

Module-3 | Library and Information Services

Unit-2: Modern Library and Information Services

After studying this unit, students will be able to:

- Understand the nature and scope of changes in the area of Library and Information Services
- Know about the components of Information and Communication Technologies (ICTs)
- Know the impact of ICTs on Library and Information services
- Study about the application of ICTs on delivering effective information services, viz. traditional and modern
- Learn about emerging trends and concepts in the area of Library and Information Services
- Understand the role of a modern Library Professional in providing information services in digital environment

Contents

3.2.1 Introduction

3.2.2 Impact of ICTs on Library and Information Science

3.2.2.1 Components of ICTs in Libraries

3.2.2.2 Impact of ICTs on Traditional Library Services

3.2.3 Modern Library and Information Services

3.2.3.1 Web-based Library and Information Services

3.2.3.2 Services to access web resources

3.2.3.3 Services to access local/internal digital resources

3.2.4 Emerging Trends in Library and Information Services

3.2.5 Roles, Skills and Competencies of Library Professionals in providing Modern Information Services

3.2.6 Summary

3.2.7 Glossary

3.2.8 Exercise



3.2.1 Introduction

The advent of technology in the last few decades, especially the revolutionary changes that have happened in the field of Information and Communication Technologies (ICTs) have reshaped the entire system of libraries and information centres. Application of computers in libraries, which began in late 1960s, followed by the universalization of library automation, marked the beginning of the trend of modernization in library and information management. Although, the primary function of a library or information centre remains the same, i.e., to acquire, organize and provide access to information to the user, the ways through which these tasks have been carried out have changed tremendously. The first decade of 21st century witnessed the emergence of internet as the most popular source of information, whereas the present decade sees a surge in the number of people accessing it, particularly using handheld devices. The role of a library has now been transformed from the sole authority and provider of stored information to a system which facilitates access to information available in any format from any internal and external source. Newer tools, technologies and concepts which enable access to and disseminate information have emerged. Their incorporation to provide better resources and services to the users has become the hallmark of library modernization. Integration of web 2.0 tools and the emergence of concepts like hybrid library, library commons, open data, etc. are some of the trends in this direction. The involvement of today's users in the creation of new information/content through various channels demands more open information platforms and library systems. Libraries have been developing or inventing new services as per the needs of the highly demanding present generation users. In the following sections of this unit, the impact of Information and Communication Technologies on library user services and the relevance of modern trends in the field are discussed along with a brief study on the changing roles of library professionals.

3.2.2 Impact of ICTs on Library and Information Science

Historically, the industrial revolution in the second half of the twentieth century spearheaded the transformation towards a technologically advanced society. Development of such a society needed unrestricted access to information, the most valuable resource and commodity. Creation, organization and access to information became the most important activity of nations who were eager to prosper. The research in the field of Information and Communication Technologies or ICTs resulted in the development of more products and services in all spheres of human life. The impact is more evident in service oriented sectors such as health, banking, education, transportation and libraries.

Let us primarily understand the two rather interchangeably used concepts, Information Technology (IT) and Information and Communication Technologies (ICTs) by studying two definitions. The first broader definition is by UNESCO whereas the second one,

oriented towards Library and Information Science, is by the American Library Association (ALA).

UNESCO defines Information and Communication Technologies (ICTs) as “the hardware and software that enable society to create, consolidate and communicate information in multimedia formats and for various purposes”. It means, ICTs include both networks (fixed, wireless, satellite and broadcasting) and applications (internet, database management systems and multimedia tools).

The American Library Association (1983) defines Information Technology (IT) as “the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information. The computers are used to process and store data, while telecommunications technology provides information communication tools, which make it possible for users to access databases and link them to other computer networks at different locations.”

The impact of the ICT's on libraries and information centres is most felt by two basic fields. These are:

- i. Management of information resources (library housekeeping operations), and
- ii. Delivery of library and information services.

The execution of library housekeeping operations such as acquisition, cataloguing, circulation, serials control, etc. are now enabled by or based on a number of information and communication technologies. The most important one is the Integrated Library Management System (ILM's). Modern libraries now function in a completely networked and automated environment where every operation is done with the help of one or many of information or communication based tools or technologies.

When we think about the delivery of library and information services, it is nearly impossible to carry them out without the help of ICTs. Internet has become the most visible and dependable information gatherer and disseminator for a researcher as well as a layman. A user can now access information at any given time from any corner of the globe with the help of a number of devices and technologies. More and more libraries are redesigning their traditional services and devising new or innovative strategies to live up to the expectations of the users. Incorporation of new ICT based user services helps them to realize these efforts.

Application of ICTs in libraries is beneficial because it:

- i. Facilitates effective control in libraries over the collection, in-house work flow and delivery of user services through Integrated Library Management System (ILM's).
- ii. Provides speedy, round the clock and easy access to information in digital formats to users.



- iii. Enables remote and flexible access to customized information to users as per their individual needs.
- iv. Facilitates access to unlimited sources of information through networking and consortia.

3.2.2.1 Components of ICTs in Libraries

The information and communication technologies used in libraries may be categorized as below:

- i. Computer Technology
- ii. Communication Technology, and
- iii. Reprographic, micrographic and printing technologies

Computer technology and its applications in libraries will be discussed in detail in later units. Some of the ICT's technologies that have direct or indirect applications in libraries are listed in Table 1.

Table 1: ICTs in Libraries

Computer Technologies	Communication Technologies	Reprographic, Micrographic and Printing Technologies
Hardware: Personal Computers Mini/Mainframe/Super Computers Handheld devices Storage: CD/DVD	Audio Video Audio-visual Radio Cable Television Film Tele-text Video-text Telephone Cell/Mobile phone Smart Phones Fax (Telefacsimile) Tele-conferencing Networking (LAN,WAN)	Reprographic Micrographic Printing (traditional and modern) 3D Printing Scanners
Software: System Software and Application Software Integrated Library Management System Digital Library Software Digitization Software e-learning Software		

Artificial Intelligence	Satellite	
Cloud Computing	Barcode	
Storage:	Smartcard	
ACD, VCD, DVD-ROM	RFID	
Flash Drives	Wireless	
E-Resources	Internet	
e-books	Email, Voice mail	
e-Journals	Instant Messaging (Chat)	
Databases (Bibliographic, Full text and multimedia)	Web 2.0/Social Media (Social Networking, Blogging, etc.)	
e-learning resources	Voice Over Internet Protocol (VOIP)	
Electronic Thesis and Dissertations (ETD)		
Library Consortia		

3.2.2.2 Impact of ICTs on Traditional Library Services

To understand the impact of ICTs on library and information services, let us first discuss some traditional or conventional library operations and services where the application of ICTs is predominant and has now become indispensable.

i. Integrated Library Management System

An Integrated Library Management System (ILMS) is also called as an Integrated Library System (ILS). An ILS is an automated system to facilitate technical functions of a library. These functions generally include circulation, acquisitions, serials control, cataloguing, etc. An ILS usually consists of a relational database, software to interact with that database, and two graphical user interfaces, one each for staff and another for users. In most ILSs, separate software functions into separate modules, each of them integrated with a unified interface. An ILS improves the efficiency of internal library operations, facilitates interoperability of information systems and provides users with easy access to library resources and services. Some of the ILSs from India and abroad are LibSys, KOHA, Evergreen, VTLS, SOUL, e-Granthalaya, Sanjay, NewGenLib, etc.

ii. Online Public Access Catalogue (OPAC)

Online Public Access Catalogue (OPAC) is an online database of library resources which can be searched by the user to locate resources in a library or on the network of



a group of libraries. The early attempts to develop online library catalogues were made by the Ohio State University in 1975 and the Dallas Public Library in 1978, which gradually replaced the card catalogues. Later, the OPAC got included as an important module in the advanced Library Management Systems. OPAC is the primary user interface of an ILMS, where the user can search the entire library catalogue, easily and quickly, using one or more search criteria (e.g., author, title, key words, class number, subject, etc.). The results are displayed in various formats such as AACR-2 and MARC. An OPAC can also be accessed from a remote computer which is on a network (LAN/WAN). When a library OPAC is provided on internet, it is called Web OPAC, where the remote user can access the catalogue and avail certain services like online renewal, reservations, loan requests, etc. from anywhere in the world with a proper internet connectivity.

iii. Reference Service

Reference service is considered as one of the most important functions of any kind of library. In-person, by post and by phone are the three most conventionally followed methods for providing reference services. The impact of ICTs on reference service is apparent in the way it is delivered to users. ICT enabled reference services are primarily computer mediated online communication between the users and the library professionals and are popularly known as “virtual reference” or “digital reference”. American Library Association defines virtual reference as a “reference service initiated electronically, often in real-time, where patrons employ computers or other Internet technologies to communicate with reference staff, without being physically present”. They are of two types, (i) synchronous, or real-time communication, like online chat using Instant Messaging (IM), Voice over IP, co-browsing and videoconferencing, and (ii) asynchronous, where the communication is send and received at different times, like e-mail, (e.g. Ask a Librarian e-mail reference), web-forms and text messaging (SMS). There are virtual reference software packages which offer customized reference services as per individual library policies. Example: Question Point software by Online Computer Library Centre (OCLC).

i. Current Awareness Service (CAS)

Current Awareness Service keep the users up-to-date in their areas of concern. This may be any online or offline resources or services that provide regular updates to users on current literature in a research field of interest. Traditional CAS includes publication of current awareness bulletins and circulation of tables of contents. Internet and the proliferation of electronic databases initiated a number of ICT enabled CAS resources and services. Libraries and database or e-content producers/distributors have developed many services which include, (i) e-

newsletters or online newsletters/bulletins, (ii) e-mail alerts, (iii) Citation indexes, (iv) RSS (Rich Site Summary) feeds from websites and online databases, (v) Saved database searches (using pre-defined search strategies as per user needs), (vi) Online peer networks (e.g. ProQuest's Community of Science), (vii) List serves, (viii) Webzines/e-zines, and (ix) Weblogs/Blogs.

v. Selective Dissemination of Information (SDI)

SDI is a type of current awareness service which involves screening of documents and the selection of the exact information, tailored to meet the specific information needs of a user or a group of users in their area of specialization, and supply of it in a personalized form. Although the concept of SDI originated in 1950s, the service became more popular in the ICT era, where it is delivered with the help of computer programmes which match the pre-designed 'user profile' with the 'document/resource profile'. The SDI service is delivered the same way as CAS is provided.

vi. Bibliographic Service

Bibliographies are essentially lists of books or other material that can be organized by author, title or subject. They are used to identify and locate a document, and to select material for developing a collection. Manual compilation of a bibliography is a tedious task and requires continuous efforts to keep it up-to-date. Bibliographic databases available online or in electronic form on CD-ROMs elude these issues and offer more search options and display formats to the users. Conventional bibliographies deal with books only, whereas these databases are digital collections of references to published literature (journal and newspaper articles, conference proceedings, reports, patents, government and legal publications, etc.). Many databases provide web based natural language and full text searches with links to the original document. Examples for some online bibliographic databases are, ERIC (Educational Resources Information Centre) by the Institute of Education Sciences (US), INSPEC by the Institution of Engineering and Technology (US), LISTA (Library, Information Science and Technology Abstract) by EBSCO, etc.

vii. Union Catalogue and Inter Library Loan(ILL)

A union catalogue consists of holdings of a group or consortium of libraries. The basic objective of such a system is to facilitate sharing of resources. A union catalogue lists the holdings of each member library, which is connected either on a network or through the Internet. Search is carried over and the result is displayed on a single user interface. The provision of inter library loan is to transact between two member libraries to lend material to each other on a short-term basis, which can be established



only with the help of a standardized union catalogue. Digitization of library holdings and web OPACs speed up the process of interlibrary loans. Examples: WorldCat by Online Computer Library Centre (OCLC), COPAC (University of Manchester, U. K.), IndCat: Online Union Catalogue of Indian Universities by Information and Library Network (INFLIBNET), and Union Catalogue of Books by Developing Library Network (DELNET).

viii. Document Delivery Service

ICT based Document Delivery Services are now common in many libraries where the requested document is delivered to the client electronically (email). The user can search the web OPAC or the union catalogue available and order for the document and get it delivered. Examples for commercial document delivery services are, British Library Document Supply Service (BLDSS), where one can obtain documents (copies of documents, images, soundtracks, etc.) online and through Science Direct.

ix. Audio Visual Services

The extent of changes in the field of audio and video (multimedia) technologies enable libraries to handle the resources more effectively in providing better service to users. Media libraries and other libraries that have collection of images, audio, films, pictures, etc. make it accessible to patrons by using latest available technologies. Multimedia resources are now stored on intranet or publically on internet and kept accessible to users. A number of hardware and software applications are used to deliver these resources.

x. Library Extension Services

Extension services are programmes or activities carried out by a library to reach out to the users who might otherwise be unaware of the resources and services. Traditional library extension services include library orientation, library tour, fairs, exhibitions, campaigns, publicity, reading clubs/groups, celebration of events, mobile library services, publications (newsletter/bulletins/guides), etc. Advent of ICT tools and technologies has made many of the library extension services more attractive and effective. Web 2.0 tools like blogs, wikis, social networks, etc. are extensively used to publicize library resources and activities. Virtual tour to the sections of the library is now a regular feature on many advanced library websites. Many libraries publish e-newsletters or e-magazines. Library orientation programmes and information literacy sessions are conducted with the help of online tools and applications.

The above discussion clearly underlines the impact of information and communication technologies on almost all traditional library services. The influence is so comprehensive that without ICT it is impossible to deliver any library services so effectively for the information needs of the users.

3.2.3 Modern Library and Information Services

Modern library and information services have been profoundly affected by the emergence of a large number of information and communication technologies and tools. Exponential growth of digital/electronic information spearheaded creation of new information products which in turn demanded new user services. The rise of Internet as a gigantic store house of information has set challenges as well as opportunities before the libraries and information centres. Web based information services take prominence as the quantity of global population which has access to Internet increases day by day. The changing preferences of today's users from print to digital/online and real-time information tend the libraries and information centres to redesign their traditional services by incorporating web based tools or developing innovative services based on these technologies.

Modern trends in library and information services can be listed under three categories:

- i. Web-based library and information services
- ii. Services to electronic/digital/web resources, and
- iii. Services to local/internal digital resources

The features of the various fast developing library services will be discussed in the following sections.

3.2.3.1 Web-based Library and Information Services

'Web' is a synonymous and popular term of World Wide Web (WWW) or Internet. The traditional method of offering library and information services has changed greatly in recent years because of the development and applications of new technology, especially the Internet and Web Technologies. The demands and expectations of users have also changed considerably. In the changed scenario, the academic libraries in India are offering new web-based library services to satisfy the users.

For this unit, "Web –based library services means library services provided using Internet as medium and library website as a gateway with the help of integrated library management systems (Madhusudhan, Nagabhushanam 2012)". In simple words, web-based library services that are modified versions of existing services and technology-driven library services (Arora, 2001). The history of web-based library and information services began in 1960s by the introduction of computers in libraries for information processing, which resulted in the creation of bibliographic databases like MEDLARS in 1963, BLAISE (British Library Automated Information Service), and the formation of online library networks, like OCLC.

In the following sections, some of the major web-based library and information services will be discussed.



i. Library Web Portals

A library web portal is a website that offers access to a broad range of information resources and services, such as online catalogues, e-journals, databases, information on new additions, programmes, etc. It acts as a gateway to the libraries web/online resources and services. Web portals have replaced the earlier static library websites, which had limited features, and now have become more interactive and user-friendly.

ii. Web OPAC and Next Generation Catalogues

Web OPAC is an Online Public Access Catalogue made available on the web. It offers the user with a 24x7 access to the library catalogue. The user can search the library catalogue and find the availability of library holdings. Simple and advanced search options are available and many of the webOPACs offer online renewal and reservation facilities to the members. A Next Generation Catalogue, also termed as Catalogue 2.0, is a single point of entry for all the library information. Here, 'information' refers to all library resources, including all bibliographic information on printed books, journals, multimedia documents but also links to full text electronic databases, digital archives, and any other library resources. These new generation catalogues use federated search engines for this one-stop searching. The users are directed to electronic and printed resources which are linked together on a single interface. Other features of the next generation catalogues are, state of the art web-interface, which is intuitive and visually appealing, enriched content (images of book covers, CD cases, book summaries, tables of contents, reviews, etc.), faceted navigation (which allow users to narrow down the search by facets, like, authors, dates, types of material, subjects, location, etc.), simple keyword search box (like popular search engines, e.g., Google) instead of controlled vocabulary, and options for advanced search, relevancy (ranking of resources using many criteria like circulation statistics, comments received, etc.), "Did you mean...?" (Spell checking of search entries and recommending other search queries), recommendations and related materials (suggestions to related materials), user contributions (ratings, reviews, comments and tagging by the users) and RSS Feeds (which give updates about new acquisitions and search updates).

Examples for Next Generation OPACs: Voyager ILS by Ex Libris, EBSCO Discovery Service (proprietary), Evergreen, Invenio, KOHA (open source).

iii. Bulletin Board Services and ListServes

A 'bulletin board' is a public discussion area where users can post messages without sending them to anyone's personal e-mail address, which can be viewed by anyone who enters the area. The entry to the area may be restricted by invitation or be kept

open. Bulletin boards are also known as forums or newsgroups. Announcements regarding library resources and activities, information on special collections, etc. can be displayed over here. These electronic bulletin boards are linked to library websites for general users and special groups.

Listserve are topic or subject oriented online forums, where messages are communicated through e-mail. These are basically discussion forums which deal with topics on academic or professional interests. One who subscribes to the listserve can send and receive emails, the process that is controlled by a programme, hosted by the parent organization/authorized individual, for example, Become a Reading Butterfly!

iv. Subject Gateways

A gateway is defined as a facility that allows easier access to network based resources in a given subject area. Subject Gateways provide high quality evaluated web resources. These act like clearing houses to quality information selected by subject experts. Basic objective of any subject gateway is to help users to locate high quality information resources available on the Internet. These are user searchable metadata databases with hyperlinks to specific information. Search may be with keywords or subject headings.

Examples: INFOPORT (INFLIBNET Subject Gateway for Indian Electronic-Resources), ipl2: Internet Public Library (IPL) and the Librarians' Internet Index (LII) (<http://www.ipl.org/>), INTUTE (Social Science Information Gateway), covering social science resources and OMNI (Organizing Medical Networked Information) covering medical resources.

v. Web based Current Awareness Service

Libraries offer web based CAS primarily through e-mails. Individual and customized email alerts are provided to the users on their area of special interest about new acquisitions of documents, table of contents of journals or new web resources available on the Internet. Many publishers also provide journal alerting service.

Example: Journal Alerting Service by Oxford University Press, Journal Table of Contents Service (tic TOCs) by JISC, National Archives, UK.

vi. Online Question and Answer Service

Web-based question and answer service is an asynchronous system that uses a web form to receive requests (questions) and responses (answers) which are sent via email to the enquirer. 'Ask a Librarian' service provided by libraries is an example for a Question and Answering Service. This is also considered as a part of the digital reference service. Example: Ask ERIC (U.S.).



ix. Webcasting

Webcasting is the method of broadcasting live audio and video in real-time, to audiences all over the world via the Internet. It is 'broadcasting' over Internet. Streaming media technology is used here to distribute a single content simultaneously to multiple viewers/listeners. There is no need to download the content before viewing. A webcast may either be distributed live or on demand. In the area of LIS, Library of Congress (LoC) offers webcasts of audio and video resources like talks on history, performing arts, culture, science and technology, through its web page for webcasts.

vii. Web based Reference Services

Providing web based reference services to users, who are sitting anywhere in the world in a 24x7 mode is now popular in many libraries. Access to in-house electronic reference sources and external digital resources like database and online reference websites, provided in a mediated way is the base of such services. Web based reference services include:

- a) **Reference websites:** These are websites that exclusively provide reference information like Britannica online (<http://www.britannica.com>), Encyclopedia.com (<http://www.encyclopedia.com/>), Infoplease (<http://www.infoplease.com>), Oxford English Dictionary (<http://www.oed.com/>).
- b) **Online Reader's Advisory Service:** The recommendations and review of the book titles and other resources by experts are posted on the library website. A search features allow the visitors to search for reviews of specific titles/resources and an online form permits the readers to submit their own review for publication on the site. Additional information on local book talks and book club is also provided with links to web sites of interest to readers.
- c) **Online Instruction Service:** Bibliographic instruction to new members is provided in an online way using web based tools and technologies. Instructional videos on the use of OPAC, resources, etc. are made available online which can be viewed/ listened by the users.

3.2.3.2 Services to access web resources

Modern libraries largely depend on web resources (also termed as electronic/digital resources) to provide up-to-date information. Almost all digital information resources are now available on a networked (internal or internet) environment. Providing access to these resources in the library or remotely on a network is one of the main services of a library. Web resources have many advantages over traditional print resources. Some are:

- a) Web resources can be interlinked and hence users get comprehensive information (e.g., journal articles can be hyperlinked with their own reference sources, external indexing/ abstracting databases and other web resources).
- b) Anytime anywhere access: Digital/web resources can be accessed 24x7 and from anywhere, may be on an internal network or on internet using a remote login facility.
- c) Web/digital resources save the time of the user, physical space in a library and are easy to maintain.

Main library and information services which are intended to provide access to various web based information resources will be discussed in this section.

i. E-Books and other Downloadable Media

Merriam Webster's Dictionary defines an E-book as “a book that is read on a computer or other electronic devices. It is a book composed in or converted to digital format for display on a computer screen or a handheld device

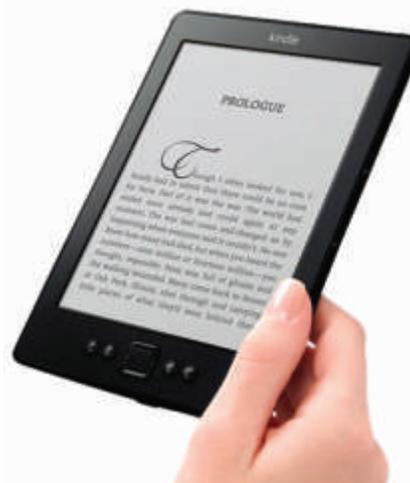
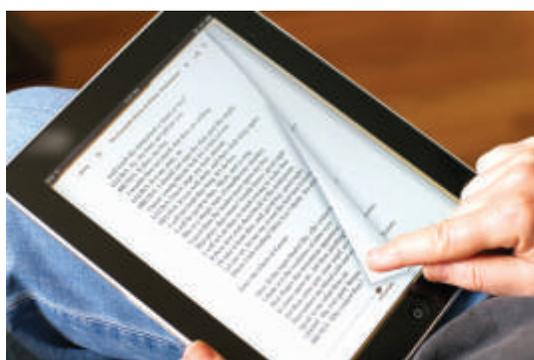


Fig 3.2.1: An E-reader

Encyclopaedia Britannica categorizes the method of distribution of e-books on the Internet as: (i) downloadable files that can be read offline, (ii) as live web pages that must be read online, or (iii) as web pages that are cached by a web browser for reading offline. e-books may be downloaded or accessed in a closed (proprietary) system, where the buyer or the library has to purchase the e-book from the publisher/distributor under the Digital Rights Management (DRM) Policy. Example: Amazon Kindle, Apple iBooks, etc. In an open system, e-book files may exist in only one place, but anyone can access and download the files (whether for purchase or free download), because their metadata are freely available and can be freely shared. Examples: Catalogues created in the Open Publication Distribution System (OPDS,



part of the Internet Archive's BookServer Project) and the Project Gutenberg. E-books can be read on any electronic device with a software to display their given file format. Most common e-book file formats include EPUB, (an open standard for e-books created by the International Digital Publishing Forum (IDPF)), e-Reader (Palm Digital Media), iBook (Apple), AZW (Amazon), LIT (Microsoft), PDF (Portable Document Format by Adobe), ODF (Open Document Format), MOBI (MobiPocket), etc. e-book reading devices include dedicated e-Readers, personal computers, mobile (smart) phones, hand held devices like tablet computers, and consoles attached to televisions or other screens.

The other downloadable media to which modern libraries provide access to users are:

- a) **Audio Books:** access to downloadable audio books (e.g. Audible.com, Amazon Prime)
- b) **Music:** access to downloadable music (e.g. Freegalmusic, Napster, Spotify, Shazam)
- c) **Digital Magazines (digital newsstand):** access to magazines in their digital form (e.g. Zinio, GTxcel)
- d) **Movies:** streaming movie service to access, films, documentaries and other video contents (e.g. Indieflix, Netflix, HuluPlus, YouTube)
- e) **News:** access to newspaper databases (eg: Worldcrunch)
- f) **Learning Resources:** e-versions of test preparatory materials, guides, handouts, etc. (e.g. Thomson Gale)

ii. Online Database

A database (e-database) is an organized collection of information, of a particular subject or multi-disciplinary subject areas; that can be searched and retrieved electronically with the help of searchable elements or fields. A single database may refer to a specific type or a variety of sources, including periodical articles, books, government documents, industry reports, conference proceedings, newspaper items, films, video recordings etc. A database may be dedicated to a single subject or cover several subjects. The contents may be updated in a daily/weekly/monthly manner. Libraries, based on their user needs, subscribe to these database through information retrieval service providers or database vendors/publishers. As the contents of library database are sourced from experts and professionals on the field, they are more reliable than the information that is available on some websites. Primarily, database can be: (i) Full-text database (compilations of documents or other information in the form of database in which the complete text of each referenced document like journal articles, conference proceedings, etc. is available for online viewing, printing, or

downloading), e.g., Academic Search Premier, JSTOR, Science Direct, and (ii) Bibliographic databases (databases of bibliographic records or citation information), e.g., LISTA, MEDLINE.

Databases have three categories based on the scope of the subject area they cover. They are:

- a) General interest (multi-disciplinary) database: consist of information from several subject areas and disciplines. E.g., JSTOR, Academic Search Complete, Project MUSE
- b) Discipline-specific databases: consist of materials from related subject areas. E.g., SocINDEX (sociology research database), SPORT Discuss (sport medicine and related fields).
- c) Subject-specific databases: provide in-depth information on a specific subject. E.g., Ethnic News Watch (ethnic, minority, and native press content), PsycINFO (behavioural science and mental health).

Libraries provide in-house and remote access to subscribed databases to their members. To reduce the huge subscription cost, libraries form consortia share the resources among them. INDEST (Indian Digital Library of Engineering, Science and Technology), and INFLIBNET are two examples for such library e-journal consortia. Another method to provide access to e-journals is through Aggregator services, which offer searchable databases of contents of e-journals from several publishers, and links to journal site for full text. E.g., Emerald, J-Gate.

iii. Other web-based resources

Other important web-based resources to which libraries provide access are:

a) Electronic Theses and Dissertations (ETDs)

Many Universities and research organizations in India and abroad are now digitizing their thesis and dissertations and make them available on internet for public access. One global initiative is Networked Digital Library of Theses and Dissertations (NDLTD). Indian Digital repositories of Theses and Dissertations include that of Indian Institute of Science, Bangalore, India and 'Sodhganga' at INFLIBNET Centre.

b) Open Educational Resources and other Course Materials

According to UNESCO, Open Educational Resources (OERs) are any type of educational material that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and



freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation. Examples of this include MIT Open Courseware Project, World Bank Open Knowledge Repository, Open Yale Courses and NROER (National Repository or Open Educational Resources) by NCERT.

Other digital learning repositories which provide teaching and learning resources on the web include ERIC (Education Resources Information Center, USA), NDLR (National Digital Learning Resources, Ireland).

3.2.3.3 Services to access local/internal digital resources

Many libraries are developing their digital collection of documents like institutional repositories and archives of historically important documents and are making them available on intranet and on the Internet. The main digital services are:

i. Institutional Repositories

An institutional repository (IR) is an electronic archive of the scientific and scholarly output of an institution, particularly an institution, which has been stored in a searchable digital format and which can be retrieved for later use. The contents deposited in IRs include: (i) Electronic Theses and Dissertations; (ii) Conference papers and Proceedings; (iii) Preprints and post prints of journal articles; (iv) Books and Research Datasets; (v) Working papers and Reports; (vi) Teaching and Learning objects; and (vii) multimedia collections. DSpace and E-Prints are the most common software used for developing IRs. IRs make the institutional outputs open to the world. Open Access IRs around the world can be accessed at the Directory of (Academic) Open Access Repositories (Open DOAR) and Registry of Open Access Repositories (ROAR) websites. Indian examples include Dyuti (Cochin University of Science and Technology), Open Access Repository of Indian Institute of Science Research Publications (ePrints@IISC), etc.

ii. Online Exhibitions

An online exhibition or virtual exhibition or online gallery is a web based service provided by libraries, museums and archives where an exhibition of digital artefacts (photographs, paintings, documents, etc. normally owned by the institution) is conducted online. It may be viewed or visited by anyone irrespective of time and physical location. Advantages of an online exhibition over the physical one include a wider reach to the audience, saves production costs, solves conservation/preservation problems, creates a durable online record and provides anytime-anywhere access.

Examples: American Treasures of the Library of Congress, Latin American Business History by Harvard Library, Online Gallery of British Library, Columbia University Library Online Exhibitions.

iii. Web Archiving Service

Jinfang Niu (2012) describes web archiving as 'the process of gathering up data that has been recorded on the World Wide Web, storing it, ensuring the data is preserved in an archive, and making the collected data available for future research. Like the management of many other kinds of information resources, the workflow of web archiving includes appraisal and selection, acquisition, organization and storage, description and access.' Web archiving services are getting prominence, as in many occasions, the web has become the sole medium for communication, sharing and collaboration between organizations and individuals and the information published on a website may be the only place where it is available. Websites are now important records for organizations and individuals that are to be preserved for reference and posterity. The dynamic nature of the websites also warrants their preservation. Web archivists use automated tools (or web crawler softwares) to collect or harvest websites. Web crawlers go across the web and into the websites to copy and save the needed information. These archived websites are organized and made available to the users for online access. Many of the national libraries are now archiving the culturally important and country specific web contents. Proprietary web archiving software services are being utilized by companies to archive their own web content for business, heritage, regulatory, or legal purposes. The largest non-profit web archiving service available is the Internet Archive (<https://archive.org/>).

Examples for Library web archives:

- ❖ **Legal Deposit UK Web Archive:** Developed by the British Library with millions of websites obtained through an annual archiving of the entire UK domain. This was enabled by the non-print legal deposit regulations introduced by the U K Government in 2013. This archive is only accessed internally through computers on premises controlled by the library.
- ❖ **The UK Open Web Archive:** This is a smaller collection of selected websites archived by the British Library. Selected websites will continue to be added to this open access collection, again with the permission of website owners. It is available online.
- ❖ **The Australian Government Web Archive (AGWA):** A web archiving initiative of the National Library of Australia (formerly known as PANDORA).
- ❖ **The Library of Congress Web Archives (LCWA):** The early development project for LoCWeb archives was called MINERVA.

3.2.4 Emerging Trends in Library and Information Services

As discussed above, new concepts are emerging in the field of library and information science. Let us understand some important emerging trends in the area of library and information services.

i. Mobile Applications for Libraries

There is an exponential growth in the number of users, particularly in developing countries, who access internet on their mobile devices, especially on smart phones. As in the case of e-commerce and entertainment industries, modern libraries are also using mobile technologies to reach out to these customers who are on the move. For that, mobile/cellular phone based applications and services are designed and incorporated by libraries. Mobile services are “typically (and often implicitly) understood as services that make use of mobile devices and/or mobile networks”. Mobile based library services include:

- a) Mobile interface to library website: Mobile optimized library website homepages
- b) Mobile interface to library catalogue
- c) Mobile reference service: Access to mobile interfaces of important reference sources like Encyclopaedia Britannica
- d) Downloadable e-books and audio books on mobile



Fig 3.2.2: Mobile website homepage of Riverside Libraries, University of California

- e) Mobile interfaces to e-journal and other databases
- f) SMS notification services: Circulation (reminder, renewal, reservation), Current awareness, SDI, Content alerts, catalogue enquiries, SMS reference services, etc.

Some libraries also developed Mobile Apps which help the users to access library services. These apps need to be downloaded and installed in the user's mobile/handheld device. E.g., BARD Mobile (National Library Service for the Blind and Physically Handicapped (NLS), Indian Law Mobile Library etc.

ii. Application of Cloud Computing in Libraries

Merriam-Webster's Dictionary defines cloud computing as “the practice of storing regularly used computer data on multiple servers that can be accessed through the Internet”. There are three service models of cloud computing services: (i) Infrastructure as a Service (IaaS), (ii) Platform as a Service (PaaS), and (iii) Software as a Service ((SaaS). Types of cloud deployment models include: (i) Private Cloud (ii) Community Cloud (iii) Public Cloud, and (iv) Hybrid Cloud. Cloud computing technologies are used in libraries to:

- a) develop cloud based digital libraries/repositories (e.g. DURACLOUD)
- b) share searchable library data
- c) host websites
- d) search scholarly content (e.g., Knimbus Knowledge Cloud)
- e) store files (e.g., Dropbox, Google Doc, SkyDrive)
- f) build networks with other libraries and people
- g) support library automation through cloud based acquisition, cataloguing and processing services and hosting the entire data on the cloud which will cut down the costs for hardware and maintenance. (e.g., ExLibris, OSS Labs)

3.2.5 Roles, Skills and Competencies of Library Professionals

The roles to be performed by a library professional are multifaceted. Some are detailed here.

The traditional role of a library professional are that of a custodian who selects, organizes and provides access to print and other media, a guide who assists users in selecting and evaluating the information sources, and a public relations personnel who maintains good relations with the management, customers and other libraries and outside organizations. The core skills traditionally associated with librarians or information professionals to perform these roles include information handling skills (like cataloguing, classification,



indexing), training and facilitating skills, (like user education, instruction, referencing), evaluation skills (like evaluation of resources and services) and concern for the customer. All these conventional skills have been applied in a different way in a highly digitized and networked environment by a modern librarian or an information scientist/professional. The need of a librarian as a facilitator, rather than a custodian, with search skills, abilities to analyse and evaluate resources and match needs with sources, has become more essential since the availability of huge amount of unverified information over the web.

Some of the key roles of Library and Information professional should perform:

- i. Providing leadership and expertise in the design, development and management of knowledge based information systems.
- ii. Developing policies or participating in its development for ensuring total or selective access to information sources and services.
- iii. Building and managing library collections consisting of print, digital and web based information resources, as per the user needs.
- iv. Facilitating access to digital information systems, repositories, networks, and consortiums.
- v. Acting as a technology application leader who works with other members of the information management team to design and evaluate systems for information access that meet user needs.
- vi. Acting as a business manager who negotiates with publishers or aggregators for the most advantageous license agreements for e-journals and databases.
- vii. Educating and assisting the users to help them to make the optimum use of the available information resources (online tutorials, web based instruction, etc.).
- viii. Collaborating with users, librarians, IT people and the outside society.
- ix. Promoting and marketing the library information resources and services.
- x. Developing the library website/web interface and managing its content.

The key skills and competencies a Library and Information professional are:

- i. **Personal Skills:** Personal skills can be defined as appropriate attitudes, values and personal traits. These include being analytical, creative, technical, flexible, reflective, able to deal with a range of users, detective-like, adaptable, responsive to others' needs, enthusiastic and self-motivated.
- ii. **Generic Skills:** Generic skills can be defined as the general skills which cut through disciplines which include information literacy, communication, critical thinking, teamwork, ethics and social responsibility, problem solving and leadership.

- iii. **Professional Skills:** The basic disciplinary knowledge relates to the professional's knowledge of information resources, access, technology and management, and the ability to use this knowledge as a basis for providing the highest quality information services. There are four major competencies, each augmented with specific professional skills: (a) Managing Information Organizations, (b) Managing Information Resources, (c) Managing Information Services, and (d) Applying Information Tools and Technologies.

3.2.6 Summary

The impact of Information and Communication Technologies (ICTs) on library and information services is tremendous. Two basic areas where modern libraries hugely depend on ICTs are the management of information resources and the delivery of information services. The ICTs used in libraries may be categorized into computer technology, communication technology, and reprographic, micrographic and printing technologies. The application of ICTs on traditional library services like integrated library management systems, Online Public Access Catalogue (OPAC), Reference Services, Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Bibliographic service, Union Catalogue and Inter Library Loan, document delivery services, audio visual services and library extension services are discussed in detail with examples. Modern trends in library and information services may be discussed under three categories, viz. web-based library and information services, services to access electronic/digital/web resources, and services to access local/internal digital resources. Web-based library and information services include- access to internet, library web portals, Web OPAC and Next Generation Catalogues, Bulletin Board Services and ListServes, Subject Gateways, Web based Current Awareness Service, Online Question and Answering Service, Webcasting, and Web based Reference Services. Services to access web resources include facilitating access to e-books and other downloadable media, online databases, and other web based resources such as electronic thesis and dissertations (ETDS) and open educational resources and other course materials. Services to access local/internal digital resources include institutional repositories, online exhibitions, and web archiving service. The unit also discusses emerging trends in Library and information services like application of mobiles and cloud computing in libraries. In the final section, the roles and skills of library professionals in providing modern information services was discussed in detail.

3.2.7 Glossary

Database: It is a collection of records with details of different data items which may be numeric, textual or image-based. It is usually searchable.



Digital Rights Management (DRM): DRM is a file-encryption and access-control system that locks e-books both to a customer's identity and to specific software controlled by the company.

ICT: Information and Communication Technologies

Information literacy: It is defined as a set of abilities enabling individuals to identify when information is needed and have the capacity to locate, evaluate and use effectively the needed information. In simple words, it means teaching the users how to access the card catalogue or OPAC, print resources, and retrieve information from online databases.

Internet: It is a worldwide network of interconnected computer networks connected together using recognized standards to enable electronic communication and the exchange of information.

OPAC: Online Public Access Catalogue

Web OPAC: An OPAC, which is provided on the web and can be accessed from anywhere with the help of Internet.

3.2.8 Exercise

Short Answer Type Questions

1. List the benefits of the application of ICTs in libraries.
2. List the categories of modern trends in library and information services.
3. State the advantages of OPAC.
4. List the advantages of computerized library services.
5. What are the major web-based library and information services?
6. Explain briefly the Online Electronic Databases.
7. Define Subject Gateways.
8. Enumerate the traditional roles of a library professional.

Long Answer Type Questions

1. Discuss the three components of ICTs in libraries.
2. Explain the impact of ICTs on library and information services
3. Discuss the impact of ICTs on traditional library services.
4. Explain the web based reference services.
5. Describe the role of the librarian in the Internet age.
6. Discuss the Application of Cloud Computing in Libraries
7. Discuss the key roles, skills and competencies of library and information professional.

Module-4 | Library and Information Services

Unit-1: Application of Computer in Library

After studying this unit, students will:

- Know about housekeeping services
- Understand the importance of housekeeping services in libraries
- Understand the need of automation of housekeeping services in libraries
- Discuss the benefits of library automation
- Understand about open source software
- Know about various open source software for libraries
- Know about the functionality of SOUL and KOHA.

Content

4.1.1 Introduction

4.1.2 Library Housekeeping Operations

4.1.3 Manual Library Housekeeping Operations

4.1.3.1 Acquisition

4.1.3.2 Cataloguing

4.1.3.3 Serials Control

4.1.3.4 Circulation Control

4.1.3.5 Problems in Manual Library Housekeeping Operations

4.1.4 Automation of Library Services

4.1.4.1 Acquisition

4.1.4.2 Cataloguing

4.1.4.3 Online Public Library Catalogue

4.1.4.4 Circulation

4.1.4.5 Serials Control

4.1.4.6 Reporting

4.1.5 Library Automation Software: SOUL (Commercial)

4.1.5.1 Introduction



- 4.1.5.2 Features
- 4.1.5.3 Procurement and Installation
- 4.1.5.4 Administration
- 4.1.5.5 SOUL Log in
- 4.1.5.6 Acquisition Module
- 4.1.5.7 Gifted Items
- 4.1.5.8 Cataloguing Module
- 4.1.5.9 Circulation Module
- 4.1.5.10 Serials Control Module
- 4.1.6 Open Source Library Automation Software**
 - 4.1.6.1 Introduction
 - 4.1.6.2 Open Source: Meaning
 - 4.1.6.3 Open Source Software for Libraries
 - 4.1.6.4 Merits of Open Source software
 - 4.1.6.5 Demerits of Open Source solution
- 4.1.7 Library Automation Software: KOHA (Open Source)**
 - 4.1.7.1 Introduction
 - 4.1.7.2 Technical Specifications
 - 4.1.7.3 Download and Installation
 - 4.1.7.4 Acquisition Module
 - 4.1.7.5 Cataloguing Module
 - 4.1.7.6 Circulation Module
 - 4.1.7.7 Serials Control Module
- 4.1.8 Summary**
- 4.1.9 Glossary**
- 4.1.10 Exercise**

4.1.1 Introduction

The Information and Communication Technology (ICT) has led to a revolution in libraries and information centers. Such applications have not only changed the scene of traditional functioning of the library, but have also enhanced the quality of library services. In this unit we will discuss the major ICT applications used in libraries.

Library automation is the general term for ICT applications in the library, which has replaced manual systems in libraries. This replacement ensures effective management and utilization of the library resources. There are many library automation software available in the market which are both proprietary and open source software. This unit offers a brief overview of SOUL and KOHA which are used to create a library database.

4.1.2 Library Housekeeping Operations

Library automation has many advantages, such as:

- i. It improves the quality, speed and effectiveness of services
- ii. Relieves professional staff from clerical work
- iii. Makes it accessible to remote users
- iv. Facilitates wider dissemination of information products and services
- v. Enables resource sharing among other library networks (Union Catalogues)
- vi. Enables rapid communication with other libraries
- vii. Improves the management of physical and financial resources.

The library of any organization deals with documents to provide information support to its users through various services. Being a service institution, it performs a number of tasks every day. Such essential routine tasks, which are of repetitive nature, are called, 'housekeeping operations'. The housekeeping operations of a library include, acquisition, cataloguing, circulation, and serials control.

It is not only essential to procure a good count of quality documents, but to facilitate their access through various services for the purpose of optimum utilization of resources as well. For this, it is also essential to ensure the quality of the services offered. Therefore, such housekeeping operations (services) require due attention of the library staff, for quality assessment and improvement, on a regular basis.

4.1.3 Manual Library Housekeeping Operations

It has been discussed in the previous units that many library services are performed manually. These library services, provided to the users without using computers as an intermediary, are known as manual library services. Manual library work involves repetition of work in different activities. Library housekeeping operations are explained in the following sections:

4.1.3.1 Acquisition

In the acquisition process, the members' requirements are understood through various methods. After identifying users' requirements, the library staff prepares a standard list of



books along with the bibliographic description. Thereafter, the list is presented before the library committee for approval. As soon as the committee approves the final list of books, the library staff prepares a purchase order (keeping in view the specialization and capability of the book supplier/vendor while mentioning specific conditions, like discount, etc.). In due course of time, the book supplier delivers all the required documents to the library. Once, the books are received from the supplier, the staff cross checks the books and compares it with the purchase order. The books are, then forwarded for accessioning, while the corresponding bill is forwarded for final payment.

4.1.3.2 Cataloguing

After the accessioning process, each book undergoes technical processing. The library staff performs classification and cataloguing work simultaneously. In the process of cataloguing, catalogue cards (main entry and added entries) are prepared based on a cataloguing standard, like AACR-2 or CCC. While preparing the catalogue card, library staff writes or types the required bibliographic description, for preparing a specific card for each book. Once, the process of preparing cards for the recently purchased books is done, the books are ready to be placed in the stacks.

4.1.3.3 Serials Control

As mentioned earlier, all periodicals or journals have their specific periodicity, which may not only vary from others but the date of delivery may also differ in case of common periodicity. For the periodicals section, it is essential to be alert and take the due action on time.

The periodicals section receives the subscribed periodicals and performs serials' check on regular basis. In this process, new issues of current periodical titles are received and their details are entered in library records (Kardex). Thus the indexing system or cataloguing system of periodicals section is updated on regular basis. All the current titles are placed in the display shelf until their volume is completed. The periodical is transferred to the binding section, when all its issues for a volume have been received. Services such as, the Current Awareness Service (CAS), Selective Dissemination of Information (SDI) Service, Indexing Service, Abstracting Service, Routing of Periodicals Service and Circulation of Bound Volumes Service are also performed.

4.1.3.4 Circulation Control

In the circulation process, documents are provided on loan to the library users. In this service, a user is allowed to borrow library documents for a specific period of time. The circulation process is controlled on the basis of a library's circulation policy. In this circulation policy, various categories of library users and types of documents are identified during technical processing. The circulation policy specifies which type of user is entitled

to get a specific type of document and for how many days. For example, in school libraries, user types are students, teachers, and staff members. The document types are text books, reference books, periodicals, periodical bound volumes, etc. It is important to understand that the circulation policy specifies the type of document entitlement, for each category of users, and the specific period of loan of documents. For example, a student can take two textbooks for a period of one week, besides he cannot get other types of documents issued. The policy also specifies that if somebody holds documents beyond the permitted time limit, he/she will be charged an overdue fine.

If a user does not return books within the due date, it is the duty of the library staff to remind him/her so that the specific book(s) may be provided to other users.

4.1.3.5 Problems in Manual Library Housekeeping Operations

In the process of performing various housekeeping tasks manually, the library staff faces the following problems:

- The bibliographic description of a book is entered repeatedly for performing different tasks like preparing list of books to be purchased, preparing purchase order, preparing catalogue cards, preparing shelf list, writing different types of reminders and in circulation process.
- It is quite difficult to issue separate reminders for each defaulter.
- If the count of current titles of the periodical section is large, it becomes difficult to memorize various aspects like their periodicity, due date of delivery, due date of sending subscription and due date of sending reminders.
- It is also difficult to maintaining cataloguing/documentation support regularly.
- Providing additional services in various housekeeping sections like Online Public Access Catalogue (OPAC), Current Awareness Service (CAS), Selective Dissemination of Information (SDI) Service, Indexing Service, Abstracting Service, Routing of Periodicals Service, Circulation of Bound Volumes Service and Reservation of Books Service for borrowing, etc.
- Additional library support requires adequate staff members, which leads to further financial liability in manual process of housekeeping operations.

4.1.4 Automation of Library Services

Library Automation refers to the phenomenon of mechanization of traditional library activities, such as Acquisition, Cataloguing, Circulation, Serial Control, etc. The aim of automation, is to integrate these activities and minimize repetition of work. The main objective of library automation is to improve the level of service and quality of output, and to fulfil needs that cannot be achieved by manual system, such as: (i) sharing of resources,



(ii) information that appears only in electronic format (e.g. CD-ROM, Internet resources, databases, etc. Automation library services is beneficial because it:

- ❖ increases the operational efficiency
- ❖ relieves professional staff from clerical/repetitive works
- ❖ improves the quality of library services
- ❖ provides new services, which are otherwise not possible, e.g., OPAC
- ❖ improves the management of information products and services
- ❖ facilitates wider access to information for users
- ❖ facilitates wider dissemination of information products and services
- ❖ participates in resource sharing/ library networks
- ❖ enables easy communication with other libraries and professionals.

The basic activities of library automation, irrespective of the type or size of a library, are:

4.1.4.1 Acquisition

The acquisition section in a library acquires reading material (books, electronic material, maps, charts, etc.). Manual acquisition system requires the maintenance of vast amount of data, innumerable files, records, etc., which involve tedious routine and repetitive tasks. The computers can perform these tasks faster and more accurately. The following are the main tasks in the acquisition section.

- ❖ Selection of documents
- ❖ Ordering of documents
- ❖ Create purchase orders
- ❖ Claiming/cancellation of documents
- ❖ Receiving/invoice processing
- ❖ Extended procurements
- ❖ Gift tracking
- ❖ Maintaining information about all library related funds
- ❖ Tracking fund allocations and adjustments
- ❖ Expenditure out of allocated funds
- ❖ Cash balance
- ❖ Updating of fiscal information through recording of specific transactions, and
- ❖ Tracking up-to-date expenditures.

In a computerized system, bibliographic data of a document, once entered, can be used for other routine activities such as, for duplicate checking, placing orders, receiving, accessioning and importing data to the catalogue module for entering cataloguing details.

4.1.4.2 Cataloguing

Catalogues are the windows to the library collection and their automation has far reaching effect on the quality of services. In a manual environment, much valuable time of professional staff is invested in the preparation of catalogue cards for each book, sorting and filing of the catalogue cards. Checking for duplicate entries (books) is another tedious and time-consuming process. In an automated system, once the relevant data is processed and made available on the computer, the catalogue can be generated in a standard format. The exchange records with other libraries, as part of a library network and generation of various approaches, can be done easily and efficiently. The computerized catalogue can generate list of recent arrivals, print catalogue cards and prepare bibliographies.

In addition, cataloguing activities done with the use of the library automation software produces an electronic catalogue, that provides access to catalogue for users, called an Online Public Access Catalogue.

4.1.4.3 Online Public Access Catalogue

OPAC is a computerized catalogue of the library resources, available to public for searching online. In other words, OPAC is an interactive search module of an automated Integrated Library Management System (ILMS). OPAC is very dynamic, highly flexible, easy, and economical to maintain and capable to meet almost every possible approach of the user. The searching capability is fast and accurate.

4.1.4.4 Circulation

The Circulation section involves direct interaction between users and staff, and therefore requires efficient and speedy service. The main functions in the circulation section are as follows:

- Issue (charge) of documents
- Return (discharge) of documents
- Renewal of documents
- Reservation of documents
- Processing schedules
- Hold of documents
- Message notices to users



- Transaction recording devices for off-line processing, and
- Inventory control.

The transactions at the circulation desk, such as: charging (issue), discharging (return), re-issue, reservations, over-due reminders and statistics, etc., are time consuming, highly labour intensive and error prone. Automation in circulation activities benefits the library. Barcode facilities tremendously improve the speed, efficiency and accuracy of the circulation transactions.

Circulation module works with the help of two master files, i.e. database of users and books. Integration of circulation module with the library catalogue allows the library staff to know about the status of a document and also the details of the user in case it is issued to her/him. This facility helps to send notices for overdue books as an email or SMS. Late fee calculation is another activity to be performed in the circulation section for books returned after the due date.

The trend these days is towards integration of circulation control systems with other functions such as online public access systems, inter-library loans, electronic mail reminders, book reservations, book status, etc. thereby, saving the time of users. These days radio frequency identification (RFID) has also been introduced for automation in circulation that also prevents theft of books.

4.1.4.5 Serials Control

By Serials, we mean publications issued at regular intervals and intended to be continued indefinitely. Serials include journals, newspapers, annual reports, advances or progress services, proceedings of learned societies, monographic series etc.

Serials control is a very complex process, which deals with a large number of publications and expenditure.. The following are the main tasks performed in the serials control section.

- Subscription to journals
- Subscription to e-journals & database
- Subscription/renewals of journals
- Subscription/renewals of e-journals & database
- Claiming of missing issues
- Replacements of journals
- Monographic serials, and
- Invoice processing.

Further, the problem of keeping track of receipts, reminders and non-receipt claims,

periodicity change, merger of titles, etc., is a tedious task if managed manually, and thus, need special treatment under serials control.

Further, the task of serials control is most complicated in a library, which subscribes to many periodicals. The reasons for these complications have been discussed earlier. For easy processing, it is essential to have an alert system, which can alert the staff member to the required and expected action but also assist in day-to-day functioning.

Automation assists in facilitating various documentation services like indexing, CAS, SDI, etc. For example, lists of serials-subject-wise, frequency-wise, currency wise, country of origin, publisher wise, etc., can be easily generated. The automated serial control system assists in making the system efficient in the following manner:

- ◆ It reminds regarding the due date of the periodical receiving
- ◆ It sends automatic reminders and reminds the due date for the next issue
- ◆ It reminds about sending periodical subscription in advance

4.1.4.6 Reporting

In addition to the operations mentioned above, the Library automation software has to be managed in such a way that users get maximum benefit, safeguards are in place, and timely access of material is ensured. The reporting features of Library automation software includes the following:

- ◆ Various reports and statistics related to library activities
- ◆ Tools for the analysis of statistical information
- ◆ Lists of user, publishers and suppliers
- ◆ Stock verification and develops stock verification report, etc.
- ◆ Besides the above, this function generates messages for library staff and users. It also generates reports on lost books, missing books, books sent for binding, and so on for the purpose of library administration.

Today, there are a number of commercial and open access Library automation software/packages available for automating library and specially designed to support library housekeeping operations (acquisition, cataloguing, circulation, serial control, etc.). An Integrated Library Management Software/ System (ILMS) is a library automation system in which data is entered in one module to avoid data redundancy. It integrates all the library activities, routine operations and information retrieval operations of a library. Some of the significant library automation software are, Software for University Libraries (SOUL), and Koha. These are discussed and explained in this unit.



4.1.5 Library Automation Software: SOUL (Commercial)

4.1.5.1 Introduction

Software for University Libraries (SOUL) is an Integrated Library Management Software (ILMS). It is developed by the University Grants Commission's INFLIBNET Centre located at Ahmedabad. Although it was primarily developed for fulfilling the requirements of college and university libraries, it can be used by all types of academic libraries. It works under client-server environment. The latest version of this software is compliant to all popular international standards for bibliographic description, protocols relating to networking and circulation. While checking its history, its first version, SOUL 1.0 was released in 2000. Its latest version SOUL 2.0 was released in 2008.

SOUL is acquired through payment. If any institution acquires it after due payment, INFLIBNET may be installed on the desired system and sufficient training on its operations is also provided.

4.1.5.2 Features

The main features of SOUL 2.0 are:

- It provides multilingual support for Indian and other foreign languages based on UNICODE.
- It is compliant with MARC-21, AACR-II, MARC-XML, and other international standards.
- In case of protocols, it is NCIP 2.0 complaint for RFID support and other similar applications for facilitating electronic surveillance, self-check-out and check-in support.
- It is based on client-server architecture.
- It supports multi-platform for bibliographic databases like My SQL, MS-SQL, etc.
- It also supports cataloguing practice of electronic documents like e-journals, e-books, etc.
- For digital libraries, it facilitates link to full-text articles and other similar digital objects.
- It provides default templates for data entry of various types of documents.
- Users can develop reports of their choice and format.
- It also supports the process of stock verification and book bank for students.
- It provides inbuilt facility for sending reports through e-mails.
- It presents a user-friendly OPAC with simple and advanced search.
- It supports data exchange as it is ISO-2709 standard compliant.

- Its circulation is based on the concept of single window operation.
- INFLIBNET has appointed regional coordinators for all of the regions for assistance and maintenance work.
- It is provided at an affordable cost.

4.1.5.3 Procurement and Installation

4.1.5.3.1 Procurement

For procuring SOUL, one can approach Information and Libraries Network Centre (INFLIBNET), Ahmedabad. There are two versions available, that is, Limited and Full version. Limited version is useful for less than 50,000 books.

4.1.5.3.2 Installation

After purchasing SOUL from INFLIBNET, it provides on-site installation support and data conversion support on payment basis. The basic technological requirements for using SOUL are as follows:

- Computer processor: Pentium IV or higher version
- Minimum processing speed: 1.6 GHz
- Minimum RAM: 512 MB (Although recommendation is 1 GB)
- Hard disk space required: Minimum 400 MB
- Windows based operating systems like XP or Vista or 2003 or 2008 server

The various available modules (modules are separate pieces of software that piece together, to form an automated system) of SOUL 2.0 are explained in the sections ahead.

4.1.5.4 Administration

The Administration module of the SOUL 2.0 facilitates inputs from various types of SOUL users and provides support to enjoy their duties and rights. This module has been divided into three major sections, viz. User management, System Parameters and Masters. This Administration module includes the following features:

- Grouping of users based on the policy;
- Transactional rights over the systems;
- Transaction level security to users;
- Various configuration settings such as labels, e-mail and other parameters related to the software use; and
- Common master databases being used in modules.

This module enables library staff to handle all the major functions, such as



- ◆ Suggestions management;
- ◆ Order processing, cancellation and reminders;
- ◆ Receipt, Payment and budgetary control;
- ◆ Master files such as currency, vendors, publishers etc.; and
- ◆ Reports.

4.1.5.5 SOUL Login

For performing activities on SOUL, Soul supports various categories of users, i.e. administrator, user, etc. One person, like administrator or a library user can log into the system through specific user I.D. and password. After logging into the system, he/she can perform only those tasks, which the specific user account permits. For example, a library user can only use OPAC support, while the library professional, assigned to perform the circulation task, is authorized to perform all the pre-defined activities of the concerned section. (Fig. 4.1.1)

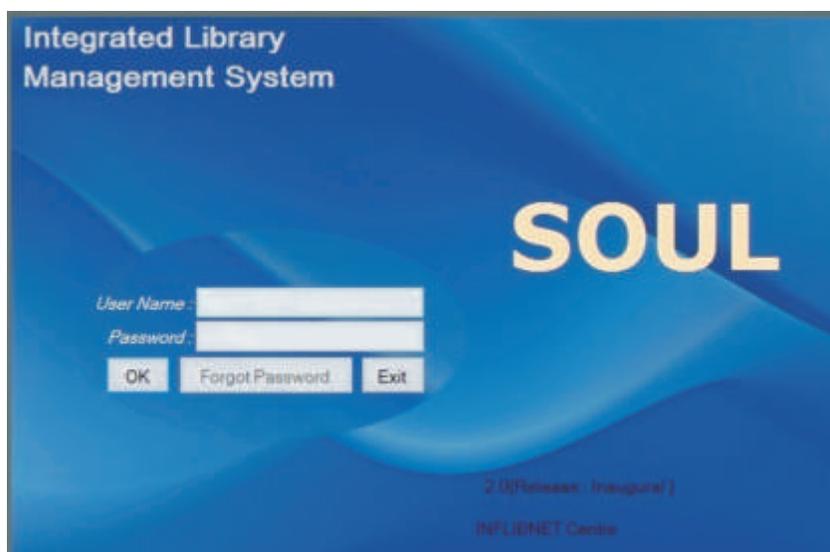


Fig 4.1.1: Snapshot of Log in Screen

4.1.5.6 Acquisition Module

The basic duties of the acquisition section of a library are to identify the documentary requirements of the library users and perform the task of book selection for the purpose of developing the library collection. In this process, SOUL provides some options to express specific requests of library users for procuring documents. Here, one can fill the blank request form, with the details of the required books and also the details of the user. (Fig. 4.1.2)

Fig 4.1.2: Snapshot of New Request Form

4.1.5.6.1 Gifted Items

In case any individual or an institution gifts a document, SOUL provides separate form to record such items. In this form, complete bibliographic description of the gifted document with the details of the donor are filled. (Fig. 4.1.3)

Fig 4.1.3: Snapshot of Gifted Document Entry Form

Ordering Process: If the request of a user is identified and accepted, it becomes essential to take approval of the library administrator/library committee. As soon as the committee grants the permission to procure the document, the system performs the ordering process. Before placing order, the database of approved suppliers with the help of separate data



sheet is developed. In the ordering process, we can select all relevant items from the approved list and generate a purchase order. (Fig. 4.1.4, 4.1.5, 4.1.6). In case, the documents are not received for a long time, a reminder is sent to the publisher or distributor of the document. (Fig. 4.1.7)

Title	Author	Currency No	Order Price	Conversion Rate	NetPrice	Budget	Approve	Order Co
-------	--------	-------------	-------------	-----------------	----------	--------	---------	----------

Fig 4.1.4: Snapshot of Ordering Process

Title	Author	Currency No	Order Price	Conversion Rate	NetPrice	Budget	Approve	Order Co
-------	--------	-------------	-------------	-----------------	----------	--------	---------	----------

Fig 4.1.5: Snapshot of Direct Approval Form

Print Order

Select option: Order No. Select Order No: LIBK/C-O/ Display

**CENTRAL LIBRARY
BANARAS HINDU UNIVERSITY
VARANASI - 221005**
Phone (0542) 2367133 & 2367130 to 33
Fax: (0542) 2367133
Email: cbhu.acq@gmail.com

PURCHASE ORDER
Original / Duplicate / Triplicate

Order No: LIBK/C-O/	Order Date: 17/10/2014
From, Librarian Central Library, Banaras Hindu University, Varanasi 221005 U.P., INDIA	To, Indica Publisher & Distributors Pvt. Ltd. 7/31, Ansari Road, Daryaganj, New Delhi- 110002, Delhi,

Dear Sir/Madam,
Subject to the terms & conditions mentioned overleaf, please supply the following book(s)/document(s)
See terms and conditions overleaf

Fig 4.1.6: Snapshot of Purchase Order

Reminder Letter

Select Supplier: Indica Publisher & Distributors Pvt. Ltd. Expected date upto: 21/10/2014 Display

**CENTRAL LIBRARY
BANARAS HINDU UNIVERSITY
VARANASI - 221005**
Phone (0542) 2367133 & 2367130 to 33
Fax: (0542) 2367133
Email: cbhu.acq@gmail.com

Reminder Letter

Reference No:
To,
Indica Publisher & Distributors Pvt. Ltd.
Baljeet Kaur
C-141, Dayanand Colony, Lajpat Nagar-IV
New Delhi 110024
Delhi

Subject : Reminder letter LIBK/VC/ Dated : 22/10/2014

Fig 4.1.7: Snapshot of Reminder for Supply

4.1.5.7 Cataloguing Module

Catalogue module is used for retrospective conversion of library resources. It also facilitates the library staff to process newly acquired library resources. In the process of cataloguing, the library professional can fill the data entry sheet of newly arrived documents. If the bibliographic information is previously entered in the library database, there is no need to feed the bibliographic information again. (Fig. 4.1.8)



The features of the catalogue module are:

- allows cataloguers to create their own templates for data entry of different library resources
- different templates for leaders and fixed fields of MARC-21
- allows user-generated customized reports
- facilitates authority database of person name, corporate body, subject headings and series name
- supports copy cataloguing in MARC-21 format by using ISO-2709 standard
- master database of publishers
- multi-lingual database, by using Unicode Character set
- supports full MARC 21 bibliographic format

Fig 4.1.8: Snapshot of Data Entry of new Title

4.1.5.8 Circulation Module

In the circulation process, SOUL allows to perform all major or minor tasks. This module takes care of all possible functions of circulation. This module covers all aspects, ranging from membership management, maintenance and status of library items, transaction, ILL, overdue charges, renewals & reminders, search status and report generation (according to

the status of the items). The circulation module is compatible with the NISO Circulation and Interchange Protocol (NCIP) version 2.0 for electronic surveillance and RFID based transaction of the items.

Some screen shots for controlling automated circulation of a library are presented in Fig. 4.1.9 and 4.1.10.

New Member

Academic Information
Category: [] Institute: [] Department: [] Course/Designation: []
Add Institute

Personal Information Contact Information Picture Guarantor Information(Optional)
Surname: [] Forename: [] Birthdate: 14-Nov-08 [] Year of Joining: 2015 [] Member Code: [] Member ID: [] Status: Active [] Gender: Male []

Payment information Others
Deposit Amount: [] Membership Amount: [] Maximum Due Amount: [] Receipt No.: [] Effective Date: 17/07/2015 [] Receipt Date: 14-Nov-08 [] Card Exp. Date: 14-Nov-08 []

Remark: []

Add Update Save Cancel Search Exit
First Previous Next Last

User: SUPERUSER Date: 17-Jul-15 11:01:38 AM

Fig 4.1.9: Snapshot of Registration of New Member

ILL Request

Request Request To Library Receiving Items On ILL Arrivals/Reports Issue Reminder to Member Return Send to L

Member Code: [] Name: [] Title: [] 1st Author: [] 2nd Author: [] Publisher: [] Library Name: [] Material: [] Publication Year: [] Date of Request: 17-Jul-15 []

ILL Request Details

Member Co	Media Descr	Book Title	Author1	Author2	Publisher

Add Update Delete Save Cancel Exit

User: SUPERUSER Date: 17-Jul-15 11:04:46 AM Records: 1

Fig 4.1.10: Snapshot of Borrowing process



4.1.5.9 Serials Control Module

The management of serials is the most complicated job for a library. This module keeps track of serials in the library, effectively and efficiently. The serial control module is developed based on the KARDEX system and has the following functions built into it:

- suggestions;
- master databases;
- subscriptions;
- check-in of individual issues of journals;
- payment, reminder, binding, and title history;
- export / import by using ISO 2709 bibliographic exchange format;
- article indexing of journal/book articles;
- cataloguing of electronic journals; and
- track of the history changes of the journals.

For understanding the process, screenshot of the SOUL system is given as Fig. 4.1.11.

The screenshot shows the 'Serial MARC 21 Entry/Edit' window. It features a 'Main Entry' tab and an 'Optional Entry' tab. The 'Leader' field is set to 'Fixed Field'. The 'Title (200)' section includes fields for 'Title Statement (245)', 'Key Title (222)', 'Publication, Distribution etc. (260)', 'Computer File Characteristics (256)', 'Varying Form Of Title (246)', and 'Former Title (247)'. Below this, there are fields for 'Title Sa', 'Remainder of title Sb', and 'Statement of resp. Sc'. The 'Current Publication Frequency (310)' section has fields for 'Frequency Sa' and 'Date Sb'. The 'ISSN (022)' section includes 'ISSN Sa', 'Level of international inta', 'Language', and 'Country'. The 'Coden Designation (030)' section has 'Coden Designation Sa'. The 'Holding Institution (850)' section has 'Holding institution Sa'. The 'Dates of Publication Or Sequential Designation (362)' section has 'Dates of publication and/or sequential designation. Sa' and a 'Format of di' dropdown. The 'Location (852)' section includes 'Copy No St', 'Acqn NoSp', 'Collect. Tp Sb', 'Coded Location Sf', 'Department', 'Supplier', 'Material', 'Class No Sk', 'Location Sa', 'Budget', 'Invoice No', 'Status', 'Book No Sm', 'Shelving Location Sc', 'Price', 'Invoice Dt', 'Date of Acq', and 'Issue Restricted?'. At the bottom, there are buttons for 'New', 'Edit', 'Save', 'First', 'Previous', 'Next', 'Last', and 'Close'.

Fig 4.1.11: Snapshot of Serials control

4.1.6 Open Source Library Automation Software

4.1.6.1 Introduction

At this juncture, it is quite clear that automating the library is a fruitful solution for avoiding majority of problems. But it is also identified, that most of our libraries, especially school and public libraries, run their services with a very small budgetary/financial support. Such libraries may find it difficult to take any initiative for automating the system. In such situations, choosing open source software is the best solution.

4.1.6.2 Open Source: Meaning

Open source software is a software, available with its source code and license. Its copyright holder is provided the right to study, modify and further distribute the software to anybody for any type of purpose. Usually such software is developed in a collaborative manner and anybody can download it for use without paying any charge.

4.1.6.3 Open Source Software for Libraries

A large number of open source software are available for automating libraries. The most popular open source library automation software are: Koha, Evergreen, OPALS (Open Source Automated Library System), NextGenLib, etc. Koha, ILMS is discussed and explained in this unit.

4.1.6.4 Merits of Open Source software

The prime merits of open source software are:

- It is normally available free of cost.
- One can download it with its source code for any type of library usage.
- One is allowed to modify its source code for satisfying his/her requirements.
- Its modified version can be distributed further, it is not required to take anybody's permission.
- Being a popular solutions, it is easy to share or transfer information with others.
- One can get regular assistance from the community members or users or developers without paying any charge.

4.1.6.5 Demerits of Open Source solution

The major demerits of an open source software are as follow:

- Majority of open source software are not reliable.
- There is no dedicated support from the side of developer.
- The user must be well acquainted with the technology issues before using it.



- ❖ There are not ready to use solutions and users are bound to perform a number of tasks like installation, database designing, customization, etc. before using it.
- ❖ It is not sure that the developers will essentially provide its updates.
- ❖ It is not essential that further support will be provided free of cost.
- ❖ It is a less secured system than any other proprietary solution.

4.1.7 Library Automation Software: KOHA (Open Source)

4.1.7.1 Introduction

KOHA is one of the most popular open source library management systems. Created in 1999, it was developed in 2000 by Katipo Communications for the Horowhenua Library Trust in New Zealand. KOHA being the first open source integrated library management system, includes all the main features related to library management, like easy interface for librarians and users, Web 2.0 compliant (tagging and RSS feeds), union catalogue facility, customizable search, circulation and borrower management, full acquisitions system including budgets and pricing information, etc.

4.1.7.2 Technical Specifications

It is a web-based open source software, which is distributed under the general public license. KOHA works on Windows, UNIX, Linux and Mac OS platforms. KOHA is a comprehensive system that has the capacity to run a library intelligently, whether it is large or small, and supports copy cataloguing. It is based on the standards/protocols like Z39.50, MARC-21 and UNIMARC. KOHA also has the capacity to manage digital libraries, online and offline electronic resources.

4.1.7.3 Download and Installation

Being an open source software, KOHA may be downloaded from its web site (<http://www.koha-community.org>). The complete documentation is also available at this site. Anybody can download KOHA and install for the purpose of automating the library. A few screen shots of KOHA for performing various activities of library system are presented below:

4.1.7.3.1 Main Menu

After logging into the KOHA library management system of a library, we find the following screen. One can choose the required option for performing his/her specific task. (Fig 4.1.12)

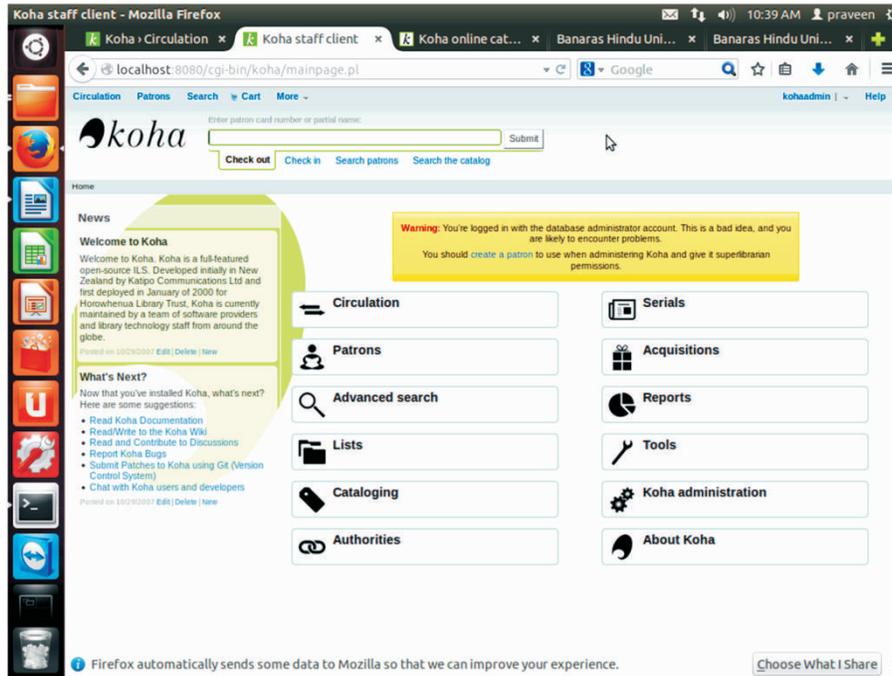


Fig 4.1.12: Snapshot of KOHA Main Menu

4.1.7.4 Acquisition Module

It is essential to do a number of tasks for performing various activities related to the acquisition process in KOHA library management system. (Fig. 4.1.13)

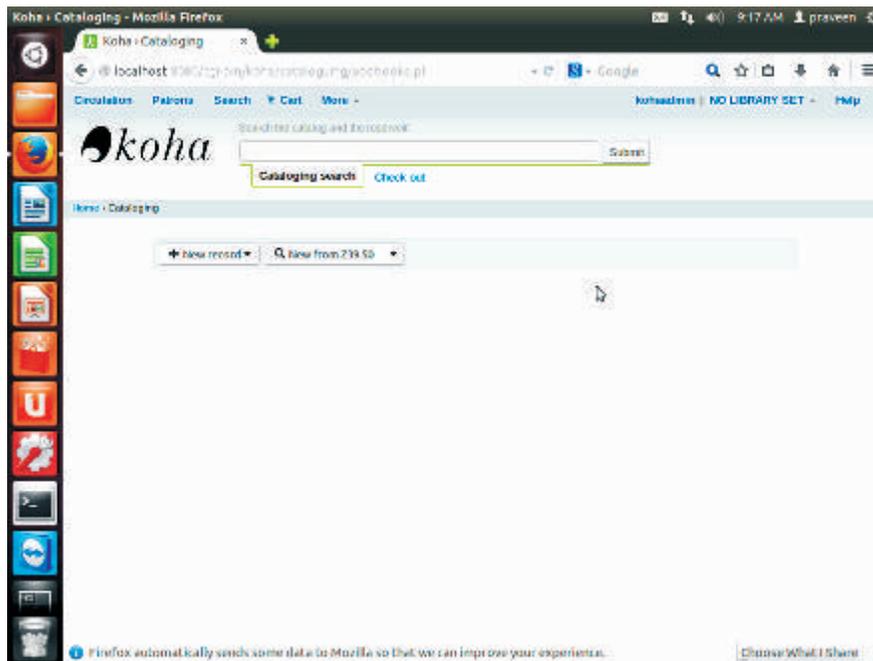


Fig 4.1.13: Snapshot of Entering a New Record



4.1.7.5 Cataloguing Module

With the help of this service, we enter bibliographic information of newly procured documents in the library database. Besides, we also provide normal as well as advanced search support to our library users for searching a desired record from the library database.

Fig. 4.1.14 and 4.1.15 are some screen shots for performing above mentioned activities.

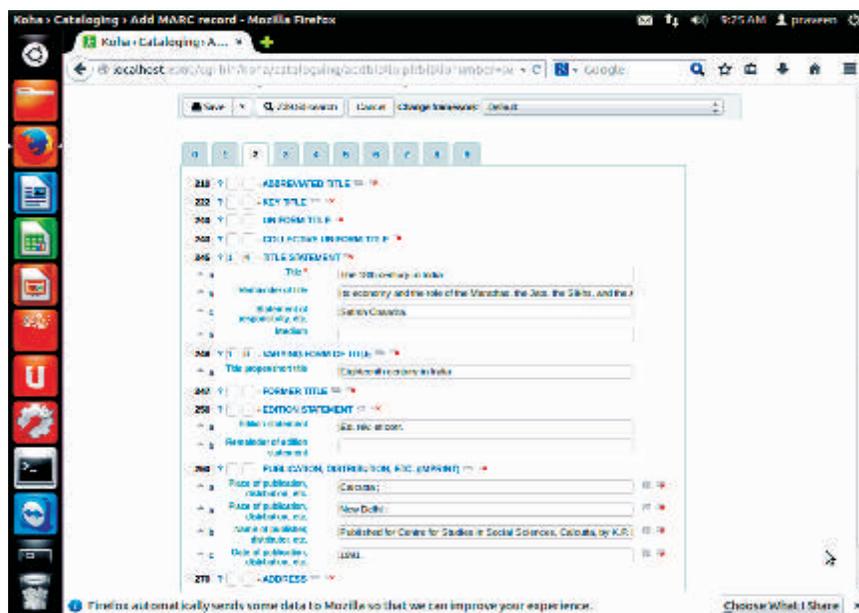


Fig 4.1.14: Snapshot of addition of MARC record

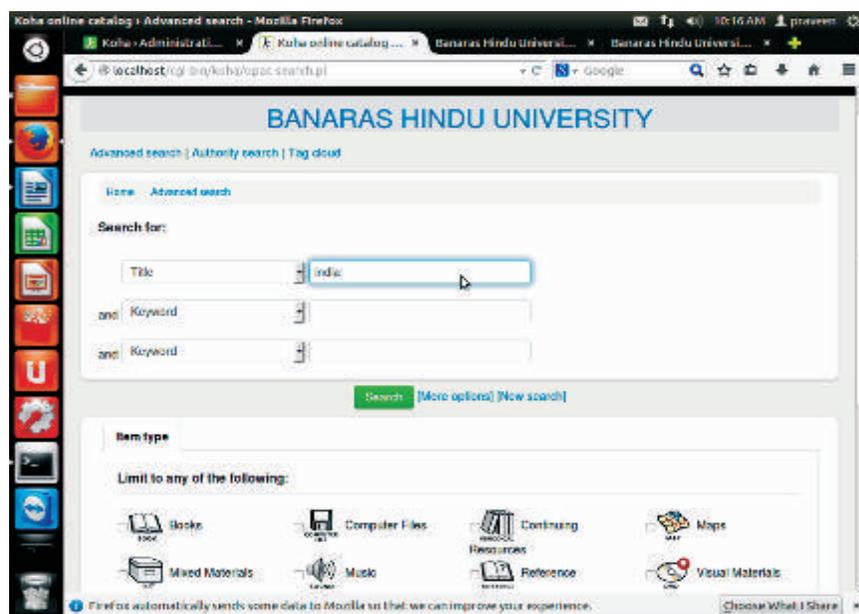


Fig 4.1.15: Snapshot of OPAC - Advanced Search

4.1.7.6 Circulation Module

Circulation activity involves the following tasks:

- Defining circulation rules for various categories of user groups with their specifications
- Registration of new user
- Issuing and returning the loaned documents
- Renewal or transfer of documents
- Keeping circulation statistics, and
- Generating reports

(Figs. 4.1.16 to 4.1.20 show various activities related to the circulation process.)

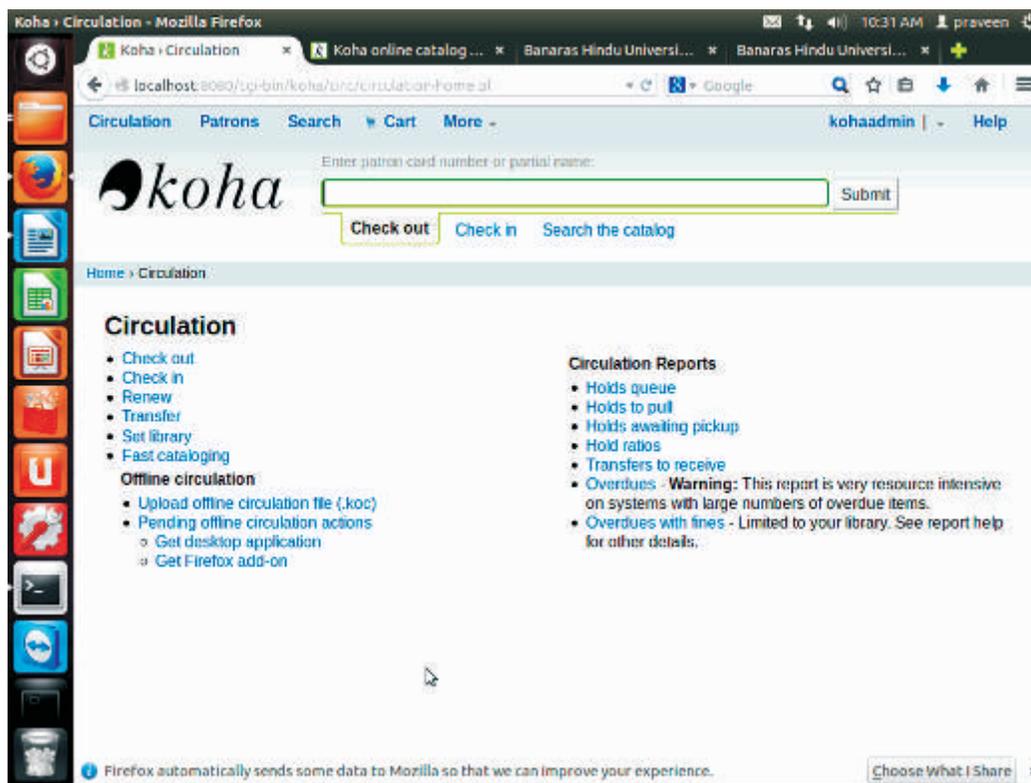


Fig 4.1.16: Snapshot of main screen of Circulation

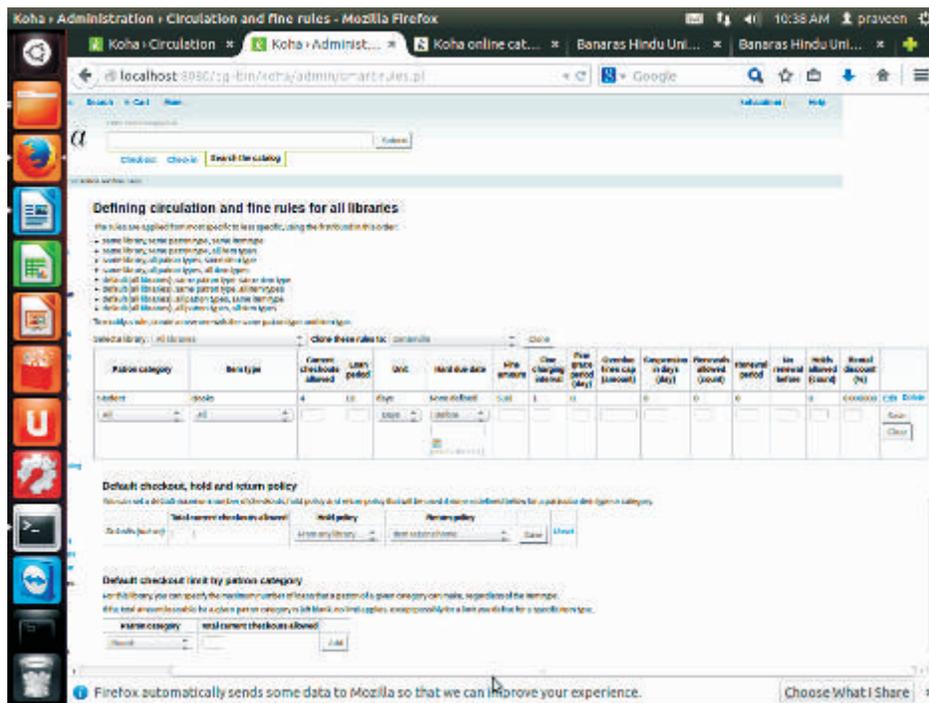


Fig 4.1.17: Snapshot of Defining Circulation Rules

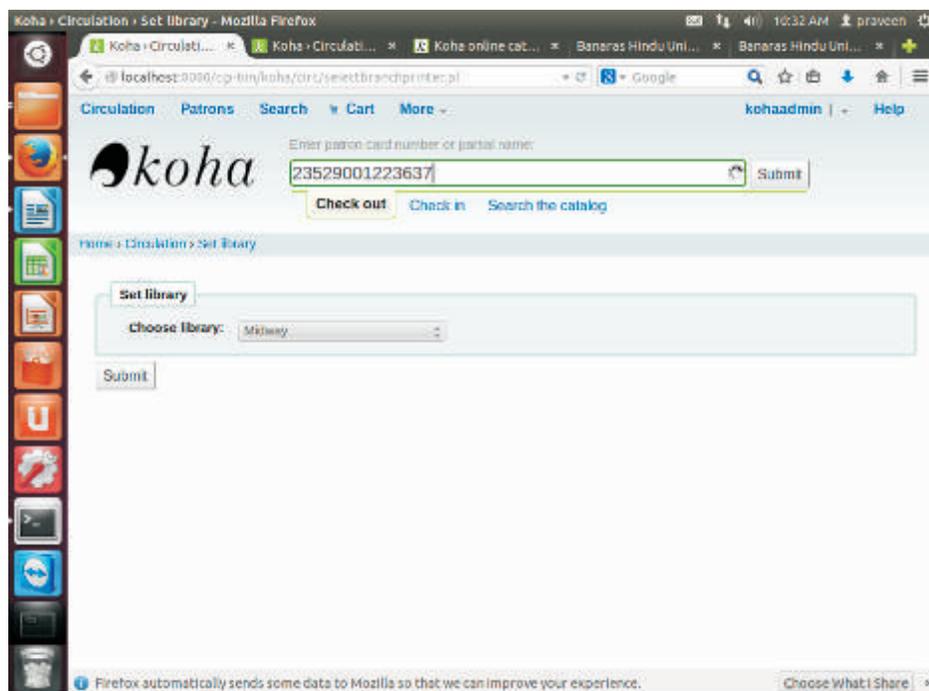


Fig 4.1.18: Snapshot of Check In/ Check Out process

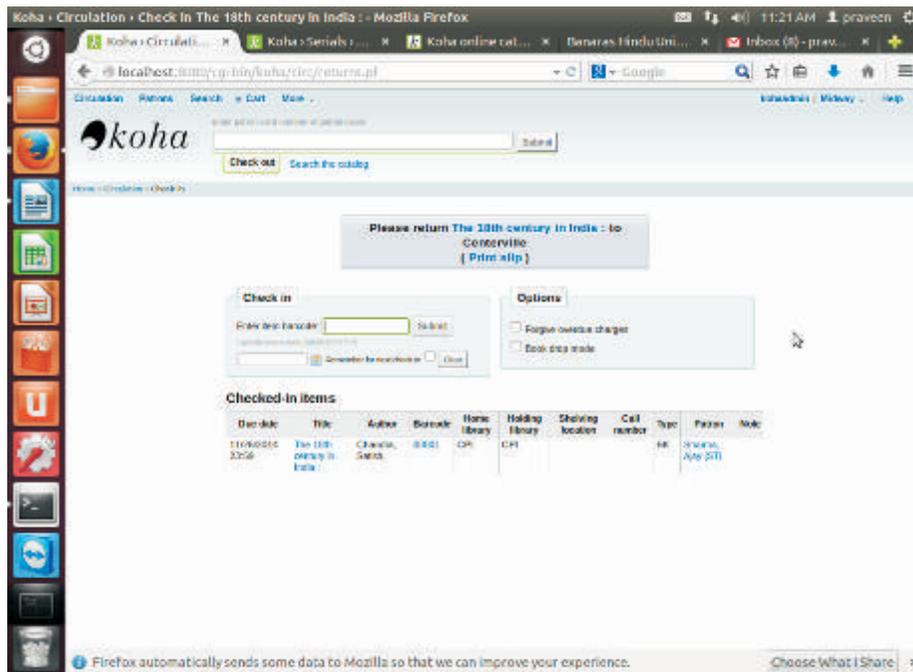


Fig 4.1.19: Snapshot of Check In/ Check Out process

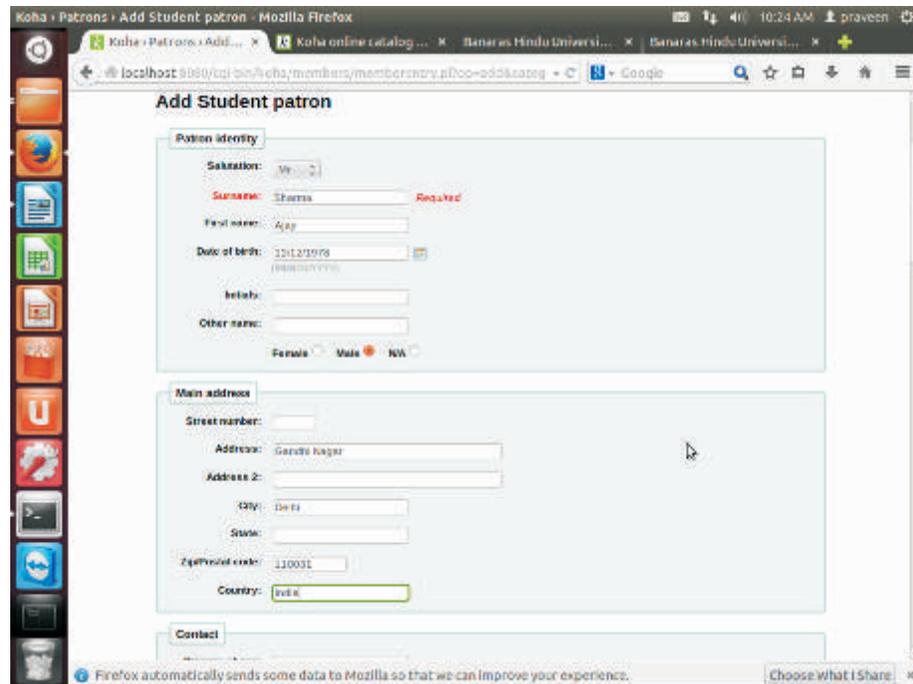


Fig 4.1.20: Snapshot of Registration of New User

4.1.7.7 Serials Control Module

For serials control, the various activities are shown in Fig. 4.1.21 and 4.1.22.

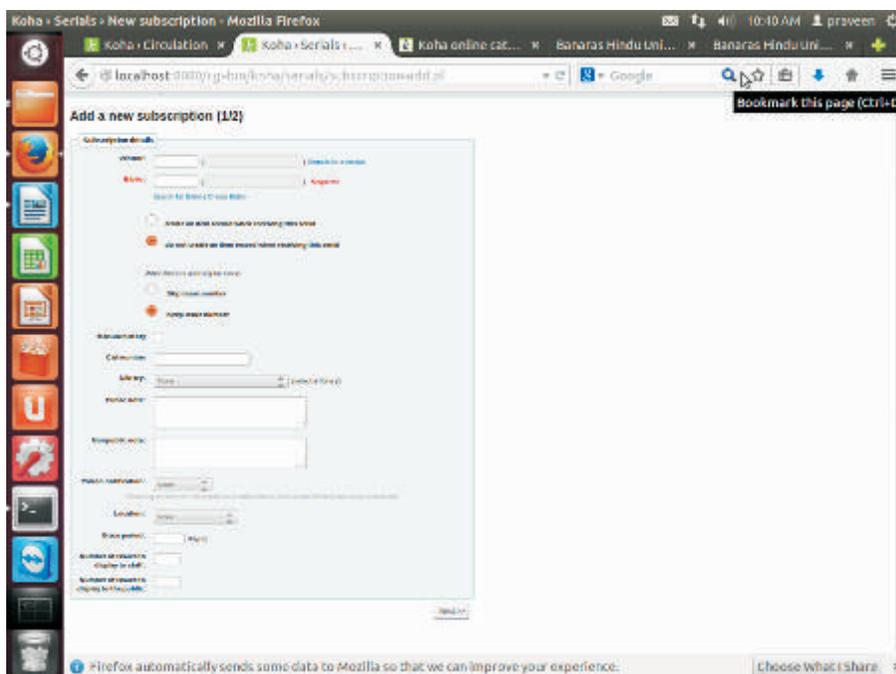


Fig 4.1. 21: Snapshot of Serials Control

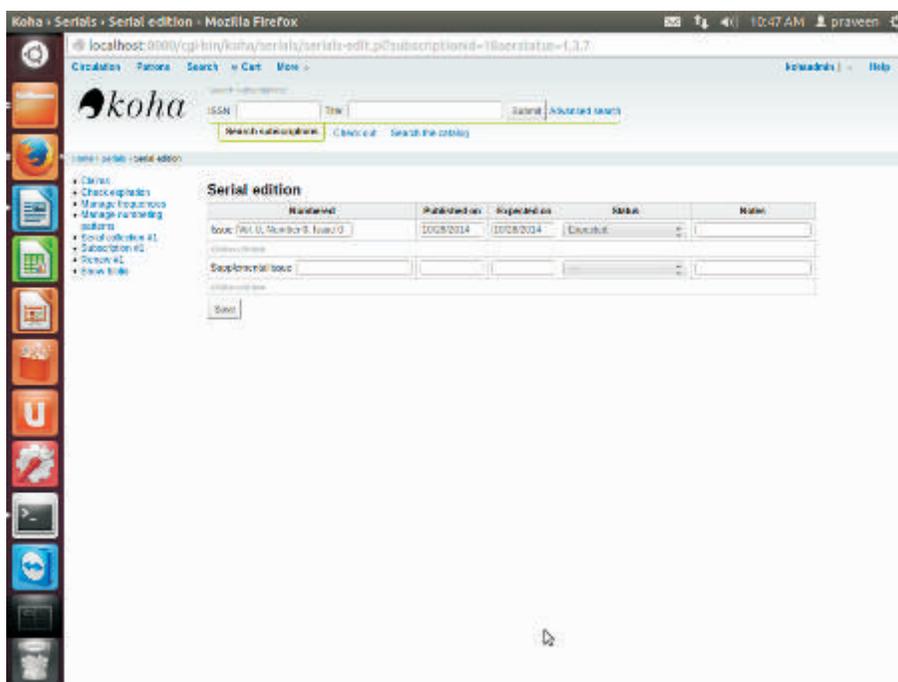


Fig 4.1.22: Snapshot of Serials Control

4.1.8 Summary

Library is a social institution, with quality information support and information services. Now-a-days, most libraries face financial problems. Hence, they are not able to initiate new services for coping with the contemporary information requirements. The major reason, as we identified, is limited count of library staff. This problem may be avoided, if we try to relieve our staff from the burden of repetitive tasks. For this, automation of libraries is the best solution. With the help of library automation, one can not only relax our library staff from burden, but also use the existing staff to introduce new services.

There are many library automation software available in the market which are both proprietary and open source. In this unit, an attempt has been made to familiarize two Library automation software, SOUL and Koha, which can be used for automating the library housekeeping operations, as well as, to provide some computer based information services in libraries. Acquisition, Cataloguing, Circulation and Serial control modules are discussed in SOUL. Open source software is a software, which is available with its source code and license. A large number of open source library automation software are available for libraries, but, Koha, ILMS is discussed and explained in this unit.

4.1.9 Glossary

Acquisition: It is the process, through which we purchase/procure new documents in the library

AACR II: Anglo-American Cataloguing Rules, Second edition

CAS: Current Awareness Service

CCC: Classified Catalogue Code: With additional Rules to Dictionary Catalogue Code

Circulation: The process of issuing and returning library documents to library patron on loan.

Housekeeping Operations: All essential routine tasks, which are of repetitive nature, are called Housekeeping operations

LAN: Local Area Network. It is a network, which connects all computer systems placed in a large hall or a building.

OPAC: Online Public Access Catalogue

SDI: Selective Dissemination of Information service

Serials Control: It is the process through which we control the collection of periodicals in the library.



4.1.10 Exercise

Short Answer Questions

1. Define library housekeeping activities.
2. Enumerate various housekeeping operations in the library.
3. Explain the different manual library housekeeping operations?
4. What are the main problems in manual library housekeeping operations?
5. What are the reasons for automating acquisition process of a library?
6. What are the prospective reasons for automating cataloguing process?
7. Discuss the Online Public Access Catalogue.
8. What type of additional services can we add to the automated circulation control?
9. What are the features included in the reporting function?
10. Discuss any five features of SOUL.
11. Discuss the essential software and hardware requirements for installing SOUL.
12. What do you understand by 'Open Source Library Automation Software'?
13. What are the different merits of an open source software?
14. What are the demerits of an open source software?
15. Discuss the various technical specifications of KOHA.

Long Answer Questions

1. Explain in detail the manual library housekeeping operations?
2. How will an automated library overcome various problems of a manually operated library system?
3. Write a note on SOUL.
4. Give a detailed account of KOHA ILMS.
5. What do you understand by library housekeeping operations? Discuss the various differences between their manual and automated processing in detail.