REPORT FILE OF MINI PROJECT

“Fullstack Todo Application with Authentication”

Submitted in partial fulfillment of the requirement for the award of degree

Of

BACHELOR OF TECHNOLOGY

Dr A P J ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

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DECLARATION

We hereby declare that the project entitled – "**Fullstack Todo Application with Authentication**", which is being submitted as Mini project of 5th semester in Computer Science & Engineering to KCC Institute of Technology and Management, G.B Nagar (U.P.) is an authentic record of our genuine work done under the guidance of **Ms. Monika Mann** of Computer Science & Engineering , KCC Institute of Technology and Management,
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Date: 30/12/2024

Place: Greater Noida

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CERTIFICATE

This is to certify that mini project report entitled "**Fullstack Todo Application with Authentication**" submitted by **"Arindam Sharma, Prince Jangra , Ayush Rawat, Aditya Kotnala"** has been carried under the guidance of **Ms. Monika Mann** of Computer Science and Engineering, KCC Institute of Technology and Management, G.B Nagar (U.P.). This project report is approved for Mini project in 5th semester in Computer Science and Engineering KCC Institute of Technology and Management, G.B Nagar (U.P.).

DR. Chetan Khemraj

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INTRODUCTON

In today's rapidly evolving technological landscape, possessing the ability to build a comprehensive fullstack application has become an indispensable skill for developers. With technology advancing at an unprecedented pace, fullstack development plays a crucial role in bridging the gap between diverse layers of software systems, enabling the creation of seamless and user-friendly digital solutions. Whether it's building web applications, mobile apps, or other complex software systems, the knowledge of fullstack development empowers developers to handle every aspect of the process, from conceptualization to deployment. This introduction sets the stage for the development of a fullstack To-Do application—a project that not only focuses on fundamental programming skills but also incorporates critical features like user authentication, which ensures a secure and personalized user experience. By integrating both frontend and backend technologies, the project exemplifies the collaborative relationship between user interface design, server-side logic, and efficient database management, providing developers with a comprehensive learning experience.

At first glance, the idea of creating a To-Do application may appear deceptively simple, given its ubiquitous nature in the world of productivity tools. However, upon closer examination, it becomes evident that such a project is rich with opportunities to explore essential programming concepts and tackle technical challenges. Building a seemingly straightforward application like this involves much more than writing basic code—it encompasses crafting a visually appealing and intuitive user interface, developing reliable backend logic, and integrating secure authentication mechanisms to protect sensitive user data. These steps not only improve technical proficiency but also expose developers to real-world scenarios, such as handling data storage, managing user sessions, and optimizing performance. By undertaking this project, developers embark on a journey of learning and growth that equips them with the skills required to create robust applications.

The To-Do application, despite its apparent simplicity, holds a significant place in the repertoire of developers, serving as a gateway to mastering fullstack development. Its universal relevance as a productivity tool underscores its importance, making it a timeless project for developers at all levels. By simulating real-world functionality—such as task creation, management, prioritization, and user-specific personalization—the application challenges developers to think beyond mere functionality. They must consider key aspects like user experience, scalability, and security, all of which are integral to delivering high-quality software. Additionally, the inclusion of features such as task reminders and collaborative capabilities can further enhance the project’s complexity, allowing developers to experiment with advanced concepts like real-time updates and cloud-based storage.

Through this project, developers gain more than just technical expertise; they also cultivate a mindset geared toward problem-solving and innovation. The To-Do application serves as a microcosm of larger, more complex projects, providing valuable insights into the considerations required to deliver applications that are not only functional but also user-centric and efficient. From choosing the right technologies to implementing effective debugging and testing practices, every step of this project contributes to building a solid foundation in software development. Ultimately, working on a fullstack To-Do application is more than just an exercise in coding—it’s an opportunity to understand the interconnected nature of modern software systems and to develop the skills necessary to thrive in an ever-changing technological world.

The Relevance of To-Do Applications in Software Development

To-Do applications serve as a microcosm of larger, more complex systems. They help developers understand the synergy between the frontend and backend while also showcasing the importance of structured data management. Additionally, they introduce developers to the intricate process of implementing secure authentication and authorization workflows.

Learning Modularity: To-Do applications encourage the use of modular design patterns. By breaking down features like task creation and user authentication into discrete components, developers learn the value of reusable and maintainable code.

Simulating Real-World Scenarios: Adding, updating, and deleting tasks simulate CRUD operations (Create, Read, Update, Delete) fundamental to most software systems. These operations form the foundation for databases and API interactions.

Building Interactive Interfaces: A To-Do application requires developers to create user-friendly interfaces that dynamically respond to input. By building such features, developers become adept at using modern JavaScript frameworks and libraries.

Ensuring Security: Authentication mechanisms protect user data, a concept critical to virtually all applications. Building secure login and registration features introduces developers to essential security practices, such as data encryption and token-based verification.

Addressing Scalability: Even simple applications must consider scalability—a key element of modern software engineering. By planning for an expanding user base or additional features, developers learn to design systems capable of growth.

Improving Problem-Solving Skills: Debugging errors, handling edge cases, and improving performance contribute to a developer's ability to tackle unforeseen challenges in larger projects.

By building a To-Do application, you're embarking on a journey that mirrors the complexities of professional software development, albeit in a more manageable scope.

OBJECTIVE AND SCOPE

OBJECTIVE:

The objective of this project is to design and develop a modern, secure, and scalable full-stack web application by leveraging the power of React, JavaScript, Node.js, MongoDB, and JSON Web Tokens (JWT). The aim is to provide users with a seamless and intuitive interface, ensure robust backend support, and maintain the highest standards of data security and performance.

The project focuses on creating a single-page application (SPA) using React, ensuring fast and dynamic user experiences through component-based architecture and efficient state management. By employing JavaScript as the primary programming language across both frontend and backend, the project achieves a unified development environment, simplifying the development process and reducing potential mismatches between client and server logic.

The backend is powered by Node.js, chosen for its non-blocking, event-driven architecture that enables high concurrency and scalability. This setup ensures the application can handle numerous simultaneous user requests without compromising on speed or reliability. To manage and store the application's data, MongoDB is used for its schema flexibility, document-oriented structure, and ability to handle large volumes of unstructured data efficiently.

Security and authentication are integral components of the project. By implementing JSON Web Tokens (JWT) for user authentication and authorization, the system guarantees secure communication between the client and the server. JWT ensures data integrity and prevents unauthorized access while enabling scalable, stateless session management.

This project also emphasizes modularity, reusability, and maintainability of code, aiming to create a well-documented and extensible codebase that can accommodate future enhancements and integrations. The application will be optimized for performance, incorporating best practices for asynchronous operations, database queries, and API interactions. Additionally, the application will adhere to responsive design principles, ensuring compatibility across various devices and screen sizes, delivering a consistent and accessible user experience.

Through this project, the ultimate goal is to demonstrate the potential of modern web development technologies to build a powerful, user-friendly, and secure application that meets the needs of its target audience while setting the foundation for future innovation.

SCOPE:

The scope of this project encompasses the development of a full-stack web application using React, JavaScript, Node.js, MongoDB, and JSON Web Tokens (JWT). The application will serve as a robust and secure platform, with the following defined scope:

Frontend (React)

- Develop a single-page application (SPA) with an intuitive and responsive user interface using React.
- Implement component-based architecture to create reusable, modular, and maintainable UI elements.
- Use React Router for client-side routing to enable seamless navigation between pages without page reloads.
- Integrate state management using tools like React Context or Redux for efficient data handling and improved user experience.
- Ensure the application is optimized for various devices and screen sizes by employing responsive design principles.

Backend (Node.js)

- Set up a robust and scalable backend server using Node.js, capable of handling multiple concurrent requests efficiently.
- Develop RESTful APIs to facilitate secure communication between the frontend and backend.
- Employ asynchronous programming techniques for handling database queries, file uploads, and third-party API integrations.

Database (MongoDB)

- Design and implement a NoSQL database schema in MongoDB, capable of storing dynamic and unstructured data.
- Utilize MongoDB's document-oriented structure for efficient data retrieval and manipulation.
- Implement data indexing to improve query performance and scalability.

Authentication and Authorization (JWT)

- Implement JSON Web Tokens (JWT) for user authentication and session management.
- Ensure secure login and signup processes by encrypting passwords and using HTTPS for data transmission.
- Enable role-based access control (RBAC) to restrict access to sensitive features and data based on user roles and permissions.

TECHNOLOGY BUCKET

The Fullstack To-Do App leverages a comprehensive set of technologies across various domains to deliver a scalable, efficient, and user-friendly application. Below is the categorized technology stack used in the project:

Frontend Technologies

- **ReactJS**: For building a dynamic and responsive user interface.
- **HTML5/CSS3**: To structure and style the frontend.
- **Bootstrap/TailwindCSS**: For pre-designed UI components and responsive design.
- **Axios/Fetch API**: To handle HTTP requests to the backend.

Backend Technologies

- **Node.js**: As the runtime environment for executing server-side JavaScript.
- **Express.js**: For creating RESTful APIs and managing server-side routes.
- **JSON Web Tokens (JWT)**: To implement secure user authentication and authorization.

Database Technologies

- **MongoDB**: A NoSQL database for storing and managing user and task data (preferred for flexibility)

JavaScript

JavaScript (JS) is a versatile, high-level programming language that has become an essential tool for modern web development. Renowned for its ability to create dynamic and interactive web content, JavaScript plays a pivotal role in enhancing user experiences on the web. It is considered one of the core technologies of the internet, alongside HTML and CSS, forming the foundation for building and maintaining responsive and engaging websites and applications. Over the years, its use has expanded far beyond the browser, establishing itself as a language with an extensive range of applications.

Key Aspects of JavaScript:

Client-Side Scripting
JavaScript is best known for its role in client-side scripting, where it adds interactivity and dynamism to websites. Whether it's enabling features like image sliders, dropdown menus, or real-time content updates, JavaScript ensures that web pages are engaging and responsive. Common tasks like form validation, implementing animations, and creating interactive maps rely heavily on JavaScript, making it indispensable for front-end development.

Server-Side Development
With the advent of runtime environments like Node.js, JavaScript has broken free from the confines of the browser to power server-side development. Node.js enables developers to build scalable, high-performance backend systems using JavaScript. This development has made JavaScript a full-stack language, allowing developers to write both the client-side and server-side code in the same language, thus simplifying the development process and improving efficiency.

Asynchronous Programming
One of JavaScript's standout features is its support for asynchronous programming, which is essential for managing tasks like API calls, file uploads, and real-time data streams. With tools like callbacks, promises, and the modern async/await syntax, JavaScript allows developers to write cleaner, more manageable code while handling asynchronous operations. This capability ensures smooth user experiences by preventing the blocking of essential tasks, such as rendering web pages or processing user inputs.

Extensive Ecosystem
JavaScript boasts a vast ecosystem of libraries, frameworks, and tools that significantly enhance its functionality and adaptability. Popular frameworks

like React, Angular, and Vue.js have revolutionized front-end development by simplifying the process of building complex, feature-rich user interfaces. On the backend, libraries such as Express.js in the Node.js ecosystem provide robust solutions for building RESTful APIs, handling database interactions, and more. This extensive ecosystem is continuously growing, driven by a vibrant global community of developers.

Beyond these aspects, JavaScript continues to evolve, with modern versions introducing new features and optimizations. The introduction of ES6 (ECMAScript 2015) and subsequent updates have added features like arrow functions, template literals, and destructuring, making JavaScript more powerful and developer-friendly. Its flexibility and compatibility with other technologies have cemented its position as a cornerstone of modern software development. Whether building a simple static website or a sophisticated single-page application, JavaScript empowers developers to deliver cutting-edge solutions for users worldwide.

Node.js

Node.js is a runtime environment that allows JavaScript to run outside the browser, making it suitable for server-side development. Built on Chrome's V8 JavaScript engine, Node.js is widely used for building scalable, real-time, and high-performance web applications. Its features include:

- **Non-Blocking I/O:** Uses an event-driven, asynchronous architecture for handling multiple requests efficiently.

- **NPM (Node Package Manager):** Provides access to a vast repository of reusable code modules.

- **Cross-Platform:** Runs on various operating systems, including Windows, macOS, and Linux.

- **Microservices:** Ideal for building lightweight and modular services.

MongoDB

MongoDB is a NoSQL database designed for scalability and flexibility. It stores data in a JSON-like format called BSON (Binary JSON), making it ideal for applications requiring fast iteration and handling of diverse data structures. Key features of MongoDB include:

- **Document-Oriented Storage:** Stores data in collections and documents rather than rows and tables.

- **Schema Flexibility:** Allows dynamic schema design for evolving requirements.

- **Scalability:** Supports horizontal scaling through sharding.

- **Aggregation Framework:** Enables complex queries and data transformations.

JSON Web Token (JWT)

JWT is a compact, URL-safe token format used for securely transmitting information between parties as a JSON object. Commonly used for authentication and authorization in web applications, JWTs are:

- **Self-Contained:** Include all necessary information (e.g., user ID, roles) for validation, eliminating the need for server-side sessions.

- **Secure:** Use cryptographic algorithms (e.g., HMAC or RSA) to ensure data integrity and authenticity.

- **Versatile:** Can be used for single sign-on (SSO), API authentication, and session management.

- **Structure:** Consists of three parts—header, payload, and signature—encoded in Base64.

React: Building Dynamic User Interfaces

React, developed by Facebook and released in 2013, is one of the most popular JavaScript libraries for building dynamic user interfaces. It’s widely used for developing single-page applications (SPAs), where the content updates dynamically without requiring full page reloads. React's strength lies in its efficiency, flexibility, and simplicity, which make it a go-to choice for modern web development.

Core Philosophy

React’s design philosophy focuses on a component-based architecture. A React application is composed of components—independent, reusable building blocks that manage their logic and rendering. These components can be nested and combined to form complex UIs, reducing redundancy and enhancing maintainability.

React’s other key philosophy is the "learn once, write anywhere" approach. Once developers are familiar with React’s core principles, they can use it across platforms, including web, mobile (with React Native), and desktop (with tools like Electron).

Virtual DOM: A Performance Booster

A major innovation introduced by React is the Virtual DOM. Instead of directly manipulating the browser's Document Object Model (DOM), React maintains a lightweight, in-memory representation of the real DOM. When a component's state changes, React updates the Virtual DOM, calculates the minimal set of changes needed (a process called reconciliation), and applies these updates to the real DOM. This approach ensures high performance, especially for applications with frequent updates.

Core Features

JSX (JavaScript XML): JSX is a syntax extension for JavaScript that allows developers to write HTML-like structures within JavaScript code. It provides a clear and concise way to describe what the UI should look like while leveraging JavaScript's full power.

Example:

```
const App = () => <h1>Hello, World!</h1>;
```

Components: Components are the building blocks of a React application. They can be either functional (defined as functions) or class-based (defined using ES6 classes). Functional components are often preferred for their simplicity and compatibility with React Hooks.

Example:

```
function Greeting(props) {
return <h1>Hello, {props.name}!</h1>;
}
```

State and Props:

1. **State**: A component's internal data that determines its behavior and rendering.
2. **Props**: Short for "properties," props are used to pass data from a parent component to a child component.

Lifecycle Methods: Class-based components in React have lifecycle methods, such as `componentDidMount` and `componentWillUnmount`, to handle component initialization, updates, and cleanup. With Hooks, functional components can achieve similar functionality using `useEffect`.

Hooks: Introduced in React 16.8, Hooks provide a way to use state and other React features in functional components. Popular hooks include:

1. `useState`: For managing state.
2. `useEffect`: For side effects like data fetching.
3. `useContext`: For accessing context without prop drilling.

Advantages of React

Reusability: React components are highly reusable. A single component can be used in multiple places, reducing redundancy and development effort.

Performance: The Virtual DOM and efficient diffing algorithms make React highly performant, even in data-heavy applications.

Developer Tools: React DevTools, available as a browser extension, allows developers to inspect and debug React components and their state easily.

Rich Ecosystem: React has a vast ecosystem, including libraries like Redux (state management), React Router (navigation), and Next.js (server-side rendering and static site generation).

Use Cases

Single-Page Applications (SPAs): React is perfect for SPAs where dynamic content updates are required without refreshing the page. Examples include Gmail and Twitter.

Dashboards: React’s ability to handle large datasets and dynamic updates makes it ideal for analytical dashboards.

Mobile Apps: Using React Native, developers can build cross-platform mobile apps using the same React principles.

React Ecosystem

Redux: While React manages state at the component level, Redux provides a centralized store for application-wide state management.

React Router: Enables navigation between different views in a React application without full-page reloads.

Next.js: A framework built on top of React for server-side rendering (SSR) and static site generation (SSG).

Challenges and Limitations

Learning Curve: React has a steep learning curve for beginners, especially with advanced concepts like hooks and state management.

Boilerplate Code: Setting up a React project often requires a significant amount of boilerplate, although tools like Create React App and Vite simplify this.

Rapid Evolution: The React ecosystem evolves quickly, making it challenging for developers to stay updated.

Introduction to Express.js

Express.js is a minimal and flexible Node.js web application framework that provides a robust set of features for building web and mobile applications. It simplifies the creation of server-side applications by providing a powerful set of tools for routing, middleware integration, and request/response handling. Express is widely used for creating RESTful APIs, web applications, and single-page applications (SPAs).

Core Concepts of Express.js

1. Middleware

Middleware functions are the building blocks of an Express application. These are functions that receive the request and response objects and can either modify them or perform some action before passing them along to the next middleware or route handler.

- **Functionality**: Middleware can perform tasks such as logging, authentication, request parsing, error handling, and much more.
- **Types**:
  - **Application-level middleware**: Used throughout the entire application.
  - **Router-level middleware**: Bound to specific routes or route groups.
  - **Error-handling middleware**: Specifically designed to handle errors.

2. Routing

Routing refers to the mechanism of defining URL patterns and associating them with specific handler functions for particular HTTP methods. Express makes it simple to define routes that respond to HTTP requests (such as GET, POST, PUT, DELETE).

- **Route definition**: Routes in Express can be defined using URL patterns and HTTP methods like GET, POST, PUT, DELETE, etc.
- **Dynamic routes**: Routes can be defined with dynamic parameters, such as `/users/:id`, where `id` can be any variable.

3. Request and Response

Express provides two objects that are central to the web application flow: **request** (`req`) and **response** (`res`).

- **Request object**: Contains all the information about the incoming HTTP request, such as URL parameters, query parameters, body content, etc.
- **Response object**: Used to send the response to the client. It provides methods like `send()`, `json()`, `render()`, and `status()`.

4. Template Engines

Express can be used with various template engines to generate dynamic HTML pages. Template engines allow for embedding dynamic content into HTML pages, such as user-specific data or results from database queries

.

- Common template engines: Pug, EJS, Handlebars, etc.

Example: Setting a template engine in Express:

```
app.set('view engine', 'ejs');
```

Introduction to Bootstrap:

Bootstrap is an open-source front-end framework for developing responsive, mobile-first web applications. Initially developed by Twitter, it has since become one of the most popular and widely used frameworks for building modern websites and applications. Bootstrap provides a set of pre-designed components, layout utilities, and JavaScript plugins to help developers create aesthetically pleasing and functional web pages quickly and efficiently.

The key feature of Bootstrap is its responsiveness. It enables websites to automatically adjust their layout and design according to the screen size of the device, ensuring that they work well on desktops, tablets, and smartphones. The framework is built with HTML, CSS, and JavaScript, and it incorporates a grid system, pre-styled components, and JavaScript plugins for added functionality.

Axios: A Detailed Overview

Axios is a promise-based JavaScript library that simplifies making HTTP requests in both the browser and Node.js environments. It is widely used for interacting with APIs, sending requests, and receiving responses in a more manageable way. Axios offers a variety of features that streamline the handling of asynchronous operations, such as handling JSON data, automatic transformation of responses, request cancellation, and built-in error handling. It has become one of the most popular tools for making HTTP requests due to its simplicity, flexibility, and ease of use.

Key Features of Axios

Promise-Based: Axios is built around the concept of promises, which are an essential feature of modern JavaScript for handling asynchronous operations. Promises allow developers to work with asynchronous code in a more readable and maintainable way, avoiding callback hell. When a request is made, Axios returns a promise that resolves with the response data or rejects with an error.

Request and Response Transformation: Axios automatically handles the transformation of data between the client and server. For instance, when the response from the server is in JSON format, Axios parses the response body into JavaScript objects automatically. Similarly, when sending data with a POST request, Axios serializes the data into the appropriate format for transmission to the server.

Support for All HTTP Methods: Axios supports all common HTTP methods, including GET, POST, PUT, DELETE, PATCH, etc. This allows developers to interact with RESTful APIs and make requests for different types of operations such as retrieving data, sending new data, updating existing data, or deleting data.

Automatic JSON Handling: One of the major conveniences of using Axios is that it automatically handles JSON responses and requests. It parses JSON responses into JavaScript objects and converts JavaScript objects into JSON format for sending requests. This eliminates the need for developers to manually handle the serialization and deserialization of JSON data.

Handling Timeouts: Axios provides a built-in feature to set timeouts for HTTP requests. If a request takes longer than the specified timeout duration, it is automatically canceled, and an error is thrown. This is particularly useful in preventing long waits or hanging requests that might block the execution of an application.

Interceptors: Interceptors are a powerful feature of Axios that allow developers to intercept requests or responses before they are handled by the `.then` or `.catch` methods. This is useful for modifying the request, such as adding authentication tokens or logging request data, or handling the response globally. Interceptors are executed globally, meaning they can be applied to all requests or responses made by Axios.

Error Handling: Axios has built-in error handling, which helps developers capture and handle any issues that arise during an HTTP request. When a request fails, Axios triggers an error and provides detailed information, including the response status, the request that failed, and the error message. This makes debugging easier by providing a clear understanding of what went wrong.

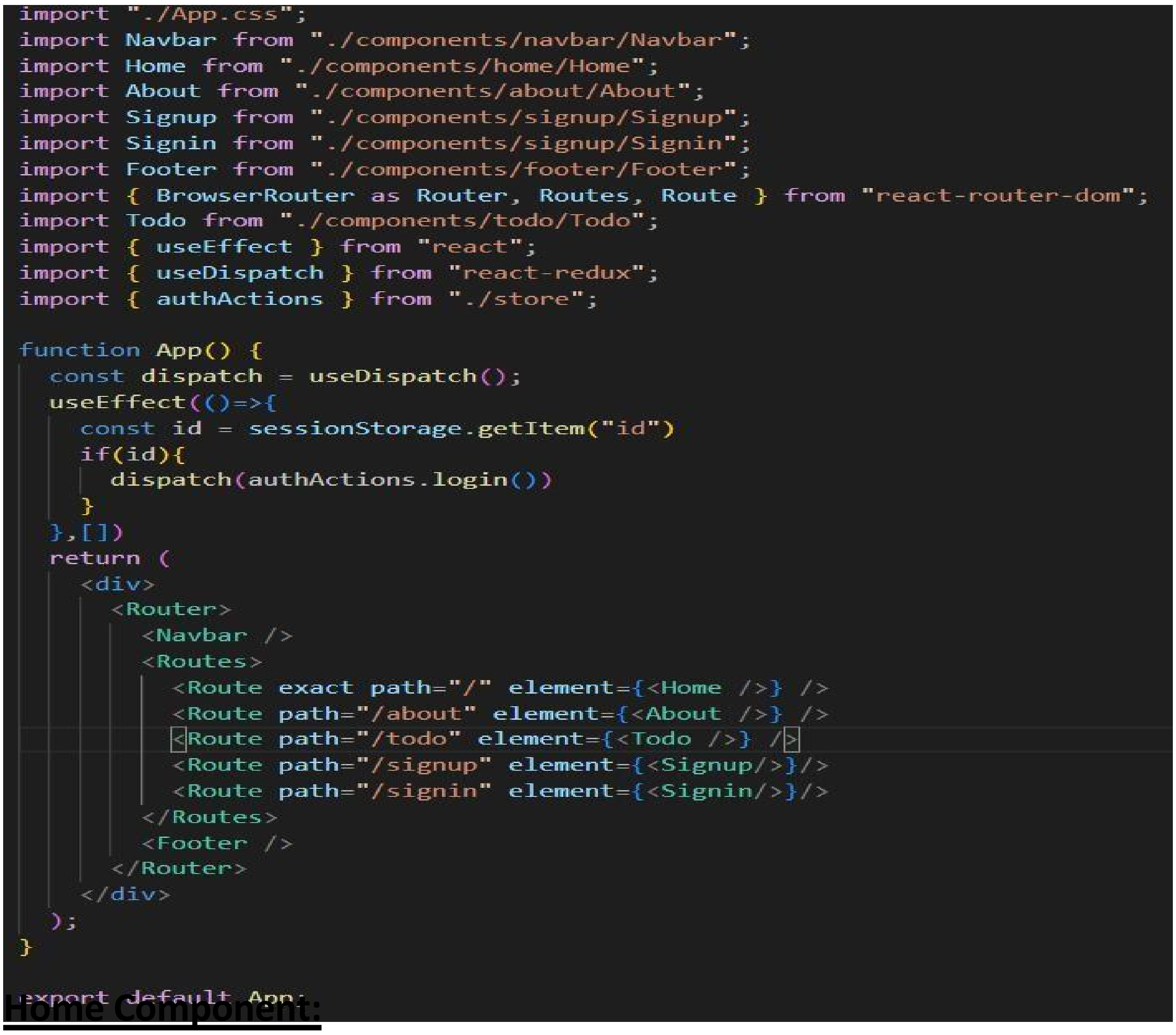
Request Cancellation: Axios supports request cancellation, which allows developers to cancel ongoing requests if they are no longer necessary. This is particularly useful when working with user interfaces where multiple requests may be initiated, and only the latest one is relevant. Axios supports cancellation through a **CancelToken**, which is used to abort an HTTP request before it completes.

Custom Configurations: Axios allows developers to set default configurations that apply to all requests. These configurations can include the base URL, headers, timeouts, and more. This is helpful when interacting with an API that requires the same settings for every request, such as including an authentication token in the headers or setting a global timeout value.

APPENDICES
IMPLEMENTATION CODE

FRONTEND:

REACT JS:

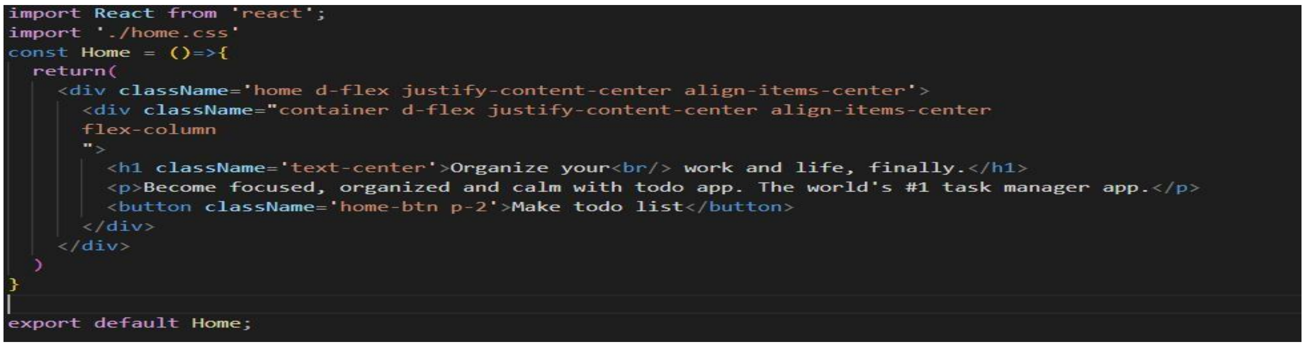


```
import "./App.css";
import Navbar from "./components/navbar/Navbar";
import Home from "./components/home/Home";
import About from "./components/about/About";
import Signup from "./components/signup/Signup";
import Signin from "./components/signup/Signin";
import Footer from "./components/footer/Footer";
import { BrowserRouter as Router, Routes, Route } from "react-router-dom";
import Todo from "./components/todo/Todo";
import { useEffect } from "react";
import { useDispatch } from "react-redux";
import { authActions } from "./store";

function App() {
  const dispatch = useDispatch();
  useEffect(()=>{
    const id = sessionStorage.getItem("id")
    if(id){
      dispatch(authActions.login())
    }
  },[])
  return (
    <div>
      <Router>
        <Navbar />
        <Routes>
          <Route exact path="/" element={<Home />} />
          <Route path="/about" element={<About />} />
          <Route path="/todo" element={<Todo />} />
          <Route path="/signup" element={<Signup/>}/>
          <Route path="/signin" element={<Signin/>}/>
        </Routes>
        <Footer />
      </Router>
    </div>
  );
}

export default App;
```

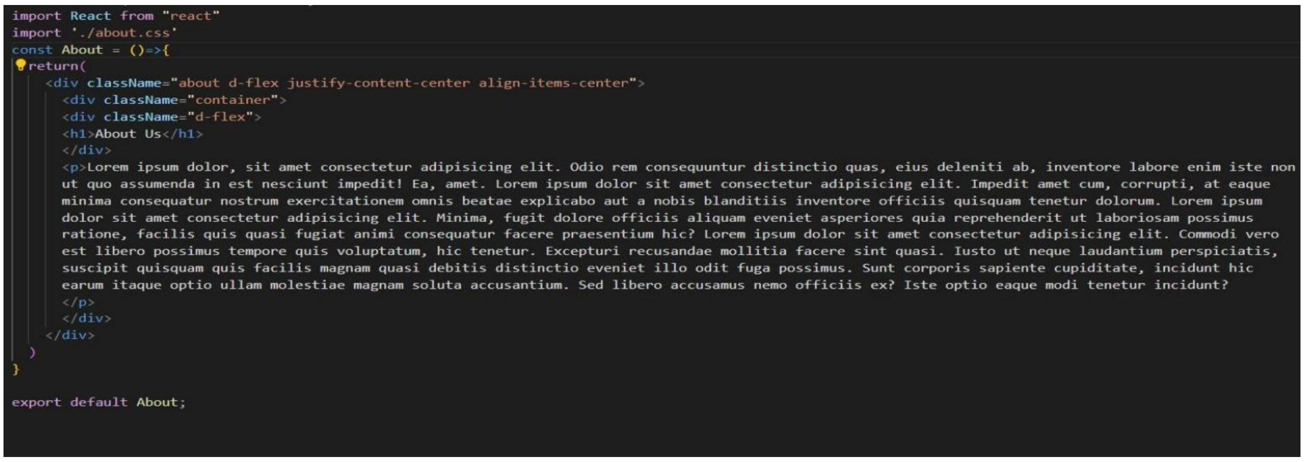
Home Component:



```
import React from 'react';
import './home.css'
const Home = ()=>{
  return(
    <div className='home d-flex justify-content-center align-items-center'>
      <div className="container d-flex justify-content-center align-items-center
      flex-column
      ">
        <h1 className='text-center'>Organize your<br/> work and life, finally.</h1>
        <p>Become focused, organized and calm with todo app. The world's #1 task manager app.</p>
        <button className='home-btn p-2'>Make todo list</button>
      </div>
    </div>
  )
}

export default Home;
```

About Component:



```
import React from "react"
import './about.css'
const About = ()=>{
  return(
    <div className="about d-flex justify-content-center align-items-center">
      <div className="container">
      <div className="d-flex">
      <h1>About Us</h1>
      </div>
      <p>Lorem ipsum dolor, sit amet consectetur adipisicing elit. Odio rem consequuntur distinctio quas, eius deleniti ab, inventore labore enim iste non
      ut quo assumenda in est nesciunt impedit! Ea, amet. Lorem ipsum dolor sit amet consectetur adipisicing elit. Impedit amet cum, corrupti, at eaque
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      suscipit quisquam quis facilis magnam quasi debitis distinctio eveniet illo odit fuga possimus. Sunt corporis sapiente cupiditate, incidunt hic
      earum itaque optio ullam molestiae magnam soluta accusantium. Sed libero accusamus nemo officiis ex? Iste optio eaque modi tenetur incidunt?
      </p>
      </div>
    </div>
  )
}

export default About;
```
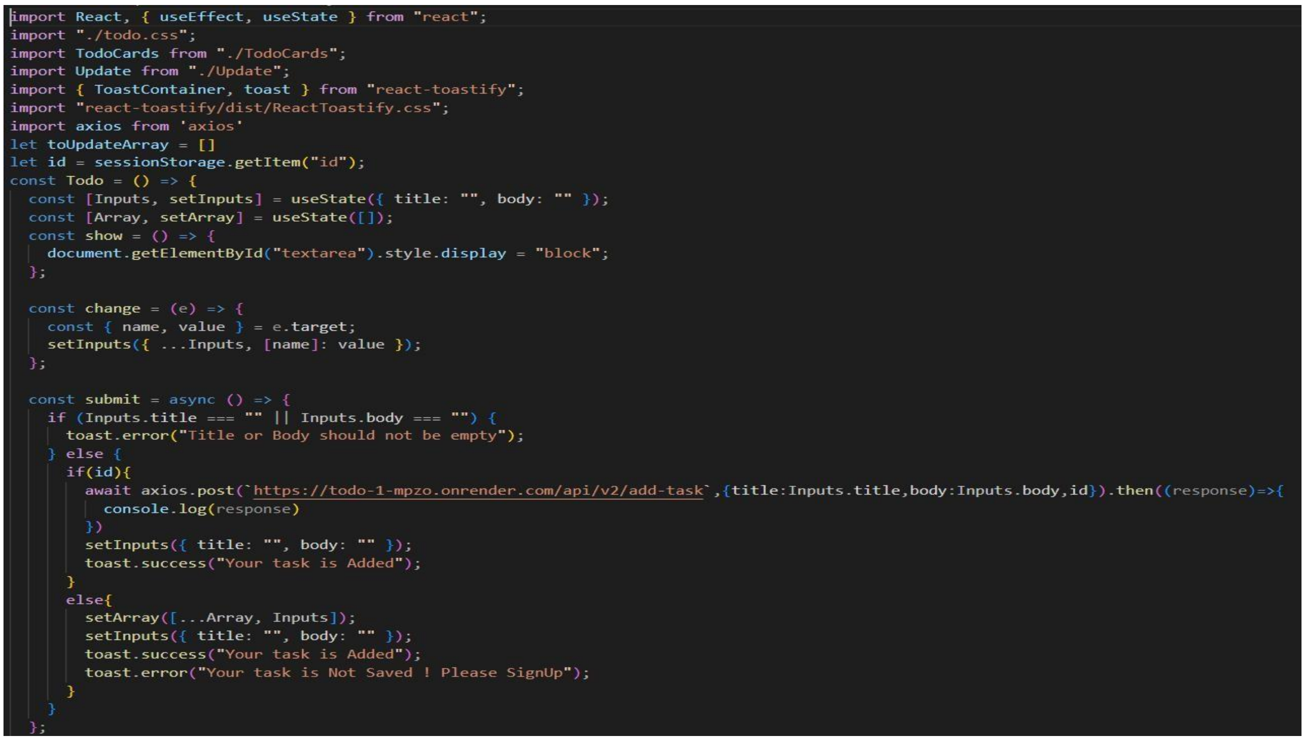
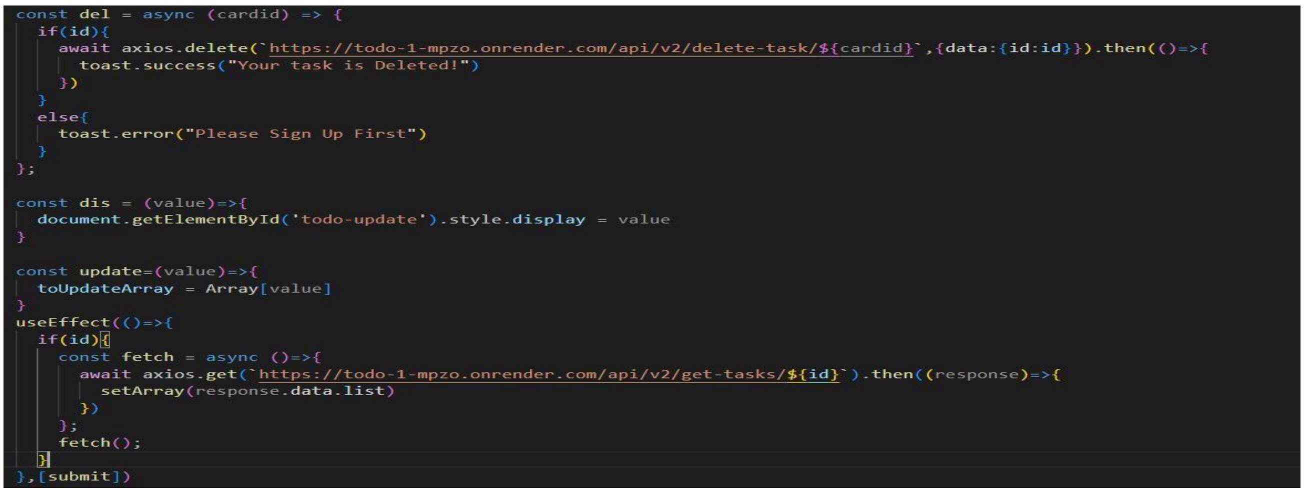
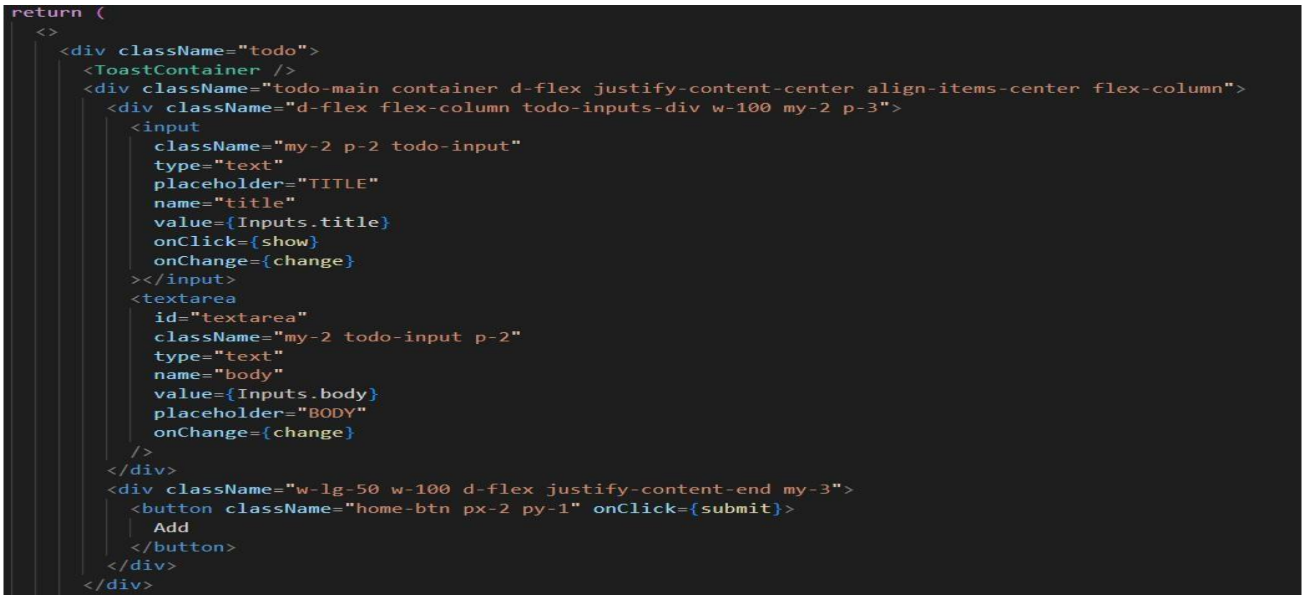

Todo Component:

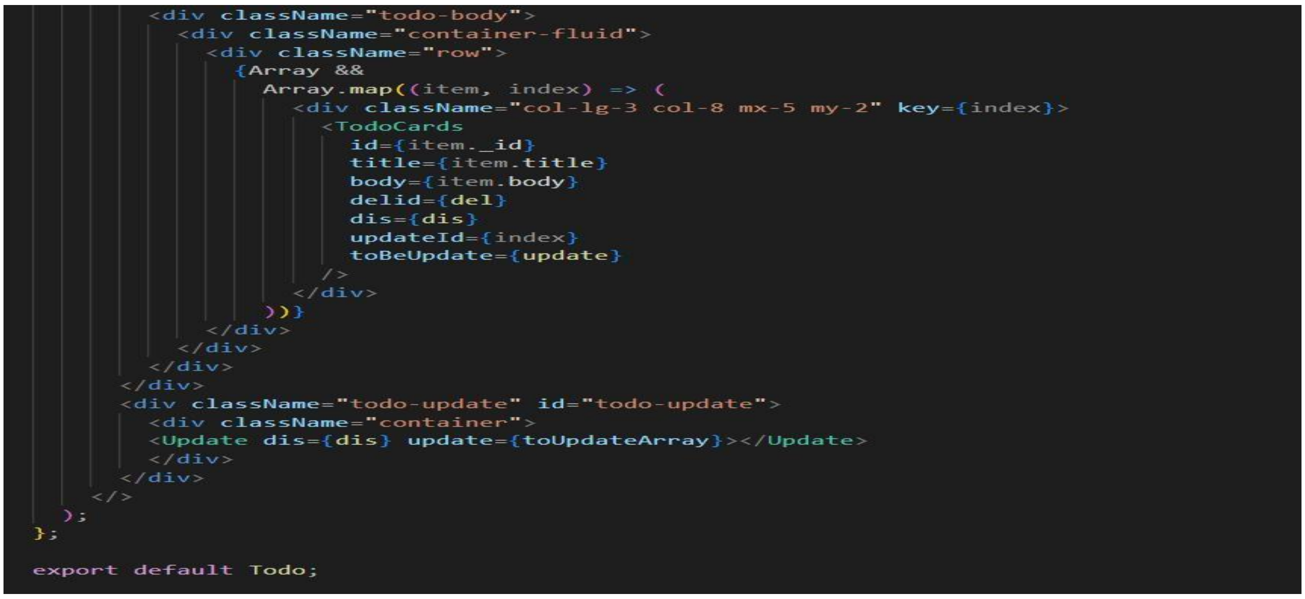


```
import React, { useEffect, useState } from "react";
import "./todo.css";
import TodoCards from "./TodoCards";
import Update from "./Update";
import { ToastContainer, toast } from "react-toastify";
import "react-toastify/dist/ReactToastify.css";
import axios from 'axios'
let toUpdateArray = []
let id = sessionStorage.getItem("id");
const Todo = () => {
  const [Inputs, setInputs] = useState({ title: "", body: "" });
  const [Array, setArray] = useState([]);
  const show = () => {
    document.getElementById("textarea").style.display = "block";
  };

  const change = (e) => {
    const { name, value } = e.target;
    setInputs({ ...Inputs, [name]: value });
  };

  const submit = async () => {
    if (Inputs.title === "" || Inputs.body === "") {
      toast.error("Title or Body should not be empty");
    } else {
      if(id){
        await axios.post(`https://todo-1-mpzo.onrender.com/api/v2/add-task`,{title:Inputs.title,body:Inputs.body,id}).then((response)=>{
          console.log(response)
        })
        setInputs({ title: "", body: "" });
        toast.success("Your task is Added");
      }
      else{
        setArray([...Array, Inputs]);
        setInputs({ title: "", body: "" });
        toast.success("Your task is Added");
        toast.error("Your task is Not Saved ! Please SignUp");
      }
    }
  };
```

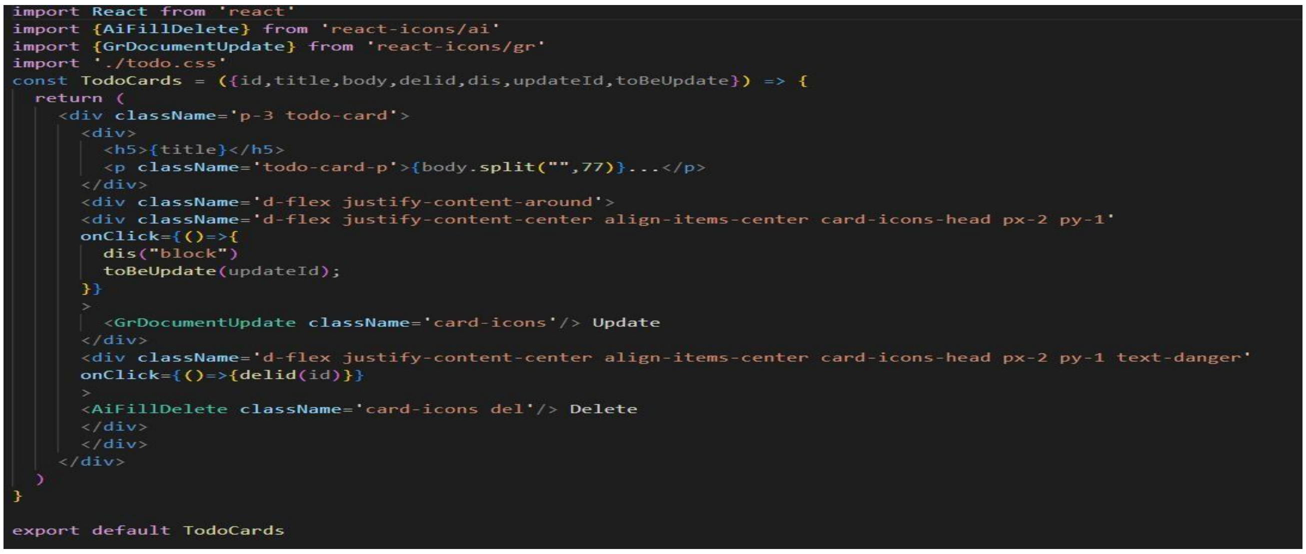


```
const del = async (cardid) => {
  if(id){
    await axios.delete(`https://todo-1-mpzo.onrender.com/api/v2/delete-task/${cardid}`,{data:{id:id}}).then(()=>{
      toast.success("Your task is Deleted!")
    })
  }
  else{
    toast.error("Please Sign Up First")
  }
};

const dis = (value)=>{
  document.getElementById('todo-update').style.display = value
}

const update=(value)=>{
  toUpdateArray = Array[value]
}
useEffect(()=>{
  if(id){
    const fetch = async ()=>{
      await axios.get(`https://todo-1-mpzo.onrender.com/api/v2/get-tasks/${id}`).then((response)=>{
        setArray(response.data.list)
      })
    };
    fetch();
  }
},[submit])
```

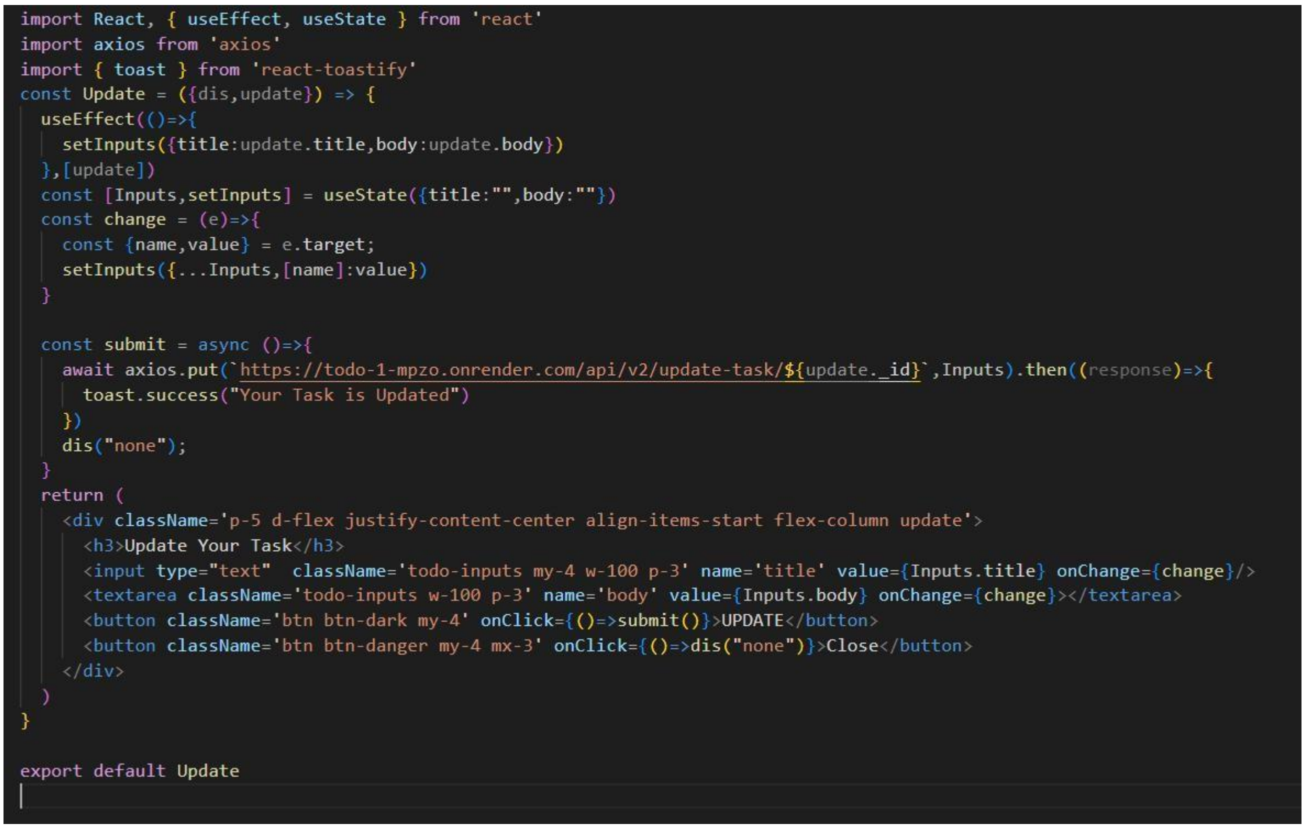

```
return (
  <>
    <div className="todo">
      <ToastContainer />
      <div className="todo-main container d-flex justify-content-center align-items-center flex-column">
        <div className="d-flex flex-column todo-inputs-div w-100 my-2 p-3">
          <input
            className="my-2 p-2 todo-input"
            type="text"
            placeholder="TITLE"
            name="title"
            value={Inputs.title}
            onClick={show}
            onChange={change}
          ></input>
          <textarea
            id="textarea"
            className="my-2 todo-input p-2"
            type="text"
            name="body"
            value={Inputs.body}
            placeholder="BODY"
            onChange={change}
          />
        </div>
        <div className="w-lg-50 w-100 d-flex justify-content-end my-3">
          <button className="home-btn px-2 py-1" onClick={submit}>
            Add
          </button>
        </div>
      </div>
```


```
          <div className="todo-body">
            <div className="container-fluid">
              <div className="row">
                {Array &&
                  Array.map((item, index) => (
                    <div className="col-lg-3 col-8 mx-5 my-2" key={index}>
                      <TodoCards
                        id={item._id}
                        title={item.title}
                        body={item.body}
                        delid={del}
                        dis={dis}
                        updateId={index}
                        toBeUpdate={update}
                      />
                    </div>
                  ))}
              </div>
            </div>
          </div>
        </div>
        <div className="todo-update" id="todo-update">
          <div className="container">
          <Update dis={dis} update={toUpdateArray}></Update>
          </div>
        </div>
      </>
    );
  };

  export default Todo;
```

TodoCards Component:

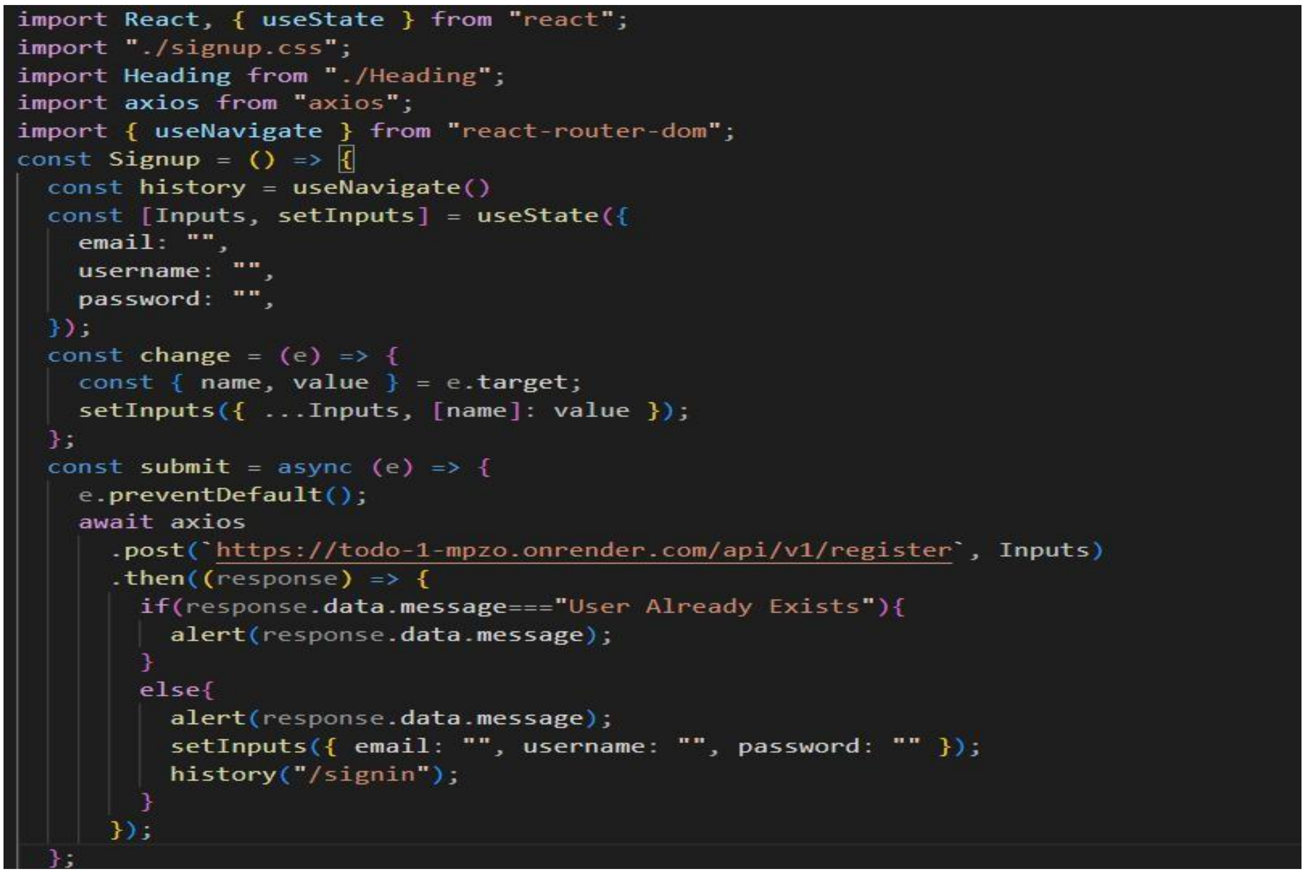

```
import React from 'react'
import {AiFillDelete} from 'react-icons/ai'
import {GrDocumentUpdate} from 'react-icons/gr'
import './todo.css'
const TodoCards = ({id,title,body,delid,dis,updateId,toBeUpdate}) => {
  return (
    <div className='p-3 todo-card'>
      <div>
        <h5>{title}</h5>
        <p className='todo-card-p'>{body.split("",77)}...</p>
      </div>
      <div className='d-flex justify-content-around'>
      <div className='d-flex justify-content-center align-items-center card-icons-head px-2 py-1'
      onClick={()=>{
        dis("block")
        toBeUpdate(updateId);
      }}
      >
        <GrDocumentUpdate className='card-icons'/> Update
      </div>
      <div className='d-flex justify-content-center align-items-center card-icons-head px-2 py-1 text-danger'
      onClick={()=>{delid(id)}}
      >
      <AiFillDelete className='card-icons del'/> Delete
      </div>
      </div>
    </div>
  )
}

export default TodoCards
```

Update Component:

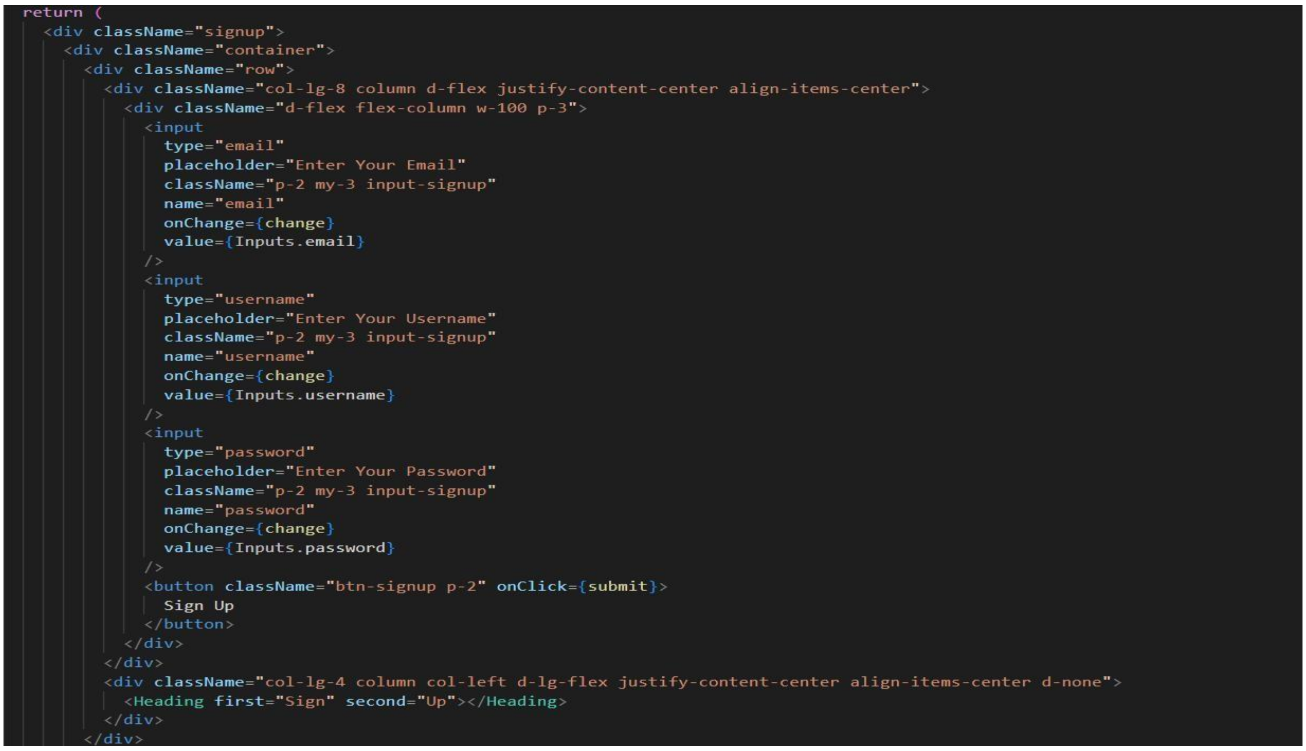


```
import React, { useEffect, useState } from 'react'
import axios from 'axios'
import { toast } from 'react-toastify'
const Update = ({dis,update}) => {
  useEffect(()=>{
    setInputs({title:update.title,body:update.body})
  },[update])
  const [Inputs,setInputs] = useState({title:"",body:""})
  const change = (e)=>{
    const {name,value} = e.target;
    setInputs({...Inputs,[name]:value})
  }

  const submit = async ()=>{
    await axios.put(`https://todo-1-mpzo.onrender.com/api/v2/update-task/${update._id}`,Inputs).then((response)=>{
      toast.success("Your Task is Updated")
    })
    dis("none");
  }
  return (
    <div className='p-5 d-flex justify-content-center align-items-start flex-column update'>
      <h3>Update Your Task</h3>
      <input type="text"  className='todo-inputs my-4 w-100 p-3' name='title' value={Inputs.title} onChange={change}/>
      <textarea className='todo-inputs w-100 p-3' name='body' value={Inputs.body} onChange={change}></textarea>
      <button className='btn btn-dark my-4' onClick={()=>submit()}>UPDATE</button>
      <button className='btn btn-danger my-4 mx-3' onClick={()=>dis("none")}>Close</button>
    </div>
  )
}

export default Update
```

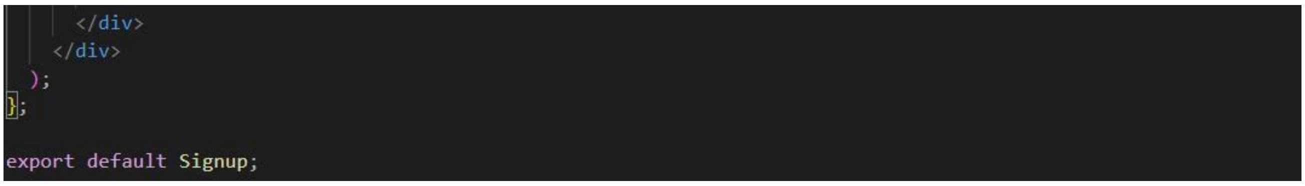
SignUp Component:



```
import React, { useState } from "react";
import "./signup.css";
import Heading from "./Heading";
import axios from "axios";
import { useNavigate } from "react-router-dom";
const Signup = () => {
  const history = useNavigate()
  const [Inputs, setInputs] = useState({
    email: "",
    username: "",
    password: "",
  });
  const change = (e) => {
    const { name, value } = e.target;
    setInputs({ ...Inputs, [name]: value });
  };
  const submit = async (e) => {
    e.preventDefault();
    await axios
      .post(`https://todo-1-mpzo.onrender.com/api/v1/register`, Inputs)
      .then((response) => {
        if(response.data.message==="User Already Exists"){
          alert(response.data.message);
        }
        else{
          alert(response.data.message);
          setInputs({ email: "", username: "", password: "" });
          history("/signin");
        }
      });
  };
```

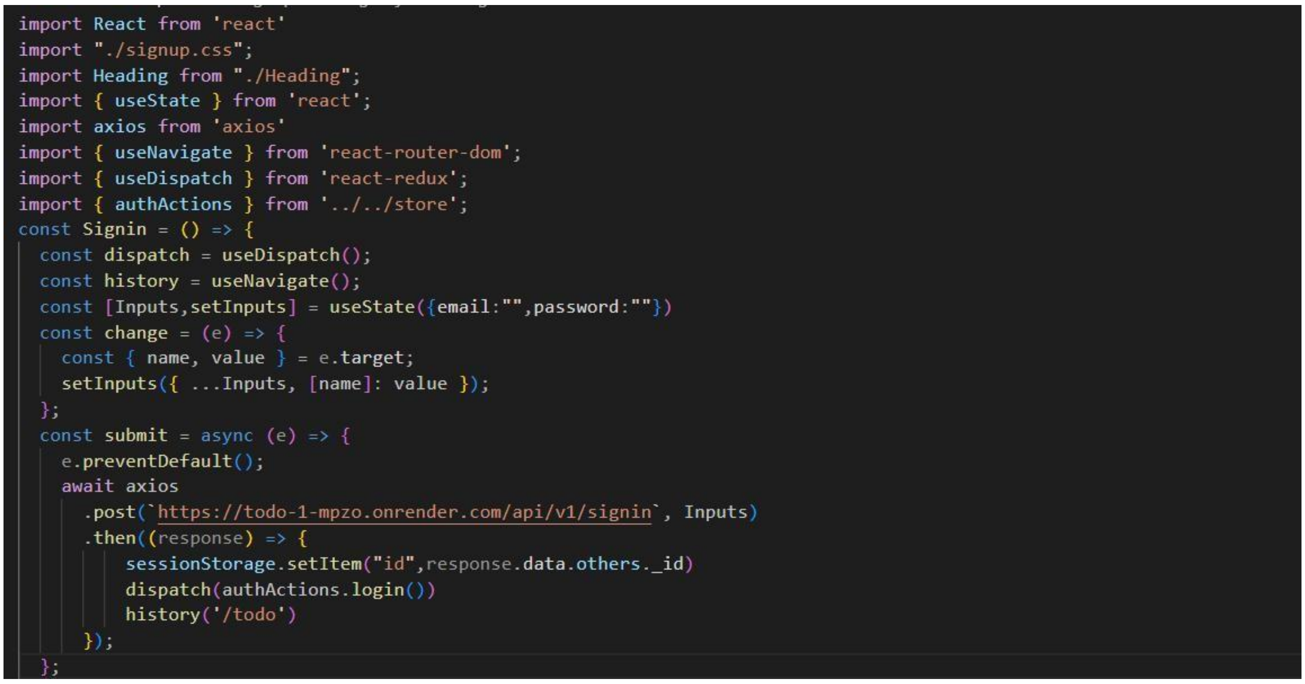


```
  return (
    <div className="signup">
      <div className="container">
        <div className="row">
          <div className="col-lg-8 column d-flex justify-content-center align-items-center">
            <div className="d-flex flex-column w-100 p-3">
              <input
                type="email"
                placeholder="Enter Your Email"
                className="p-2 my-3 input-signup"
                name="email"
                onChange={change}
                value={Inputs.email}
              />
              <input
                type="username"
                placeholder="Enter Your Username"
                className="p-2 my-3 input-signup"
                name="username"
                onChange={change}
                value={Inputs.username}
              />
              <input
                type="password"
                placeholder="Enter Your Password"
                className="p-2 my-3 input-signup"
                name="password"
                onChange={change}
                value={Inputs.password}
              />
              <button className="btn-signup p-2" onClick={submit}>
                Sign Up
              </button>
            </div>
          </div>
          <div className="col-lg-4 column col-left d-lg-flex justify-content-center align-items-center d-none">
            <Heading first="Sign" second="Up"></Heading>
          </div>
        </div>
```



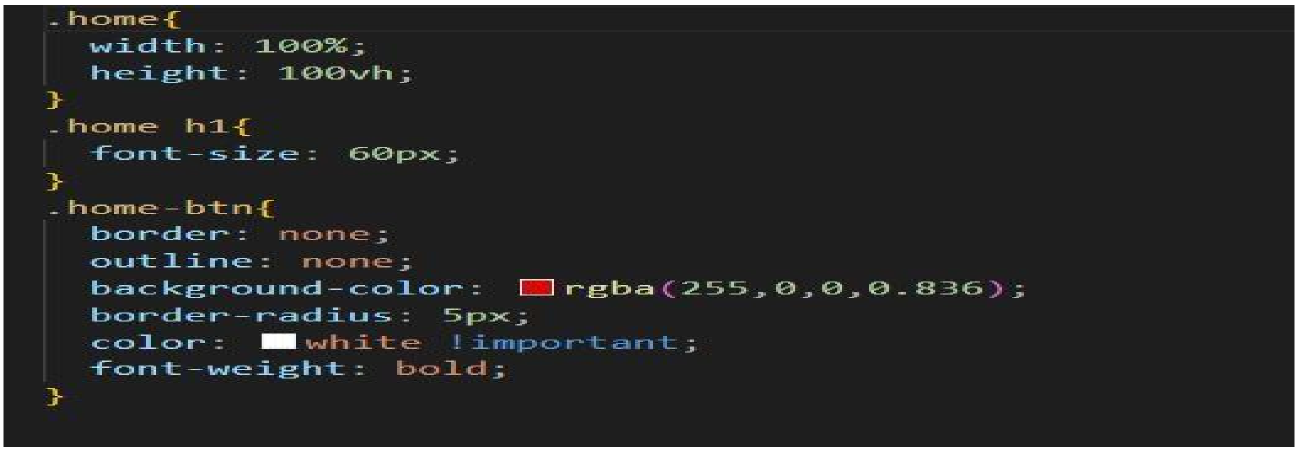
```
      </div>
    </div>
  );
};

export default Signup;
```

SignIn Component:



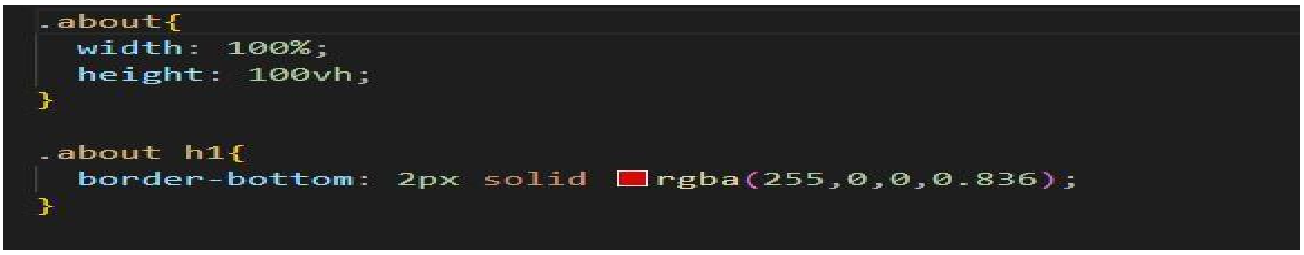
```
import React from 'react'
import "./signup.css";
import Heading from "./Heading";
import { useState } from 'react';
import axios from 'axios'
import { useNavigate } from 'react-router-dom';
import { useDispatch } from 'react-redux';
import { authActions } from '../../store';
const Signin = () => {
  const dispatch = useDispatch();
  const history = useNavigate();
  const [Inputs,setInputs] = useState({email:"",password:""})
  const change = (e) => {
    const { name, value } = e.target;
    setInputs({ ...Inputs, [name]: value });
  };
  const submit = async (e) => {
    e.preventDefault();
    await axios
      .post(`https://todo-1-mpzo.onrender.com/api/v1/signin`, Inputs)
      .then((response) => {
        sessionStorage.setItem("id",response.data.others._id)
        dispatch(authActions.login())
        history('/todo')
      });
  };
```

Home CSS:



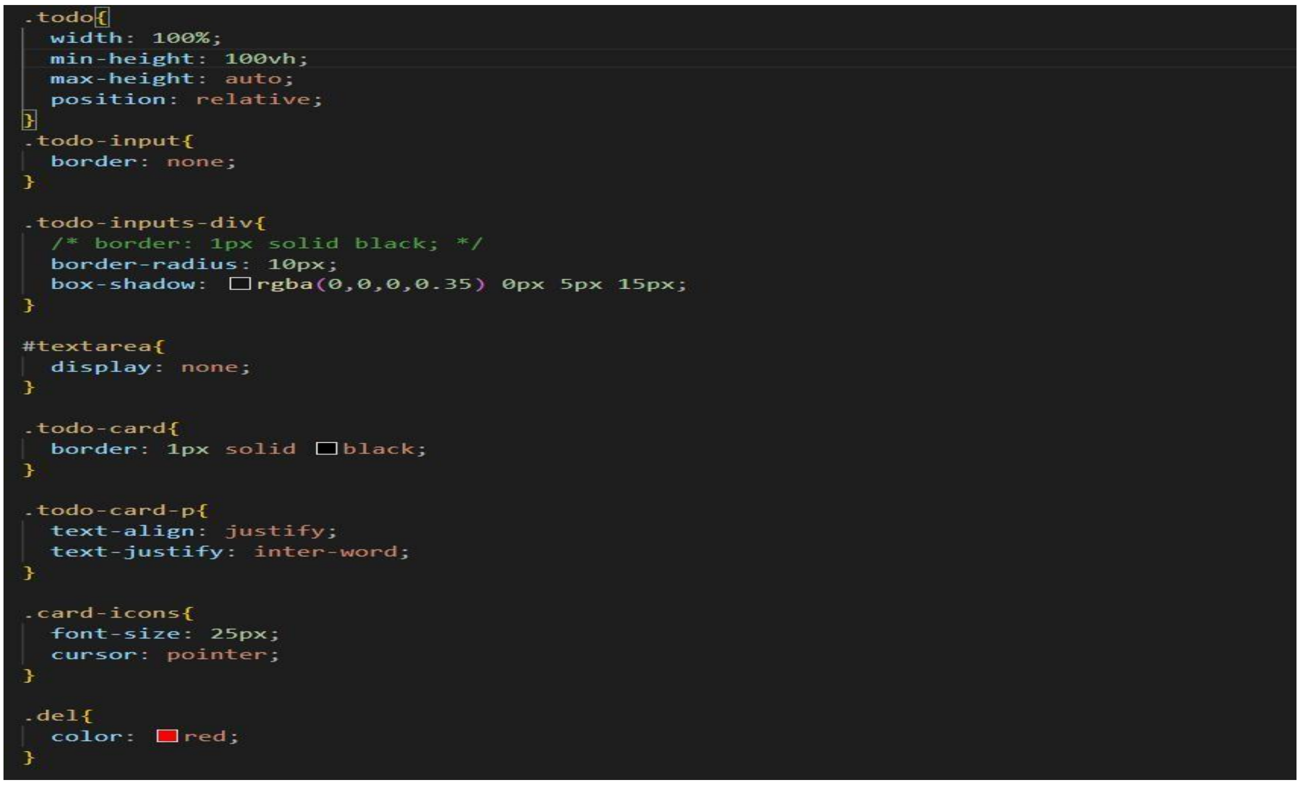
```css
.home{
   width: 100%;
   height: 100vh;
}
.home h1{
   font-size: 60px;
}
.home-btn{
   border: none;
   outline: none;
   background-color: rgba(255,0,0,0.836);
   border-radius: 5px;
   color: white !important;
   font-weight: bold;
}
```

About CSS:



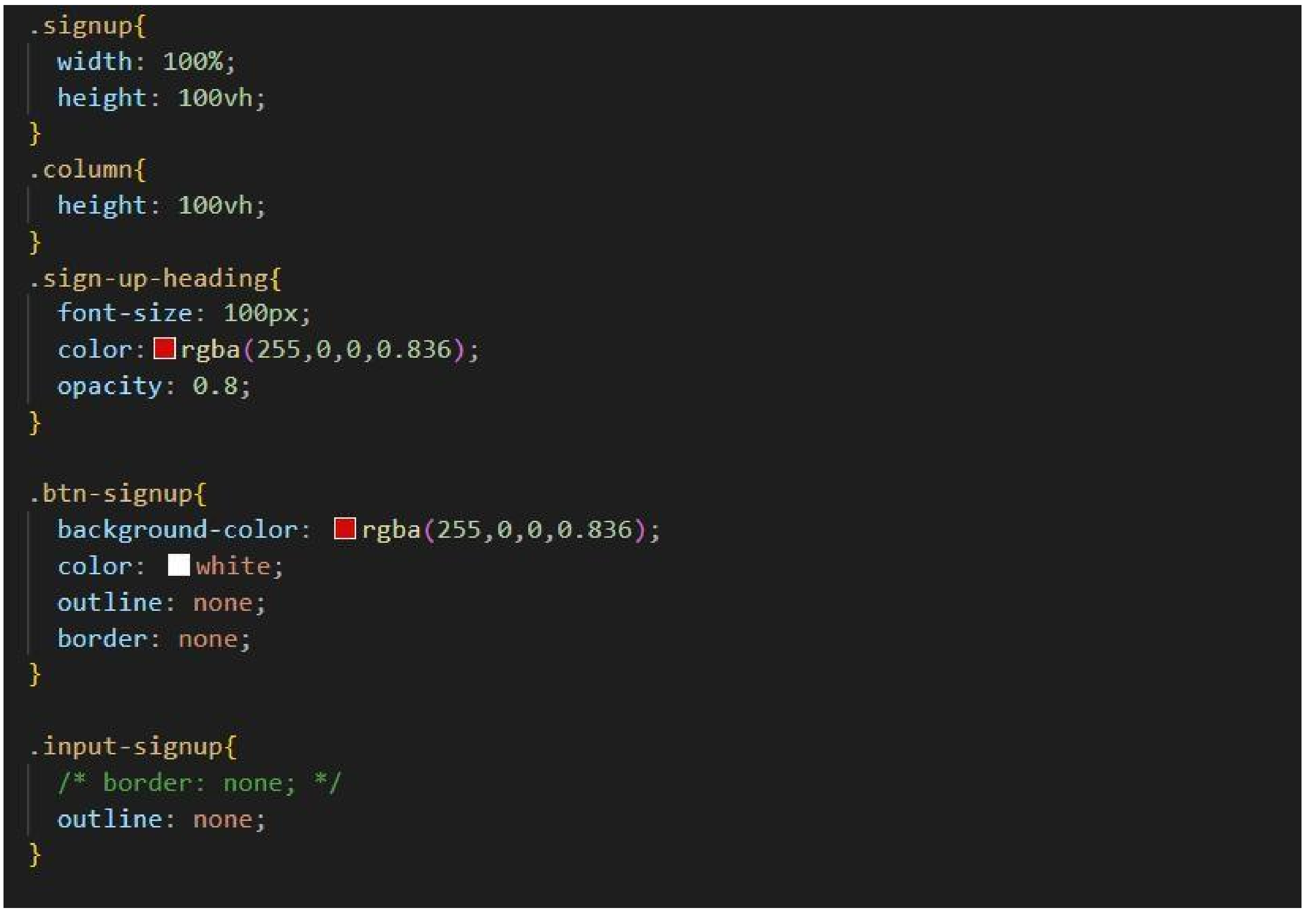
```css
.about{
   width: 100%;
   height: 100vh;
}

.about h1{
   border-bottom: 2px solid rgba(255,0,0,0.836);
}
```

Todo CSS:



```css
.todo{
   width: 100%;
   min-height: 100vh;
   max-height: auto;
   position: relative;
}
.todo-input{
   border: none;
}

.todo-inputs-div{
   /* border: 1px solid black; */
   border-radius: 10px;
   box-shadow: rgba(0,0,0,0.35) 0px 5px 15px;
}

#textarea{
   display: none;
}

.todo-card{
   border: 1px solid black;
}

.todo-card-p{
   text-align: justify;
   text-justify: inter-word;
}

.card-icons{
   font-size: 25px;
   cursor: pointer;
}

.del{
   color: red;
}
```

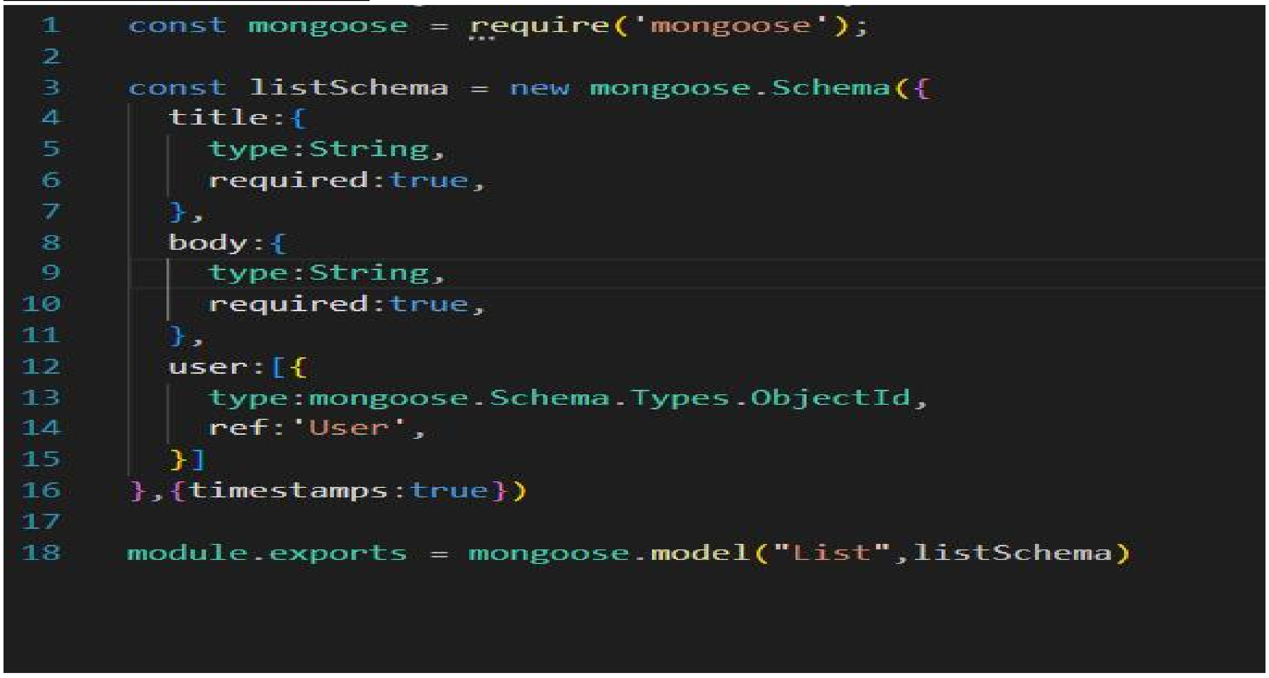
SignUp CSS:



```css
.signup{
  width: 100%;
  height: 100vh;
}
.column{
  height: 100vh;
}
.sign-up-heading{
  font-size: 100px;
  color: rgba(255,0,0,0.836);
  opacity: 0.8;
}

.btn-signup{
  background-color: rgba(255,0,0,0.836);
  color: white;
  outline: none;
  border: none;
}

.input-signup{
  /* border: none; */
  outline: none;
}
```

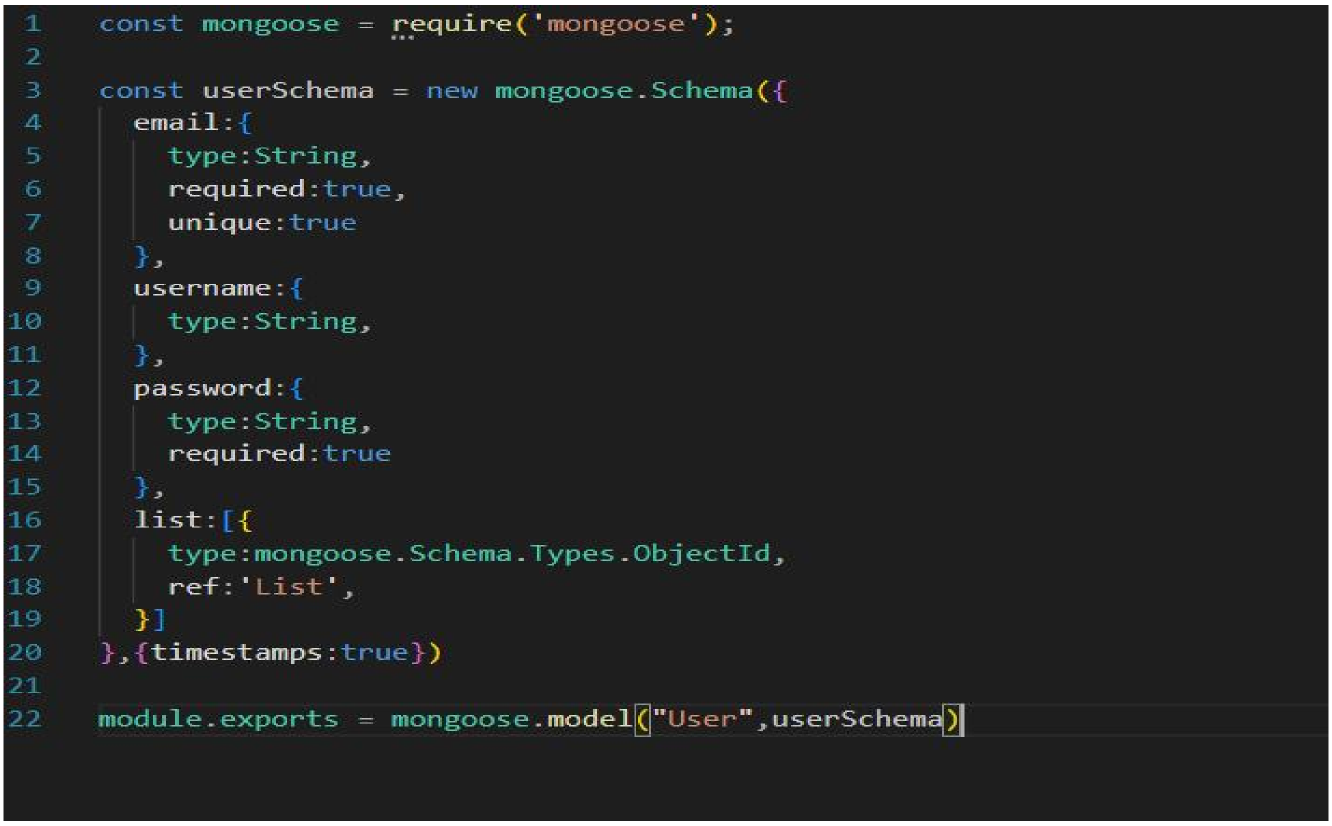
BACKEND:

List Schema Model:



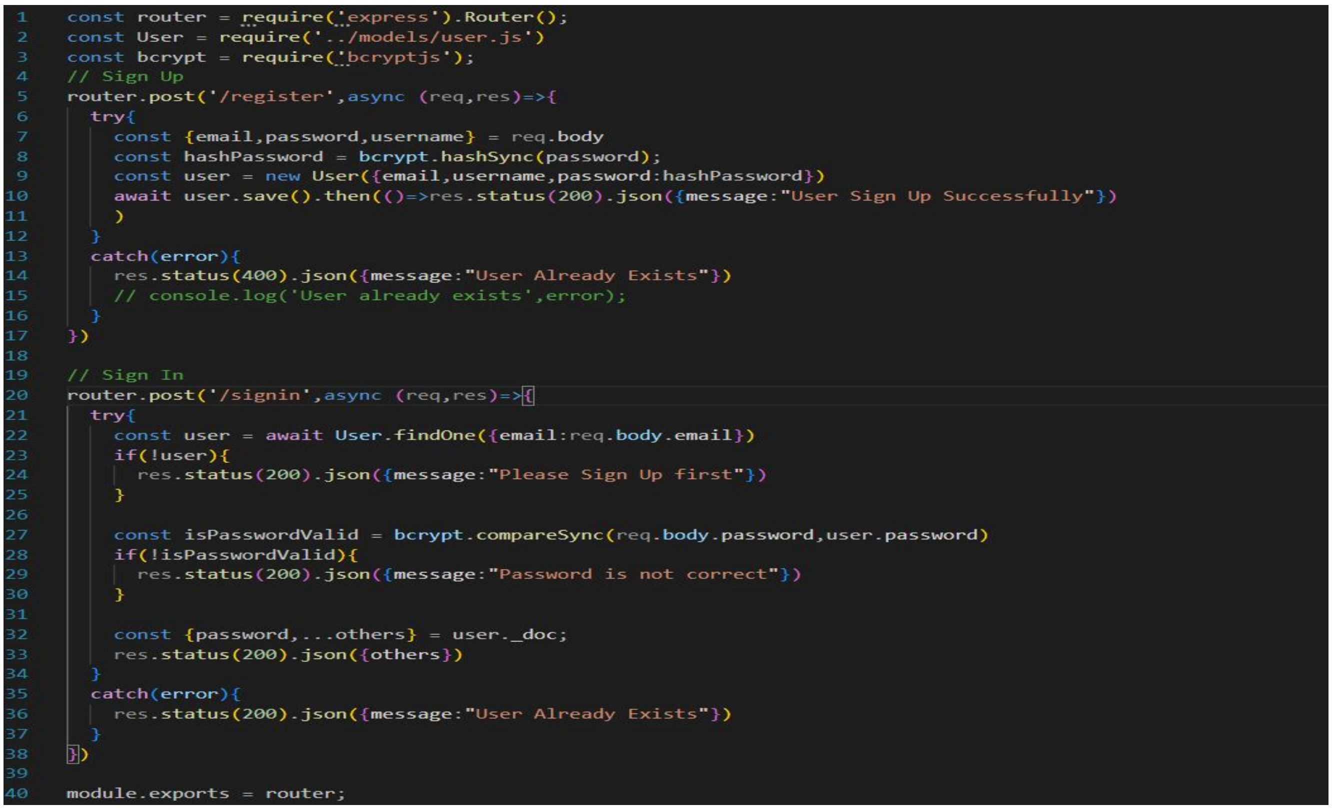
```
const mongoose = require('mongoose');

const listSchema = new mongoose.Schema({
    title:{
        type:String,
        required:true,
    },
    body:{
        type:String,
        required:true,
    },
    user:[{
        type:mongoose.Schema.Types.ObjectId,
        ref:'User',
    }]
},{timestamps:true})

module.exports = mongoose.model("List",listSchema)
```

User Schema Model:



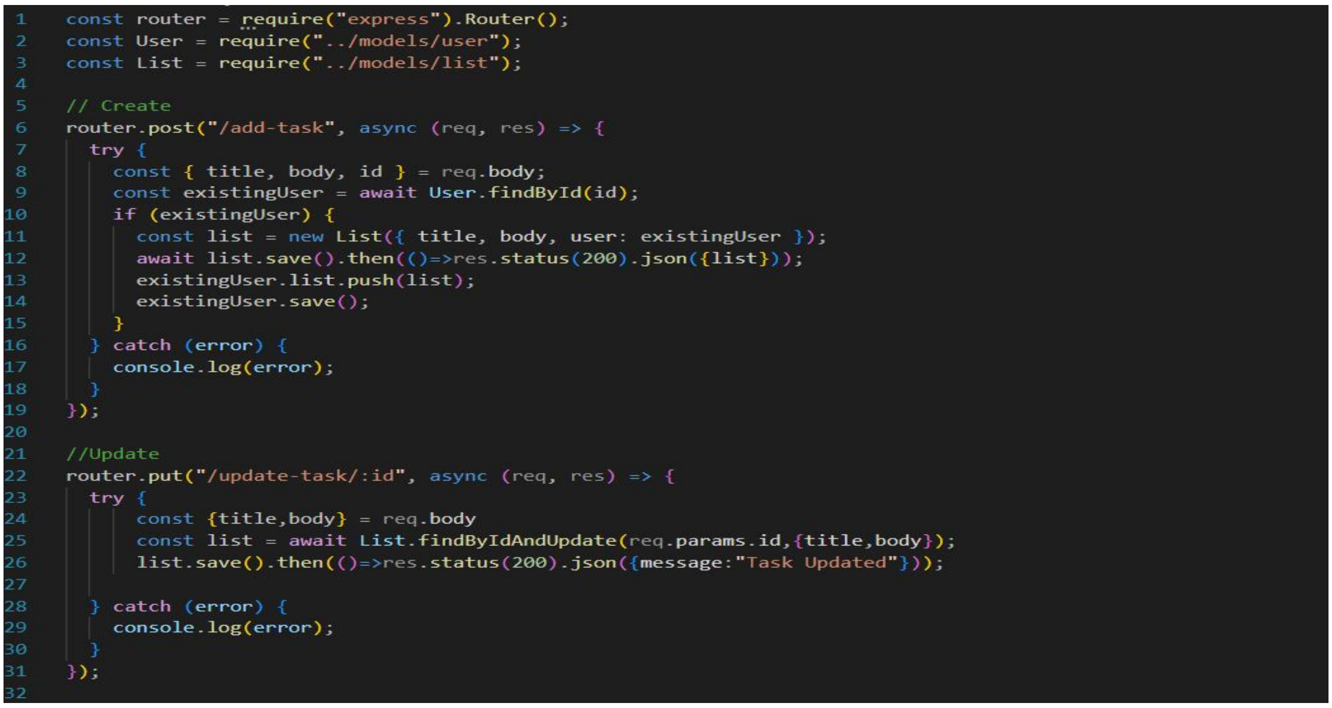
```
const mongoose = require('mongoose');

const userSchema = new mongoose.Schema({
  email:{
    type:String,
    required:true,
    unique:true
  },
  username:{
    type:String,
  },
  password:{
    type:String,
    required:true
  },
  list:[{
    type:mongoose.Schema.Types.ObjectId,
    ref:'List',
  }]
},{timestamps:true})

module.exports = mongoose.model("User",userSchema)
```

Authentication Route:

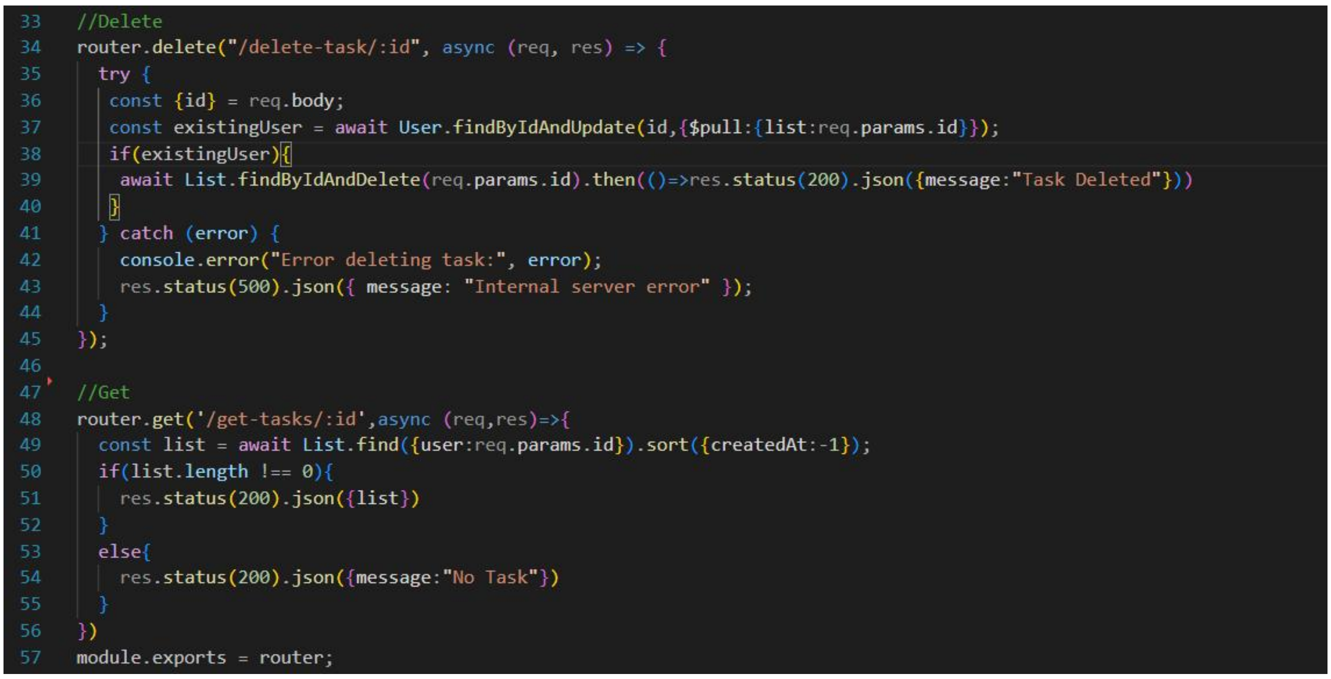


```
const router = require('express').Router();
const User = require('../models/user.js')
const bcrypt = require('bcryptjs');
// Sign Up
router.post('/register',async (req,res)=>{
  try{
    const {email,password,username} = req.body
    const hashPassword = bcrypt.hashSync(password);
    const user = new User({email,username,password:hashPassword})
    await user.save().then(()=>res.status(200).json({message:"User Sign Up Successfully"})
    )
  }
  catch(error){
    res.status(400).json({message:"User Already Exists"})
    // console.log('User already exists',error);
  }
})

// Sign In
router.post('/signin',async (req,res)=>{
  try{
    const user = await User.findOne({email:req.body.email})
    if(!user){
      res.status(200).json({message:"Please Sign Up first"})
    }

    const isPasswordValid = bcrypt.compareSync(req.body.password,user.password)
    if(!isPasswordValid){
      res.status(200).json({message:"Password is not correct"})
    }

    const {password,...others} = user._doc;
    res.status(200).json({others})
  }
  catch(error){
    res.status(200).json({message:"User Already Exists"})
  }
})

module.exports = router;
```

List Route:

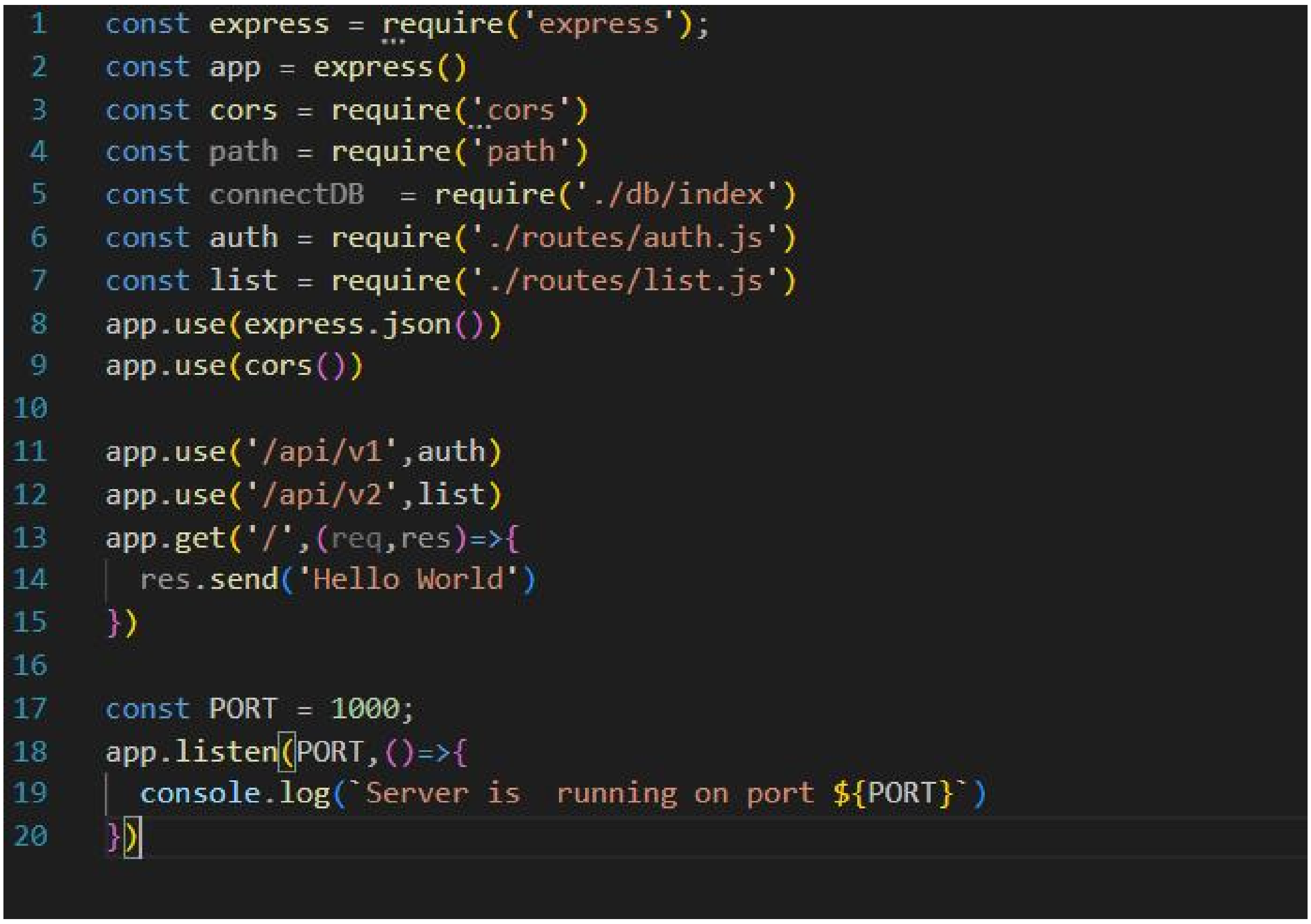


```
const router = require("express").Router();
const User = require("../models/user");
const List = require("../models/list");

// Create
router.post("/add-task", async (req, res) => {
  try {
    const { title, body, id } = req.body;
    const existingUser = await User.findById(id);
    if (existingUser) {
      const list = new List({ title, body, user: existingUser });
      await list.save().then(()=>res.status(200).json({list}));
      existingUser.list.push(list);
      existingUser.save();
    }
  } catch (error) {
    console.log(error);
  }
});

//Update
router.put("/update-task/:id", async (req, res) => {
  try {
      const {title,body} = req.body
      const list = await List.findByIdAndUpdate(req.params.id,{title,body});
      list.save().then(()=>res.status(200).json({message:"Task Updated"}));

  } catch (error) {
    console.log(error);
  }
});
```



```
//Delete
router.delete("/delete-task/:id", async (req, res) => {
  try {
    const {id} = req.body;
    const existingUser = await User.findByIdAndUpdate(id,{$pull:{list:req.params.id}});
    if(existingUser){
      await List.findByIdAndDelete(req.params.id).then(()=>res.status(200).json({message:"Task Deleted"}))
    }
  } catch (error) {
    console.error("Error deleting task:", error);
    res.status(500).json({ message: "Internal server error" });
  }
});

//Get
router.get('/get-tasks/:id',async (req,res)=>{
  const list = await List.find({user:req.params.id}).sort({createdAt:-1});
  if(list.length !== 0){
    res.status(200).json({list})
  }
  else{
    res.status(200).json({message:"No Task"})
  }
})
module.exports = router;
```

App Route:

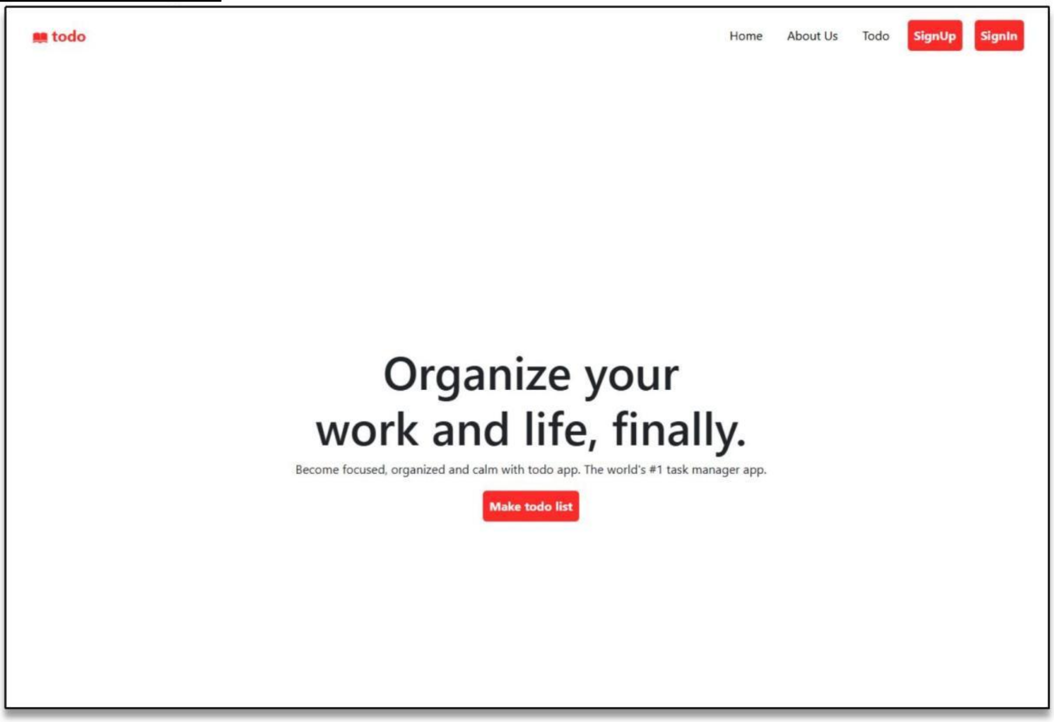


```
const express = require('express');
const app = express()
const cors = require('cors')
const path = require('path')
const connectDB  = require('./db/index')
const auth = require('./routes/auth.js')
const list = require('./routes/list.js')
app.use(express.json())
app.use(cors())

app.use('/api/v1',auth)
app.use('/api/v2',list)
app.get('/',(req,res)=>{
  res.send('Hello World')
})

const PORT = 1000;
app.listen(PORT,()=>{
  console.log(`Server is  running on port ${PORT}`)
})
```

OUTPUT SCREEN

LINK: https://arindamtodo.netlify.app/

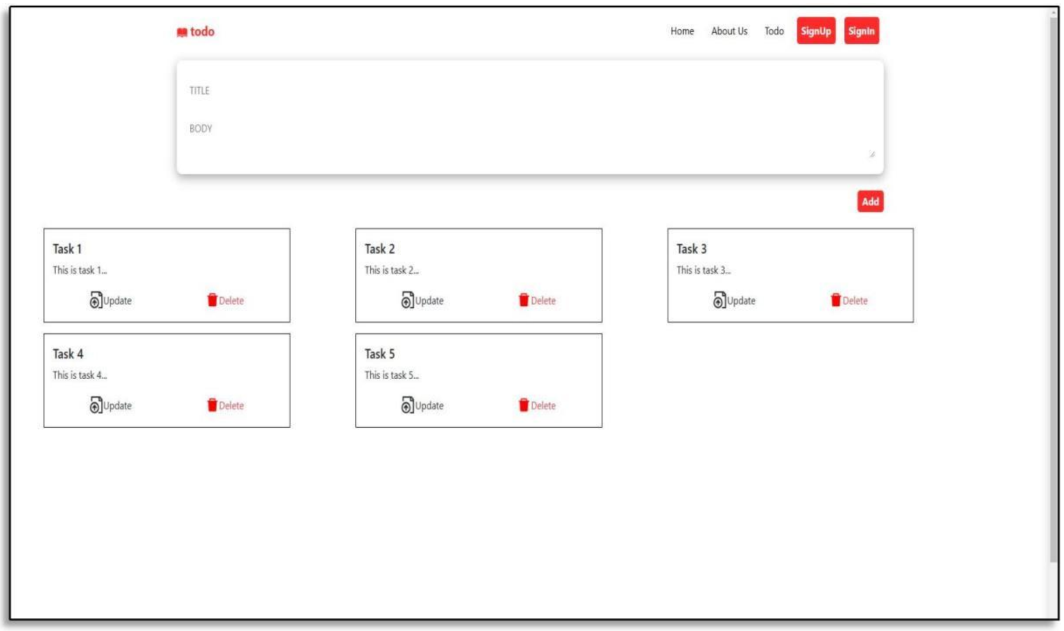
Home Page:



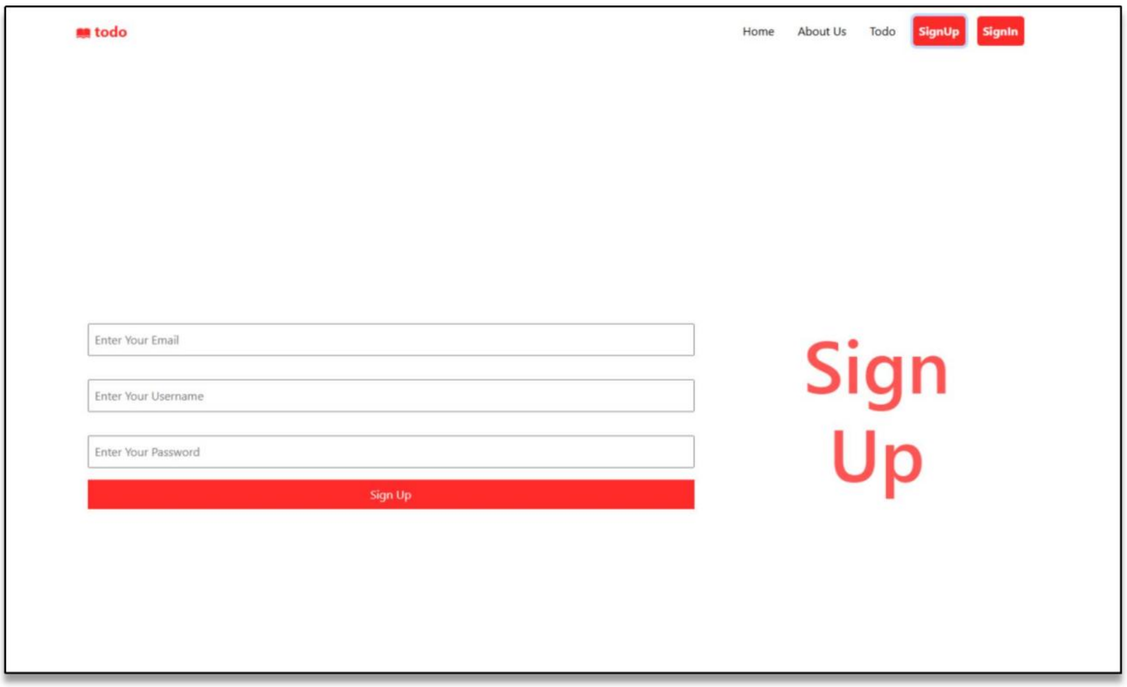
Organize your
work and life, finally.

Become focused, organized and calm with todo app. The world's #1 task manager app.

Todo Page:



SignUp Page:


todo
Home
About Us
Todo
SignUp
SignIn
Enter Your Email
Enter Your Username
Enter Your Password
Sign Up
Sign Up

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