

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	26 JUNE 2025
Team ID	LTVIP2025TMID59454
Project Name	LearnHub: Your Center for Skill Enhancement
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: <https://www.coursera.org>

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based interface for learners, educators, and admins	HTML, CSS, JavaScript/ React Js etc.
2.	Application Logic-1	Logic for course creation, uploading videos, adding modules	Node js, Express js
3.	Application Logic-2	Logic for enrollment, tracking progress, submitting assessments	Node js, Express js
4.	Database	Stores user info, course details, quiz results, progress tracking	MongoDB
5.	Authentication Module	Manages secure user login, registration, password rese	JWT (JSON Web Tokens), bcrypt, Passport.js
6.	Application Logic – Admin	Logic for approving/rejecting courses, user management, monitoring usage	Node.js, Express.js
7.	Certificate Generator	Auto-generates downloadable certificates on course completion	PDFKit / jsPDF / HTML2PDF
8.	Discussion Forum / Chat	Enables student-instructor and student-student communication	Socket.io / Firebase Realtime DB / CometChat

9.	Hosting & Deployment	Hosting frontend, backend, and database	Vercel / Netlify (Frontend), Render / Heroku / AWS EC2 (Backend), MongoDB Atlas (Database)
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Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frontend and backend built using open-source technologies	React js, Node js, Express js
2.	Scalable Architecture	3-tier architecture with RESTful APIs-based services.	Microservices, REST API, MVC pattern
3.	Cross-Platform Compatibility	Works on all major browsers and mobile devices	HTML5, CSS3, Responsive Web Design
4.	Cloud-Ready Infrastructure	Can be deployed on cloud platforms with autoscaling	AWS, Heroku, Vercel, Docker
5.	Real-Time Communication	Enables instant messaging and live interaction in forums	Socket.io, WebSockets
6.	Secure User Management	Ensures secure registration, login, and role-based access	JWT, OAuth 2.0, bcrypt
7.	Data-Driven Insights	tracks learner behavior and progress for analytics	MongoDB Aggregation, Google Analytics

References:

[React.js Documentation](#)

[Node js Best Practice](#)

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>