Chapter-3

System Analysis & Design

3.1 Comparison of Existing Application with your Project with merits and demerits:

- Existing system does not have any facility of faculty login or student login whereas proposed system will have a facility of student login as well as faculty's login.
- Existing system does not have any facility of online news board where information of new books, files or some useful links are provided.
- Existing system does not have any facility to generate transaction report regarding to book whereas proposed system provides admin with a tool to generate reports.
- Existing system does not have any facility for student and faculty to check book availability by the book's title, author and publisher.
- Existing system does not have any system for generating fine receipt whereas in proposed system has facility to generate online fine receipt

Merits:

- This system reduces the paper work as compare to existing system.
- Proposed system can store all the transactions regarding to book in database that is more efficient as compare to paper work.
- UI is more user friendly so that a non- technical person can find easy to use.

Demerits:

- If server goes down, then basic book management operation like book issue couldn't work well.
- Wrong information can return wrong or invalid details in search.
- Usage restriction, internet is required for better performance.

3.2 Project Feasibility:

3.2.1 Technical Feasibility:

In this project, technically it is possible for admin to keep the all transaction of the book without any paperwork. Students and faculty can get their book issued records in their profile. Admin can generate fine receipt in case of late issue or damage of book.

3.2.2 Operational Feasibility:

It is feasible to make use of such function like report generation by admin and can be downloaded as pdf. Students and Faculties can search the books using search bar.

3.2.3 Implementation Feasibility:

Implemented project will be user friendly. When the student/faculty is registered by the admin he/she is able to access the system.

3.2.4 Economical Feasibility:

In this project we will use Sublime Text which is free open source text editor, WAMP server and MySQL database. So, the cost of the project will be very less.

3.2.5. Resource Feasibility:

It is also an essential part of a feasibility study. It includes how much time is available to build the new system, when it can be built, whether it interferes with normal business operations, type and amount of resources required, dependencies, and developmental procedures with company revenue prospectus.

3.3 Project Timeline Chart:

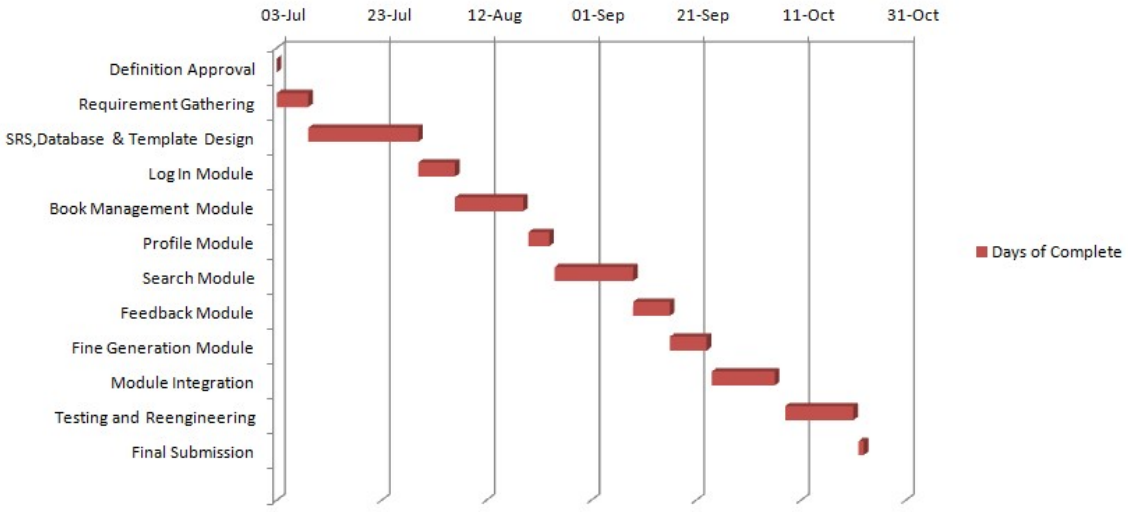

Figure 3.1 Timeline Chart

3.4 Detailed Module Description:

1. Login/Register:

When users access the system through Portal Direct Entry, they are considered guests until they log in. This Module is a portal module that allows users to type username and password to log in. This module can be placed on any module tab to allow users to log in to the system. In this module only, admin has rights to register the student/faculty.

2. Book Management:

This module has different functionalities according to the users as follow:

1. Admin:

- Admin can add, delete and update the books.
- Admin can generate the reports of all transactions of the books.
- Admin can generate the receipt of fine.
- Admin can send news to the users regarding to library.

2. Student:

- Student can issue, renew and return the book.
- Student can issue only one book and validity is one month.

3. Faculty:

- Faculty can issue, renew and return the book.
- Faculty can issue n number of books.

3. **Fine Generation:**

Admin can fine in case of late return or damage of book. In this module, Admin can generate fine receipt online.

4. **Profile:**

In this module, Admin can view user's profile. User can update his/her profile. Even student and faculty member can change details about them as an when required.

5. **Feedback:**

User's feedbacks are used as a basis for selecting the appropriate book from number of book. So, in this module user can give feedback for the particular book.

6. **Search:**

User can search the book via search bar by book name, author name, and publication name. User can view general description of the book.

3.5 Project SRS:

3.5.1 Use Case Diagram:

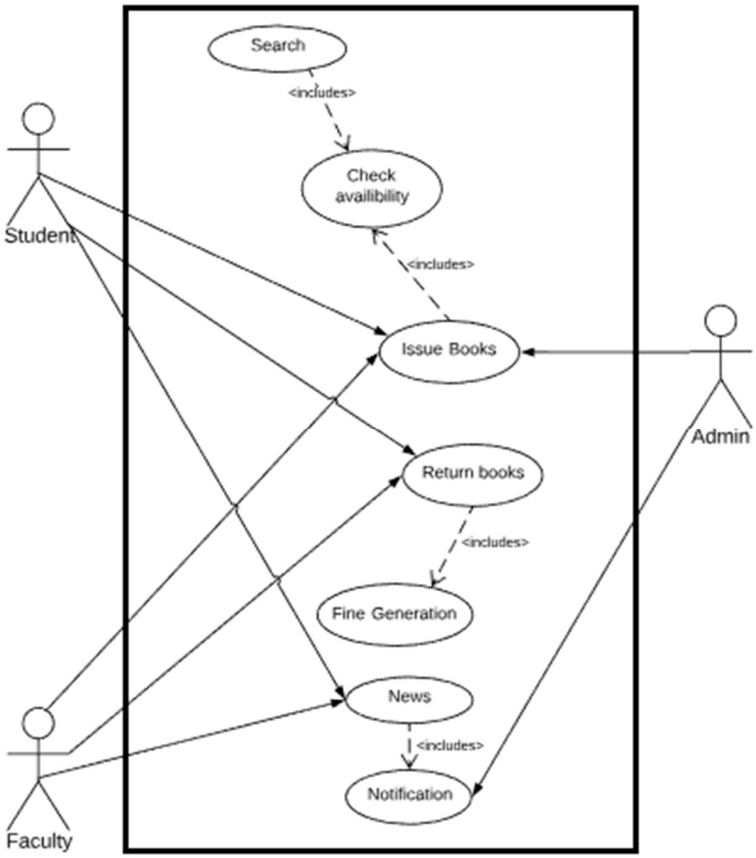

Figure 3.2 Use Case Diagram

3.5.2 Data Flow Diagram:

Level 0:

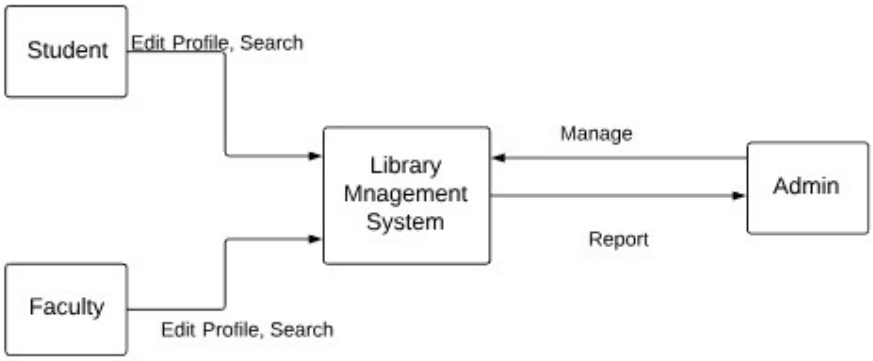

Figure 3.3 DFD Level 0

Level 1:

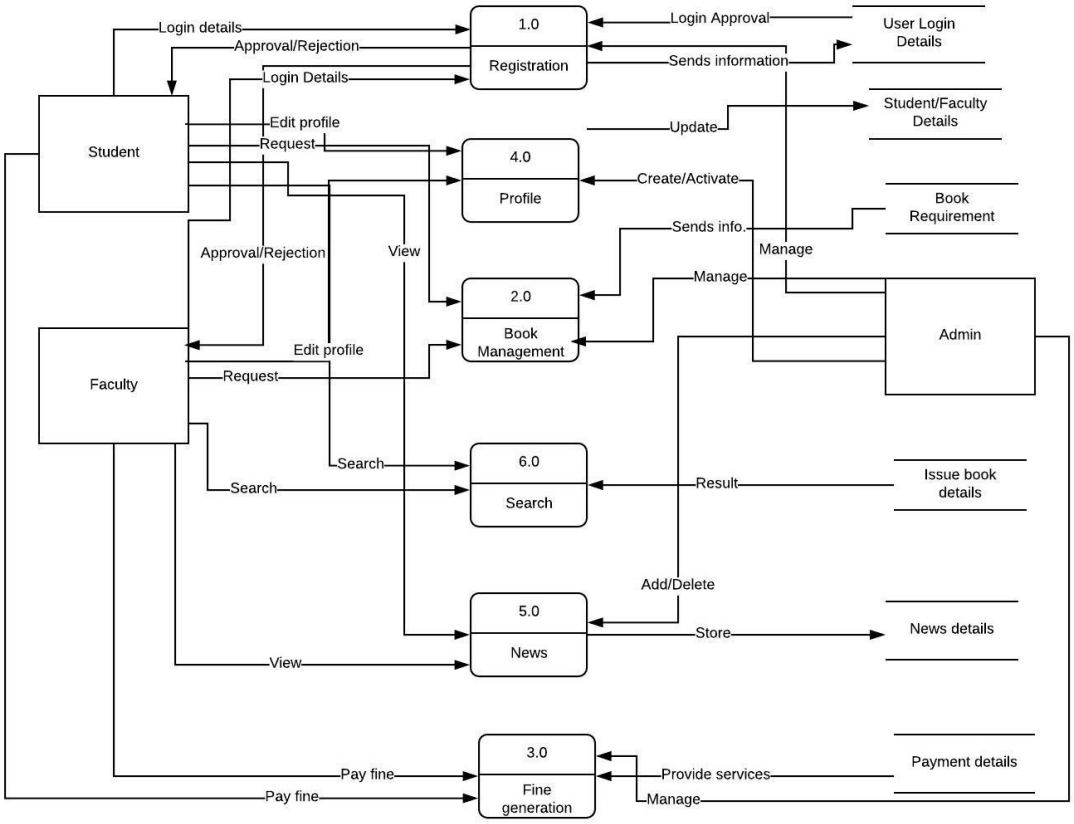

Figure 3.4 DFD Level 1

Level 2:

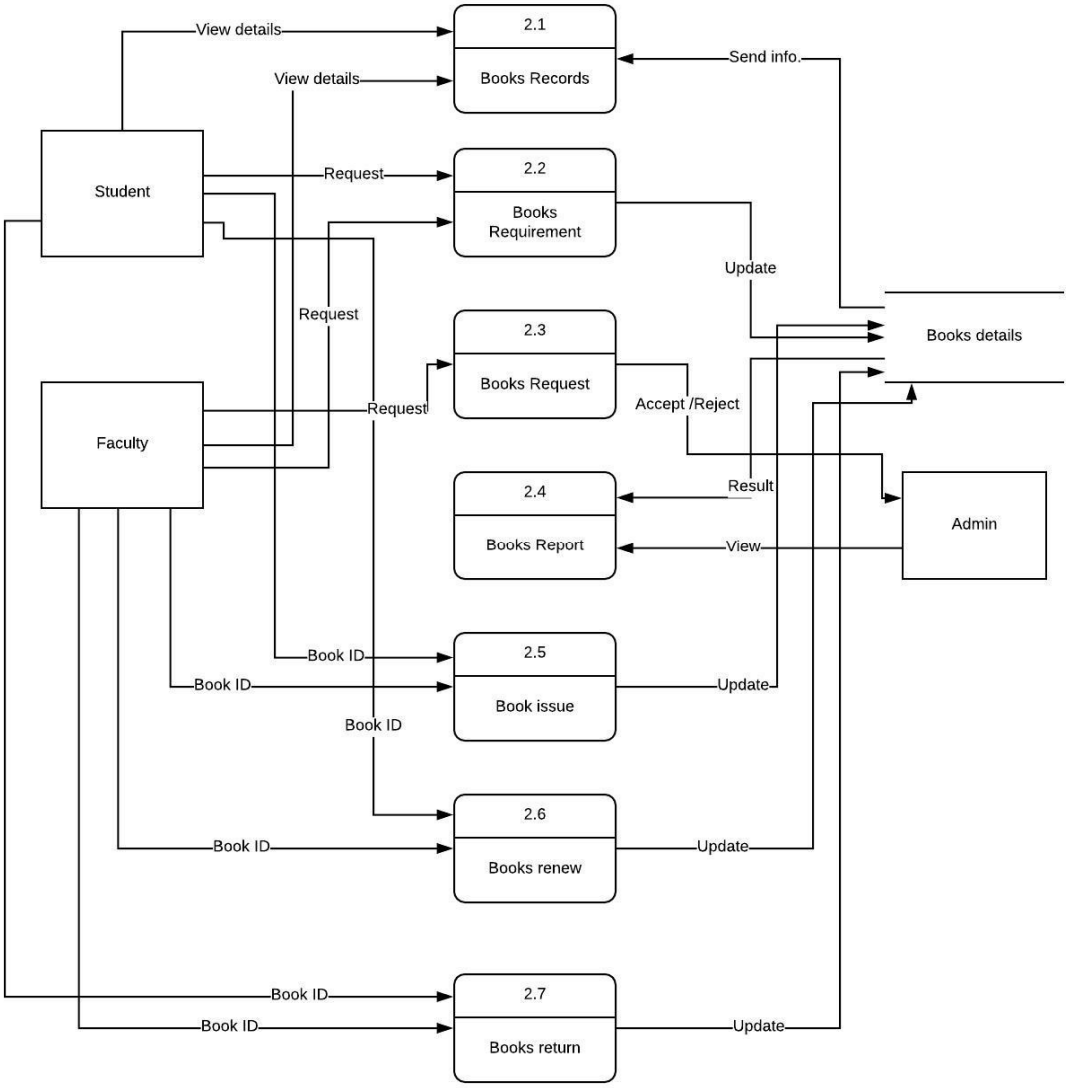

Figure 3.5 DFD Level 2

3.5.3 Class Diagram:

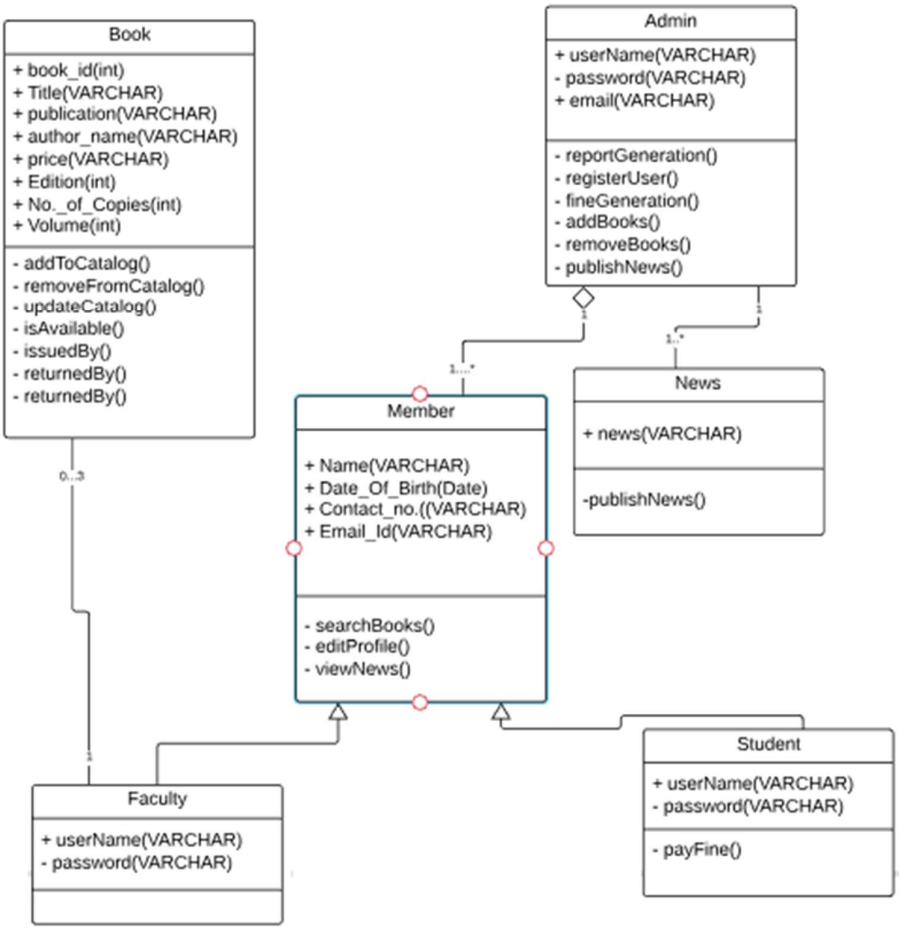

Figure 3.6 Class Diagram

3.5.4 Entity Relationship Diagram:

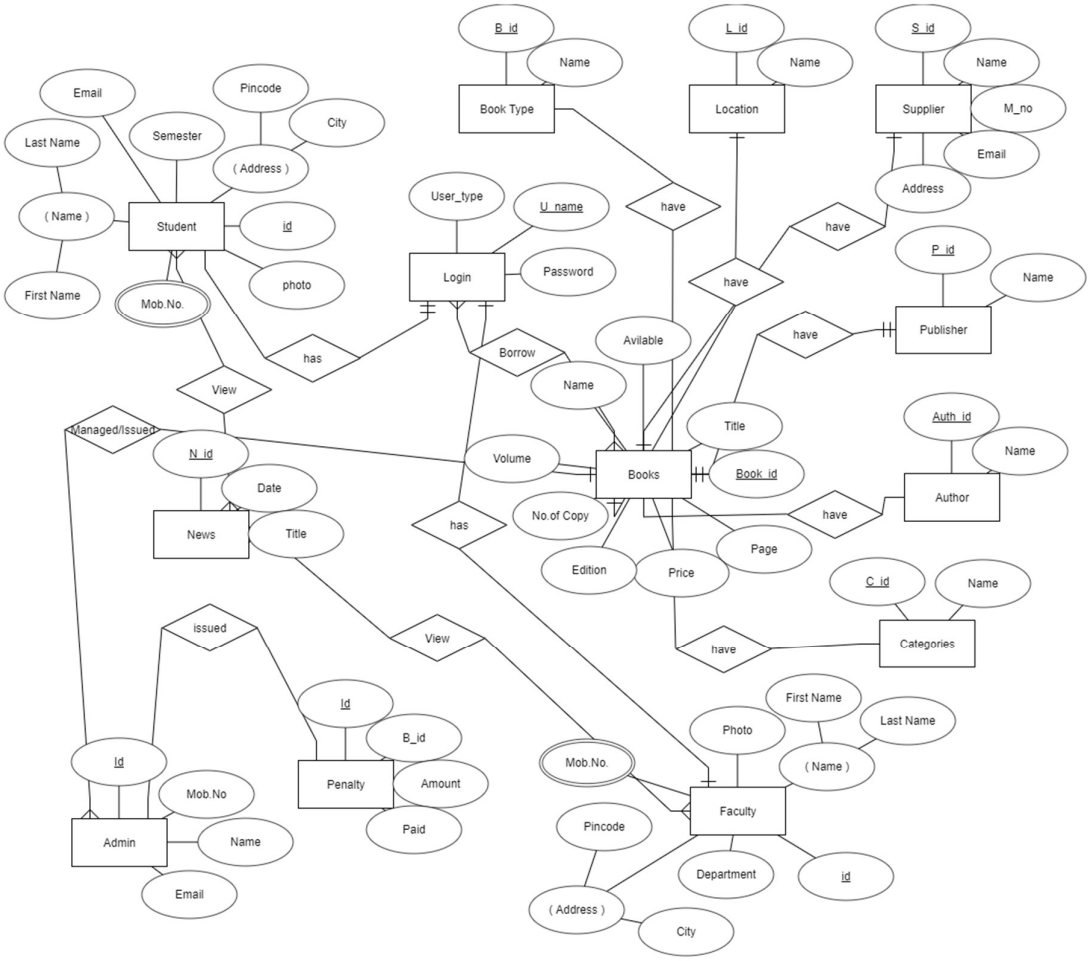

Figure 3.7 Entity Relationship Diagram

3.5.5 Sequence Diagram:

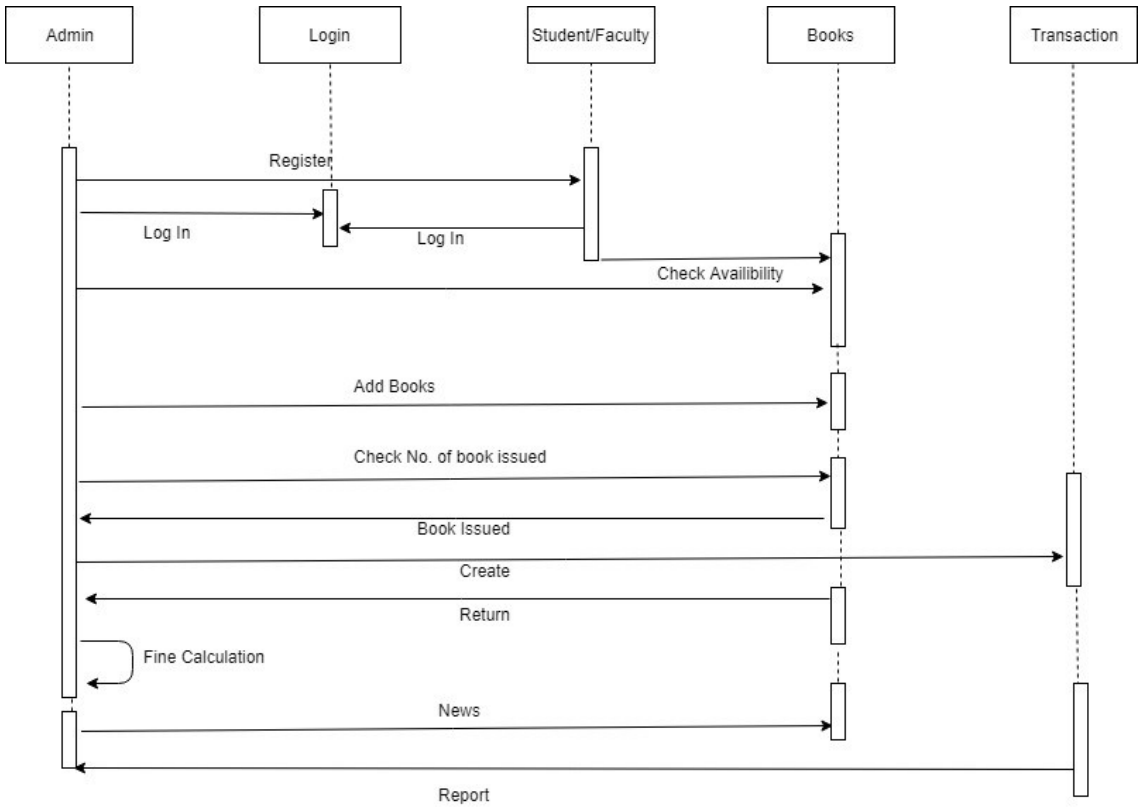

Figure 3.8 Sequence Diagram

3.5.6 Activity Diagram:

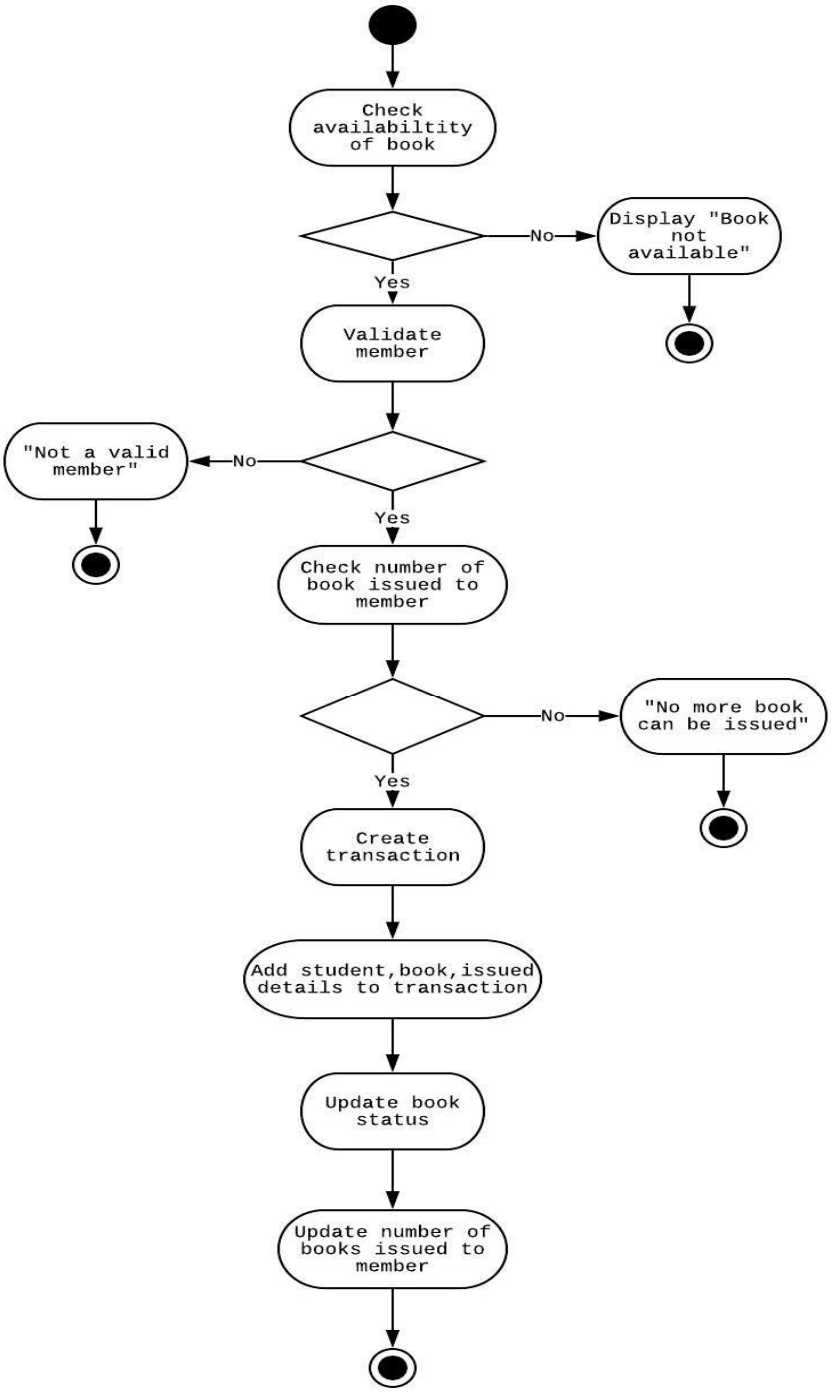

Figure 3.9 Activity Diagram

3.6 Data Dictionary:

Database design is the process of producing a detailed data model of a database. This data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database.

Table Name: Login

Description: Username, User Type, Password

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Sr. No	No	Yes	Int	10	
Username	No	Yes	Varchar2	20	
User Type	No	Yes	Varchar2	20	
Password	No	Yes	Varchar2	20	

Table 3.1 Login

Table Name: Student Detail

Description: S_id, Name, Email, Mob_no, Address, Semester

Primary key: S_id

Foreign key: Email

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
S_id	Yes	Yes	Varchar2	10	Primary key

Name	No	Yes	Varchar2	30	
Email	No	Yes	Varchar2	100	Foreign key
Mob_no	No	Yes	Varchar2	10	
Address	No	Yes	Varchar2	50	
Semester	No	Yes	Varchar2	3	

Table 3.2 Student Detail

Table Name: Faculty Detail

Description: F_id, Name, Email, Mob_no

Primary key: F_id

Foreign key: Email

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
E_id	Yes	Yes	Varcahr2	10	Primary key
Name	No	Yes	Varchar2	30	
Email	No	Yes	Varchar2	100	Foreign key
Mob_no	No	Yes	Varchar2	10	

Table 3.3 Faculty Detail

Table Name: Book Detail

Description:Id,Title,Author,Publisher,Edition,Volume,Supplier,,Booktype,Category,Page,Price

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	No	Yes	Varchar2	50	Primary key
Title	No	Yes	Varchar2	200	
Author	No	Yes	Varchar2	150	
Publisher	No	Yes	Varchar2	100	
Edition	No	Yes	Varchar2	50	
Volume	No	Yes	Varchar2	10	
Supplier	No	Yes	Varchar2	150	
Booktype	No	Yes	Varchar2	80	
Category	No	Yes	Varchar2	200	
Page	Yes	Yes	Integer	50	
Price	No	Yes	Double		

Table 3.4 Book Detail

Table Name: Author Detail

Description: Id, Name

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	Yes	Yes	Integer	20	Primary key
Name	No	Yes	Varchar2	200	

Table 3.5 Author Detail

Table Name: Publisher Detail

Description: Id, Name

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	Yes	Yes	Integer	10	Primary key
Name	No	Yes	Varchar2	20	

Table 3.6 Publisher Detail

Table Name: Supplier Detail

Description: Id, Name

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
S_id	Yes	Yes	Integer	30	Primary key
Name	No	Yes	Varchar2	30	

Table 3.7 Supplier Detail

Table Name: Book Type

Description: Id, Name

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	Yes	Yes	Integer	10	Primary key
Name	No	Yes	Varchar2	20	

Table 3.8 Book Type

Table Name: Book Issue

Description: Id, Bookid, userid, issuedate, returndate, fine, count

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description

Id	Yes	Yes	Integer	11	Primary key
BookId	No	No	Varchar2	30	
UserId	No	No	Varchar2	50	
Issuedate	No	No	Timestamp		
Returndate	No	Yes	Timestamp		Current_Timestamp
ReturnStatus	No	Yes	Integer	1	
Fine	No	No	Integer	11	
Count	No	Yes	Integer	2	

Table 3.9 Book Type

Table Name: Category Detail

Description: Id, Name

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	Yes	Yes	Integer	10	Primary key
Name	No	Yes	Varchar2	20	

Table 3.10 Category Detail

Table Name: News Detail

Description: Id, Bname, Author, Edition, Publisher, Link

Primary key: Id

Attribute Name	Auto Increment	Not Null	Type	Size	Attribute Description
Id	Yes	Yes	Integer	100	Primary key
Bname	No	Yes	Varchar2	500	
Author	No	Yes	Varchar2	500	
Edition	No	Yes	Varchar2	500	
Publisher	No	Yes	Varchar2	500	
Link	No	Yes	Longblob		

Table 3.11 News Detail