Project Report Format

1. **INTRODUCTION**

   1.1 Project Overview:
   LearnHub is a modern, minimalist digital learning platform designed to streamline the process of online education. It allows students to browse and enroll in courses, track their progress, and receive completion certificates. Teachers and administrators are equipped with tools to manage users and courses via a responsive admin dashboard.

   1.2 Purpose:
   The purpose of LearnHub is to provide a centralized, efficient, and user-friendly platform for digital learning. It focuses on accessibility, role-based management, and effective delivery of educational content to bridge the gap in digital education.

2. **IDEATION PHASE**

   2.1 Problem Statement:
   Students often struggle with fragmented learning systems that lack consistency, accessibility, and tracking capabilities. Similarly, teachers and admins face difficulty managing courses and user data effectively across platforms.

   2.2 Empathy Map Canvas:
   Users: Students, teachers, and admins
   Says: "I want to learn/manage easily", "I need access to resources and certification."
   Thinks: "Will this platform help me achieve my goals efficiently?"
   Does: Browses courses, uploads materials, monitors progress
   Feels: Overwhelmed by poor UI/UX, frustrated by lack of tools

   2.3 Brainstorming:
   User role management
   Course video uploads
   Certificate generation
   Admin dashboard
   Mobile responsiveness
   Progress tracking system

3. **REQUIREMENT ANALYSIS**

   3.1 Customer Journey map:
   Visit the website
   Register/Login
   Browse courses
   Enroll and start learning
   Track progress
   Complete course

   3.2 Solution Requirement:
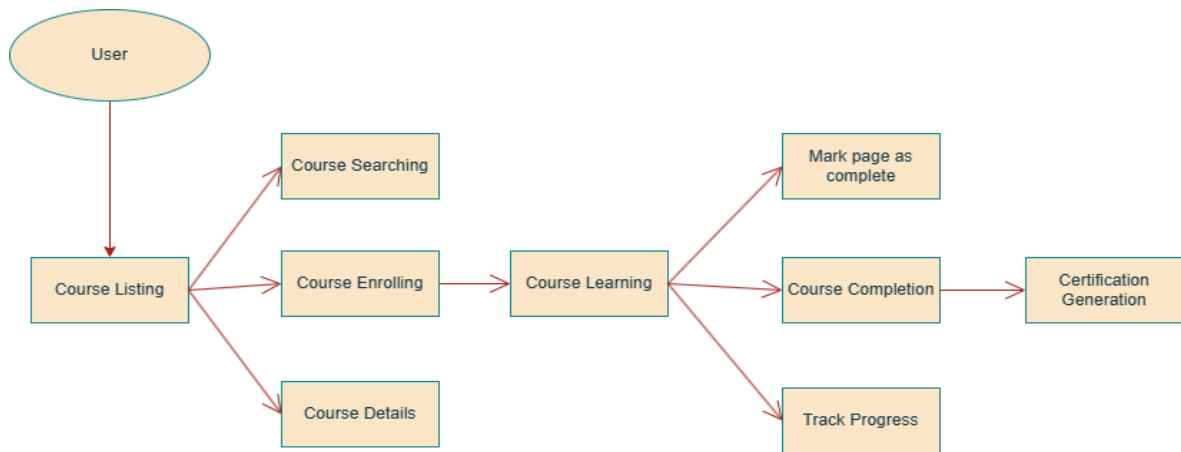   Authentication system (JWT-based)
   Video hosting & streaming
   Certificate generation
   Course management tools
   Frontend with responsive UI

3.3 Data Flow Diagram:

3.4 Technology Stack:
Frontend: React (Vite, MUI), React Context
Backend: Node.js, Express.js, JWT, Multer
Database: MongoDB (Mongoose)
Dev Tools: Git, npm, Postman

4. PROJECT DESIGN

4.1 Problem Solution Fit:

A unified learning system like LearnHub simplifies the educational process for all stakeholders. It eliminates the need for third-party tools and consolidates features in one ecosystem.

4.2 Proposed Solution:
Develop a full-stack MERN web application where users can interact based on roles:

Students: Enroll, view courses, download certificates
Teachers: Upload courses, manage content
Admins: Manage users, approve content

4.3 Solution Architecture:
Frontend: React (SPA)
Backend: RESTful APIs
Database: MongoDB with Mongoose schemas
Auth: JWT with role-based access

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning:
Requirements Gathering
UI/UX Prototyping
Backend API Development
Frontend Integration
Testing & Debugging
Deployment & Demo

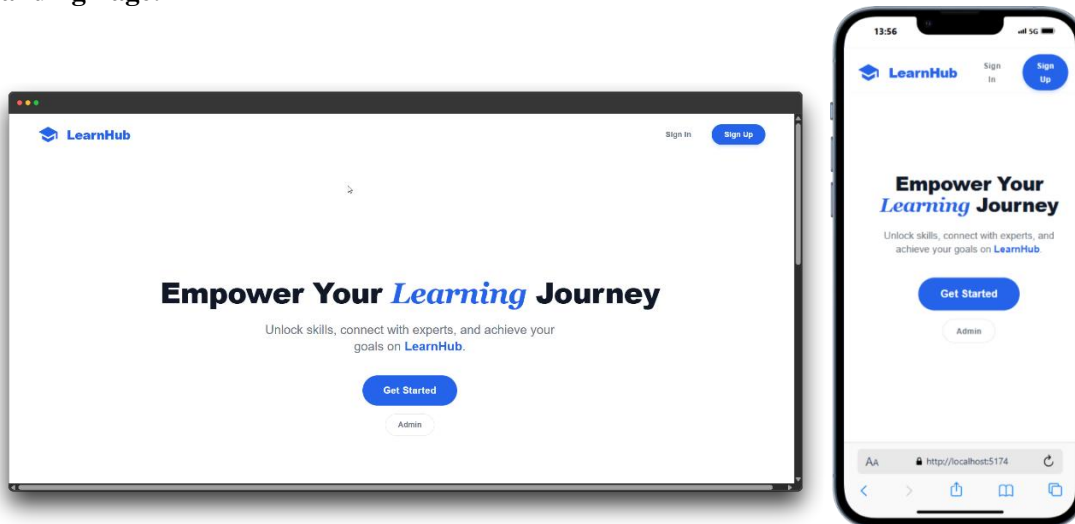## 6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing:

Basic load testing using Postman collections and developer tools.
JWT authentication tested for expiry, storage, and secure routing.
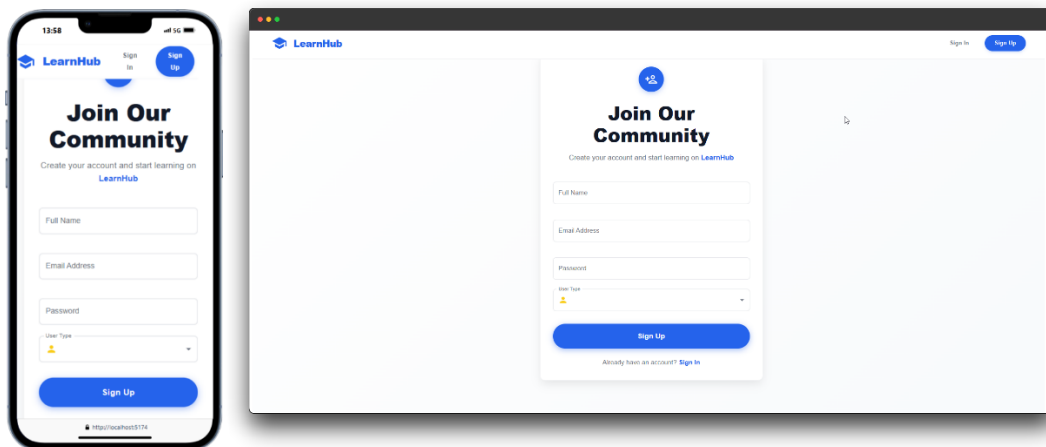File upload performance tested via Multer middleware.

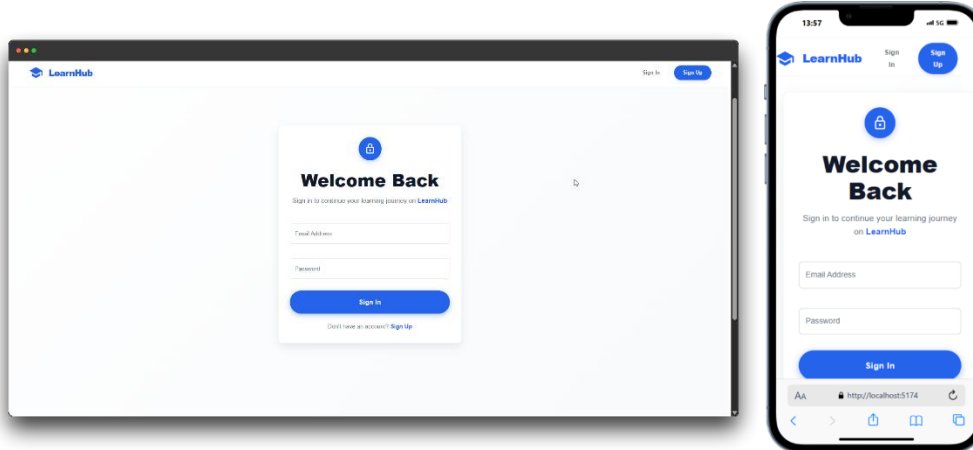## 7. RESULTS

Output Screenshots:

Landing Page:

Registration Form:

Login From:

8. ADVANTAGES & DISADVANTAGES

Advantages:

Role-based access
Certificate generation
Responsive interface
Scalable architecture

Disadvantages:

No real payment integration (demo only)
Minor UI inconsistencies on small devices
Certificate formatting issues on some browsers

9. CONCLUSION

LearnHub successfully demonstrates how a modern, accessible, and role-based online education system can empower both learners and educators. With core functionalities in place, it lays a strong foundation for further enhancements and real-world deployment.

10. FUTURE SCOPE

Integrate real payment gateway (e.g., Stripe, Razorpay)
Push notifications and messagingCertificate Generation
Certificate Generation
Upload additional content types (PDFs, Quizzes)
Enhanced accessibility & automated testing

11. APPENDIX

Source Code :

https://github.com/imoham
medyasin/ShaikMohamme
dYasin

Dataset Link: N/A

GitHub & Project Demo Link : DEMO LINK - LEARNHUB