

**A project Report**  
**On**  
**DIGITAL LIBRARY EXPLORER USING**  
**MACHINE LEARNING**

Submitted in partial fulfillment of the requirement  
for the award of the degree of

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**Computer Science and**  
**Engineering**



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## **CANDIDATE'S DECLARATION**

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled "DIGITAL LIBERAY EXPLORER USING MACHINE LEARNING" in partial fulfillment of the requirements for the award of the B.TECH CSE 3 YEAR-submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of month, Year to Month and Year, under the supervision of ABHEY KUMAR Designation – MACHINE LEARNING. Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida .

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

**ABHAY KUMAR**

**CERTIFICATE**

The Final Thesis/Project/ Dissertation Viva-Voce examination of **HUMAIRA HOSSAIN METHELA – 19SCSE1010439 and ASHOTOSH PANDEY – 19SCSE1010510** has been held on 23 dec ,2021 and his/her work is recommended for the award of B.tech.

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Dean

Date: 23/12/2021

Place: Greater Noida

## ABSTRACT

An important role for librarians over the next five to ten years is to provide access to online library resources—free, open-access, or purchased, all valuable resources—in an intuitive, easy-to-use one-stop shop and not to be afraid of running a continual beta test in which new services and functions can be added when necessary. To fill this role, librarians and electronic resources managers need flexible, interoperable resource-discovery systems based on open-source software. In addition, we must continue to assess users' needs and reach out by adapting our systems to fit their requirements, rather than expecting them to come to us; indeed, our very future depends on it.

Two decades after the advent of electronic journals and databases, librarians are still grappling with ways to best manage e-resources in conjunction with traditional print resources and at the same time explore new purchasing initiatives and practices, such as demand-driven acquisition of electronic books. In addition, these times of economic austerity are creating budgetary pressures at many institutions of higher education, resulting in librarians having to justify their spending on collections and resource management more than ever.

Techniques for Electronic Resource Management (TERMS) began in 2008 after a discussion about electronic resource management (ERM), current ERM tools, and what was lacking both in current practice and with the systems available. TERMS expands on Pesch's electronic resources life cycle and seeks to become a reference point for those who are new to ERM, those who have suddenly shifted job functions to oversee ERM, and those who may want to implement its recommendations of best practice.

The problem occurred before having computerized system includes like When computerized system is not implemented file is always lost because of human environment. Sometimes due to some human error there may be a loss of records. File damaged When a computerized system is not there file is always lost due to some accident like spilling of water by some member on file accidentally. Besides some natural disaster like floods or fires may also damage the files. When there is no computerized system there is always a difficulty in searching of records if the records are large in number. After the number of records become large the space for physical storage of file and records also



as an aide to discoverability and serendipity amidst informational abundance. We might imagine, for example, patrons browsing automatically-derived topics of interest across a digital library comprising thousands or millions of texts—more texts, certainly, than typical constraints on labor or expertise would allow us to imagine labelling manually.

Digital Libraries examines the theory and practice of acquisition, definition, organization, management, preservation, and dissemination of digital information via global networking. It covers all aspects of digital libraries (DLs), from large-scale heterogeneous data and information management & access to linking and connectivity to security, privacy and policies, to its application, use, and evaluation.

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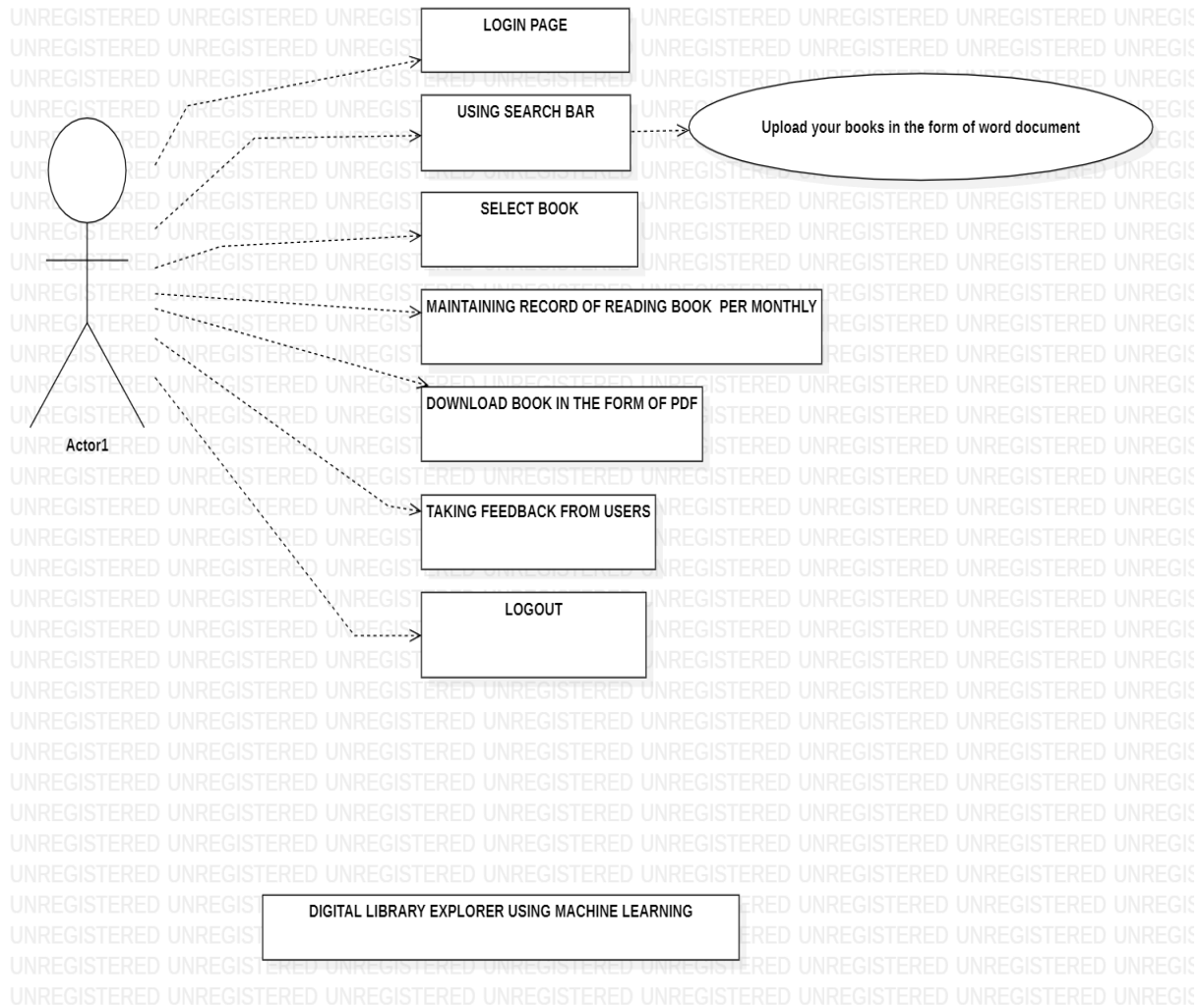
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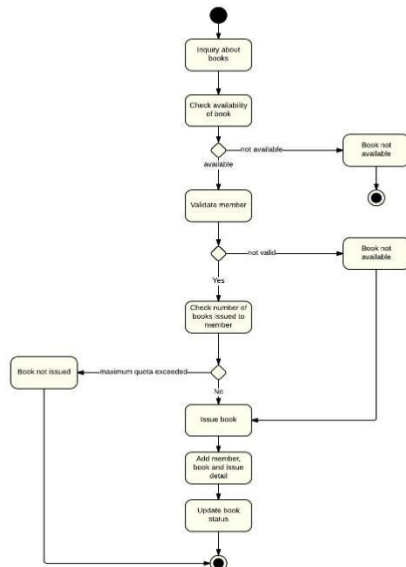
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## UML DIAGRAM :





# ACTIVITY DIAGRAM



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## **CHAPTER -1** **INTRODUCTION**

Significant changes seen by society through the transmission of information around the globe and it is accountable to the evolution of information technology. Now it is possible to archiving and accessing knowledge in the digitized form besides preservation of traditional knowledge due to use of information technology. Demand for electronic information increasing day by day and at the same time traditional format of library becoming more and more expensive and complex to maintain. Now it is time for libraries to capitalize these challenges and meet demands and expectations of digital users. Libraries has to redesign their services to create value addition to satisfy the user's community.

Most of the research and writings on library management have focused on academic libraries and only recently has there been more interest in the administration of public libraries. The skill and style of public library managers – the directors, branch managers, and department and service managers who are leading these institutions – strongly affects the culture of a public library.

Library staff looks to these managers to help them navigate through the rapid changes that are occurring in public libraries as these changes in technology, roles, and user expectations strongly alter their daily routines of public service. Contemporary library managers need a wider array of skills and attributes than their earlier and more traditional counterparts and will need to seek continual professional development to remain effective as public libraries transition into the twenty-first century.

These managers will also need to distinguish between management and leadership skills and learn to identify and mentor leaders within their staff who can assist in the transition. This paper is a brief scan of the literature currently available on managing libraries and includes information on academic as well as public libraries due to the above-mentioned lack of public library material. Weiner reviewed the literature extant on leadership in academic libraries and surveyed materials on “recruitment, leadership potential

identification, career development, roles and responsibilities, and characteristics and management style”.

Digital libraries are relatively new, evolving increasingly with the phenomenal success of the internet. This has opened up the idea that digital collections can be made available to a wide variety of users, over an international platform. With this innovation comes a limitless set of problems to be overcome through research. In this review, the broad outline of the types of problems facing digital library development will be discussed resulting in particular focus on usability. This vast area of research has been narrowed down to techniques for evaluating the usability of digital libraries and the shortcomings of these standard techniques that work well on the internet platform, but not for the digital library domain. Ultimately, these shortcomings are investigated through discussion of research into proposed frameworks for evaluating multiple digital libraries attribute by attribute in order to begin to create some standards for digital library development.

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For years, libraries and information services at U.S. Department of Energy (DOE) National Laboratories have flourished as they have fulfilled their mission to support very specialized populations of customers working intimately with scientific and technical information (STI). Recent developments in technology and library resource sharing capabilities have brought about opportunities for meaningful collaborations among the DOE Scientific and Technical Information Program (STIP) partners. A concept paper presented by Dr. Walter Warnick, director of DOE's Office of Scientific and Technical Information (OSTI), at InForum '98, challenged the STIP partners to work

together to develop a National Library for Energy Science and Technology (NLEST). The challenge received many strong reactions, but even among those with initial reluctance, continued interest in developing an NLEST or related collaboration has continued to grow. Information professionals within the STIP community anticipate that resource sharing collaborative efforts will benefit their respective organizations. Current measures may bring a level of formality to more informal collaborative efforts. In order to develop such collaborations, many building blocks should be set in place in order to build a strong foundation for further collaboration. The goal of this paper is to lay out a blueprint for three of the building blocks. Drawing from the literature, definitions of digital and virtual libraries and selected efforts of digital libraries initiatives outside DOE are presented. Third, respondents among STIP partners to an informal survey resulted in data that highlights efforts at DOE and contractor libraries and information services to implement technology to provide information services to their customers. It is these partners who will form the nucleus of any STI collaboration, so measuring and evaluating what services currently exist is essential.

The purpose of a library management system is to operate a library with efficiency and at reduced costs. The system being entirely automated streamlines all the tasks involved in operations of the library. The activities of book purchasing, cataloging, indexing, circulation recording and stock checking are done by the software. Such software eliminates the need for repetitive manual work and minimizes the chances of errors.

The library management system software helps in reducing operational costs. Managing a library manually is labor intensive and an immense amount of paperwork is involved. An automated system reduces the need for manpower and stationery. This leads to lower operational costs.

The system saves time for both the user and the librarian. With just a click the user can search for the books available in the library. The librarian can answer queries with ease regarding the availability of books. Adding, removing or editing the database is a simple process. Adding new members or cancelling existing memberships can be done with ease.

Stock checking and verification of books in the library can be done within a few hours. The automated system saves a considerable amount of time as opposed to

the manual system.

The library management system software makes the library a smart one by organizing the books systematically by author, title and subject. This enables users to search for books quickly and effortlessly.

Students need access to authentic information. An advanced organized library is an integral part of any educational institution. In this digital age a web based library management system would be ideal for students who can access the library's database on their smartphones.

Library management systems are designed to manage the movement of books and maintain records of the members in a library. The software solution is designed based on the system requirements, the people involved, the content of the operation and the activity to be performed.

The system requirement in library management focuses on the possibility of search for books by title, author or subject by the member. They should be able to locate a book physically by the unique identification code and the rack number for each book. The system should provide details on the books held by the members. The system should limit the number of books that can be taken and the number of days that a book can be kept for. The system should generate fines when due from the member.

The next step focuses on the functions of the librarian, the member and the system. Managing books by the librarian, searching for books by the members and notifications sent by the system are detailed in a case diagram.

The third step in the design of the library management system software is based on the different aspects of a library. The name of the library, the book details, member details, membership cards, book reservations, book lending, cataloging, fines, book racks and notifications are consolidated as a class diagram.

The next step further breaks down the functions into specific activities that are performed in a library. An activity diagram based on the primary activities – checking out a book, returning a book and renewing a book – is drawn.

The final stage is coding for each activity in the case, class and activity diagrams. This is the most important function in the design of the library management system software.

Library management system gitHub, the software created using Python, stores data on a log file. The software systems are developed on this platform.

The main aim of this project is to provide an easy to handle and automated library management system. This project also provides features and an interface for maintaining librarian's records, student's history of issues, and fines. The owner can easily update, delete and insert data in the database with this project.

The following are some of the features provided by this project:

- The issue of books by online mode.
- Columns provided to search book online.
- Requests to the librarian can be sent to provide new books in the column.
- Login portal for a student for security purposes of the library.
- Homepage for the student which has different buttons to navigate to pages containing the date of issue, date of return, fine charges, etc.
- Columns for teachers to get the book issued if desired.
- Requests column for teachers to ask for the introduction of new or essential books in the library.
- Maintaining records of the librarian and other library staff.
- Feedback page to be viewed and monitored by the college authority, to which student
- The teacher can mention any misbehave or feedback to the library.

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A college library management is a project that manages and stores books information electronically according to students needs. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. It becomes necessary for colleges to keep a continuous check on the books issued and returned and even calculate fine. This task if carried out manually will be tedious and includes chances of mistakes. These errors are avoided by allowing the system to keep track of information such as issue date, last date to return the book and even fine information and thus there is no need to keep manual track of this information which thereby avoids chances of mistakes.

Thus this system reduces manual work to a great extent allows smooth flow of library activities by removing chances of errors in the details.

Library is regarded as the brain of any institute; many institutes understand the importance of the library to the growth of the institute and their esteem users (students). LMS support the general requirement of the library like acquisition, cataloguing, circulation.

Library project system that offers many flexible and convenient features, allowing librarians and library users to maximize time and efficiency. Library System gives the all detailed information about students, staff and books. It will track on the how many books available in library and books issued to the students. It shows popular book among the students. It will provide book lost in library. It keeps the record of the suppliers and book binders. It generates MIS reports for management. Our software is customizable for any library requirement.

Online Library Management System is a system which maintains the information about the books present in the library, their authors, the



members of library to whom books are issued, library staff and all. This is very difficult to organize manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Library becomes much simple. The Online Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations. This computerization of library helps in many instances of its maintenances. It reduces the workload of management as most of the manual work done is reduced.

## **CHAPTER -02**

### **LITRATURE SURVEY**

The web based nature of digital libraries means research into internet/WWW based topics are relevant to digital Libraries, e.g. accessibility, usability, information retrieval, automation, xml, metadata; however, whilst this research provides a grounding for digital libraries, their diversity brings about a sub set of research areas that can only be relevant to their domain. In addition, there are areas of research relevant to the information science aspect of digital libraries, where traditional library ideals are being transferred onto a technical platform for international audiences. One of the greatest problems for digital library development is fulfilling the requirements of Computer Scientists, Information Scientists and the myriad of users that will access the collections.

Research areas which cross over between computer and information science are Obtaining Information, Preservation and Quality of Service. Obtaining Information can be defined as, who provides the content for the library? Problems can arise if institutions are not willing to freely share their resources. Depending on the type of library, information may need to be digitised, or converted to more recent technologies.

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Several usability studies of digital libraries exist namely, Alexandria Digital Library, Greenstone Digital library, Perseus Digital library and NCSTRL (Networked Computer Science Technical Reference Library). The latter was evaluated using usability inspection methods in a case study by Hartson et al. (2004), the analysis of the evaluation raised numerous problems found in evaluating digital libraries. A lack of research was highlighted in techniques to effectively evaluate digital libraries along with the issue that they, as usability specialists, do not have extensive knowledge and experience with digital libraries and can only evaluate using general guidelines established for systems; highlighting the research requirement for a usability evaluation

technique specific to digital library evaluation. I can agree that although research exists into usability evaluation for digital libraries, it is not extensive which is surprising as usability is of vital importance in development of any system.

Ekere et al (2016) study the perception of users towards digital library facilities, resources and services and found that users are highly satisfied with it. Users are highly aware and satisfied about the digital library resources such as WWW, WIFI and search engines compare to online databases, portals, online abstract, video CDs, CD-ROMs, and online indexes and abstract.

Asad Khan (2016) investigated the factors that influence the adoption of Digital Library among research students. The findings revealed that Interface characteristics influence cognitive response which predict student's intention of using digital library. Whereas navigation, individual differences and system characteristics significantly affected the ease of use. Usefulness is directly affected by system characteristics and system quality. Finally, it is found that usefulness have highest effects on digital library usage intention.

Xianjin et al (2015) worked on Flow experience with respect to Mobile Library and try to compares perception of user's with mobile libraries and web digital libraries with respect to flow experience. Where flow experience defined as best experience about an activity that can be done by comparing perceived skills and perceived challenges. Study reveals that more users experienced flow in using web digital libraries than mobile libraries.

Yalan et al (2014) examined quality of digital library which define as the quality of information quality of system and overall service quality of digital library. The comparison of user's perceptions towards virtual communities and digital libraries have been done understand the actual nature of e quality perceived by the users. Based on the user's perception study found that digital libraries provide better information, system and service quality than virtual communities.

Ming-deretal (2012) research scholar are frequent users of digital resources of library in this regard this study investigated usage pattern, search behavior of graduate students and perception towards digital resources. Study reveals that students are using digital resources during thesis writing and science and technology student consider it as the most important for their research compare to other disciplines. Less number of students are using metasearch and alter services to collect update information.

As the economic growth increased the peoples are led to the higher

aspiration to excel in education and work through better access to information and knowledge. Technologies for building user-centered digital library environments and making computer-user interactions more intelligent should be explored [1]. Earnshaw discussed in his article about the old libraries and its drawbacks to keeping records. A book provided an irreducible deposit of information that could be read, reviewed, criticized, as well as providing the basis for the development of its ideas into further volumes [2]. Information is no longer exclusively library-centric but is also network-centric. The center of gravity has moved from information provision to information access. Online search (via engines such as Google) is replacing physical search. Combining the best of both worlds i.e. the traditional library and the online search – to meet the developing requirements of users is a key challenge for the future [2]. In this article, the author discussed the digital media consideration, the initial development in digital libraries and the long term preservation of digital data. As mentioned in this article digital library is a repository where a significant proportion of content is in the digital form. Which can be indexed and searchable via electronics means which is an advantage over the paper-based information [3]. The difficulty and expense of preserving digital information is a potential impediment to digital library development. Preservation of traditional materials became more successful and systematic after libraries and archives integrated preservation into the overall planning and resource allocation. Digital preservation is largely experimental and replete with the risks associated with untested methods. Digital preservation strategies are shaped by the needs and constraints of repositories with little consideration for the requirements of current and future users of digital scholarly resources. This article discusses the present state of digital preservation, articulates requirements of both users and custodians, and suggests research needs in storage media, migration, conversion, and overall management strategies. Additional research in these areas would help developers of digital libraries and other institutions with preservation responsibilities to integrate long-term preservation into program planning, administration, system architectures, and resource allocation.

A review of the literature on digital or virtual library initiatives demonstrates that challenges are not uncommon as organizations build their resource sharing system. It is important to realize that the STIP community is not alone when encountering difficulties, and to take heart that others have overcome initial problems to build the system they envisioned. The following excerpts illustrate a few of those challenges. Debate about the digital library is clouded by emotion and self-interest. Emotion plays its part because the digital library is seen by some as a threat to the book, and a threat to the book is an attack on culture itself. Self-interest enters the fray because in the instability provoked by the digital library there will be

winners and losers. 3 Depending on your point of view the digital library can be the end of libraries as we know them, or the salvation of libraries as we know them. (Collier, 1997) "What I never dreamed of yesterday, I can't do without today," U.S. Representative George Brown. Richard Luce (1998) voices three concerns relative to the impact of the digital library on users: 1) "supplier-centric" solutions, with each new system requiring its own interface, 2) that it is becoming harder for the librarian to integrate information which the library does not manage, and 3) finally, Luce cautioned about the statistical usage data which librarians are being asked to provide to publishers and which can be mined from usage data collected by computers. There is a serious potential for misuse of this data. (Luce, Elsevier Science Information. 1998) A new library economy will need to be developed. It is not enough to say that electronic information is expensive, without making valid comparisons with the alternatives and measuring the relative cost benefits. These could be intangible. · Licensing versus ownership, over time · Payment by usage versus subscription · Space requirements in the electronic environment · Equipment and communications · People, their changing skills and remuneration · Cooperation with other providers, including the private sector · Income generation, publishing and charging (Collier, 1997) The constant care and feeding of information consumers will continue to be challenging. The time gap between novelty or newness of a technology or service and the expectation and even demand of excellence in utilizing that technology and providing that service has grown shorter. Some examples include: The designer of a successful marketing plan [for libraries] must (1) identify the real values of the organization (in our case our particular laboratory or the broader DOE community) and how those values are described and measured, (2) determine what the web of producer/client relations is and where the library fits best, and (3) work to ensure that the library actually accomplishes what the plan requires. (Trombatore, in Ardis, 1994) Electronic libraries are often labeled "libraries without walls" because they rely on their connection to other libraries, information centers, and sources of data that are not physically within the library itself. [Some are] more correctly described as a library that has only walls--and a few computer terminals. We function as an information convenience store, trying to supply the largest quantity of goods to the largest number of customers in the fastest manner possible. Not surprisingly, we are concerned only with accessing and delivering information, not with preserving it. (Dupuis, in Ardis, 1994) The Web Is Not a Library, but it has the potential to change the most basic foundations of knowledge creation, sharing, and application - worldwide. Millions of people are using the Web as if it were a library. Ways the Web is not a library: 1) the information is not all there; 2) the Web is lacking standards and validation; 3) it has minimal cataloging, i.e., collection structure or organization; 4) it does not yield effective retrieval of information. 4 Predictions of the library's demise coincide with an increase in the use of libraries. It is important to acknowledge that librarians have always had two overriding imperatives: knowledge of the users they serve, and knowledge of recorded knowledge domains. In the expanding knowledge universe, the librarian and information user can be thought of as pioneers exploring new knowledge frontiers.

In 2001, Jewell reported on the selection, licensing, and support of online materials by research libraries and concluded that several libraries had developed local systems for acquiring, managing, and supporting electronic resources. Jewell's report was followed in 2004 by a report from the Digital Library Federation's (DLF) Electronic Resource Management Initiative (ERMI), which "was organized to support the rapid development of such systems by producing a series of interrelated documents to define needs and to help establish data standards." The report went on to provide a road map for ERM.

Between 2003 and 2005, the first commercial ERM systems came to market. However, by 2006, Adlington, in a white paper to Vanderbilt, reported:

On the back end, we continue to rely on methods developed when we had 250 rather than 25,000 eresources. Information on our electronic resources is currently kept in paper files (license agreements), Excel spreadsheets (vendor contact information and administrative passwords), staff web pages (usage statistics), small databases (trial and decision tracking, divisional library resources, technical problem reports), SFX (ejournal holdings), and our ILS (acquisitions and payment data). Few of these systems are connected to each other; in some cases, information is readily accessible only to one or a few individuals, not by intent, but by the limitations of the storage mechanism. Many procedures are not documented and rely on informal channels of communication.

More recently there have been a number of open-source and community ERM systems, such as CORAL and CUFTS, developed by Simon Fraser University (SFU) and implemented by SFU and the University of Prince Edward Island, which view this "technology not necessarily as a way of spending less money, but spending money more wisely."

Another growing area of ERM is the work being performed to develop a suite of standards to support the vast amount of access and management knowledge and myriad of tools needed to maintain adequate access to electronic resources. According to Sarah Glasser, "KBART and IOTA are both working to decrease OpenURL link failures that are caused by metadata deficiencies." In addition, "PIE-J differs from KBART and IOTA because it is not focused on link resolver errors. Formed by NISO in 2010, PIE-J addresses access barriers that arise from the manner in which electronic journals are presented on provider websites."

“Simply put, collection management is the systemic, efficient and economic stewardship of library resources.” The term collection development has been with us since the 1960s. However, it is a constantly evolving area, and as the library collection moves from one dominated by print to one dominated by electronic resources, collection development policies may have been patched rather than redesigned to reflect the different emphasis on delivery. In a 2012 study, Mangrum and Pozzebon found that “over half of the libraries tried to address ER [electronic resources] in some way. However, most policies contain traditional language with a section on library ER inserted into the latter portion of the document.”

In regard to collection development and management trends, the two biggest growth areas are e-book purchasing and purchase-on-demand or patron-driven acquisition models. There has been an explosion in collection management literature on these two topics over the past three to four years. A single place for best practices, or from which a local library can create its own localized best practices, is definitely needed: “Bleiler and Livingston stressed that a lack of established policies and procedures for assessment puts a library at risk for financial loss and recommended that libraries create selection policies and standardized methods for assessment, train staff for contract negotiation, and share strategies, policies, and best practices.”

In addition to changes to the format of delivery of library resources, libraries must also contend with the impact of today’s economic environment. Hazen suggests that libraries need to rethink their collection development in light of these issues and move from collection to collection and content, where content is “a category that encompasses everything to which a library enjoys ready physical or digital access regardless of ownership status [and] is central to all that we do.”

Collins and Grogg cited workflow management as number one in librarians’ top six ERM priorities. They found that “over a third of librarians surveyed prioritized workflow or communications management, and they called it one of the biggest deficiencies (and disappointments) of ERMS functionality.” This area has also been highlighted by the National Information Standards Organization (NISO), which has created a working group, ERM Data Standards and Best Practices Review, to undertake a gap analysis regarding ERM.

In the United Kingdom, the Managing Electronic Resource Issues (MERI) project at the University of Salford aimed “to produce a use case of ERM systems and a preliminary set of requirements for an electronic resource management system, for use by the University of Salford and other HE institutions and system suppliers.” The requirements document from this project went on to inform the SCONUL shared ERM requirements project. An output

of these projects was a set of workflows that describe the various processes involved in managing electronic resources. The University of Huddersfield was one of the sixteen UK universities to take part, and like others, had never actually recorded these workflows until asked to do so by the project. All project members found that by recording workflows, they were able to take advantage of efficiencies discovered as part of documenting the process.

One of the objectives of the TERMS blog and wiki was to collect a number of e-resource workflows from a variety of different types of libraries. Both the University of Huddersfield and Portland State University shared their workflows as part of TERMS. The release of the six TERMS via the blog also encouraged other universities to share their workflows and discuss efficiencies; indeed, “rethinking e-resources workflows and developing practical tools to streamline and enhance various inelegant processes have become the priorities.”

Since the launch of the first draft of TERMS, the project has now attracted interest in various workflows from different libraries around the world, including the University of Cork, Duke University, Florida Gulf Coast University, and Texas A&M University.

A recent press release by Jisc in the United Kingdom suggested that international collaboration is needed to transform ERM in libraries—“Many of the concerns libraries have in the management of electronic resources are the same across the world”—and that projects such as GoKB and the Knowledge Base + service in the United Kingdom “are exploring community-based solutions.”

It is hoped that the content in each of the six TERMS wiki pages, including shared workflows (available under Other Documents), will prepare the electronic resources manager to address this international need to map and understand the e-resources cycle in order to provide seamless access to patrons and create efficiencies in the e-resources workflow.

Kurt Lewin’s work has had a profound impact on social psychology and on experiential learning, group dynamics, and action research (Smith, 2001; Lewin, 1952). Chris Argyris, Peter Senge, Edgar Schein, Warren Bennis, and Rosabeth Moss Kanter have been influenced by Lewin’s theories and applied them in different ways to their own research. The authors (Argyris, 1993; Argyris & Schön, 1978, 1996) examine the process of single and double loop learning. Argyris has developed a theory that takes a dysfunctional organization and by application of the Model 2 theory turns it into an organization that learns and overcomes barriers to organizational change. Model 2, or double loop learning theory, is a strategy for building consensus among individuals in an organization. Double loop learning theory uses the process of interviews to



figure out the dysfunctional behaviors and defensive routines that occur in the organization .

The second level includes the espoused beliefs and values each member holds. Over time the group reflects original beliefs and values, as well as a sense of what ought to be, as distinct from what is (Schein, 2003, p. 28). Bottom line fundamental values that exist in a group, from how the group forms and validates its beliefs, strategies, goals, and philosophies are deeply rooted in the group. Volkan provides an extreme example of how this bond forms in an ethnic situation. Volkan (2004) describes how Slobodan Milosevic used an incident that occurred over 600 years ago to create an emotional bond that led to the ethnic cleansing of another group. Based on shared cultural experiences, Milosevic played on the beliefs, goals, and philosophies common to the Serbian people.

Hernon and Rossiter (2006) studied the emotional intelligence concepts that are relevant to university library directors. Their research involved two different activities for gathering information. They analyzed all of the job advertisements for library directors in College & Research Libraries News from 2000 to 2004 and looked for any mention of leadership skills. Then they interviewed university library directors to compare their career experiences with the information taken from the advertisements.

By comparing the expectations of search committees with the actual experiences of the directors, they suggest which emotional intelligence traits are most useful in academic library management. The authors conclude that identifying these traits and helping to “cultivate the ones deemed most critical” (p. 274) is important for the development of future leaders. Mullins and Linehan (2006) provided a public library context for leadership and management in their study of thirty public library managers in Ireland, Britain, and the United States.

Sager’s (2001) writings on identifying the skills and attributes needed in library administration derive from his work as a library executive recruiter. He has conversed with many library administrators, board members and trustees, search committees, and job candidates and proposes that successful managers need not only the traditional skills that have defined a library manager’s role, but also many newer skills as well. Sager believes that there is “much greater complexity in managing today’s libraries” .

Although his work is based on experience and not research, there is value in his discussion of what he believes are the most important skills and attributes because it is based on his extensive interaction with the groups listed above. Throughout the article “Evolving Virtues,” he also creates his own list of traits that he believes will emerge in the future and ends the article by listing some

methods for library managers to develop these newer skills. Herson, Powell, and Young (2003) conducted research in academic and public libraries to assess the qualities that library directors need in order to be successful in their careers and have written an effective book on the results of their work.

Library Manager is a complete solution of all library related work. It will assist you and simplify your work by an easy interface. It has various features such as printing reports, checking for books not deposited in time, fine control over students, and many more.

Library Manager is library management software that has the interface that which is easy to use by everyone. It can be used personal information system for staff members and students. Books can be easily managed and arranged by using this software. Fine over late deposit of books can be maintained and if whenever require then fine setting and number of books to be issue can be change. Library database can be backed up in any time that the staffs want. It also has other facilities such as printing of different types of reports. Users can also issue/ deposit books, magazine, and others. The software is fully customizable, various setting and visualization can be changed as desired. In this software version, entries of only 100 books, 25 students and 15 staff members can be made. For making further entries, you may need to purchase the full retail version of the software.

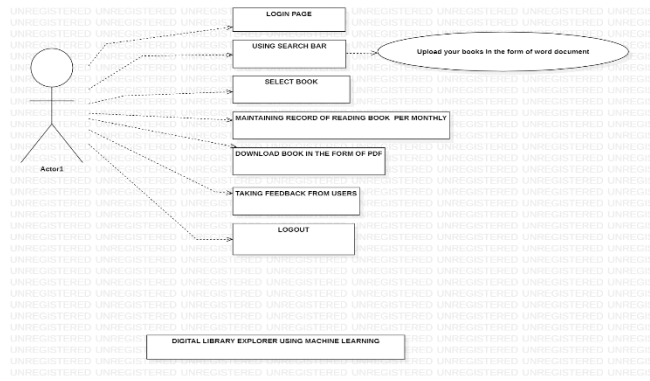
The designer of a successful marketing plan [for libraries] must (1) identify the real values of the organization (in our case our particular laboratory or the broader DOE community) and how those values are described and measured, (2) determine what the web of producer/client relations is and where the library fits best, and (3) work to ensure that the library actually accomplishes what the plan requires. (Trombatore, in Ardis, 1994) Electronic libraries are often labeled “libraries without walls” because they rely on their connection to other libraries, information centers, and sources of data that are not physically within the library itself. [Some are] more correctly described as a library that has only walls--and a few computer terminals. We function as an information convenience store, trying to supply the largest quantity of goods to the largest number of customers in the fastest manner possible. Not surprisingly, we are concerned only with accessing and delivering information, not with preserving it. (Dupuis, in Ardis, 1994) The Web Is Not a Library, but it has the potential to change the most basic foundations of knowledge creation, sharing, and application - worldwide. Millions of people are using the Web as if it were a library. Ways the Web is not a library: 1) the information is not all there; 2) the Web is lacking standards and validation; 3) it has minimal cataloging, i.e., collection structure or organization.



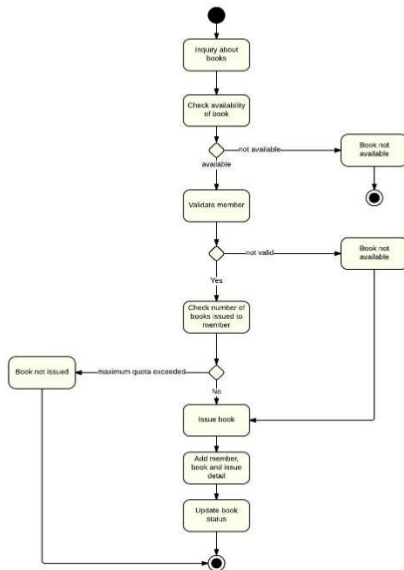
# Chapter 3

## System design

### Use case diagram



### Activity diagram



## Library table from database

Library Software — □ ×

### Library Controls Connect To Database

ISBN:	0133761312	User ID:	1
Title:	Intro to Java Program	Name:	1
Author:	Y. Daniel Liang	Address:	Check Out Book
Book IDs in:	2 3	Search by UserID	Check Out
Book IDs out:	1		Return Book
Search by ISBN			Return
			Check Rentals By User ID
			Check Rentals (User ID only)
			Check Rental by Book ID
			Check Status (Book ID only)

Welcome to the Library Database Control System  
 Connected to Database Server.  
 Book # 1 checked out to user # 1  
 You did not enter the required data  
 Book # 1, Intro to Java Programming (10e), was checked out by John Smith: user ID # 1  
 User # 1 checked out Intro to Java Programming (10e); book # 1

## Admin Table From Database

localhost / localhost / php-jquery\_example / users | phpMyAdmin 3.1.3.1

http://localhost/phpmyadmin/index.php?db=php-jquery\_example&token=7759a7adab...

Server: localhost Database: php-jquery\_example Table: users

Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/> user_id	int(11)			No	None	auto_increment	
<input type="checkbox"/> user_name	varchar(60)	utf8_unicode_ci		Yes	NULL		
<input type="checkbox"/> user_pass	varchar(47)	utf8_unicode_ci		Yes	NULL		
<input type="checkbox"/> user_email	varchar(80)	utf8_unicode_ci		Yes	NULL		

Print view Propose table structure @

Add 1 field(s)  At End of Table  At Beginning of Table  After user\_id

Indexes:

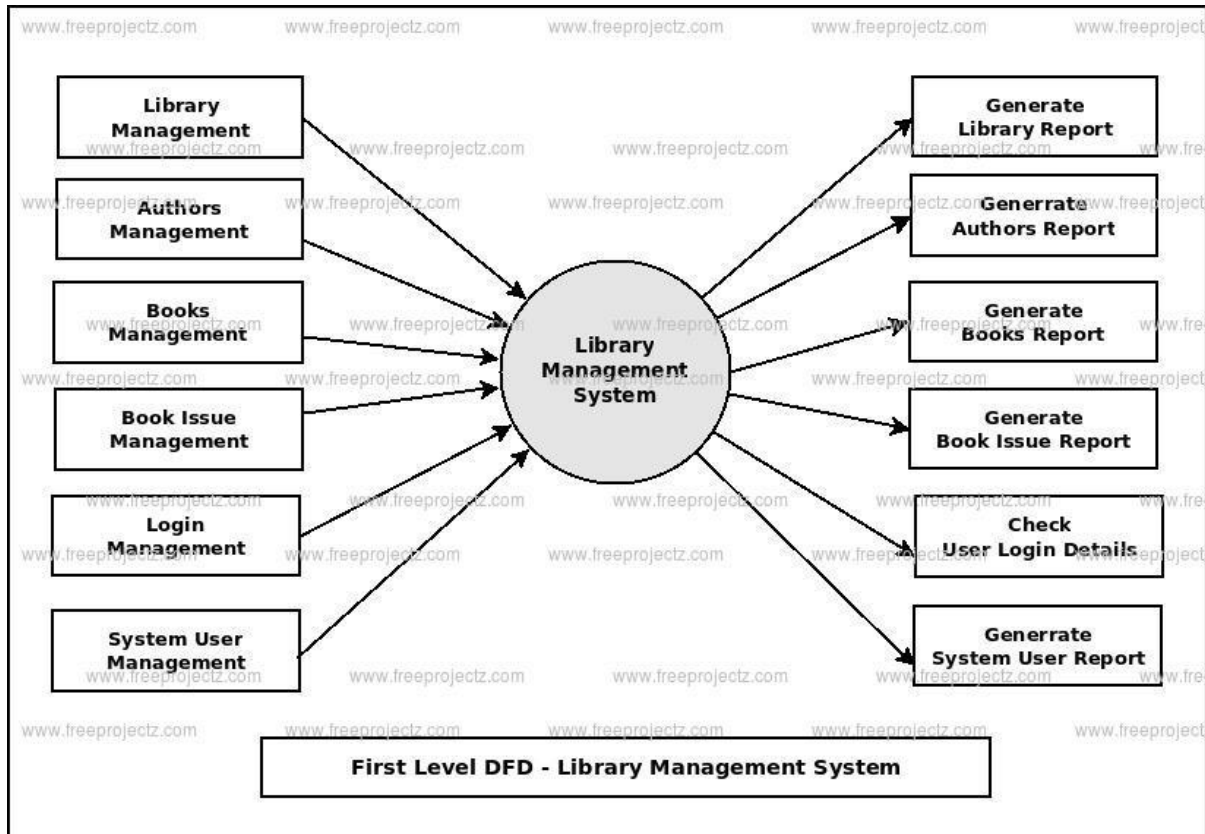
Action	Keyname	Type	Unique	Packed	Field	Cardinality	Collation	Null	Comment
	PRIMARY	BTREE	Yes	No	user_id	1	A		
	user_name	BTREE	Yes	No	user_name	0	A	YES	

Create an index on 1 columns

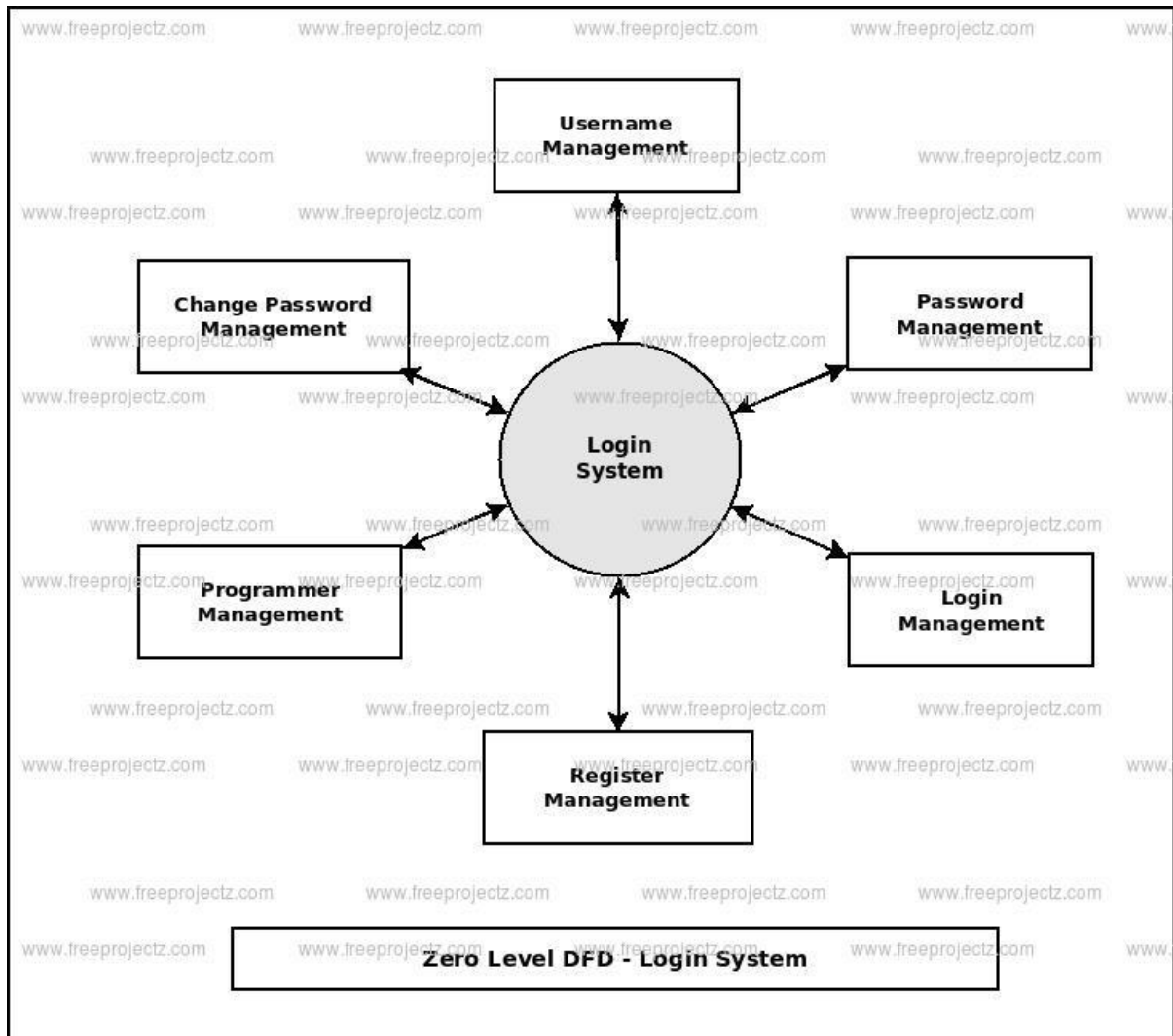
Space usage Row Statistics



# Data flow diagram

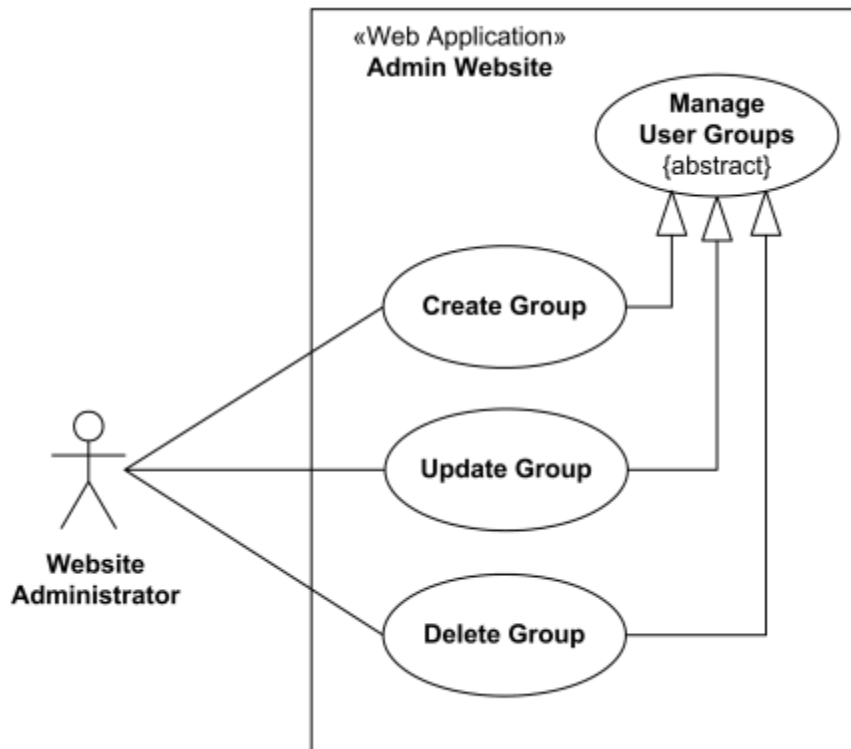


# Data flow diagram for registration





# Admin



## **Chapter 4**

### **Modules Description**

We will focus on the following set of requirements while designing the Library Management System:

1. Any library member should be able to search books by their title, author, subject category as well by the publication date.
2. Each book will have a unique identification number and other details including a rack number which will help to physically locate the book.
3. There could be more than one copy of a book, and library members should be able to check-out and reserve any copy. We will call each copy of a book, a book item.
4. The system should be able to retrieve information like who took a particular book or what are the books checked-out by a specific library member.
5. There should be a maximum limit (5) on how many books a member can check-out.
6. There should be a maximum limit (10) on how many days a member can keep a book.
7. The system should be able to collect fines for books returned after the due date.
8. Members should be able to reserve books that are not currently available.
9. The system should be able to send notifications whenever the reserved books become available, as well as when the book is not returned within the due date.

## The software tools used

The whole Project is divided in two parts the front end and the back end.

HTML- HTML or Hyper Text Markup Language is the main markup language for creating web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like `< >`), within the web page content. HTML tags most commonly come in pairs like some tags represent empty elements and so are unpaired, for example **Error! Filename not specified.**. The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags). In between these tags web designers can add text, further tags, comments and other types of text-based content. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages.

CSS- Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a cornerstone specification of the web and almost all web pages use CSS style sheets to describe their presentation. CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification.

MYSQL- MySQL ("My S-Q-L", officially, but also called "My Sequel") is (as of July 2013) the world's second most widely used open-source relational database management system (RDBMS). It is named after co-founder Michael Widenius daughter, My. The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL

was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation .MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases.

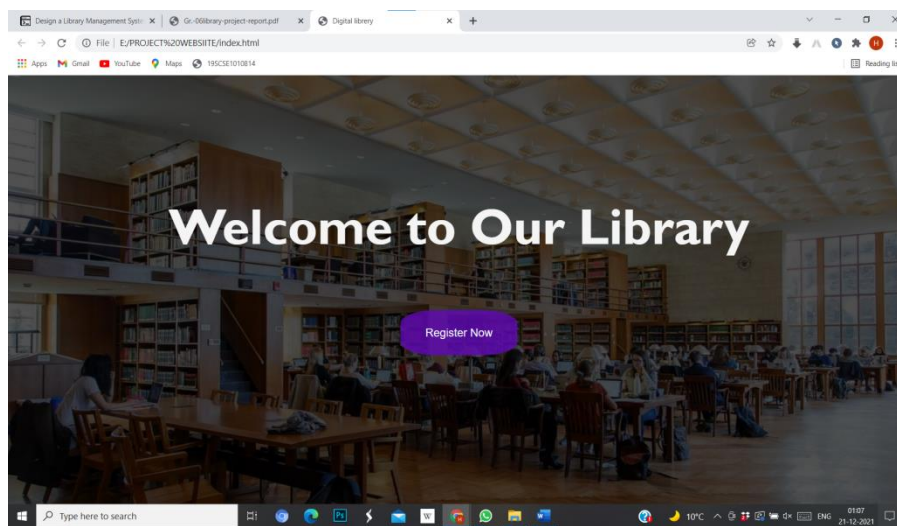
JAVA - Java has been one of the most popular programming languages for many years. Java is Object Oriented. However, it is not considered as pure object-oriented as it provides support for primitive data types (like int, char, The Java codes are first compiled into byte code (machine-independent code). Then the byte code runs on **Java Virtual Machine (JVM)** regardless of the underlying architecture. Java syntax is similar to C/C++. But Java does not provide low-level programming functionalities like pointers. Also, Java codes are always written in the form of classes and objects. Java is used in all kinds of applications like Mobile Applications (Android is Java-based), desktop applications, web applications, client-server applications, enterprise applications, and many more. When compared with C++, Java codes are generally more maintainable because Java does not allow many things which may lead to bad/inefficient programming if used incorrectly. For example, non-primitives are always references in Java. So we cannot pass large objects (like we can do in C++) to functions, we always pass references in Java. One more example, since there are no pointers, bad memory access is also not possible. When compared with Python, Java kind of fits between C++ and Python. The programs are written in Java typically run faster than corresponding Python programs and slower than C++. Like C++, Java does static type checking, but Python does not.

Machine learning – **Machine learning (ML)** is the study of computer algorithms that can improve automatically through experience and by the use of data.<sup>[1]</sup> It is seen as a part of artificial intelligence. Machine learning algorithms build a model based on sample data, known as training data, in order to make predictions or decisions without being explicitly programmed to do so.<sup>[2]</sup> Machine learning algorithms are used in a wide variety of applications, such as in medicine, email filtering, speech recognition, and computer vision, where it is difficult or

unfeasible to develop conventional algorithms to perform the needed tasks.<sup>[3]</sup>

A subset of machine learning is closely related to computational statistics, which focuses on making predictions using computers; but not all machine learning is statistical learning. The study of mathematical optimization delivers methods, theory and application domains to the field of machine learning. Data mining is a related field of study, focusing on exploratory data analysis through unsupervised learning.<sup>[5][6]</sup> Some implementations of machine learning use data and neural networks in a way that mimics the working of a biological brain.<sup>[7][8]</sup> In its application across business problems, machine learning is also referred to as predictive analytics.

### Screenshots of registration form



After entering to the home page of the website , student can choose the **USER LOGIN** option where they are asked to enter username & password , and if he/she is a valid user then a student login page will be displayed.

The aim of the system testing process was to determine all defects in our project .The program was subjected to a set of test inputs and various observations were made and based on these observations it will be decided whether the program behaves as expected or not. Our Project went through two levels of testing 1.Unit testing 2.integration testing.

Unit testing is undertaken when a module has been created and successfully reviewed .In order to test a single module we need to provide a complete environment ie besides the module we would require

- The procedures belonging to other modules that the module under test calls • Non local data structures that module accesses
- A procedure to call the functions of the module under test with appropriate parameters Unit testing was done on each and every module that is described under module description of chapter 4 1. Test For the admin module
  - Testing admin login form-This form is used for log in of administrator of the system.In this we enter the username and password if both are correct administration page will open other wise if any of data is wrong it will get redirected back to the login page and again ask for username and password
  - Student account addition- In this section the admin can verify student details from student academinc info and then only add student details to main library database it contains add and delete buttons if user click add button data will be added to student database and if he clicks delete button the student data will be deleted
  - Book Addition- Admin can enter details of book and can add the details to the main book table also he can view the books requests .

Test for Student login module

- Test for Student login Form-This form is used for log in of Student .In this we enter thelibraryid, username and password if all these are correct student login page will open other wise if any of data is wrong it will get redirected back to the login page and again ask for libraryid, username and password.
- Test for account creation- This form is used for new account creation when student does not fill the form completely it asks again to fill the whole form when he fill the form fully it gets redirected to page which show waiting for conformation message as his data will be only added by administrator after verification.

Test for teacher login module

Test for teacher login form- This form is used for logg in of teacher .In this we enter the username and password if all these are correct teacher login page will open other wise if any of data is wrong it will get redirected back to the login page and again ask for username and password.

In this type of testing we test various integration of the project module by providing the input .The primary objective is to test the module interfaces in order to ensure that no errors are occurring when one module invokes the other module.

## Chapter 5

### Result

Library staff looks to these managers to help them navigate through the rapid changes that are occurring in public libraries as these changes in technology, roles, and user expectations strongly alter their daily routines of public service. Contemporary library managers need a wider array of skills and attributes than their earlier and more traditional counterparts and will need to seek continual professional development to remain effective as public libraries transition into the twenty-first century.

These managers will also need to distinguish between management and leadership skills and learn to identify and mentor leaders within their staff who can assist in the transition. This paper is a brief scan of the literature currently available on managing libraries and includes information on academic as well as public libraries due to the above-mentioned lack of public library material. Weiner reviewed the literature extant on leadership in academic libraries and surveyed materials on “recruitment, leadership potential identification, career development, roles and responsibilities, and characteristics and management style”

Online library system makes possible to create a digital library with proper cataloging features. It's the system which helps top arrange and present books in proper manner with inline searching facility. Using this system, you are free to store unlimited number of books and other study materials online with advanced security features to access these resources. It's the system which will store detailed records of all your books. To make searching process easier, while creating a catalog, you are being provided with adding title and descriptions for particular book to make searching by keywords possible.



## **Chapter 6**

### **Conclusion**

Significant changes seen by society through the transmission of information around the globe and it is accountable to the evolution of information technology. Now it is possible to archiving and accessing knowledge in the digitized form besides preservation of traditional knowledge due to use of information technology. Demand for electronic information increasing day by day and at the same time traditional format of library becoming more and more expensive and complex to maintain. Now it is time for libraries to capitalize these challenges and meet demands and expectations of digital users. Libraries has to redesign their services to create value addition to satisfy the user's community.

Online library system makes possible to create a digital library with proper cataloging features. It's the system which helps to arrange and present books in proper manner with inline searching facility. Using this system, you are free to store unlimited number of books and other study materials online with advanced security features to access these resources. It's the system which will store detailed records of all your books. To make searching process easier, while creating a catalog, you are being provided with adding title and descriptions for particular book to make searching by keywords possible.

This website provides a computerized version of library management system which will benefit the students as well as the staff of the library. It makes entire process online where student can search books, staff can generate reports and do book transactions. It also has a facility for student login where student can login and can see status of books issued as well request for book or give some suggestions. It has a facility of teacher's login where teachers can add lectures notes and also give necessary suggestion to library and also add info about workshops or events happening in our college or nearby college in the online notice board.

There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility , a feature Of group chat where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfills each users need in the best way possible.

After we have completed the project we are sure the problems in the existing system would overcome. The "LIBRARY MANAGEMENT SYSTEM" process made computerized to reduce human errors and to increase the efficiency. The main focus of this project is to lessen human efforts. The maintenance of the records is made efficient, as all the records are stored in the ACCESS database, through which data can be retrieved easily. The navigation control is provided in all the forms to navigate through the large amount of records. If the numbers of records are very large then user has to just type in the search string and user

gets the results immediately. The editing is also made simpler. The user has to just type in the required field and press the update button to update the desired field. The Books and Students are given a particular unique id no. So that they can be accessed correctly and without errors. Our main aim of the project is to get the correct information about a particular student and books available in the library. The problems, which existed in the earlier system, have been removed to a large extent. And it is expected that this project will go a long way in satisfying users requirements. The computerization of the Library Management will not only improves the efficiency but will also reduce human stress thereby indirectly improving human recourses.

We also note that the two open source systems lag behind proprietary systems in terms of customer-facing APIs that result in tangible activities which extend functionality or enable interoperability. While the open source model may offer many other advantages, we see fewer APIs designed for library customer use and a much lower level of activity among libraries executing projects that make use of this approach. This trend has much to do with the demographics of the libraries using the software.

The evidence gathered in this report reflects ongoing progress toward more openness in library automation systems, but also that much work remains. We see a variety of options and opportunities. Libraries that expect to work with their automation system as delivered and not become involved in local extensions or programming will find that the majority of systems were built for that kind of use. For libraries that want to do more with their automation systems, however, we see a great deal of functionality possible today through open.

The hype persists. Library automation systems, proprietary and open source alike, compete more and more on the basis of enabling libraries to do more with their systems. That competition for openness drives the development of the technologies that enable that capability. The reality is still a bit messy. While we've seen a great deal of functionality exposed through Web services and other APIs, it still takes a lot of hard work to use the APIs in ways that benefit the library. The APIs available to library programmers continue to be quirky and less than comprehensive, even from the vendors with the strongest offerings in this area. We can also tell by the information received that vendors and libraries alike see the need to make systems more open. Hopefully, a better reality will evolve over time.

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- 2) <https://www.makeuseof.com/tag/websites-aid-daily-routine/>
- 3) <https://in.pcmag.com/web-sites/72977/10-sites-you-have-to-check-every-day>
- 4) <https://buffer.com/resources/daily-success-routine/>
- 5) <https://www.calendar.com/blog/what-are-the-advantages-of-scheduling/>