

Project Report

DATABASE MANAGEMENT SYSTEM

(CS 315)

Project Topic

E-Library Management System

Group Members :

1. Rajat Goyal (190676)
2. Gulshan Kumar Choudhary (190348)

Abstract

E- Library Management System maintains the information about the books present in the library, their authors, publishers, the members of the library to whom books are issued, library admins, etc. This is very difficult to organize manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Library has become much simpler. Online Library Management has been designed to computerize and automate the operations performed on the information about the members, book issues and returns and all other operations. This computerization of the library helps in many instances of its maintenance. It reduces the workload of management as most of the manual work done is reduced.

PROJECT AIMS AND OBJECTIVES

- Online book reading.
- A search column to search availability of books.
- Facility to download required books.
- Study Online Courses
- An Admin login page where admin can add and edit books,courses and user information
- A User Login page where users can search and issue books, read online books and courses and edit their information.
- Unregistered students who are studying in the university can also issue and return books by going to the library.
- Their data will also be maintained by the portal.
- Also they can easily register on the system and do all issues and read books online easily.
- Admin will be able to login with a email id and password.
- Registered Students require Roll No and password to log in into the system.

Technologies Used

The whole project is divided into two parts : Front end and Back end

- **Front End**

The front end is designed using

- ❖ HTML5
- ❖ CSS
- ❖ JavaScript
- ❖ Bootstrap

All the webpages are designed using HTML, styling is done using CSS and Bootstrap, JavaScript is used for making pages dynamic and interactive.

- **Back End**

The back end is designed using

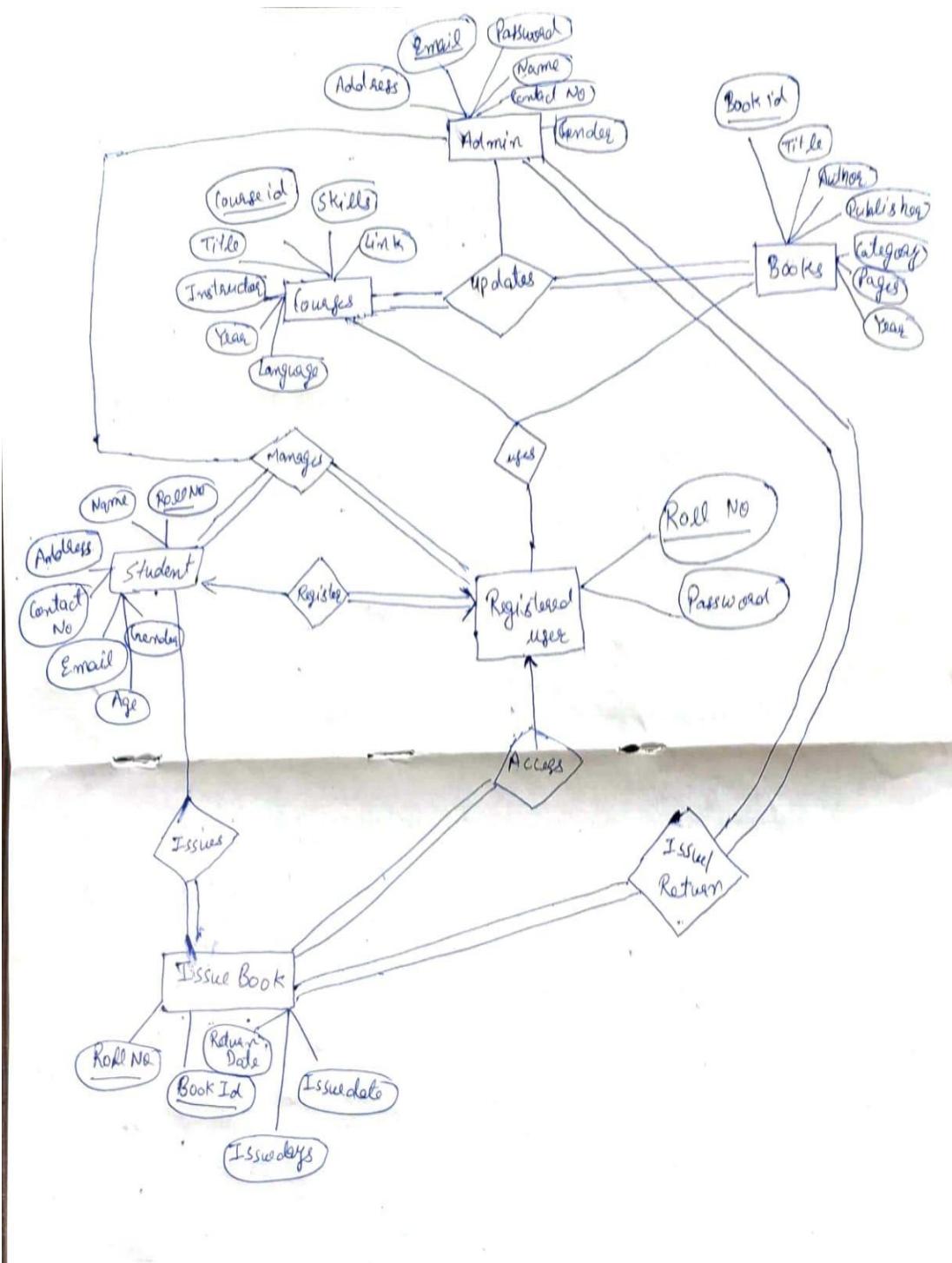
- ❖ PHP
- ❖ MySQL

All the webpages and databases are hosted using XAMPP server.

PHP is used for connecting and accessing the databases with the webpages.

MySQL is used for querying required data from the tables.

ER DIAGRAM



SYSTEM DESIGN

Tables in SQL database to maintain data

➤ E-Library Database

Table	Action	Rows	Type	Collation	Size	Overhead
adminlogin		2	InnoDB	utf8mb4_general_ci	16.0 KiB	-
books		20	InnoDB	utf8mb4_general_ci	32.0 KiB	-
courses		6	InnoDB	utf8mb4_general_ci	16.0 KiB	-
issuebook		21	InnoDB	utf8mb4_general_ci	16.0 KiB	-
otp_expiry		4	InnoDB	utf8mb4_general_ci	16.0 KiB	-
registered_students		5	InnoDB	utf8mb4_general_ci	16.0 KiB	-
students		7	InnoDB	utf8mb4_general_ci	16.0 KiB	-
7 table(s)	Sum				65 InnoDB utf8mb4_general_ci	128 KiB
						0 B

- The Database name is Elibrary and it has 7 tables.

➤ Admin table

		email	password	firstname	lastname	contactno	dob	address	age	gender
<input type="checkbox"/>		gulshan@iitk.ac.in	123	Gulshan	Kumar	9006543291	2000-09-09	Hall-3	21	Male
<input type="checkbox"/>		rgoyal@iitk.ac.in	1221	Rajat	Goyal	926126371	2001-10-10	Kota, Rajasthan	21	Male
		With selected:								

- This table contains all the information about the admins
- PRIMARY KEY: email

➤ Students table

		rollno	firstname	address	contactno	email	lastname	dob	gender	age
<input type="checkbox"/>		180850	Shubham	D-512, Hall 5, IIT Kanpur	9654213456	ssharma@iit.ac.in	Sharma	2000-10-02	Male	22
<input type="checkbox"/>		190045	Ajay	E-405, Hall 2, IIT Kanpur	9654231223	sajay@iit.ac.in	Sharma	2001-03-15	Male	21
<input type="checkbox"/>		190078	Aman	D-301, Hall 12, IIT Kanpur	9234163712	amanb@iit.ac.in	Bansal	2001-01-12	Male	21
<input type="checkbox"/>		190490	Jhanvi	F-318, Hall 6, IIT Kanpur	9967416248	jhnvit@iit.ac.in	Tomar	2001-07-11	Female	21
<input type="checkbox"/>		190676	Rajat	C-207, Hall 13, IIT Kanpur	9824361226	goyalr@iit.ac.in	Goyal	2001-01-01	Male	21
<input type="checkbox"/>		200340	Divya	A-635, Hall 6, IIT Kanpur	9387216517	divs@iit.ac.in	Shukla	2002-04-05	Female	20
<input type="checkbox"/>		200874	Sumit	B-332, Hall 9, IIT Kanpur	9923123468	sahu@iit.ac.in	Sahu	2002-03-21	Male	20

- It contains the information of all students studying in the university.
- PRIMARY KEY- roll no and email

➤ Registered Users table

	<input type="button" value="←"/>	<input type="button" value="→"/>		rollno	password
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	190045	1234
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	190490	#12c
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	190676	12345
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	200340	#te21*
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	200874	*123

- It contains the list of students who have registered on the E-Library Portal
- It stores the Roll No. and Password for the users.
- PRIMARY KEY- Roll No.

➤ Books table

	<input type="button" value="←"/>	<input type="button" value="→"/>	Bookid	Title	Author	Publisher	Category	Pages	Year	Language	Link	Quantity	
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0073511218	Organic Chemistry	Francis A Carey Dr., Robert M. Giuliano	McGraw-Hill	Chemistry	1248	2016	English	https://1lib.in/book/3338577/f28dc4?dsource=recomm...	0
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0321563840	The C++ Programming Language	Bjarne Stroustrup	Addison Wesley	Computer Science	1366	2013	English	https://1lib.in/book/2290165/2b58c9	21
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0321856562	Introduction to Electrodynamics	David J. Griffiths	Addison-Wesley	Physics	624	2012	English	https://1lib.in/book/5103011/55c730	19
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0323341268	Cell Biology	Thomas D. Pollard, William C. Earnshaw	Elsevier	Biology	900	2016	English	https://1lib.in/book/2861582/b3a4ec	26
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0684801221	The Old Man and The Sea	Ernest Hemingway	Scribner Paperback Fiction	Fiction	65	1995	English	https://1lib.in/book/694397/1aef93	15
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	088385757X	Visual Group Theory	Nathan Carter	The Mathematical Association of America	Mathematics	297	2009	English	https://1lib.in/book/1306393/df23f9	12
<input type="checkbox"/>	<input type="button" value="Edit"/>	<input type="button" value="Copy"/>	<input type="button" value="Delete"/>	0980232775	Introduction to Linear Algebra	Gilbert Strang	Wellesley-Cambridge Press	Mathematics	584	2016	English	https://1lib.in/book/3515653/3e302b	0

- This table stores all the information about books present in the library.
- If the quantity of a book becomes 0 then still the book will be present in the table as it might be the case that the book is issued to some students.
- PRIMARY KEY- Bookid

➤ E-Courses table

	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	courseid	name	instructors	year	language	link	skills
4	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	4	Python for Machine Learning	Bharani Akella	2022	English	https://www.mygreatlearning.com/academy/learn-for...	Pyhton
5	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	5	Introduction to Digital Marketing	Vishal Padghan	2022	English	https://www.mygreatlearning.com/academy/learn-for...	Marketing
6	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	6	Cloud Foundations	Nirmallya Mukerjee	2021	English	https://www.mygreatlearning.com/academy/learn-for...	Cloud Fundamentals
7	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	7	AWS For Beginners	Rakesh Sinha	2022	English	https://www.mygreatlearning.com/academy/learn-for...	Cloud Computing Fundamentals
8	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	8	Business Finance Foundations	Aswath Damodaran	2022	English	https://www.mygreatlearning.com/academy/learn-for...	Accounting Transactions
9	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	9	Product Management	Satvik Roy	2022	English	https://www.mygreatlearning.com/academy/learn-for...	Product Management Strategy

- This table contains the information of all the online courses available.
- Registered Users can access and study these courses by logging in into the system.
- PRIMARY KEY- courseid

➤ Issuebook table

	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	id	rollno	bookid	issuedays	issuedate	returndate
23	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	23	190045	0073511218	1	2022-04-11	2022-04-12
24	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	24	190045	0321856562	4	2022-04-11	2022-04-15
25	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	25	190045	0321563840	5	2022-04-11	2022-04-16
26	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	26	190045	0980232775	1	2022-04-11	2022-04-12
27	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	27	190045	1118231465	1	2022-04-11	2022-04-12
28	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	28	190045	9780134093413	1	2022-04-11	2022-04-12
29	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	29	190045	0323341268	2	2022-04-11	2022-04-13
30	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	30	190490	0073511218	1	2022-04-11	2022-04-12
31	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>	31	190490	0980232775	1	2022-04-11	2022-04-12

- It stores the data about the books issued, issue date, return date, fine and roll no of the student to which the book is issued.
- Primary key- Roll No. and Book Id
- FOREIGN KEY- Roll No. references Students (Roll No.), Registered Students(Roll No.)
- FOREIGN KEY- Book Id REFERENCES Books (Book Id)

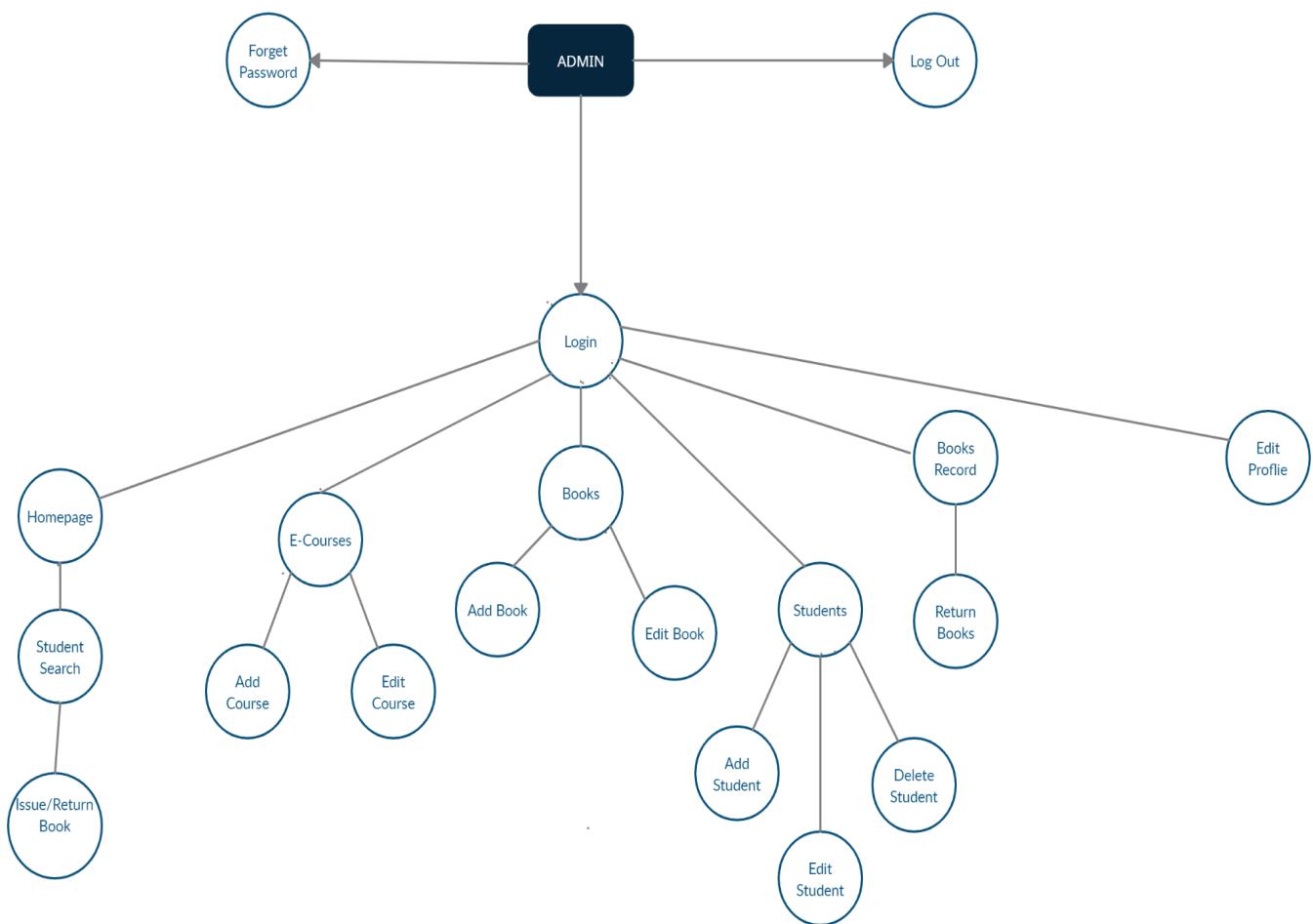
➤ OTP table

			id	otp	email	create_at	
<input type="checkbox"/>	 Edit	 Copy	 Delete	31	546225	gulshan@iitk.ac.in	2022-03-26 15:45:28
<input type="checkbox"/>	 Edit	 Copy	 Delete	43	247091	arun@iitk	2022-04-10 13:09:47
<input type="checkbox"/>	 Edit	 Copy	 Delete	47	332172	goyalr@iitk.ac.in	2022-04-11 18:05:52
<input type="checkbox"/>	 Edit	 Copy	 Delete	48	824105	sahu@iit.ac.in	2022-04-11 18:16:51

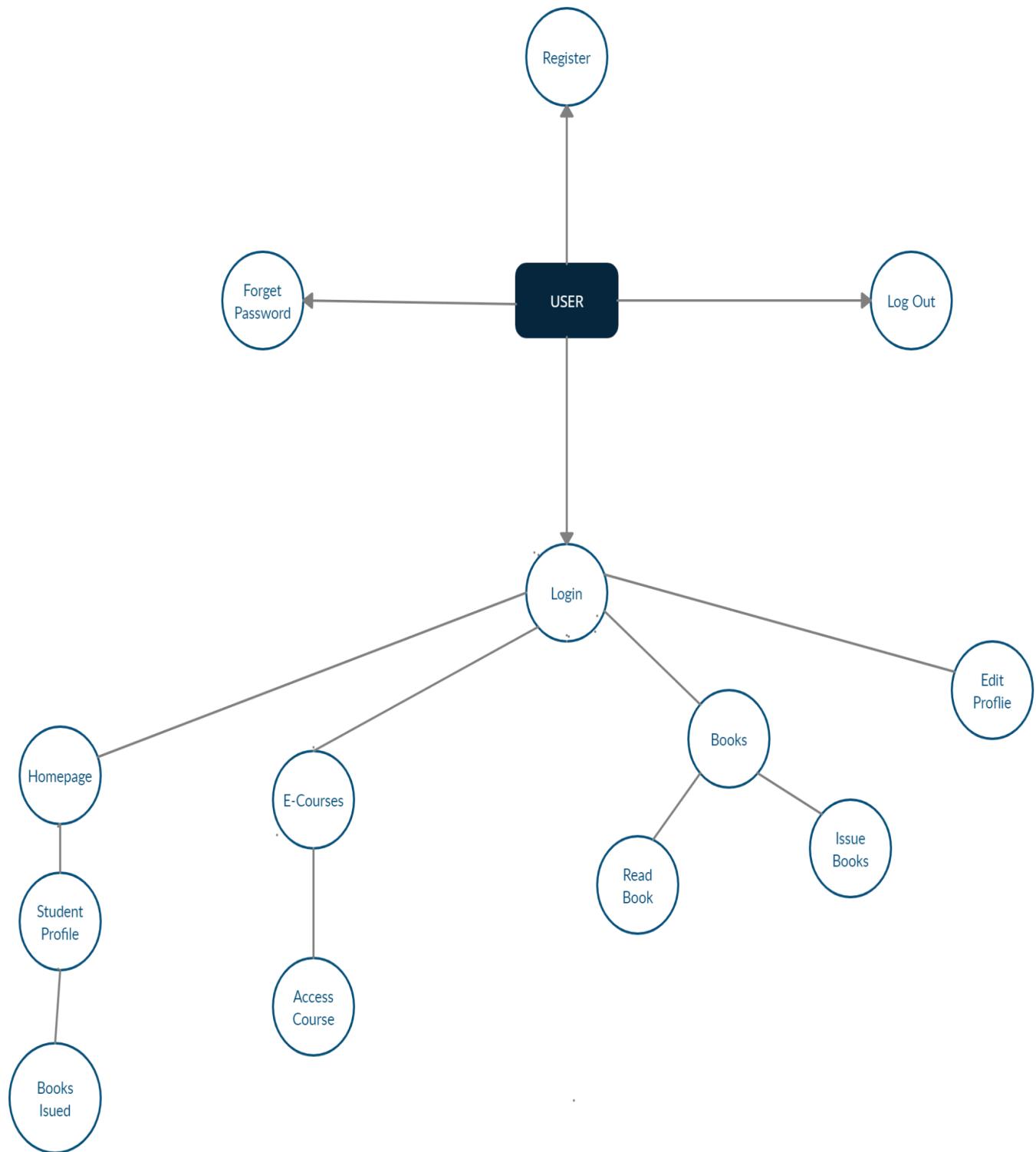
- The table stores the otp sent to the email of admins and registered users who want to recover their accounts.
- OTP will be valid for 15 mins.
- After entering the correct OTP, a user will be able to set a new password.
- Primary key- Email
- FOREIGN KEY- Email REFERENCES (Students (Email) OR Admin Table>Email))

Data Flow Diagrams

- Admin Data Flow Diagram



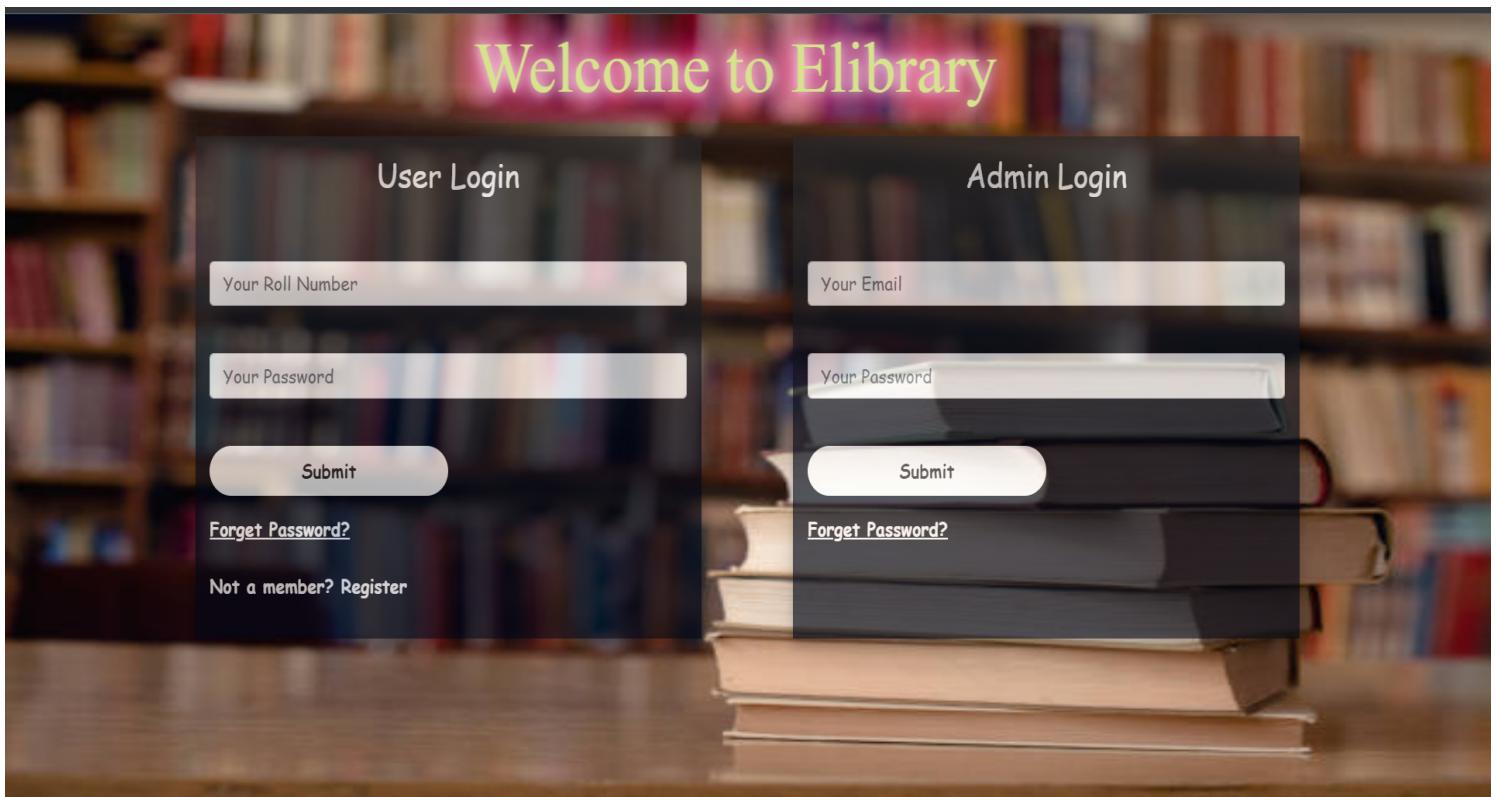
- User Data Flow Diagram



Functional Requirements

➤ Admin login and User login

- Admin and registered users can login into the system by using a valid email/Roll no. and password



➤ Admin page

1. Homepage

The screenshot shows the 'Student Search' results for a user named 'ajay'. The search bar contains 'ajay'. The table has columns: S.No., Roll No., First Name, Last Name, Contact No., Email, DOB, Gender, Address, and Action. One row is shown with values: 1, 190045, Ajay, Sharma, 9654231223, sajay@iitk.ac.in, 2001-03-15, Male, E-405, Hall 2, IIT Kanpur. A blue button labeled 'Issue/Return' is visible in the Action column.

S.No.	Roll No.	First Name	Last Name	Contact No.	Email	DOB	Gender	Address	Action
1	190045	Ajay	Sharma	9654231223	sajay@iitk.ac.in	2001-03-15	Male	E-405, Hall 2, IIT Kanpur	<button>Issue/Return</button>

- Admin homepage has a student search option which allows admin to issue or return books of a searched user.

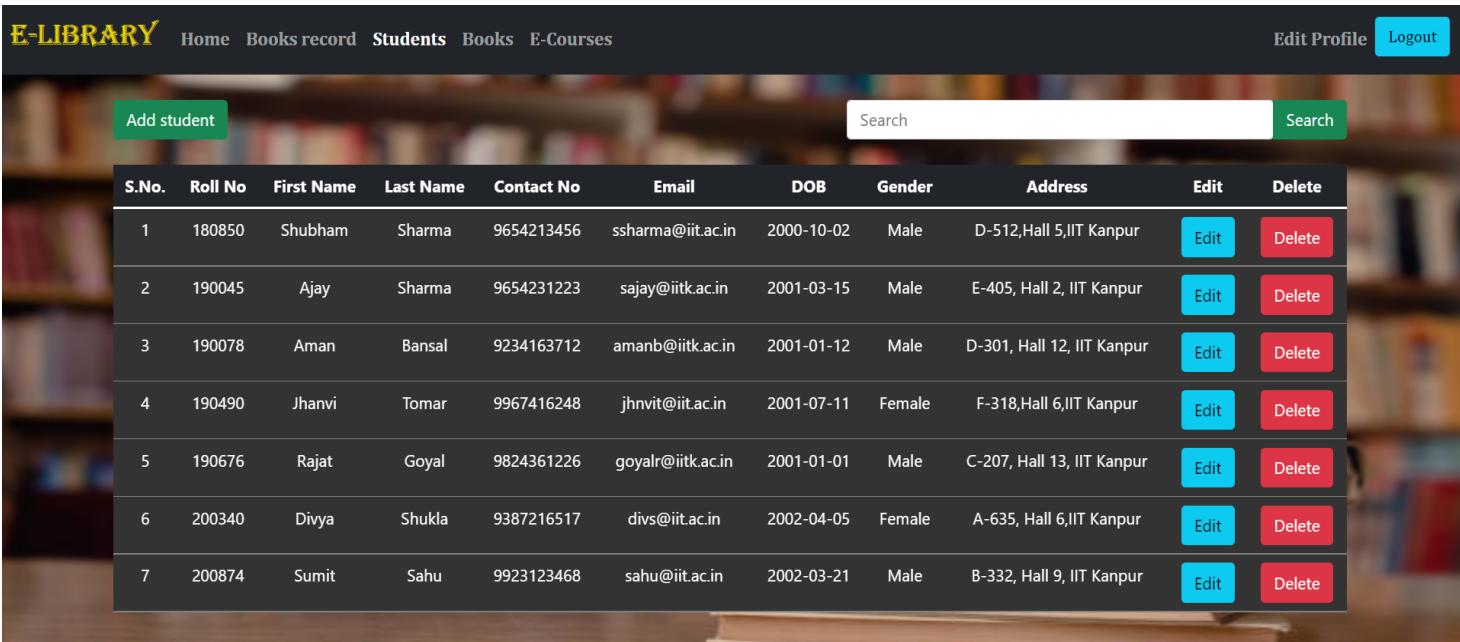
2. Books Record

The screenshot shows a list of books issued. The table has columns: S.No., Rollno, Bookid, Issuedate, Returndate, Issuedays, Fine, and Action. Eight rows of data are listed, each with a red 'Return' button in the Action column.

S.No.	Rollno	Bookid	Issuedate	Returndate	Issuedays	Fine	Action
1	190045	0073511218	2022-04-11	2022-04-12	1	0	<button>Return</button>
2	190045	0321856562	2022-04-11	2022-04-15	4	0	<button>Return</button>
3	190045	0321563840	2022-04-11	2022-04-16	5	0	<button>Return</button>
4	190045	0980232775	2022-04-11	2022-04-12	1	0	<button>Return</button>
5	190045	1118231465	2022-04-11	2022-04-12	1	0	<button>Return</button>
6	190045	9780134093413	2022-04-11	2022-04-12	1	0	<button>Return</button>
7	190045	0323341268	2022-04-11	2022-04-13	2	0	<button>Return</button>
8	190490	0073511218	2022-04-11	2022-04-12	1	0	<button>Return</button>

- This page shows all details about the issued books like issuedate, returndate, fine and the user Roll No. by whom it is issued.

3. View and Manage Students

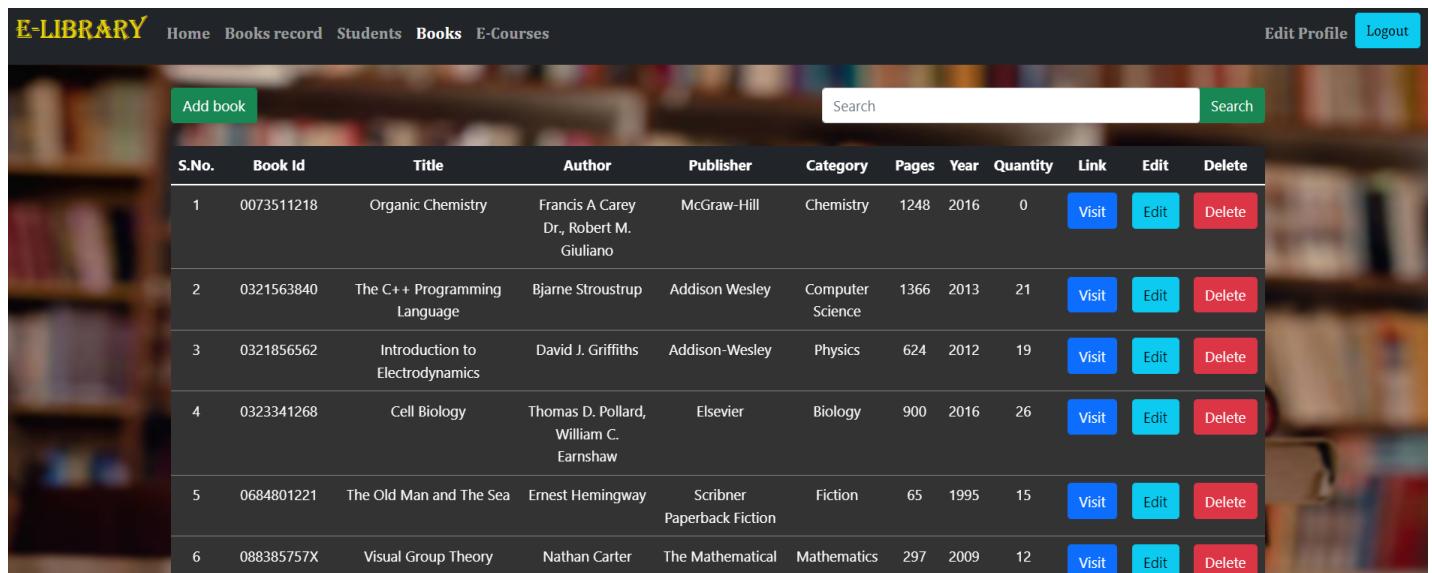


The screenshot shows a table of student records with the following columns: S.No., Roll No., First Name, Last Name, Contact No., Email, DOB, Gender, Address, Edit, and Delete. There is also an 'Add student' button and a search bar at the top.

S.No.	Roll No.	First Name	Last Name	Contact No.	Email	DOB	Gender	Address	Edit	Delete
1	180850	Shubham	Sharma	9654213456	ssharma@iit.ac.in	2000-10-02	Male	D-512,Hall 5,IIT Kanpur	<button>Edit</button>	<button>Delete</button>
2	190045	Ajay	Sharma	9654231223	sajay@iit.ac.in	2001-03-15	Male	E-405, Hall 2, IIT Kanpur	<button>Edit</button>	<button>Delete</button>
3	190078	Aman	Bansal	9234163712	amanb@iit.ac.in	2001-01-12	Male	D-301, Hall 12, IIT Kanpur	<button>Edit</button>	<button>Delete</button>
4	190490	Jhanvi	Tomar	9967416248	jhnvit@iit.ac.in	2001-07-11	Female	F-318,Hall 6,IIT Kanpur	<button>Edit</button>	<button>Delete</button>
5	190676	Rajat	Goyal	9824361226	goyalr@iit.ac.in	2001-01-01	Male	C-207, Hall 13, IIT Kanpur	<button>Edit</button>	<button>Delete</button>
6	200340	Divya	Shukla	9387216517	divs@iit.ac.in	2002-04-05	Female	A-635, Hall 6,IIT Kanpur	<button>Edit</button>	<button>Delete</button>
7	200874	Sumit	Sahu	9923123468	sahu@iit.ac.in	2002-03-21	Male	B-332, Hall 9, IIT Kanpur	<button>Edit</button>	<button>Delete</button>

- This page shows details of all students(both registered and unregistered on library portal) of the University
- Add New Student
Admin can add new student by this option
- Edit/Delete Student Information
Admin can edit and information of any student

4. View and Manage Books



The screenshot shows a table of book records with the following columns: S.No., Book Id, Title, Author, Publisher, Category, Pages, Year, Quantity, Link, Edit, and Delete. There is also an 'Add book' button and a search bar at the top.

S.No.	Book Id	Title	Author	Publisher	Category	Pages	Year	Quantity	Link	Edit	Delete
1	0073511218	Organic Chemistry	Francis A Carey Dr. Robert M. Giuliano	McGraw-Hill	Chemistry	1248	2016	0	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
2	0321563840	The C++ Programming Language	Bjarne Stroustrup	Addison Wesley	Computer Science	1366	2013	21	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
3	0321856562	Introduction to Electrodynamics	David J. Griffiths	Addison-Wesley	Physics	624	2012	19	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
4	0323341268	Cell Biology	Thomas D. Pollard, William C. Earnshaw	Elsevier	Biology	900	2016	26	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
5	0684801221	The Old Man and The Sea	Ernest Hemingway	Scribner Paperback Fiction	Fiction	65	1995	15	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
6	088385757X	Visual Group Theory	Nathan Carter	The Mathematical Association of America	Mathematics	297	2009	12	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>

- This page shows details about all the books present in the library.
- Add New Book
Admin can add new book through this option

- Edit/Delete Book

Admin can delete and edit the details of any book

5. E-courses

S.No.	Name	Instructors	Year	Language	Skills	Link	Edit	Delete
1	Python for Machine Learning	Bharani Akella	2022	English	Pyhton	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
2	Introduction to Digital Marketing	Vishal Padghan	2022	English	Marketing	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
3	Cloud Foundations	Nirmallya Mukerjee	2021	English	Cloud Fundamentals	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
4	AWS For Beginners	Rakesh Sinha	2022	English	Cloud Computing Fundamentals	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>
5	Business Finance Foundations	Aswath Damodaran	2022	English	Accounting Transactions	<button>Visit</button>	<button>Edit</button>	<button>Delete</button>

- This page shows all the online courses that are present in the library.
- Admin can add new courses, edit and delete any existing course from here.

6. Edit Admin Profile

Edit Profile

Email:

Password:

Firstname:

Lastname:

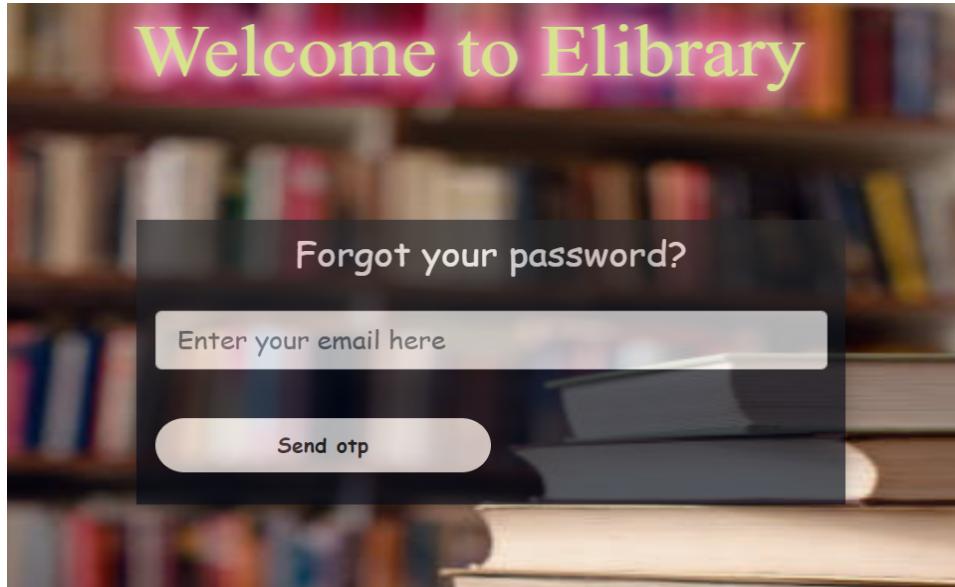
Contactno: Dob:

Age: Gender:

Address:

- Edit Profile page allows admin to change his/her details like (Password, Name, Contact no, Address etc)
- Email id can't be changed as it is the primary key for admin.

7. Forget password



- An OTP will be sent to the email id of the admin who wants to recover the password.
- OTP will be valid for 15 mins.

➤ User Page

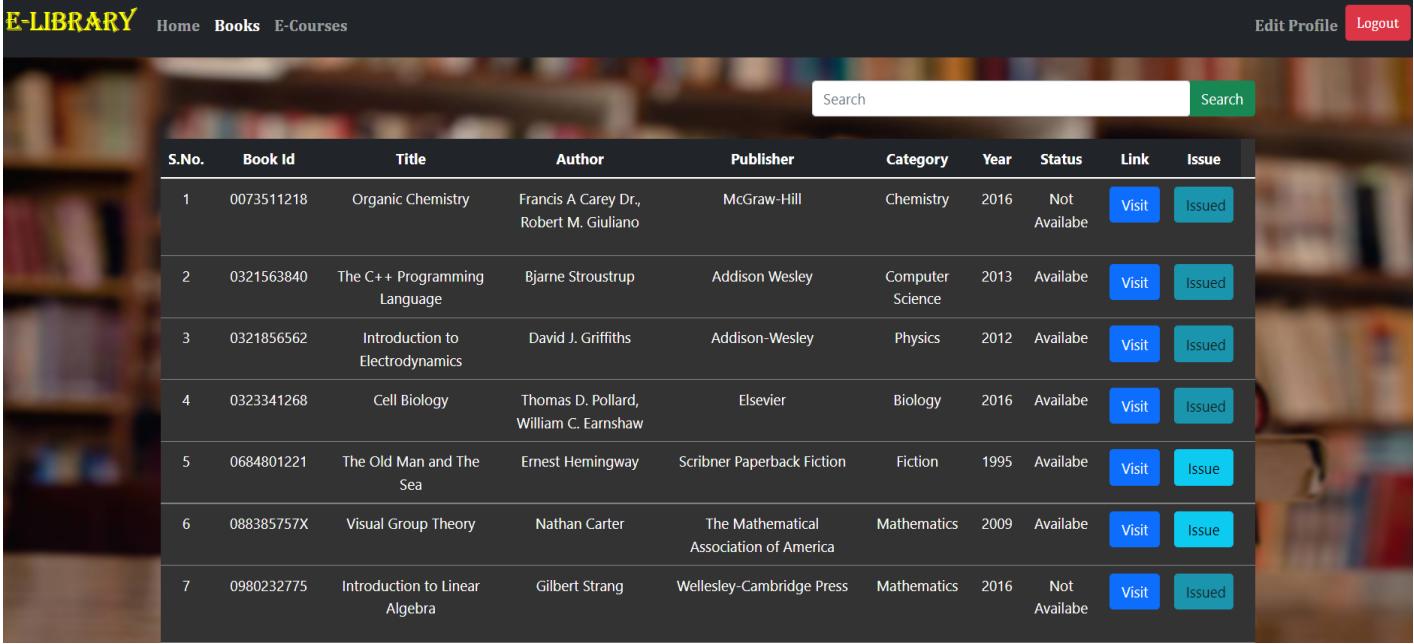
1. Home page

A screenshot of the user home page. At the top, there's a navigation bar with "E-LIBRARY", "Home", "Books", "E-Courses", "Edit Profile", and "Logout". The main content area has a form titled "Student details" with fields for First Name (Ajay), Last Name (Sharma), Address (E-405, Hall 2, IIT Kanpur), Roll no (190045), Email (sajay@iitk.ac.in), Contact No (9654231223), and DOB (2001-03-15). Below this is a section titled "Books Issued" with a table showing three books issued to the user.

S.No.	BookId	Title	Author	Issuedate	Returndate	Fine
1	0073511218	Organic Chemistry	Francis A Carey Dr., Robert M. Giuliano	2022-04-11	2022-04-12	Rs.0
2	0321856562	Introduction to Electrodynamics	David J. Griffiths	2022-04-11	2022-04-15	Rs.0
3	0321563840	The C++ Programming Language	Bjarne Stroustrup	2022-04-11	2022-04-16	Rs.0

- This page shows details of the user and the issued books (Book Name, Issue date, Return date, Fine)

2. Books page



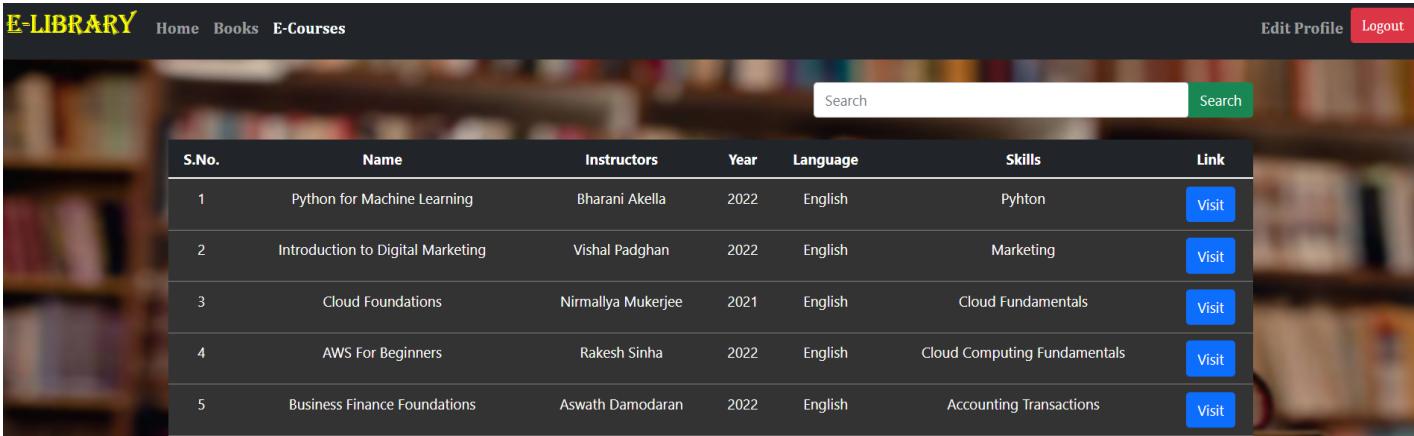
E-LIBRARY Home Books E-Courses Edit Profile Logout

Search Search

S.No.	Book Id	Title	Author	Publisher	Category	Year	Status	Link	Issue
1	0073511218	Organic Chemistry	Francis A Carey Dr, Robert M. Giuliano	McGraw-Hill	Chemistry	2016	Not Available	Visit	Issued
2	0321563840	The C++ Programming Language	Bjarne Stroustrup	Addison Wesley	Computer Science	2013	Available	Visit	Issued
3	0321856562	Introduction to Electrodynamics	David J. Griffiths	Addison-Wesley	Physics	2012	Available	Visit	Issued
4	0323341268	Cell Biology	Thomas D. Pollard, William C. Earnshaw	Elsevier	Biology	2016	Available	Visit	Issued
5	0684801221	The Old Man and The Sea	Ernest Hemingway	Scribner Paperback Fiction	Fiction	1995	Available	Visit	Issue
6	088385757X	Visual Group Theory	Nathan Carter	The Mathematical Association of America	Mathematics	2009	Available	Visit	Issue
7	0980232775	Introduction to Linear Algebra	Gilbert Strang	Wellesley-Cambridge Press	Mathematics	2016	Not Available	Visit	Issued

- This page shows all the books available in the library.
- Users can read/download these books through the ‘visit’ button.
- Users can issue books only if it is not already issued and it's available for issue.

3. E-courses page



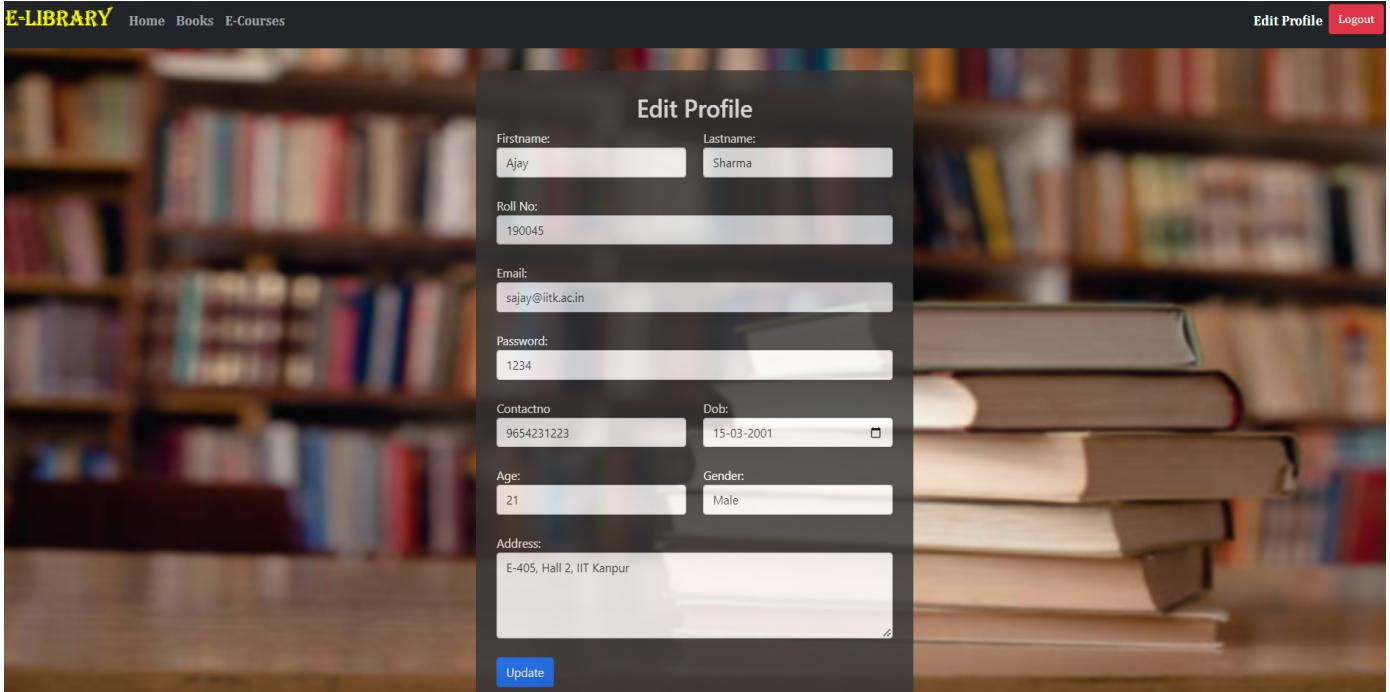
E-LIBRARY Home Books E-Courses Edit Profile Logout

Search Search

S.No.	Name	Instructors	Year	Language	Skills	Link
1	Python for Machine Learning	Bharani Akella	2022	English	Python	Visit
2	Introduction to Digital Marketing	Vishal Padghan	2022	English	Marketing	Visit
3	Cloud Foundations	Nirmallya Mukerjee	2021	English	Cloud Fundamentals	Visit
4	AWS For Beginners	Rakesh Sinha	2022	English	Cloud Computing Fundamentals	Visit
5	Business Finance Foundations	Aswath Damodaran	2022	English	Accounting Transactions	Visit

- Users can access online courses through this page.

4. Edit Profile page



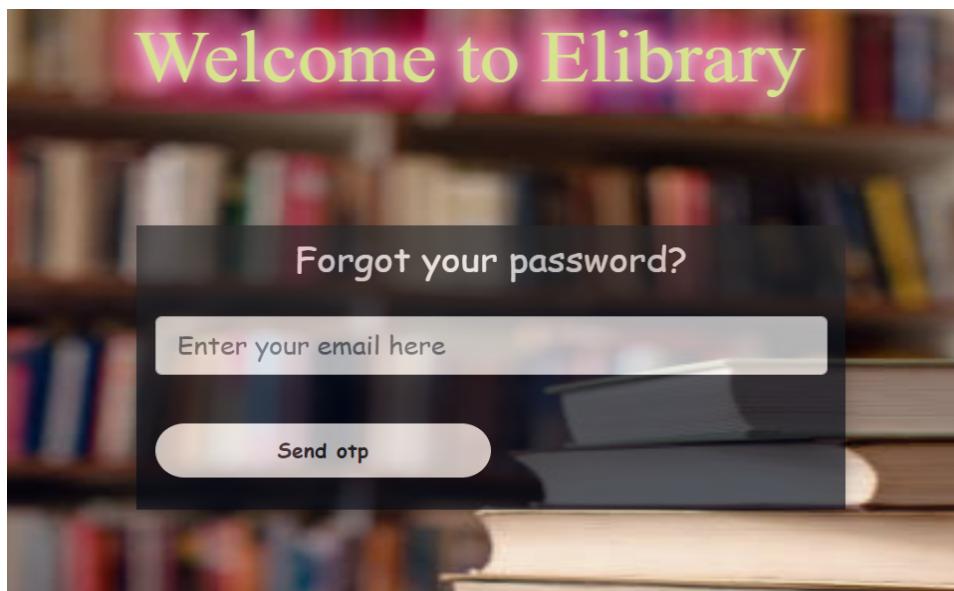
The screenshot shows the 'Edit Profile' page of an e-library system. At the top, there's a navigation bar with 'E-LIBRARY', 'Home', 'Books', 'E-Courses', 'Edit Profile' (highlighted in red), and 'Logout'. The main area has a dark background with a grid of input fields for user information. The fields include:

- Firstname: Ajay
- Lastname: Sharma
- Roll No: 190045
- Email: sajay@iitk.ac.in
- Password: 1234
- Contactno: 9654231223
- Dob: 15-03-2001
- Age: 21
- Gender: Male
- Address: E-405, Hall 2, IIT Kanpur

A blue 'Update' button is at the bottom left.

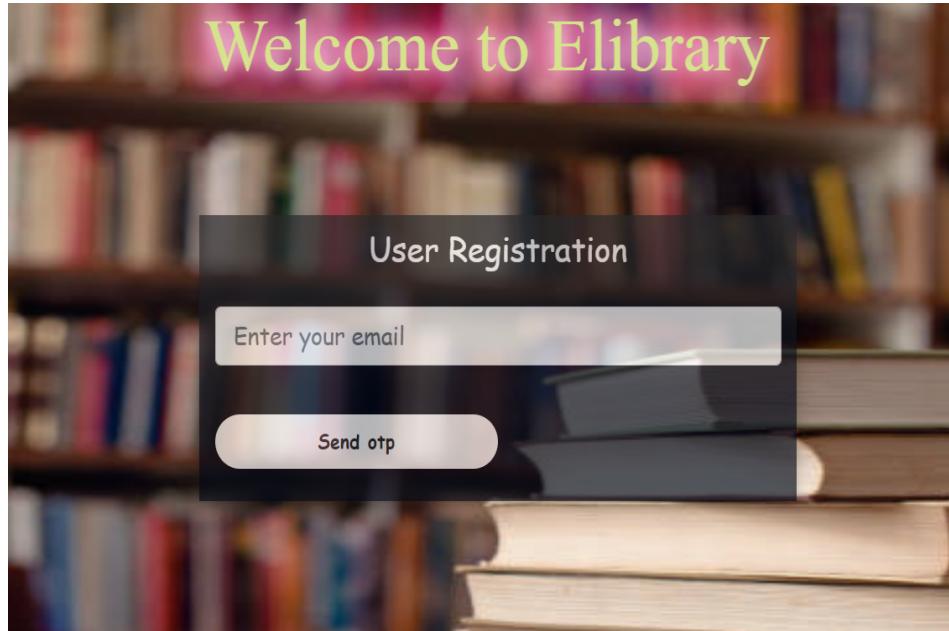
- Users can edit their info except email and rollno (As these are unique for every user)

5. Forgot password



- An OTP will be sent to the email id of the user who wants to recover the password.
OTP will be valid for 15 mins.

6. User Register



- New user can only register if he is not already registered and he is present in the university.
- After entering a valid email, the user will get an otp in their mail which will be valid for 15 minutes through which the user can set the password for the account.