LearnHub: Full Stack MERN Project Documentation

1. Introduction

Project Title: LearnHub: Your Skill Enhancement Center

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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).

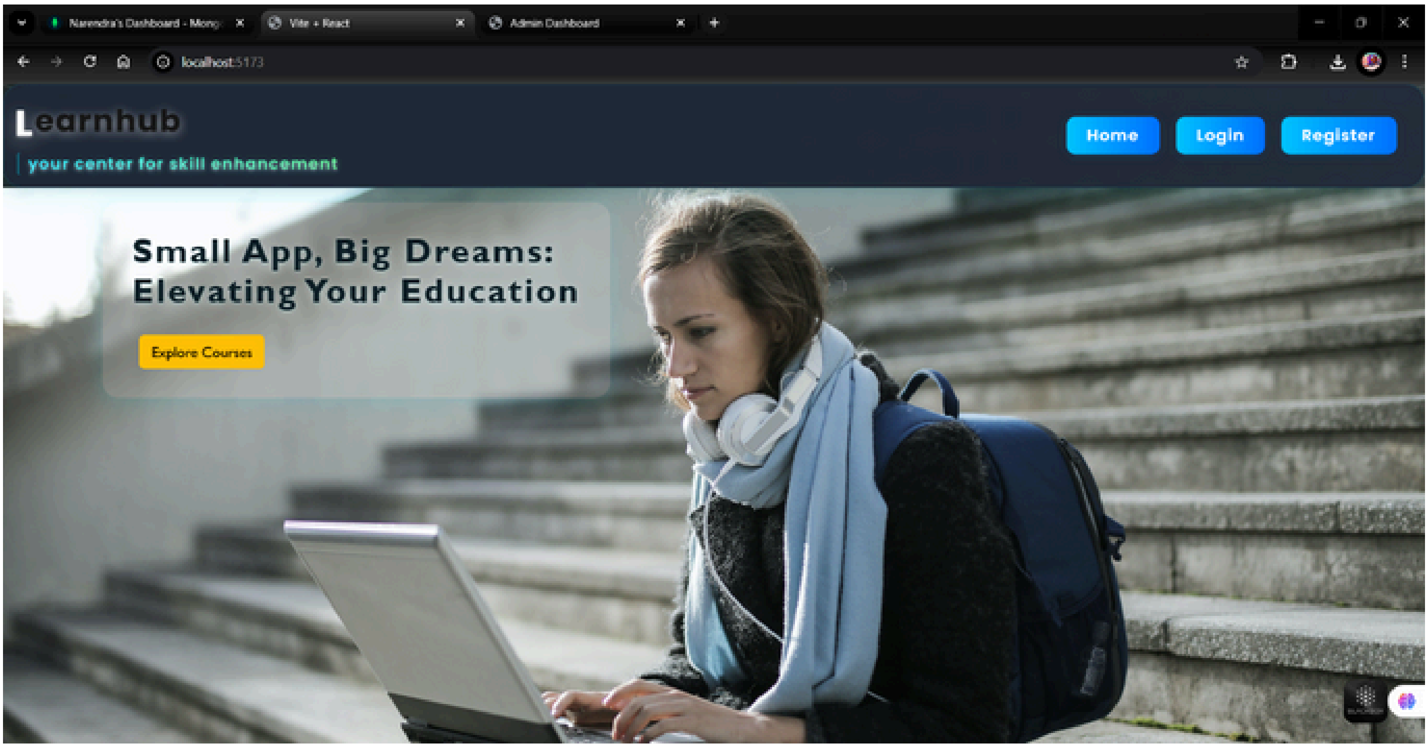
9. User Interface

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

10. Testing

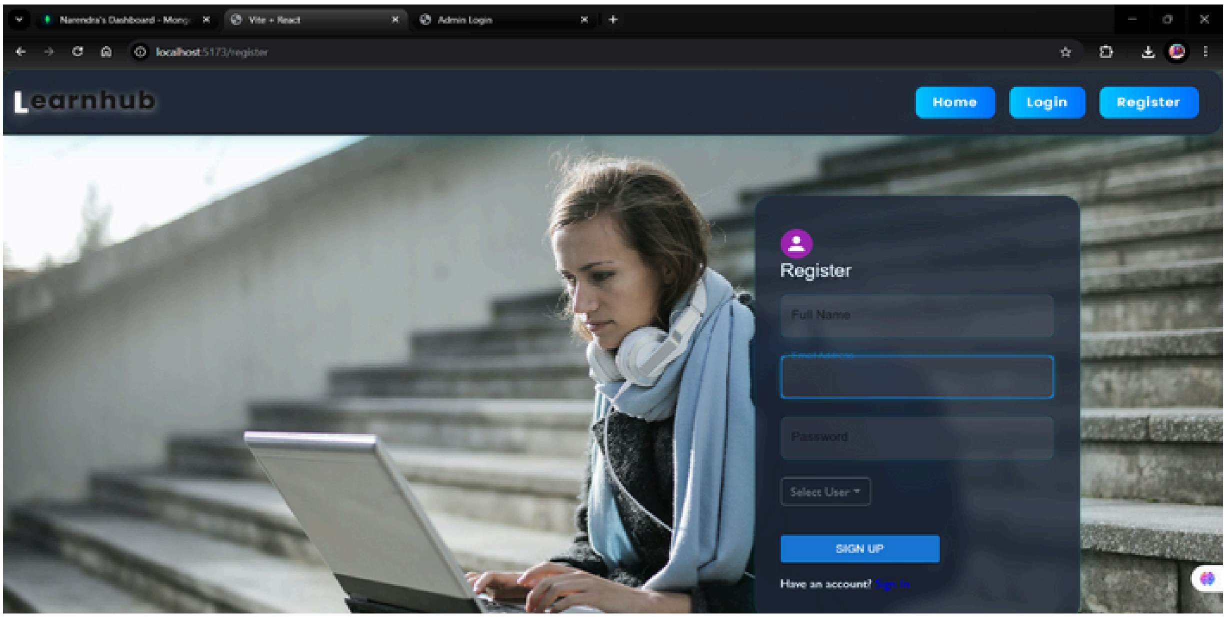
- Unit testing using Jest (backend)
- Manual testing using Postman for API validation
- UI testing for all user roles

11. Screenshots or Demo

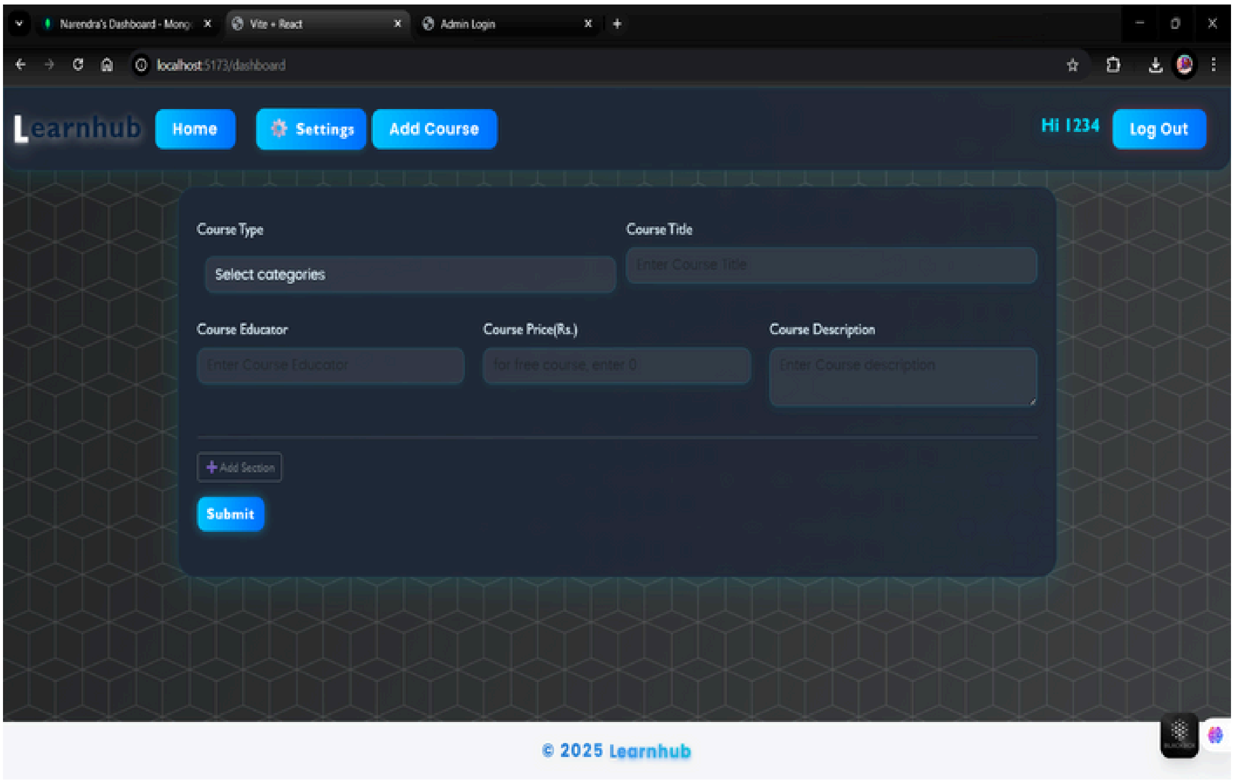


Small App, Big Dreams: Elevating Your Education

- Registration page



- Educator Course Creation Page



Course Type

Select categories

Course Title

Enter Course Title

Course Educator

Enter Course Educator

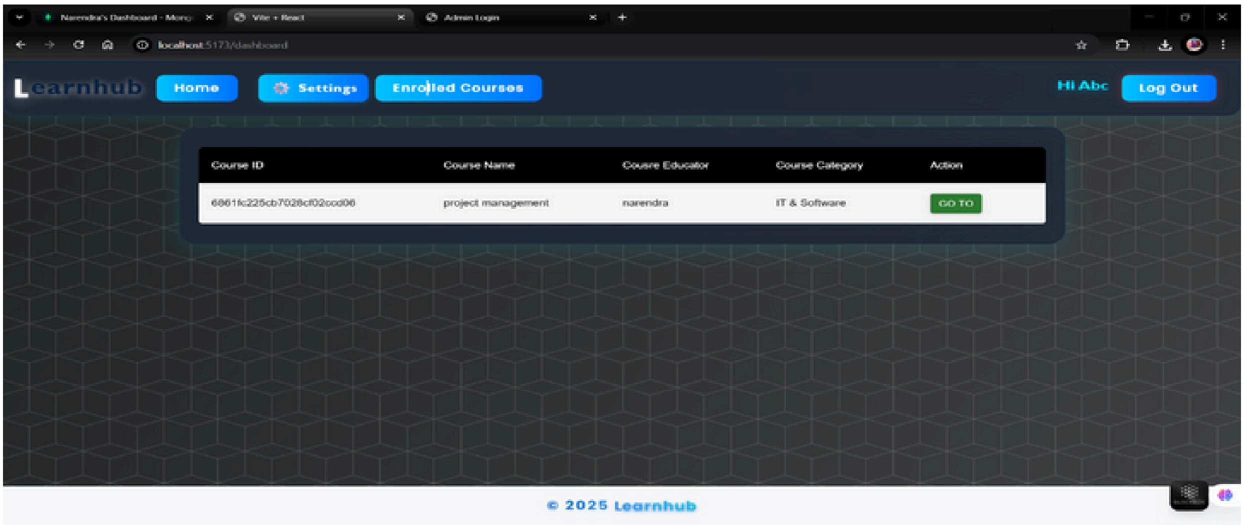
Course Price(Rs.)

for free course, enter 0

Course Description

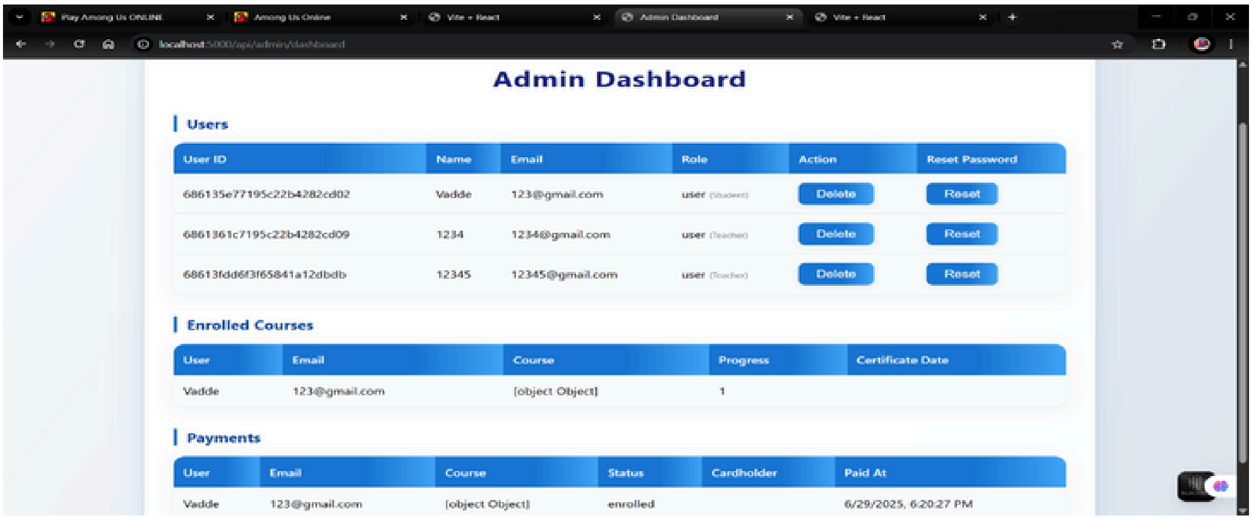
Enter Course description

- Enrolled courses Dashboard



Course ID	Course Name	Cousre Educator	Course Category	Action
6861fc225cb7028cf02ccd06	project management	narendra	IT & Software	GO TO

- Admin Overview Panel



Admin Dashboard

Users

User ID	Name	Email	Role	Action	Reset Password
686135e77195c22b4282cd02	Vadde	123@gmail.com	user (Student)	Delete	Reset
6861361c7195c22b4282cd09	1234	1234@gmail.com	user (Teacher)	Delete	Reset
68613fdd6f3f65841a12dbdb	12345	12345@gmail.com	user (Teacher)	Delete	Reset

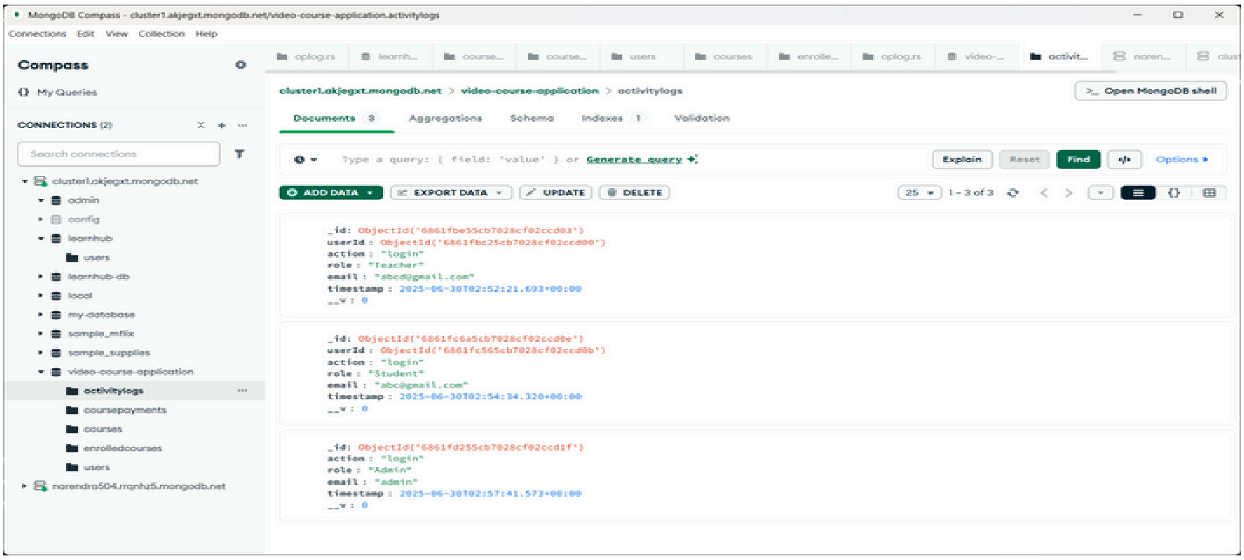
Enrolled Courses

User	Email	Course	Progress	Certificate Date
Vadde	123@gmail.com	[object Object]	1	

Payments

User	Email	Course	Status	Cardholder	Paid At
Vadde	123@gmail.com	[object Object]	enrolled		6/29/2025, 6:20:27 PM

- Mongodb compass database



```
_id: ObjectId('6861fbe55cb7028cf02ccd03')
userId : ObjectId('6861fbc25cb7028cf02ccd00')
action : "login"
role : "Teacher"
email : "abcd@gmail.com"
timestamp : 2025-06-30T02:52:21.693+00:00
__v : 0
```

```
_id: ObjectId('6861fc6a5cb7028cf02ccd0e')
userId : ObjectId('6861fc565cb7028cf02ccd0b')
action : "login"
role : "Student"
email : "abc@gmail.com"
timestamp : 2025-06-30T02:54:34.320+00:00
__v : 0
```

```
_id: ObjectId('6861fd255cb7028cf02ccd1f')
action : "login"
role : "Admin"
email : "admin"
timestamp : 2025-06-30T02:57:41.573+00:00
__v : 0
```

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