LearnHub: Full Stack MERN Project Documentation

1. Introduction

Project Title: LearnHub: Your Skill Enhancement Center

Team ID:LTVIP2025TMID50776

Team Members:

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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).

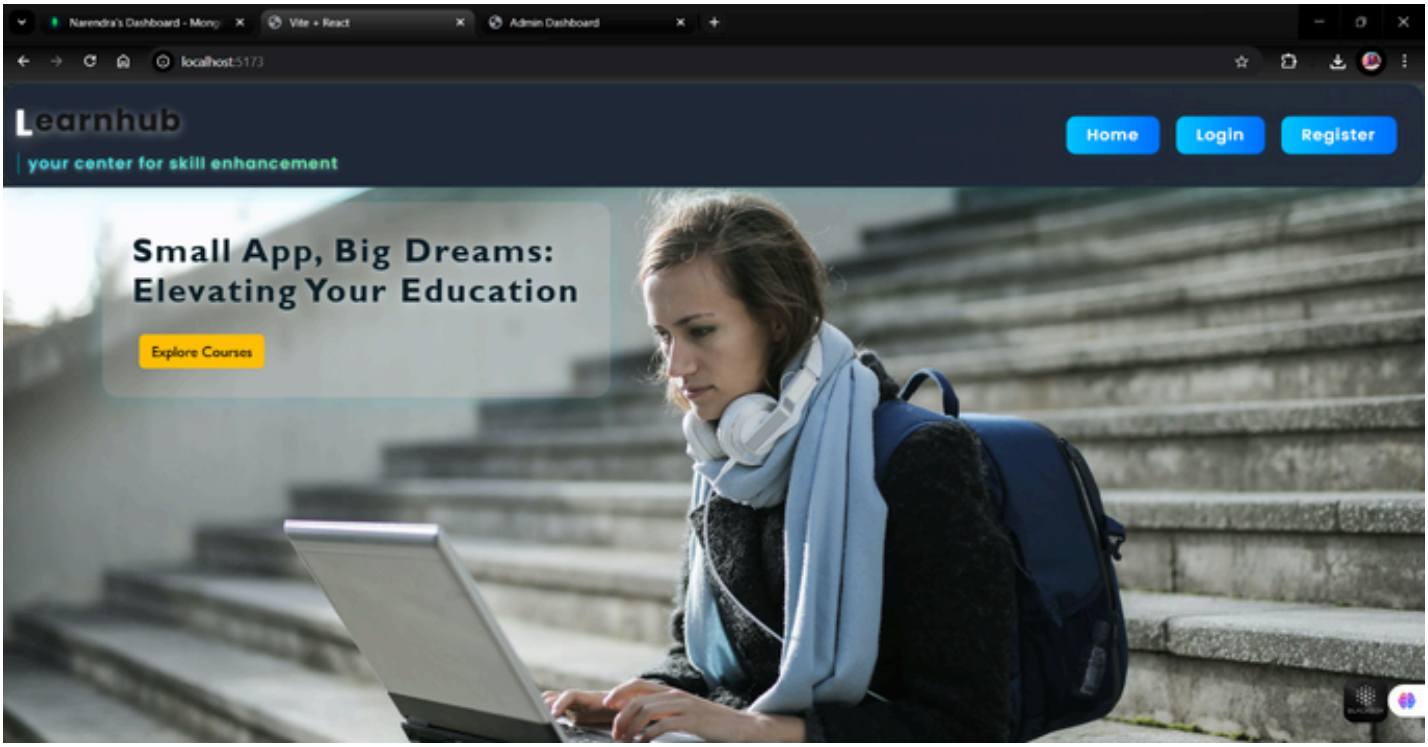
9. User Interface

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

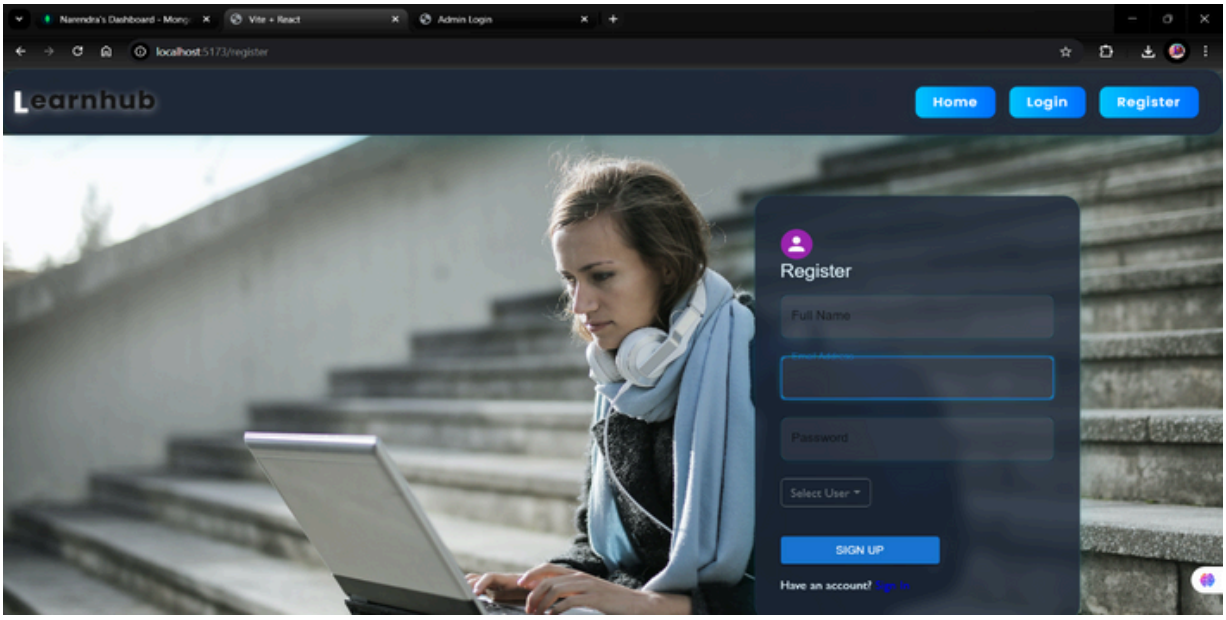
10. Testing

- 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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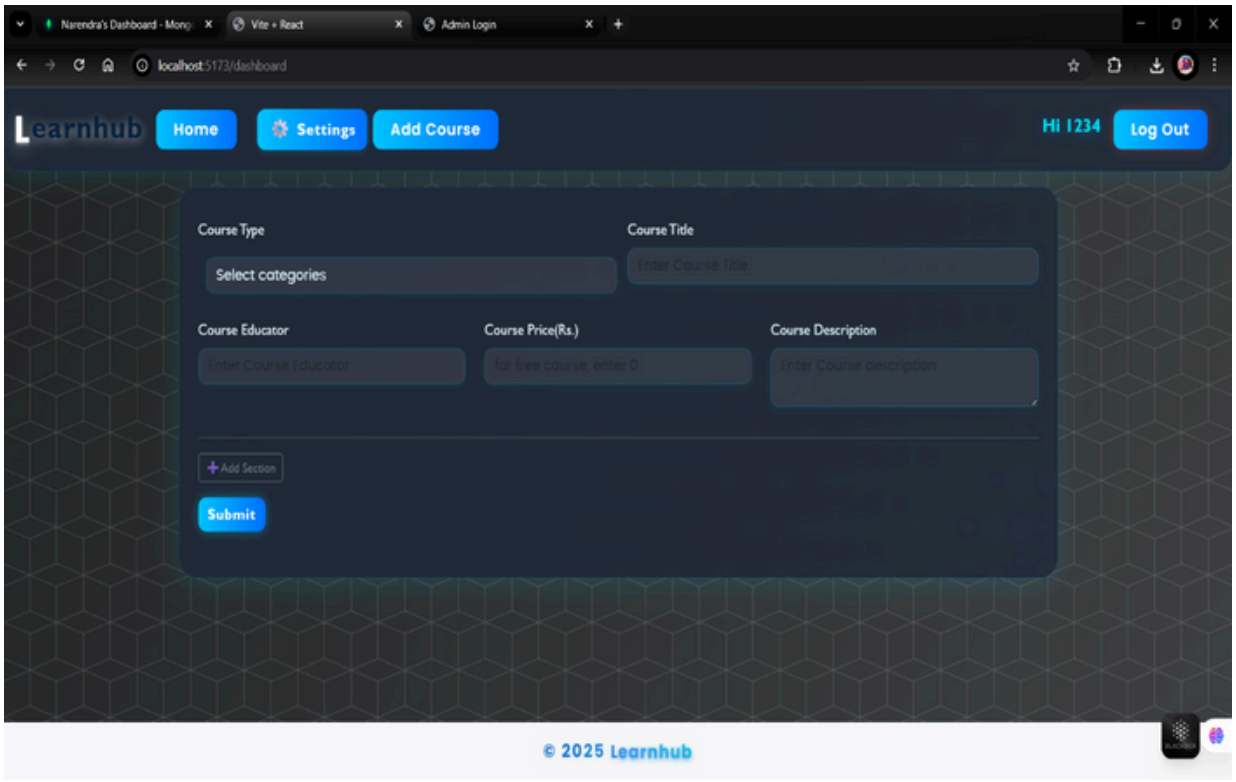
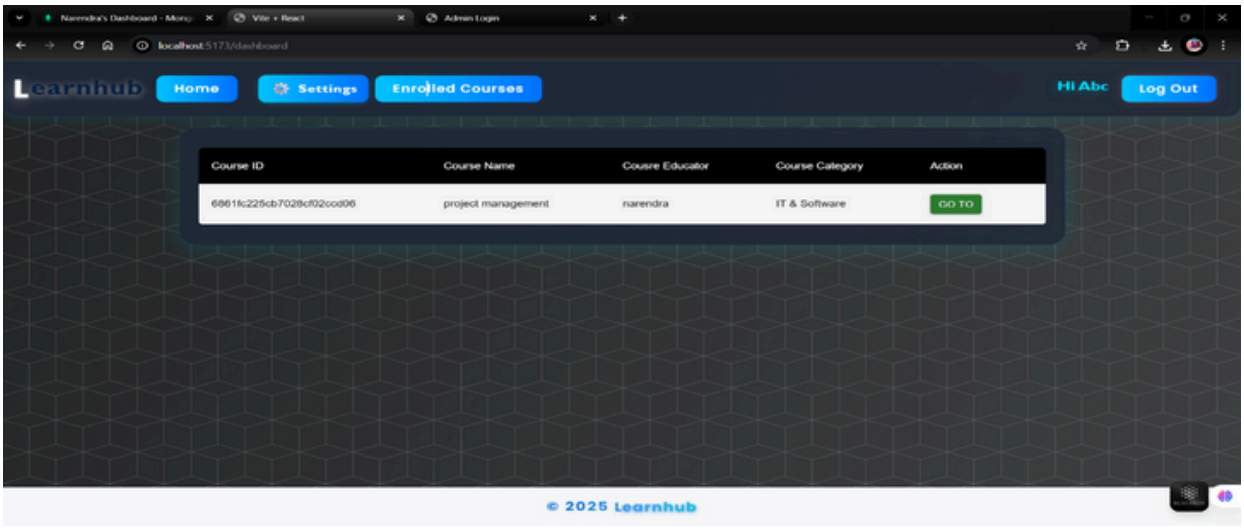
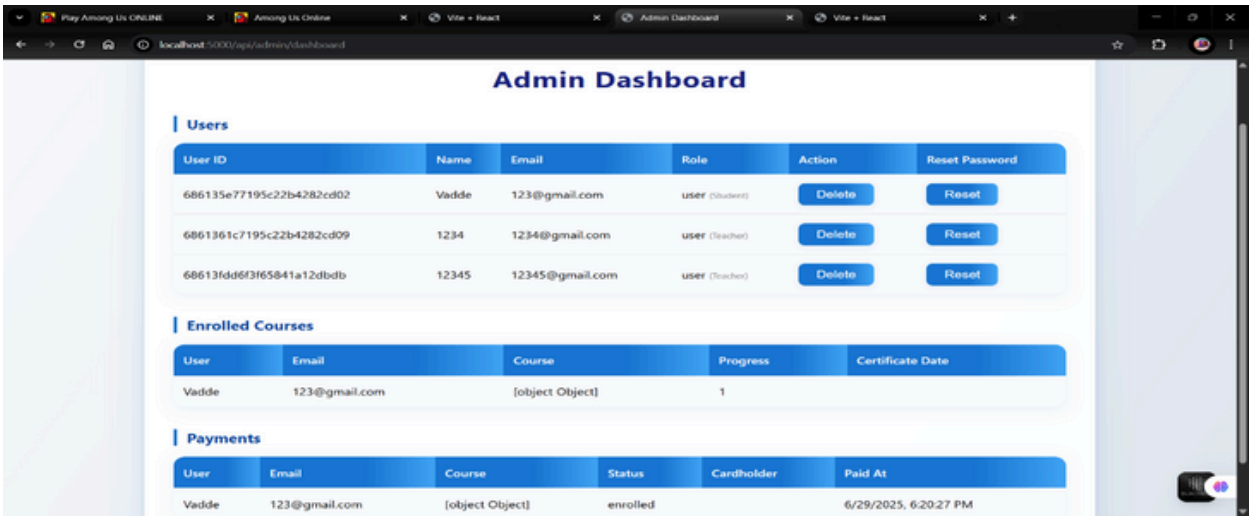


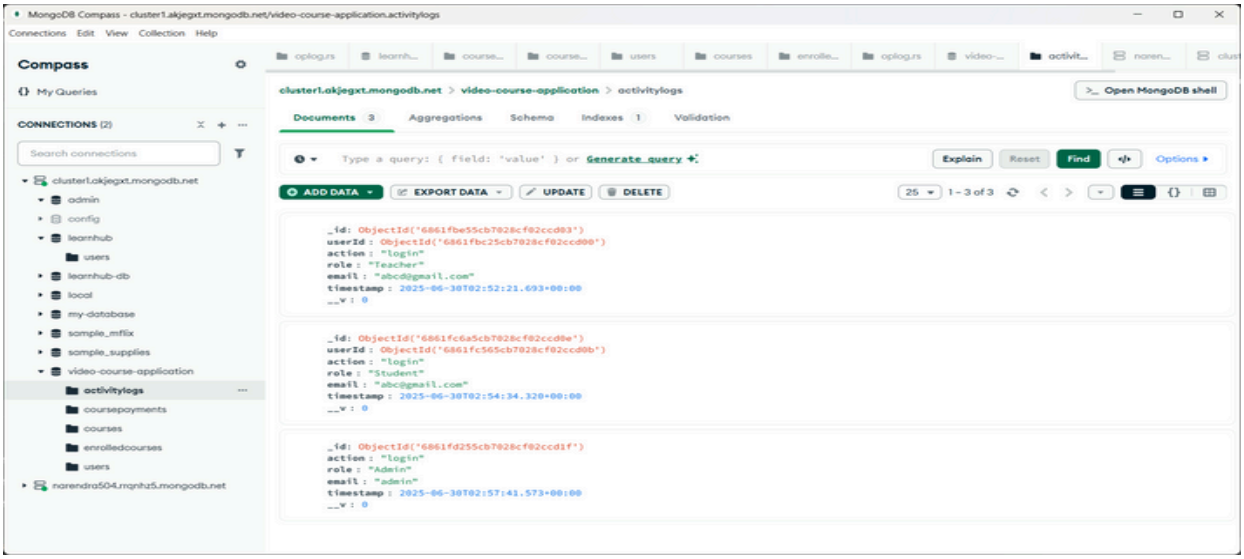
- Enrolled courses Dashboard



- 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