Report 1-DevShelf(SOI)

Web Development Project Planning

1. Introduction

A Library Management System (LMS) is a software application designed to help manage the operations of a library such as issuing and browsing of the books efficiently.

2. Technology Stack

Code Editor- To write the code

- **VS Code-**The most popular coding platform nowadays

Frontend- Files that are loaded on client's end, to make the interaction smooth.

- **HTML/CSS**: To give structure and style to our content that would be shown on client's pc
- **JavaScript**: Essential for adding interactivity to the website. To tell how the website is going to work on the client's end
- **Framework/Library**:
    - o **React.js**: Popular library for building user interfaces. Offers component-based architecture, making the code more modular and reusable. Great for single-page applications.

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Backend- to manage the logic so that the website runs smoothly

- **Node.js with Express**: JavaScript runtime built on Chrome's V8 JavaScript engine. Express is a minimal and flexible Node.js web application framework. Also the only thing we have researched about backend till now.

Database- To store the name of the books issued or available, basically to store the data of website. There are 2 types of Databases-SQL databases and non-SQL databases. We are using SQL database as they appear more structured. Still we haven't researched about databases a lot so depending on our need in future we might change it.

- **PostgreSQL**: Powerful, open-source object-relational database system.

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Reasons for Choosing This Stack

- **React.js**: Allows for creating dynamic and responsive user interfaces efficiently. The large community and extensive documentation provide good support.
- **Node.js with Express**: Both are based on JavaScript, allowing for a unified language across the stack. Express is lightweight and flexible, ideal for building RESTful APIs.

- **PostgreSQL**: Reliable and powerful relational database system, with strong support for various data types and ACID compliance.

  ***The chosen stack can change as we progress in the project. For now these seemed the best option which might change in the future.**

4. Learning Plan

Frontend: React.js

- **Already know basics of HTML, CSS, and JavaScript**.
- **Resources**:
  - Official React documentation
  - React tutorials on platforms like freeCodeCamp
  - Youtube (Code with Harry)

Backend: Node.js with Express

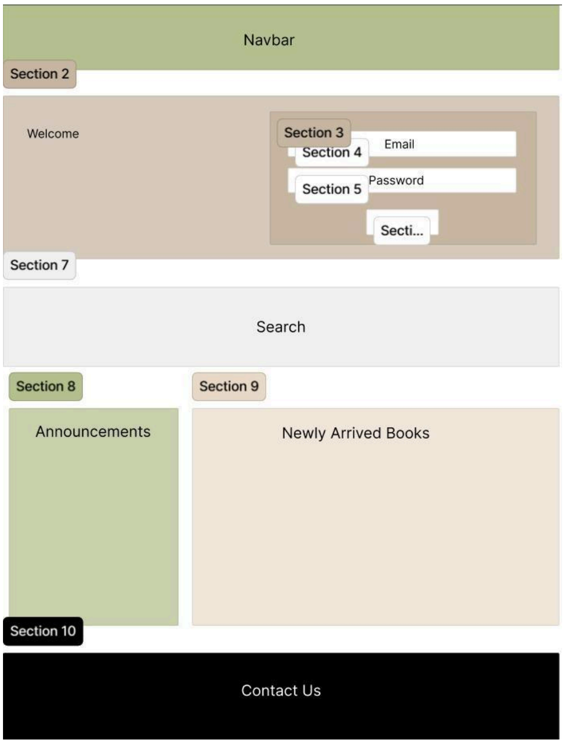
- **Already have basic JavaScript knowledge**.
- **Resources**:
  - Official Node.js and Express documentation
  - YouTube

Database: PostgreSQL

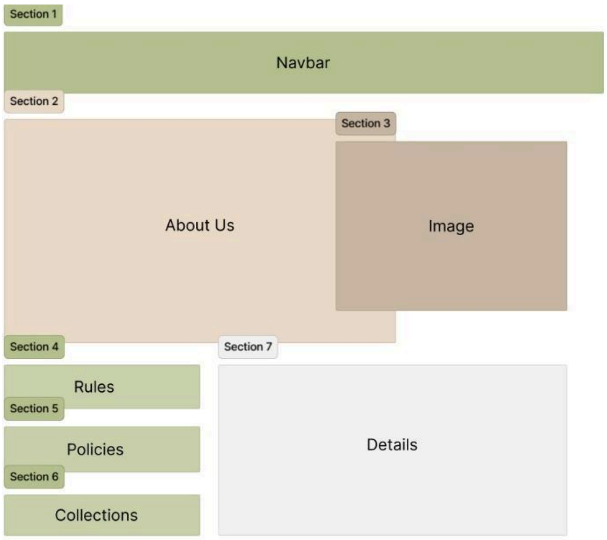
- **Resources**:
  - Official PostgreSQL documentation
  - Online tutorials and courses

ALSO how can I forget out beloved- ChatGPT

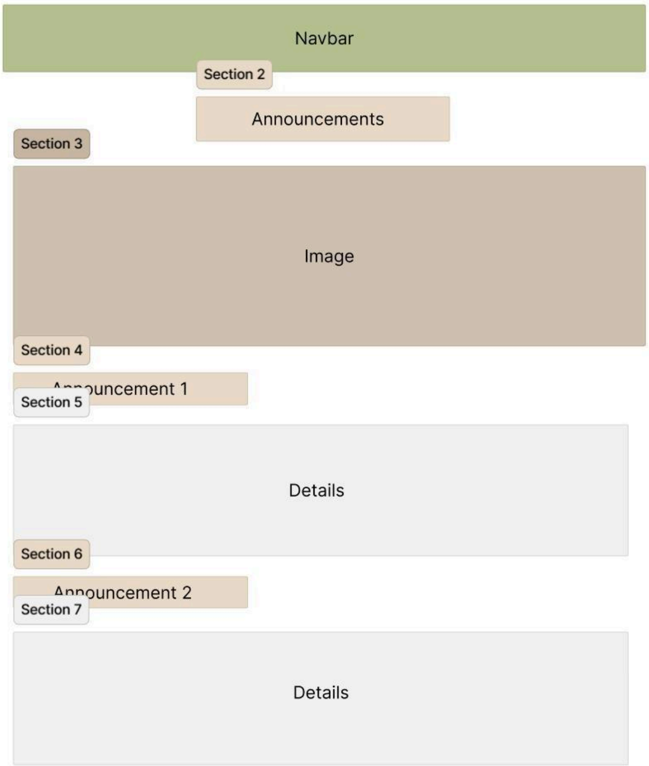
6. UI/UX Sketches



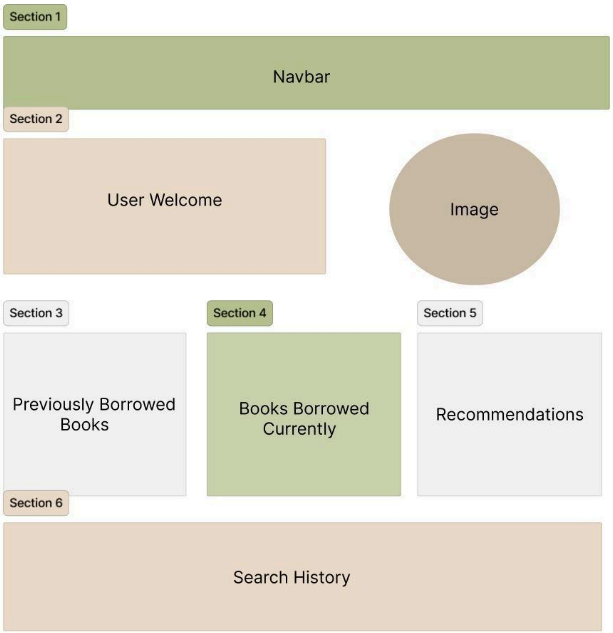
Home Page- Page that will open once you open the website



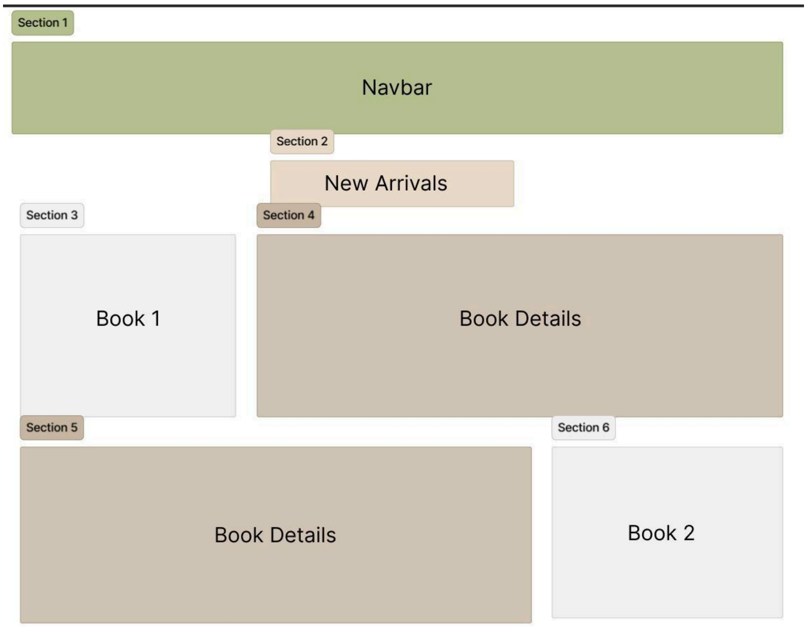
About Us Page- Page that will open after the user clicks on about us option present in the navigation bar



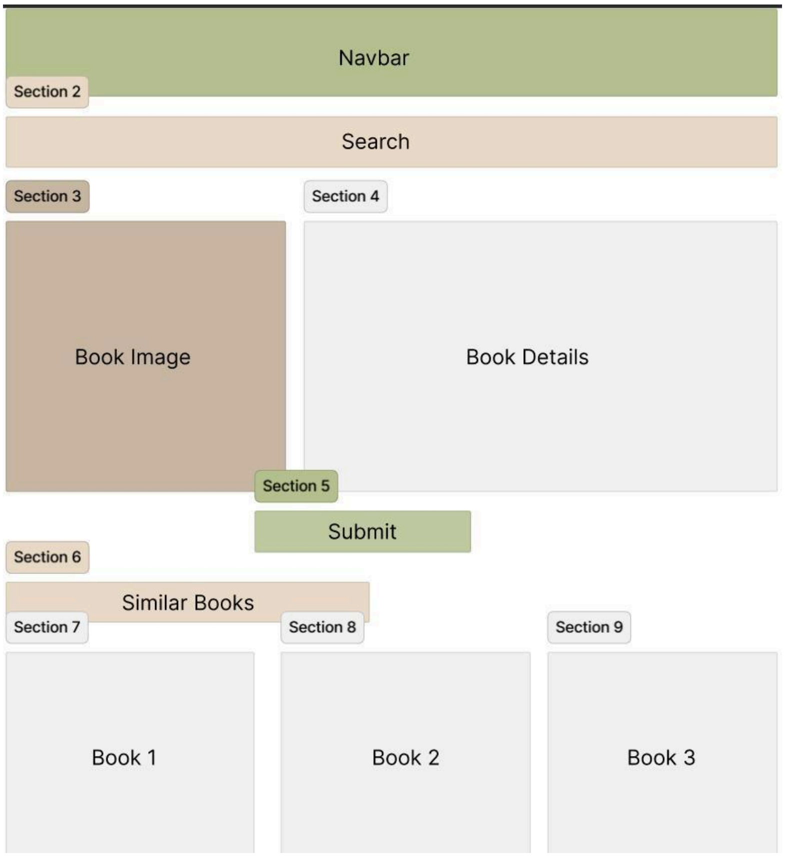
Announcements- Page for any announcements to be made from the librarian



Login Page- Page that will appear after you login with your college email id



New Arrivals Page- Page that informs about freshly arrived books

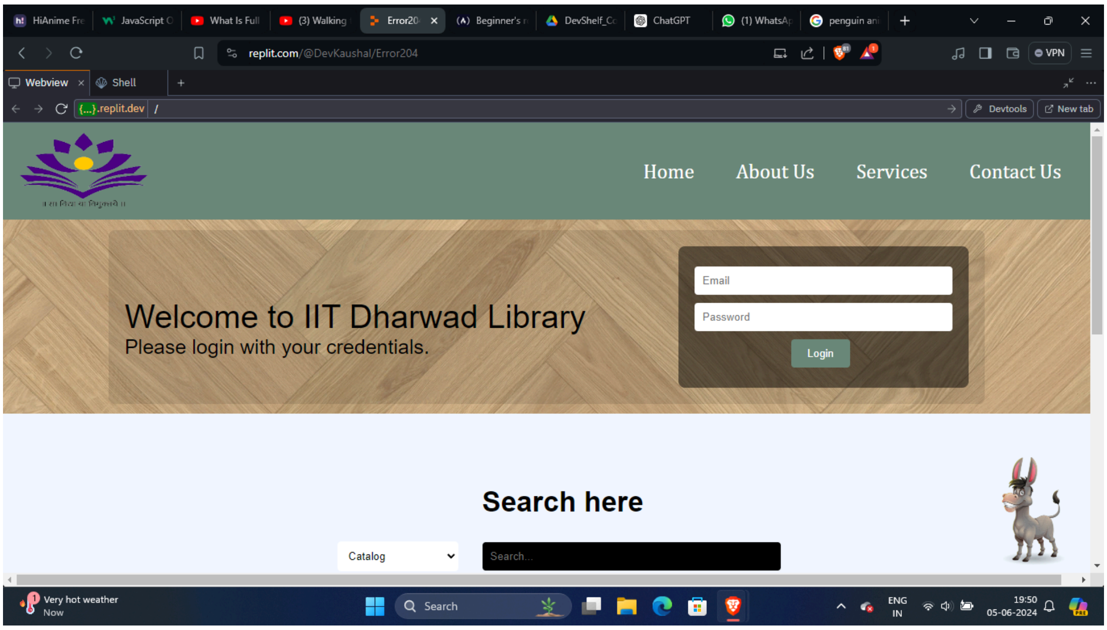


Book Search- Page for searching a specific book that the user wants

7. Rough Timeline

- **Week 1**: Learn basics of React.js
- **Week 2**: Advance React.js (state management, hooks, etc.)
- **Week 3**: Learn basics of Node.js and Express
- **Week 4**: Advance Node.js and Express (middlewares, authentication, etc.)
- **Week 5**: Learn basics of PostgreSQL
- **Week 6**: Integrate frontend with backend, setup database

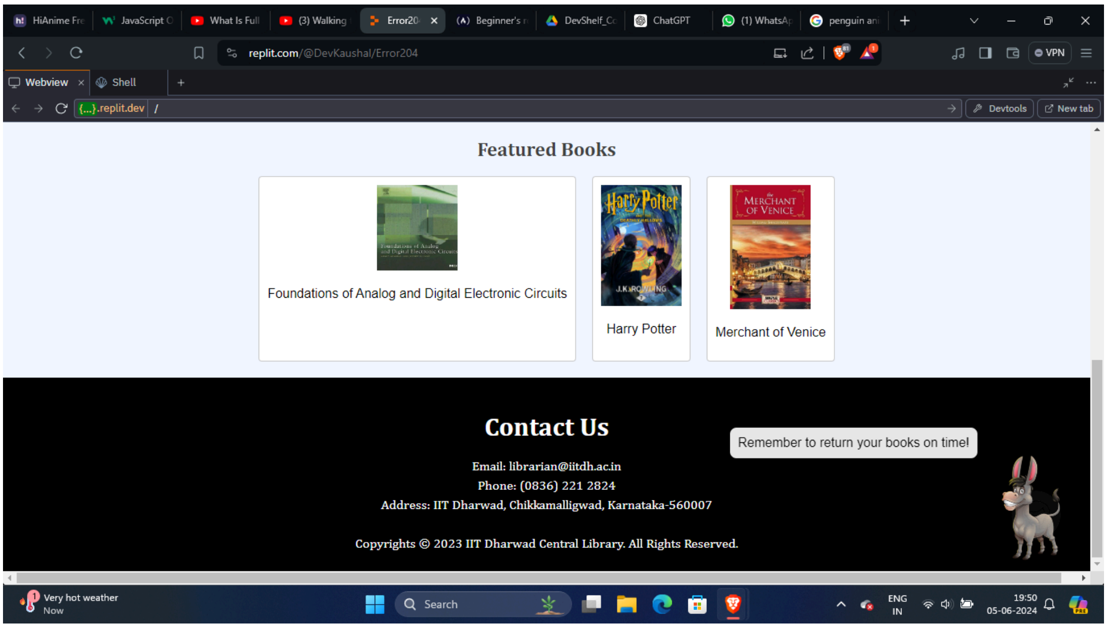
We are already done with the designing of the home page, the java script part is left. It looks something like this



Welcome to IIT Dharwad Library

Please login with your credentials.

Search here



Featured Books

Foundations of Analog and Digital Electronic Circuits

Harry Potter

Merchant of Venice

Contact Us

Remember to return your books on time!

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We have added an animated picture too which keeps popping some dialogs, to make our website more interactive and user friendly.