Requirement Analysis Phase

Technology Stack (Architecture & Stack)

Field	Details
Date	21 February 2026
Team ID	LTVIP2026TMIDS47806
Project Name	LearnHub: Your Center for Skill Enhancement
Individual Member	C. Karthik
Maximum Marks	4 Marks

Technical Architecture Description

The OLP application follows the MERN stack architecture (MongoDB, Express.js, React.js, Node.js) with Vite as the frontend build tool. The client communicates with the server via RESTful APIs. The server handles business logic, JWT authentication, and database operations through Mongoose ODM.

Table 1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Web UI for Students, Teachers, and Admin with interactive components	React.js + Vite, Ant Design (Antd), Bootstrap
2	HTTP Client	Handles API communication between frontend and backend	Axios
3	Application Server	RESTful API server; handles routing, middleware, business logic	Node.js + Express.js
4	Authentication	JWT token generation and validation; bcrypt password hashing	jsonwebtoken + bcryptjs
5	File Uploads	Handles multipart/form-data for course content uploads	Multer
6	Database	NoSQL document store for users and courses data	MongoDB + Mongoose ODM
7	Environment Config	Manages sensitive variables (PORT, MongoDB URI, JWT Secret)	dotenv

| 8 | Dev Tool | Auto-restart backend on file changes | Nodemon |

Table 2: Database Schema

Collection	Fields	Description
users	_id, name, email, password, type	Stores all users. 'type' field determines role: student, teacher, or admin
courses	_id, userID (FK), C_educator, C_categories, C_title, C_description, sections, C_price, enrolled	Stores course data. userID references the teacher from the users collection