Low Level Design (LLD)

Last date of revision: 01/03/2023

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Document Version Control

Date Issued	Version	Description	Author
20th February,2023	1.1	First Draft	Paramita
21st February	1.2	Workflow process added	-Do-
22nd February	1.3	Constraints and Exceptions added	
23rd February	1.4	Key performance indexes added	
24th February	1.5	Flowcharts added denoting input and output	
24th February	1.6		
25th February	1.7	Added dataset overview and updated user I/O flowchart.	
26th February	1.8	LLD Structure ready for submission	

Contents

Abstract

Books have long been the best friend of the civilized society. Apart from providing knowledge, it is the propagation of communication that transcends into an intellectual and psychological broadening of the minds of the superior species, the humans. Most printed material have opened new domains of evolution, ideas, research, and a barter of information. The Online book shop carries the tradition of a better improved society that chooses to buy books, trace and track readers as well as buyer-sellers to interact.

The system is primarily an eCommerce application, that is a mega Book mart intended to connect anybody and everybody interested in reading in print. The age-old tendency to widen view with reading is being enhanced by the system.

The system connects people who are book collectors and often feel the necessity to lend their books in exchange of money to people who might carry on their legacy. In a scenario of recent trends to read pdf's and rely on online materials, the system demands commendable respect as it tends to connect readers across the globe, online.

1 Introduction

1.1   Need of a Low-Level Design Document:

The low-level Design Document contains a detailed description of the application to be developed. Low level designing contains bulky data and document tto delve into details the development phase. The LLD is a reference document for developers, reference material with all the technicalities involved.

Low level designing aims at the technical detailing of the project. It consists of the algorithm and details about classes/ methods to achieve the required functionality in terms of business requirements. The Low Levell design aims to achieve the functional and non-functional requirements by giving a technical roadmap for it. The document divided into various sections to make the code reusable and scalable.

The main objective of the project is to make a connection between the people who have a demand for books and those who need the books.

This project shall be delivered in a manner that suggestive changes may be easily implemented without disturbing the already existing data.:

1.2   Scope

This software system will be a Web application This system will be designed to locate all interested readers to find their books easily as well as those who have hold on to resources, to share it.

In the application, registered users will be given a chance to get hold of books of their interest in various formats and from most of the domains.

Books may be bought and sold likewise. Books may be acquired in physical form in hardcover or as online pdf versions.

1.3   Constraints

A few functionalities could not be implemented.

- o The system suffers from the drawback of not being overtly tested. System testing and Loop testing were performed but not all functionalities could be tested.
- o The buying and Lending of Books portal, does not give a vivid reasoning of marked price of books. The cost of purchase or lending being set on common market standards.
- o Books from all domains and all necessities could not be put on the portal.
- o No guarantee regarding the old books and their authenticity may be provided by the system.

1.4 Risks

Document specific risks that have been identified or that should be considered.

- The authenticity of users is not determined.
- The pdfs of books available are therefore cautiously done for a few.
- Copyright and patent rules for creative content are subject to a few risks. This makes the system vulnerable.

1.5 Out of Scope

1. The project is developed in the local system and the code in github repository.
2. The project is not hosted in any cloud platform and is still not available in on internet.
3. Book Authors to be connected with Readers.
4. Writing skill improvement implementation.

5. Broader range of sale manifesto to be developed

2. Technical specifications

It includes the hardware software and other technical requirements of the system. It would require at least 256MB of RAM for its smooth functioning. The System requirements are to be fulfilled by the PC on which the system is to be primarilydeveloped. The Software is to be developed in eclipse IDE as a Dynamic Web based Java2EE project. Java, JSP, and Java Script are to be used in Front End. Backend Database is managed in Container Database mysql using the MySQL Workbench. The Intel microprocessor with Ryzen is used in the PC.

2.1. Hardware Requirements

- Processor: Intel Pentium microprocessor with RYZEN
- Main memory: 512 MB
- Hard disk :   256 MB required
- Keyboard: Standard
- Monitor: 600x800 Resolution or above
- Mouse: Scroll
- Secondary storage: 32GB

2.2. Software Requirements

2.2.1. Tools and platforms used

❀ Operating System: Windows11

❀ Front End: HTML, CSS, JAVA, JSP, JS

❀ Back End: MySQL[WorkBench] 8.0 CE

❀ Platform: ECLIPSE IDE[2022-09]

❀ Language: JAVA, JS, JSP

2.2.2. Software interfaces

- ❖ Application: Eclipse IDE[2022-09] for javaEE]
- ❖ Server: Tomcat 9.0
- ❖ Database: MySQl
- ❖ Browser :   FIREFOX
- ❖ Additional API :   MS OFFICE

The Software is to be managed and maintained after deployment on an iterative basis,

i.e. updating requirements according to changing needs. As maintainability is easy and development is based on technical updations of academics and availability, the Software is technically feasible. The Software is least prone to attacks as the data involves each individual personally. Less threat for virus and worms are expected as customized data is only to be accessed by registered and authenticated individuals.

2.1.2   Input schema

The input schema was created in mysql workbench.

Name of database: **onlinebookshop**

The tables and schema developed were:

system_admin
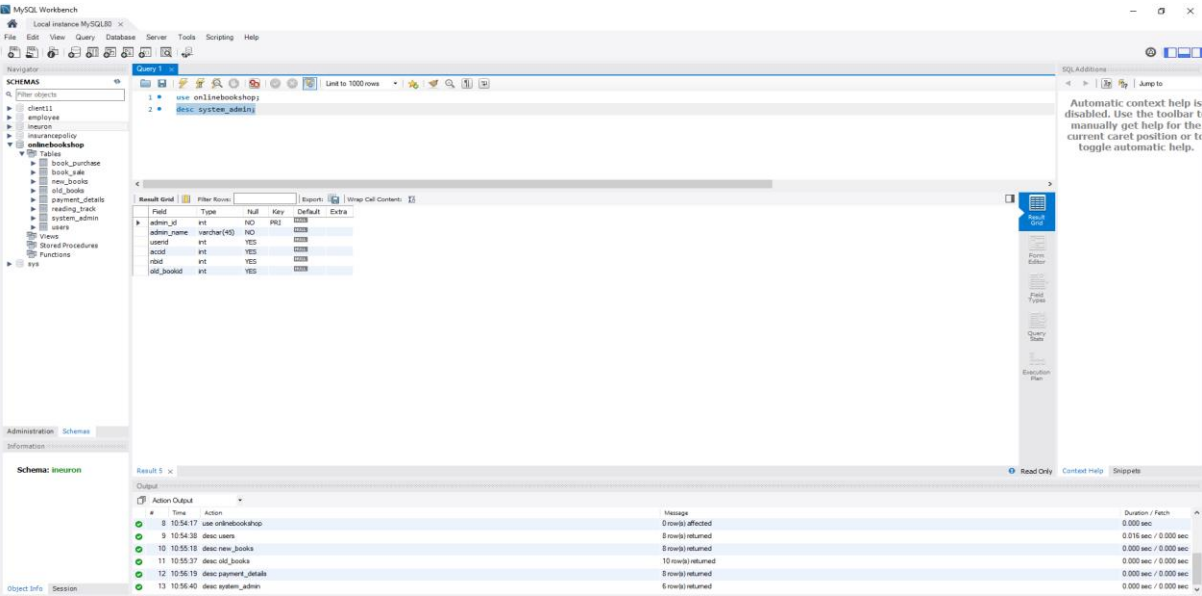
users
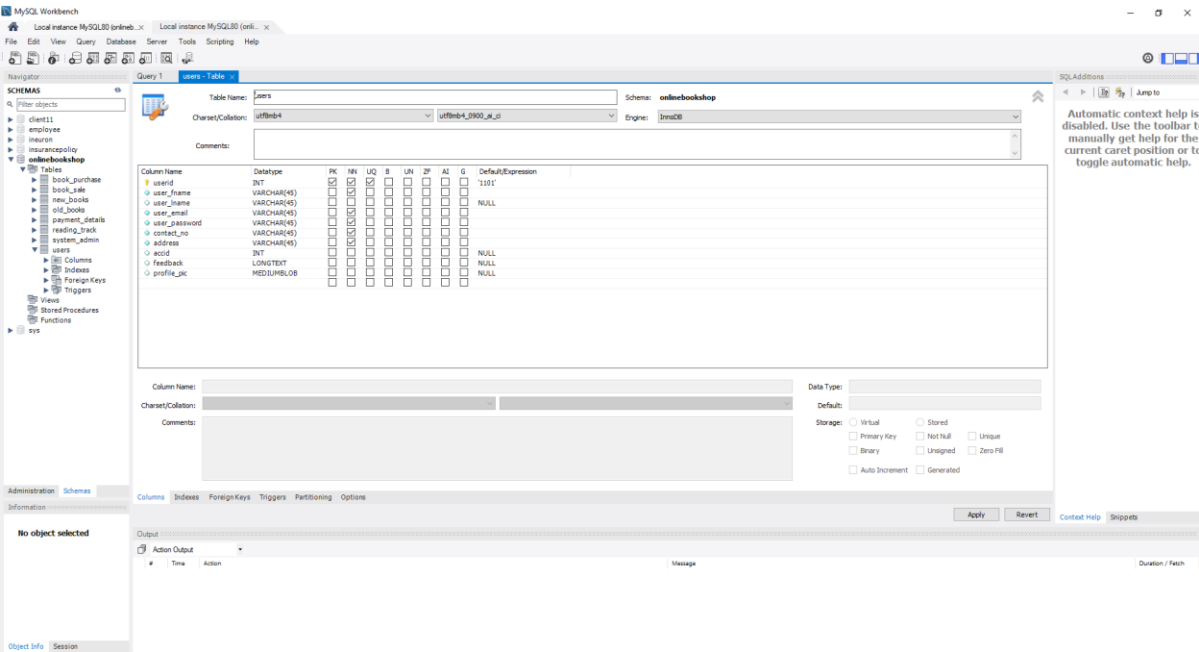
new_book schema
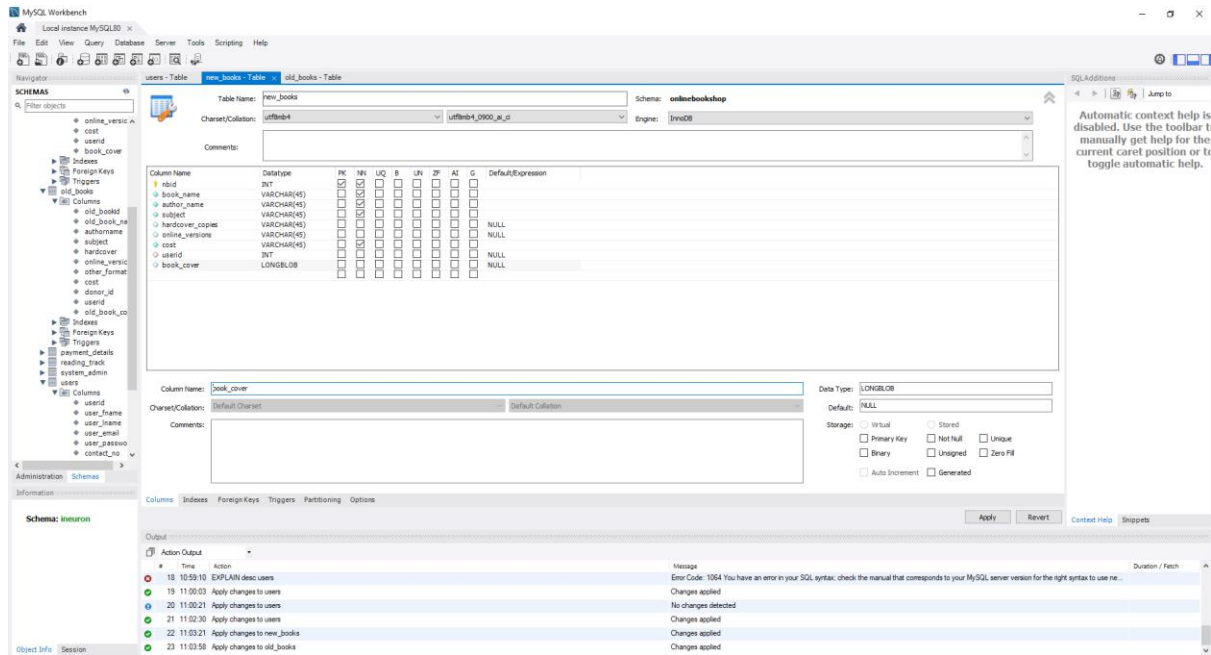
Payment_details schema
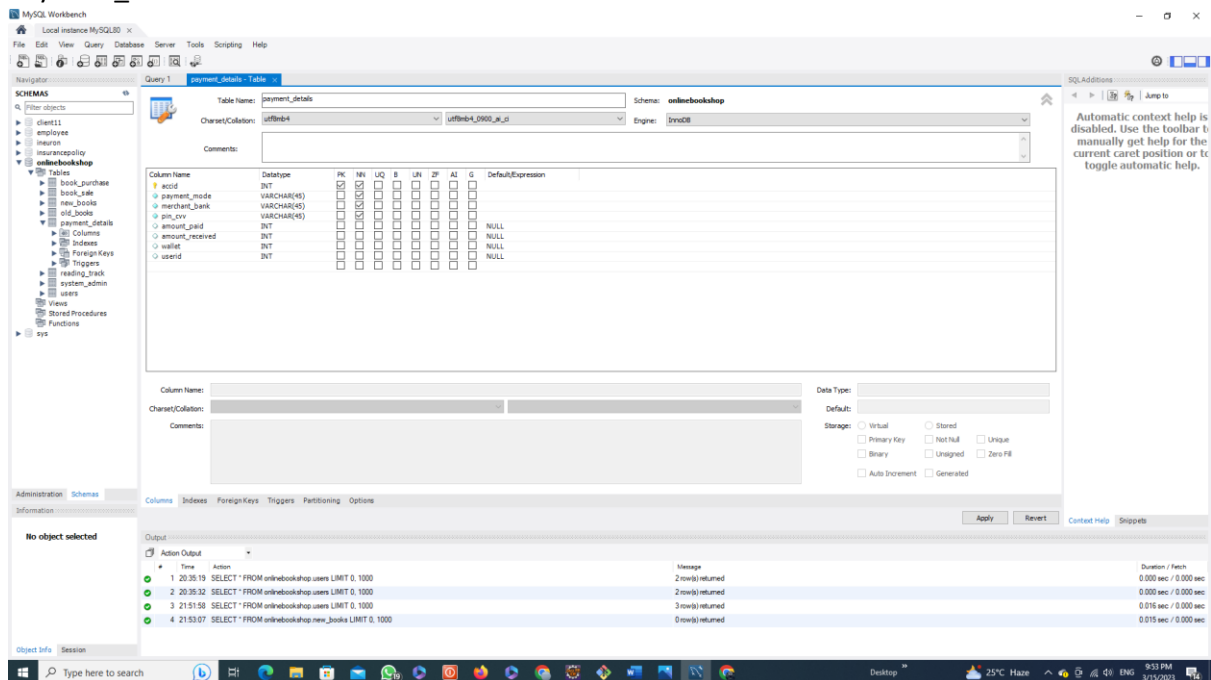
Old_books schema
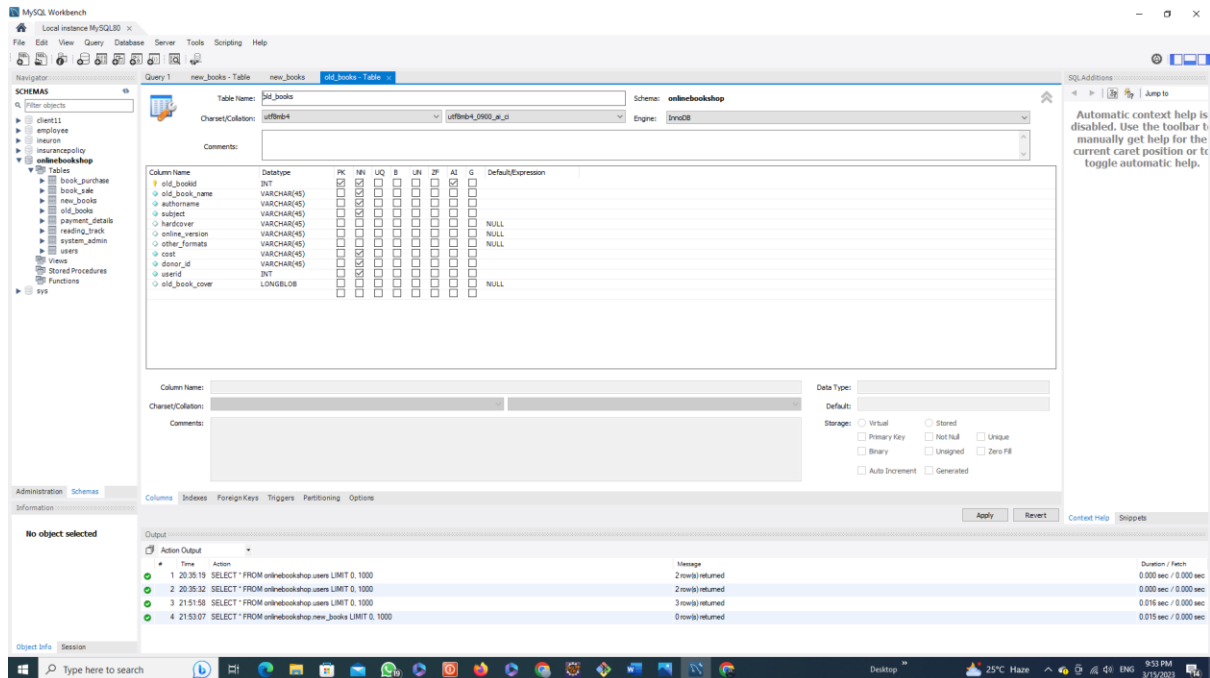
Reading track schema
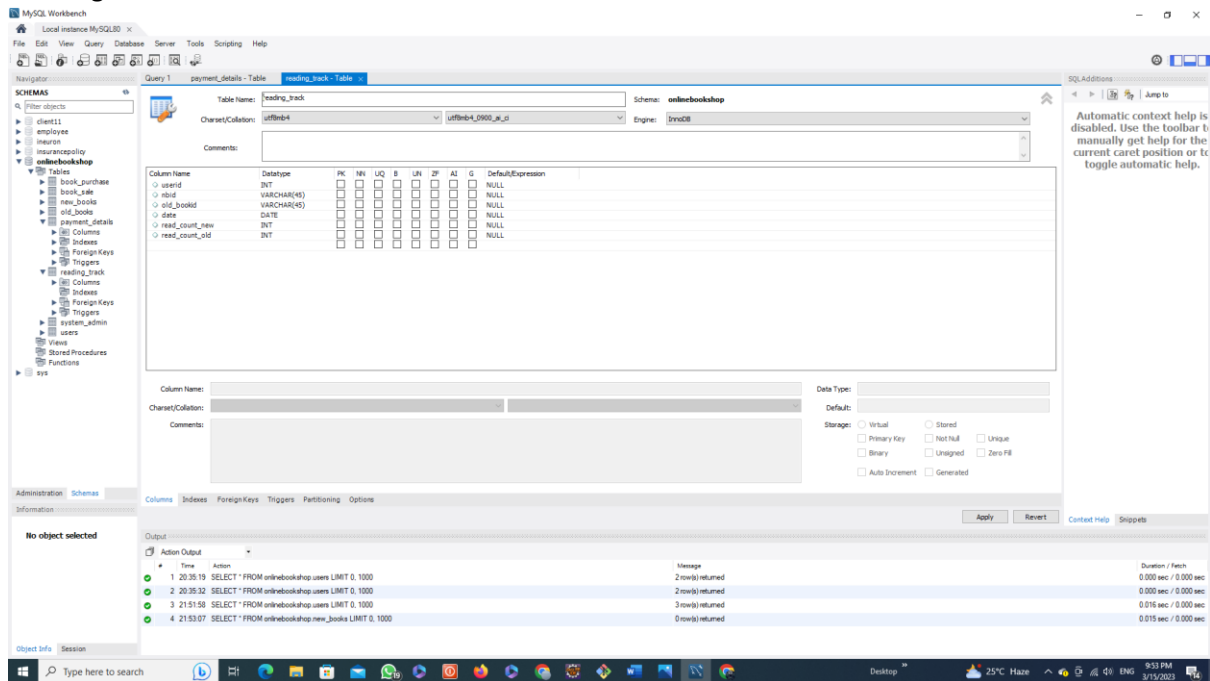
Book_sale schema
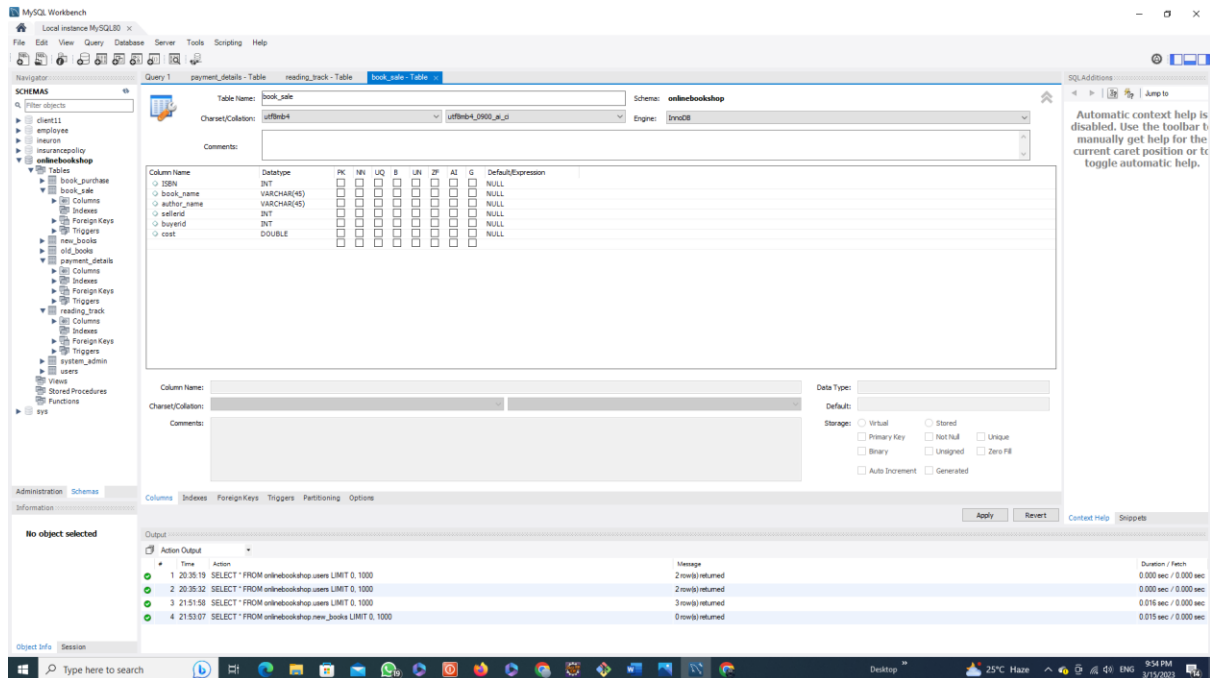
Book_purchase schema
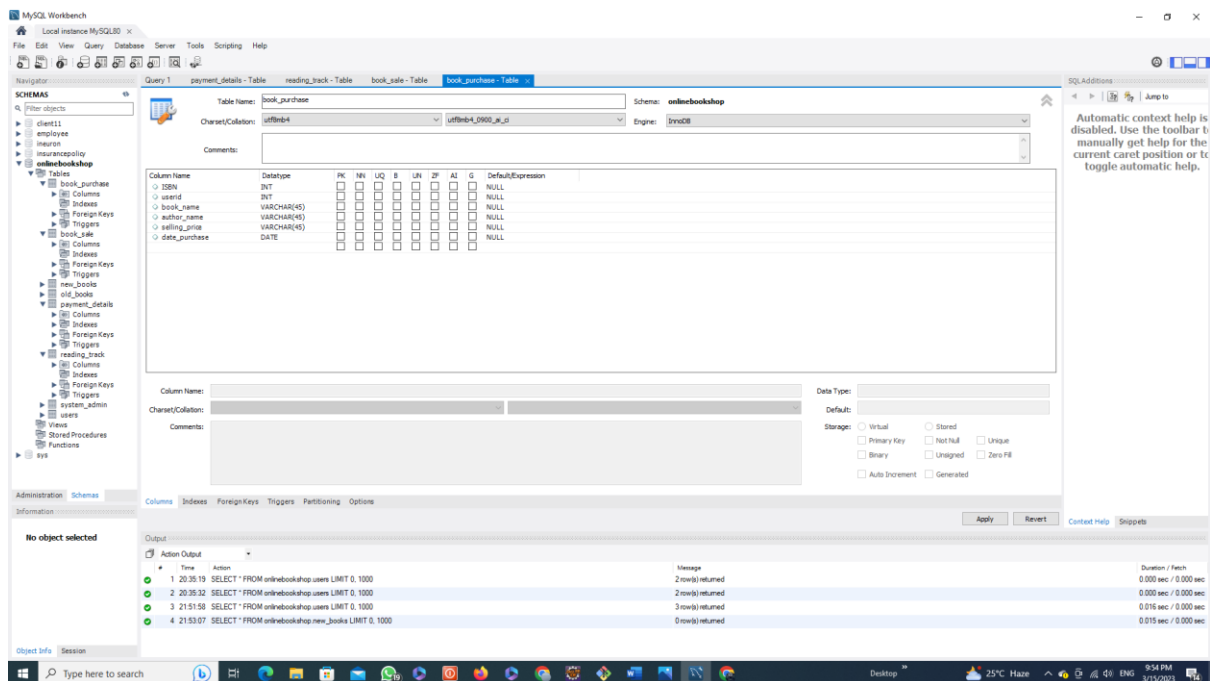
2.4 Database

System needs to store every request into the database and we need to store it in such a way that it is easy to retrain the model as well.

1. The User chooses the disease.
2. The User gives required information.

3. The system stores each and every data given by the user or received on request to the database. MySQL IS CHOSEN AS THE BACKEND DATABASE.

3. Technology stack

Front End	HTML/CSS/JSP/Java
Backend	Mysql[Port:3306]
Database	Mysql[Workbench 8.0 CE]

3 Problem Statement:

The system to be developed is based on online application development of a book shop. The catalogue of books is made available to prospective clients.

- Clients need to register on the platform to view the different available catalogues.

- After a successful login clients are required to choose domains and subjects of their choice.

- This leads to the choice of old vs new books.

- New Books are available in printed and different formats.

- Physical copies as well as online pdf fomats are available. Some material is available in .png formats.

- Old Books may be ordered according to the residence of the clients and the prospective seller, if the physical copy of the book is not available to the system admin.

- All Readers can be a prospective seller as well.

- They are directed according to their personal choices to access the payment portal and webpages meant for the same.

- All users of the system are requested to follow guidelines and updated information on the applications social media pages

SOFTWARE DEVELOPMENT METHODOLOGY

2.3. SOFTWARE LIFECYCLE MODEL

The software to be developed depends on the series of identifiable stages that would eventually lead to the product. The diagrammatic representation would follow in building the logical framework. It would be based on the requirements analysis and the design phase. The proposed software is planned after the requirements analysis and therefore may be developed by means of the iterative waterfall model. In order to give it a stage to analyse the effects of theprior stage, the iterative approach has been followed.

REQUIREMENTS ANALYSIS

SYSTEM ANALYSIS

SOFTWARE DESIGN

CODING

TESTING

DEPLOYMENT

MAINTENANCE
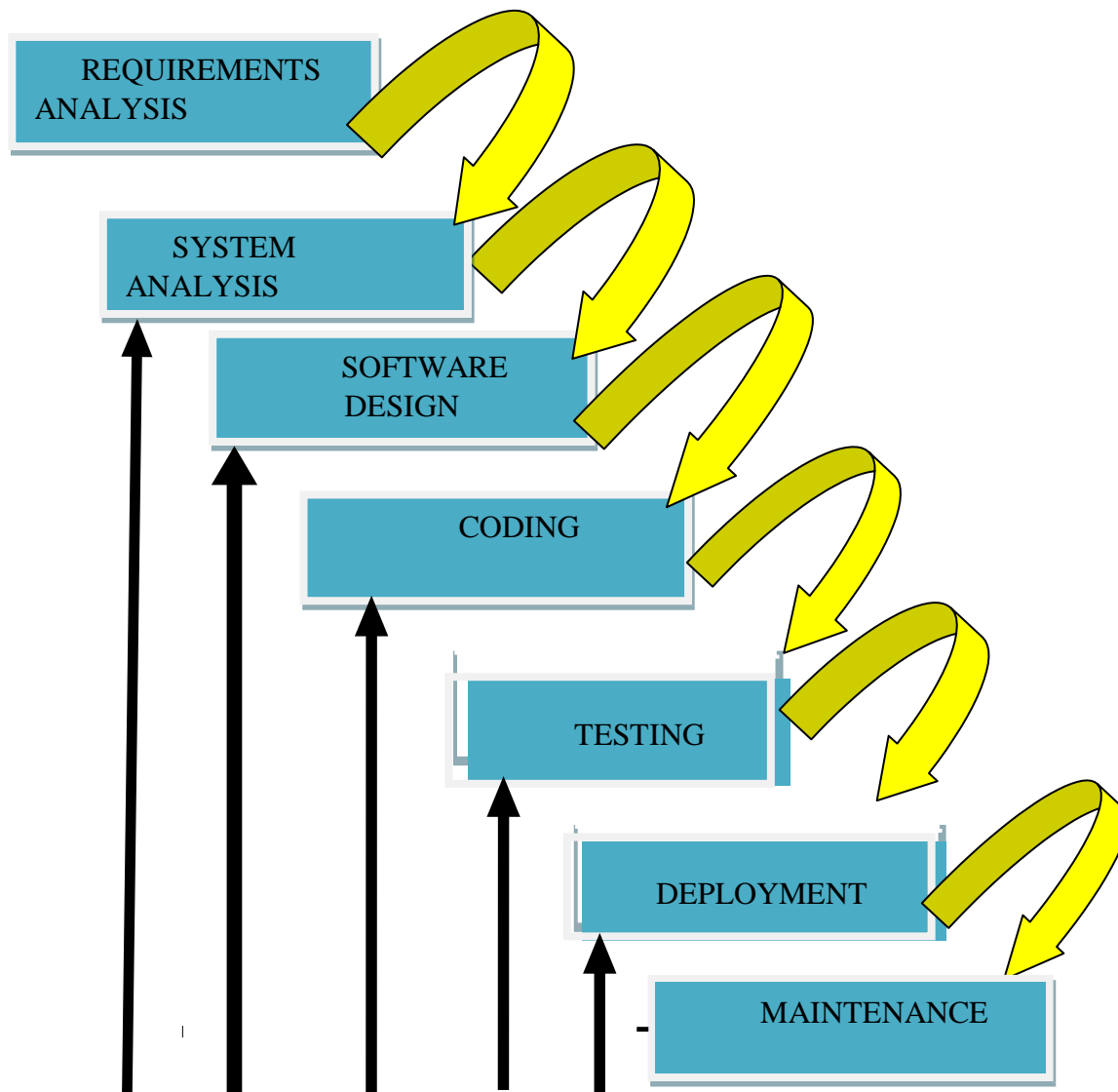
FLOW CHART

Module 1: user_login: This module is activated after user_registration and the user is provided the login button. If the user presses the login button the user is presented with the loginmodule. The user enters the user_email and user_password. The users table in database stores an userid generated from user_email and password. The entered credentials are checked with stored ones. If the match occurs verification is done On successful completion of the processes, the user is verified as authentic and allowed access.
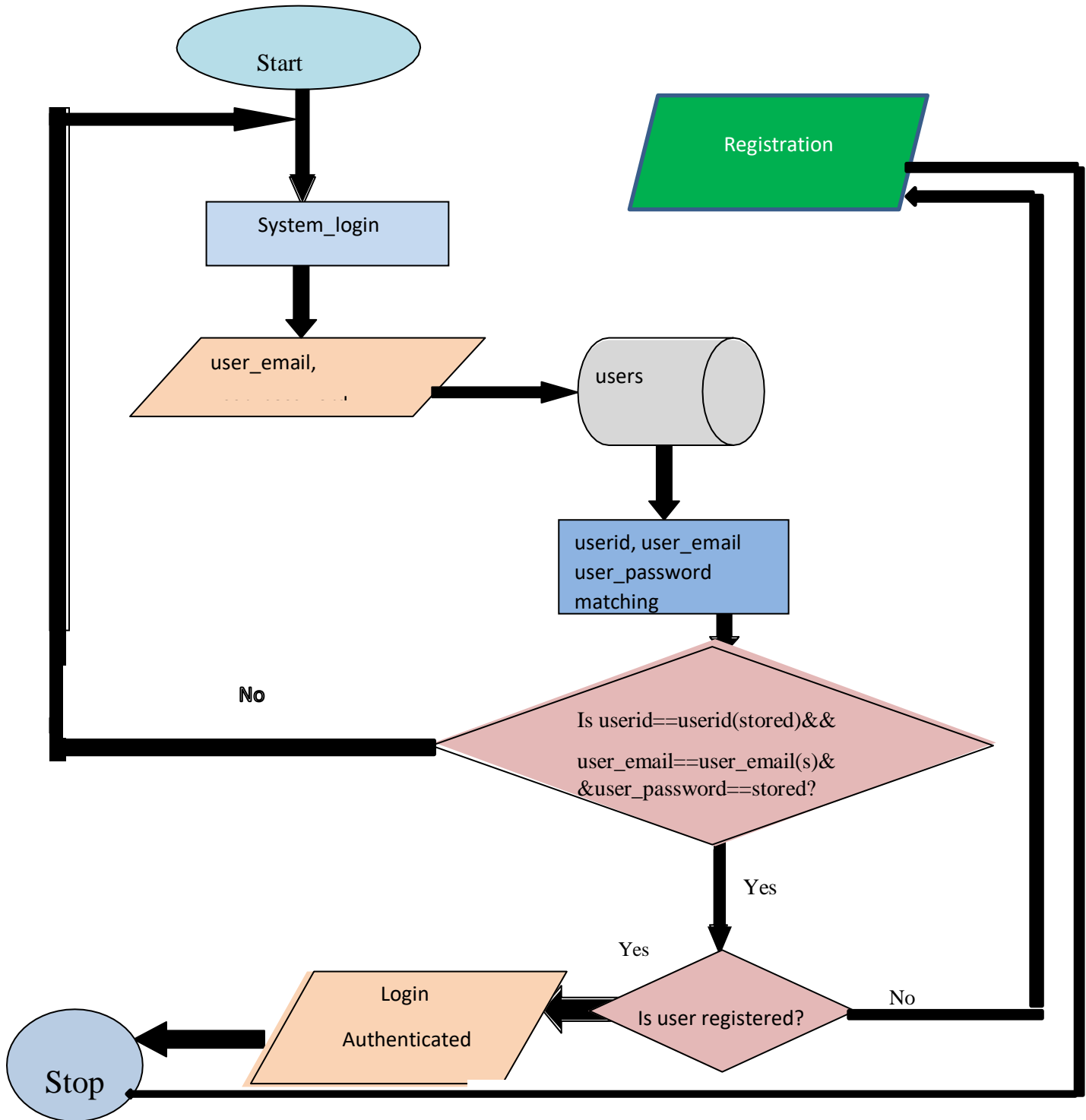
Module 2: BookCatalogue : This module is available to all users who have registered and made a successful login. After login, users are given usual instructions and information about the application and its working procedure. Making a profile on the site is optional. However, users with profiles are kept updated with new updations and available advantages of the BookManagement System

Y

```
  start  ──▶  Give choice of  ──▶  Do you want to visit the
             Books                  New Books page?
```

Yes

No

```
New Book  ──▶  Redirection to New Book page
```

Do you want old books?

No

Yes

New Book Choice

Old Books

Old Book Choice

Do you want to continue?

Yes

No

stop
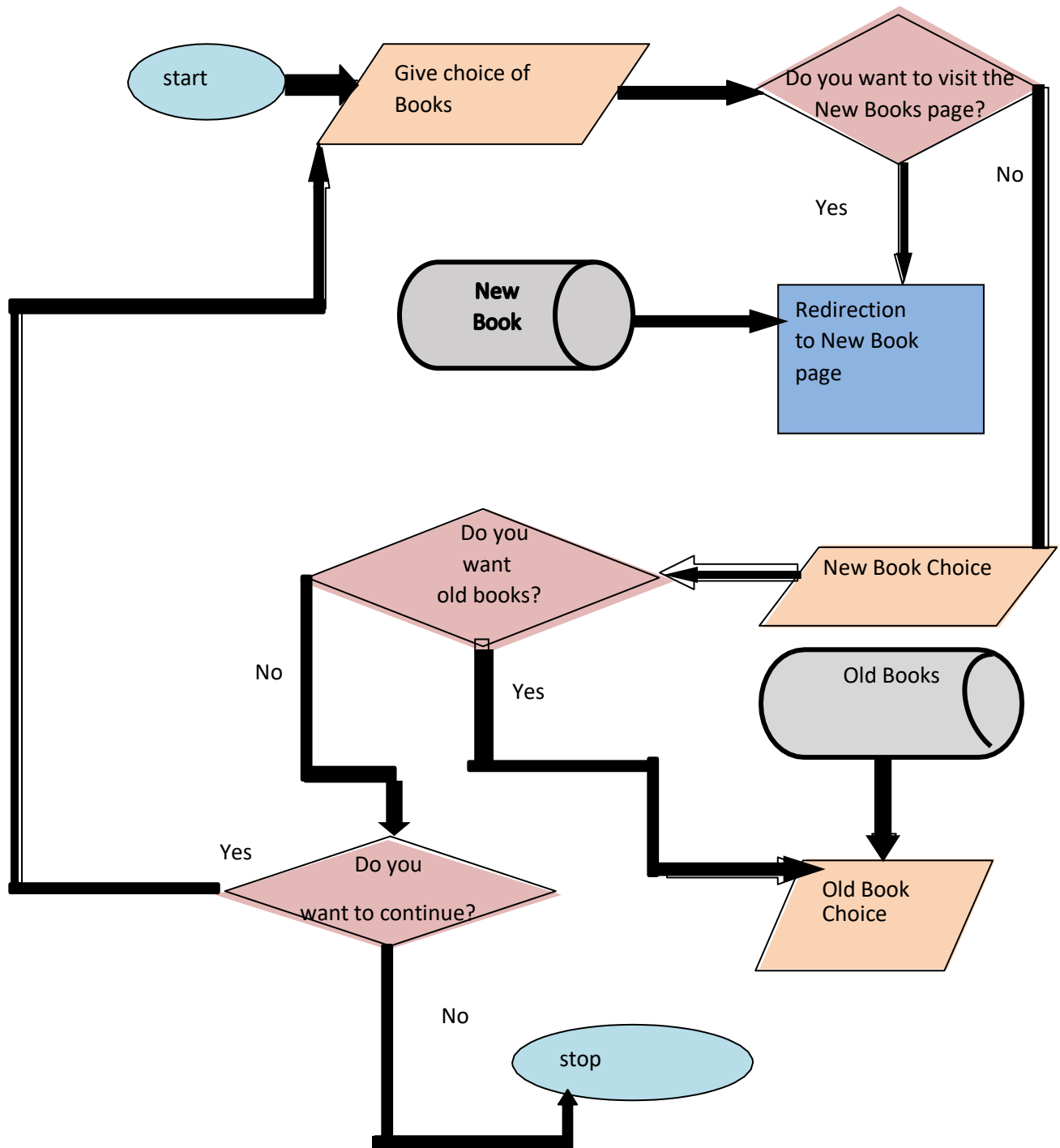
Module 3: payment_portal : The payment portal is to be accessed by the users whowish to buy old or new books. This portal is also used by Book selling enthusiasts. Each mode has its own cost , the user may enquire and access this mode if desired.

start

Book name , ISBN, author_name

Old Book

New Book

Amout to be paid for each Book

Do you want to proceed?

No

Yes

Payment process

Enter merchant bank and payment mode

Enter card_no,expiry,cvv,amount

Confirmation of payment

Do you want to continue?

Book Order Receipt

Yes

No

Stop
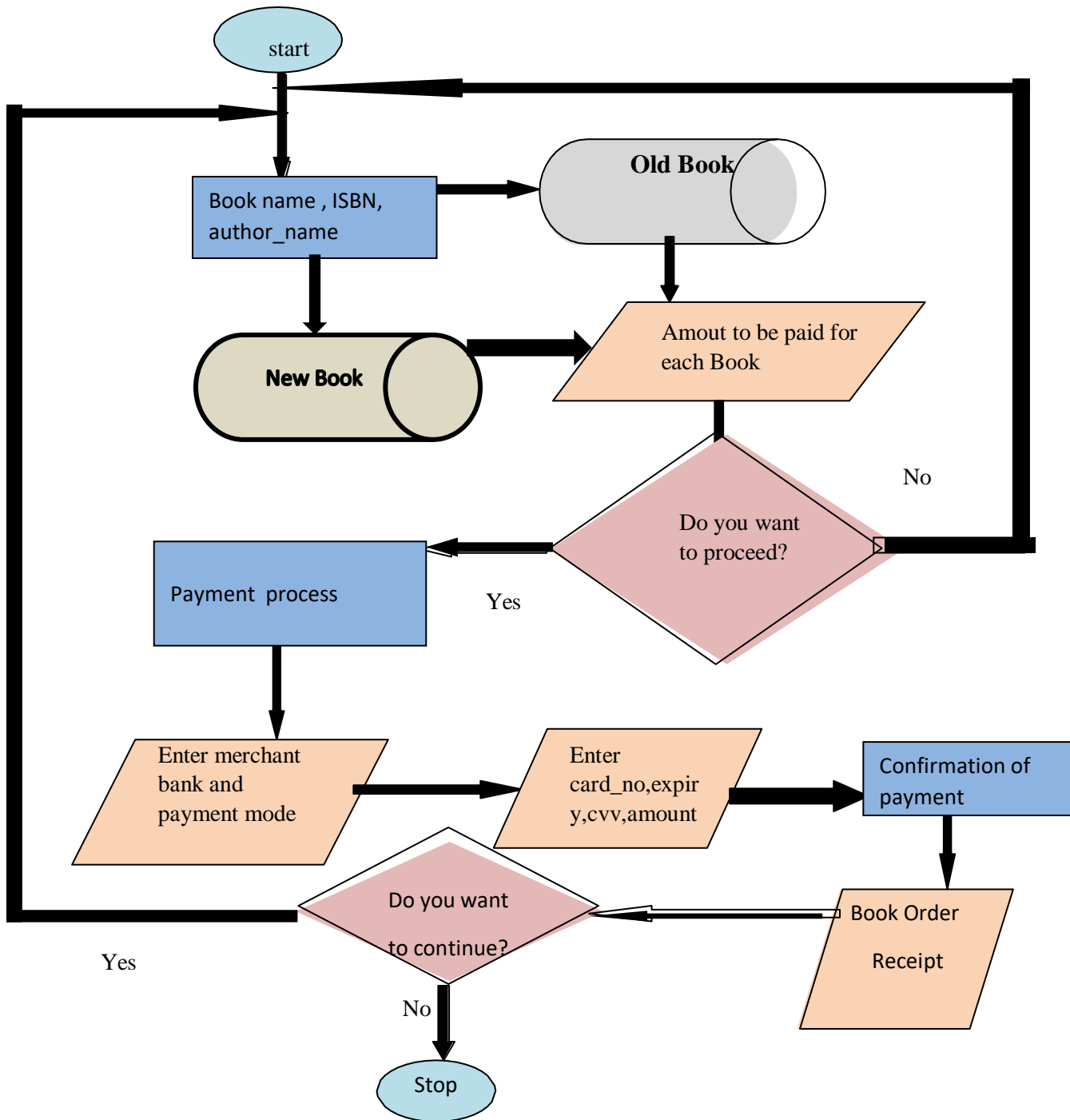
Module 4 : Book Resell: Book Resell process is the unique feature of this system. Book Selling occurs here in2 ways

- New Book Sell

- Old Book Resell

start → User Resell option → Books Owned by user → Book details uploaded → Generation of ISBN if not present in system → Is user ready to sell?

No → (back to start)

Yes → Book Details and ISBN confirmed for sell → Book Sell Process Begins with book upload in the selling window

No / Yes → Purchaser details upload and amount transfer → Is the reseller ready? → Book declaredsold → Generation of sale invoice → stop

CLASS DIAGRAM: It is used as a mapping to design systems in Object Oriented languages. It is a static representation of each class, interface, association and constraint involvedin designing the system.

buys   1

users
+userid: Integer
-useremail: String
-userpassword: String
-username: String
-contact_no: String
-address: String
+register()
-login()
+readBooks()
+saleBooks()
+buyBooks()

system__admin

-admin_id:Integer

-admin_name:String

+validationOfUsers()

+addNewBooks()

+addOldBooks()

+geberationOfSaleReceipt()

+trackReading()

has   n

1

1

provides   sells

1

n

New_books

+nbid: Integer
+book_name : String
+author_name: String
+version: String
+subject: String
+cost :double
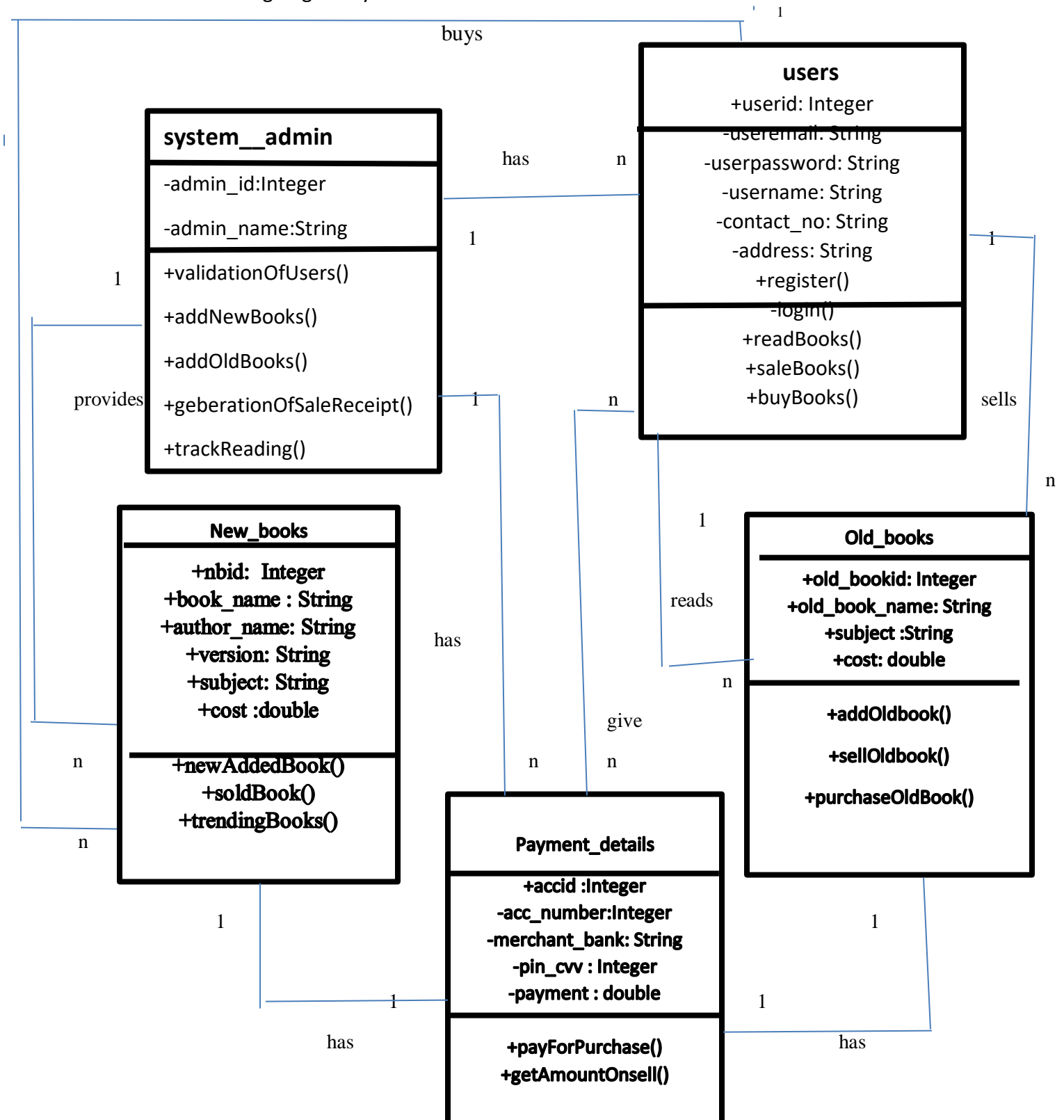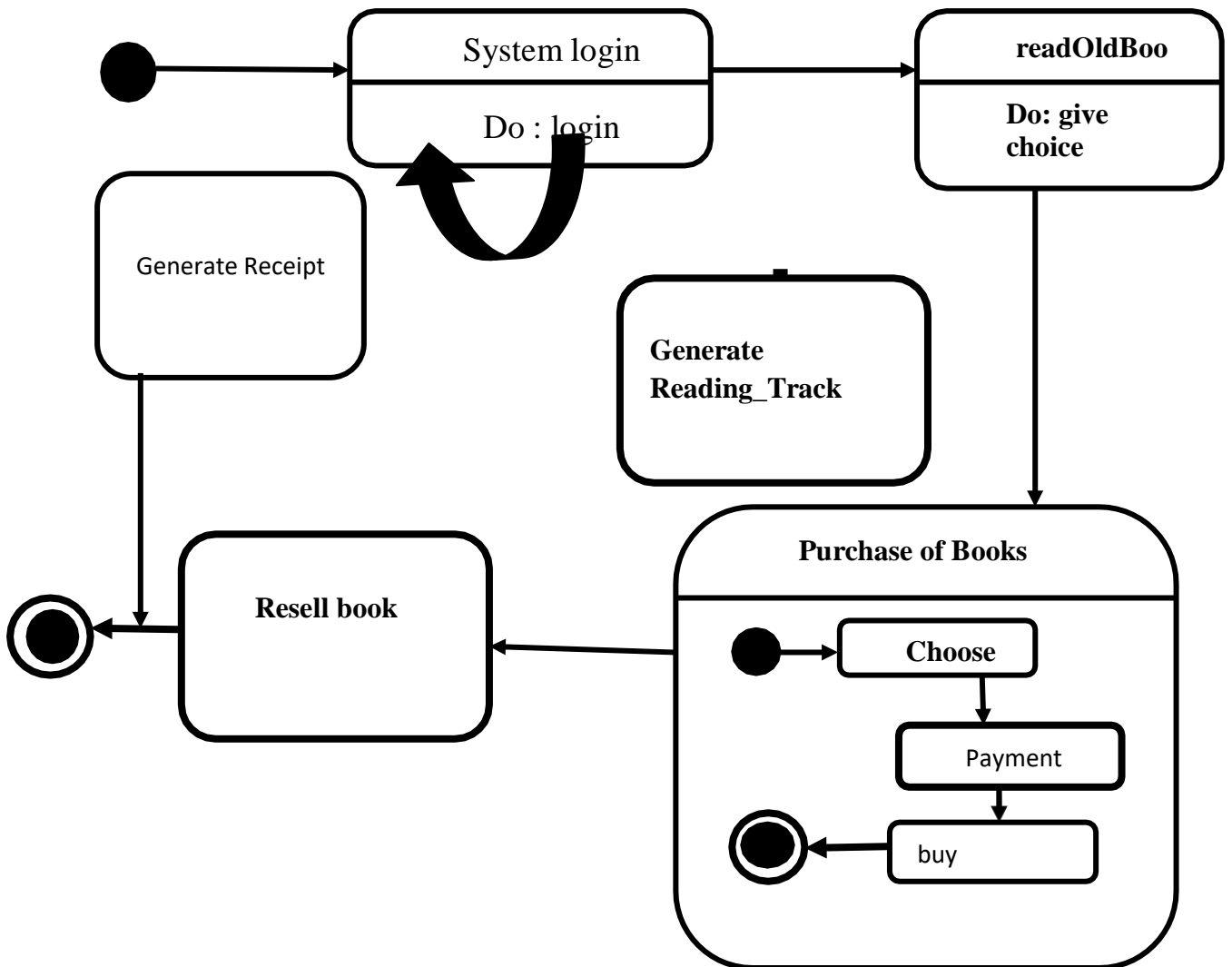
+newAddedBook()
+soldBook()
+trendingBooks()

Old_books

+old_bookid: Integer
+old_book_name: String
+subject :String
+cost: double

+addOldbook()
+sellOldbook()
+purchaseOldBook()

reads

has

give

n   n   n

n

n

1

Payment_details

+accid :Integer
-acc_number:Integer
-merchant_bank: String
-pin_cvv : Integer
-payment : double

+payForPurchase()
+getAmountOnsell()

1   1   1   1

has   has

6.1. STATE TRANSITION DIAGRAM

Sequence Diagram to denote dynamic workflow as functions:

Books

system login()

authenticate user()

ChoiceOf New Old Books()

purchaseOfBooks()

Sell0fBooks()

5 User I/O workflow

New UserRegistrati

UserLogin

Is User valid?

Set Profile, read and get ReadingTrack

Choose BookSale/ BookPurchase from Catalogue

Access PaymentPortal

Get BookOrder

Logout
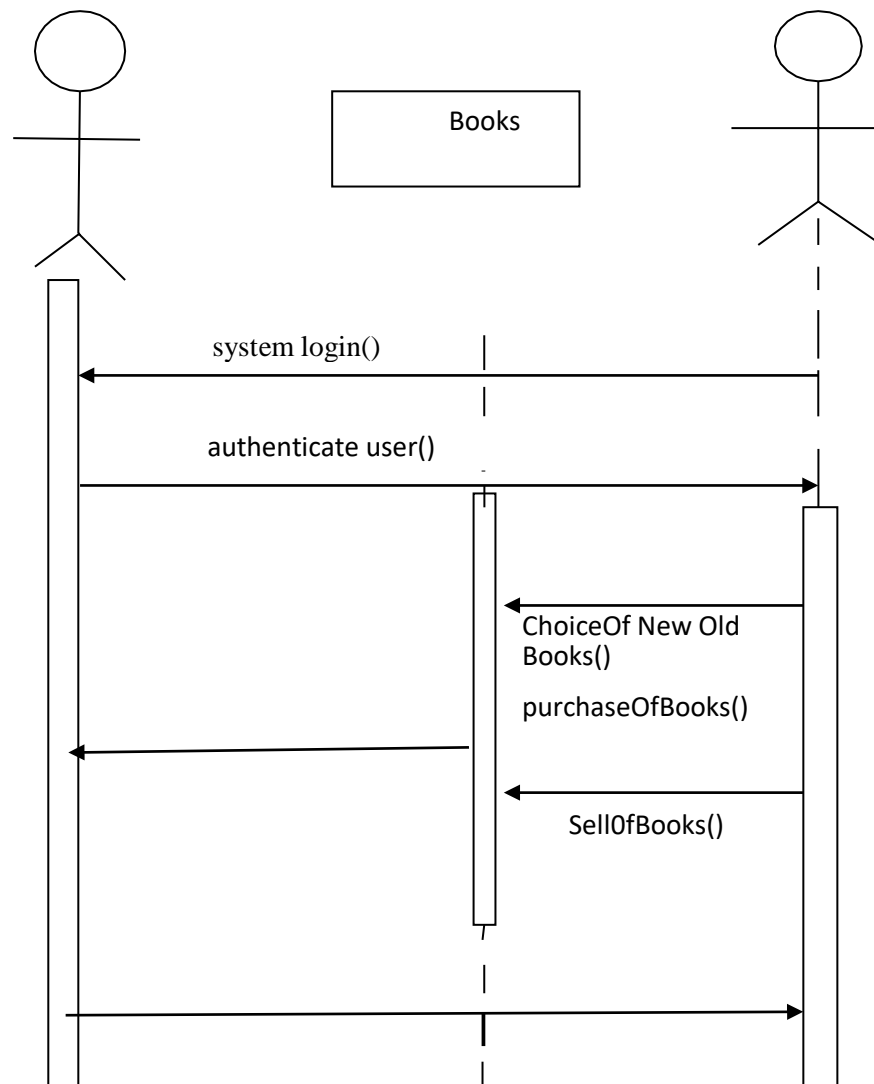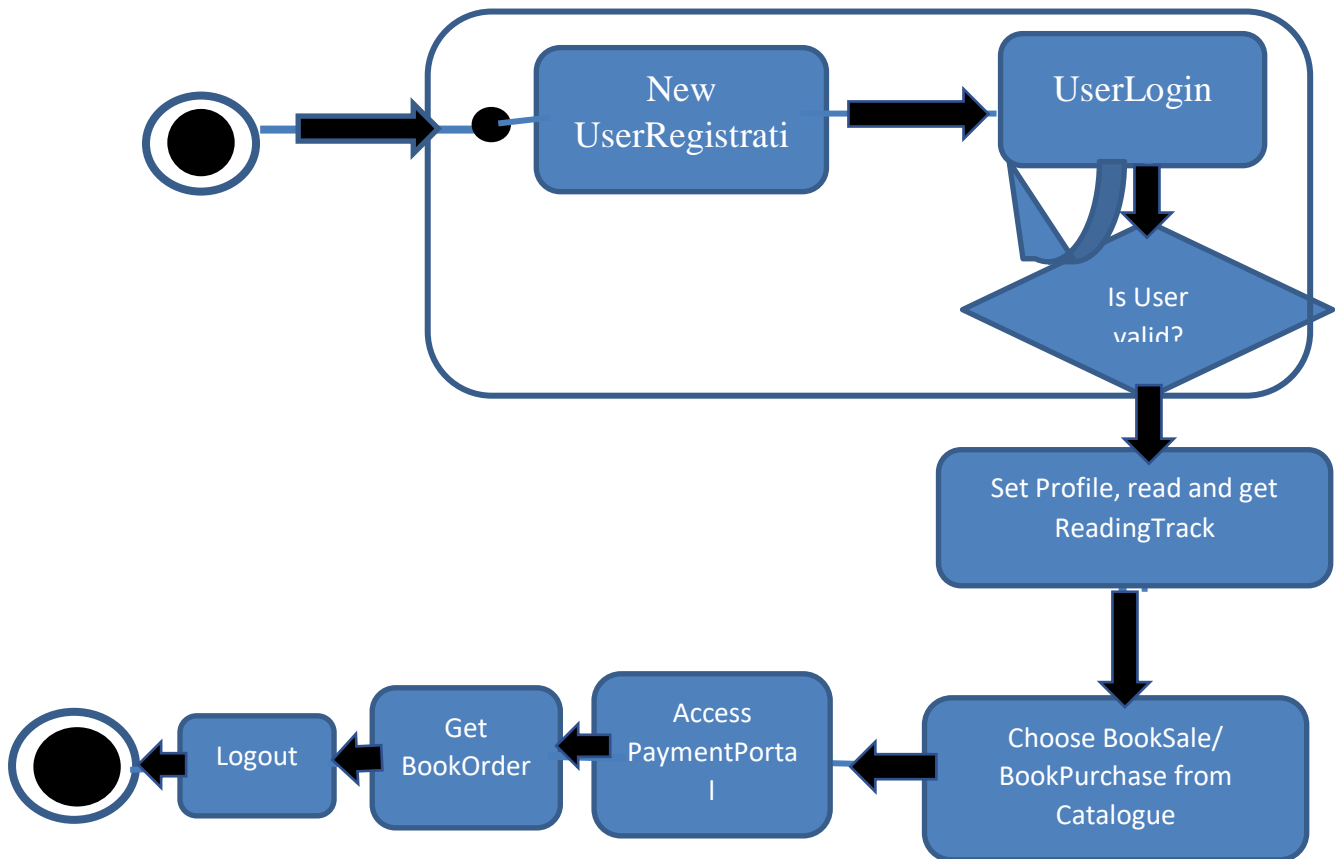
6 Exceptional scenarios

Step	Exception	Mitigation	Module
25th February,2023	1.1	First Draft	Paramita Pal
17th March,2023	1.2	Added Workflow chart	-Do-

7 Test cases

Test case	Steps to perform test case	Module	Pass/Fail
1	Enter name, email, address,contact and registration done	Registration	Success[50%]
2.	Enter user email and password in signIn page	SignIn	Success[25%]
3.	settingUserProfile and getting data from database	UserProfile	Success[505]
4.	Finding the reading track	ReadingTrack	Not tested
5.	PaymentPortal	PaymentPortal	Not tested
6.	Book for sale	BookSale	Not tested
7.	Book for Purchase	BookPurchase	Not Tested

8 Key performance indicators (KPI)

- A new idea of book promotion using the application
- Improvement of self-studying habit
- Number of times a Visitor enters the site to read books
- Registration , profile Creation
- Time spent on each book sets his/her Reading track
- Different subjects and domains that govern his/her interests
- Book put for Sale
- Book Purchased Online or onsite