

# SOFTWARE ENGINEERING & PROJECT MANAGEMENT

## 18CSC206J

### DIGITAL LIBRARY MANAGEMENT SYSTEM



**BATCH NO.: 20**  
**VIJEEESH PK (RA2011026020105)**  
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<b>EX NO: 1</b>	<i>Identify the software project, create business case, arrive at a problem statement</i>
<b>DATE:</b>	

### ***Introduction: -***

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

The system requirement in library management focuses on the possibility of the search for books by title, author, or subject by the member. Library Management System is a computerized system which helps user(librarian) to manage the library daily activity in electronic format. It reduces the risk of paperwork such as file lost, file damaged and time consuming. It can help user to manage the transaction or record more effectively and timesaving.

#### ***1.1. Problem Statement: -***

The problem occurred before having computerized system includes:

-File lost When a computerized system is not implemented/ file is always lost because of the human environment. Sometimes due to some human error there may be a loss of records.

-File damaged When a computerized system is not their file is always lost due to some accident like spilling of water by some member on file accidentally. Besides, some natural disasters like floods or fires may also damage the files.

-Difficult to search records When there is no computerized system there is always a difficulty in searching for records if the records are large in number.

-Space consuming After the number of records becomes large the space for physical storage of file and records also increases if no computerized system is implemented.

- Cost consuming as there is no computerized system to add each record paper will be needed which will increase the cost for the management of the library.

## ***Objective:***

The software solution is designed based on the system requirements, the people involved, the content of the operation and the activity to be performed. With the use of our software, the span required for declaration of result and use of manpower will be reduced to a great extent.

Also, the student gets a message of the result to their official email or registered mobile number to overcome server issues

## ***Scope of the product:***

The base idea behind this project is to promote reading as a hobby. By providing a platform to rent and read books, we aim to inculcate the habit of reading in today's generation. Our application/website will be the mode of communication between authors and poets and their fans and avid readers.

## ***1.2. ONE PAGE BUSINESS CASE TEMPLATE:***

### ***The Project: -***

The project aims and objectives that will be achieved after completion of this project are discussed in this subchapter.

The aims and objectives are as follows:

- Online book reading.
- A search column to search availability of books.
- Facility to download required book
- Video tutorial for students.
- An Admin login page where admin can add books, videos or page sources.
- Open link for Learning Websites

### ***The History: -***

In the old days, many people went to the library to get knowledge or read as a hobby of theirs. But nowadays in this generation, the kids or people don't often go to a library and many people don't have a hobby of reading books in their spare time. This Library management software is designed to bring back reading of books.

### ***Constraints: -***

The Software Requirements Specification is produced at the culmination of the Analysis task. The function and performance allocated to software as part of system engineering are refined by establishing a complete information description, a detailed functional and behavioral description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

### ***Approach: -***

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization.

The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made.

The development of this project will require front end and back-end programming knowledge. Thus, it is important to equip yourself with the same.

<b>EX NO: 2</b>	<i>Stakeholder and user description, identify the appropriate process models, comparative study with agile model</i>
<b>DATE:</b>	

## ***2.1. Identifying Stakeholders: -***

### ***1. USER:***

#### **Description of feature:**

This feature is used by the user to login into the system. They are required to enter user id and password before they are allowed to enter the system. The user id and password will be verified and if invalid ID is found the user is not allowed to enter the system.

#### **Functional requirements:**

- User id is provided when they register.
- The system must only allow users with valid id and password to enter the system.
- The system performs an authorization process which decides what user level can access to.
- The user must be able to logout after they finished using the system.

### ***2. SPONSOR:***

Sponsor is the person or the organization that provides financial support for the project.

As of now, this project is self-sponsored.

Once we upgrade, we may require financial interference of a management.

### ***3. PROGRAM MANAGER:***

A Program Manager articulates a program's strategy and objectives and assesses how it will impact.

### ***4. PROJECT MANAGEMENT OFFICE (PMO):***

A project management office (PMO) is a team or department that sets and maintains standards for project management throughout an organization.

### ***5. PROJECT MANAGER:***

Project Managers (PMs) are responsible for planning, organizing, and directing the completion of specific projects for an organization while ensuring these projects are on time, on budget, and within scope.

## **6. PROJECT TEAM:**

A project team is comprised of the project manager, project management team and the other members who carry out work

### ***Benefits: -***

#### ***A. Economic Feasibility***

This is a very important aspect to be considered while developing a project.

We decided on the technology based on the minimum possible cost factor. All hardware and software cost has to be borne by the organization. Overall, we have estimated that the benefits the organization is going to receive from the proposed system will surely overcome the initial costs and the later on running cost for the system.

#### ***B. Technical Feasibility***

This included the study of function, performance and constraints that may affect the ability to achieve an acceptable system. For this feasibility study, we studied complete functionality to be provided in the system, as described in the System Requirement Specification (SRS) and checked if everything was possible using different types of frontend and backend platforms.

#### ***C. Operational Feasibility***

No doubt the proposed system is fully GUI based and is very user friendly and all inputs to be taken are all self-explanatory even to a layman. Besides, proper training has been conducted to let them know the essence of the system so that they feel comfortable with the new system. As far as our study is concerned the clients are comfortable and happy as the system has cut down their loads and doing.

## **2.2. IDENTIFY THE APPROPRIATE PROCESS MODELS: -**

### **Process Model**

In our software, we are following the prototyping Model (Evolutionary) as initially the requirements are not clear.

The requirements are added in the prototype as and when they are understood.

Software reviews are applied at various points during software engineering and serve to uncover the errors and defects that can be removed.

## **2.3. COMPARISON BETWEEN WATERFALL AND AGILE MODEL: -**

### **WHY AGILE MODEL IS BETTER THAN WATERFALL MODEL?**

- The Agile Model is based on iterative development and hence it divides the entire project into smaller parts which reduces the risk factor which is not the case in the waterfall model.
- The Waterfall model cannot accept the changes in requirements but in agile model it is easy to change the system requirements.
- In an agile model, the entire project is divided into smaller parts which helps to minimize the project risk and to reduce the overall project delivery time requirements.
- In the waterfall model, since the risk factor is high, it is not suitable for complex projects.
- In the waterfall model the testing is done in a later stage; it does not allow identifying the challenges and risks in the earlier phase, so the risk reduction strategy is difficult to prepare, which is not the case in agile models.
- In the waterfall model, it follows a sequential approach whereas in the agile model it explains the process in order of incremental approach.
- In agile it performs the testing concurrently with software development whereas in the waterfall model the testing comes after the build phase only.
- In an agile model the distance between the customer and developer is short whereas in a waterfall model it is long.
- In agile there can be any change in the project but in the waterfall model there are no changes throughout the project work.

<b>EX NO: 3</b>	<i>Identify the Requirements, System Requirements, Functional Requirements, Non-functional Requirements</i>
<b>DATE:</b>	

### ***3.1. REQUIREMENTS:***

Requirements are defined during the early stages of the system development as a specification of what should be implemented. A collection of requirements is a requirements document. They may be user level facility description, detailed specification of system behavior, general system property, a specific constraint on the system or information on how-to carry-on computation. The three types of requirements are explained below.

#### ***3.1.1. SYSTEM REQUIREMENTS:***

System requirements are the configuration that a system must have in order for a hardware or software application to run smoothly and efficiently. Failure to meet these requirements can result in installation problems or performance problems. The former may prevent a device or application from getting installed, whereas the latter may cause a product to malfunction or perform below expectation or even to hang or crash.

##### ***1. Hardware requirements: -***

Processor: Intel core i5 7<sup>th</sup> generation

2. Hard disk: 500GB

3. RAM: 8GB

##### ***Software requirements: -***

Operating system- Windows 7 is used as the operating system as it is stable and supports more features and is more user friendly.

- Database MYSQL-MYSQL is used as a database as it easy to maintain and retrieve records by simple queries which are in English language which are easy to understand and easy to write.

- Development tools and Programming language- HTML is used to write the whole code and develop web pages with CSS, java script for styling work and php for server side scripting.

### ***3.1.2. FUNCTIONAL REQUIREMENTS: -***

A functional requirement document defines the functionality of a system or one of its subsystems. It also depends upon the type of software, expected users and the type of system where the software is used. Functional user requirements may be high-level statements of what the system should do but functional system requirements should also describe clearly about the system services in detail.

<b>EX NO:</b> 4	<i>Prepare project plan based on scope, find job roles and responsibilities, calculate project effort based on resources</i>
<b>DATE:</b>	

#### **4.1. PROJECT PLAN: -**

**> PROJECT NAME:**

- Digital Library Management

**> PROJECT MEMBERS:**

Our project consists of two members:

- 1) Vijeesh PK – RA2011026020105
- 2) Sanjeevi Raj – RA2011026020117
- 3) Anas Asif – RA2011026020125

**> MODULES:**

- User Login
- Registering New User
- Registering New Book
- Search Book

**> SCHEDULING:**

<b><i>Task</i></b>	<b><i>Start date</i></b>	<b><i>End date</i></b>
Business Case Development		
Identifying Stakeholders, Process Modules and Required Modules	<b>18/03/2022</b>	<b>22/03/2022</b>

	<b>12/03/2022</b>	<b>15/03/2022</b>
Identify requirements	<b>24/03/2022</b>	<b>29/03/2022</b>
Setting cost estimates and budget	<b>31/03/2022</b>	<b>05/04/2022</b>
Final Revisions	<b>07/04/2022</b>	<b>12/04/2022</b>

#### **4.2. JOB ROLES AND RESPONSIBILITIES: -**

<b>MEMBERS</b>	<b>ROLE AND RESPONSIBILITIES</b>
<b><u>Anas Asif</u> <u>RA2011026020125)</u></b>	<b>Team Leader:</b> Responsibility of coordination of the team, checking for errors, updating for the current status of the project and guiding the team.
<b><u>Vijesh PK</u> <u>RA2011026020105)</u></b>	<b>- Front End Developer:</b> Responsibility of designing the software and interfacing with the server. <b>- Software Architect:</b> Design of UML Diagrams and other blueprints.
<b><u>Sanjeevi Raj</u> <u>RA2011026020117)</u></b>	<b>- Tester:</b> Responsibility of testing the project at a smaller level and reporting the errors.

#### **4.3. PROJECT EFFORT BASED ON RESOURCES: -**

- COCOMO2 (Constructive Cost Model 2) is an algorithmic cost estimation technique proposed by Boehm, which works in a bottom-up manner.
- It is designed to provide some mathematical equations to estimate software projects.
- These mathematical equations are based on historical data and use project size in the form of KLOC.
- The COCOMO model uses a multivariable size estimation model for effort estimation.

$$\text{OBJECT POINT} = \sum_{i=1}^3 \sum_{j=1}^3 c_{ij} * w_{ij}$$

	<b>SIMPLE</b>	<b>MEDIUM</b>	<b>COMPLEX</b>
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SCREENS	1	3	2
REPORT	1	3	1
3GL	0	0	1

$$(1*1+3*2+2*3) + (1*2+3*5+1*8) + (1*10) = 13+25+10 \\ = 48$$

$$\text{NOP} = \text{Object Point} * (1 - \% \text{ reuse}/100) \\ = 48 * (1-0)$$

$$= 48$$

$$\text{EFFORTS} = \text{NOP} / \text{PROD} \\ = 48/13 \\ = 3.7$$

NOP = New Object

Point PROD =

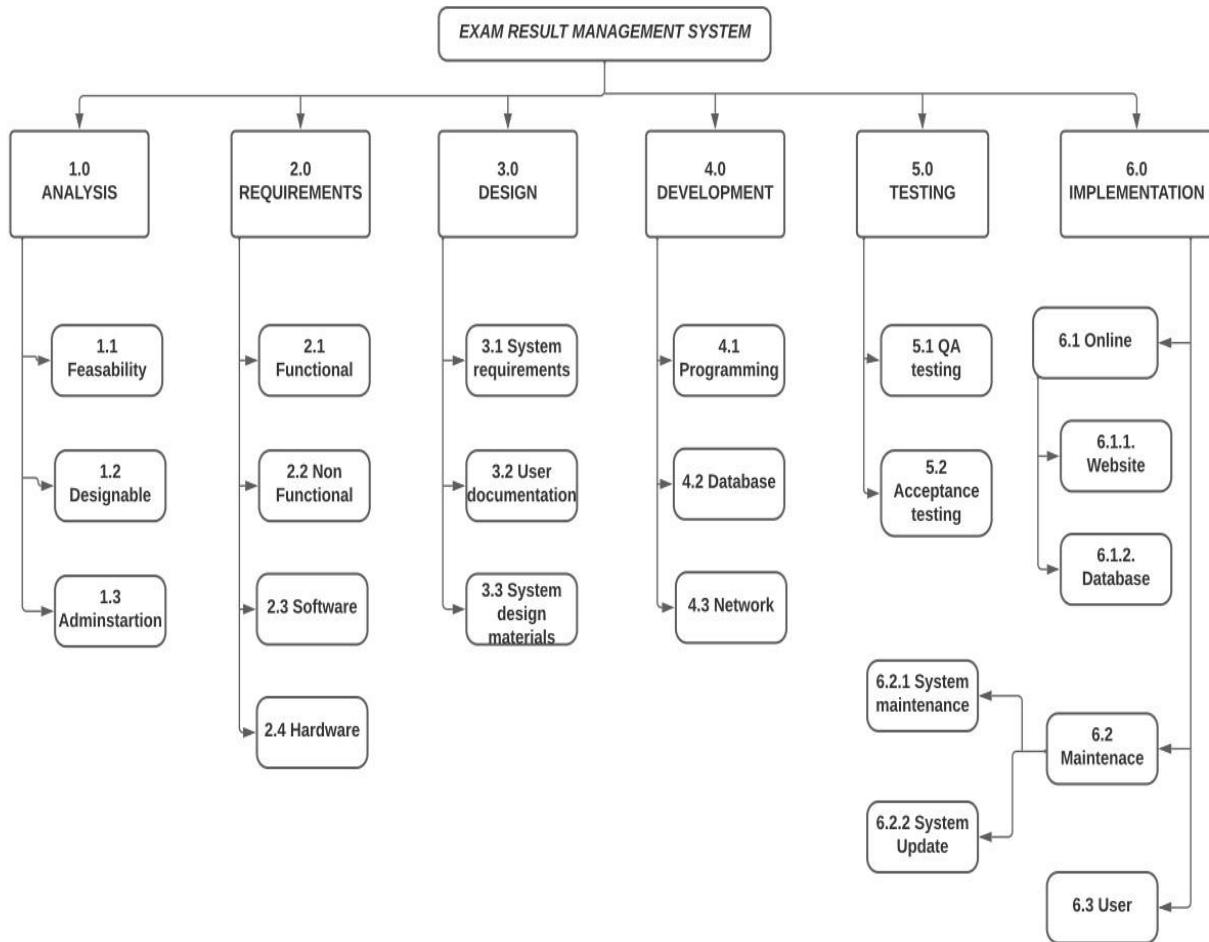
Productivity

We have assumed nominal developer experience.

<b>EX NO: 5</b>	<i>Prepare the work breakdown structure based on timelines, Risk identification plan</i>
<b>DATE:</b>	

### **5.1. WORK BREAKDOWN STRUCTURE: -**

Work Breakdown Structure (WBS) is a deliverable – oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. A WBS is the cornerstone of effective project planning, execution, controlling, monitoring, and reporting. All the work contained within WBS is to be identified, estimated, scheduled, and budgeted.



## 5.2. RISK MANAGEMENT: -

### DESCRIPTION:

Risk management is the practice of identifying potential risks in advance by analyzing them and taking precautionary steps to curb the risk.

Risk Management is the identification, evaluation and prioritization of risks, controlling the probability or impact of unfortunate events.

### RISKS TO BE HANDLED:

- Maintaining Database
- Hacker's intent to get user data
- Improper internet connection
- Low Website Speed

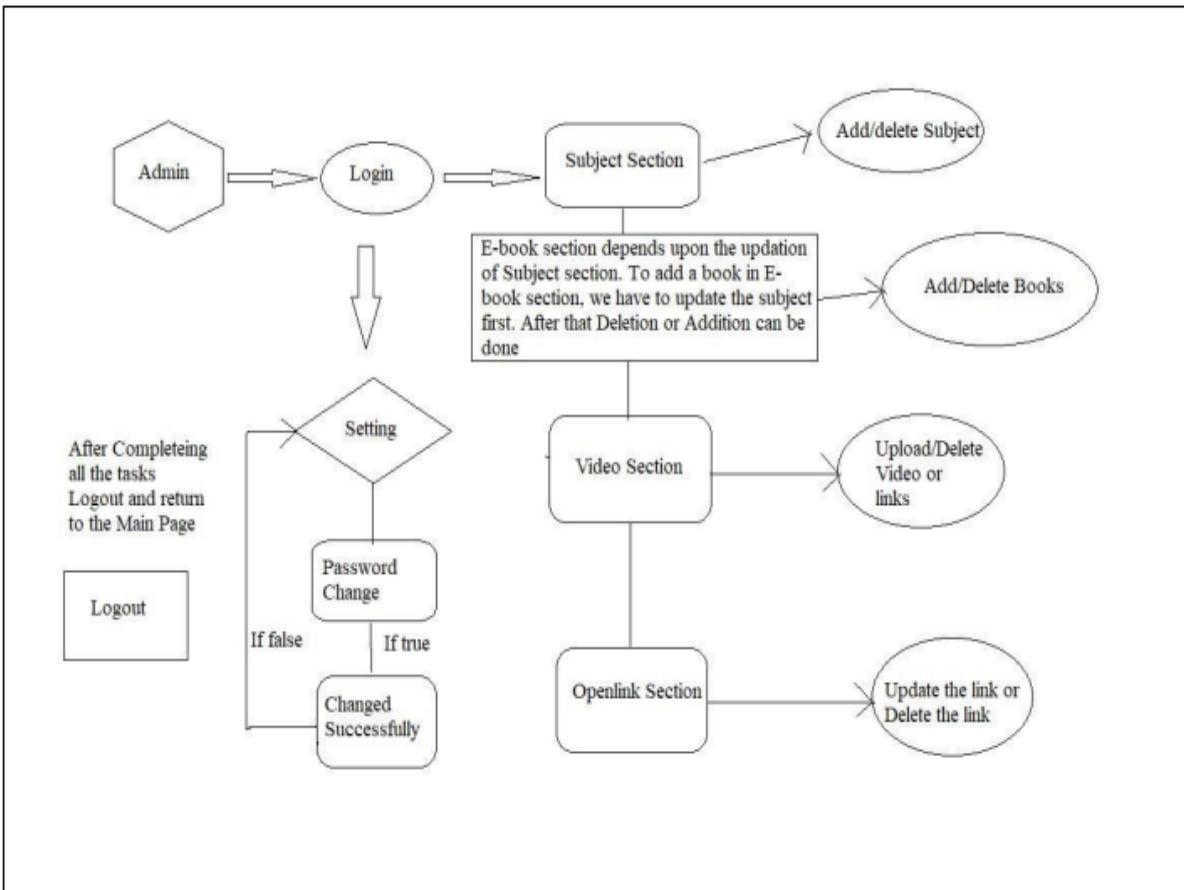
## ***MANAGING RISKS:***

- Performing periodic maintenance of the server.
- Using of Captcha and other security protection things to protect from bot attack.
- The bugs must be removed, and the code must pass as many test cases as possible.

<b>EX NO: 6</b>	<i>Design a System Architecture, Use Case Diagram, ER Diagram, DFD Diagram, Class Diagram, Collaboration Diagram</i>
<b>DATE:</b>	

### ***6.1. SYSTEM ARCHITECTURE: -***

Here we have used the basic software front end design model in order to represent the system architecture of our software model.



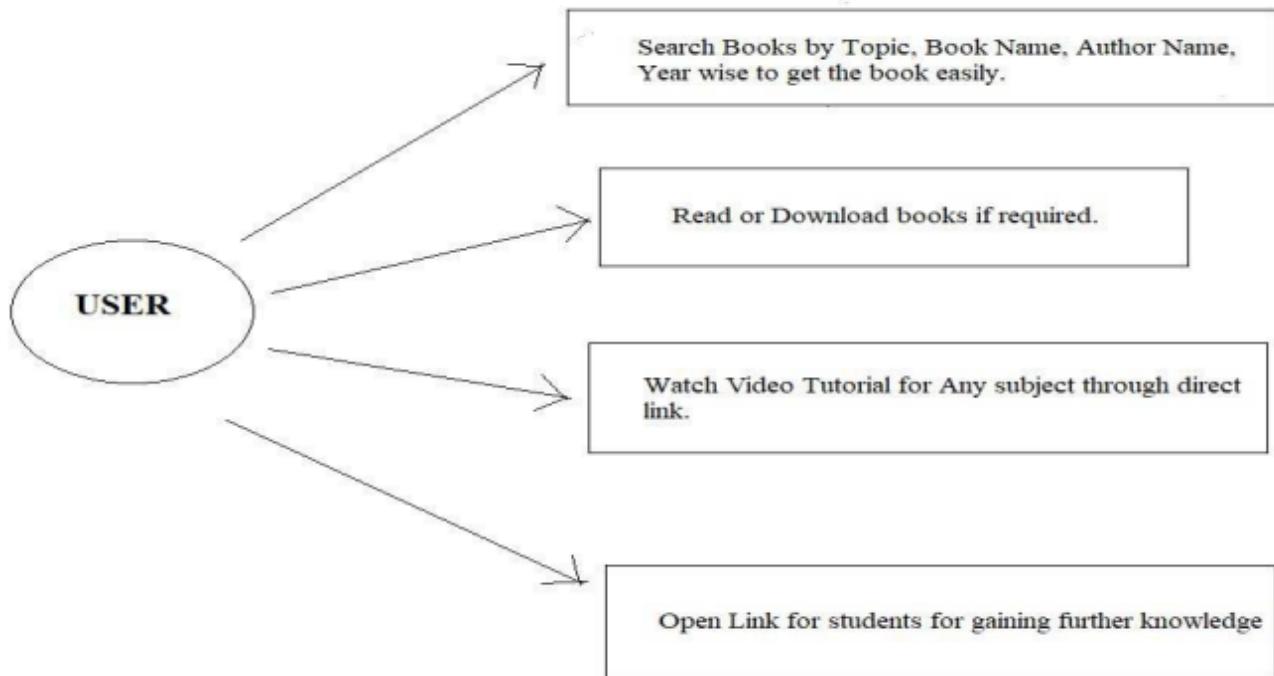
The above is a simple form of system design diagram which It defines a **structured solution** to meet all the technical and operational requirements, while optimizing the common quality attributes like performance and security.

## **6.2. MODELING USECASE DIAGRAM AND SCENARIOS: -**

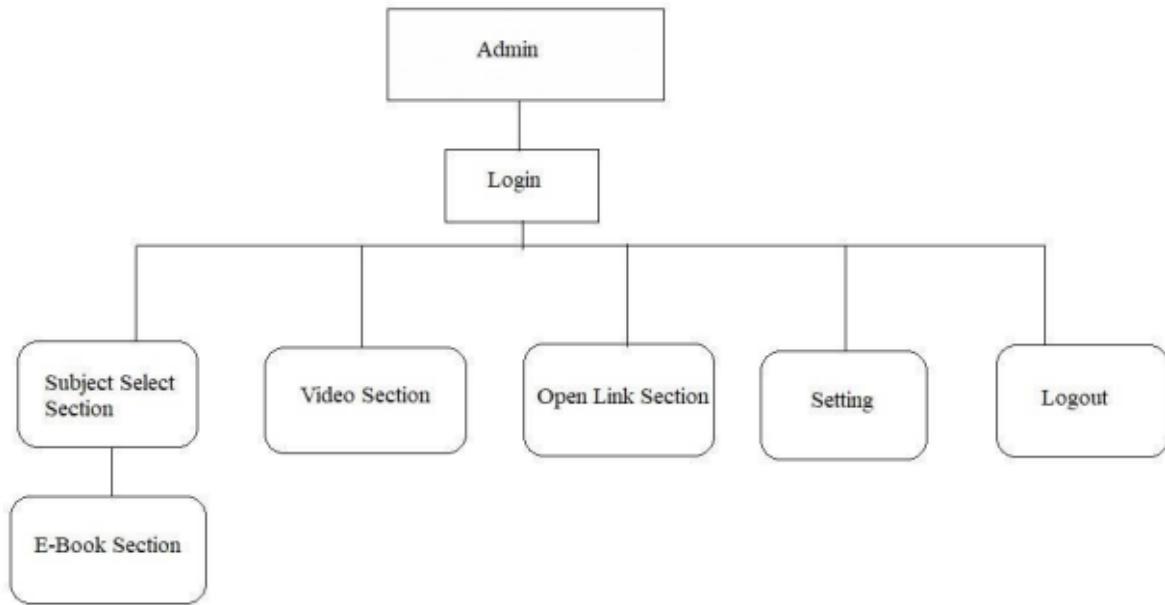
### **6.2.1. USE CASE DIAGRAM DESCRIPTION:**

- There are 2 actors:
  - Admin
  - User
- The login and logout, update profile, changing password use cases have relations with admin and the user.

### **6.2.2. USE CASE DIAGRAM (FOR USER):**



### **USE CASE DIAGRAM (FOR ADMIN):**



### **6.3. MODELING OF ER DIAGRAM: -**

#### **6.3.1. ER DIAGRAM DESCRIPTION:**

- An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system.
- ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education, and research.

#### **USES OF ER DIAGRAM:**

- Database design
- Database troubleshooting
- Business information systems
- Business process re-engineering (BPR)
- Education
- Research

## **COMPONENTS OF ER DIAGRAM:**

ER Diagrams are composed of entities, relationships (Cardinality) and attributes. They also depict cardinality, which defines relationships in terms of numbers.

**1] ENTITY:** A definable thing—such as a person, object, concept or event—that can have data stored in it.

**2] ATTRIBUTES:** A property or characteristic of an entity.

**3] KEYS:**

PRIMARY KEY(PK): It is unique, cannot be repeated and never null.

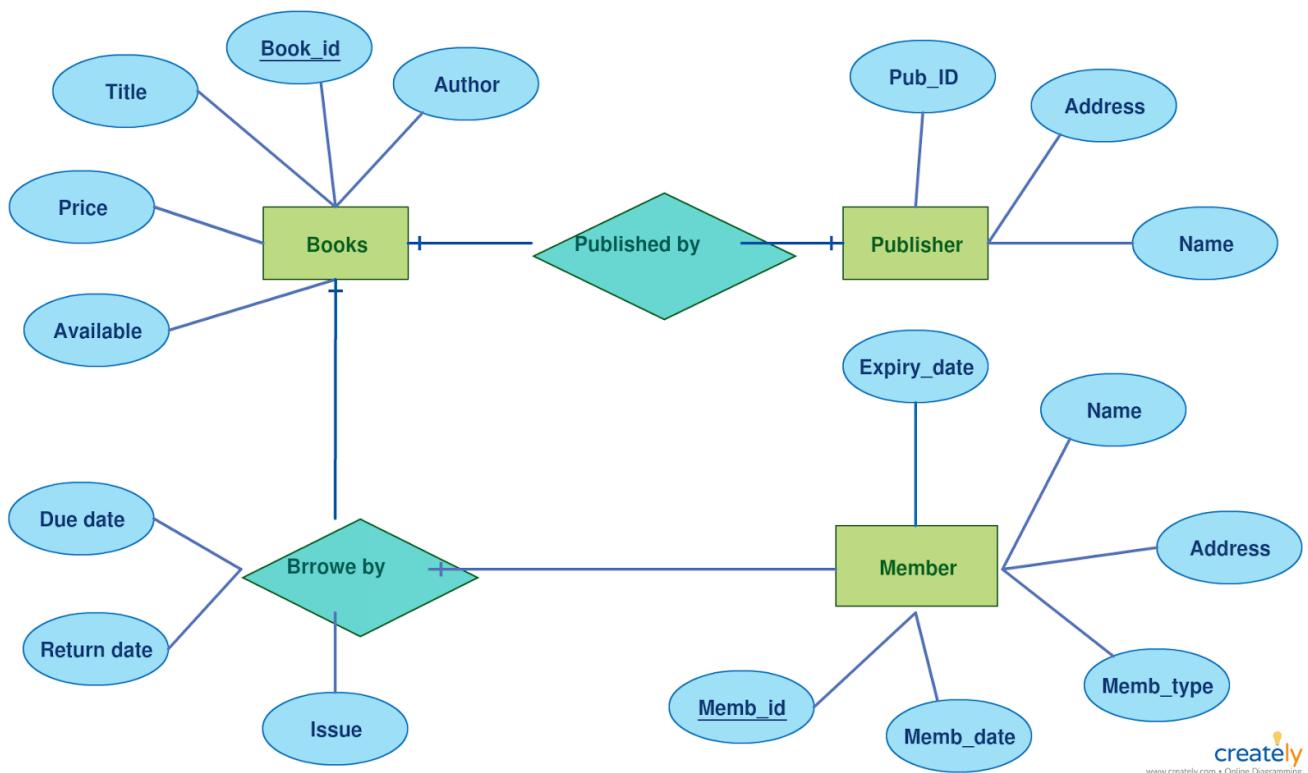
FOREIGN KEY(FK): It is not unique and can be repeated.

**4] CARDINALITY:** Defines the numerical attributes of the relationship between two entities.

- One to one
- Many to one
- One and only
- Zero to one
- One or many
- Zero or many

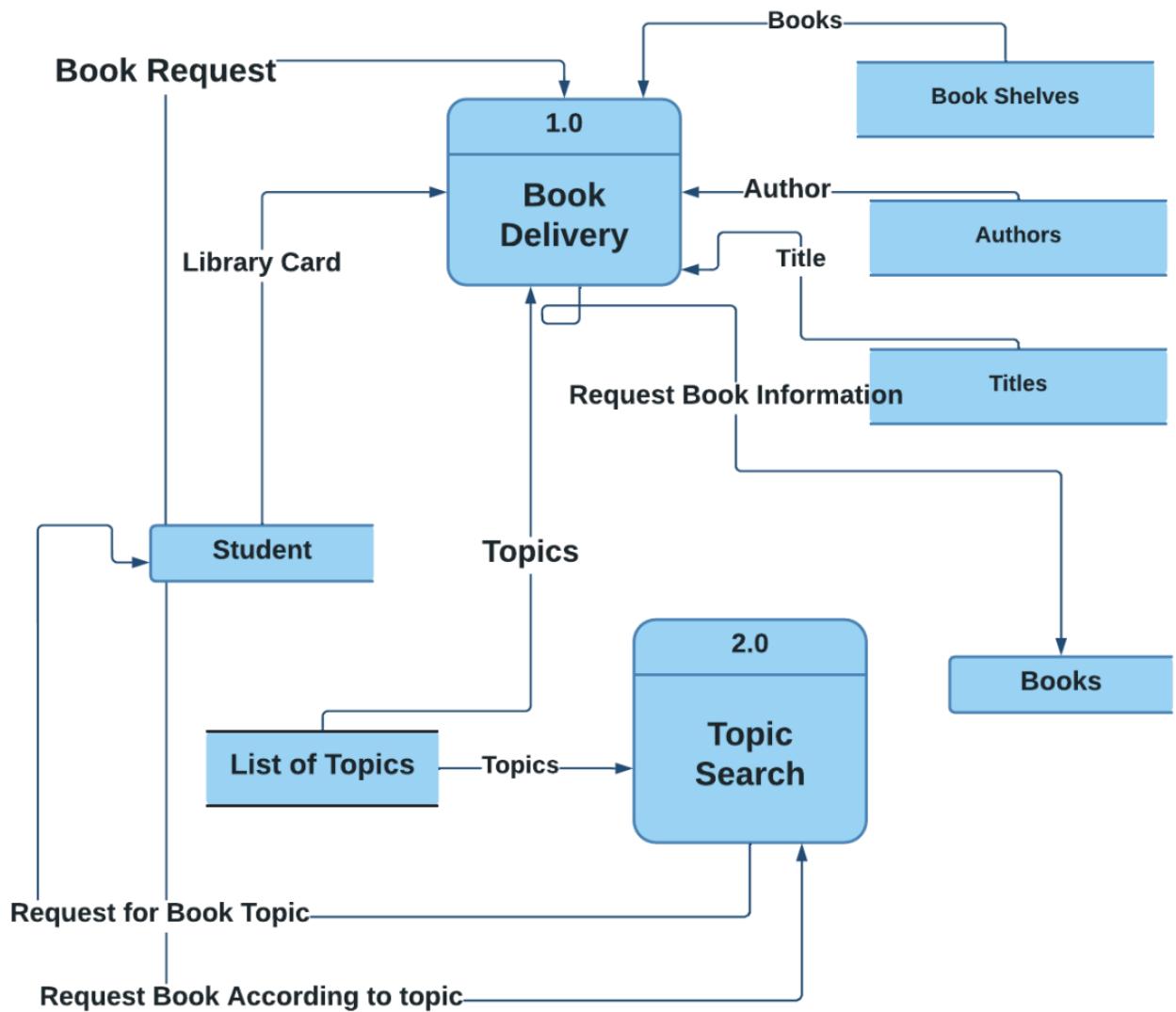
### 6.3.2. ER DIAGRAM:

E-R Diagram for Library Management System



## **6.4. MODELING OF DATA FLOW DIAGRAM: -**

### **6.4.1. DATA FLOW DIAGRAM DESCRIPTION:**



## **6.5. MODELING OF CLASS DIAGRAM: -**

### **6.5.1. CLASS DIAGRAM DESCRIPTION:**

Class diagrams are one of the most useful types of diagrams in UML as they clearly map out the structure of a particular system by modeling its classes, attributes, operations, and relationships b/w objects.

## COMPONENTS OF CLASS DIAGRAM:

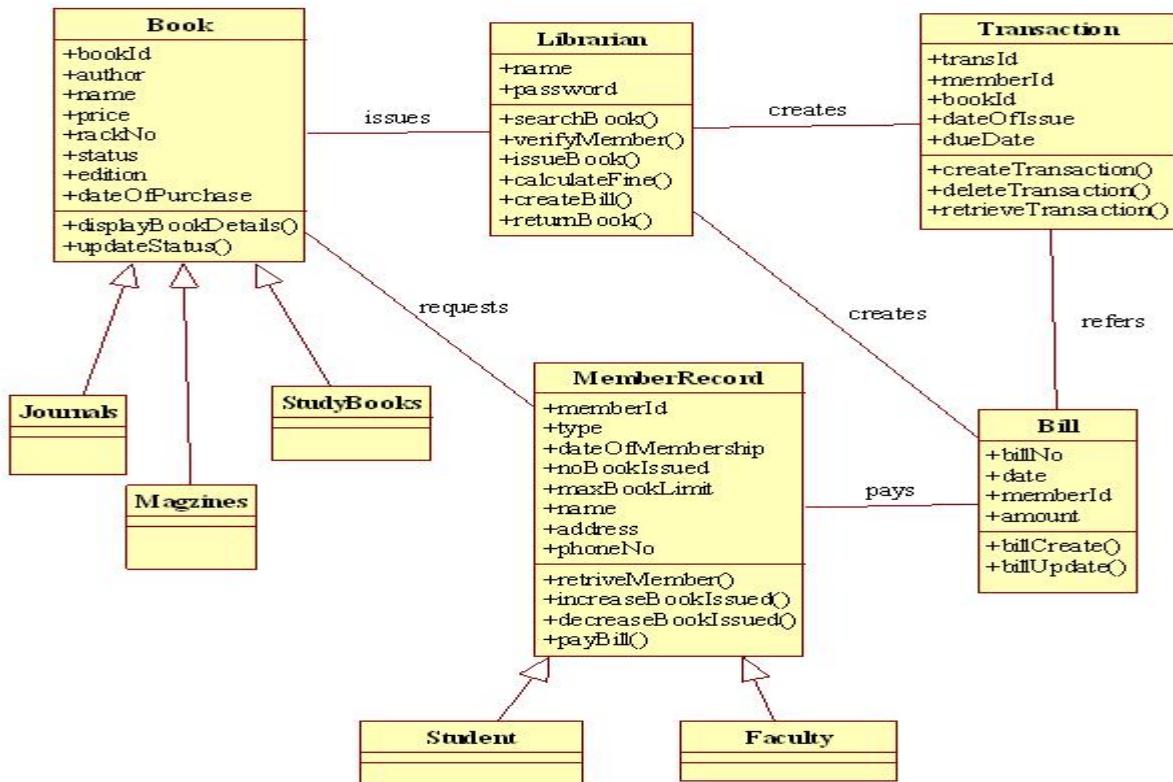
The standard class diagram is composed of three sections:

UPPER SECTION: Contains the name of the class. This section is always required, whether you are talking about the classifier or an object.

MIDDLE SECTION: Contains the attributes of the class. Use this section to describe the qualities of the class. This is only required when describing a specific instance of a class.

BOTTOM SECTION: Includes class operations (methods). Displayed in list format, each operation takes up its own line. The operations describe how a class interacts with data.

### 6.5.2. CLASS DIAGRAM:



## **6.6 MODELING OF COLLABORATION DIAGRAM: -**

### **6.6.1. COLLABORATION DIAGRAM DESCRIPTION:**

Communication diagrams, formerly known as collaboration diagrams, are almost identical to sequence diagrams in UML, but they focus more on the relationships of objects—how they associate and connect through messages in a sequence rather than interactions.

#### **COMPONENTS OF COMMUNICATION DIAGRAM:**

##### **1] OBJECTS:**

Objects can be classed as either a supplier or a client. Suppliers call the function that supplies the message. Clients send the message to the supplier, who receives it. It is represented by a rounded rectangle.

##### **2] ACTORS:**

Stick figure represents the actor. It is the instance that invokes the interaction. Each actor has a specific name and a role.

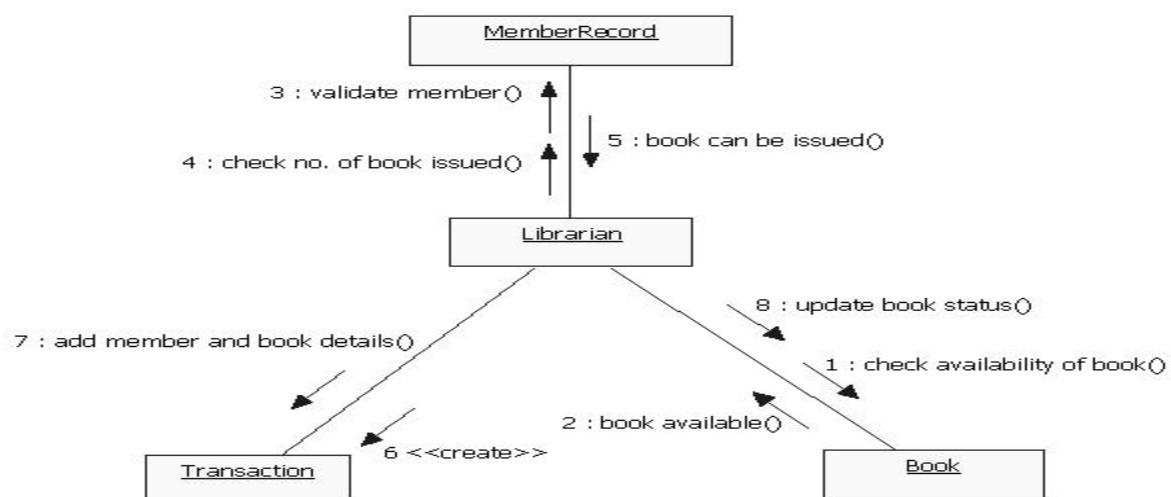
##### **3] LINKS:**

A straight line connecting two objects indicates a relationship between them. The two objects can send messages to each other.

##### **4] MESSAGES:**

Typically, messages will have a number and description next to them. The number determines the order in which messages should be read.

### **6.6.2. COLLABORATION DIAGRAM:**



<b>EX NO: 7</b>	<i>State and Sequence Diagram, Deployment Diagram, Sample Frontend Design</i>
<b>DATE:</b>	

## **7.1. STATECHART DIAGRAM: -**

### **7.1.1. STATECHART DIAGRAM DESCRIPTION:**

State diagram describes the behavior of a single object in response to a series of events in a system. This UML diagram models the dynamic flow of control from state to state of a particular object within a system.

#### **COMPONENTS ARE:**

- **Initial State:**

A filled circle followed by an arrow represents the student's login (object's) initial state.

- **States**

States in the state chart diagram represent situations during the life of an Object. You can easily illustrate a state in SmartDraw by using a rectangle with rounded corners.

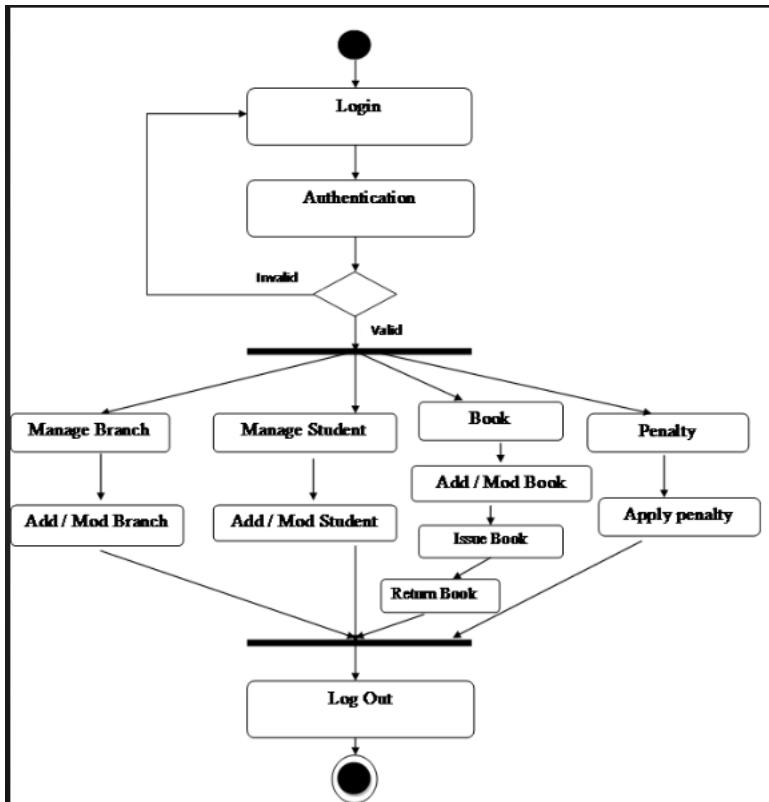
- **Transition**

A solid arrow represents the path between different states of an object of Exam result management system.

- **Final State**

An arrow pointing to a filled circle nested inside another circle represents the (object's) result.

### **7.1.2. STATECHART DIAGRAM:**



### **7.2. SEQUENCE DIAGRAM: -**

#### **7.2.1. SEQUENCE DIAGRAM DESCRIPTION:**

Sequence diagram are a popular dynamic modelling solution in UML because they specifically focus on lifelines, or the processes and objects that live simultaneously, and the messages exchanged between them to perform a function before the lifeline ends.

#### **COMPONENTS IN SEQUENCE DIAGRAM:**

##### **1] ACTOR:**

Stick figure represents the actor. Shows entities that interact with the external objects of the system.

##### **2] OBJECTS:**

Rectangular boxes represent the object, demonstrating how an object will behave in the context of the system.

##### **3] ACTIVATION BOXES:**

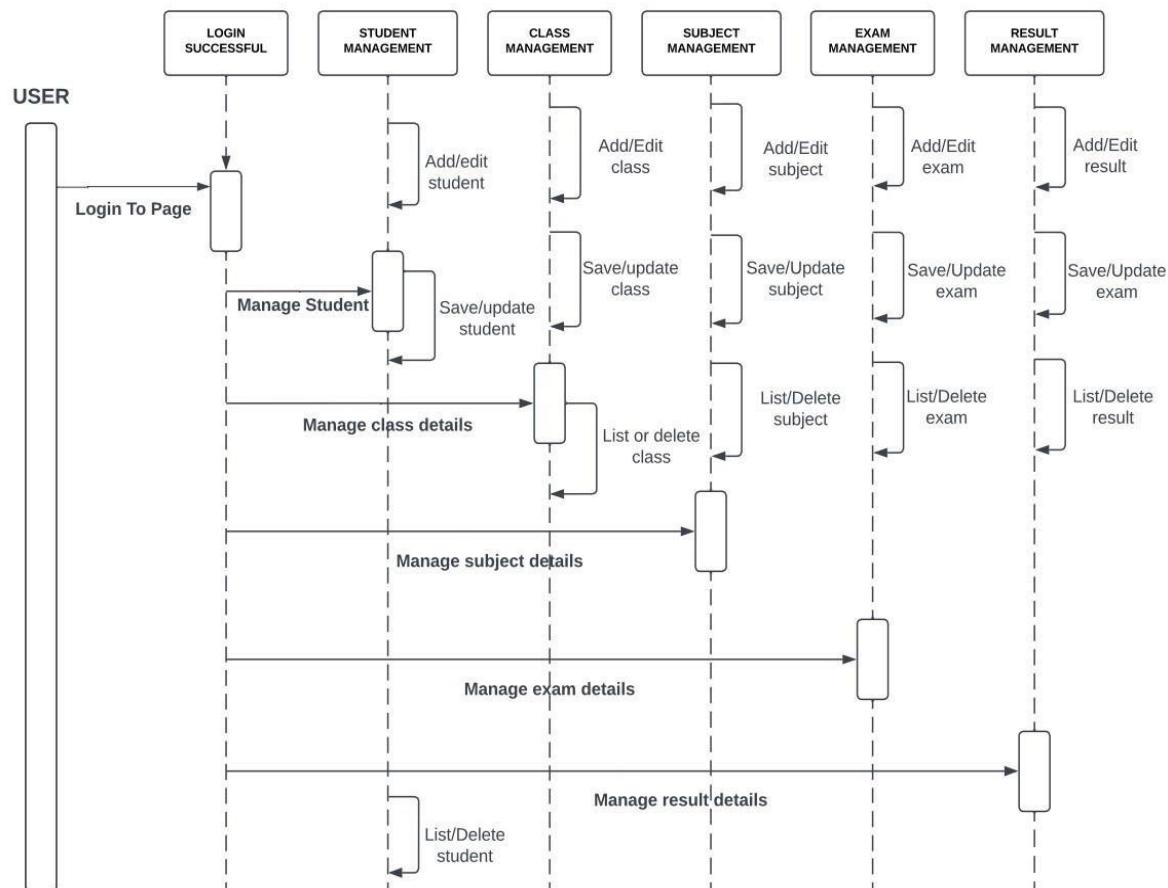
Represents the time needed for an object to complete a task. The longer the task will take, the longer the activation box becomes.

#### 4] MESSAGE SYMBOLS:

We use the following arrows and message symbols to show how information is transmitted between objects. These symbols may reflect the start and execution of an operation or the sending and reception of a signal.

- **SYNCHRONOUS MESSAGE:** Represented by a solid line with a solid arrowhead. This symbol is used when a sender must wait for a response to a message before it continues. The diagram should show both the call and the reply.
- **ASYNCHRONOUS MESSAGE:** Represented by a solid line with a lined arrowhead. Asynchronous messages don't require a response before the sender continues. Only the call should be included in the diagram.
- **REPLY MESSAGE:** Represented by a dashed line with a lined arrowhead, these messages are replies to calls.
- **DELETE MESSAGE:** Represented by a solid line with a solid arrowhead, followed by an X. This message destroys an object.

#### 7.2.2. SEQUENCE DIAGRAM:



## **7.3 DEPLOYMENT DIAGRAM: -**

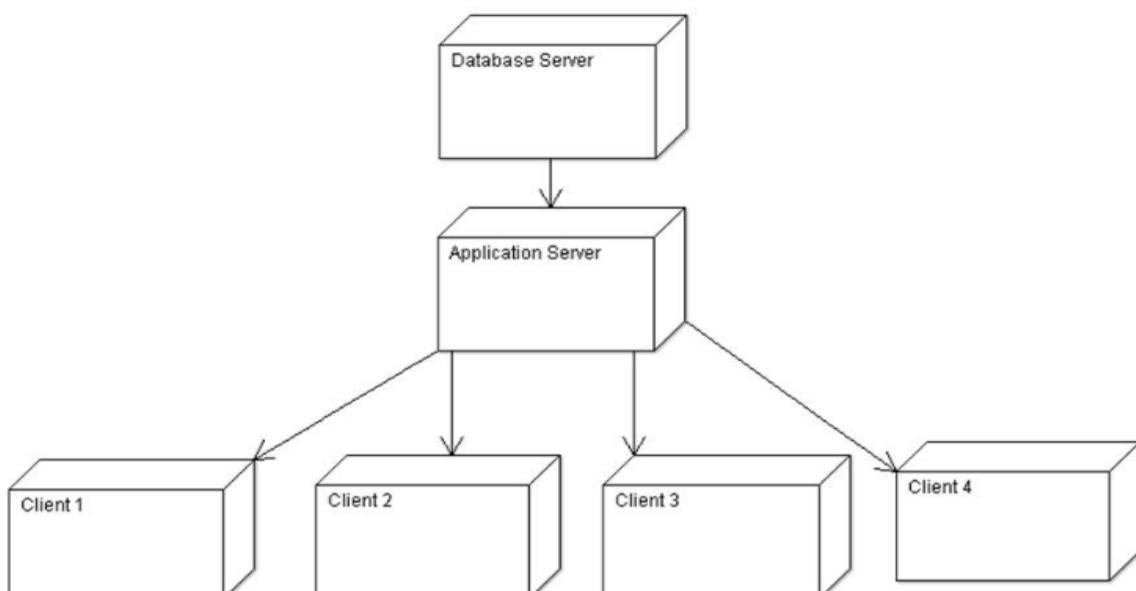
### **7.3.1. DEPLOYMENT DIAGRAM DESCRIPTION:**

A deployment diagram is a UML diagram type that shows the execution architecture of a system, including nodes such as hardware or software execution environments, and the middleware connecting them.

Deployment diagrams are typically used to visualize the physical hardware and software of a system. Using it you can understand how the system will be physically deployed on the hardware.

Deployment diagrams help model the hardware topology of a system compared to other UML diagram types which mostly outline the logical components of a system.

### **7.3.2. DEPLOYMENT DIAGRAM:**



dig Deployment Diagram For Library Management System

## 7.4. SAMPLE FRONTEND DESIGN: -

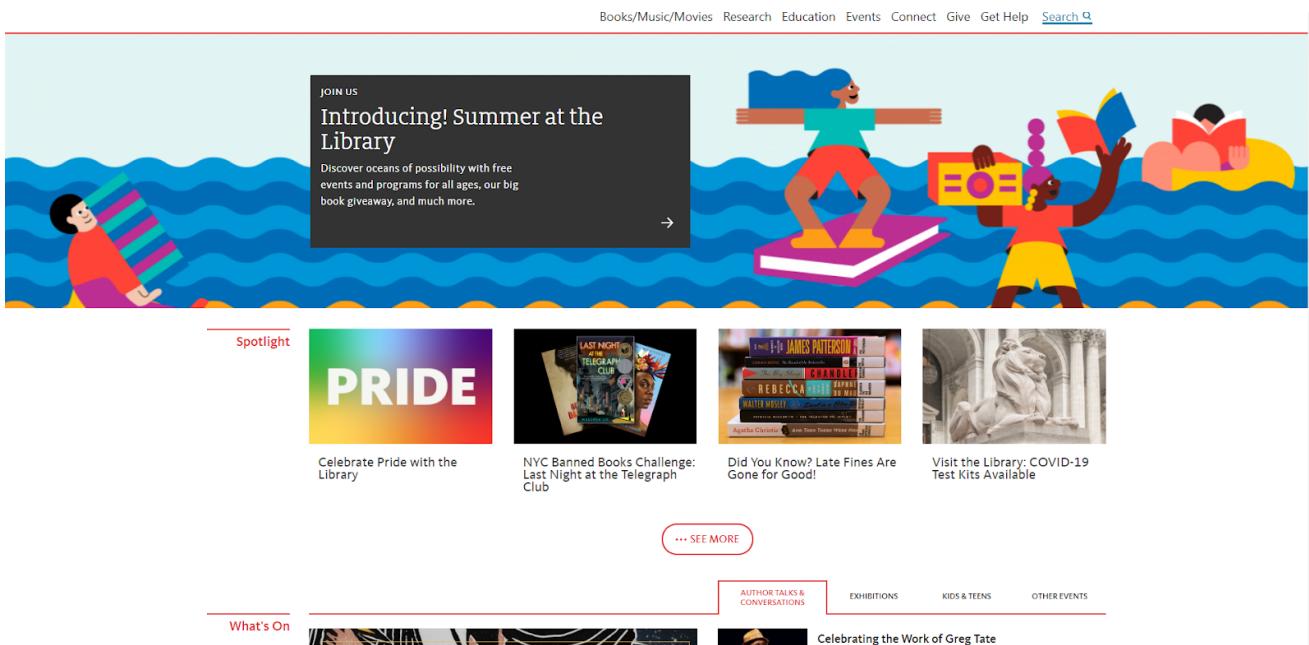


Fig.7.4.1 Landing Page



Fig.7.4.2. Different Login Modules

<b>EX NO: 8</b>	<b><i>Module Description, Module Implementation (phase 1) Using Agile</i></b>
<b>DATE:</b>	

### **8.1. MODULE DESCRIPTION: -**

Following are the main Module of this Digital Library Managementsystem.

1. Login Module - At Admin Side
2. User Management Module - At Admin Side
3. Profile Management Module - At Admin Side
4. Result Management Module - At Admin & Student Side

### **Features of Digital Library Management System:**

- User can login to the web page using their credentials.
- After logging in to the web page, User can select their favorite or new book.
- Admin can see analytics data of user details, books read data.
- Admin can Add Edit and Delete data.
- Admin can take control of the web page.
- User can be able to solve their query also.

**EX NO: 9**

**DATE:**

## ***Module Implementation, Scrum Master to Induce New requirements in Agile Development***

Get a Free Library Card Today!



Welcome! Get a free library card from The New York Public Library.

[Apply for a Library Card Online](#)

New York residents ages 13 and older can get a digital library card through our [online card application](#) and gain access to an array of digital resources. You may also request physical items with your digital account; however you will need to check out your items with a physical card.

If you are an international researcher looking to request research materials ahead of your visit, please use our [alternate form](#).

[Digital Library Cards for Kids](#)

Patrons 12 and under can apply for a digital library card with a parent or guardian through our free e-reader app SimplyE. Note: These accounts cannot be restricted to only children's materials. Learn more about how to download and get started with [SimplyE for iOS](#) and [SimplyE for Android](#).

[Apply for a Library Card at an NYPL Location](#)

To borrow physical and digital materials, please visit one of our locations with proof of ID and address to complete the application for a physical card. Apply for a library card at a New York Public Library location near you. [Find a location near you](#).

[Renew Your Expired Card](#)

If you currently have an NYPL account and your card has expired, please do not apply for a new card. Duplicate records will be deleted. [Learn more about how to renew your card here](#).

Fig.9.1. Library Card Creation/Renewal

The New York Public Library Shop

JUST IN   NYPL   JEWELRY   ACCESSORIES   WORK + HOME   BOOKS   KIDS   GIFT   SALE   INFO

CART

Meet Your New Favorite Accessory!  
Our NYPL-exclusive Black Denim Stamp Tote is spacious and sturdy, making it a great everyday bag.  
[SHOP NOW](#)

A black denim tote bag with leather straps and a small pocket on the front, standing in a garden setting with pink flowers and greenery. A straw hat with a red band is visible in the foreground.

Fig.9.2. Shopping Tab which displays ads

**EX NO: 10**

**DATE:**

## ***Module Implementation (Phase 2)***

The following Screenshots provide information on Login modules

This screenshot shows the login interface for normal users. At the top, there is a navigation bar with links for Books/Music/Movies, Research, Education, Events, Connect, Give, Get Help, and a search bar. Below the navigation bar, there is a large input field labeled "ENTER YOUR BARCODE OR USERNAME". Underneath this field are two smaller input fields: one for "Barcode or Username" and another for "PIN/Password". There is also a "Remember this login information?" checkbox and a "SUBMIT" button.

Fig.10.1. Login for normal users

This screenshot shows the login interface for research users. It has a similar structure to Fig.10.1, featuring a navigation bar at the top and a large "ENTER YOUR BARCODE OR USERNAME" input field. Below it are fields for "Barcode or Username" and "PIN/Password", a "Remember this login information?" checkbox, and a "SUBMIT" button. The layout is identical to the normal user login page.

Fig.10.2. Login for research users

Get a Free Library Card Today!



Welcome! Get a free library card from The New York Public Library.

**Apply for a Library Card Online**

New York residents ages 13 and older can get a digital library card through our [online card application](#) and gain access to an array of digital resources. You may also request physical items with your digital account; however you will need to check out your items with a physical card.

If you are an international researcher looking to request research materials ahead of your visit, please use our [alternate form](#).

**Digital Library Cards for Kids**

Patrons 12 and under can apply for a digital library card with a parent or guardian through our free e-reader app [SimplyE](#). Note: These accounts cannot be restricted to only children's materials. Learn more about how to download and get started with [SimplyE for iOS](#) and [SimplyE for Android](#).

**Apply for a Library Card at an NYPL Location**

To borrow physical and digital materials, please visit one of our locations with proof of ID and address to complete the application for a physical card. Apply for a library card at a New York Public Library location near you. [Find a location near you.](#)

*Fig. 10.3. Creating new account*

**PIN/ PASSWORD RESET REQUEST**

To reset your PIN/ PASSWORD, please enter your barcode or username and confirm what you have entered BEFORE you click the submit button.

An email will be sent to the address we have on file for your account. If you do not receive this email, please confirm the correct barcode or username was entered. The email will contain a temporary link that allows you to reset your PIN/ Password.

If you need further assistance please call 917-275-6975. Staff are available to assist Monday-Saturday 10AM to 6PM.

Barcode or  
username

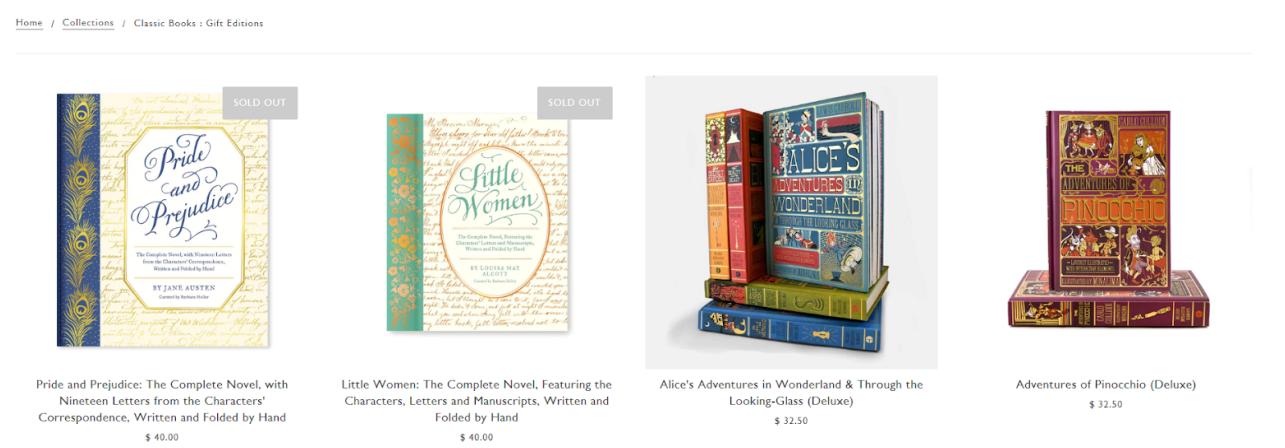
*Fig. 10.4 Reset Password*

**EX NO: 11**

## ***Module Implementation (Phase 3)***

**DATE:**

### **11.1. MODULE IMPLEMENTATION (PHASE 3): -**



*Fig.11.1. Shop page for books*



*Fig.11.2. Shop Page for pocket sized books*

<b>EX NO: 12</b>	<b><i>Master Test Plan, Test Case Design (Phase 1)</i></b>
<b>DATE:</b>	

### **12.1. MASTER TEST PLAN: -**

<b>TESTING OBJECTIVE</b>	<b>FOCUSING ON PERFORMANCE ISSUE</b>
Test Items	Login system, Registration system, Payment System
Features to be tested	Login verification, Registration feature, Viewing Library Feature, Viewing shop feature
Features not to be tested	
Approach	Method – Manual Testing
Required Hardware/Software	A PC with 8 GB RAM, Internet Connectivity
Risks	
Testers & Schedule	Tester:
Estimate	Rs500/- (Excluding Tax and other charges)

### **12.2. TEST CASE DESIGN: -**

➤ ***Testing:***

- The process of executing a system with the intent of finding an error.
- Testing is defined as the process in which defects are identified, isolated, subjected for rectification and ensured that product is defect free in order to produce the quality product and hence customer satisfaction.

- Quality is defined as justification of the requirements
- Defect is nothing but deviation from the requirements.
- Testing --- The presence of bugs
- Testing can demonstrate the presence of bugs, but not their absence
- Debugging and Testing are not the same thing!
- Testing is a systematic attempt to break a program or the AUT
- Debugging is the art or method of uncovering because the script /program did not execute properly.

➤ **Testing Methodologies:**

- **Black box Testing** is the testing process in which tester can perform testing on an application without having any internal structural knowledge of application. Usually Test Engineers are involved in the black box testing.
- **White box Testing** is the testing process in which tester can perform testing on an application with having internal structural knowledge. Usually, The Developers are involved in white box testing.
- **Gray Box Testing:** is the process in which the combination of black box and white box techniques are used.

➤ **Positive Test Case:**

- The positive flow of the functionality must be considered
- Valid inputs must be used for testing.
- Must have the positive perception to verify whether the requirements are justified.

➤ **Negative Test Case: -**

- Must have negative perception.
- Invalid inputs must be used for test.

<b>EX NO: 13</b>	<b><i>Manual Testing</i></b>
<b>DATE:</b>	

### **13.1. MANUAL TESTING: -**

TEST AREA	INPUT	TEST DESCRIPTION	OUTPUT/RESULT
<b>Login Module</b>	<b>Username and Password</b>	<b>Permits the user to enter into the application</b>	<b>Tested</b>
<b>Payment Module</b>	<b>Click validate and pay option</b>	<b>Checks for security and functionality of payment feature</b>	<b>Tested</b>
<b>Renting Module</b>	<b>Click on book to rent for 7 days</b>	<b>Checks availability of book searched and directs to payment module. If payment is processed the book is available in the user's library for 7 days</b>	<b>Tested</b>

<b>EX NO: 14</b>	<b><i>User Manual, Analysis of Costing, Effort and Resources</i></b>
<b>DATE:</b>	

## **14.1. USER MANUAL: -**

### **14.1.1 Introduction:**

The “Digital Library Management System” application allows user simple interface to access their account from a mobile device to find the books they love to read and borrow them by paying a small book rent fee.

### **14.1.2. Getting Started:**

Download and install the "Digital Library Management System" application available on play store or AppleStore. The application is compatible with Android versions 5.0 and above.

### **14.1.2a. System Requirements:**

- Smartphone with Android versions 5.0 and above.
- Internet connection for Application to function.

### **14.1.3. Troubleshooting:**

Missing or Incorrect Password or E-Mail. A message will be displayed in the event Try again with proper credentials to access

## **14.2. ANALYSIS OF COSTING, EFFORT AND RESOURCES:**

### **> DEVELOPMENT OF PROJECT:**

<b>RESOURCE REQUIREMENT</b>	<b>COST</b>
Computer with core i7 8 <sup>th</sup> gen processor, at least 8GB of RAM, running on windows 10.	Rs. 65000/-
Code	Open Source
Printing	Rs. 500/-

**> SERVER-END:**

RESOURCE REQUIREMENT	COST
My SQL	Enterprise Edition Rs. 10000/-
http web services	Std edition Rs. 5000/-
UPS	Rs. 2500/-

**> OTHER COSTS:**

Employee salary	-
Maintenance cost	Rs. 1000/- per month