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## 1 Introduction

Our R&D has been hired by the APIIT SD INDIA to make a library management system. Our system is going to be based on the HCIU principles. We have to make a fully functional system for the library of the college. The working of the library is too complex i.e. maintaining the piles of records makes it difficult for the librarian to handle it. So to reduce the complexity we are going to make a user friendly system and its interface is based on the principles of HCIU.

The system will be based on the design principles, and will achieve usability goals. We have kept in mind a wide range of users for our system. We will do the analysis of the stakeholders to know the persons or group of person affected by our system or the person who do have indirect interest in our system. The market is full of Library Management Software's so we have to the competitive analysis of the libraries to find the usability goals achieved by the other system and how our system is going to achieve those.

The functionalities of the system will include the interface for the librarian and student as well.

The librarian will have the power to add the book, renew the book, return the book, and issue the book to student. The librarian will manage the whole library by maintaining the records of the book, maintaining the records of students. So we have to provide the functionality of the librarian to the system. The students will also have the functionality of viewing the history of the books issued, the reserved book in the account, student can view the fine issued. So these are the functionalities of the system.

We are going to introduce a better interface which will not only provide the full functionality of the system but also provide the user with the simplest interface and easy steering to the menus and sub-menus. The interface will be deliberated by following all the principles, rules and guidelines to develop or build a good Website concepts of HCI.

## 2 User profiling:

User Profiling is basically the process of establishing the knowledge of different types of users. User profiling is critical process that refers to creation of a profile via the extraction from a set of data. The various assistances of user profiling are Stakeholder Analysis, Data Gathering Techniques and Task Analysis.

“According to Boutelle (2004) of identifying and categorizing your user audience, gathering their statistics and then producing a user role for each individual.”

User profiling helps us reduce the chances of system failure because successful system comprised of both user requirement as well as the system requirement. It is done to find out answer of the three basics question.

### 2.1 Question to which we targeted to find answer

- I. Who are our users?
- II. What is goal of users for product?
- III. What are the tasks required to achieve the goal?

### 2.2 Literature review

Literature review or Secondary research is based on the finding of other people research. We do secondary research to find more information about the system and key term associated with the system. It is also done to understand the functionality, basic terminology and working process of the system.

We are going to do the secondary research for making library management system. In which we are going to find answer of the following question:

- I. Functionality related to the library management system and how it works.
- II. Terms or keywords related to library management system.

We are search on internet, journal and books to find the relevant answer of the following questions:

- I. Functionality related to the library management system and how it works.

Discusses: library management system has of many functionality with the help of which librarian performed his activity. After studying various sources like book management of library: a spec kit, mimage website the features of library management system:

- Manage book: Librarian can easily add, update, and delete the record of books and details of CD/DVD.

- Categorization of user: Librarian can categorize the users in a specific group like student, teacher, and non teaching staff.
- Calculate fine: The system provides features to Librarian that he/she can make different rules for different types of user and merge to the system.
- Manage members: System can manage the records of member of the library.
- New registration: System gives facility of new member registration.
- Issue books
- Return book
- Generate report of different level
- Acquisition: Ordering, receiving and invoicing materials.

## II. Terms or keywords related to library management system.

- Accession number: It is a unique number assigned to a book in the order in which it is added to the library collection and it is maintained by the librarian. Librarian assign accession numbers in continuous numeric sequence but it is also assigned to indicate the types of the books or item and year of accession (Gupta, 1994).
- Cataloguing: It contains all the important details about the books or CD/DVD with date by which books can be located on the shelves of the library (Netugc.com, 2013).
- ISBN: It stands for international standard Book Number. It is a unique number of 9 or 13 digits used to identify the book. It is issued by Raja Ram Mohan Roy National agency for ISBN in India (Gupta, 1994)..
- Class number: The Dewey Classification system(DDC) gives a number to each book based on its subject matter. It ensures books on the same subject are near each other on the shelves (Ipl.org, 2013).
- OPAC: It stands for online public access catalog. It is a online database managed by the library and used to search a library catalog to find the books in the library. It has following functionality (Cordeiro and Dahl et al., 2005):
  - Find: To find or search entities according to user's criteria.
  - Identify: To identify an entity.
  - Select: To select appropriate result for user.
  - Obtain: To acquire access to the entity described.

## 2.3 Competitive analysis to gather the requirements

Koha Library management system: Koha is open source integrated library management system which is developed in New Zealand at Horowhenua trust.

Advantages of koha:

- It is fully featured modern integrated library management software.
- It is OS independent i.e. it runs at any platform like window, Linux.
- Universal icon is used so that user can easily understand and locate the functionality.
- Fully catalog, library stock management, acquisitions.
- All frequently use function kept at one place.
- Important links are provided at the top of the home page.
- Fast and powerful searching of all the metadata.
- Scanner facility: Since it is work on web browser thus we use any pc supported scanner.
- This is best for institutes who can't afford the cost of some heavy tool.

Disadvantages of Koha:

- Student can't access the system to search and for viewing the details.
- It should take high bandwidth to operate.
- Customization is not grate as commercial system.
- Unfeasible for large and complex library.

## 2.4 Data gathering methods

### Questionnaire:

A questionnaire is a list of written questions that can be done either presence of researcher or absence of researcher. (Google.co.in, 2013)

**Firstly:** Respondents could be asked to complete the questionnaire with the researcher not present. This is a postal questionnaire and (loosely) refers to any questionnaire that a respondent completes without the aid of the researcher.

**Secondly:** Respondents could be asked to complete the questionnaire by verbally responding to questions in the presence of the researcher. This variation is called a structured interview.

Questionnaires are restricted to two basic types of question:

- Closed-ended (or “closed question”) is a question for which a researcher provides a suitable list of responses (e.g. Yes / No). This produces mainly quantitative data.
- Open-ended (or “open question”) is a question where the researcher doesn't provide the respondent with a set answer from which to choose. Rather, the respondent is asked to answer "in their own words". This produces mainly qualitative data.

Strength	Weaknesses / Limitations of Method
I. It is Practical. II. Large amounts of information can be collected from a large number of people in a short period of time and in a relatively cost effective way. III. Can be carried out by the researcher or by any number of people with limited affect to its validity and reliability. IV. The results of the questionnaires can usually be quickly and easily quantified by either a researcher or through the use of a software package. V. Can be analyzed more 'scientifically' and objectively than other forms of research.	I. Limited amount of question is to be asked. II. Lacks validity III. There is no way to tell how truthful a respondent is being IV. There is no way of telling how much thought a respondent has put in V. The respondent may be forgetful or not thinking within the full context of the situation VI. People may read differently into each question and therefore reply based on their own interpretation of the question i.e. what is 'good' to someone may be 'poor' to someone else, therefore there is a level of subjectivity that is not acknowledged (Learning, 2009)



### 2.4.1 Questionnaire with Librarian

Dear Respondent,

We are having an assignment in which we have assigned task to develop the Library management system. Therefore for getting required and appropriate information about library system we are doing a survey.

You are requested to respond to the statements in the following questionnaire. This questionnaire is about to information needs regarding the Library Management System. Instructions are given for all set of questions. Please follow the instructions carefully. Please ensure that you respond to every question.

#### PERSONAL INFORMATION IN DETAILED

##### Section A

1. Name of the respondent: .....
2. Age:
  - a. 21-30 [     ]
  - b. 31-40 [     ]
  - c. 41 & above [     ]
3. Educational qualification .....
4. E mail address .....
5. Contact Number .....

##### Section B

1. On Which type of library management system you are working?
  - a. Window based [     ]
  - b. Web based [     ]
  - c. Both [     ]
  - d. None of these [     ]

➤ The purpose of this question is to know that which type of system they use most.
2. Have you any problem with graphical interface of system?
  - a. Yes [     ]
  - b. No [     ]

➤ The purpose of asking this question to know about the interface of library management system. Whether the system interface is eye pleasing or not.
3. Can you find all functionality easily through your system?
  - a. Yes [     ]
  - b. No [     ]

- The purpose of this question is to know whether the most frequent function is on homepage or not.
- 4. Can you change the language of system?
  - a. Yes [      ]
  - b. No [      ]
- The purpose of having this question to know where the system supports other language rather than English.
- 5. Do you navigate the website easily?
  - a. Yes [      ]
  - b. No [      ]
- The purpose of having this question to know where the system is having any help to operate the site.
- 6. Whether the system is having the facility of increase the size of text.
  - a. Yes [      ]
  - b. No [      ]
- The purpose of having this question is to know that whether user can increase the size of specific text.
- 7. What are the criteria to search any book if user asked for?
  - a. Title of book [      ]
  - b. Subject of book [      ]
  - c. Author [      ]
  - d. Publication [      ]
  - e. ISBN [      ]
  - f. All [      ]

Note\*: ISBN – International Stander Book Number, It is a unique number for book.

- The purpose of asking this question to know that category of searching the book.
- 8. What is the time period of return the issued book?
  - a. 3 days [      ]
  - b. 7 days [      ]
  - c. 15 days [      ]
  - d. One month [      ]
- The purpose of having this question is to get function of library.

9. Does the return date of issued book vary from user to user?

- a. Yes [ ] for whom .....
- b. No [ ]

➤ Asking of this question is to get the function of library about issuing the book.

10. Can any user renew their issued book?

- a. Yes [ ]
- b. No [ ]

➤ Asking of this is to know that can any user renew their issued book from website only while accessing the website.

11. Your system is providing the advance search of books?

- a. Yes [ ]
- b. No [ ]

➤ The purpose of asking this question to know that any user can use multiple search option.

12. Does your system providing any help for user?

- a. Yes [ ]
- b. No [ ]

➤ The main purpose of asking this question is to know help section is necessary to give on website.

13. Does there any fine system for late submission of books?

- a. Yes [ ]
- b. No [ ]

➤ The purpose of having this question to get the information about the fine system.

14. Does fine vary time to time?

- a. Yes [ ]
- b. No [ ]

➤ To know that the fine vary time to time so that to calculate the fine and procedure to find

15. How much books can user issued at once?

- a. Maximum One Books [     ]
- b. Maximum Three Books [     ]
- c. Maximum Six Books [     ]
- d. Maximum Ten Books [     ]

➤ To get the information about maximum number of book issue.

**Signature of Respondent**

.....

**Date:**

**“Thank You for Your Cooperation”**

### 2.4.2 Questionnaire with student

Dear Respondent,

We are having an assignment in which we have assigned task to develop the Library management system. Therefore for getting required and appropriate information about library system we are doing a survey.

You are requested to respond to the statements in the following questionnaire. This questionnaire is about to information needs regarding the Library Management System. Instructions are given for all set of questions. Please follow the instructions carefully. Please ensure that you respond to every question.

#### PERSONAL INFORMATION IN DETAILED

##### Section A

6. Name of the respondent: .....
7. Age:
  - d. 21-30 [     ]
  - e. 31-40 [     ]
  - f. 41 & above [     ]
8. Educational qualification .....
9. E mail address .....
10. Contact Number .....

##### Section B

1. Have you ever access the library management website?
  - a. Yes [     ]
  - b. No [     ]

➤ The purpose of asking this question to know that respondent is aware of any library website or not.
2. Do you navigate the website easily?
  - a. Yes [     ]
  - b. No [     ]

➤ The purpose of asking this question is to get the information about the visibility of every links.
3. Have you ever try to change the language of library website?
  - a. Yes [     ]
  - b. No [     ]

- The purpose of having this question to get the information about that any website is having facility to change the language.
- 4. Does every link is understandable and meaningful?
  - a. Yes [      ]
  - b. No [      ]
- The purpose of having this question is to know that any universal icon is used to define the link and their purpose.
- 5. Have you ever search the book using the advance search?
  - a. Yes [      ]
  - b. No [      ]
- The purpose of having this question is to get that every website is having the option of advance search.
- 6. How do you renew the book?
  - a. From Library [      ]
  - b. From Website [      ]
- The purpose of asking this question to know that user can issue the book from website.
- 7. Can you read the e-book from the library website?
  - a. Yes [      ]
  - b. No [      ]
- This question is asked to get the information to whether student access the e-book.
- 8. How do you pay the fine?
  - a. To accountant [      ]
  - b. To library [      ]
  - c. Pay From Website [      ]
  - d. None [      ]
- We want to get the information that how to pay.

### 2.4.3 Interview

An **interview** is a direct face-to-face attempt to obtain reliable and valid measures in the form of verbal responses from one or more respondents. It is a conversation in which the roles of the interviewer and the respondent change continually. (Learning, 2009)

Advantages	Disadvantages
<ol style="list-style-type: none"><li>1. Allows the interviewer to clarify questions.</li><li>2. Allows the informants to respond in any manner they see fit.</li><li>3. Allows the interviewers to observe verbal and non-verbal behavior of the respondents.</li><li>4. Very good technique for getting the information about the complex, emotionally laden subjects.</li><li>5. Can be easily adapted to the ability of the person being interviewed. (Mbaofficial.com, 2012)</li></ol>	<ol style="list-style-type: none"><li>1. Unstructured interviews often yield data too difficult to summarize or evaluate.</li><li>2. Time consuming and cost effective.</li><li>3. It not easy to find experienced interviewee. (Okstate.edu, 2010)</li><li>4. Requires highly skilled interviewer.</li><li>5. May sometimes involve systematic errors.</li></ol>

**Interview with Librarian:**

1. How do you store books record in your system?
  - We are having the form filling criteria for adding the books in the library. As per the book is to add so we go through the form filling process.
2. Have you any catalog to store the books details in your system? Please give details about the catalogs of your system. Can you give me some idea about catalog features?
  - Yes, we are having every types of catalog to keep record and store the books into the system. First we add each detail about books, such as author name, title of book, publication name and year, purchasing date, no of copies and more.
3. In Library each books is having unique id? How do you generate the unique id for book?
  - To generate the unique id there is rule we go through that rule and follow step by step process and then generate the unique id for book. Generally library science student know to generate the unique id for any book. In library science it is known as ISBN.(International Standard book number)
4. Do you generate report? Which type of report you generate?
  - Yes, we generally generate report for added the books and issued books and fines.
5. Does your system work on internet? If yes then which browser is more compatible? If no then can you enhance it to access from internet also?
  - Yes, Mozilla Firefox is more compatible for my system.
6. Does your system work on mobile? If yes, do all features work on mobile also?
  - No, our system not works properly on mobile.
7. Does your system having access specification for different users?
  - For different user there is login process for different type of users.
8. Who provide the username and password for librarian? Which types of characters are allowed for the username and the password?
  - Administrator provides username and password for each user. Username and password should be of combination of numeric, character and special character also.
9. Does your system having different user category? How do you differentiate them?
  - Yes, we differentiate by the help of their username because the username is always a unique which is provided by institution only.
10. Have you made any rules for the system and the users?



- Yes, User can not issue more than 6 books and one time renew is there late submission is having the penalty process so user should to pay for that.
11. Is something unique functionality or feature in your system? If yes state them.
- User can change the language of system, and change the size of text and more..
12. Can you want any enhancement in the features of your system in future? If yes then give suggestion?
- I want to put the rating system in my system so that user can rate the site after going through the website.

#### 2.4.4 Observation

It is the fundamental way of finding out the world around us. It allows the researcher to study the people in their comfort environment to understand the things from their point of view. (Baker, 2013, pp. 171-189)

The purpose of observation is not just looking and listening for data collection. It simply defined “systematic enquiry made public” (Stenhouse, 1975). It said systematic where it provides reliable and quantifiable data or it is some way selective. In order to make observation “public” means what we see and listen has to be recorded to analyze (Strath.ac.uk, 2013).

**Advantages of observation:** (Kothari, 2006, p. 96)

- It is real world data, not data from lab study. So no duplicity.
- It is free or independent of respondent’s willingness to respond.
- Subjective bias is eliminated.
- This method is suitable in studies which deal with subjects who are not capable of giving verbal reports.

**Disadvantage:** (Kothari, 2006, p. 96)

- It is expensive method.
- It provides very limited information.
- Unforeseen factors may interfere with observation.

## Observation Sheet 1

**Record Id:** 5656LMS

**Date:** 4 Oct 2013

**Time:** 11:10 AM

**Location:** APIIT SD INDIA, Panipat

**Observing Condition:**

- How efficiently librarian works on system?
- Steps follow by librarian to issue/return book, manage books.

**Conclusion:**

- Most of the times students came to issue the book then the librarian would issue the book to the student as per request.
- I observed that the librarian was updating the account of the student and was adding the book issued.
- Also there was a limit of only six books to be issued to a student so the librarian refused to issue a book when a student wanted to issue the book.
- The student came to return a book to the librarian and the book was issued only for seven days so the student exceeding the given period of keeping the book was charge with fine of Rs 1 for 1 week and Rs 2 for 2<sup>nd</sup> week and soon.
- Also I observed that a student could renew the book but only for one time.
- The fine was being calculated for late return of the book and was updated with the student's account.

## Observation Sheet 2

**Record Id:** 5657LMS

**Date:** 5 Oct 2013

**Time:** 11:10 AM

**Location:** PIET, Panipat

### Observing Condition:

- How efficiently librarian works on system?
- Steps follow by librarian to issue/return book, manage books.

### Conclusion:

We visited library of another college to gather data about the functionalities of library management system with the help of observation. This time we have visited the PIET (Panipat Institute of technology). Through observation we are able to gather a huge amount of data.

- This system was entirely different from the library we visited earlier of APIIT SD INDIA in terms of functionalities.
- The students came mainly to issue the book, and then the librarian searches the student's account on the system and then issues the book to the student.
- The system was responding a bit slow so the librarian was facing difficulty to issue a book.
- The student also requested to renew the book but here the books was issued for two weeks.
- The librarian was updating the student's account when the students returned the book and accordingly calculating the fine.
- The fine was Rs 5for late submission of the book and it increased twice per week.
- It was a good experience in the library though it was very useful for our further research.

## 2.5 Conclusion for data gathering method

### 2.5.1 Conclusion of questioner for Librarian

After having the questionnaire session with numbers of librarian we conclude that web based Library management system is better than window based library management system. System should be easily accessible. User can easily navigate the system. Any type of user can easily access the system. System should have some feature so that user can change the color of whole system or the specific text. User can make the text bold. System should have the function of changing language of the whole system so that user can change the language to their respective language. System should have some live help section so that user can chat to the librarian also. System interface should have color combination which is pleasing to eye neither dark on dark nor light on light. System should have most frequent functionality on home page only. We can say that hidden functionality would not be most frequent functionality. System must have the advance search option for book. Every link should be understandable and meaning full. Every link should work properly. There should be option to rate you site by the user also.

### 2.5.2 Conclusion of questioner for Student

After having questionnaire session we conclude that user wants the effective system. We get what are the functionality should be on website so that user can access the data. Such as: To search the book either by the advance search, or specific search. Student can see their issued record. Student should have help section to know the system. Send the mail to librarian with question while facing problem with system.

### 2.5.3 Conclusion of Interview

After having the interview session with head of librarian we know that to store the book and about catalog and their functionality and what are the function going inside the library. Every system is having their rule which is followed by every members and users. Every book is having their unique id and book is issued with the help of ISBN of book. System should have functionality to renew the books from the website and having the function of changing the font size, color, to bold the text. We concluded that any system should have their functionality to add books, update books, add users, update users detail, search books and help section.

## 2.6 Concluding user profiling

- I. Head Librarian: Head librarian interacts 100% of the functionality of the system. He/She has to login before work with the system. This provide authentication to head librarian.

<u>Physical characteristics</u>	<u>Physical report according to user</u>
1. Background	<b>Education</b>
2. Skill	<b>Ability to troubleshoot the problem, Easily learn new technology, evaluate the need of all the users.</b>
3. Language	<b>English, Hindi</b>
4. Age	<b>30-35</b>
5. Education	<b>Master's Degree in Library Science</b>
6. Experienced	<b>5-7</b>
7. Preferences	<b>B.A(English), good communication skills</b>

**Goal:** Work with all the functionality of the system like Control financial activity, Create weekly/monthly/yearly reports, issue/return books, take quotation, purchase books.

**Task:** The task of head librarian within the system is categorizing of books, add/update/delete/search the book records and student list, generating different types of records. Insert selected quotation details in the system.

- II. Library Assistants: He/she is work with limited functionality of the system.

<u>Physical characteristics</u>	<u>Physical report according to user</u>
1. Background	<b>Education and technical</b>
2. Skill	<b>Some knowledge about computer and internet, Easily learn new technology</b>
3. Language	<b>English, Hindi</b>
4. Age	<b>22+</b>
5. Education	<b>B.A(English) or BCA</b>
6. Experienced	<b>Minimum 1 year</b>
7. Preferences	<b>Good interaction skills</b>

**Goal:** The goal of library assistance is to issue/return book, calculate fine, search book.

**Task:** Assistance librarian can only issue and return book to the students or other staff and search the book , check availability of books and also see some reports.

### III. Expert Student:

<u>Physical characteristics</u>	<u>Physical report according to user</u>
1. Background	<b>Educational</b>
2. Skill	<b>Good knowledge about Computer</b>
3. Language	<b>English</b>
4. Age	<b>17+ year</b>
5. Education	<b>Matriculation, intermediate or student related to IT branch</b>

### IV. Novice Student:

<u>Physical characteristics</u>	<u>Physical report according to user</u>
1. Background	<b>Educational</b>
2. Skill	<b>less knowledge about Computer</b>
3. Language	<b>English</b>
4. Age	<b>1-16 year</b>
5. Education	<b>1 to 7 class student</b>

**Goal:** The main goal of student to request to issue the books, search the book and get book availability details, see his fine or return date of the book.

**Task:** Student can able to send query about books, search the books by book title, name or category, and see his details.

### V. Teacher








The organization has teaching and non teaching staff. Teaching staffs are who teach the student and non teaching staffs are the staffs who are member of the organization but do other work rather than teaching like program coordinator, event coordinator. Teacher have highly qualify person and their age is in between 20 to 60 year.

**Goal:** Teacher will able to issue the book for limited time period, search the book and get availability details.

**Task:** Firstly teacher has to search the book, if book is available then he has give a request to issue the book and book will be issued to the respective teacher.

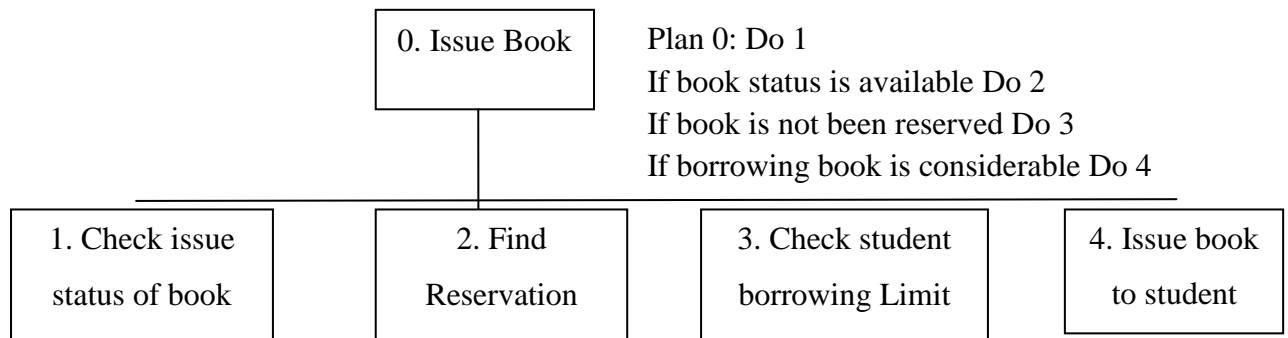
## 2.7 Metaphor

The use of one object to represent other is called metaphor. It is basically a conceptual model used mostly in graphical user interface to map the real time object into the system. For example if we are going to develop an educational website, we can use traditional metaphors like scheduling, tutorials, video lecture. (Usabilitybok.org, 2013)

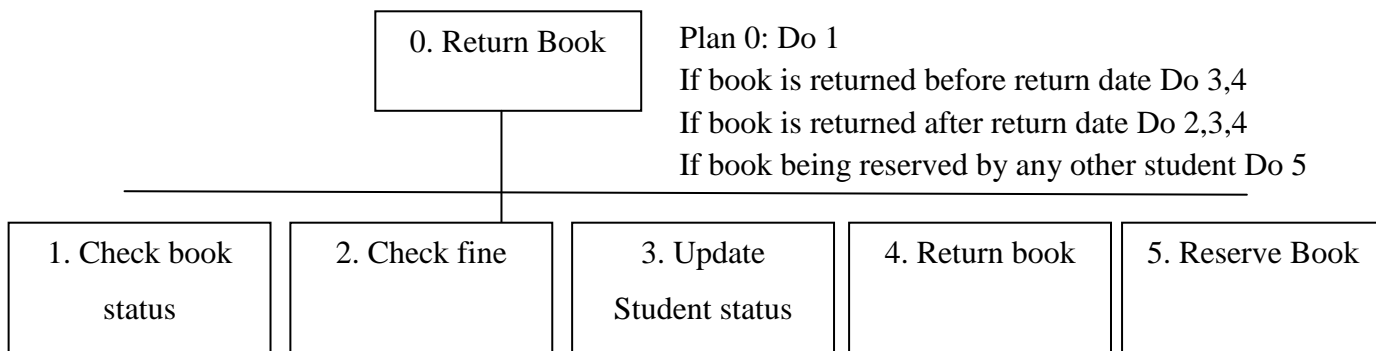
1		It is image icon indicating home symbol through which user directly understand that if he wants to go to home page of the system he can reach there through this icon. It is universally accepted symbol for home.
2		It is indicating the history symbol. Through this symbol user can see his/her history.
3		This icon indicating a person. In our case we used this symbol for student profile.
4		We know that mobile symbol is used for contact. Thus this symbol is used for contact to librarian.
5		Question mark is used whenever we do not know. Thus it is best to use as Help symbol. User can see the icon and understand what the meaning of the icon.
6		A magnifier is used for searching the thing. It is universally accepted.
7		This icon is used for give rating to the contents in many website. Thus we are decided to use this icon in our system.

## 2.8 Task Analysis

### I. Task analysis for issuing a book



### II. Task analysis for or returning a book





## 2.9 Human factors

It can have a major impact on the software development process and quality of software produced. It is focus on range of different topics including human error, human capability and human computer interaction (Cherry, 2013). It is important because different users have different way to learn the things and different interaction skills. Cultural and national differences play a part (Searchcio-midmarket.techtarget.com, 2013).

### 2.9.1 Types Of human factor:

- I. **Physiology:** It is related to human physical capabilities. It mainly includes the visual and audio properties of the screens such as color, Brightness, contrast. For Example
  - Human reaction time: Message with sound being more effective than simple message. Human gives more attention to sound rather than textual message.
  - Speed of accuracy of the movement: The mouse movement should be accurate that human can control it easily.
  - The sizes of the keyboard keys are not smaller than user finger size.
- II. **Cognition:** It affect the system develop on human brain. It refers to development of system modeled after the human brain. It means how people/system thinks, remember and learn the things by its own. Cognition refers to the process by which the users become familiar with things or in other words it's the process by which a human can gain knowledge.

According to George Miller's (1956) theory (Psychologicalscience.org, 2013),

$7 \pm 2$  chunks of information can be held in short – term memory at any time.

- III. **Perception:** It is about how a person perceives input. It is categorized in three categories
  - a. Auditory Perception: It is the ability of person to perceive and understand sound.
  - b. Haptic (touch) Perception: Through the touch of the object person can recognize the object.
  - c. Visual Perception: People think that the action is happening in real time but it is not like that. It is a computer simulation system through which people perform their tasks on simulated environment and get the real time result.

## 2.10 Stakeholder Analysis

Stakeholders are persons, group of persons or organization who are directly or indirectly affected by our system. Stakeholders do have expectation, interest in the project. Stakeholders use, they do have an impact on any aspect on the project.

Stakeholders can be grouped into two different categories which may be direct or indirect. Direct stakeholders are the one who directly interact with the project do have a direct impact on the development of the project, they can influence the output of the results of project, they are involved in the development phase of the project they can be managers, developers and customers. Indirect stakeholders are not directly affected by the system but they do have an interested in the project or are expecting something as an output from the project.

So we need to identify the stakeholders at the planning phase so that they could be identified and accordingly the project needs to be modified so to handle the risks involved in the project as the stakeholder analysis is closely related to risk management.

If we are not doing stakeholder analysis then we will have to start the project again from the scratch if someone shows interest in your system.

There are four main types of stakeholders

- I. **Primary Stakeholder:** Primary stakeholders are the persons who can directly access the system or do access the system by providing proper input to the system as to work effectively. They get feedback from the system as a response from the system.

**Analysis:**

In our system the primary stakeholders are head librarian and Library Assistants who is using the library management system to manage the overall functionality of the system.

- II. **Secondary Stakeholders:** Secondary stakeholders are the persons who do not directly interact with the system but will get feedback from the system or the report from the system.

**Analysis:** Secondary stakeholders in our system are the students who are getting feedback from the system as the fine imposed on them.

- III. **Tertiary Stakeholders:** Tertiary stakeholders are the who are not in the category of the stakeholders who directly interact with the system but are affected from the system in some way or another.

**Analysis:** The management of the college is the tertiary stakeholders since the success or failure of the system will affect them since they have invested capital in the system so they are the one who are not interacting with the system but the feedback of the system affect them.

- IV. **Facilitating stakeholders:** These stakeholders contribute in the development, design of the system. They are also affected by the output of the system since they are one who is assigned to do the task so it is their responsibility to make the system as per user requirement.

**Analysis:** The facilitating stakeholders are the members of the project team like developers, programmers and designers.

### 2.11 Impact of user profiling on design

In User requirement after having detailed study we concluded and know that what type of user is required for library management system and what would be task for them. In competitive analysis we get the information about other library management system (Koha). And know about the good thing and bad thing related to the system. In the data gathering method we have the questionnaire session with librarian and student and interview session with the Head of Librarian. Know about the system and what user wants in the system and about functionality and the interactivity of system and after observing another system we know about system more. Then we conclude some universal icons as metaphors of functionality. We know about the task and their sequence in task analysis. We know about the people who are directly and indirectly affected by the system.

### 3 Usability Goals and Competitive Analysis

#### 3.1 Designing Principle

##### 3.1.1 Introduction

The design is introduced by Donald Norman(1988). There are six designing principles which are as follows:

- I. **Visibility:** As we know that human mind is excellent at noticing and interpreting clues in real word (Foundations of Human-Computer Interaction, 2013). The first thing that user notices is what he sees in the interface. It is about how clearly the user sees the state of the interface and possible actions (Vishal's IDYeah Blog on UX, Usability and Design, 2013). According to visibility “the most used function kept in front of user”. The controls and action is visible and obvious.
- II. **Feedback:** it is about sending back information about what action has been done and what has been accomplished. It is about giving proper feedback or message to user that what is happening now. It should be obvious when a control has been used. It is all about providing good feedback for a user’s action (Vishal's IDYeah Blog on UX, Usability and Design, 2013).
- III. **Constraints:** It is about restricting the way of user interaction with the system to reduce possible error made by user when they work on the system.
- IV. **Mapping:** It is about to relationship between controls and their effect in the world. When we are activating a action or pressing the key generally triggers the system to perform some task. There is a relationship or mapping between a control and its effect. Controls should place in a logical ways that match real world object (Architectingusability.com, 2013).
- V. **Consistency:** It provides the way to learn the discovering patterns to people. New situations become more manageable when existing pattern knowledge can be applied to understanding how things work. Consistency is the key to helping the users recognize and apply pattern. Things that look similar should do similar things (Architectingusability.com, 2013). It is of two types:  
Internal Consistency: It refers to the designing operation to behave same within the system.  
**External Consistency:** It means that the program is consistent with the environment in which it runs. This provides the consistency for both operating system and typical suite of

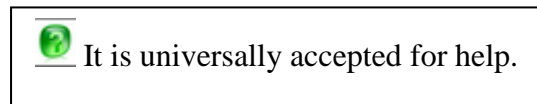
application (Sylvantech.com, 2013). It refers to the designing operation to behave across the system.

- VI. **Affordance:** It is refer to attribute of object that allows the users to know how to use it. The physical property of the object tells about the functionality of the system. It provides visual clues concerning the functionality of the object (Soupofmedia.com, 2013).

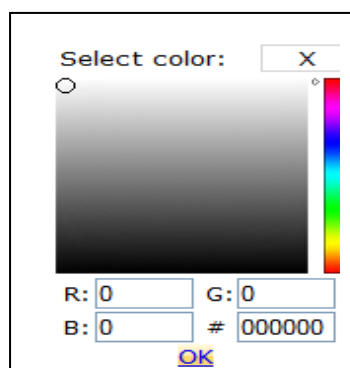
### 3.1.2 Way to achieve designing principle in our system

#### I. **Visibility:**

- **Color:** We are decided to provide white color for background and black color for foreground. These color combinations enhance the readability of the contents of the system it also increases the visibility grade of the contents and pleasing to the eyes.
- **Icons:** We will providing universal icons and proper label for the issue book, return books ,search book and many other function with the help of which user can easily understand in first sight that what this function do.



- We will keep most usable function in front of interface like search function kept in top level of the screen and inside it we provide other sub section of search like search by author name, book title, book publication etc.
- We will provide customization of color for text and background through which user can adjust the color according to his choice. We decided to provide color picker for this purpose.



- We will provide the magnifying option to user through which they can change the size of text. We are decided to provide four level of enlarge option to user.

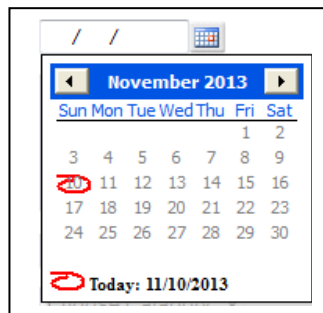
#### II. **Feedback**

- We will give proper and full grammatical sentence for the action preformed by user with the help of alert box, message box.

- We will provide user login status at the top of the page.
- We will provide validation to the fields.

### III. Constraints:

- We are decided to give drop down menu for date, time, month, date and year, category of books and many other options to restrict the user selection method.



- We will provide auto enable and disable functionality to our function. We have decided to enable renew button after search, by default renew button will disable.



- We will do proper validation for all the important fields of the forms like user name that user name should be unique and password should be of length between 7 to 16, important fields should not be black.
- We will not ask to user to input those values which we can derived from other field value like from date of birth field value we can calculate the age.
- We will implement the business rule properly like maximum book issue limit for a student will be six.

### IV. Mapping

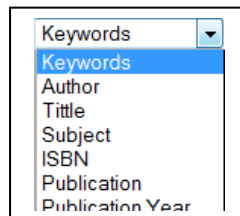
- We will place different functionality in the sequence way like search option will keep before issues the book.
- We will provide give down arrow in horizontal menu bar to indicate sub menu.
- We will categorize the details like book details, author details, publisher details, personal details.

### V. Consistency

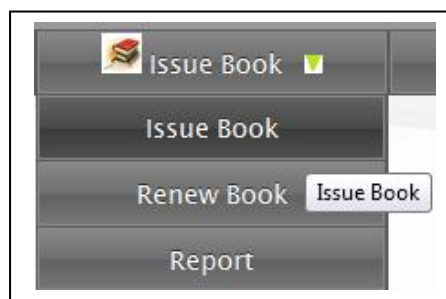
- We will provide shortcuts for the important functionality which saves the user time. We will use control + function first character to create the sort cuts. If two function having same character at the first place then we will first decide which function most frequently use and the keep most frequent function first character to control+ function name and other function sort cut with control+ shift+ function first name.
- We will use universal icon for functions.
- We will use same font color and size across the different pages.
- We will provide title for links and imaged.
- We will provide title for each screen.
- We will provide functionality name consistent across the pages.

## VI. Affordance

- We will provide scroll bar in the pages where necessary through which user can understand that for page up they should click up arrow and for page down they should click on down arrow.
- We will provide arrow based combo box which shows the user that something is happen when arrow will click.



- We will provide down arrow on menu items that indicate that submenu will open on the click of the menu.



## 3.2 Usability goals

### 3.2.1 Introduction

Usability goals means to achieve specified goals in particular environment with effectiveness, efficiency and satisfaction. Usability is a quality attribute that assesses how easy user interface are to user (Nngroup.com, 2013). It makes the system or product easier to use for users and matches them more closer to need of the users and their requirements (Usabilitynet.org, 2013). Usability must address three quality components i.e. effectiveness, efficiency and satisfaction. Usability goals means to achieve the five components i.e. learnability, efficiency, memorability, errors and subjective satisfaction

#### **I. Learnability:**

Learnability is for novice users. This is one of the important and basic components of usability goals. It is define as the ability of user to understand product capabilities and how to use them (Usability-architects.com, 2013). Learnability is basically for the users who do not have sufficient or meager knowledge about computer i.e. novice users. So in order to understand or interact efficiently with a system the system should be simple and interactive. This should be achieved by making the interface simpler and using simple language which novice users could understand. Atleast less considering about using the higher functionalities the user or being specific novice users are able to understand and use the basic functionalities of the system. It refers to how easily users accomplish their basic tasks at the very first time they encounter with the system (Uregina.ca, 2013). It depends on the designer as how to design the system simple yet effective for the novice users to achieve learnability. The usability goal is also to reduce time for learnability which means how much less times a user is taking in learning the functionalities of the system. The users are able to find what they want easily.

#### **II. Efficiency**

Efficiency is for the expert users. It refers to the ease of use of the system or product in helping the expert user to accomplish their critical tasks (Webschematix.com, 2013). Learnability and efficiency goes hand-in-hand. The learnability is how easily the user interacts with the system and find it user friendly if the controls are placed in visible region but efficiency mainly deals with the consumption of user's time. Suppose there are two websites and one website is taking two steps tp complete a process on the other hand the other website is taking one steps to complete the same process so we can say that the second



website is efficient as it is saving the user's time . We can say that the expert users knows about the computer pretty well they would be less concerned about the learnability but they would be focused on efficiency as they want a process to take as less time as it can . So it is important to have an efficient system. We can say that efficiency is once users have learn the design, how quickly can they perform the critical tasks (Dan Carlberg, 2013).

### **III. Memorability**

The term defines itself as how much memorable a thing could be the same thing we could correlate with our system or design. It refers to the extent to which a casual user can remember how the product works and retain proficiency with it (Usability-architects.com, 2013). The memorability is for those user who has not interacted with system from a long time and when they interact with the system after a long time how much they can memorize. So for this the system must be efficient as the user will not encounter much problem interacting with the system returning after a long time. The more efficient the system is the more memorability is achieved. The memorability is also one of the most important factors for usability goals since the user will find it difficult interacting and accessing functionalities of the system after a long time then the user will be less interested in using the system thus leading to the wastage of efforts. So the system should be efficient taking less number of steps for a task so that user can remember the steps or find it less difficult interacting with the system after a long time. It also defined as when users return to the system after a time of not using it, how easily can they re-establish expertise (Dalhousie University, 2013).

### **IV. Errors:**

The user will encounter some errors during using the system and how it solved later on, how severe are these errors, and how easily can they recover from the errors? It refers to how error are prevented, recovered from and managed to minimize loss and user frustration (Webschematix.com, 2013). There could be numerous errors which could lead to a catastrophic system but mainly errors are solved during testing phase. There are number of errors user make while using the system and what is the priority of that error and how easily they can recover from it.

### **V. Subjective Satisfaction:**

The degree to which users enjoy using and interacting with the product (Usability-architects.com, 2013). It deals with providing satisfaction to the user. We can take opinion from the users that how pleasant and comfortable the system is for them. The extent to which

user enjoys using and interacting with the system .The design of the website pleases the user which will coming back to the website or system , if the system is more learnable, efficient then the user will be satisfied with the system and the frequency of interaction will increase making them a regular user. Asking the user their opinion with the help of questionnaires or interview after trying system for real task if the user is satisfied with the system or not.

### 3.2.2 How to achieve usability goals

**Learnability:** we will achieve learnability in the following ways in keeping mind the novice users.

- I. We will keep our system design simple and attractive so that the first impression of the website will create an impact on the users. We will not use heavy graphics and dark color in our system.
- II. We will provide less complex interface so that user can easily interact with it and doesn't find it difficult to understand the system. We will keep most used functionality in front of user. We will use less advertisement.
- III. We will place links in the visible region so that user does not have to search hard or face problems while navigating.
- IV. The user would be provided with help and support in case the user finds it difficult to understand anything as for the novice users they have less knowledge about the computer such as tool tips , pop-up-helps etc.
- V. The applications will be simple and the functionalities would be cut down so that user takes less time to learn the website.

**Efficiency:**

- I. We will provide multiple input methods.
- II. We will provide multiple search option to user like user will search the book through title, name, and author name of the book.
- III. We will categories the items in a logical manner like search menu contains all type of search option like simple search, advance search.
- IV. We have tried to minimize the steps to complete a process thus making the user to complete a task in as much less time as possible.
- V. We have used a good interface so that user takes less time to point out the required functionality to execute it.
- VI. We will provide proper help in case user finds it difficult to accomplish a task.

**Memorability**

- I. We will provide navigation menu which is same on every page i.e. across the page and links to all pages will be provided in our system as user will not have to remember the page which he wants to surf.
- II. We will provide appropriate title to each page through which user can know where he/she is now.
- III. We will merge the functionalities in a logical manner. It will take less time for the user to memorize the steps to complete a task or we can say that user is not need to remember the steps to accomplish a task.
- IV. We will use universally accepted symbols and icons with which are users are already familiar thus user will take less time in remembering the website.

**Errors:**

- I. We will provide proper validation for fields that limiting the user to input the wrong details and making fewer errors.
- II. Suppose user encounters any errors so we will provide help as how to recover for that error in form of proper message using appropriate language.
- III. First and foremost we will test our system with the extensive testing thus nullifying any chances of errors. We try to avoid bugs from the system before release.
- IV. We have applied validation and exception handling for each and every possible errors user could make, thus making our system less error prone.

**Subjective Satisfaction:**

- I. We will provide rating meter through which we know user will satisfaction.
- II. We will provide feedback form to user.
- III. Our prime concern is customer satisfaction and for that we take the appropriate steps.

**3.3 Competitive analysis based upon usability goals:**

Before going to develop our system we are analyzing the existing system component on the basis of usability goals. Through which we can know about product that it achieve user goal with effectiveness, efficiency and satisfaction.

System A: PhpmyLibrary

System B: Openbiblio

System C: Koha

**Scoring Scheme** (Zotero.org, 2005)

Excellent	5
Very Good	4
Good	3
Average	2
Poor	1
Not supported	0

**Learnability:**

Serial No.	Factor	System A	System B	System C
1	Simple English language	4	3	4
2	Smooth interface	3	2	3
3	Appropriate icons and symbols used	3	4	4
4	Tool tip provided	3	1	1
5	Help and support provided	1	1	4

**Efficiency:**

Serial No.	Factor	System A	System B	System C
1	Provide shortcuts	3	3	4
2	AJAX used	4	2	5
3	Categorize the same element at one place	4	2	5
4	Multiple input method	3	2	3
5	Multiple searching	2	3	4

**Memorability:**

Serial No.	Factor	System A	System B	System C
1	Provide universal shortcuts	2	2	3
2	Grouping of menu item	4	2	5

3	Generate list of favorite item	0	0	3
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**Error**

Serial No.	Factor	System A	System B	System C
1	Provide on screen instruction	3	3	4
2	Providing proper validations	3	2	3
3	Proper error message	1	1	3
4	Proper error handling	2	1	3

**Subjective satisfaction:**

Serial No.	Factor	System A	System B	System C
1	Comfort level	2	1	3
2	Providing feedback form	2	0	4

### 3.4 Impact on design

We had done usability goal through which we knew the attitude of our user towards our system. It helped us for taking decision about design of the system i.e. the interface, functionality and their arrangements. We will keep our interfaces simple to users that users will easily understand the interface.

Through the design principle we found that how we have to place the functionality, how to arrange them. It helped us to taking decision about which type of icons and message will provide which type of color combination we can use for our system.

From study of our competitor we came to know that how they achieve the quality components of usability in their product and what user wants from the product.

## 4 Design and Prototype

### 4.1 Prototype

Prototype is basically a dummy system developed to understand the user requirement in detail. We can say that the prototype is an abstract model which is near to the real system. The benefit of making prototype is that it helps to keep the design in track and gives the user's review about the system and accordingly modification takes place. It facilitates the developers to remove the bugs and flaws in the system at an early stage thus making the effort of the developer to go in the right direction thus reducing time and cost. It helps user to interact with it and explore its suitability. (Svpg.com, 2009) We can say that prototypes are the versions of the design for the effective evaluating the design of an interactive product. It clarifies the ambiguous requirements. One thing to be kept in mind those unnecessary things should not be include in the prototype as it will increase the cost.

There are two types of prototypes:-

- I. **Low – fidelity prototype**- They are the prototypes that are cheap and quick to produce. The low fidelity prototypes do have the limited characteristics of the final system. They are beneficial in evaluating and clearing early design issues such as layout of controls, color issues, visibility issues and others. The fundamental problems or we can say that basic problems those lead to errors, confusions as it will be evaluated by the user, the user will clarify the basic requirements which are good to be considered at an early stage.  
E.g. – storyboard, Index/card stickies . (Teced.com, 2009)
- II. **High- Fidelity prototype** - This prototyping is done to find out the wide range of usability issues to be considered. This type of prototyping retains the many characteristics of the final system thus it is expensive and time-consuming to produce. E.g. – software prototyping etc. (Docstoc.com, 2010)

#### 4.1.1 Research

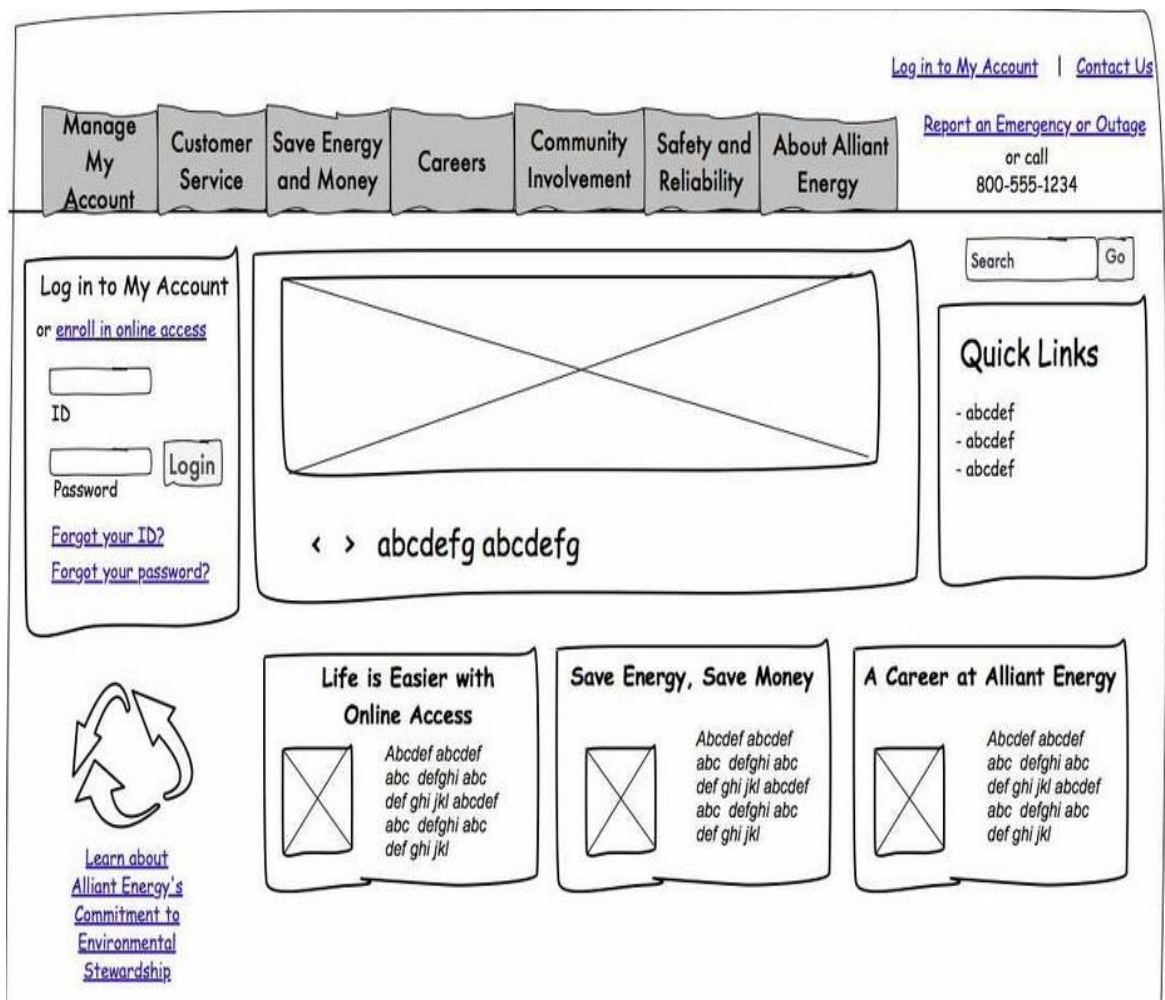
We have searched many websites, many articles and books for the low-fidelity prototype i.e. storyboarding and we have been successful in gathering much required information about the storyboards as we had to consider storyboard in our assignment so it was mandatory to search the appropriate storyboard that will display all the contents uniformly and accordance with the user's satisfaction.

So here are some sample formats of the storyboards

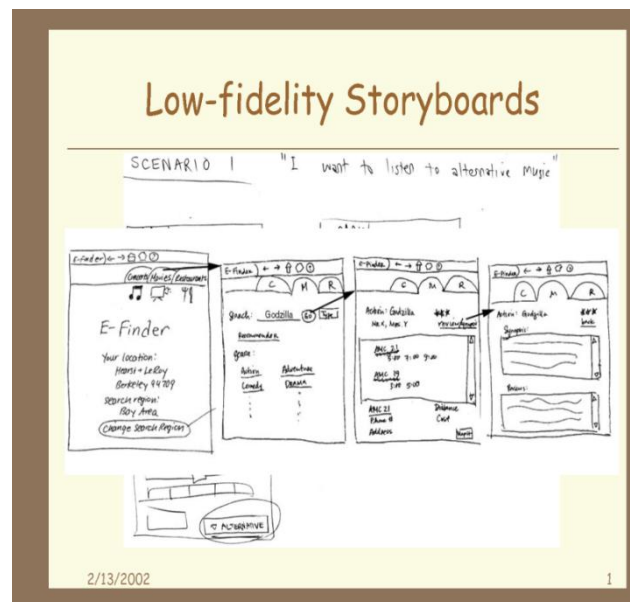
## I. Sketch flow Storyboards:-



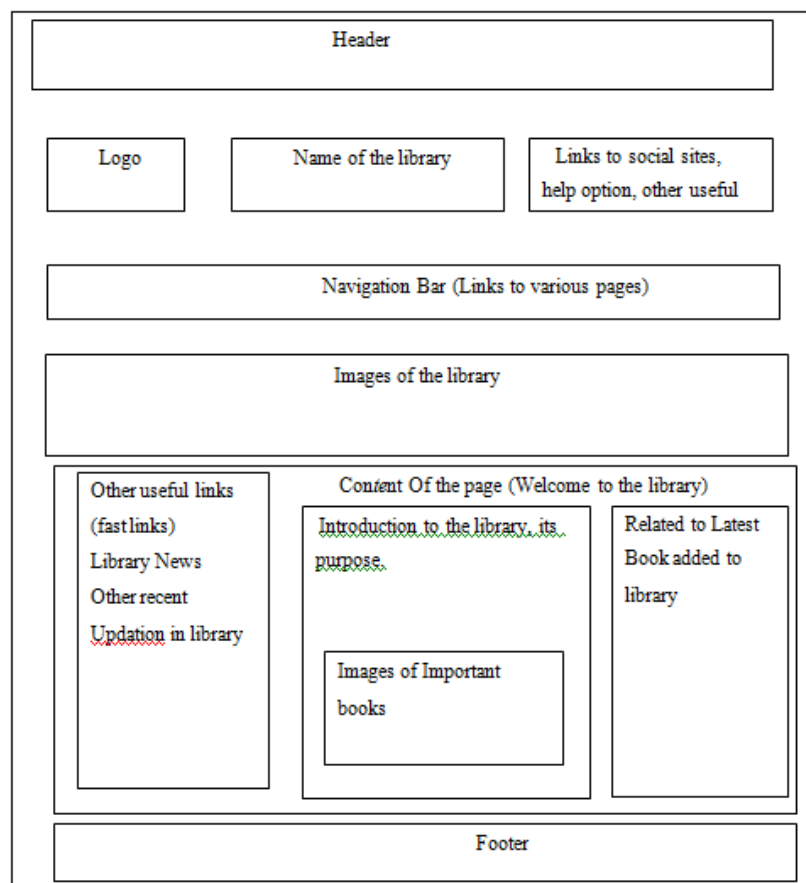
## II. Low fidelity wireframe - storyboards



### III. Low-fidelity storyboarding



### IV. The prototype which we have chosen for our system



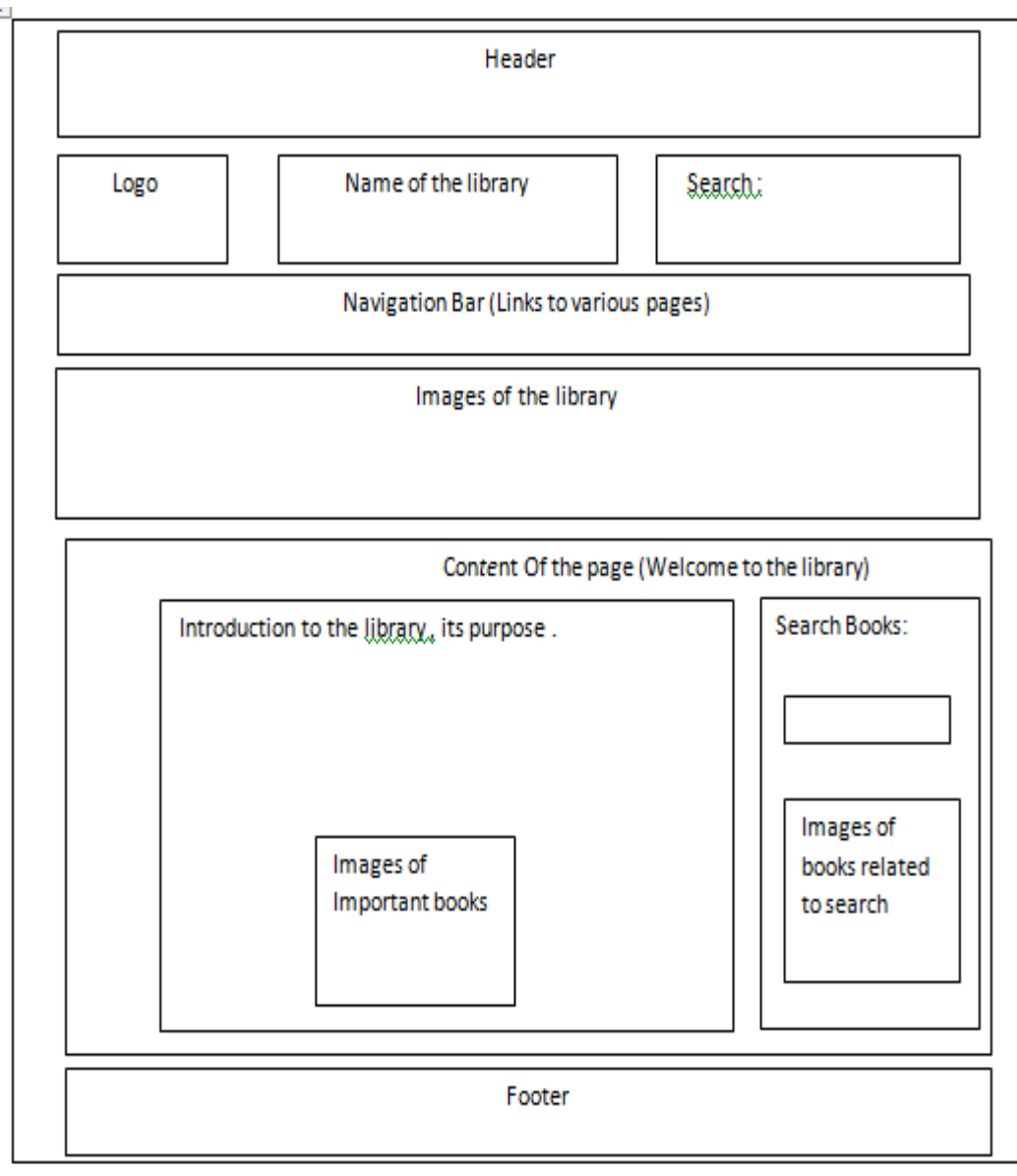


## Conclusion

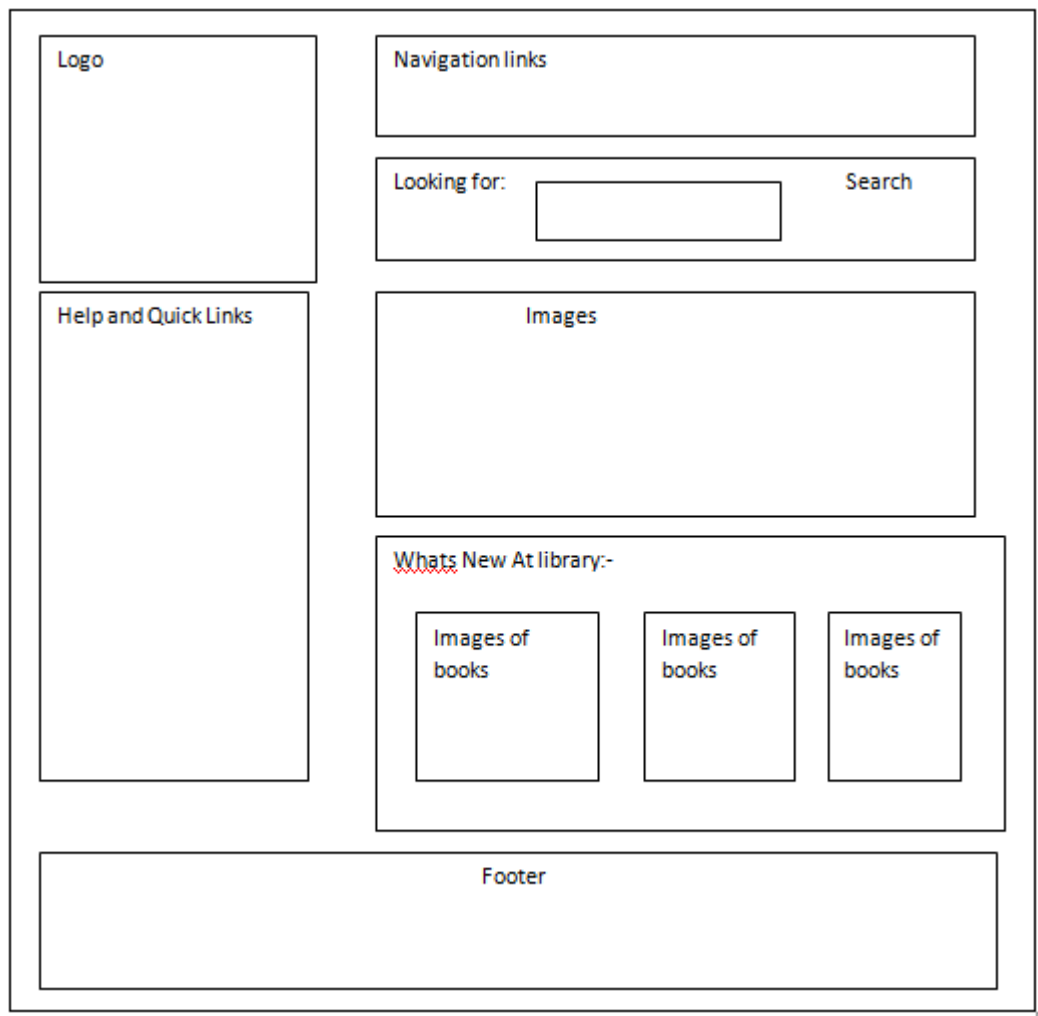
We have searched various storyboards and have concluded this one since it will give the user's the feel as how our design is going to be and how we are going to achieve usability goals. The above storyboards were good in their aspect but they were not appropriate.

## 4.2 Parallel Design

Design 1: Made by Gautam Mishra



## Design 2: Made by Mohit Kumar



## Design 3: Made by Alok Ranjan

The wireframe illustrates a library website layout with the following components:

- Header:** Contains a "Logo" placeholder, the "Name of the library", and a "Search:" input field.
- Navigation links:** A vertical list of five links on the left side.
- Recent News:** A section below the navigation links containing two news items.
- About the college:** A section below the recent news.
- Images related to library:** A large rectangular area for displaying images.
- About us:** A section below the images related to library.
- More Images:** A section below the about us section.
- Login Options:** A section below the more images section.
- Footer:** A horizontal bar at the bottom of the page.

### 4.3 Peer to peer Evaluation

Peer to peer evolution is for creative work done by other people or member of the group. It is based on the concept that other people will usually find more weakness and error in the design and will be able to be make a more accurate evaluation of it than designer of the design. It helps to maintain and enhance quality by detecting weakness and error in specific work (Linfo.org, 2013).

We have going to perform peer to peer evaluation for our storyboard of master design . In this part we evaluate each other design.

#### 4.3.1 Evaluation for design 1

Design 1 is evaluated by Mohit Kumar.

Merits of the Design

- The navigation links at the top are given in a appropriate format thus achieving consistency.
- The page has also provided some features like searching user can search whatever he wants on the webpage thus increasing efficiency.
- The controls are visible as soon as the user looks at the website.

Demerits of the page:-

- In this master page the design is simple yet effective.
- There are no extra functionalities given to user as required in Library Management System.
- There is no option to increase the size of text so it is not providing learnability.
- The design is such that the space of the page is much wasted and there is no proper utilization of the space of the page.
- The color combination used is not appropriate.

#### 4.3.2 Evaluation for design 2

Design 1 is evaluated by Alok Ranjan

Merits of the Design

- The page provides the vertical links which has the help options which is beneficial for the user and it also achieves learn ability.
- The content of the page is appropriate as it has provided with the image of the new arrivals at library.
- The page uses font color which is appropriate since it is achieving visibility.

- This page though has complex interface has utilizes the space appropriately.

#### Demerits of the Design

- The logo is taking much space on the page.
- The page seems not organized as the sequence of the contents placed on the page is not proper.
- Too much use of images on screen.
- The search dialog box is also occupying much space on the page.
- The navigation links are placed in a way that would not satisfy the user since it will be nit appropriate to place the links in header, it should be placed in visible range.
- This interface is so much complex that user will be confused by seeing the design and thus the user will refuse to accept the design.

#### 4.3.3 Evaluation for design 3

Design 1 is evaluated by Gautam Mishra

#### Merits of the Design

- The contents on this page are properly organized thus the page is not crowded with the extra information.
- The interface is also user-friendly it will be liked by users.
- Various useful links are given to the user thus facilitating the user with the important information.

#### Demerits of the Design

- The page has used wrong color combinations dark color on dark background thus visibility rules are violated.
- The navigation links are given in the vertical menu along with other links which will create ambiguity as the consistency will be violated.
- The font size is not uniform all over the page somewhere it is small and somewhere it is large.
- The font color used is also dark as we have seen the color combinations used for the user is not appropriate thus making the user restricted even to study contents.
- The option for login could have been given separately as currently it is merged with the content of the page and thus user will take time to find it thus this design is not efficient.

#### 4.3.4 Impact of evaluation on design

After peer to peer evaluation, we have reached to conclusion and finally we are considering the good things of all the pages that we have evaluated separately. From this we knew how our final design looks like. The good points about the master page of our system are

- I. The navigation bar has been providing with the important links thus facilitating the user.
- II. The appropriate color combination has been used to ensure visibility.
- III. The useful links are provided on the main page thus user does not have to get confused about searching various links.
- IV. In case the user finds it difficult to interact or user has stuck somewhere in the process then the help has been provided to the user.
- V. The extra functionalities such as user could change the color as per his/her choice; also a facility of changing the font size has been given to the user.
- VI. The images have been provided so that user will get the idea from the images what this page wants to convey.
- VII. The universal icons, images have been used for the page so that the consistency is maintained.
- VIII. So here we conclude our design as this is the final design based on peer to peer evaluation.

## 4.4 Storyboard for each screen

### Story Board:

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

---

**Screen: 1 of 1**

**Screen Descriptions:**

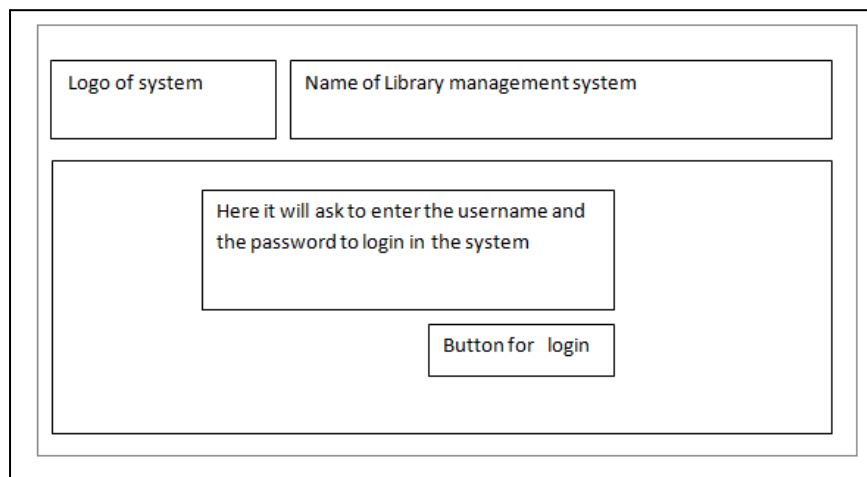
**Links from screens:** System start up page

**Links to screen** All

This page is for the Login page

**Functionality/Interactivity**

**This storyboard has one button to login into system.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 1 of 9**

**Screen Descriptions:**

**Links from screens:** Home, search book,  
Book, Add user, issue book, help.

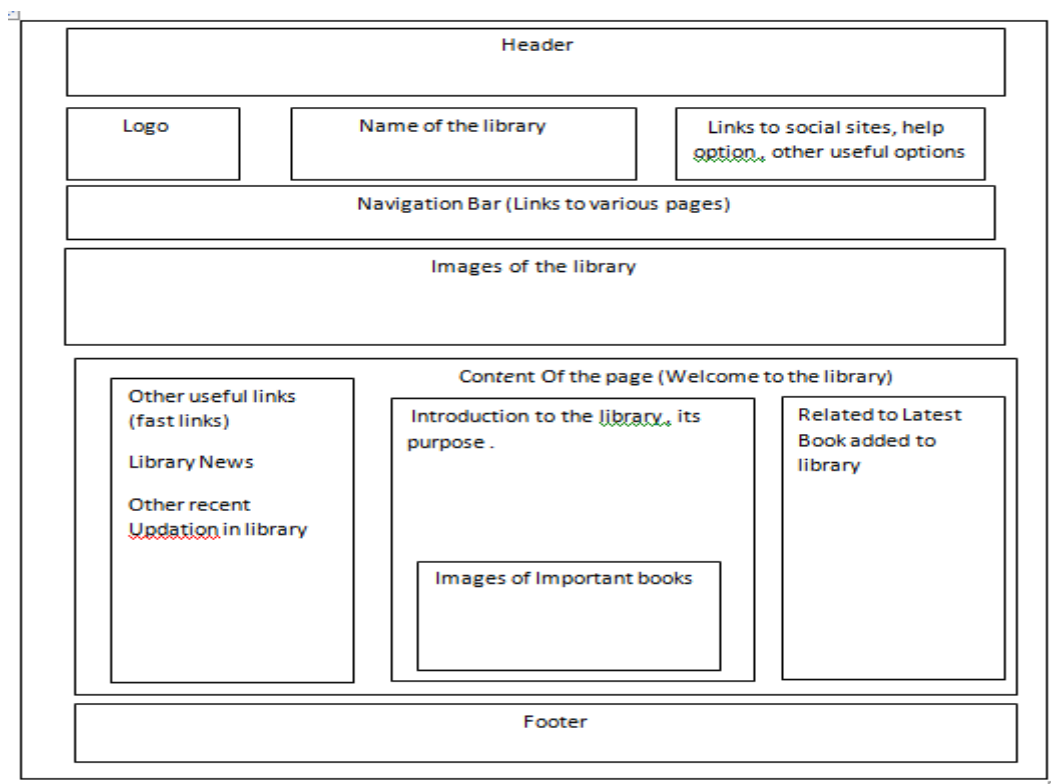
**Links to screen** search book

Book, Add user, issue book, help..

This page is for the home page

**Functionality/Interactivity**

**This storyboard has no button.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg



**Librarian Storyboard.****Project Title:** Library Management system**Date on which this storyboard is developed** 15-october-2013**Screen: 2 of 9****Screen Descriptions:**

**Links from screens** Home, search book, Book, Add user, issue book, help.

**Links to screen:** Home, Book, Add user, issue book, help.

This page is for searching the book by librarian

**Functionality/Interactivity****This storyboard has one button to search the books.**

Logo of Page

Name Of the website

Links to social sites, other useful links

Image related to the library

Searching the books, magazines, journals.

Search by:

It will display all the details related to the search by the librarian which are book name, status, no of books, class no.

Background: white

Color Scheme: Border of blue color

Text attributes: Courier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 3 of 9**

**Screen Descriptions:**

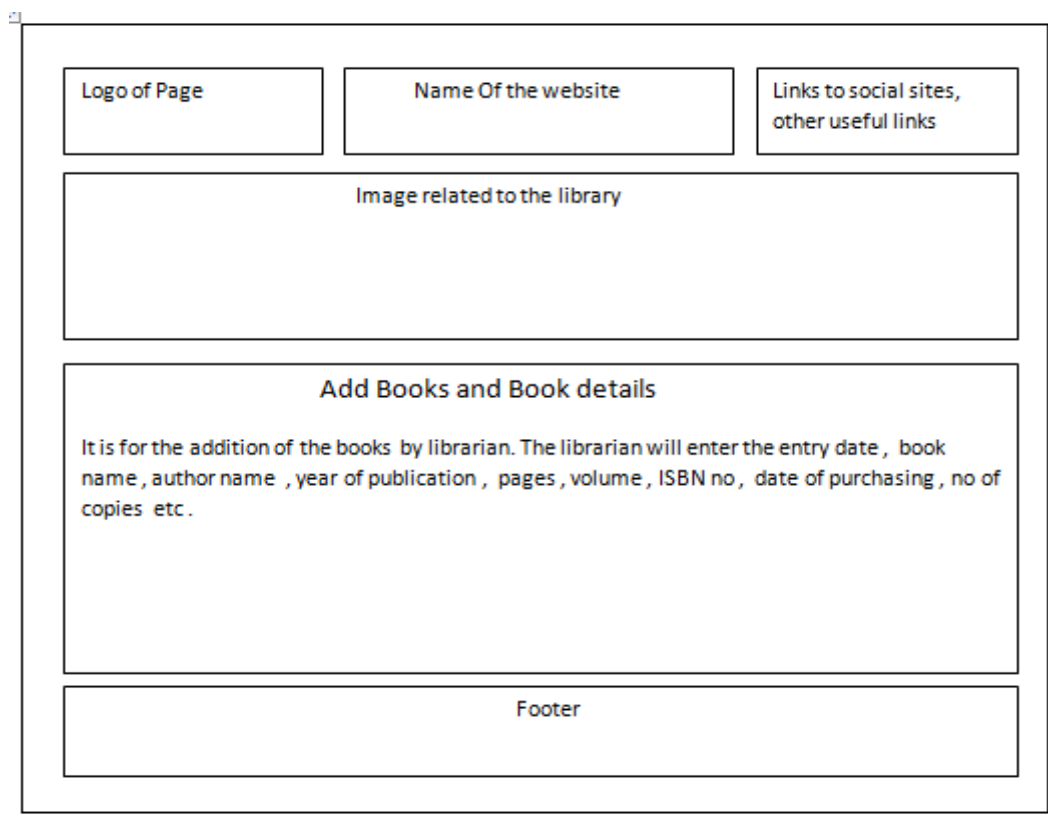
**Links from screens** Home, search book, Book, Add user, issue book, help.

**Links to screen:** Home, search book, Add user, issue book, help.

This page is for adding the book by librarian

**Functionality/Interactivity**

**This storyboard has three buttons i.e. cancel, reset, submit** that allow to cancel the process of searching the book, reset the fields, submit button will add the book details in the system.



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 4 of 9**

**Screen Descriptions:**

**Links from screens** Home, search book, Book, Add user, issue book, help.

**Links to screen:** Home, search book, Add user, issue book, help.

This page is for editing the details of book by librarian

**Functionality/Interactivity**

**This storyboard has four buttons i.e. cancel, reset, update, submit, delete** that allow to cancel the process of searching the book, reset the fields, update button will update the book details in the system and delete button will delete the book detail from the system.

Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 5 of 9**

**Screen Descriptions:**

**Links from screens:** Home, search book, Book, Add user, issue book, help .

**Links to screen:** Home, search book, Add user, issue book, help.

This page is for generating the report by the librarian.

**Functionality/Interactivity**

**This storyboard has one button to generate the report.**

The storyboard for Screen 5 of 9, titled 'Report Generation', is structured as follows:

- Header:** Contains three elements: 'Logo of Page', 'Name Of the website', and 'Links to social sites, other useful links'.
- Image:** A large rectangular area labeled 'Image related to the library'.
- Form Area:** A central box containing:
  - Text: 'Here librarian will generate the report by entering the searching the criteria and then the click button on generate report.'
  - Text: 'Select to generate:' followed by a text input field.
  - A 'Generate Report Button'.
- Report Area:** A box below the form labeled 'Here the report would be generated depending upon the criteria'.
- Footer:** A box at the bottom labeled 'Footer'.

Background: white

Color Scheme: Border of blue color

Text attributes: Courier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 6 of 9**

**Screen Descriptions:**

**Links from screens:** Home, search book, Book, Add user, issue book, help.

**Links to screen:** Home, search book, Book, Add user, issue book, help..

This page is for adding a new user.

**Functionality/Interactivity**

**This storyboard has three buttons cancel, reset, submit** that allow to cancel the process of searching the book, reset the fields, submit button will add the user details in the system .

Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 7 of 9**

**Screen Descriptions:**

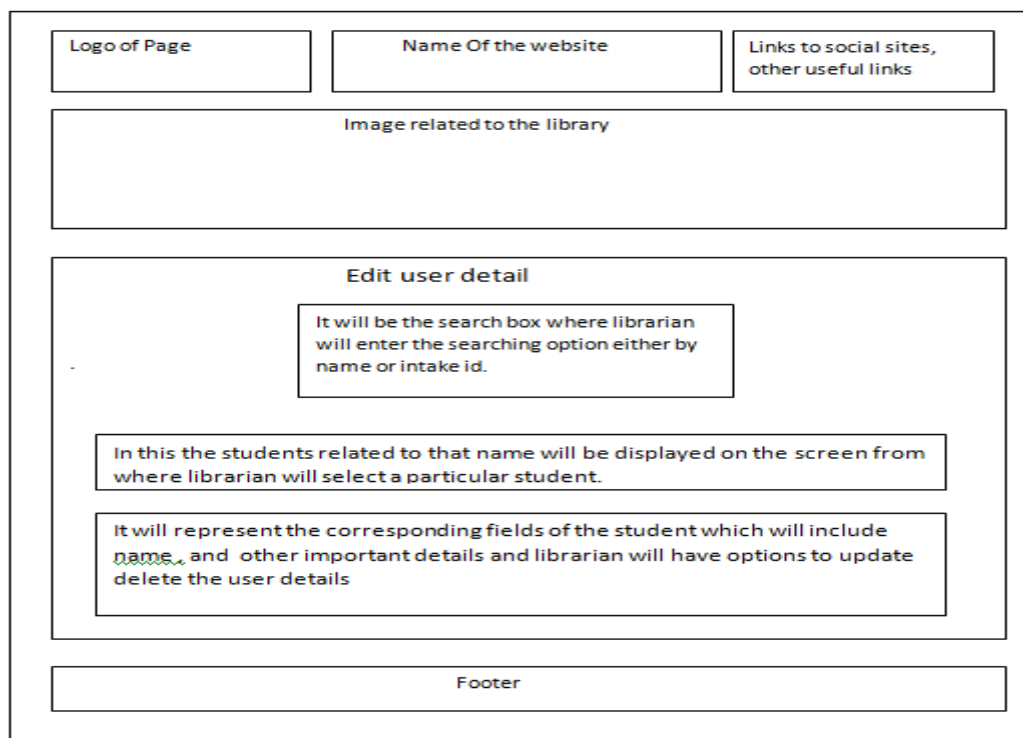
**Links from screens** Home, search book, Book, Add user, issue book, help.

**Links to screen** Home, search book, Book, issue book, help.

This page is for editing the details of the user.

**Functionality/Interactivity**

**This storyboard has three buttons cancel, reset, update, delete** that allow to cancel the process of searching the book, reset the fields, update button will update the user details in the system and delete button will delete the book detail from the system.



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 8 of 9**

**Screen Descriptions:**

**Links from screens:** Home, search book, Book, add user , issue book, help.

**Links to screen:** Home, search book, Book, add user , help.

This page is for issuing the book.

**Functionality/Interactivity**

**This storyboard has two buttons search and issue.** Search button will search the student detail and issue button will issue the book and add it to student history.

The storyboard for Screen 8 of 9, titled 'Issuing a book', is structured as follows:

- Header:** Contains three elements: 'Logo', 'Name of the library', and 'Links to social sites and other useful options, links'.
- Images related to library:** A horizontal section for displaying library-related images.
- Main Content Area:**
  - Search Section:** A box stating 'Here librarian would search about the user by entering the name or id of the user.' followed by a text input field.
  - Results Section:** A box stating 'It will show the results of search by the librarian .it will show users to whom book has to be issued.'
  - Issue Form:** A box containing the text 'In this librarian will fill in the details of the book as well as the student to which book is issued.' Below this are labels for 'Student name:' and 'Id:' with corresponding input fields. An 'Issue Book' button is positioned to the right of the 'Id' field.
  - Issued Books List:** A box at the bottom of the main area stating 'List of book issued to the student will be displayed.'
- Footer:** A single box at the very bottom labeled 'Footer'.

Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 9 of 9**

**Screen Descriptions:**

**Links from screens:** Home, search book, Book, add user, issue book, help.

**Links to screen:** Home, search book, Book, add user, help.

This page is for renewing the book.

**Functionality/Interactivity**

**This storyboard has three buttons search, renew, Return** allows to search the student history and then renew button will renew the book and return book will return the book.

Logo

Name of the library

Links to social sites and other useful options, links

Images related to library

**Student issued history**

In this librarian will search the student to which book is issued to renew or return the book.

Student name:

Search

List of student will be displayed to the librarian from whom he has to select.

It will display the date of books issued the check in date and check out date, option to return the book or renew the book .

1. Let us c	06-nov-2013	11-nov-2013	Renew	Return
-------------	-------------	-------------	-------	--------

Footer

Background: white

Color Scheme: Border of blue color

Text attributes: Courier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg



## Student storyboard

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 2 of 10**

**Screen Descriptions:**

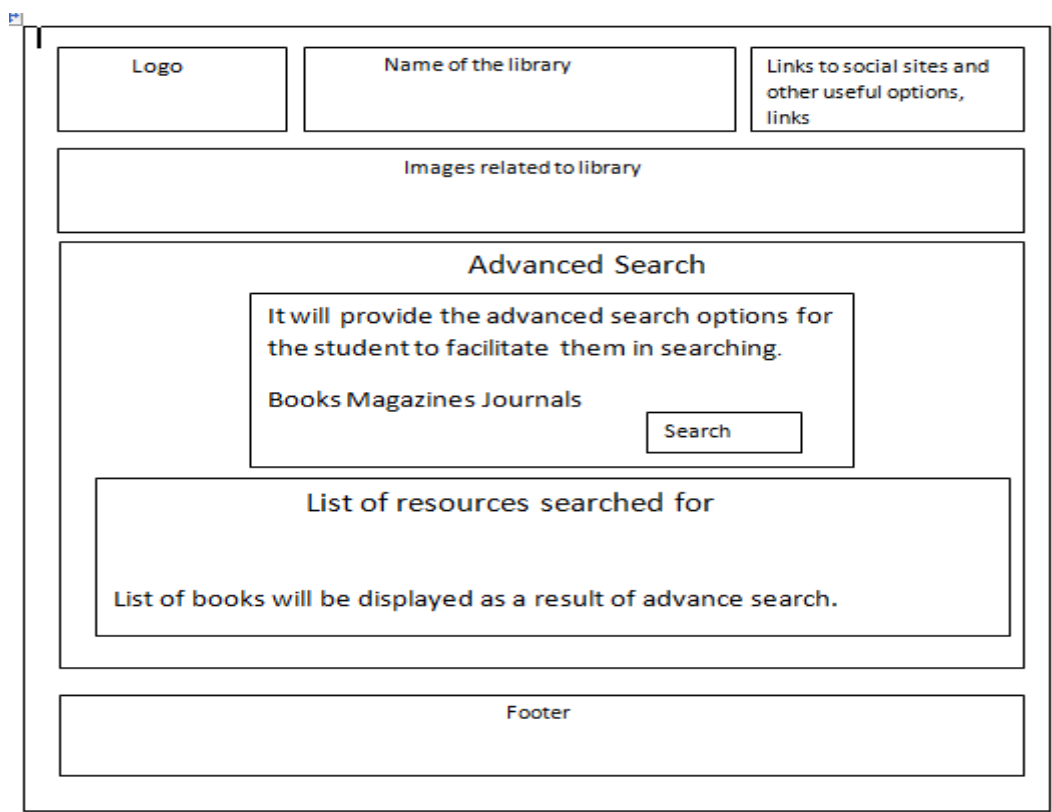
**Links from screens** Home, search & find, Student record, Help , Ask a librarian.

**Links to screen** Home, Student record, Help , Ask a librarian.

This page is for advance searching the books, journals, magazines available in the library.

### Functionality/Interactivity

**This storyboard has one button to search the all resources.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 3 of 10**

**Screen Descriptions:**

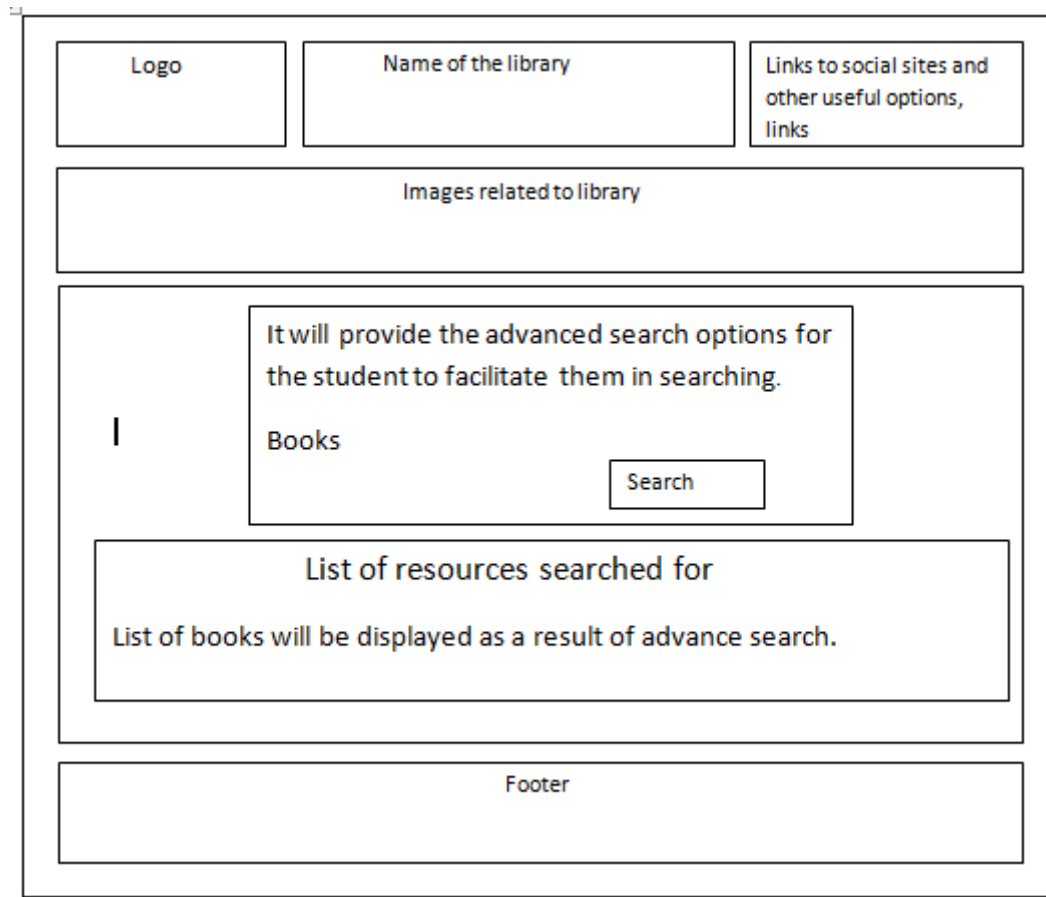
**Links from screens** Home, search & find, Student record, Help , Ask a librarian.

**Links to screen** Home, Student record, Help , Ask a librarian. .

This page is for searching the books available in the library.

**Functionality/Interactivity**

**This storyboard has one button to search the books.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 4 of 10**

**Screen Descriptions:**

**Links from screens** Home, search & find, Student record, Help , Ask a librarian.

**Links to screen** Home, Student record, Help , Ask a librarian. .

This page is for searching the journals available in the library.

**Functionality/Interactivity**

**This storyboard has one button to search the journals.**

Logo

Name of the library

Links to social sites and other useful options, links

Images related to library

It will provide the advanced search options for the student to facilitate them in searching.

Journals

Search

List of resources searched for

List of Journals will be displayed as a result of advance search.

Footer

Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 5 of 10**

**Screen Descriptions:**

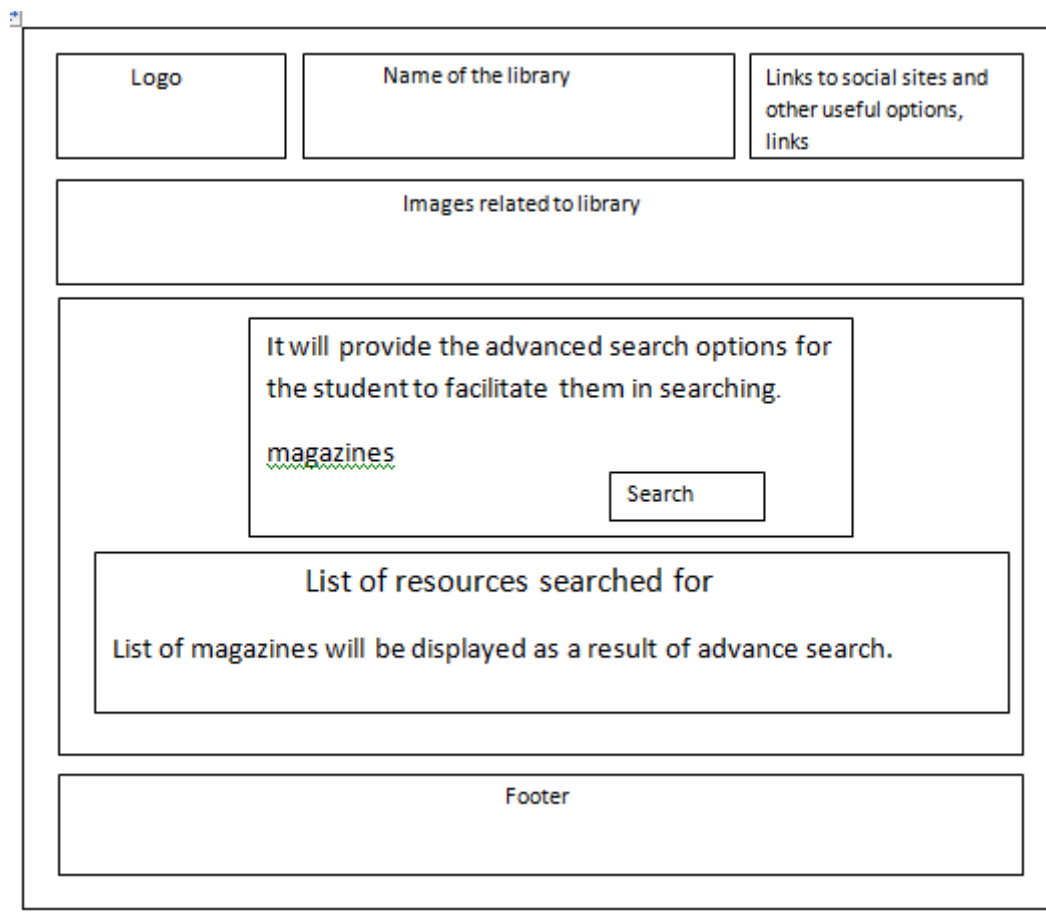
**Links from screens** Home, search & find, Student record, Help , Ask a librarian.

**Links to screen** Home, Student record, Help , Ask a librarian. .

This page is for searching the magazines available in the library.

**Functionality/Interactivity**

**This storyboard has one button to search the magazines.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 6 of 10**

**Screen Descriptions:**

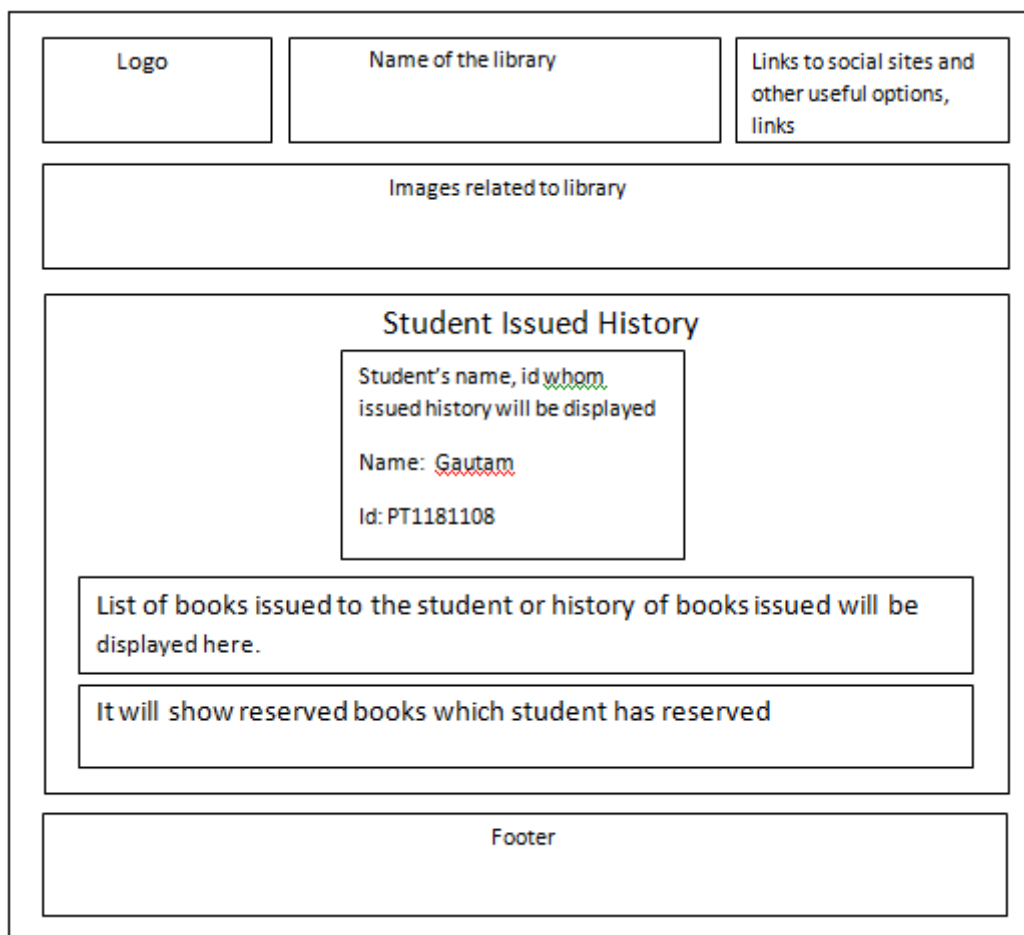
**Links from screens:** screens Home, search & find, Student record, Help , Ask a librarian..

This page is for looking at the issued history like books issued.

**Links to screen:** Home, search & find, Help , Ask a librarian..

**Functionality/Interactivity**

**This storyboard has two buttons search and renew:** search will search the student detail and then go to renew the book.



Background: white

Audio: Nill

Color Scheme: Border of blue color

Video: Nill

Text attributes: Curier new, size:11, color black.

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 7 of 10**

**Screen Descriptions:**

**Links from screens:** screens Home, search & find, Student record, Help , Ask a librarian..

This page provides the facility to the student to reserve a book.

**Links to screen** Home, search & find, Help , Ask a librarian..

**Functionality/Interactivity**

**This storyboard has two buttons Search and reserve book** Search will search the book after that reserve book will the reserve the particular book.

The storyboard for Screen 7 of 10, titled 'Library Management system', shows a user interface for reserving books. The layout is as follows:

- Header:** Contains three elements: 'Logo', 'Name of the library', and 'Links to social sites and other useful options, links'.
- Images related to library:** A section for displaying library-related images.
- Student Issued History:** The main content area, which includes:
  - A search box with the text 'Student will search for the book which he wants to reserve' and a 'Search' button.
  - A list of books with the text 'List of books will be displayed here form here student could reserve the book'. The list has columns for '1. Book Name', 'Reserve date', and 'today's date', followed by a 'Reserve book' button.
- Footer:** A section at the bottom of the screen.

Background: white

Audio: Nill

Color Scheme: Border of blue color

Video: Nill

Text attributes: Curier new, size:11, color black.

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 8 of 10**

**Screen Descriptions:**

**Links from screens:** screens Home, search & find, Student record, Help , Ask a librarian..

This page provides the help for the users.

**Links to screen:** Home, search & find, Student record, Ask a librarian..

**Functionality/Interactivity**

**This storyboard has no buttons.**

Logo	Name of the library	Links to social sites and other useful options, links						
Images related to library								
<p align="center"><b>Manual help for the users</b></p> <p>This is for helping the user in case of any ambiguity or any help needed to navigate through the website.</p> <table border="1"> <thead> <tr> <th>Links</th> <th>Help(Explanation)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>			Links	Help(Explanation)				
Links	Help(Explanation)							
Footer								

Background: white

Audio: Nill

Color Scheme: Border of blue color

Video: Nill

Text attributes: Curier new, size:11, color black.

Animation: Nill

Stills: images.jpg

**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 9 of 10**

**Screen Descriptions:**

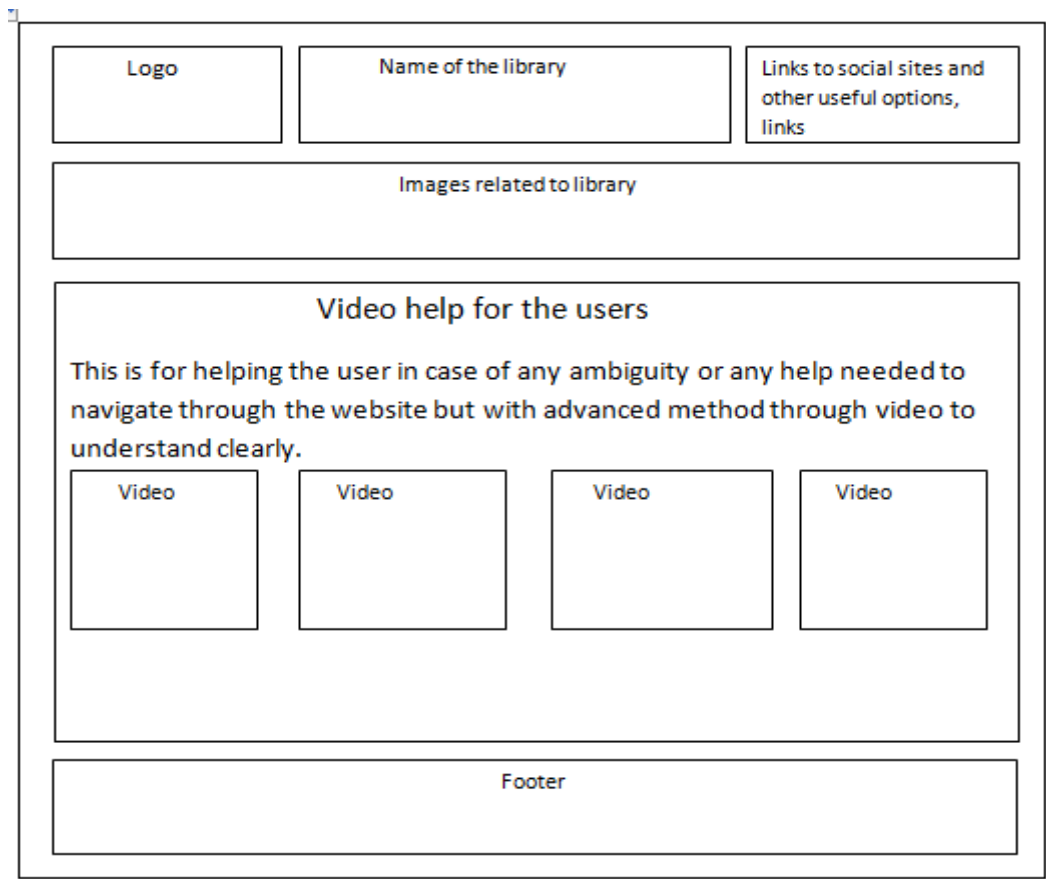
**Links from screens :** Home, search & find, Student record, Help , Ask a librarian..

**Links to screen:** Home, search & find, Student record, Ask a librarian.

This page provides the video help for the users.

**Functionality/Interactivity**

**This storyboard has no buttons.**



Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg



**Project Title:** Library Management system

**Date on which this storyboard is developed** 15-october-2013

**Screen: 10 of 10**

**Screen Descriptions:**

**Links from screens** Home, search & find, Student record, Help, Ask a librarian..

**Links to screen** Home search & find, Student record, Help,.

This page provides user facility to ask question from the library in case of any doubt.

**Functionality/Interactivity**

**This storyboard has one button send to send the mail to librarian.**

The storyboard illustrates the 'Ask a librarian' screen layout. It features a header with three boxes: 'Logo', 'Name of the library', and 'Links to social sites and other useful options, links'. Below the header is a wide box labeled 'Images related to library'. The main content area is enclosed in a large box with the title 'Ask a librarian'. Inside this box, there is a text block stating 'It does contain the contact no of the librarian in case of any severity.' followed by another text block: 'It provides the option for email to the librarian by entering the name and the email address.' Below this, there are input fields for 'Name:' and 'Email Id:', and a larger text area for 'Question:'. A 'Send' button is positioned at the bottom right of the form area. The entire screen is framed by a 'Footer' box at the bottom.

Background: white

Color Scheme: Border of blue color

Text attributes: Curier new, size:11, color black.

Audio: Nill

Video: Nill

Animation: Nill

Stills: images.jpg

## 4.5 Screen design with description

### I. Home Page



### Screen Description

This is the home page of our Library Management System. The user will get to know about our system through home page. As we can see it has the images of the new arrivals of the books in the library. The user will get to know about the news of library from this page. The user can navigate to other pages which he opts for.

## II. Searching

The screenshot displays the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search & Find, Student Record, Help, and Ask a Librarian. The main header features a logo with a book and a magnifying glass, and the word "LIBRARY". Below the header, there is a "Library News" section on the left, an "Advance Search" section in the center, and a "Latest Book" section on the right. The "Advance Search" section includes a "SEARCH FOR" form with radio buttons for Book, Journals, Novel, and Magazines, and a "Keywords" dropdown menu. Below the search form, there is a "List of Ressourcess searched for" section with a table showing search results. The "Latest Book" section displays two book covers: "C++ Programming" and "GATE TOPICWISE SOLVED PAPERS Electrical Engineering".

Library News  
All Library branches and offices will be closed in observance of Dipawali.

Advance Search

SEARCH FOR

☐ Book ☐ Journals ☐ Novel ☐ Magazines

Keywords

AND Keywords

AND Keywords

AND Keywords

File Type : Any Format

Search

List of Ressourcess searched for

S.No	Name	Availability
1	Outlook	Yes
2	Mangalam Weekly	No
3	India Today	Yes

Latest Book

C++ Programming


GATE TOPICWISE SOLVED PAPERS Electrical Engineering

Copyright@ SUNWAVE Library

### Screen Description

This page is for the student where the student will be able to search the desired books, journals, magazines, novels. The student is given advance functionality of advance search which will help the students in the efficient searching of the books or whatever journals. The list associated to the search will be displayed at the bottom of the page as a result of the advance search.

### III. Add Book



The screenshot shows the 'Add Book' interface of the SUNWAVE LIBRARY. The page features a green header with the library's logo and navigation links: Home, Search Book, Book, Add user, Issue Book, and Help. The main content area is titled 'LIBRARY' and 'Add books and books details'. It contains a form with the following fields:

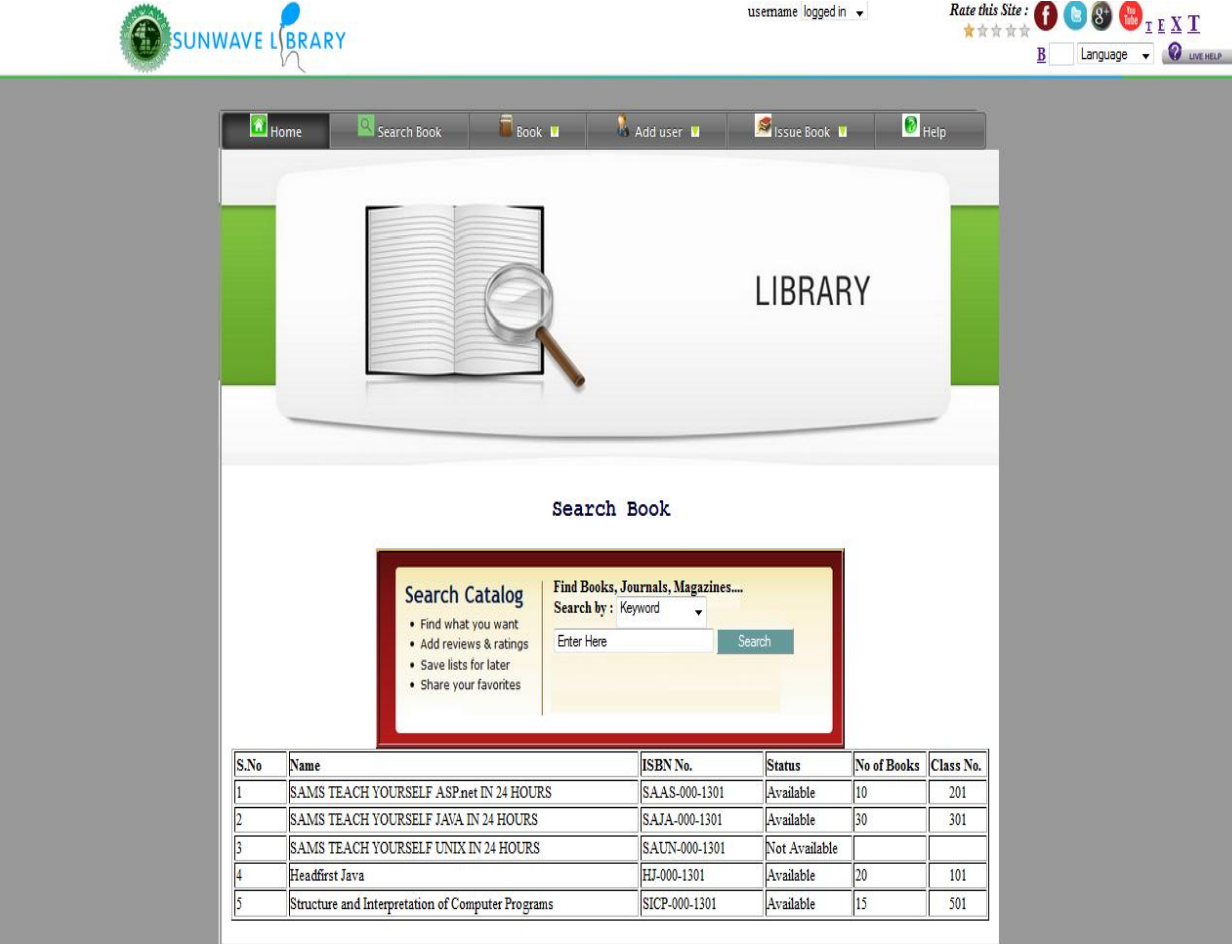
Field	Value
Entry Date	11/11/2018
Accession No.	
Author Name	
Title of Book	
Edition	
Publication	
Place of Publication	
Year of Publication	
Pages	
Volume	

Copyright@ SUNWAVE Library

#### Screen Description

This page is for librarian to add book. This page provides the facility to add a new book to the database by the librarian. The librarian needs to enter the details of the book i.e. accession no, author name, title of book, and other fields as specified in the screenshot. The librarian will add the details of the book by pressing the button.

## IV. Search book



The screenshot shows the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search Book, Book, Add user, Issue Book, and Help. The main content area features a large banner with an open book and a magnifying glass, with the word "LIBRARY" to the right. Below the banner is a "Search Book" section. This section includes a "Search Catalog" box with a list of actions: "Find what you want", "Add reviews & ratings", "Save lists for later", and "Share your favorites". To the right of this box is a search form titled "Find Books, Journals, Magazines..." with a "Search by: Keyword" dropdown, an "Enter Here" input field, and a "Search" button. Below the search form is a table displaying search results.

S.No	Name	ISBN No.	Status	No of Books	Class No.
1	SAMS TEACH YOURSELF ASP.net IN 24 HOURS	SAAS-000-1301	Available	10	201
2	SAMS TEACH YOURSELF JAVA IN 24 HOURS	SAJA-000-1301	Available	30	301
3	SAMS TEACH YOURSELF UNIX IN 24 HOURS	SAUN-000-1301	Not Available		
4	Headfirst Java	HJ-000-1301	Available	20	101
5	Structure and Interpretation of Computer Programs	SICP-000-1301	Available	15	501

Copyright@ SUNWAVE Library

**Screen Description**

This page is only for searching the book. If the librarian is requested by a student to search a book then this page is helpful in searching the particular book. The student will have to enter the searching criteria which he wants to search whether he want to search through title, author, subject or ISBN no. The search results will be displayed at the bottom of the page.

## V. Simple search

The screenshot displays the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search & Find, Student Record, Help, and Ask a Librarian. The user is logged in as 'username'. On the right, there are social media links (Facebook, Twitter, YouTube, RSS, Text) and a 'Rate this Site' section with five stars. Below the navigation bar, the main content area features a large banner with an open book and a magnifying glass, labeled 'LIBRARY'. To the left of the banner, there is a 'Library News' section stating: 'All Library branches and offices will be closed in observance of Dipawali.' In the center, there is a 'Search Catalog' section with a 'Find Books....' heading. Below this, there is a 'Search Books by:' dropdown menu set to 'Keyword', an 'Enter the name...' text input field, and a 'Search' button. To the right of the search section, there is a 'Latest Book' section featuring a book cover for 'C++ Programming'. Below the search section, there is a 'List of Books searched for' table. The table has four columns: S.No, Name, Availability, and Items. It lists six books with their respective availability and item counts. At the bottom of the page, there is a copyright notice: 'Copyright@ SUNWAVE Library'.

Library News  
All Library branches and offices will be closed in observance of Dipawali.

Search Catalog

Find Books....  
Search Books by : Keyword  
Enter the name... Search

Latest Book  
C++ Programming

List of Books searched for

S.No	Name	Availability	Items
1	Headfirst Java	Yes	10
2	Introduction to Algorithms	No	0
3	Structure and Interpretation of Computer Programs	Yes	5
4	SAMS TEACH YOURSELF UNIX IN 24 HOURS	Yes	24
5	SMALL C++ HOW TO PROGRAM w/CD	Yes	10
6	ELEMENTS OF THE THEORY OF COMPUTATION	No	0

Copyright@ SUNWAVE Library

### Screen Description

This page is only for searching the book. If the student is not doing advance search then this page is helpful in searching the particular book. The student will have to enter the searching criteria which he wants to search whether he want to search through title, author, subject or ISBN no.

## VI. Edit Book Detail

username logged in

Rate this Site : ☆☆☆☆

Language

Home Search Book Book Add user Issue Book Help

**LIBRARY**

**Edit Books and Books details**

**Search Catalog**

- Find what you want
- Add reviews & ratings
- Save lists for later
- Share your favorites

Find Books....  
Search Books by : Keyword  
Enter Here.... Search

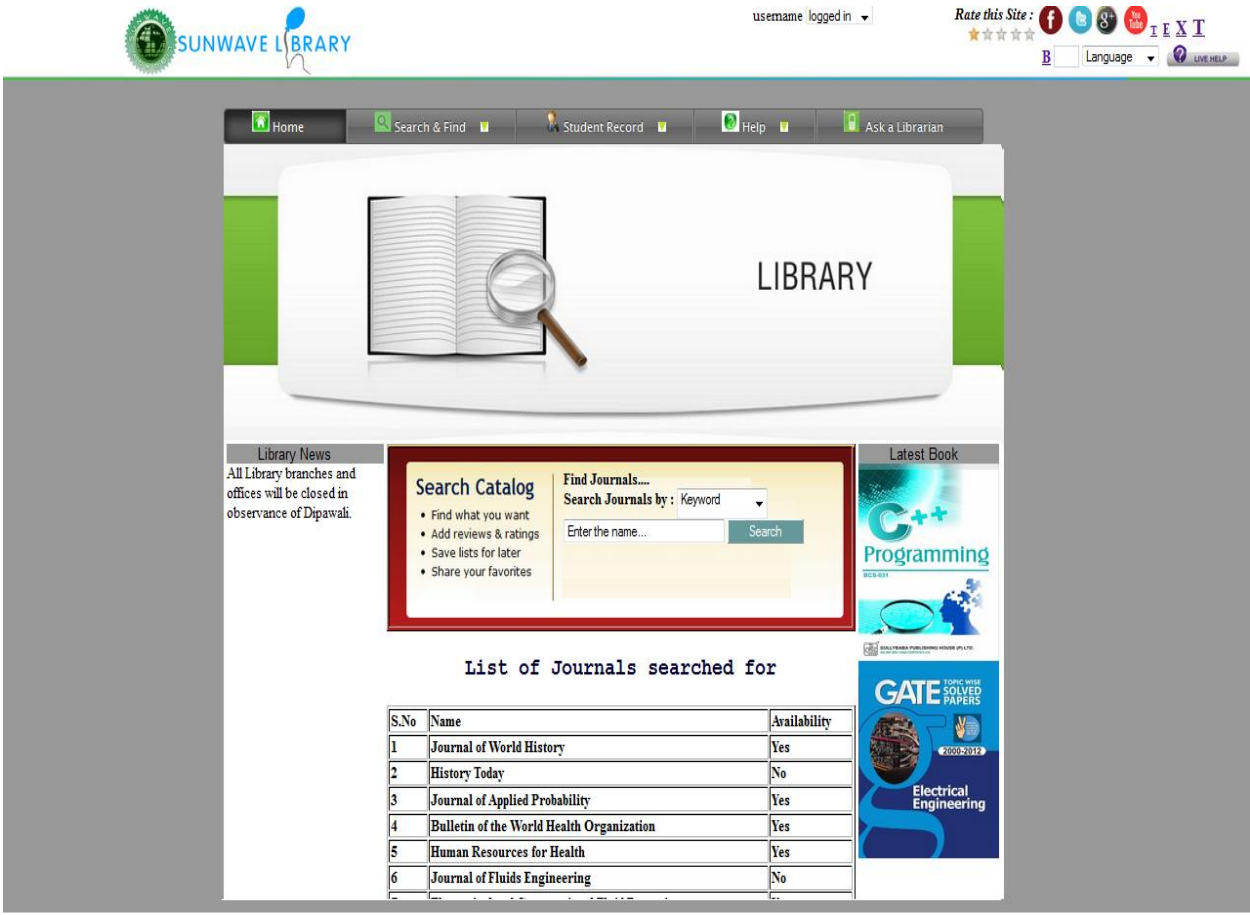
Entry Date  
Accession No.  
Author Name  
Title of Book  
Edition

Copyright@ SUNWAVE Library

### Screen Description

This page helps the librarian to edit the details of the book already added in the system. In case of any modification to be done in the book details the librarian will enter the details of the book to be edited. The librarian will enter the details which he/she wants to modify and accordingly will click on the update button.

## VII. searching the Journal



The screenshot shows the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search & Find, Student Record, Help, and Ask a Librarian. The main header features a large graphic of an open book with a magnifying glass and the word "LIBRARY". Below this, there is a "Search Catalog" section with a "Find Journals..." dropdown menu and a "Search Journals by: Keyword" search bar. To the right of the search bar is a "Search" button. Below the search bar, there is a "List of Journals searched for" table. The table has three columns: S.No, Name, and Availability. The table lists six journals. To the right of the search bar, there is a "Latest Book" section featuring a book cover for "C++ Programming" and another for "GATE 2000-2012 Electrical Engineering".

Library News  
All Library branches and offices will be closed in observance of Dipawali.

**Search Catalog**

Find Journals....  
Search Journals by: Keyword  
Enter the name...

**List of Journals searched for**

S.No	Name	Availability
1	Journal of World History	Yes
2	History Today	No
3	Journal of Applied Probability	Yes
4	Bulletin of the World Health Organization	Yes
5	Human Resources for Health	Yes
6	Journal of Fluids Engineering	No

Latest Book  
C++ Programming  
GATE 2000-2012 Electrical Engineering

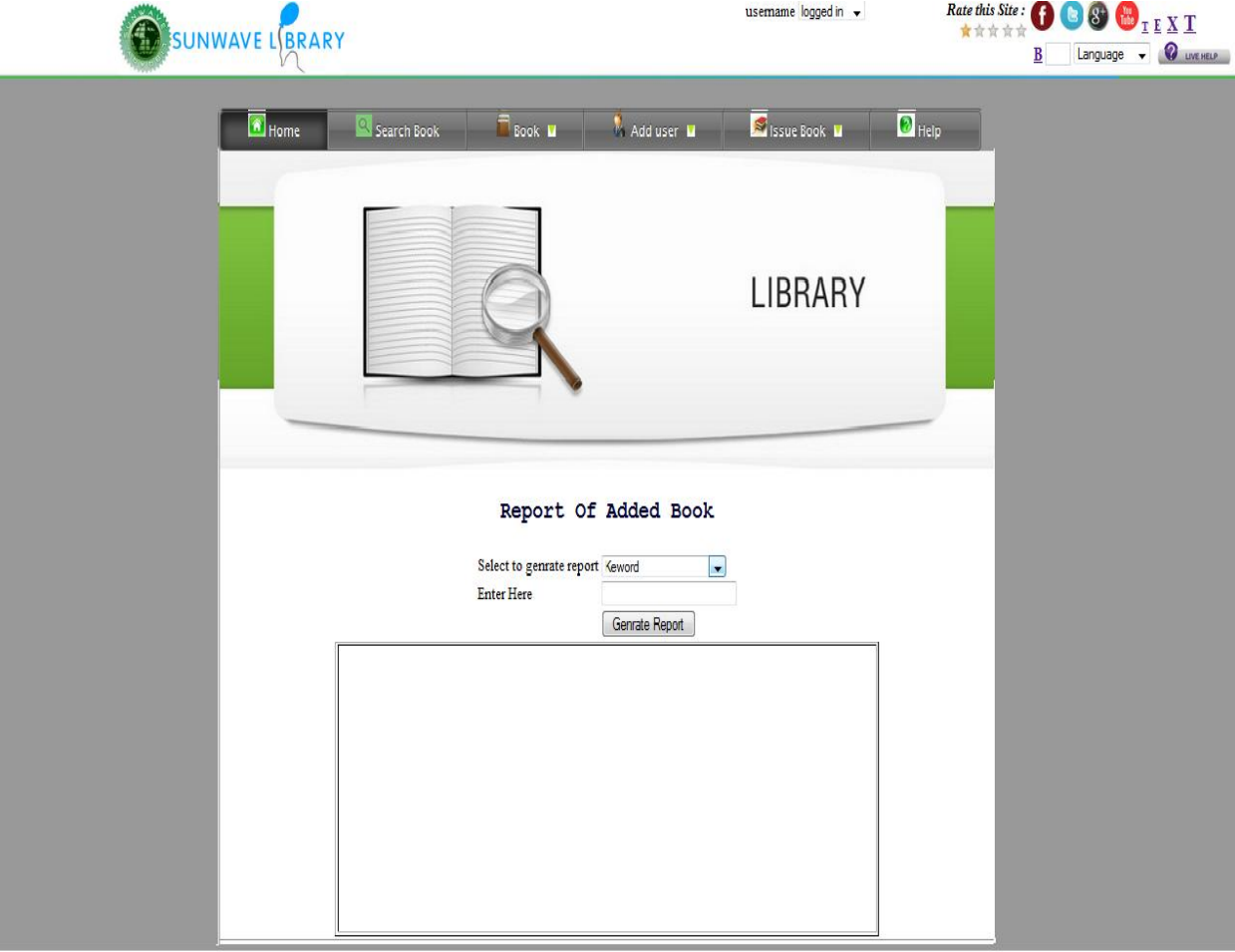
Copyright@ SUNWAVE Library

### Screen Description

This page is only for searching the Journal. If the student is not doing advance search then this page is helpful in searching the particular journal. The student will have to enter the searching criteria which he wants to search whether he want to search through title, author, subject or ISBN no. The search results will be displayed at the bottom of the page.



## VIII. Report



The screenshot displays the SUNWAVE LIBRARY website interface. At the top, there is a navigation bar with links: Home, Search Book, Book, Add user, Issue Book, and Help. The main content area features a large banner with an open book and a magnifying glass, with the word 'LIBRARY' to the right. Below the banner, the section is titled 'Report Of Added Book'. It contains a form with a dropdown menu labeled 'Select to generate report' with 'Keyword' selected, a text input field labeled 'Enter Here', and a 'Generate Report' button. A large empty rectangular box is positioned below the form. The footer of the page reads 'Copyright@ SUNWAVE Library'.

Copyright@ SUNWAVE Library

### Screen Description

This page will allow librarian to generate the report. The librarian will enter or choose the subject or author or publication and then will click on the generate report button .The report will be generated at the page .

## IX. searching the magazines

The screenshot displays the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search & Find, Student Record, Help, and Ask a Librarian. The main header features the library's logo and a large graphic of an open book with a magnifying glass, labeled 'LIBRARY'. Below this, the 'Search Catalog' section is prominent, with a search bar and a 'Search' button. To the right, there are sections for 'Library News' and 'Latest Book'. The search results are displayed in a table below the search bar.

Library News  
All Library branches and offices will be closed in observance of Dipawali.

Search Catalog

Find magazines...  
Search magazines by: Keyword  
Enter the name... Search

Latest Book

G++ Programming

GATE TOPIC WISE SOLVED PAPERS

List of magazines searched for

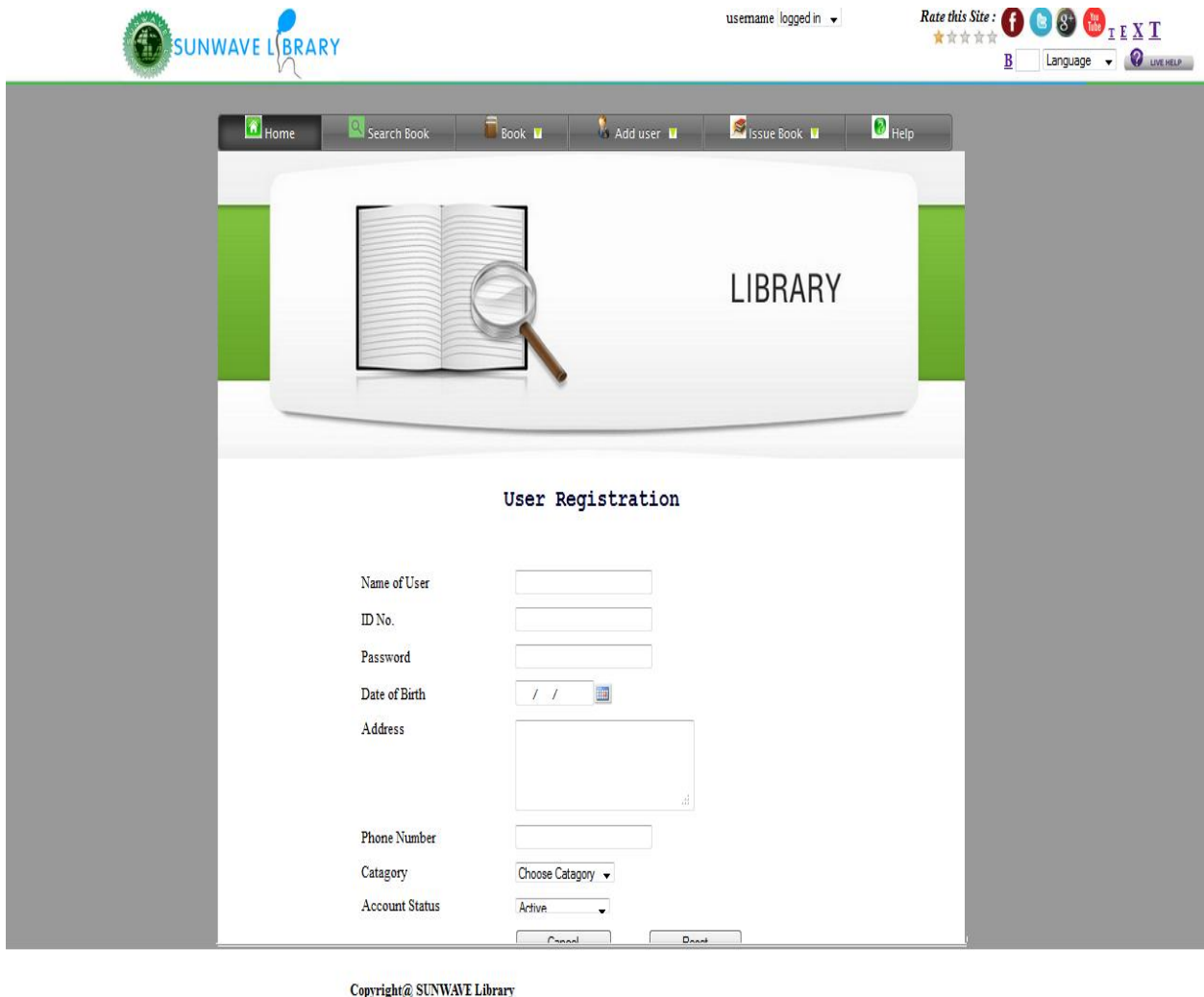
S.No	Name	Availability
1	Outlook	Yes
2	Mangalam Weekly	No

Copyright@ SUNWAVE Library

**Screen Description:**

This page is only for searching the magazines. If the student is not doing advance search then this page is helpful in searching the particular magazines. The student will have to enter the searching criteria which he wants to search whether he want to search through title, author, subject or ISBN no. The search results will be displayed at the bottom of the page.

## X. Registration



The screenshot displays the SUNWAVE LIBRARY website's user registration interface. At the top, the site's logo is on the left, and navigation links (Home, Search Book, Book, Add user, Issue Book, Help) are in the center. On the right, there are links for 'username logged in', 'Rate this Site', social media icons, and a 'Language' dropdown. The main content area features a large graphic of an open book with a magnifying glass and the word 'LIBRARY'. Below this is the 'User Registration' form, which includes input fields for Name of User, ID No., Password, Date of Birth (with a calendar icon), Address, Phone Number, a 'Choose Catagory' dropdown, and an 'Account Status' dropdown set to 'Active'. 'Cancel' and 'Submit' buttons are at the bottom of the form. The footer contains the text 'Copyright@ SUNWAVE Library'.

username logged in

Rate this Site : ★★★★★

Language

Home Search Book Book Add user Issue Book Help

LIBRARY

User Registration

Name of User

ID No.

Password

Date of Birth  /  /

Address

Phone Number

Catagory

Account Status

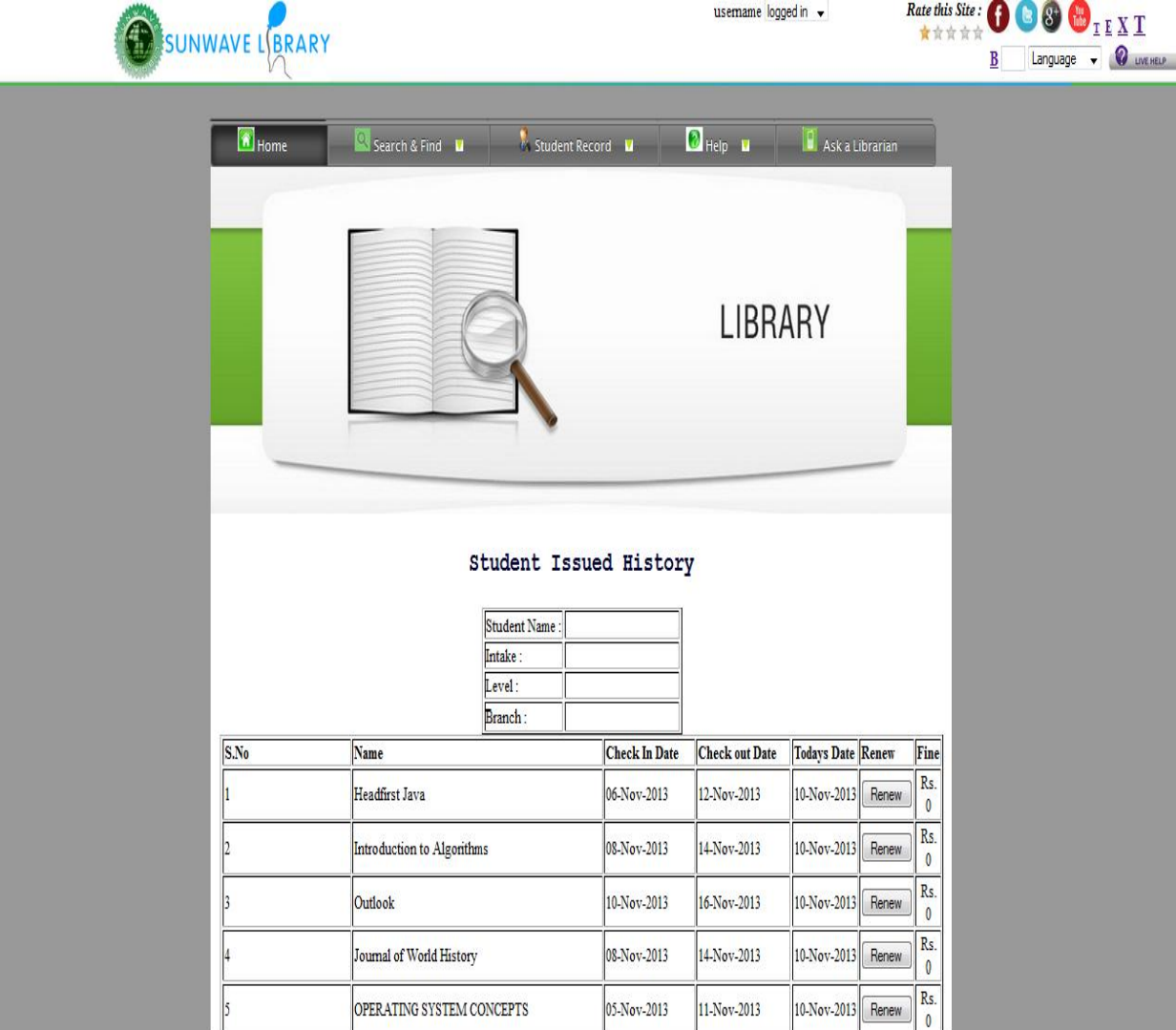
Cancel Submit

Copyright@ SUNWAVE Library

### Screen Description: -

As we can see from the screen shot it will be used for the addition of a new user to the system. The user details will be filled by the librarian i.e. name, ID no, d/o/b, address, phone no. The librarian will have to click on the button submit to add the user to the system.

## XI. Student details



username logged in

Rate this Site : ☆☆☆☆

Language

Home Search & Find Student Record Help Ask a Librarian

**LIBRARY**

**Student Issued History**

Student Name :  
Intake :  
Level :  
Branch :

S.No	Name	Check In Date	Check out Date	Todays Date	Renew	Fine
1	Headfirst Java	06-Nov-2013	12-Nov-2013	10-Nov-2013	Renew	Rs. 0
2	Introduction to Algorithms	08-Nov-2013	14-Nov-2013	10-Nov-2013	Renew	Rs. 0
3	Outlook	10-Nov-2013	16-Nov-2013	10-Nov-2013	Renew	Rs. 0
4	Journal of World History	08-Nov-2013	14-Nov-2013	10-Nov-2013	Renew	Rs. 0
5	OPERATING SYSTEM CONCEPTS	05-Nov-2013	11-Nov-2013	10-Nov-2013	Renew	Rs. 0

Copyright@ SUNWAVE Library

### Screen Description

The page helps us to find the issued history of the books by the student. The details will be already displayed to the student in the given table in the screenshot .The issued book history also have the renew button option through which student could renew the book.

## XII. Edit User Details

username logged in

Rate this Site : ★★★★★

Language

Home Search Book Book Add user Issue Book Help

**LIBRARY**

**Edit User Details**

**Search Catalog**

- Find what you want
- Add reviews & ratings
- Save lists for later
- Share your favorites

Find User...  
Search User by : Keyword  
Enter Here Search

Name	Intake	Password	Search
Alok Ranjan	PT1181114	alokranjan	Search
Alok Kumar	PT1182207	alokkumar	Search

Name of User

Copyright@ SUNWAVE Library

### Screen Description

This page helps the librarian to edit the details of the user already added in the system. In case of any modification to be done in the user details the librarian will enter the details of the user to be edited. The librarian will enter the details which he/she wants to modify and accordingly will click on the update button.

## XIII. Reserve Book

username logged in

Rate this Site : ☆☆☆☆

Language

Home Search & Find Student Record Help Ask a Librarian

**LIBRARY**

**Reserve Any Book**

**Search Catalog**

- Find what you want
- Add reviews & ratings
- Save lists for later
- Share your favorites

Find Books....  
Search Books by : Keyword  
Enter the name... Search

**List Of books**

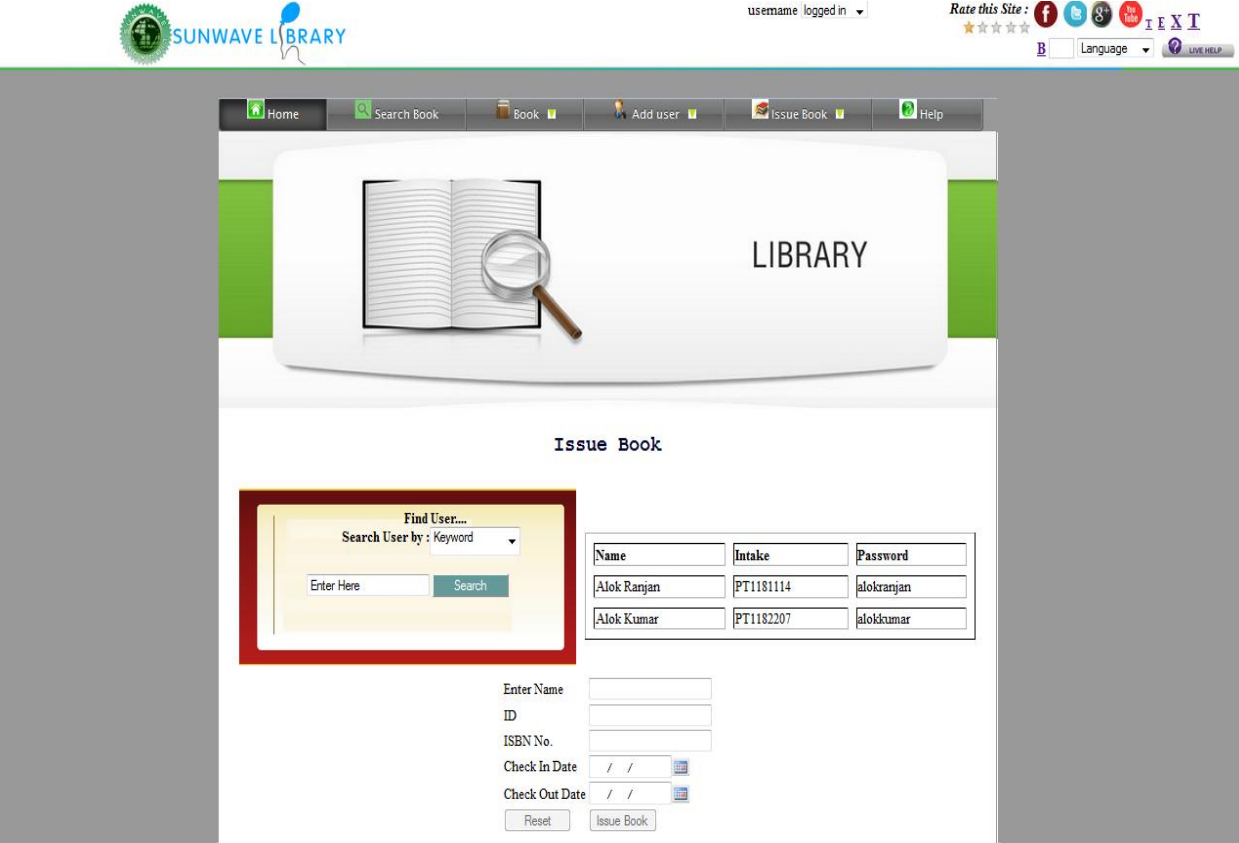
S.No	Name	Reserve Date For	Todays Date	Reserve Book
1	Object Oriented Turbo C Plus Plus	11/11/2012	11/07/2013	Reserve
2	Programming With C Plus Plus	11/11/2012	11/07/2013	Reserve
3	Oriented Progra With Ansi & Turbo C Plus Plus	11/11/2012	11/07/2013	Reserve

Copyright@ SUNWAVE Library

**Screen description:**

It is for the student the screen displayed above gives the user facility to reserve a book for the study purpose in the future. The user needs to search the book by filling the searching criteria and thereafter entering which one to search. The results will be displayed at the bottom of the page where there is a reserve button which will help the user to reserve a particular book.

## XIV. Issue Book



The screenshot displays the 'Issue Book' interface of the SUNWAVE LIBRARY system. The page includes a navigation bar with links: Home, Search Book, Book, Add user, Issue Book, and Help. The main content area features a header with a book icon and the word 'LIBRARY'. Below this is the 'Issue Book' section, which contains a 'Find User...' search box, a table of users, and a form for entering book details.

**Find User...**  
Search User by : Keyword  
Enter Here Search

Name	Intake	Password
Alok Ranjan	PT1181114	alokranjan
Alok Kumar	PT1182207	alokkumar

Enter Name  
ID  
ISBN No.  
Check In Date / /  
Check Out Date / /  
Reset Issue Book

Copyright@ SUNWAVE Library

**Screen Description:-**

This is the basic functionality of the system which is fulfilled by the system. The librarian will have to search the user to whom the book is to be issued. Once the user is searched the librarian will enter the book details i.e. ISBN no and check in date and check out date and then will click on issue book button to issue the book.

## XV. Manual Help



username logged in

Rate this Site :        
 ★★★★★  
 B Language LIVE HELP

Home
Search & Find
Student Record
Help
Ask a Librarian



LIBRARY

### Manual Help For Users

The following table provides a *brief* explanation of the listed Web pages and their content.

Link	Use For
<a href="#">Home</a>	This is home page which is having information about the SUNWAVE Library. This also shows the latest books added to library.
<a href="#">Search &amp; Find</a>	This section contain Four section those are 1. <a href="#">Advance Search</a> which contain advance search option for to search the resourcess. 2. <a href="#">Books</a> This section can find only books. 3. <a href="#">Journals</a> In this section user can search the journals only. And 4. <a href="#">Magazines</a> This section can search only the magazines.
<a href="#">Student Record</a>	This section contain three combined section those are 1. <a href="#">Book History</a> , 2. <a href="#">Reserve Book</a> and 3. <a href="#">Feedback</a> . In Book History section the history of issued book by user will be shown to user and user can renew the book for next week also. user can see the late to submit the booko get the fine also. It also show the list of book reserved and you can cancel the reserved book also. In reserve book section You can find the book and reserve for a particular date. In Feedback section user can give their views about this site either demants, manits of site. And can give the suggestion also.
<a href="#">Help</a>	In help section there is three section 1. <a href="#">Help &amp; Documentation</a> , 2. <a href="#">Video</a> and 3. <a href="#">Location</a> In help and documentation section you will get the whole detail about the every link available on the site. In video section Video help is there so that user can get help. And In Location section address of library give there so

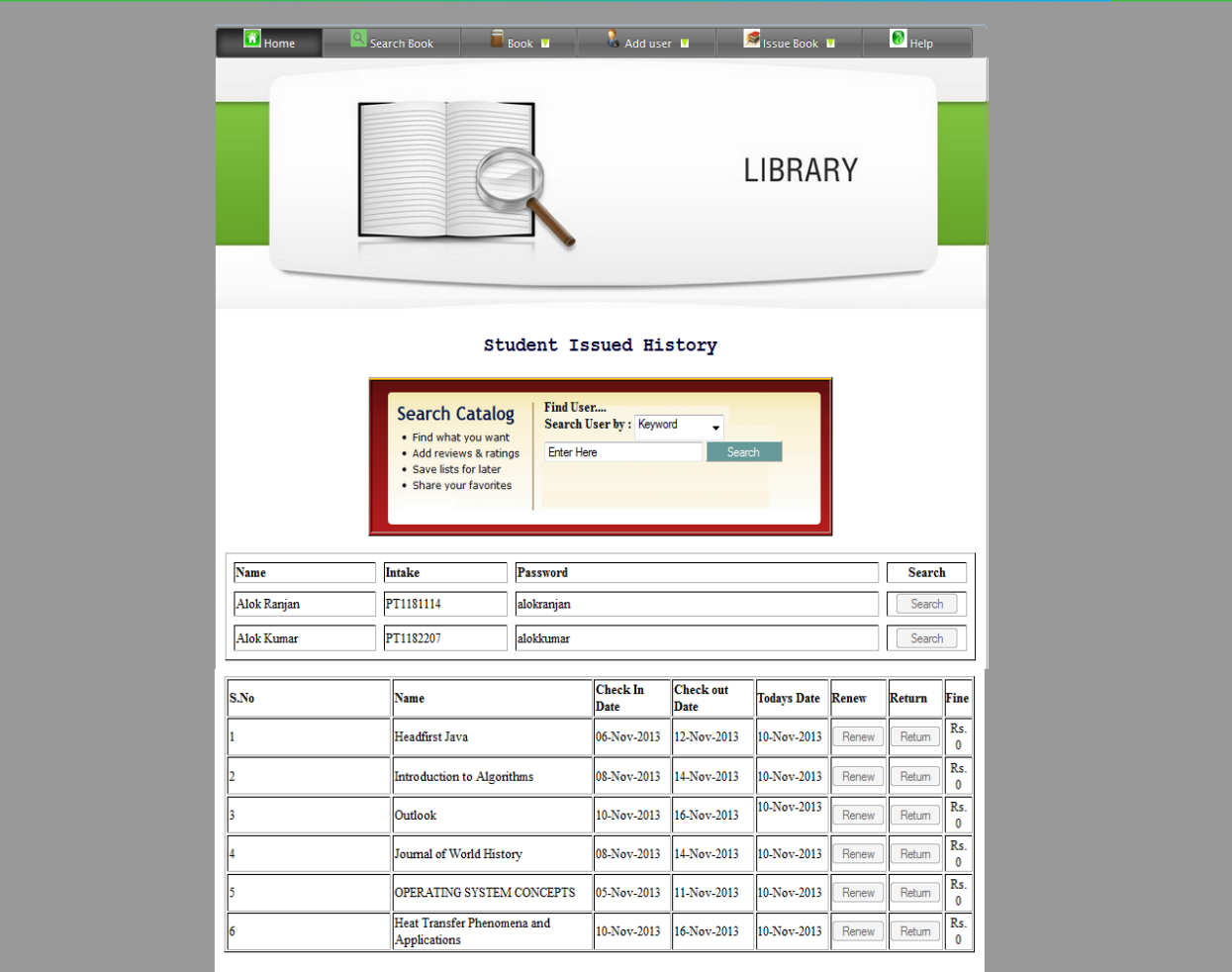
Copyright@ SUNWAVE Library

### Screen Description

The screen provides the user manual for the user in case the user finds any difficulty in the navigation of the system.



## XVI. Issue history



**SUNWAVE LIBRARY**

username logged in | Rate this Site: ★★★★★ | Language | LIVE HELP

Home | Search Book | Book | Add user | Issue Book | Help

## LIBRARY

### Student Issued History

**Search Catalog**

- Find what you want
- Add reviews & ratings
- Save lists for later
- Share your favorites

**Find User...**  
**Search User by:** Keyword  
Enter Here

Name	Intake	Password	Search
Alok Ranjan	PT1181114	alokranjan	<input type="button" value="Search"/>
Alok Kumar	PT1182207	alokkumar	<input type="button" value="Search"/>

S.No	Name	Check In Date	Check out Date	Todays Date	Renew	Return	Fine
1	Headfirst Java	06-Nov-2013	12-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0
2	Introduction to Algorithms	08-Nov-2013	14-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0
3	Outlook	10-Nov-2013	16-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0
4	Journal of World History	08-Nov-2013	14-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0
5	OPERATING SYSTEM CONCEPTS	05-Nov-2013	11-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0
6	Heat Transfer Phenomena and Applications	10-Nov-2013	16-Nov-2013	10-Nov-2013	<input type="button" value="Renew"/>	<input type="button" value="Return"/>	Rs. 0

Copyright@ SUNWAVE Library

**Screen Description**

This screen is one of the important screens for the librarian who will help the librarian to return or renew the book as per student request. The librarian will first search the user and then corresponding the book issued history will appear. The librarian will then returns or renew the books and the correspondingly fine will be calculated.

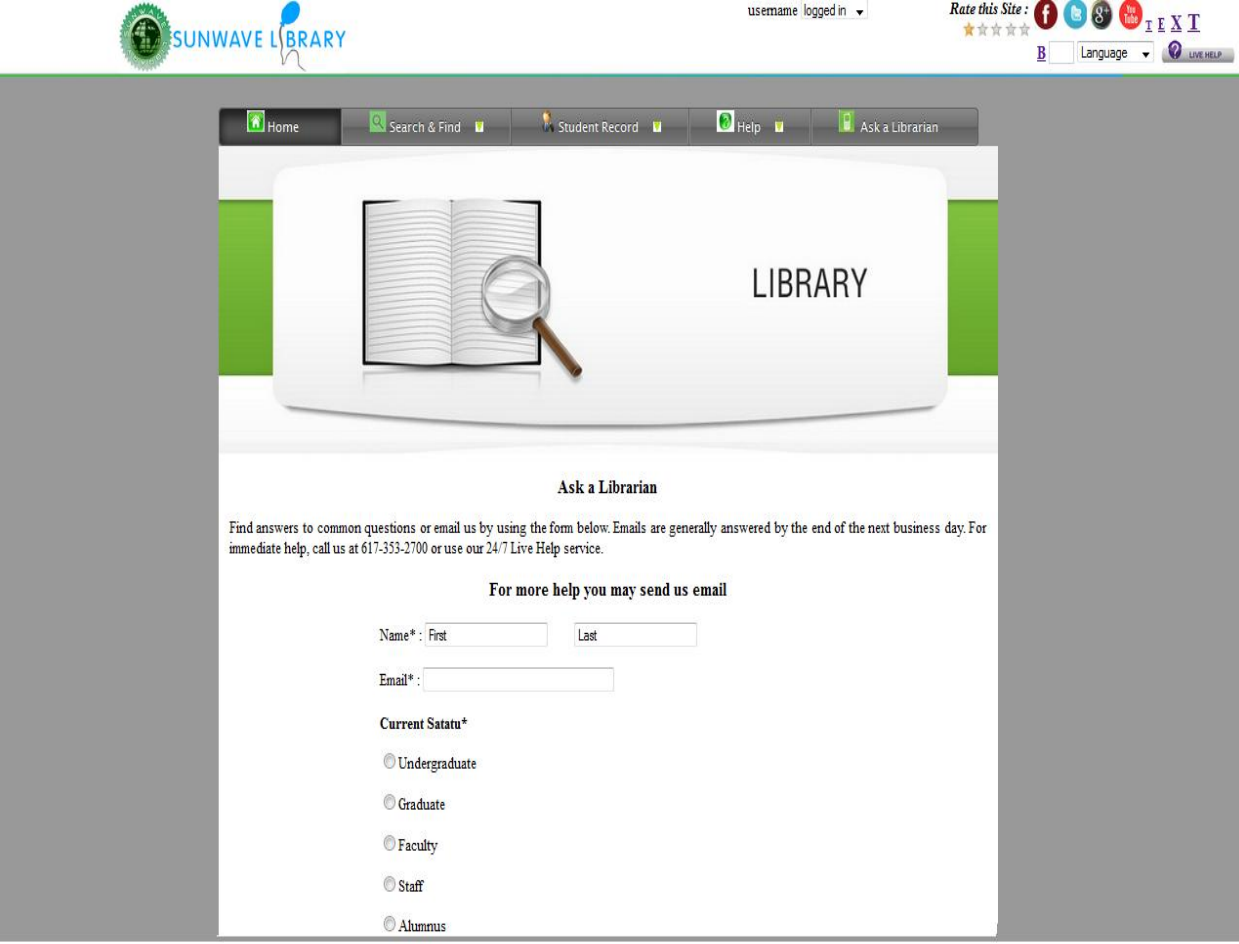
## XVII. Video help

**Screen Description**

This page is for the video tutorial for the novice user in case he finds it difficult to operate.

The page contains the demo video displaying how to work through the page.

## XVIII. Contact us



The screenshot shows the SUNWAVE LIBRARY website. At the top, there is a navigation bar with links: Home, Search & Find, Student Record, Help, and Ask a Librarian. The 'Ask a Librarian' link is highlighted. Below the navigation bar, there is a large banner with an image of an open book and a magnifying glass, and the word 'LIBRARY' in large letters. Below the banner, the 'Ask a Librarian' section is displayed. It includes a paragraph: 'Find answers to common questions or email us by using the form below. Emails are generally answered by the end of the next business day. For immediate help, call us at 617-353-2700 or use our 24/7 Live Help service.' Below this, there is a heading 'For more help you may send us email' and a form with the following fields: 'Name\* : First' and 'Last' (two separate text boxes), 'Email\* : ' (a single text box), and 'Current Satatu\*' (a group of radio buttons). The radio buttons are labeled: Undergraduate, Graduate, Faculty, Staff, and Alumnus. At the bottom of the page, there is a copyright notice: 'Copyright@ SUNWAVE Library'.

username | logged in

Rate this Site : ☆☆☆☆

Language

LIVE HELP

Home Search & Find Student Record Help Ask a Librarian

LIBRARY

**Ask a Librarian**

Find answers to common questions or email us by using the form below. Emails are generally answered by the end of the next business day. For immediate help, call us at 617-353-2700 or use our 24/7 Live Help service.

**For more help you may send us email**

Name\* : First Last

Email\* :

**Current Satatu\***

☐ Undergraduate

☐ Graduate

☐ Faculty

☐ Staff

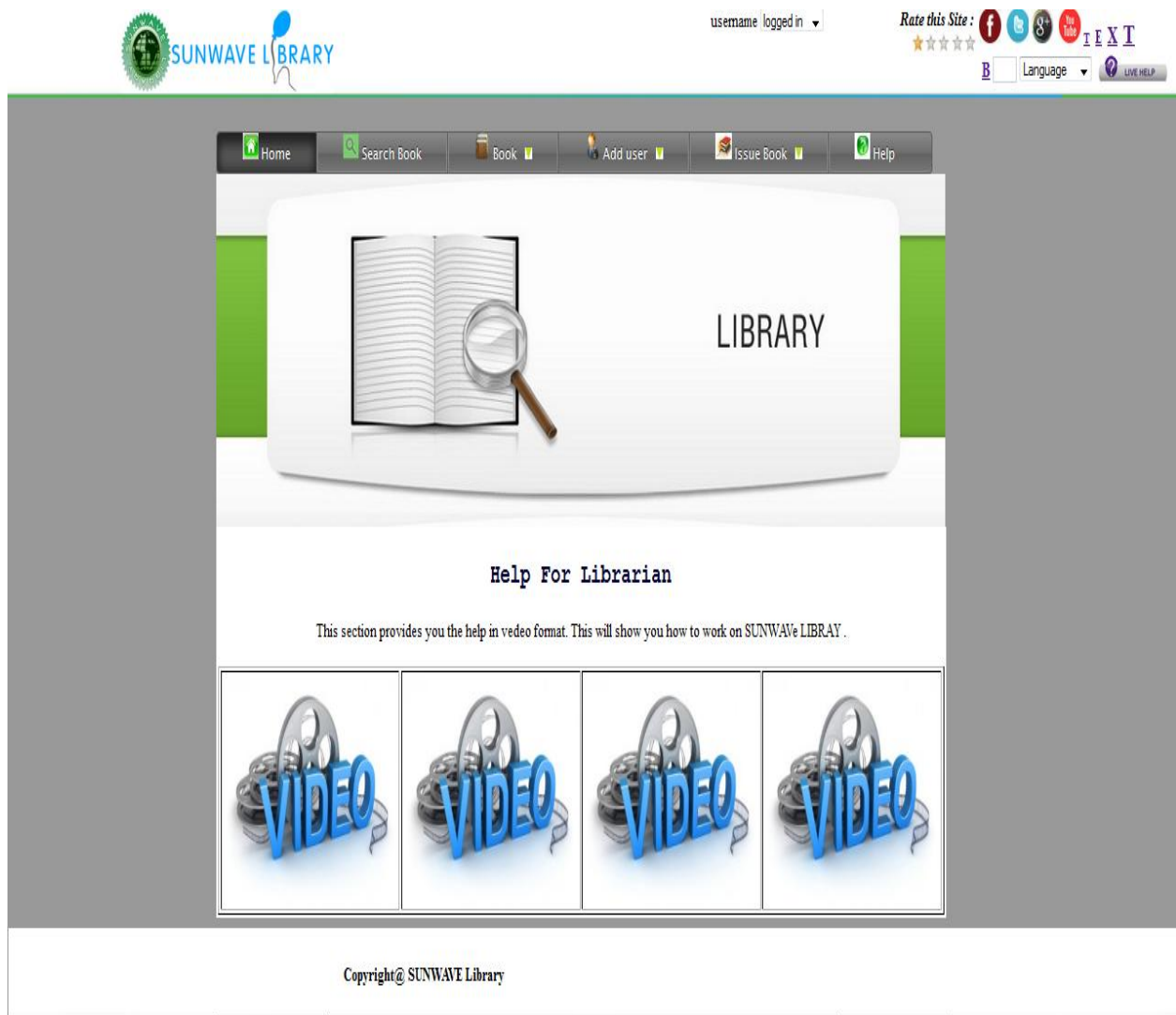
☐ Alumnus

Copyright@ SUNWAVE Library

**Screen Description**

This page gives user the power to ask a question to librarian in case of any ambiguity. The user will have to enter the email id , name and then ask the question.

## XIX. Help for librarian

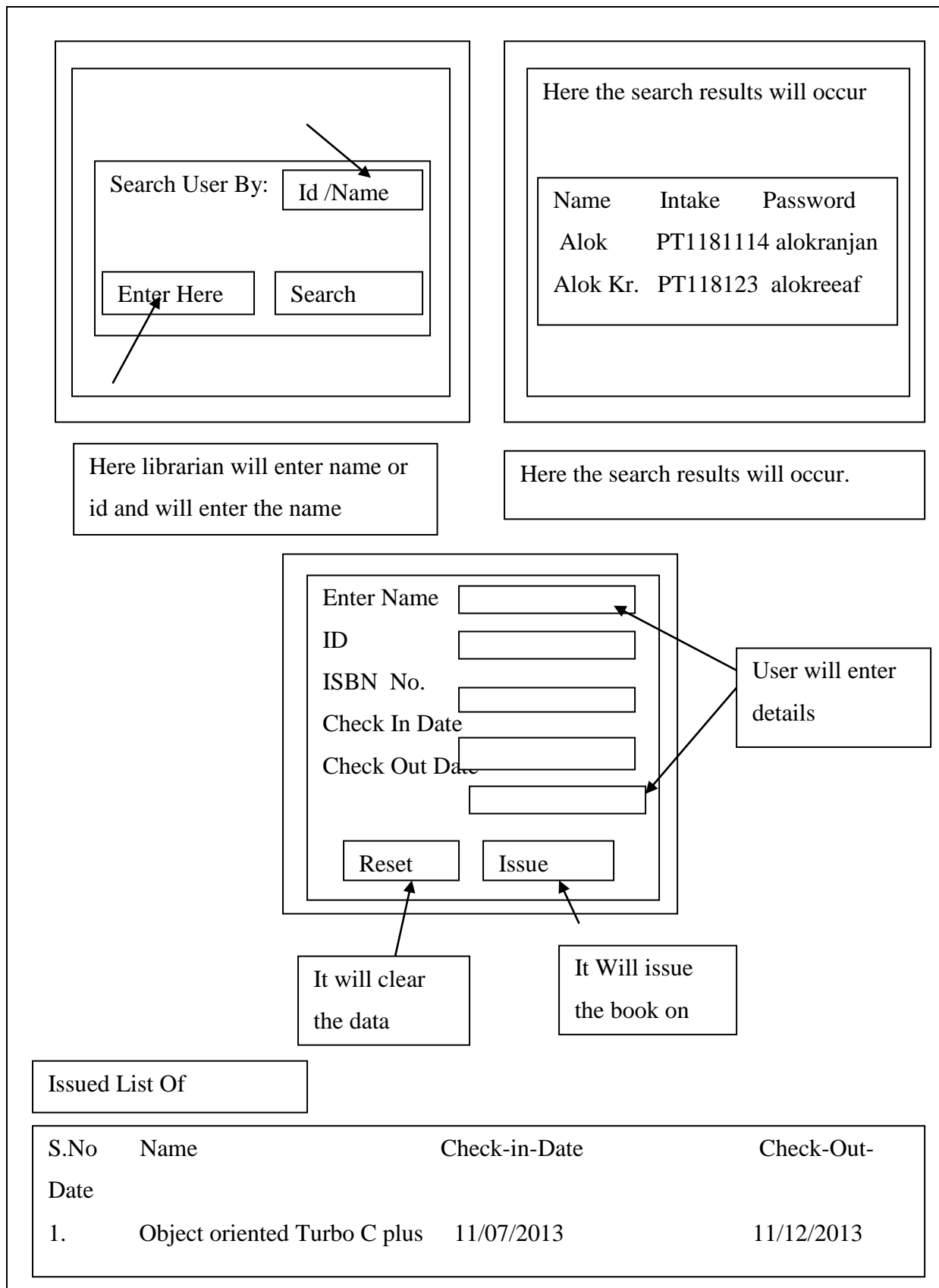


### Screen Description

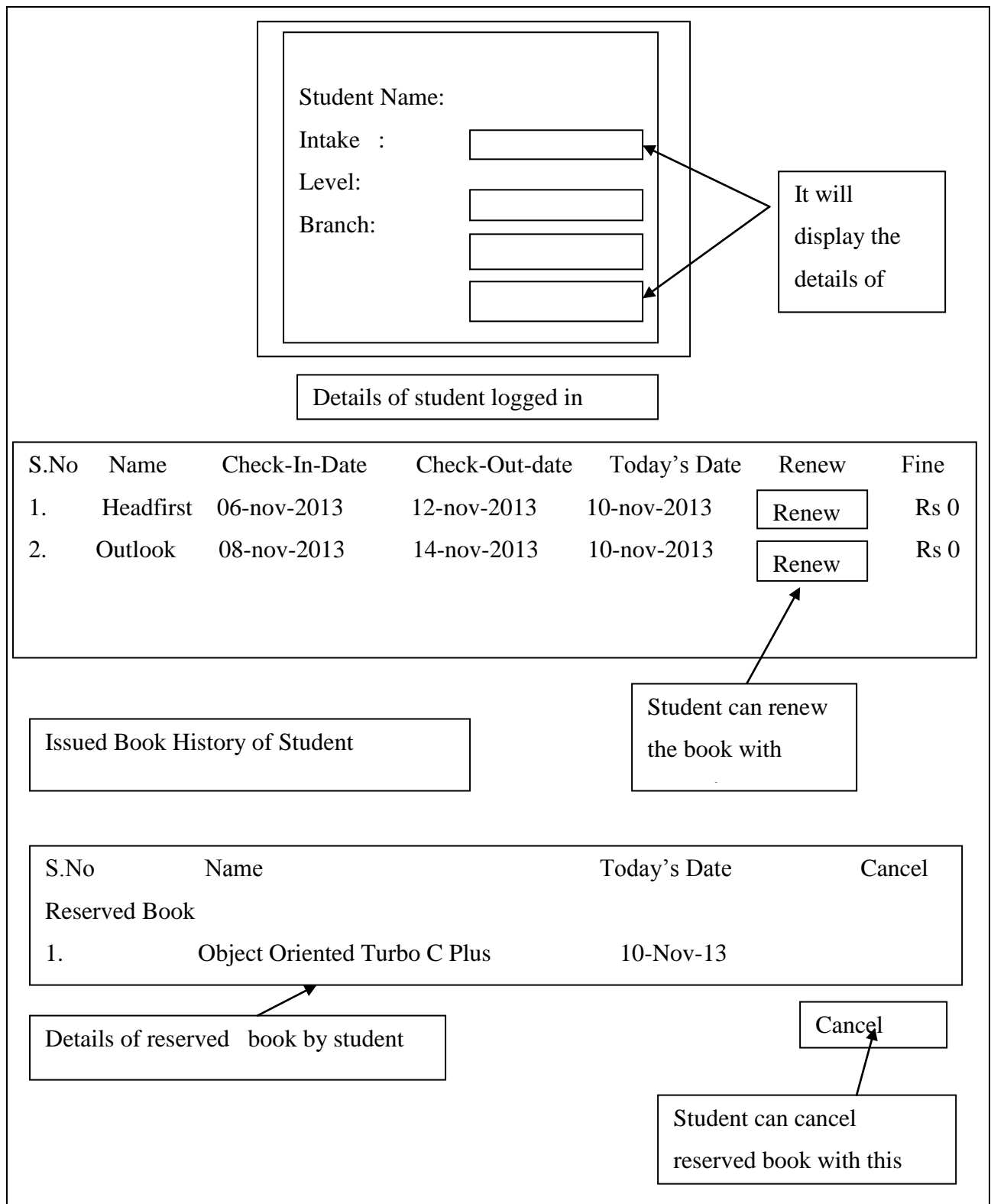
This is for the help for the librarian in the system in form of video tutorials. The librarian will choose the video to be played and the librarian can see the video.

## 4.6 Storyboarding by process

### I. Process storyboard for issuing a book



## II. Process storyboard for Renew Book



## 5 Testing

### 5.1 Formative Testing

#### 5.1.1 Introduction

Formative testing is a type of usability testing. It is done by user view. This testing type makes an attempt to describe the “look and feel” and usage features or usage aspects of a product (The-software-testing.com, 2013). In formative testing we test our system on the basis of usability goals to find that our system is user friendly or not. Formative testing is conduct to check all five usability goals i.e. learnability, efficiency, memorability, error, subjective satisfaction.

Here we are conducting formative testing for our Library management System taking five different users. We have decided five tasks to test, which are as follows:

Task 1: Issue a book

Task 2: Fill the user registration form

Task 3: Fill the details for add book

Task 4: Fill the search criteria

Task 5: Generate report

#### 5.1.2 Task 1: Issue a book

##### I. Learnability testing:

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	4	>5
User 3	0	2	2	>5
User 4	0	2	2	>5
User 5	0	2	3	>5

**Conclusion:** Our all five novice users that participate in the testing performed their task i.e. issue a book in less than 5 min and out of 5 users 3 users completed the task in expected time. So we achieved the learnability goal for this task.

## II. Efficiency Testing

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	3	>5
User 3	0	2	2	>5
User 4	0	2	2	>5
User 5	0	2	2	>5

Total actual completion time=2+3+2+2+2=11 minutes

Total Number of users=5

Average actual completion time=Total actual completion time/ Total Number of users

Average actual completion time=11/5=2.2 minutes

**Conclusion:** We have taken five expert users to perform this task and found that out of 5 users 4 have completed the task in expected time. The average completion time is 2.2 minutes which is very near to expected time. Thus we have successfully achieved efficiency of usability goal for this task.

## III. Memorability testing

Users	Day	Idol Time (in minute)	Actual completion time (in minute)
User 1	1 <sup>st</sup> Day	5	3
User 1	2 <sup>nd</sup> Day	5	2
User 1	6 <sup>th</sup> Day	5	2

**Conclusion:** We have given same task to our casual user to perform after gap of days and found that he completed his task without difficulty. So we found that our system is memorable to user.

## IV. Error testing

Users	Optimal error (no. of time)	Encounter error (no. of time)	Unacceptable (no. of time)
User 1	0	1	>3
User 2	0	0	>3
User 3	0	0	>3
User 4	0	1	>3
User 5	0	0	>3



**Conclusion:** Since out of 5 users 3 have achieved their goal/task without any error. Thus our system achieved error goal for this task.

### 5.1.3 Task 2: Fill the user registration form

#### I. Learnability testing:

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	3	>5
User 3	0	2	2	>5
User 4	0	2	2	>5
User 5	0	2	3	>5

**Conclusion:** Out of 5 users 3 users completed the task in expected time. So we achieved the learnability goal for this task.

#### II. Efficiency Testing

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	2	>5
User 3	0	2	3	>5
User 4	0	2	3	>5
User 5	0	2	2	>5

Total actual completion time= $2+2+3+3+2=11$  minutes

Total Number of users=5

Average actual completion time=Total actual completion time/ Total Number of users

Average actual completion time= $11/5=2.4$  minutes

**Conclusion:** We found that out of 5 users 4 have completed the task in expected time. The average completion time is 2.4 minutes which is very near to expected time. Thus we have successfully achieved efficiency of usability goal for this task.

### III. Memorability testing

Users	Day	Idol Time (in minute)	Actual completion time (in minute)
User 1	1 <sup>st</sup> Day	3	3
User 1	4 <sup>th</sup> Day	3	2
User 1	8 <sup>th</sup> Day	3	2

**Conclusion:** We have given same task to our casual user to perform after gap of days and found that he completed his task without difficulty. So we found that our system is memorable to user.

### IV. Error testing

Users	Optimal error (no. of time)	Encounter error (no. of time)	Unacceptable (no. of time)
User 1	0	0	>3
User 2	0	0	>3
User 3	0	0	>3
User 4	0	1	>3
User 5	0	0	>3

**Conclusion:** During the task period out of 5 users only 1 user got the error. So our system achieved error goal for this task.

#### 5.1.4 Task 3: Fill the details for add book

##### I. Learnability testing:

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	3	>5
User 3	0	2	2	>5
User 4	0	2	2	>5
User 5	0	2	2	>5

**Conclusion:** Our all five novice users that participate in the testing performed their task i.e. issue a book in less than 5 min and out of 5 users 4 users completed the task in expected time. So we achieved the learnability goal for this task.

## II. Efficiency Testing

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	2	2	>5
User 2	0	2	2	>5
User 3	0	2	3	>5
User 4	0	2	2	>5
User 5	0	2	2	>5

Total actual completion time=2+2+3+2+2=11 minutes

Total Number of users=5

Average actual completion time=Total actual completion time/ Total Number of users

Average actual completion time=11/5=2.2 minutes

**Conclusion:** We have taken five expert users to perform this task and found that out of 5 users 4 have completed the task in expected time. The average completion time is 2.2 minutes which is very near to expected time. Thus we have successfully achieved efficiency of usability goal for this task.

## III. Memorability testing

Users	Day	Idol Time (in minute)	Actual completion time (in minute)
User 1	1 <sup>st</sup> Day	5	3
User 1	5 <sup>th</sup> Day	5	2
User 1	7 <sup>th</sup> Day	5	2

**Conclusion:** We gave this task to user to perform it after a gap of days and found that he completed his task successfully. Thus we found that our system is memorable to user.

## IV. Error testing

Users	Optimal error (no. of time)	Encounter error (no. of time)	Unacceptable (no. of time)
User 1	0	0	>2
User 2	0	0	>2
User 3	0	0	>2
User 4	0	1	>2
User 5	0	0	>2

**Conclusion:** Since out of 5 users 4 have successfully completed their task without any error. Thus our system achieved error goal for this task.

#### 5.1.5 Task 4: Fill the search criteria

##### I. Learnability testing:

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	1	2	>3
User 2	0	1	1	>3
User 3	0	1	2	>3
User 4	0	1	1	>3
User 5	0	1	1	>3

**Conclusion:** Out of 5 users 3 users completed the task in expected time. So we achieved the learnability goal for this task.

##### II. Efficiency Testing

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	1	1	>3
User 2	0	1	2	>3
User 3	0	1	2	>3
User 4	0	1	1	>3
User 5	0	1	1	>3

Total actual completion time=1+2+2+1+1=7 minutes

Total Number of users=5

Average actual completion time=Total actual completion time/ Total Number of users

Average actual completion time=7/5=1.4 minutes

**Conclusion:** We found that out of 5 users 3 have completed the task in expected time. The average completion time is 1.4 minutes which is very near to expected time. Thus we have successfully achieved efficiency of usability goal for this task.

##### III. Memorability testing

Users	Day	Idol Time (in minute)	Actual completion time (in minute)
User 1	1 <sup>st</sup> Day	2	2
User 1	2 <sup>nd</sup> Day	2	3
User 1	7 <sup>th</sup> Day	2	2

**Conclusion:** We have given same task to our casual user to perform after gap of days and found that he completed his task without difficulty. So we found that our system is memorable to user.

#### IV. Error testing

Users	Optimal error (no. of time)	Encounter error (no. of time)	Unacceptable (no. of time)
User 1	0	0	>3
User 2	0	0	>3
User 3	0	0	>3
User 4	0	0	>3
User 5	0	0	>3

Conclusion: Since no user got the error during the task perform. So our system achieved error goal for this task.

#### 5.1.6 Task 5: Generate report

##### I. Learnability testing:

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	1	1	>3
User 2	0	1	1	>3
User 3	0	1	2	>3
User 4	0	1	1	>3
User 5	0	1	2	>3

**Conclusion:** Our all five novice users that participate in the testing performed their task i.e. issue a book in less than 5 min and out of 5 users 3 users completed the task in expected time. So we achieved the learnability goal for this task.

##### II. Efficiency Testing

Users	Optimal time (in minute)	Expected time (in minute)	Actual completion time (in minute)	Unacceptable Time (in minute)
User 1	0	1	1	>3
User 2	0	1	1	>3
User 3	0	1	1	>3
User 4	0	1	1	>3
User 5	0	1	2	>3

Total actual completion time= $1+1+1+1+2=6$  minutes

Total Number of users= $5$

Average actual completion time=Total actual completion time/ Total Number of users

Average actual completion time= $6/5=1.2$  minutes

**Conclusion:** The average completion time is 1.2 minutes which is very near to expected time. Thus we have successfully achieved efficiency of usability goal for this task.

### III. Memorability testing

Users	Day	Idol Time (in minute)	Actual completion time (in minute)
User 1	1 <sup>st</sup> Day	1	1
User 1	4 <sup>th</sup> Day	1	1
User 1	7 <sup>th</sup> Day	1	1

**Conclusion:** We gave this task to user to perform it after a gap of days and found that he completed his task successfully. Thus we found that our system is memorable to user.

### IV. Error testing

Users	Optimal error (no. of time)	Encounter error (no. of time)	Unacceptable (no. of time)
User 1	0	0	>2
User 2	0	0	>2
User 3	0	1	>2
User 4	0	0	>2
User 5	0	0	>2

**Conclusion:** Since out of 5 users 4 have successfully completed their task without any error. Thus our system achieved error goal for this task.

**Overall conclusion:** Selected five tasks related to our system given to different users. We found that all our users completed their task successfully. All the criteria for testing is fulfilled in our system. The users of our system are satisfied with our product. Thus we conclude that our system provides the subjective satisfaction.

## 5.2 Heuristic evaluation:

### 5.2.1 Introduction

Heuristic evaluation is proposed by Jakob Nielsen and Molich at 1990. This method is done by looking at the interface that what is good or bad about the system and on the basis of some guideline we evaluate our design (Nielsen, 1993, pp. 155-156). It describe the method where some selected evaluator examine the interface of the system and looking the problem related to design on the basis of some designing guideline. It is the guideline followed by experts. It is performed by each individual evaluator which examines the interface along and after evaluation they combine and evaluate their result. The result of examination and evaluation is then recorded (Dumas and Redish, 1994, p. 65). Since this method requires few resources, money, time so it is popular among web developer.

### 5.2.2 List of Heuristic

- I. Visibility of system status: It is about what is system is doing currently will always visible to user. It is refer to feedback for use.
- II. Match between system and real world: The system should speak the users' language, using words, phrases and concepts that are familiar to the user, rather than system-oriented terms (Nngroup.com, 2013). It decides whether the system terms or icons match with real world. For example the invoice should be in simple English language. In invoice do not used system related term like "1034e" instead of it provide simple English like message that why this message came.
- III. User control and freedom: User is allowed to do the things as the user choice but with some restrictions. For example past option should only enable when copy is done.
- IV. Consistency: Users should not have to wonder whether different words, situations, or actions mean the same thing (Web.cs.wpi.edu, 2013). Like we should either use sign in or login term throughout the system, they have same meaning.
- V. Error Prevention: It refers to user should not get any error. For this provide validation for the error handling so that user can not bother about the error. Even better than good error messages is a careful design which prevents a problem from occurring in the first place (Affairs, 2013).
- VI. Recognition rather than recall: It is about minimizing the memory load of the user i.e. user can see and recognize the meaning of the object without any trouble. The user

should not have to remember information from one part of the dialogue to another (Nngroup.com, 2013).

- VII. Flexibility and efficiency of use: The system should be efficient for both types of the experience and inexperience users. It speeds up the work of expert user. For example, shortcut which speed up the work. It is about number of way system can be used.
- VIII. Aesthetic and minimalist: Distracting contents (example advertisement) of the page should not affect the continuous flow of the page because it may slow down the system work (Affairs, 2013). The contents of the page should be relevant to the topic of the page. For example the interface should be simple and shower i.e. used simple color, font type.
- IX. Help Users Recognize, Diagnose, and Recover from Errors: Whenever error comes to user screen then give a simple message to user that how user can recover.
- X. Help and documentation: It is better that user can interact with the system without any help but if the help is required to user then provide the help and documentation section.

### 5.2.3 Heuristic Testing

- I. Visibility of system status:

Serial No.	Guideline	Status
1	Is it always clear what is happening from each action that user perform?	yes
2	Is login status visible to user?	yes
3	Is system show which menu item is selected?	no
4	Is system show different cursor (hand sign) when hover to links?	yes
5	Is it clear which information is place at the current location?	yes

- II. Match between system and real world

Serial No.	Guideline	Status
1	Are icons familiar to user?	yes
2	Does shape of icons, clues or images match cultural conventions?	yes
3	Are form fields appropriate to user?	yes
4	Is menu items order	yes



	logically appropriate?	
5	Is vocabulary appropriate to user?	yes

### III. User control and freedom

Serial No.	Guideline	Status
1	Is there is undo function?	no
2	Can user add own favorites item?	no
3	Can user cancel a process when process is in progress?	yes
4	Are copy past option provided?	yes
5	Is buttons enable/disable functions provide by developer?	yes

### IV. Consistency

Serial No.	Guideline	Status
1	Have universal formatting standards followed throughout to system?	yes
2	Are icons labeled?	yes
3	Have menu included 7+2 or 7-2 items.	yes
4	Does each screen contain title?	yes
5	Is sound used for feedback?	no

### V. Error Prevention

Serial No.	Guideline	Status
1	Have appropriate validation for the fields provided?	yes
2	Does system prevent users from making error?	yes
3	Does fields provide in text message?	no
4	Is limitation for fields provided along with input box?	no
5	Are menu choices logical?	yes

## VI. Recognition rather than recall

Serial No.	Guideline	Status
1	Are icons and symbols used having universal meaning?	yes
2	Does downward arrow provide to represent the dropdown menu?	yes
3	Are mandatory fields are mark clearly?	yes
4	Are color highlighting used?	no
5	Is arrangement of function group correctly?	yes

## VII. Flexibility and efficiency of use

Serial No.	Guideline	Status
1	Do novice users do his basic work?	yes
2	Does system accessible through touch screen devices?	no
3	Does user have option to clicking or hitting enters through keyboard to perform default option on dialog box.	yes
4	Can user select the fields through the mouse or keyboard shortcut?	no
5	Does system provide shortcut for menu items?	yes

## VIII. Aesthetic and minimalist

Serial No.	Guideline	Status
1	Is system having without any unnecessary content?	yes
2	Is the system aesthetically pleasing?	yes
3	Does the forms are clear, simple?	yes
4	Is title of menu brief instead of too long?	yes
5	Is the readability of the contents of the system clear to user?	yes

## IX. Help Users Recognize, Diagnose, and Recover from Errors

Serial No.	Guideline	Status
1	Does system gives appropriate message to user whenever error comes and also tells how to recover from it?	Yes
2	Is feedback message useful to user?	Yes
3	Is sound used to indicate error?	No

4	Do error message avoid use of violent word?	Yes
5	Is multiple level of error handling provided for novice and expert user?	No

#### X. Help and documentation

Serial No.	Guideline	Status
1	Is system providing online help?	Yes
2	Does system provide audio/video tutorial?	Yes
3	Does system provide quick reference help?	No
4	Is information relevant to user?	Yes
5	Does system provide full explanation help?	No

### 5.3 Impact on final prototype

We made our prototype and performed formative testing and heuristic testing on our prototype. From formative testing we checked quality components of usability. We come to know that our system will acceptable by user or now. We have successfully achieved all the goal of the usability. Heuristic testing gave the information about our design. We came to know that our functionality is visible to user or not, system gives proper feedback to user, our functionality map with other functionality or not. The output of these testing is that our system provides all the quality components of usability and design of the system is clear to user. It helps us in marketing planning.

## 6 Overall achievement of learning outcome

Overall we know deeply about Human computer interaction and usability. It is study about people that how they interact with the system. This assignment helps us to understand the user profiling that how we know about our user. In this assignment we perform different types of competitive analysis to understand the marketing strategy of the product. We also come to know how to perform different data gathering method for a given project. Through this assignment we got the knowledge about Usability and its quality component. To complete this assignment we performed research of different topics. We Search the books, journals and websites to understand the topics.

Through this assignment we know about different types of prototype which are best for software design in our point of view. We did peer to peer analysis for our system in which evaluates each other design. For this we performed research to know about different types of storyboard samples and select one sample.

This assignment is helps us to know how to perform formative testing and heuristic evolution for the given project.

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## 8 Appendix:

Questionnaire:

Dear Respondent,

We are having an assignment in which we have assigned task to develop the Library management system. Therefore for getting required and appropriate information about library system we are doing a survey.

You are requested to respond to the statements in the following questionnaire. This questionnaire is about to information needs regarding the Library Management System.

Instructions are given for all set of questions. Please follow the instructions carefully. Please ensure that you respond to every question.

### PERSONAL INFORMATION IN DETAILED

#### Section A

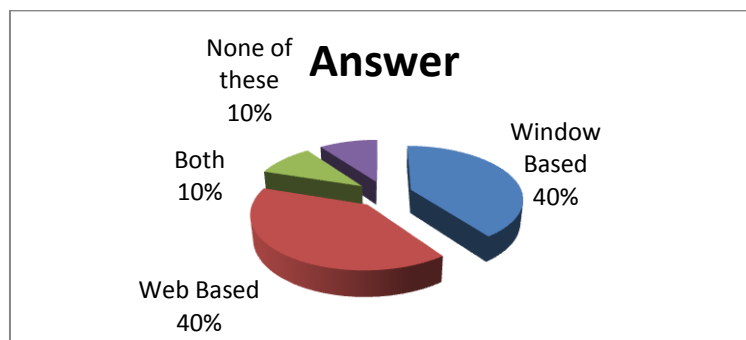
1. Name of the respondent: .....
2. Age:
  - g. 21-30 [     ]
  - h. 31-40 [     ]
  - i. 41 & above [     ]
3. Educational qualification .....
4. E mail address .....
5. Contact Number .....

**Section B**

1. On Which type of library management system you are working?

- a. Window based [      ]
- b. Web based [      ]
- c. Both [      ]
- d. None of these [      ]

❖ The purpose of this question is to know that which type of system they use most.

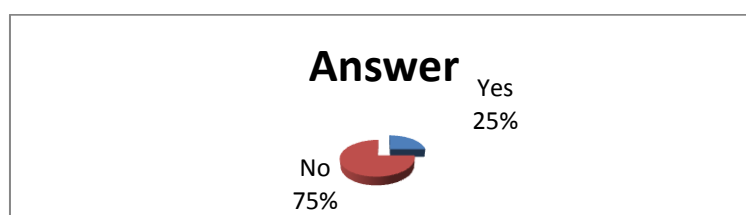


❖ Now a day's maximum people is using their windows based library management system and also using the web based library management. So we can say that it is necessary to be a management system that can easily manage the whole library. We have concluded that we can develop the library management system either the web based or windows based system. Both work very smoothly and will be beneficial.

2. Have you any problem with graphical interface of system?

- a. Yes [      ]
- b. No [      ]

❖ The purpose of asking this question to know about the interface of library management system. Whether the system interface is eye pleasing or not.



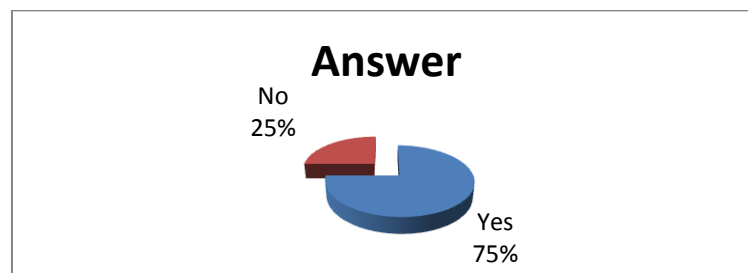
❖ As the data says that some system having graphical interface problem. We have concluded that graphical interface should be best suitable for the library management system. Color combination should be pleasing to eyes. Color

should be perfectly matched not that to be the dark on dark and light on light colors.

3. Can you find all functionality easily through your system?

- a. Yes [      ]  
b. No [      ]

❖ The purpose of this question is to know whether the most frequent function is on homepage or not.

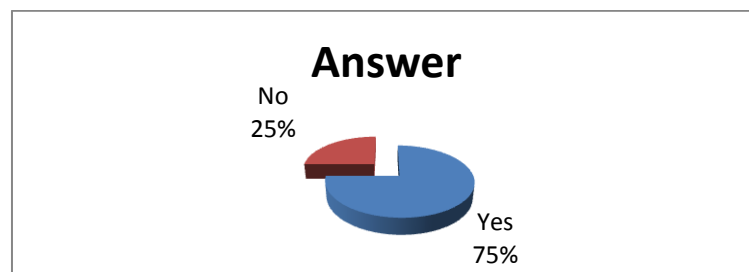


❖ As the data says that some systems that are having hidden functionality and are unable to find and so. So we have concluded that mostly functionality should be on the first page so that user can find it easily. We can use the icons so that it can easily understood by the user that the purpose of giving that functionality.

4. Can you change the language of system?

- a. Yes [      ]  
b. No [      ]

❖ The purpose of having this question to know where the system supports other language rather than English.

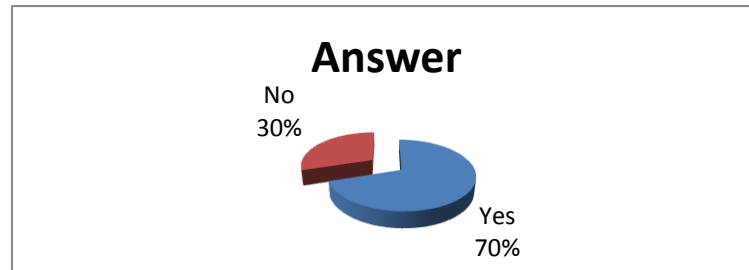


❖ We conclude that system should supports other language so that user who does not know the English.

## 5. Do you navigate the website easily?

- a. Yes ☐
- b. No ☐

❖ The purpose of having this question to know where the system is having any help to operate the site.

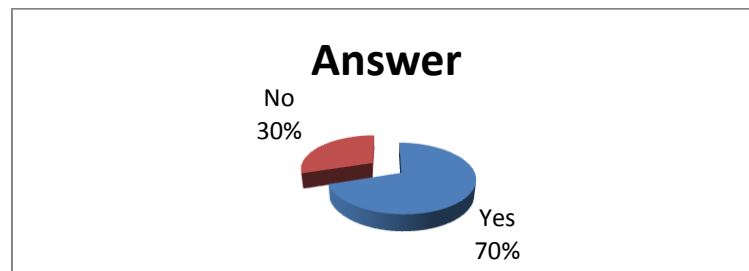


❖ We conclude that system should provide help section also.

## 6. Whether the system is having the facility of increase the size of text.

- a. Yes ☐
- b. No ☐

❖ The purpose of having this question is to know that whether user can increase the size of specific text.



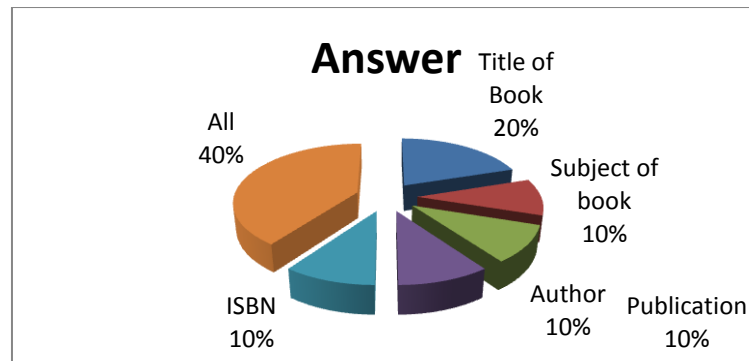
❖ We conclude that system should have functionality of increase the text size.

## 7. What are the criteria to search any book if user asked for?

- a. Title of book ☐
- b. Subject of book ☐
- c. Author ☐
- d. Publication ☐
- e. ISBN ☐
- f. All ☐

Note\*: ISBN – International Stander Book Number, It is a unique number for book.

❖ The purpose of asking this question to know that category of searching the book.

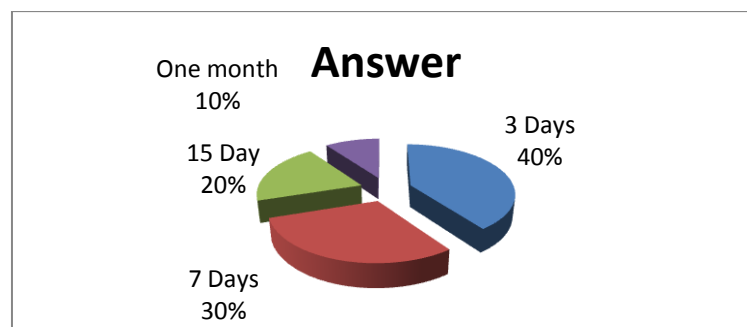


- ❖ As the data says that the maximum system having all the criteria to search. So we have concluded that in our system we also include all the criteria to search the book so that user can not face any problem when someone asked about any book.

8. What is the time period of return the issued book?

- a. 3 days [      ]
- b. 7 days [      ]
- c. 15 days [      ]
- d. One month [      ]

- ❖ The purpose of having this question is to get function of library.



- ❖ After seeing these data we have concluded that it is sufficient to return the book after 7 days.

9. Does the return date of issued book vary from user to user?

- a. Yes [      ] for whom .....
- b. No [      ]

- ❖ Asking of this question is to get the function of library about issuing the book.

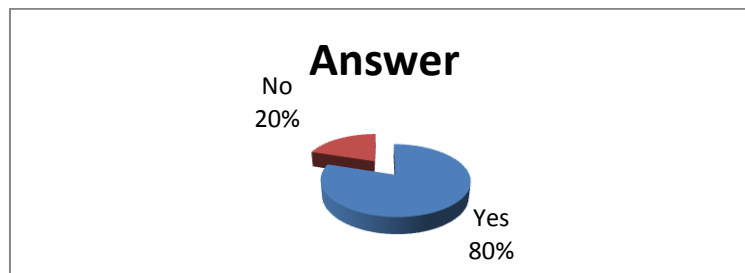


- ❖ We have concluded that it is necessary that return date of book should be vary from user to user. It should depend on the type of user.

10. Can any user renew their issued book?

- a. Yes [      ]
- b. No [      ]

- ❖ Asking of this is to know that can any user renew their issued book from website only while accessing the website.

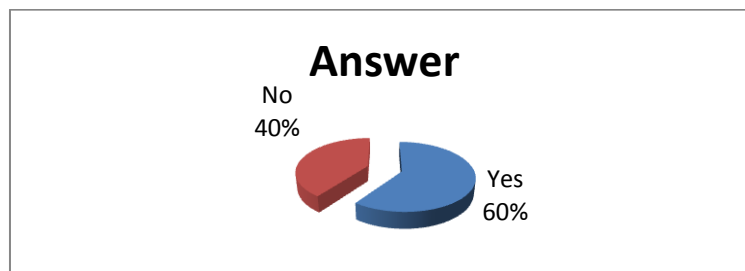


- ❖ We have concluded that user if want to keep book so he will have to renew the specific issued book and extend the return date by a week.

11. Your system is providing the advance search of books?

- a. Yes [      ]
- b. No [      ]

- ❖ The purpose of asking this question to know that any user can use multiple search option.



- ❖ We conclude that system should provide advance search.

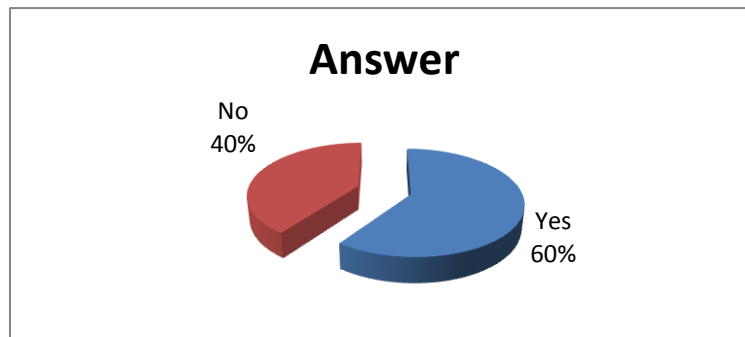


12. Does your system providing any help for user?

a. Yes [      ]

b. No [      ]

- ❖ The main purpose of asking this question is to know help section is necessary to give on website.



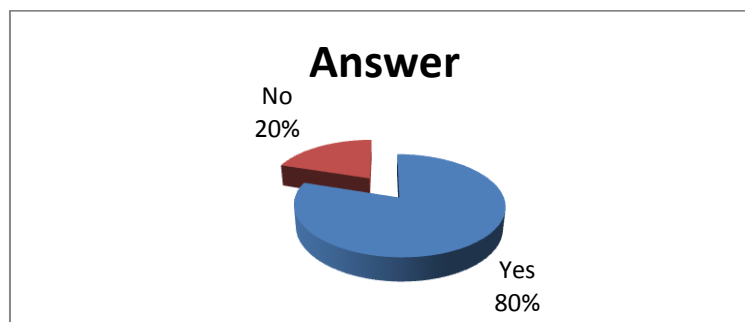
- ❖ We conclude that system should provide the help section so that user can frequently use the system.

13. Does there any fine system for late submission of books?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of having this question to get the information about the fine system.



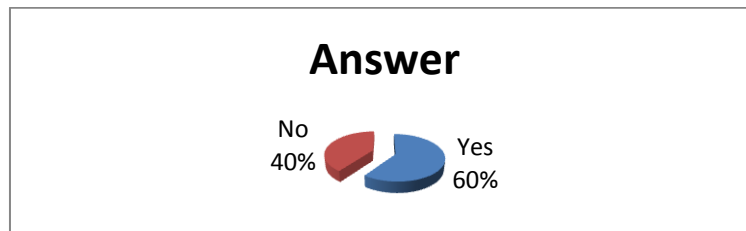
- ❖ We have concluded that it is necessary that fine system should be there so that user can return the book on time.

14. Does fine vary time to time?

a. Yes [      ]

b. No [      ]

- ❖ To know that the fine vary time to time so that to calculate the fine and procedure to find



- ❖ We have concluded that fine should vary time to time. If any user returns the book after 7 days of return date the fine would be of Rs 1 each working day it will gradually increase if the user will return after 15 days. So the fine would be of...1...2...4...8...16 types.

15. How much books can user issued at once?

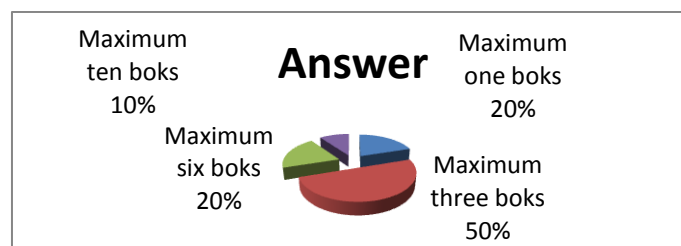
a. Maximum One Books [      ]

b. Maximum Three Books [      ]

c. Maximum Six Books [      ]

d. Maximum Ten Books [      ]

- ❖ To get the information about maximum number of book issue.



- ❖ We have concluded that the no of issue books would vary user to user. Because it depends on necessarily of user.

**Signature of Respondent**

.....

**Date:**

**“Thank You for Your Cooperation”**

**Questionnaire with student:**

Dear Respondent,

We are having an assignment in which we have assigned task to develop the Library management system. Therefore for getting required and appropriate information about library system we are doing a survey.

You are requested to respond to the statements in the following questionnaire. This questionnaire is about to information needs regarding the Library Management System.

Instructions are given for all set of questions. Please follow the instructions carefully. Please ensure that you respond to every question.

**PERSONAL INFORMATION IN DETAILED****Section A**

1. Name of the respondent: .....
2. Age:
  - a. 21-30 [     ]
  - b. 31-40 [     ]
  - c. 41 & above [     ]
3. Educational qualification .....
4. E mail address .....
5. Contact Number .....

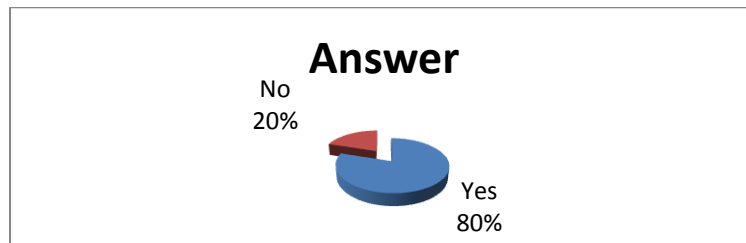
**Section B**

1. Have you ever access the library management website?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of asking this question to know that respondent is aware of any library website or not.

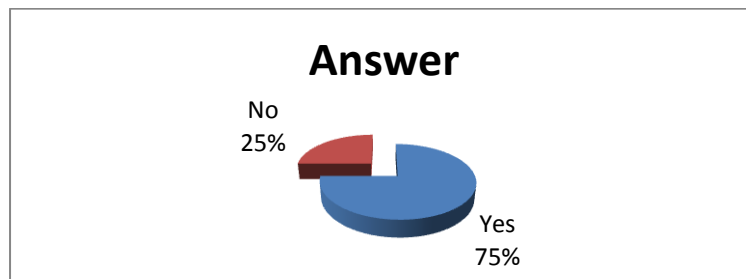


2. Do you navigate the website easily?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of asking this question is to get the information about the visibility of every links.

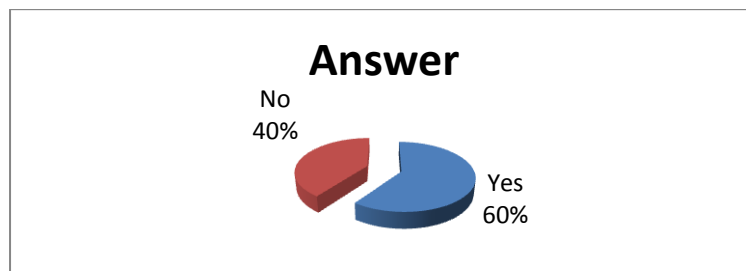


3. Have you ever try to change the language of library website?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of having this question to get the information about that any website is having facility to change the language.



4. Does every link is understandable and meaningful?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of having this question is to know that any universal icon is used to define the link and their purpose.

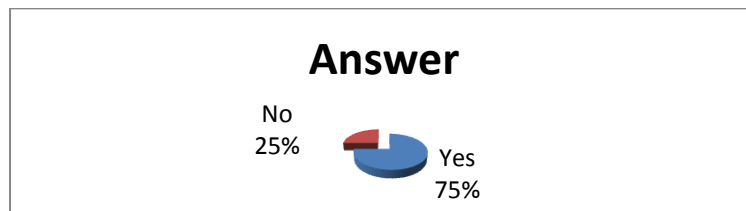


5. Have you ever search the book using the advance search?

a. Yes [      ]

b. No [      ]

- ❖ The purpose of having this question is to get that every website is having the option of advance search.

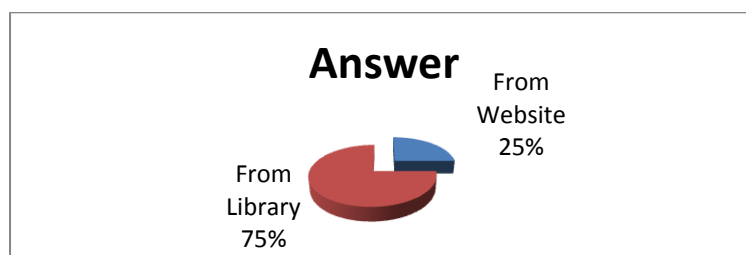


6. How do you renew the book?

a. From Library [      ]

b. From Website [      ]

- ❖ The purpose of asking this question is to know that user can issue the book from website.

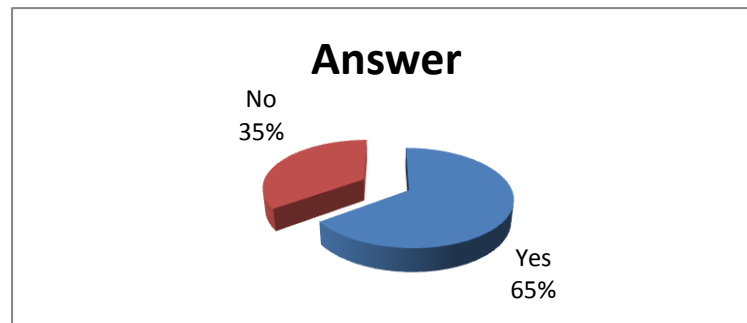


7. Can you read the e-book from the library website?

a. Yes [      ]

b. No [      ]

- ❖ This question is asked to get the information to whether student access the e-book.



8. How do you pay the fine?

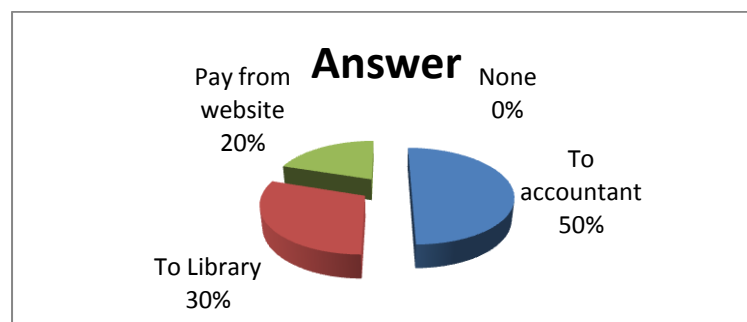
a. To accountant [      ]

b. To library [      ]

c. Pay From Website [      ]

d. None [      ]

- ❖ We want to get the information that how to pay.



## Interview with librarian:

### Section A

1. How do you store books record in your system?

- ❖ We are having the form filling criteria for adding the books in the library. As per the book is to add so we go through the form filling process.

2. Have you any catalog to store the books details in your system? Please give details about the catalogs of your system. Can you give me some idea about catalog features?

- ❖ Yes, we are having every types of catalog to keep record and store the books into the system. First we add each detail about books, such as author name, title of book, publication name and year, purchasing date, no of copies and more...

3. In Library each books is having unique id? How do you generate the unique id for book?
  - ❖ To generate the unique id there is rule we go through that rule and follow step by step process and then generate the unique id for book. Generally library science student know to generate the unique id for any book. In library science it is known as ISBN.(International Standard book number)
4. Do you generate report? Which type of report you generate?
  - ❖ Yes, we generally generate report for added the books and issued books and fines.
5. Does your system work on internet? If yes then which browser is more compatible? If no then can you enhance it to access from internet also?
  - ❖ Yes, Mozilla Firefox is more compatible for my system.
6. Does your system work on mobile? If yes, do all features work on mobile also?
  - ❖ No, our system not works properly on mobile.
7. Does your system having access specification for different users?
  - ❖ For different user there is login process for different type of users.
8. Who provide the username and password for librarian? Which types of characters are allowed for the username and the password?
  - ❖ Administrator provides username and password for each user. Username and password should be of combination of numeric, character and special character also.
9. Does your system having different user category? How do you differentiate them?
  - ❖ Yes, we differentiate by the help of their username because the username is always a unique which is provided by institution only.
10. Have you made any rules for the system and the users?
  - ❖ Yes, User can not issue more than 6 books and one time renew is there late submission is having the penalty process so user should to pay for that.
11. Is something unique functionality or feature in your system? If yes state them.
  - ❖ User can change the language of system, and change the size of text and more..
12. Can you want any enhancement in the features of your system in future? If yes then give suggestion?
  - ❖ I want to put the rating system in my system so that user can rate the site after going through the website.