#### 1. Introduction

Project Title: LearnHub - E-Learning Platform

Team Members:

- Thatraju Sandhya - Full Stack Developer

#### 2. Project Overview

Purpose: LearnHub is an online e-learning platform built to simplify access to digital education, enabling students to learn from anywhere through structured content and seamless interaction.

#### Features:

- User authentication and role-based access (Admin, Teacher, Student)
- Course creation, enrollment, and progress tracking
- Responsive UI with video lectures and quizzes
- Admin panel for managing users and content

#### 3. Architecture

Frontend: Built with React.js (Vite), structured with reusable components and routes.

Backend: Node.js and Express.js to handle APIs and secure authentication.

Database: MongoDB Atlas using Mongoose for schema modeling.

#### 4. Setup Instructions

#### Prerequisites:

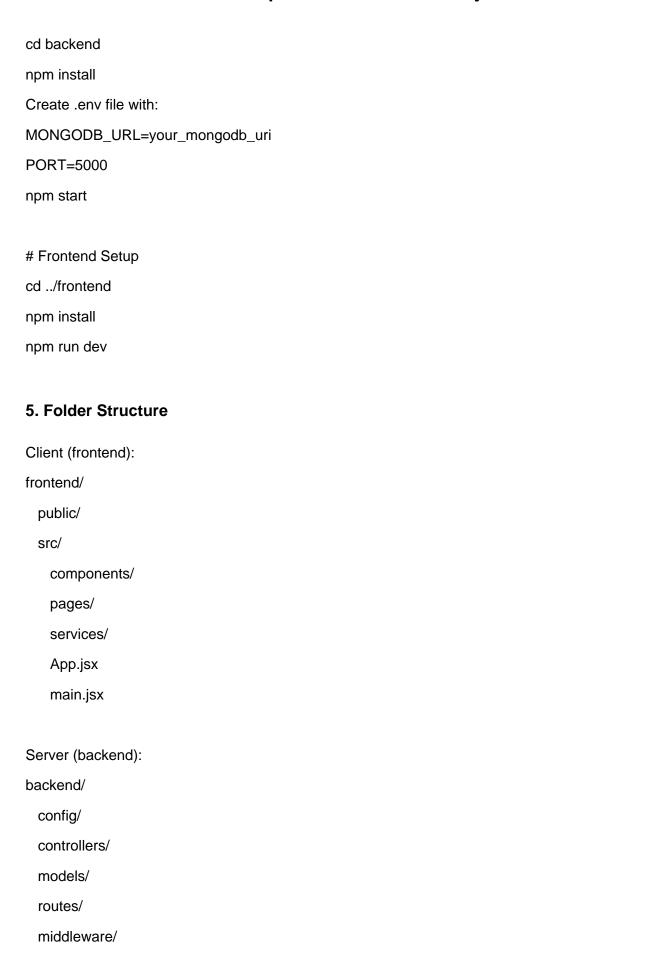
- Node.js (v18+), npm, MongoDB Atlas (or local MongoDB)

#### Installation:

git clone https://github.com/sandhyathatraju/LEARNHUB.git

cd LEARNHUB

# Backend Setup



index.js

## 6. Running the Application

Frontend:

cd frontend

npm run dev

Backend:

cd backend

npm start

### 7. API Documentation

POST /api/auth/register -> Register new user

POST /api/auth/login -> User login (returns JWT)

GET /api/courses -> List all courses

POST /api/courses -> Create a new course

PUT /api/courses/:id -> Update a course

DELETE /api/courses/:id -> Delete a course

## 8. Authentication

Method: JWT-based authentication

#### Flow:

- On login/register, the server issues a token
- Protected routes verify the token using middleware
- Role-based access ensures Teachers/Admins have extra permissions

#### 9. User Interface

- Dashboard view for students, teachers, and admins

- Course details and interactive content display
- Responsive layout using Tailwind CSS

## 10. Testing

#### Strategy:

- Unit testing for backend routes using Jest
- Manual testing of frontend components and form validation

#### 11. Screenshots or Demo

Include screenshots or demo video link to showcase the application

#### 12. Known Issues

- Course video upload may fail on unstable internet
- Mobile view for teacher panel has minor alignment issues

#### 13. Future Enhancements

- Add real-time chat for students and instructors
- Integrate payment gateway for premium courses
- Enable dark mode and accessibility improvements