Full Stack Development with MERN

Learn Hub - Your Center for Skill Enhancement

Online Learning Platform

1. Introduction

- Project Title: LearnHub - Your Center for Skill Enhancement □ Team Members: o

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2. Project Overview

- Purpose:
  The purpose of LearnHub is to offer an interactive and accessible online learning platform that enables students to learn new skills and teachers to deliver content effectively. The platform supports registration, course management, and certification.

- Key Features:

  - o User roles: Admin, Teacher, Student o Course creation, categorization, and enrollment o Interactive elements: forums, webinars o Certificate generation o Payment integration for paid courses o Responsive UI with filtering and search

3. Architecture

- Frontend:
  Built with React.js using Vite for development, integrated with:

  - o Bootstrap o Material UI o MDB React UI Kit o Axios for API calls o React Router for navigation

- Backend:
  Developed using Express.js and Node.js.

  - o   RESTful API design o Authentication with JWT
  - o   Middleware (authMiddleware.js) for protected routes
- Database (MongoDB):
  Two main collections:

  - o   Users: { _id, name, email, password, type }

  - o   Courses: { _id, userID, C_educator, C_categories, C_title, C_description, sections, C_price, enrolled }

4. Setup Instructions ☐

Prerequisites: o Node.js and

npm o MongoDB o Vite o Git

- Installation Steps:

```
git clone [your-repo-link] cd your-
project-folder

# Frontend setup cd
frontend npm install

# Backend setup cd
../backend npm install
```
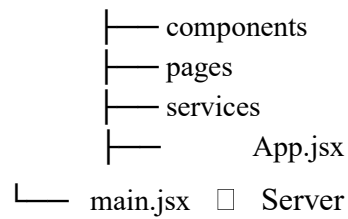
- Environment Variables:
  Create a .env file in the
  backend folder:

```
PORT=5000
MONGO_URI=your_mongo_connection_string
JWT_SECRET=your_jwt_secret
```
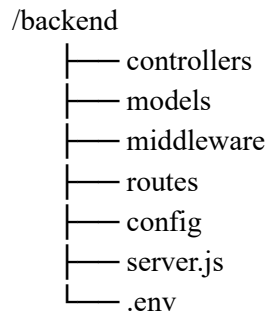
5. Folder Structure

- Client (Frontend):

```
/frontend
     ├─── public
     ├─── src
```

```
        ├──── components
        ├──── pages
        ├──── services
        ├────         App.jsx
└──── main.jsx   ☐   Server
```

(Backend):

```
/backend
        ├──── controllers
        ├──── models
        ├──── middleware
        ├──── routes
        ├──── config
        ├──── server.js
        └──── .env
```

6. Running the Application ☐

    Frontend: cd frontend npm

    run dev ☐ Backend: cd

    backend npm start

    •   Access App:
        http://localhost:5172

7. API Documentation

    •   POST /api/auth/register – Register user
    •   POST /api/auth/login – Login user
    •   GET /api/courses – List courses
    •   POST /api/courses – Add new course
    •   PUT /api/courses/:id – Update course
    •   DELETE /api/courses/:id – Delete course
    •   POST /api/enroll – Enroll in a course

8. Authentication

    •   JWT-based authentication

- Tokens issued upon login
- Middleware checks token validity before accessing protected routes

9. User Interface Screens
   include:

   - Landing Page
   - Register/Login Page ☐ Admin Dashboard
   - Teacher Dashboard
   - Student Dashboard
   - Course Detail and Enrollment

10. Testing

    - Manual testing done across different roles
    - Bug fixing during implementation
    - UI verification after final build

11. Screenshots or Demo

    - Access all materials here: LearnHubDrive

12. Known Issues
    - Payment integration may require real-world gateway
    - No file upload for assignments or student submissions yet
    - Limited error handling on some backend routes

13. Future Enhancements

    - Chat feature between student and instructor
    - AI-based course recommendation
    - Assignment submission & grading
    - Mobile app version
    - Multi-language support