MERN stack powered by MongoDB

Project Documentation

Introduction

Project Title: LearnHub

Team Members:

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2.	Balachandar S	412721104007	A58E5EEAA518FF4BE3743FF4DEA696D0	Frontend
3.	Dayanithi M	412721104009	2E6CCD61AB2AA0286B044A5C1C459B47	Frontend
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Project Overview

Purpose:

LearnHub is an online learning platform designed to connect students and instructors in a collaborative learning environment. The platform facilitates course creation, student enrollment, and a discussion forum, providing a user-friendly interface for seamless learning.

Features:

- **Student/User:**
  - Signup with email verification and OTP-based password reset.
  - View all available courses and access enrolled courses.
  - Discussion forum for creating or continuing threads.
  - Editable profile except for email.
- **Instructor:**
  - Create, edit, and delete courses.
  - Upload course sections, including videos and descriptions.
  - View enrolled students for their courses.
  - Editable profile except for email.

    - **Admin:**
        - View all registered users, instructors, and courses.
        - Delete courses if necessary.
        - Popup view for instructor-specific courses.
- **Exclusions:**
    - No payment gateway (replaced with a dummy page).
    - Admin login not implemented (accessed via route).

Architecture

Frontend:

- Developed using **React**, styled with **Bootstrap**, and built with **Vite** for optimized performance.
- Responsive design ensures usability across devices.

Backend:

- Built using **Node.js** and **Express.js** to handle APIs and business logic.
- Middleware includes:
    - **bcryptjs** for password hashing.
    - **jsonwebtoken** for authentication.
    - **Multer** for file handling.

Database:

- **MongoDB** as the database solution, implemented with **Mongoose** for schema design and data interaction.

Setup Instructions

Prerequisites:

- Node.js
- MongoDB Atlas Account
- Cloudinary account for image and video storage.

Installation:

1. **Clone the repository:**

   git clone https://github.com/dk172923/online-learning-platform

   cd online-learning-platform

2. **Install dependencies:**
   - **Frontend:**

     cd client

     npm install
   - **Backend:**

     cd server

     npm install

3. **Set up environment variables:**
   - Create **.env** file in the **server** folder with the following:

MONGODB_URI='mongodb+srv://dhineshkumar1729:qwertyuiop@cluster0.cwt4c.mongodb.net/?retryWrites=true&w=majority&appName=Cluster0'

JWT_SECRET='t9843yt8hg0h8y834th893hy89h'

EMAIL_USER='dhineshkumar24murugan007@gmail.com'

EMAIL_PASS='szlv xili ndrw qasg'

CLOUDINARY_CLOUD_NAME='dgosdgcem'

CLOUDINARY_API_KEY='695861773226449'

CLOUDINARY_API_SECRET='H7QShPl9ouKwmBTdrmnFihgaIIU'

   - Create .**env.local** file in the **client** folder with the following:

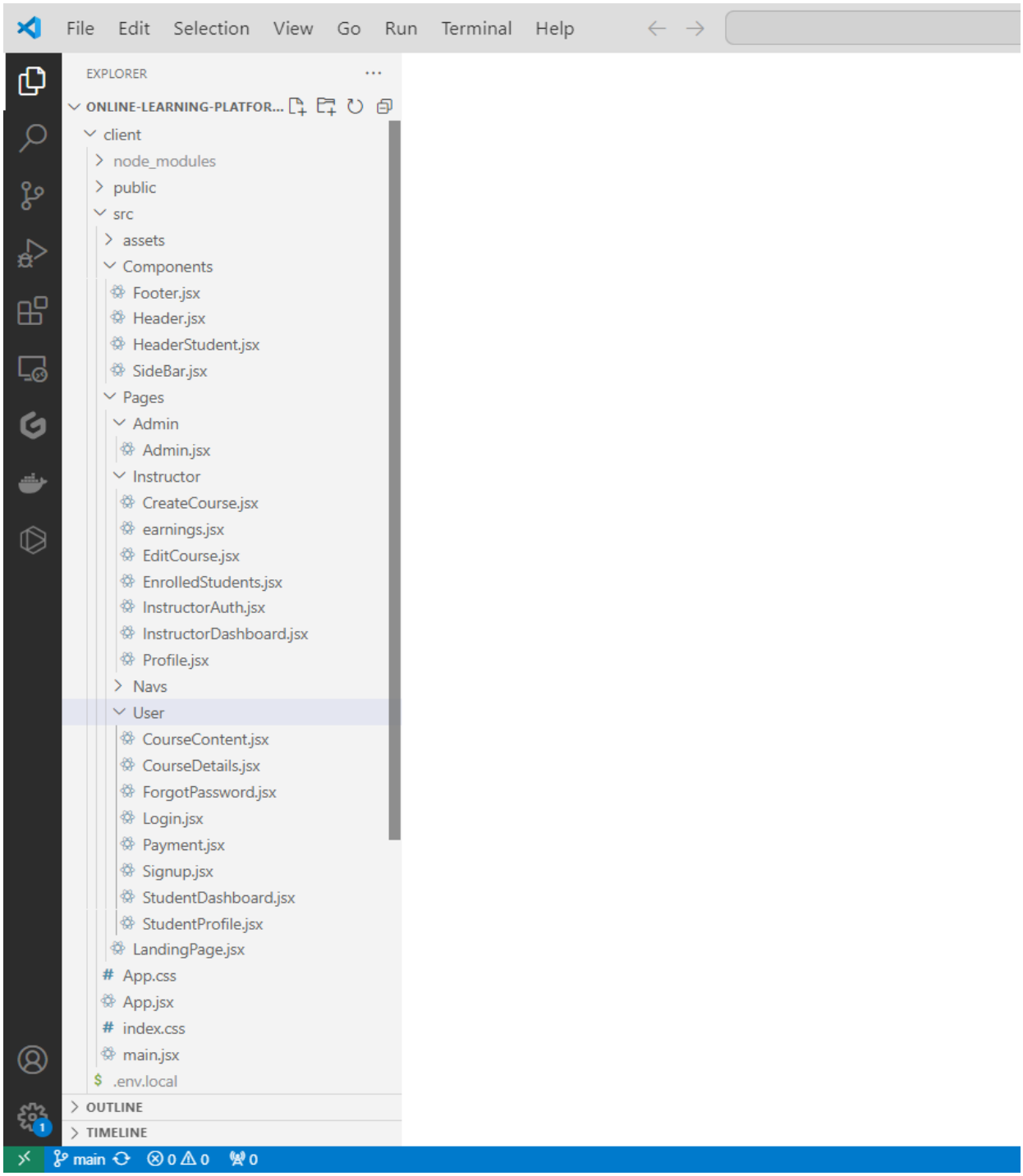
VITE_REACT_APP_BACKEND_BASEURL=http://localhost:5000

Folder Structure

Client (Frontend):

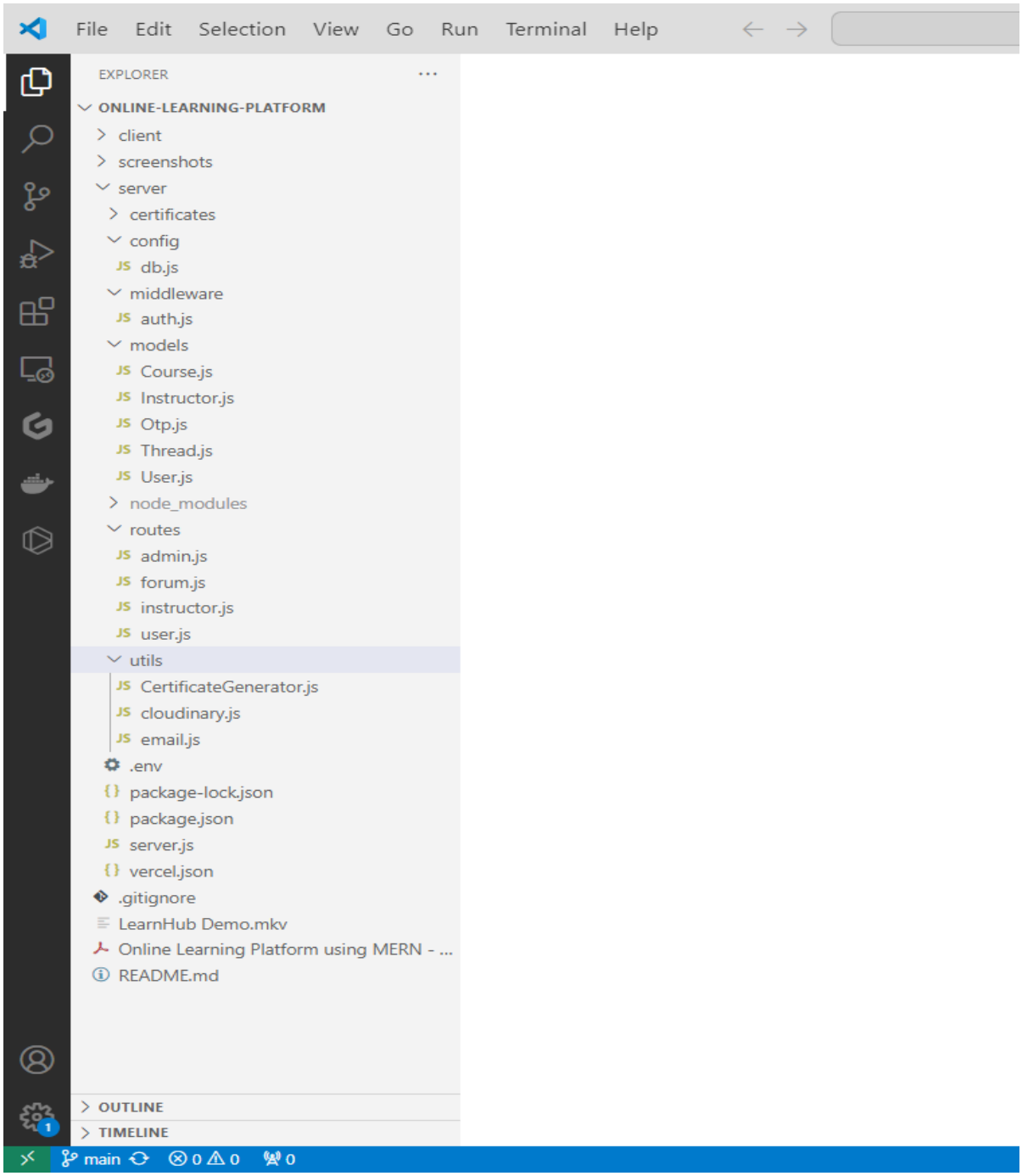
- **src/:** Contains all React components, pages, and assets.
  - **Components/:** Reusable UI components such as Footer, Header, HeaderStudent and SideBar

- **Pages/:** Folders such as Admin, User, Instructor and Navs containing Pages for different aspects of the application.



Server (Backend):

- **routes/:** Defines API routes for users, instructors, forums, and admin.
- **models/:** MongoDB schemas for Users, Courses, Instructor, Thread and OTP.
- **middleware/:** Authentication using jwt token.
- **utils/:** Contains the Cloudinary API and Certificate Generation code.



Running the Application

- **Frontend:**

  cd client

  npm run dev

- **Backend:**

  cd server

  nodemon server.js (or) node server.js

API Documentation

User Routes:

- **POST /signup**: Register a new user.
- **POST /login**: Login user.
- **GET /verify-email:** To verify the newly registered user.
- **POST /forgot-password**: Send OTP for password reset.
- **POST /verify-otp:** To verify the OTP for changing password.
- **POST /update-password:** Changes the password of the user.
- **PUT /addCourse:** For adding the course to the purchased course list.
- **GET /student/:userEmail:** For fetching the users' profile.
- **PUT /student/:userEmail:** To update the users' profile.
- **POST /upload-profile-image-user:** For updating/uploading the profile image.
- **GET /name:** To fetch the user's name using the email id.
- **GET /student-dashboard/courses:** Gets all the courses of the platform.
- **GET /student-dashboard/my-courses:** Fetch the courses enrolled by the user.
- **GET /course-content:** Get course content by courseId
- **POST /update-progress:** Mark section as completed & update last-viewed section
- **POST /generate-certificate:** To create and download the certificate after course completion.
- **POST /check-course-purchase:** Check whether the user is enrolled or not in a course.
- **GET /courses:** Fetch all courses for header student

- **GET /:email:** Fetch user by email to get purchased courses for header student
- **GET /instructors/:instructorEmail:** To fetch the instructor using email id
- **GET /courses/:coursed:** Fetch the specified course details

Instructor Routes:

- **POST /signup**: Register a new user.
- **POST /login**: Login user.
- **GET /verify-email-instructor:** To verify the newly registered user.
- **POST /forgot-password**: Send OTP for password reset.
- **POST /verify-otp:** To verify the OTP for changing password.
- **POST /update-password:** Changes the password of the user.
- **GET /:instructorEmail:** Fetches the instructor's profile
- **PUT /:instructorEmail:** Updates the instructor's profile
- **POST /upload-profile-image:** Uploads the instructor's profile image
- **GET /courses/:instructorEmail/:courseId/students:** Fetch students enrolled in a specific course, only for the instructor who created the course
- **GET /courses/:instructorEmail:** Fetch all courses taught by a specific instructor
- **POST /courses:** Get courses based on the instructor email id.
- **DELETE /courses/:id:** Delete course Route
- **GET /courses/edit-courses/:id:** Get course by ID Route
- **PUT /courses/:id:** Delete a course by its ID
- **POST /upload-video:** Video upload route using Cloudinary
- **POST /upload-image:** Image upload route using Cloudinary
- **POST /create-course:** To create a new course.

Admin Routes:

- **GET /users**: View all registered users.
- **GET /instructors:** View all registered instructors.
- **GET /courses:** Get all the courses in the platform
- **DELETE /courses/:id:** Delete a specific course.
- **GET /instructors/:email/courses:** To get the courses of any particular instructor.

Forums Routes:

- **GET /:courseId/threads:** Get all messages for a specific course's discussion thread
- **POST /:courseId/threads:** Post a new message to a specific course's discussion thread

Authentication

- **JWT (JSON Web Tokens):**
  - Tokens generated on successful login.
  - Middleware checks token validity for protected routes.
- **Email Verification:**
  - Verification link sent during signup using **Nodemailer**.
- **OTP-based Password Reset:**
  - OTP sent via email for secure password reset.

User Interface

- **Student Dashboard:** Displays enrolled courses, profile management, and discussion forum.
- **Instructor Dashboard:** Course creation tools and enrolled students' view.
- **Admin View:** User, instructor, and course management in a streamlined UI.

Testing

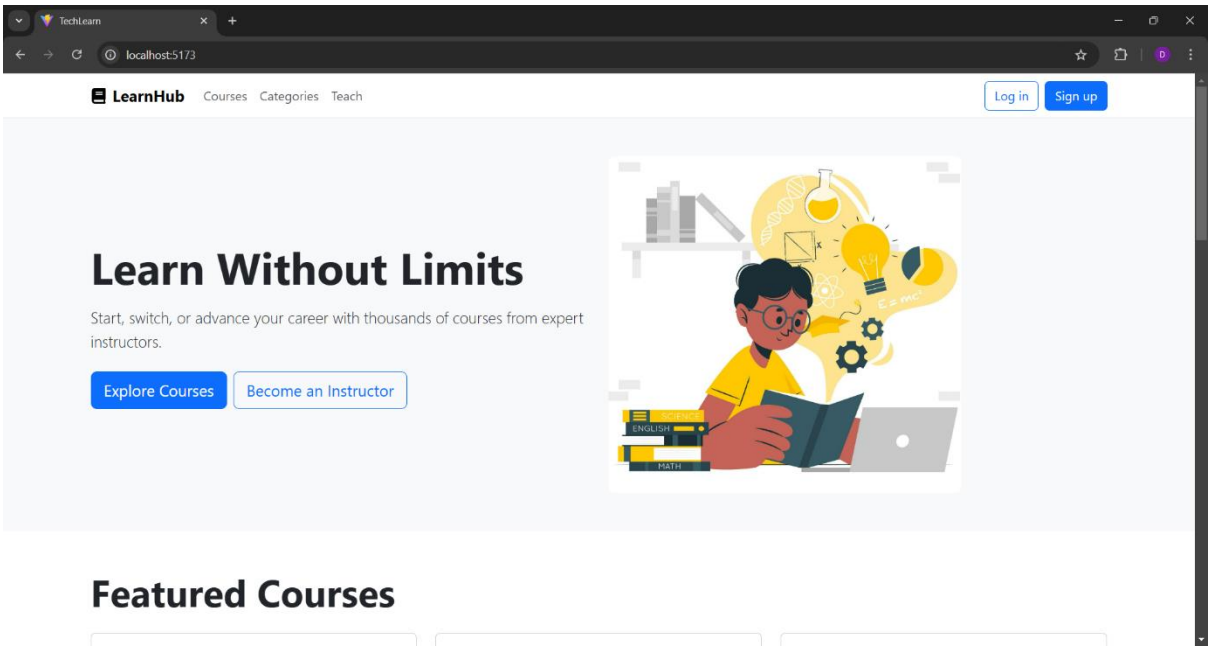
- **Manual Testing:** Verified all major functionalities including user signup, course creation, and discussion threads.
- **Postman:** Used for API endpoint testing.

Screenshots or Demo

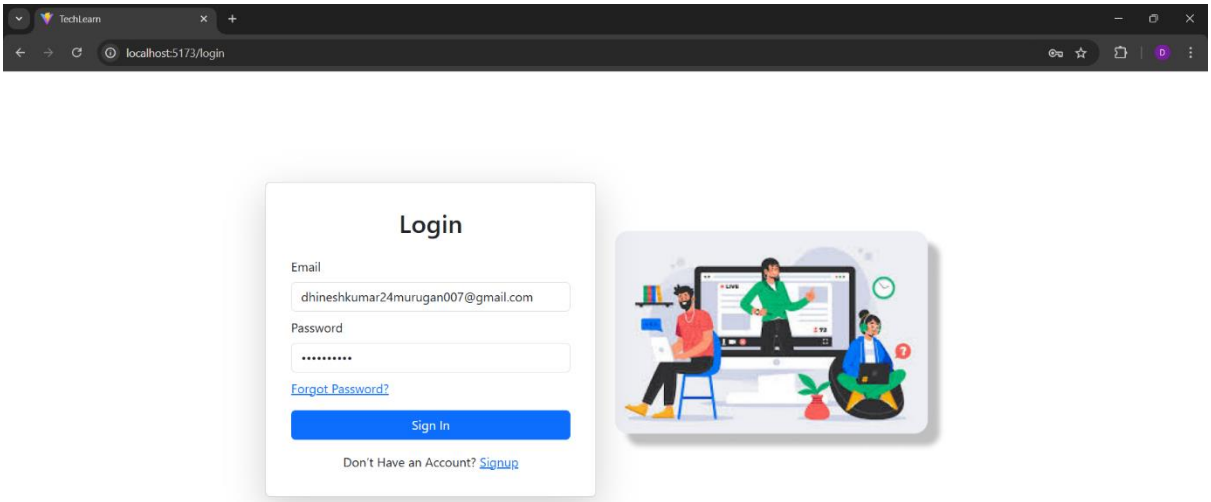
- **Demo Link:** https://drive.google.com/file/d/1Uxsi-6nVnCJHkIMTg7CFQtv2fTrNtNdR/view?usp=sharing

- **Screenshots:**

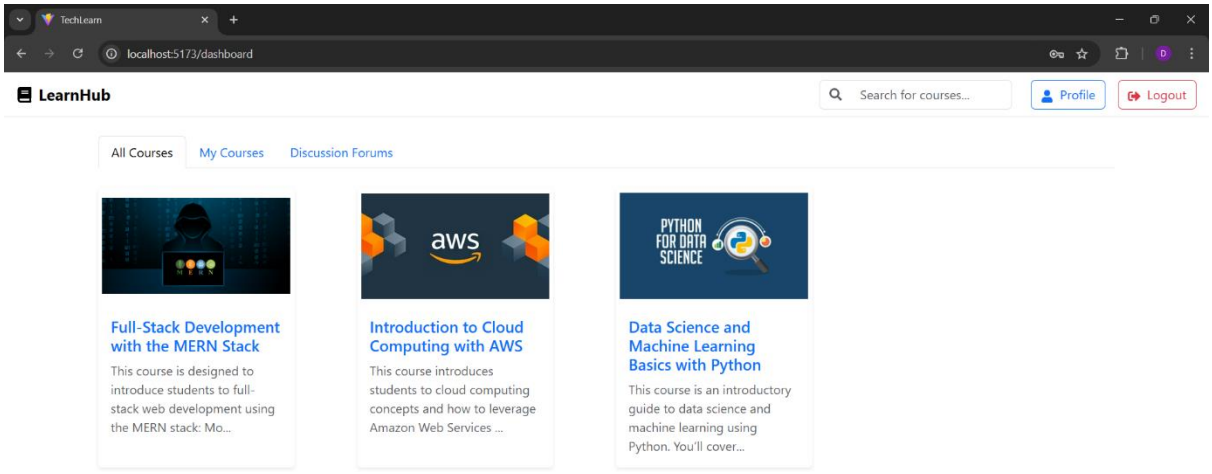
1. Landing Page



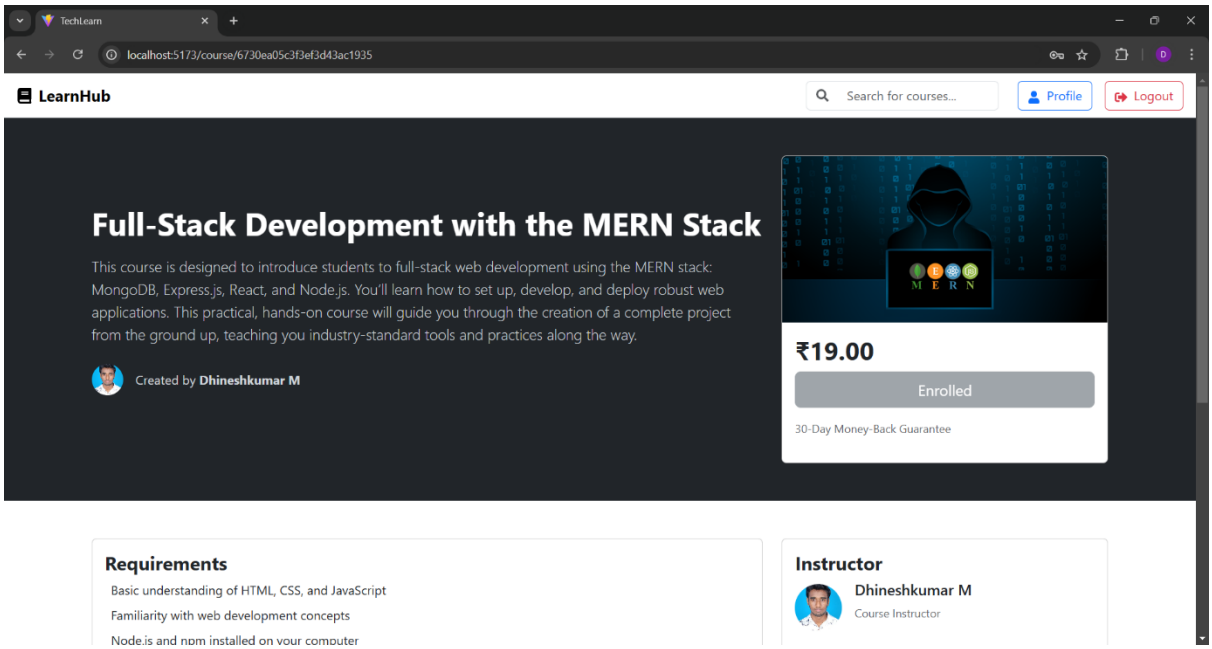
2. User Login



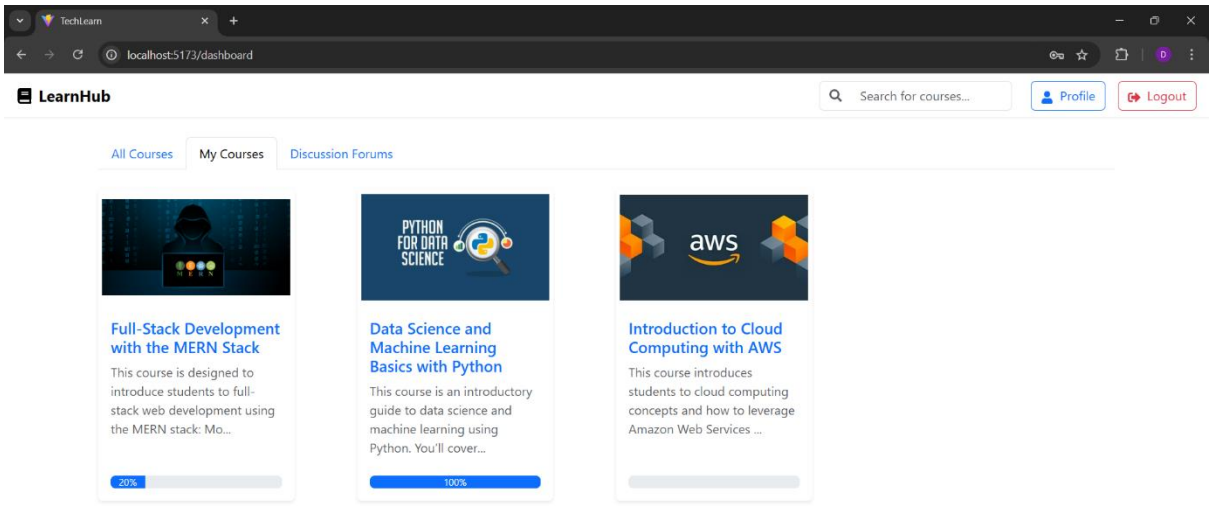
3. User Dashboard



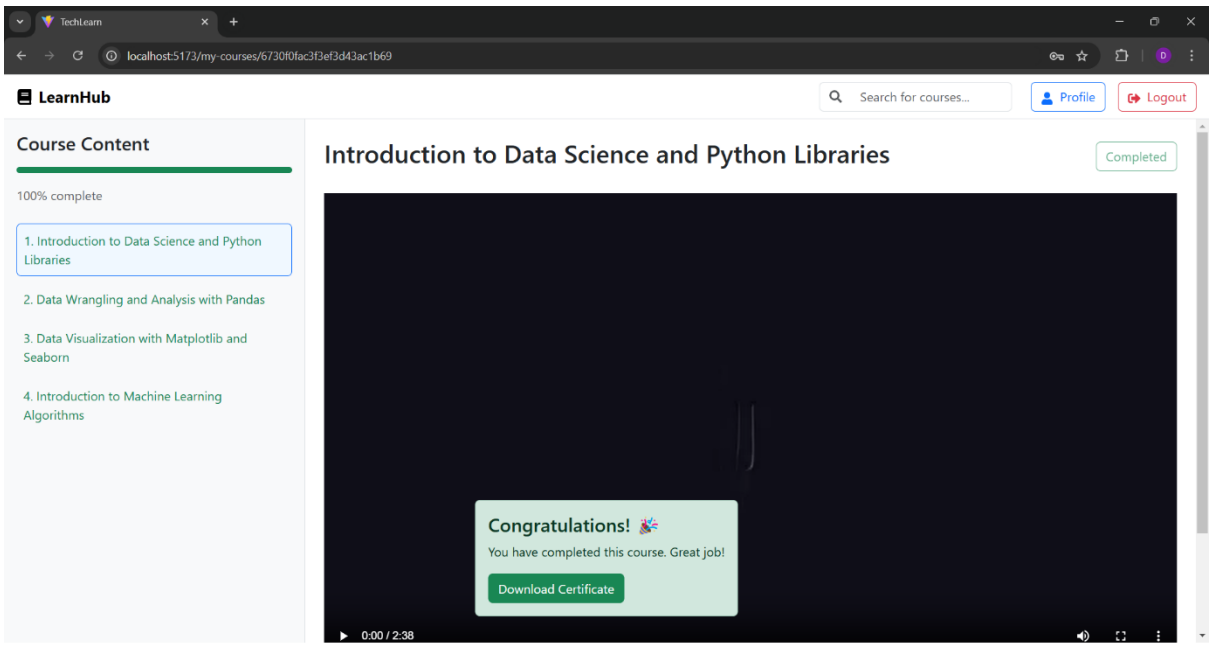
4. User Course Details



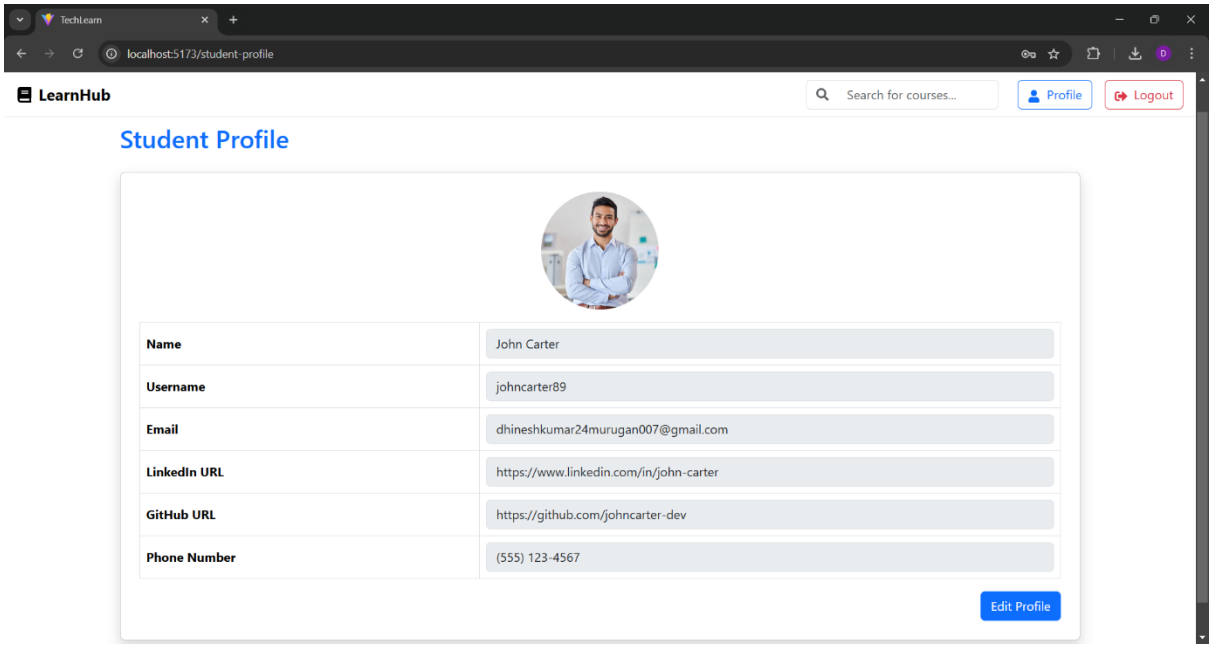
5. User My Courses Page



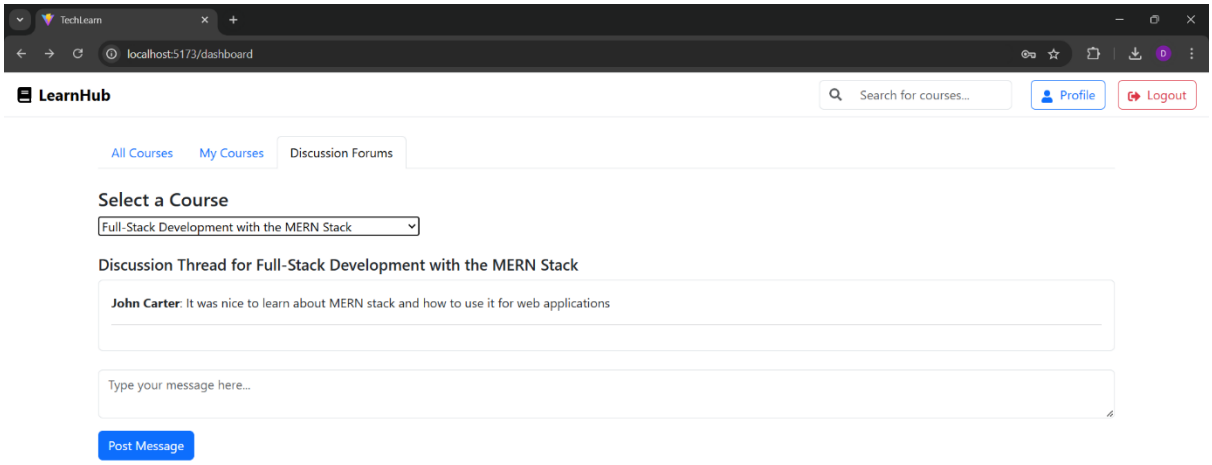
6. User Course Access



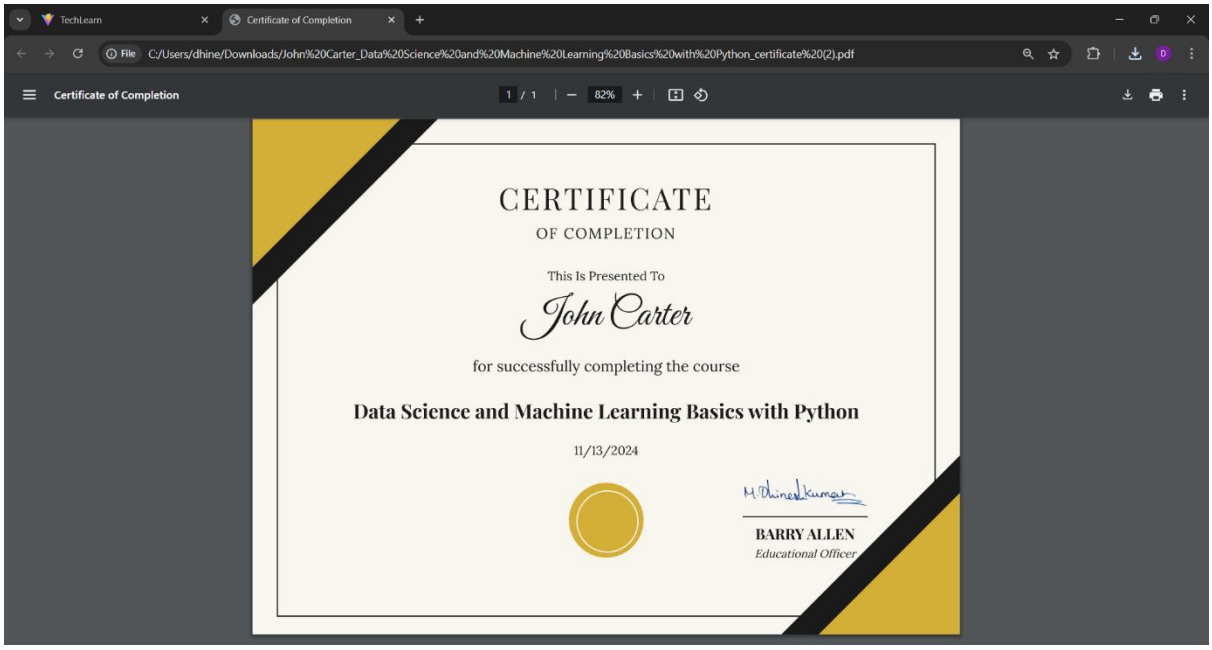
7. User Profile Page



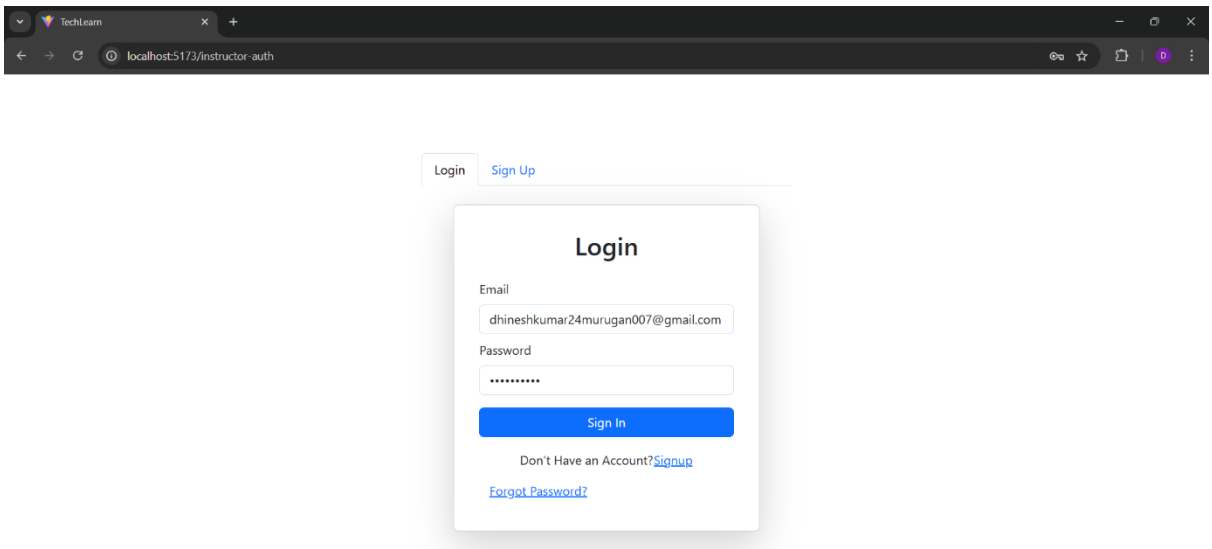
8. User Discussion Forums



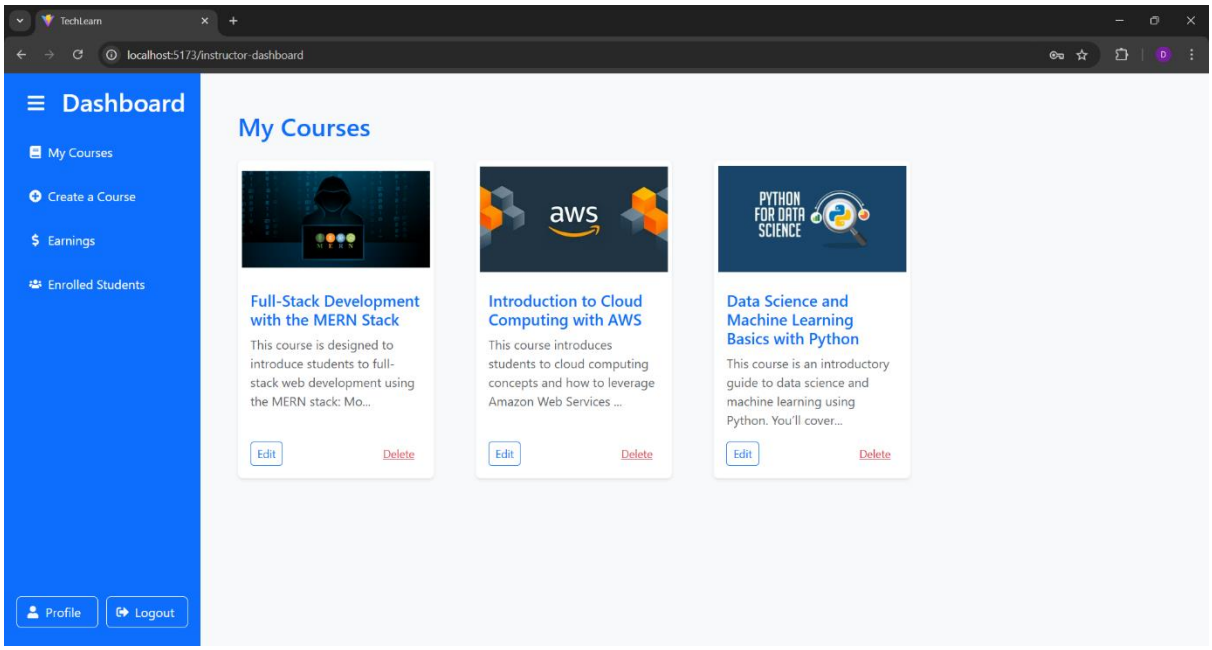
9. User Certificate



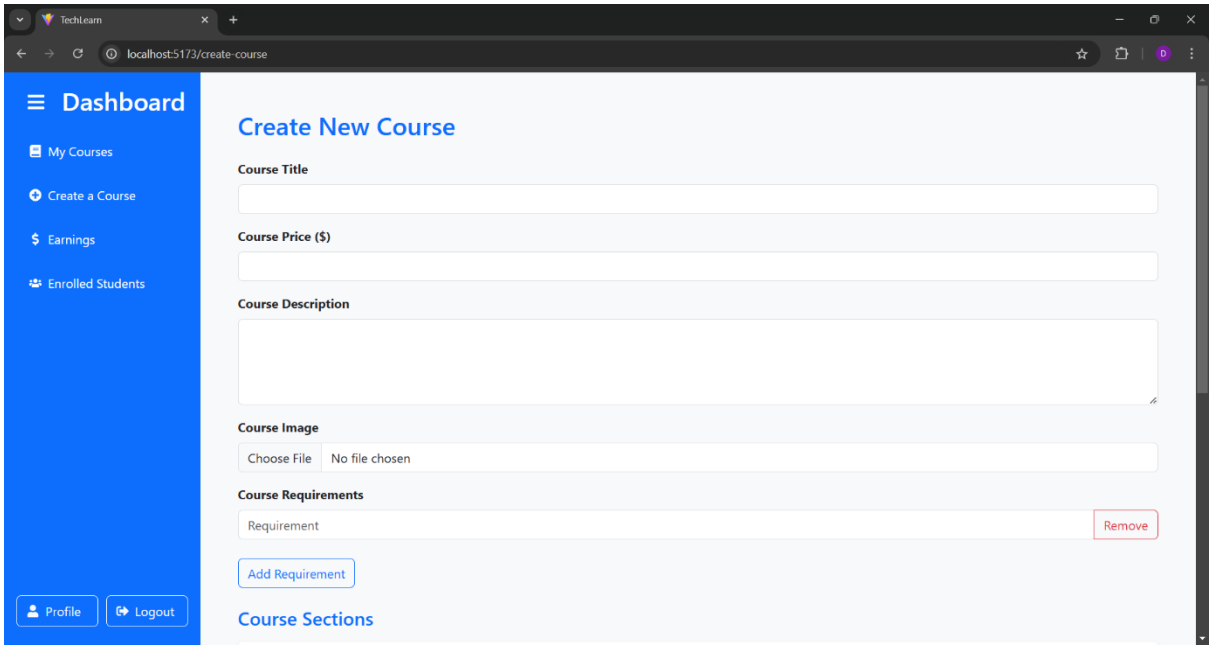
10. Instructor Login



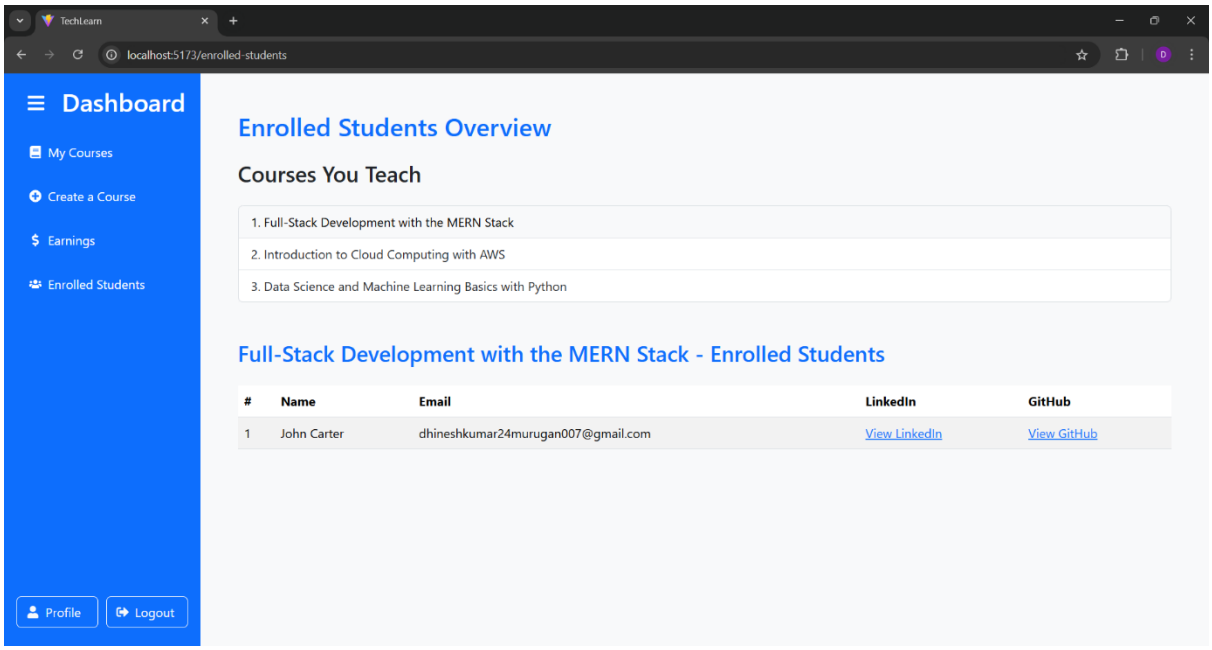
11. Instructor Dashboard



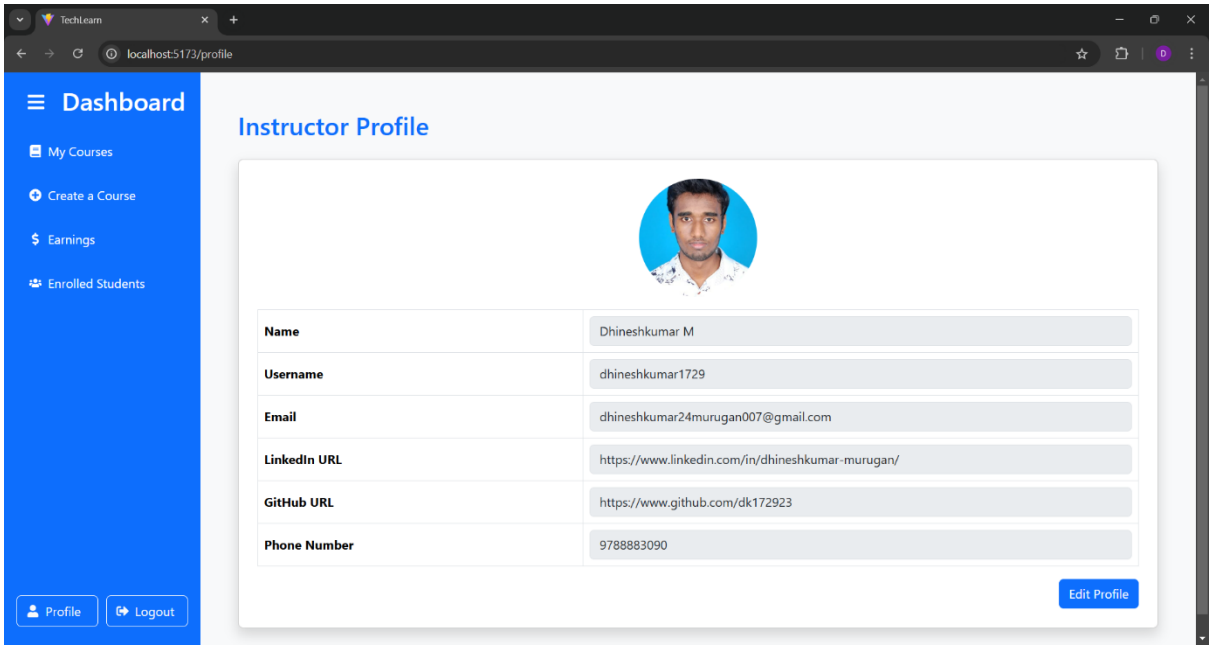
12. Instructor Course Creation



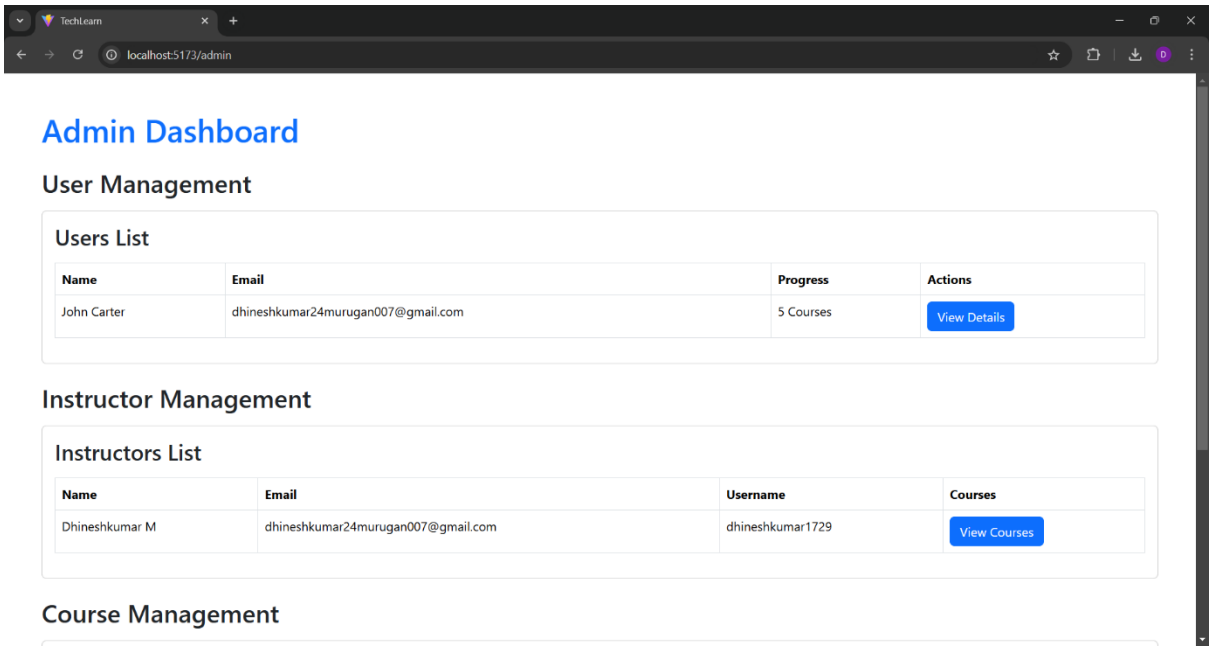
13. Instructor Enrolled Students



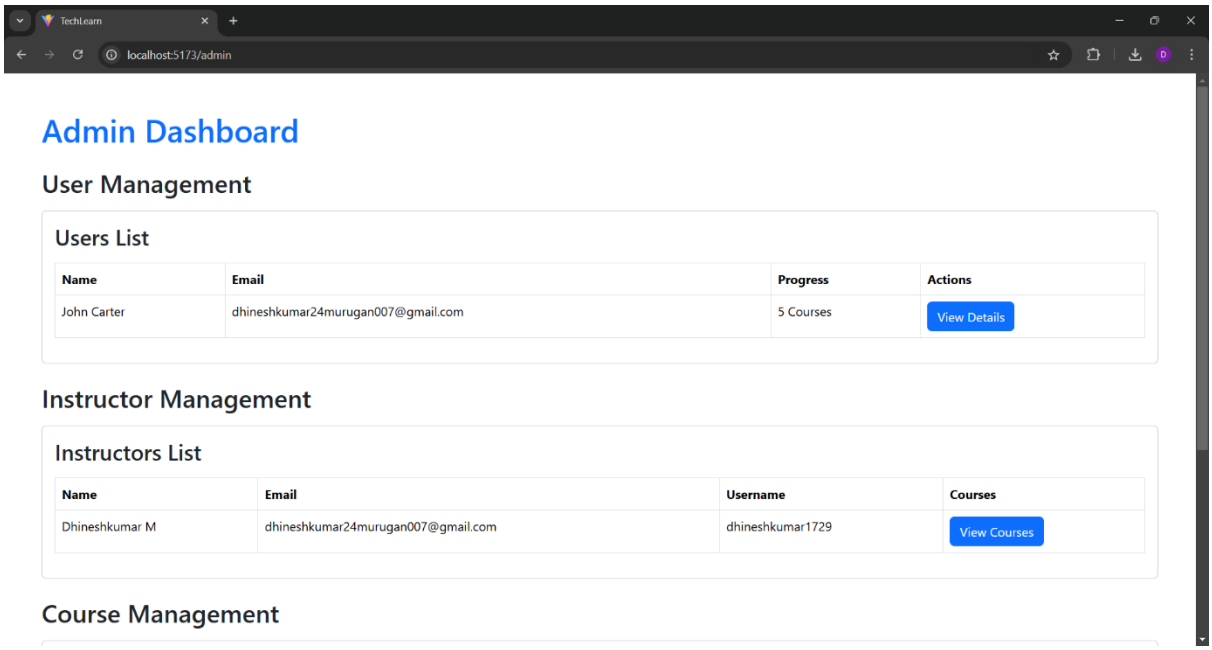
14. Instructor Profile Page



15. Admin Dashboard – 1



16. Admin Dashboard – 2



Known Issues

- Admin lacks a dedicated login functionality but only a route.
- No robust error handling for invalid uploads.
- No payment since, the instructor of the course, told us not to include any payment gateway.
- Doesn’t fetch the image, video names while editing the profile or courses.

Future Enhancements

- Add payment gateway for course enrollment.
- Implement advanced analytics for admin insights.
- Include a recommendation engine for personalized course suggestions.
- Integrate WebRTC for live webinars