PROJECT REPORT

On

E-learning

Submitted in partial fulfilment of the requirement for the Course
Advance Full Stack of

COMPUTER SCIENCE AND ENGINEERING
B.E. Batch-2022
in

Jan -2025

CHITKARA
UNIVERSITY

Submitted By

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CERTIFICATE

This is to be certified that the project entitled "**E-learning**" has been submitted for the Bachelor of Computer Science Engineering at Chitkara University, Punjab during the academic semester January 2025- May-2025 is a bonafide piece of project work carried out by "Kumar Garg (2210991820) Keshav Garg (2210991782) Khushal Goyal (2210991791) Kavita Jora (2210991773)" towards the partial fulfillment for the award of the course Integrated Project (22CS038) under the guidance of "Mr. Rahul" and supervision.

Sign. of Project Guide :

Mr. Rahul

CANDIDATE'S DECLARATION

We, **Kumar Garg (2210991820)   Keshav Garg (2210991782) Khushal Goyal (2210991791) Kavita Jora (2210991773),** B.E.-2022 of the Chitkara University, Punjab hereby declare that the Full Stack Report entitled "**E-learning**" is an original work and data provided in the study is authentic to the best of our knowledge. This report has not been submitted to any other Institute for the award of any other course.

Sign. of Student 1   Sign. of Student 2   Sign. of Student 3
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Date: 3/3/25

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1. Abstract/Keywords

An innovative e-learning platform designed to bridge the gap between education and employment by offering structured courses, live projects, mentorship, and job opportunities in emerging technologies like full-stack development.

2. Introduction to the Project

2.1 Background

The demand for skilled tech professionals has skyrocketed due to rapid advancements in technology, but the traditional education system often fails to align with the practical needs of the industry. This project aims to address the skill gap by providing an e-learning platform that offers not only comprehensive tech courses but also job placement opportunities through partnerships with top companies. The platform will include real-world projects, coding challenges, and mentorship programs to help learners gain hands-on experience. Additionally, AI-powered career guidance and resume-building tools will assist students in securing their dream jobs. By bridging the gap between education and industry demands, this platform will empower aspiring tech professionals with the skills and opportunities they need to succeed in the competitive job market.

2.2 Objective

To develop a user-friendly and scalable e-learning platform that provides interactive courses, real-time assessments, and personalized learning experiences. The platform will support seamless user authentication, multimedia content delivery, progress tracking, and responsive design for accessibility across devices. Utilizing a modern full-stack technology stack, the goal is to ensure high performance, security, and an engaging user experience for learners and instructors alike. Additionally, the platform will incorporate collaborative tools such as discussion forums, live sessions, and peer-to-peer interactions to enhance knowledge sharing. AI-driven recommendations and adaptive learning features will personalize content for users based on their progress and performance. The system will also include an intuitive dashboard for administrators and educators to manage course content, monitor user engagement, and analyze learning outcomes. With a focus on scalability, data security, and ease of use, the platform aims to revolutionize online education by providing an efficient and immersive learning environment.

2.3 Significance

- Enhanced Accessibility – Provides learners with 24/7 access to educational resources from anywhere, breaking geographical barriers.
- Interactive Learning Experience – Supports multimedia content (videos, quizzes, coding exercises) to enhance engagement and retention.

- Scalability – A full-stack architecture ensures seamless expansion to accommodate growing users, courses, and functionalities.
- Personalized Learning Paths – Implements AI/ML-driven recommendations, adaptive learning, and progress tracking to suit individual needs.
- Cost-Effective Education – Reduces dependency on physical classrooms, making learning more affordable and inclusive.
- Real-Time Assessments & Feedback – Allows instant evaluation through quizzes, coding challenges, and automated grading systems.

3.2 Problem Statement

Many existing platforms prioritize theoretical knowledge over hands-on experience, leaving learners unprepared for real-world challenges. Bootcamps and courses often lack personalized guidance, making it difficult for individuals to navigate their learning journey effectively. Additionally, the high cost of quality education creates a barrier for many aspiring professionals.

Employers, on the other hand, struggle to assess candidates' practical capabilities beyond certifications and degrees. The absence of a standardized skill evaluation framework further complicates hiring decisions, leading to inefficiencies in recruitment. Bridging the gap between education and employment requires a more integrated approach that emphasizes project-based learning, mentorship, and direct industry engagement.

3. Software and Hardware Requirement Specification

3.1 Methods

- **Frontend**: React.js for an intuitive user interface.
- **Backend**: Node.js with Express.js for scalable server-side operations.
- **Database**: MongoDB for dynamic and flexible data storage.

3.2 Programming/Working Environment

- **Development Tools**: Visual Studio Code, Postman for API testing.
- **Version Control**: Git/GitHub for code collaboration.
- **Deployment**: AWS for backend, Vercel for frontend hosting.

3.3 Requirements to Run the Application

- **Hardware**: A system with at least 4 GB RAM and stable internet connectivity.
- **Software**: Node.js runtime, MongoDB server, and a web browser.

4. Database Analyzing, Design, and Implementation

- **Database Design**:
  Tables include Users, Courses, Mentors, Projects, and Jobs.

- **Schema Implementation**:
  MongoDB used to create collections with JSON-like structure for flexible data modeling.

5. Program's Structure Analyzing and GUI Constructing

GUI Snapshots:

- **Homepage**: Showcases courses, testimonials, and featured jobs.
- **User Dashboard**: Displays progress, enrolled courses, and certifications.
- **Admin Panel**: Tools for course management, job postings, and user analytics.

6. Code Implementation and Database Connections

- **Code Implementation**:

  o API endpoints for user authentication, course management, and job applications using Express.js.

      o   React.js components for dynamic user interaction.

- **Database Connections**:
  - o MongoDB Atlas for secure cloud database hosting.
  - o Mongoose ODM for schema modeling and data querying.

7. System Testing

Testing Levels:

- o **Unit Testing**: Tested individual modules like authentication and course completion.
- o **Integration Testing**: Verified the interaction between the frontend and backend.

8. Limitations

- Limited initial course offerings.
- Heavy reliance on internet connectivity for accessing the platform.
- Requires continuous updates to remain relevant with industry trends.

9. Conclusion

The platform addresses critical issues in the education-to-employment pipeline by combining skill-building courses with mentorship and job placements. It offers a seamless experience for learners aiming to upskill and secure jobs in the tech industry, fostering a well-equipped and job-ready workforce.

10. Future Scope

- Expansion to include more courses in trending technologies like AI, ML, and cybersecurity.
- Integration of AI-based recommendation systems for personalized learning paths.
- Addition of live coding platforms and hackathons for practical experience.
- Collaboration with more hiring partners to increase job opportunities.

11. Bibliography/References

- **AWS Documentation**: Hosting backend services.
- **Vercel Documentation**: Deploying React.js applications.
- **GeeksforGeeks**: Full-stack development tutorials.
- **Javatpoint**: MongoDB and Node.js guides.
- **MDN Web Docs**: JavaScript and web development best practices.

12. Screenshots

Time to Recharge!

Chess
Test your strategy with a quick chess match against the computer!

Play Now

Tetris
Stack falling blocks strategically to create and clear complete rows in this classic puzzle game!

Play Now

Flappy Bird
Guide your bird through obstacles by tapping to flap - simple but addictively challenging!

Play Now

Available Quizzes

ReactJS Basics
Test your React knowledge!

JavaScript Fundamentals
Assess your JavaScript skills.

CSS Essentials
Check your understanding of CSS.

KU

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Courses Enrolled 5	**Account Status** Active

Available Courses

new Course

Lorem ipsum dolor sit amet consectetur adipisicing elit.

Tutor: 123   Duration: 12 weeks   Price: ₹123

→ Get Started

hello

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Tutor: 676186a3be84d97e7bfcec35   Duration: 124 weeks   Price: ₹12

→ Get Started

java

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Tutor: 675fedf15f9f02100b665095   Duration: 13 weeks   Price: ₹1200

→ Get Started

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My App

- Dashboard
- Timer
- Schedule
- Courses
- My Profile
- Take A Break
- Take Quiz

- Logout

Pomodoro   Short Break   Long Break

25:00

Start ↻

Task Name:
Enter task name

Description:
Enter task description

Start Time:
-- : -- --

End Time:
-- : -- --

Add Task

Planned Activitites

Clear