PROJECT SYNOPSIS

ON

QuestEd: A Modern Learning Management System

SUBMITTED

TO

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

FOR

Full Stack Engineering

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1) Problem Statement:

Despite the rapid adoption of online education, most Learning Management Systems (LMS) lack personalization, interactivity, and effective course management.

Students face challenges in discovering categorized courses, tracking their progress, and providing meaningful feedback. Educators struggle with creating structured courses, uploading lecture content, and monitoring learner engagement.

The challenge is to design a secure, user-friendly, and scalable LMS that provides video-based learning, course categorization, reviews, and real-time analytics for both students and educators.

2) Title of project:

QuestEd: A Modern Learning Management System

3) Objective & Key Learnings:

Objectives:

- Provide secure authentication for students & educators.
- Enable course browsing, enrollment, and peer reviews.
- Allow educators to create/update courses with lecture videos.
- Offer graphical analytics to track performance.
- Deliver a smooth, scalable, and engaging platform.

Key Learnings:

- Implementing MERN stack for scalable web applications.
- Managing media uploads (Cloudinary, Multer) securely.
- Designing dashboards with graphical analytics.
- Ensuring data privacy with JWT & bcrypt.js.
- Deploying cloud-based solutions for scalability.

4) Options available to execute the project:

Web-Based Platform (MERN Stack):

- Built with React.js, Redux Toolkit, Tailwind CSS.
- Provides responsive design for desktop & mobile.
- Interactive dashboards with Recharts.
- Modular development with REST APIs.

Cloud-Based Deployment:

- MongoDB Atlas for cloud database.
- Vercel/Netlify for frontend hosting.
- Render/Heroku/AWS for backend.
- Cloudinary for video storage.
- Ensures scalability, security, and high availability.

5) Advantages/ Disadvantages:

Advantages:

1. Secure authentication with JWT & password encryption.
2. Categorized course browsing with video-based learning.
3. Graphical analytics for educators to track engagement.
4. Peer reviews for better decision-making.
5. Cloud deployment ensures scalability.
6. Intuitive and responsive interface.

Disadvantages:

1. Dependent on stable internet connectivity.
2. Cloud hosting may increase costs with scale.
3. Handling large video uploads may need optimization.
4. Security risks if not maintained (token/session leaks).
5. Reliance on third-party services (Cloudinary, hosting).

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