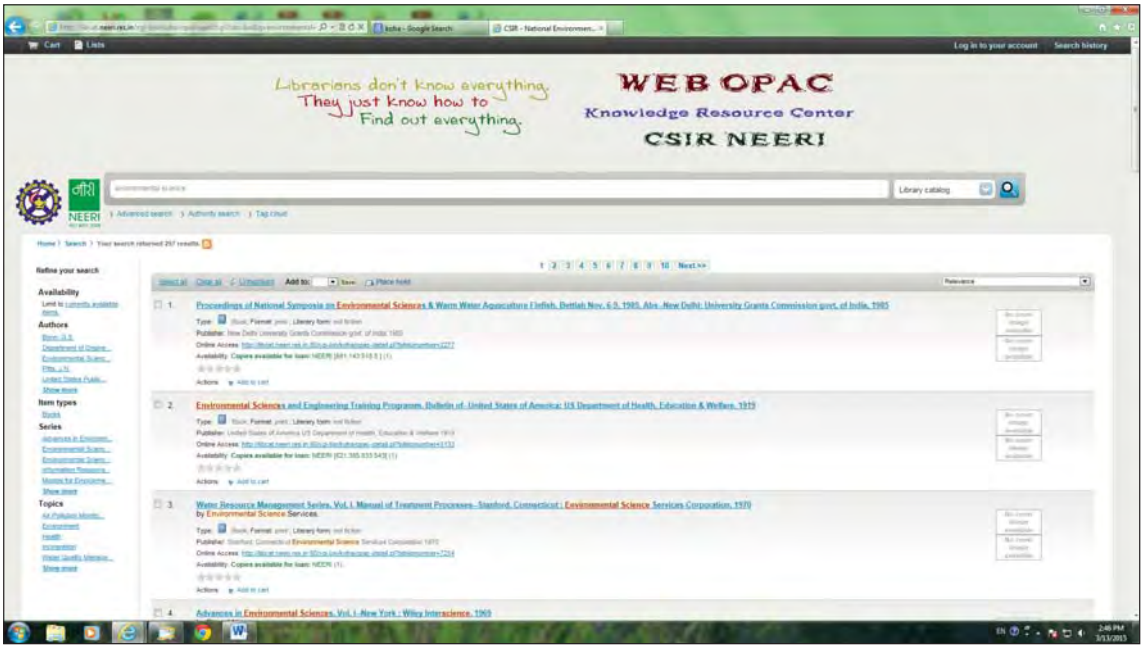


Figure 28: Opac Particular Title Information

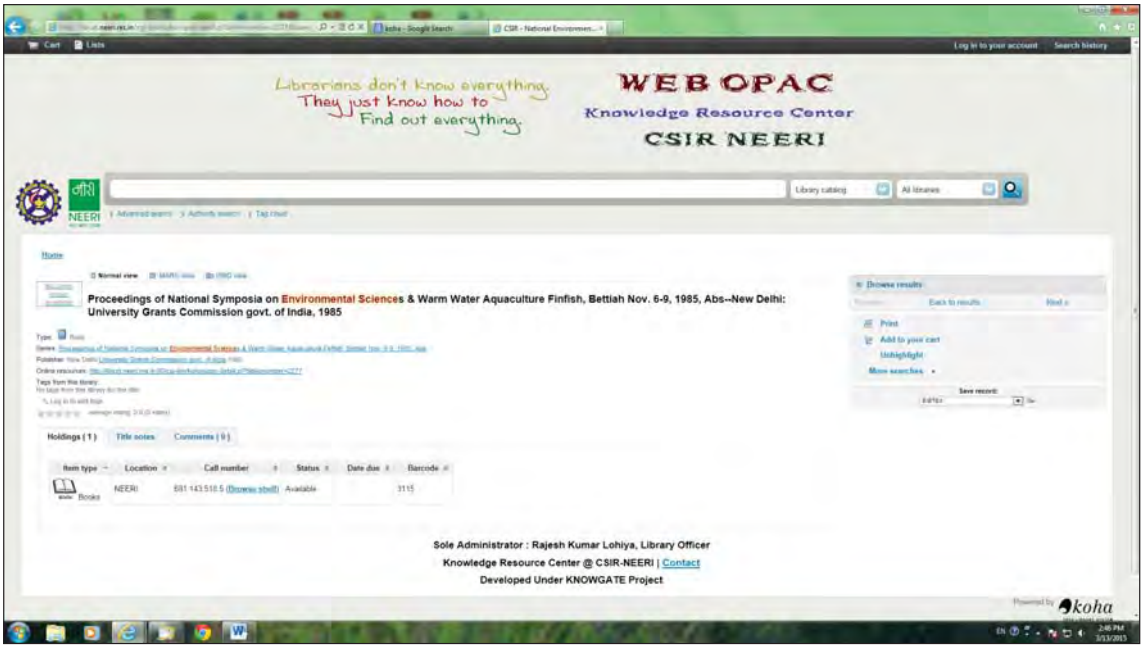
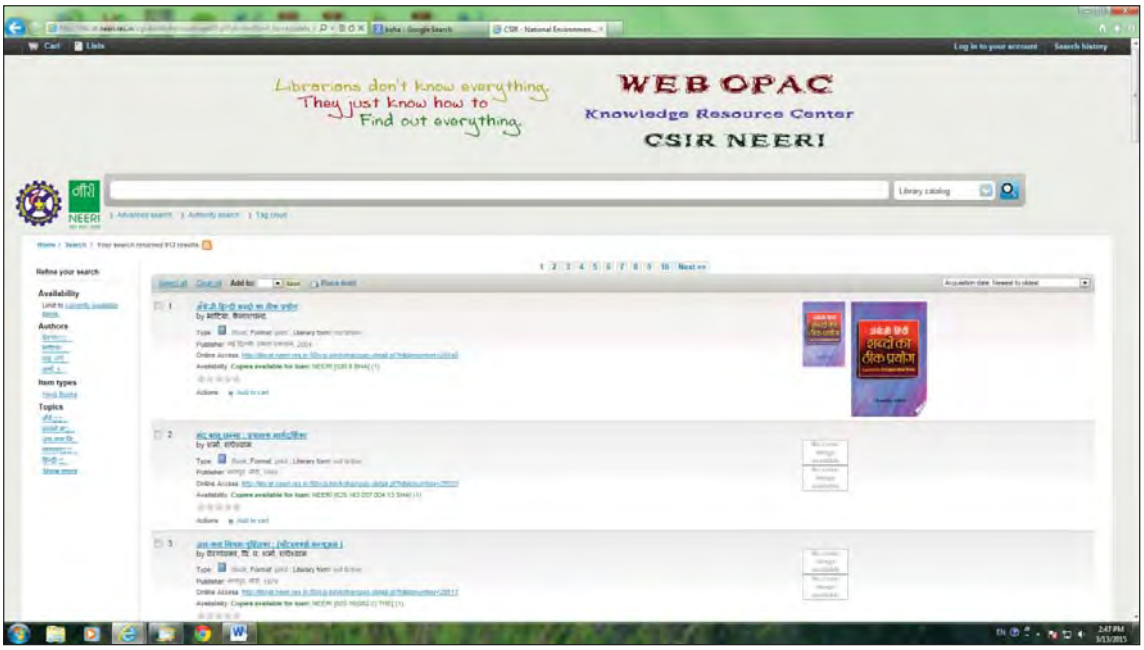


Figure 29 shows the Browsing Book Shelves.

Figure 29: Browsing Book Shelves

Figure 30 shows the Hindi book search by item.

Figure 30: Hindi Books Search by Items



Bound Volume Searching

Figure 31 shows the bound volume search by item.

Figure 31: Bound Volume Search by Items

Serials Searching

Figure 32 & 33 are shows the current serials search by item.

Figure 32: Current Serial Search by Items

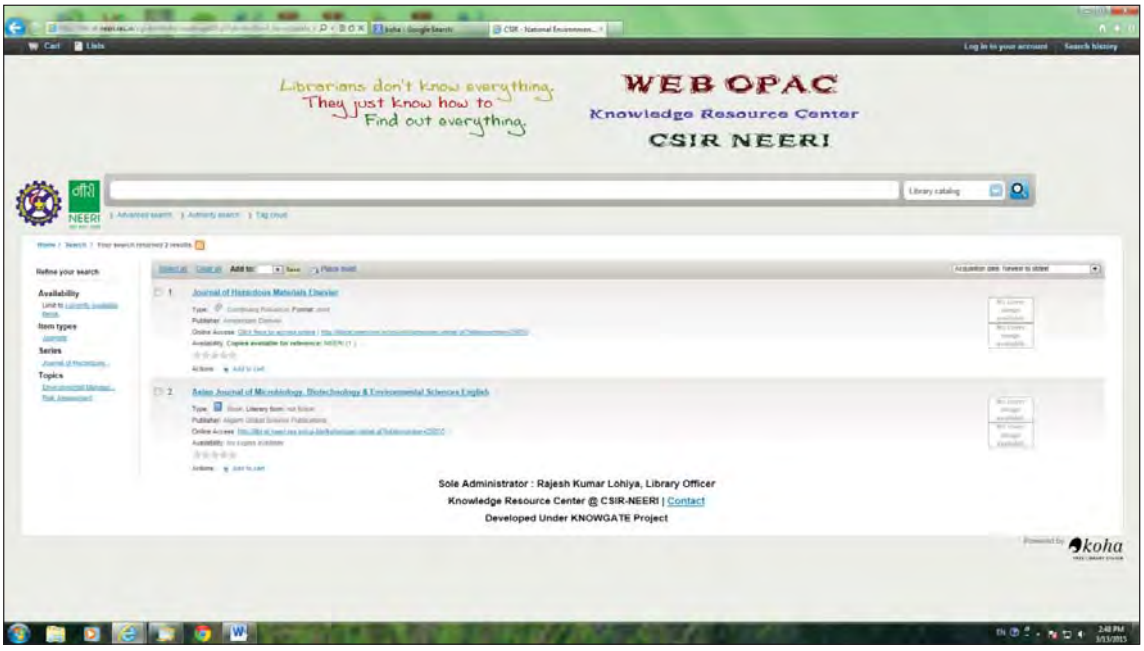
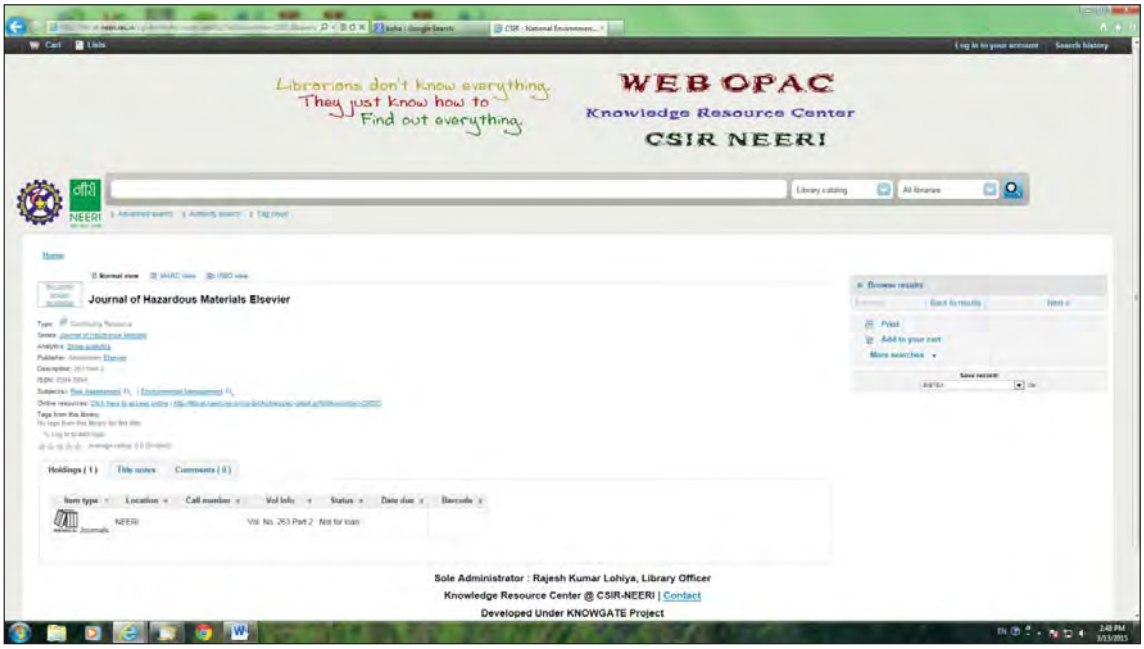


Figure 33: Current Serial Search by Items



Outcome of the Study

Bases on this project at Knowledge Resource Center CSIR-NEERI the following are the outcome of the study:

1. CSIR-NEERI library collections are in single databases.
2. It will give the full autonomy over the library collection and other operation.
3. Scientists and researchers can check the required document by the OPAC module at 24X7 anywhere in the world by www.
4. Scientists and researchers can check the status of their borrowed books.
5. They can also get the full details about the books for their further reading and research and also get the full text, if the soft copy of books available in web by OPAC module.
6. This library can share their data with others via Z39.50 protocol.

CONCLUSION

Automation of library using open source software is a challenging job. For implementation of OSS needs detailed planning and dedication is required. The objective of this study is to use the KOHA open source software system for the library automation of the major day to day activities of the various section of the knowledge resource center CSIR-National Environmental Engineering Research Institute, Nagpur, which is tiresome and cumbersome. After so many studies by the researchers have found that the KOHA open source software is more suitable for the library automation. This project had the basic objective migrate bibliographic data of the books and other documents from proprietary software (LIBSYS) to open source software (KOHA) at KRC-CSIR-NEERI, Nagpur, with which the automation of circulation routines and other activities is carried out. In this point of view it may be concluded that Koha is a useful package for the creation of a databases and for the information retrieval. Migration of the existing data to the OSS system also usually demands consideration efforts. Thus a lot of time is required to understand how the system works and trouble shooting, but gradually the system functions accordingly.

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