

LearnHub: Full Stack MERN Project Documentation

1. Introduction

Project Title: LearnHub: Your Skill Enhancement Center

Team ID:LTVIP2025TMID50776

Team Members:

Team Leader : p reddy sai

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2. Project Overview

Purpose:To create a comprehensive online learning platform where learners can enroll in courses, track their progress, and receive certifications, while educators can create and manage courses.

Features:

- User registration and login for educators and learners
- Course creation and management by educators
- Course enrollment and tracking by learners
- Certification upon completion
- Admin dashboard for platform management
- Multilingual content support

3. Architecture

Frontend:Developed using React.js with Vite for faster build and performance. Styled using Material UI and Bootstrap for responsive design.

Backend:Node.js with Express.js to build RESTful APIs for user auth, course management, and content handling.

Database:MongoDB with Mongoose ODM. Collections include users, courses, and enrollments. Schemas maintain relations between learners and their courses.

4. Setup Instructions

Prerequisites:

- Node.js and npm
- MongoDB Community Server

Installation:

Clone the repository

Frontend setup

cd frontend

npm install

Backend setup

cd ../backend

npm install

Create .env in backend with:

PORT=5000

MONGODB_URI=<your_mongo_uri>

JWT_SECRET=<your_jwt_key>

5. Folder Structure

Client (frontend):

- /src/components: Reusable components (e.g., Navbar, CourseCard)
- /src/pages: Registration, Dashboard, CoursePage, etc.
- /src/services: API call files using Axios

Server (backend):

- /models: Mongoose schemas (User.js, Course.js)
- /routes: Express routes (auth, courses, admin)
- /middleware: Auth middleware (JWT verification)
- /controllers: Business logic for API requests

6. Running the Application

Frontend

cd frontend

npm run dev

Backend

cd backend

npm start

7. API Documentation

Method	Endpoint	Description
POST	/api/auth/register	Register a new user
POST	/api/auth/login	Login a user
POST	/api/courses	Create a new course
GET	/api/courses	Get list of courses
POST	/api/enroll	Enroll in a course
GET	/api/progress/:id	Get learner progress

8. Authentication

- JWT-based authentication used for securing protected routes.
- Tokens stored in localStorage for session handling.
- Role-based authorization (admin, educator, learner).

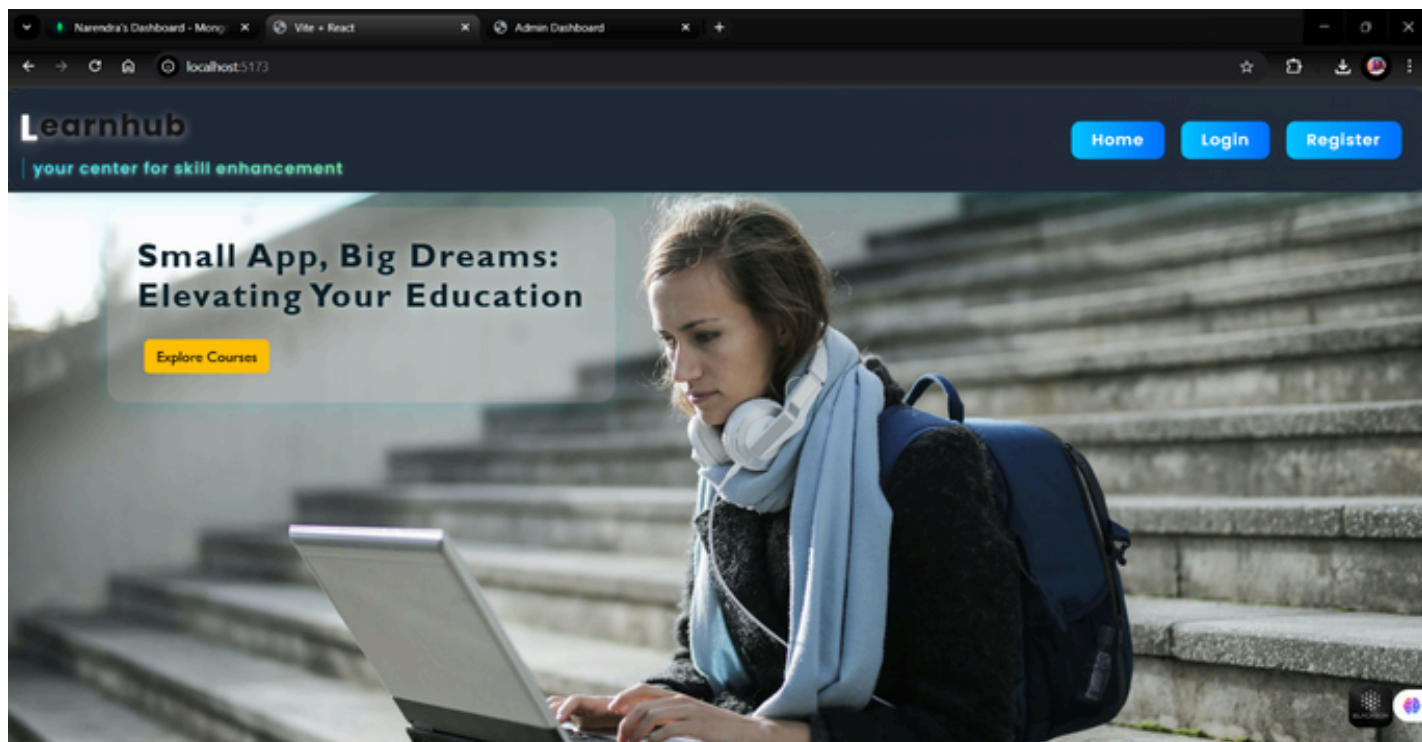
9. User Interface

- Simple and intuitive UI using Material UI and Ant Design.
- Dashboards for learners, educators, and admin.
- Certificate and course progress views.

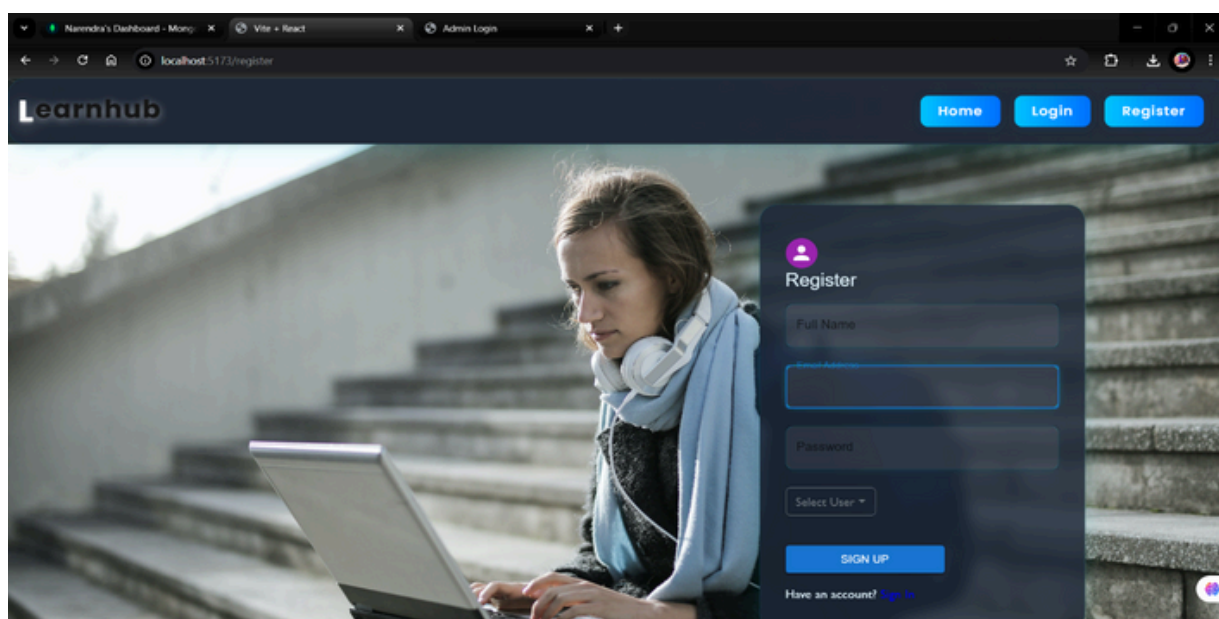
10. Testing

- Unit testing using Jest (backend)
- Manual testing using Postman for API validation
- UI testing for all user roles

11. Screenshots or Demo



- Registration page



- Educator Course Creation Page
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The screenshot shows a web browser window with the URL `localhost:5173/dashboard`. The page has a dark theme with a hexagonal pattern. At the top, there's a navigation bar with the 'Learnhub' logo, 'Home', 'Settings', and 'Add Course' buttons. On the right, it says 'Hi 1234' and has a 'Log Out' button. The main content area features a form for adding a new course. The form has five input fields: 'Course Type' (with a dropdown menu showing 'Select categories'), 'Course Title' (with placeholder text 'Enter Course Title'), 'Course Educator' (with placeholder text 'Enter Course Educator'), 'Course Price(Rs.)' (with placeholder text 'for free course, enter 0'), and 'Course Description' (with placeholder text 'Enter Course description'). Below these fields is a '+ Add Section' button and a 'Submit' button. At the bottom of the page, there's a footer with '© 2025 Learnhub' and a small mobile app icon.

Course Type: Select categories

Course Title: Enter Course Title

Course Educator: Enter Course Educator

Course Price(Rs.): for free course, enter 0

Course Description: Enter Course description

+ Add Section

Submit

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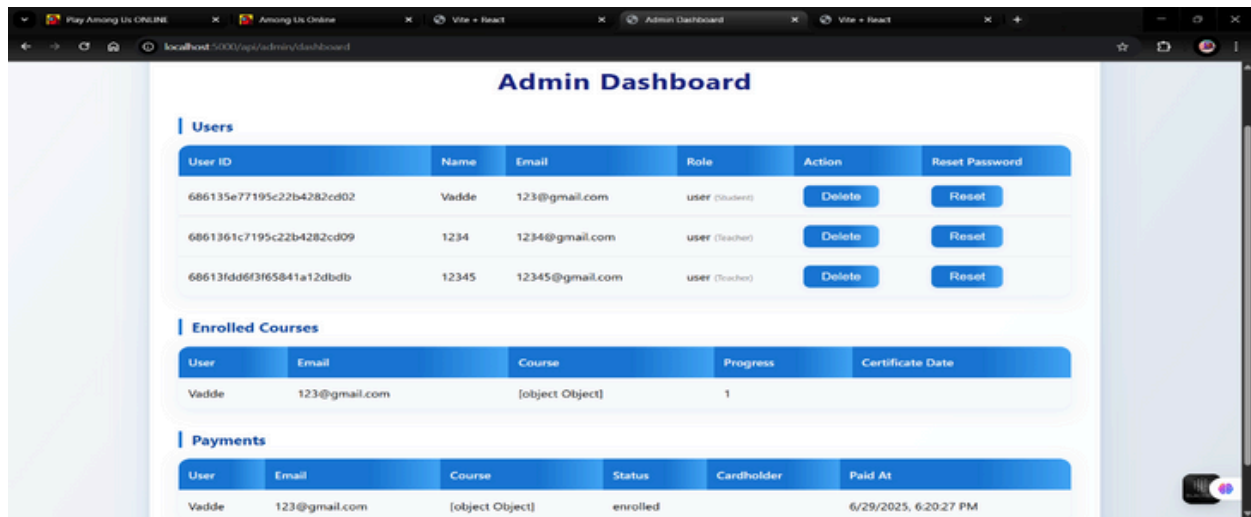
- Enrolled courses Dashboard

The screenshot shows the 'Enrolled Courses' section of the Learnhub dashboard. It features a table with the following columns: Course ID, Course Name, Course Educator, Course Category, and Action. There is one row of data with the following values: Course ID '6861fc225cb7028cf02cc0d06', Course Name 'project management', Course Educator 'narendra', Course Category 'IT & Software', and an Action button labeled 'GO TO'. The page also includes the same navigation bar and footer as the previous screenshot.

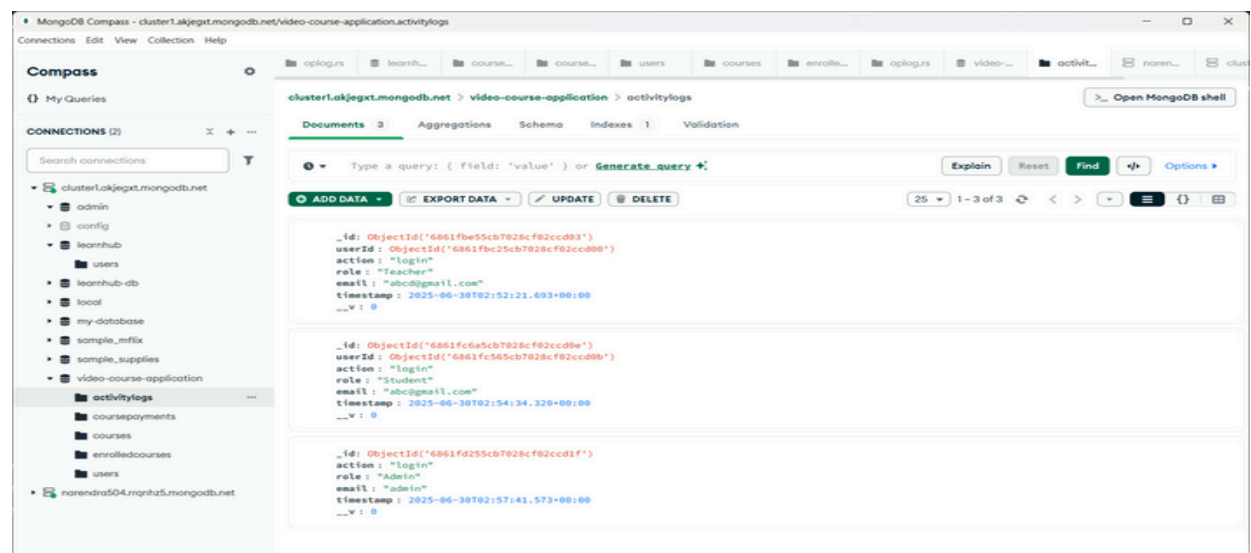
Course ID	Course Name	Course Educator	Course Category	Action
6861fc225cb7028cf02cc0d06	project management	narendra	IT & Software	GO TO

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- Admin Overview Panel



- MongoDB compass database



12. Known Issues

- No video compression during upload
- Limited analytics in admin dashboard
- No notification system (yet)

13. Future Enhancements

- Real-time classroom/live video sessions
- Mobile application for learners
- Gamification features for learners
- Educator rating and review system

