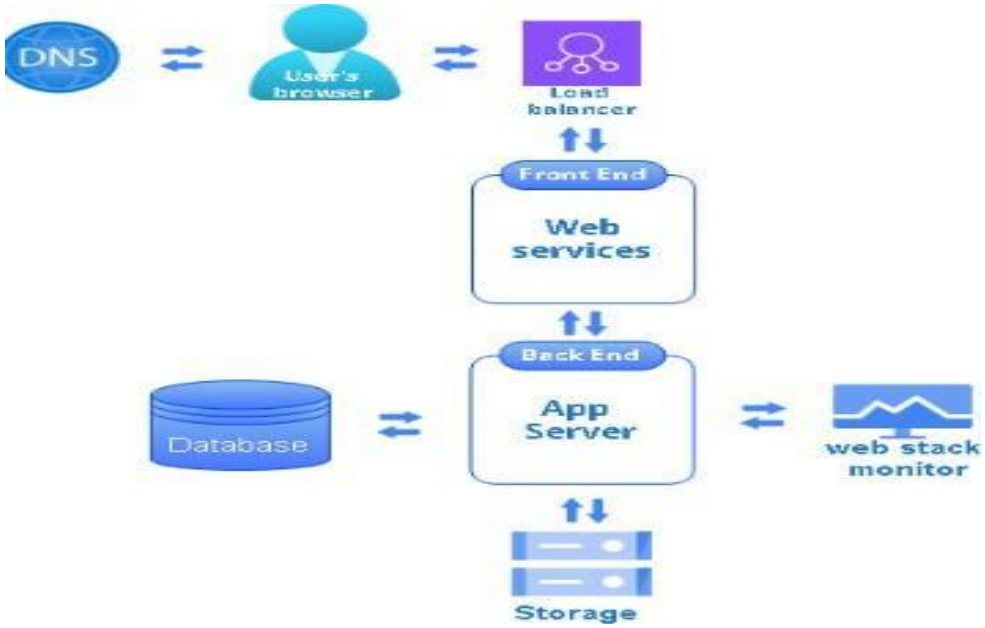
Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	27 June 2025
Team ID	LTVIP2025TMID20380
Project Name	HouseHunt : Finding your perfect rental Home
Maximum Marks	4 Marks

Technical Architecture – HouseHunt

HouseHunt is built using a **client-server architecture**, ensuring smooth interaction between users, agents, and admins. The system is divided into three main layers: **Frontend**, **Backend**, and **Database**. RESTful APIs connect the layers, enabling secure and efficient data exchange. Real-time chat and notifications are supported using **Socket.IO**.



Architecture Guidelines – HouseHunt

- The system includes core blocks:

1. **Frontend:** React.js (Material UI, Bootstrap)
2. **Backend:** Node.js + Express.js (REST APIs)
3. **Database:** MongoDB (User, Complaint, Chat, Feedback data)

- **Infrastructure:**
    1. Local setup for development
    2. Cloud deployment via Vercel (frontend), Render or Railway (backend), MongoDB Atlas (database)
- **External Interfaces:**
    1. Gmail SMTP for emails
    2. Google OAuth for login
    3. Optional: Twilio for SMS
- **Data Storage:**
    1. All structured data in MongoDB
    2. Files/images stored via Firebase or AWS S3 (optional)
- **ML Model (Optional):**

1. Future-ready for smart routing or auto-prioritization using ML

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	**User Interface**	How user interacts with the application (Web UI, etc.)	**React.js**, **HTML**, **CSS**, **JavaScript**, **Material UI**, Bootstrap
2	**Backend**	Server-side logic, API routes, authentication, CRUD operations	**Node.js**, **Express.js**
3	**Authentication**	Handles user login, registration, and JWT-based session contro	**JSON Web Token (JWT)**
4	**API Testing**	Testing API endpoints manually during development	**Postman**
5	**Database**	Data storage for users, complaints, chats, etc.	**MongoDB (NoSQL)**
6	**State Management**	Handling local component state and API response handling	**React useState, useEffect, Axios**
7	**Image Upload**	Uploading and saving property images to server	**Multer (Node middleware)**
8	**Routing**	Navigating between pages in frontend	**React Router DOM**
9	**Admin Panel**	Admin functionalities like owner approval	**Custom-built React Components**
10	**Infrastructure**	Hosting backend/frontend on cloud/local	**Localhost, Render, Railway, Cloud Foundry, Kubernetes**

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology Used
1	**Open-Source Frameworks**	Libraries and frameworks used	**React.js**, **Express.js**, **Node.js**, **Mongoose**, **Socket.io**
2	**Security Implementations**	Authentication, Authorization, Data Protection	**JWT**, **bcrypt.js**, **CORS**, **HTTPS**, **SHA-256**, **Helmet**
3	**Scalable Architecture**	Modular design for performance and growth	**3-tier architecture**, **Microservices-ready**, **REST APIs**
4	**Availability**	Ensures uptime, handles traffic	**Load Balancers**, **Cloud Deployment**, **Clustered MongoDB**
5	**Performance**	Optimized code for response time and user experience	**Axios**, **CDN**, **Caching (Redis optional)**, **Lazy Loading**

References

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