HOUSE HUNT

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1. INTRODUCTION

1.1 PROJECT OVERVIEW:

🏠 PROJECT TITLE:

HOUSEHUNT**: Finding Your Perfect Rental Home**

📘 PROJECT OVERVIEW:

The *HOUSEHUNT* project is designed to simplify and streamline the rental home search process by providing users with a smart, efficient, and user-friendly digital platform. It aims to bridge the gap between property seekers and landlords or real estate agents by offering a centralized system where rental properties can be discovered, compared, and secured with ease.

Through the use of advanced search filters, interactive map views, and real-time availability updates, HOUSEHUNT helps users find rental homes that best match their budget, lifestyle, and location preferences. Whether a student, professional, or family, the platform offers tailored solutions to make the house-hunting experience faster, smoother, and more reliable.

🎯 OBJECTIVES:

- To provide a digital platform for users to search for rental properties.
- To help users filter properties based on specific criteria like location, price, size, and amenities.
- To assist landlords and property managers in listing and managing rental homes efficiently.
- To promote secure communication between tenants and property owners.
- To reduce the time and effort traditionally required in searching for rental homes.

💻 KEY FEATURES:

- User Registration and Login
- Smart Property Search with Filters
- Map-based Property Listings

- Detailed Property Information with Images
- Virtual Tours or Video Walkthroughs
- Save and Compare Properties
- Contact Landlord or Schedule Visits
- Notifications and Alerts for New Listings

👥 **TARGET USERS:**

- College students searching for hostels or PG accommodations
- Working professionals relocating to new cities
- Families looking for long-term rental homes
- Landlords and real estate agents managing rental listings

🛠️ **TECHNOLOGY STACK (SUGGESTIVE):**

- **Frontend:** React.js / Flutter
- **Backend:** Node.js / Django / Firebase
- **Database:** MongoDB / PostgreSQL / Firestore
- **APIs:** Google Maps API, Geo-location, SMS/Email Alerts
- **Authentication:** Firebase Auth / OAuth

☑️ **EXPECTED OUTCOME:**

A reliable, intuitive platform that reduces the stress of house hunting, connects property seekers with the right listings, and modernizes the rental process through technology.

1.2 Purpose:

🎯 **PURPOSE OF THE PROJECT**

The purpose of the **HOUSEHUNT** project is to develop a smart and convenient platform that simplifies the process of finding and renting a home. The traditional house-hunting process is often time-consuming, unorganized, and stressful. HOUSEHUNT aims to eliminate these challenges by offering an all-in-one digital solution where users can search, filter, view, and secure rental properties efficiently.

This project is designed to:

- **Help tenants** easily find homes that match their needs, budget, and lifestyle.
- **Assist landlords and agents** in listing and managing their rental properties.

- **Provide a seamless communication channel** between renters and property owners.
- **Enhance user experience** through technology like virtual tours, map-based searches, and real-time notifications.

Ultimately, the project seeks to **digitize and modernize the rental experience**, making it faster, safer, and more accessible to everyone.

2. IDEATION PHASE

2.1 Problem statement:

Finding a suitable rental home is often a **time-consuming**, **confusing**, and **inefficient** process for both tenants and landlords. Renters typically rely on scattered sources such as local brokers, social media posts, or word-of-mouth, which often lack updated information, transparency, and proper filtering options. Similarly, landlords face difficulty in reaching the right tenants and managing listings efficiently.

There is **no unified platform** that effectively connects renters with landlords while providing smart search filters, real-time availability, virtual tours, and secure communication.

Hence, there is a need for a **comprehensive digital solution** that simplifies the rental process by helping users:

- Find verified rental properties quickly,
- Filter based on specific preferences (location, price, amenities, etc.),
- View complete property details virtually,
- Communicate securely with landlords or agents.

The **HOUSEHUNT** platform is proposed to solve these challenges by providing an intelligent, interactive, and easy-to-use application for both property seekers and property owners.

2.2 Empathy Map canvas:

□ Empathy Map Canvas: Target User – Rental Home Seeker (Tenant)

Section	Insights
Says	- "I want a house near my college/office." - "It should be in my budget." - "I don’t trust random online listings."
Thinks	- "Is this area safe and well-connected?" - "What if the owner is not genuine?" - "Will I find a good home before my deadline?"
Does	- Searches on multiple apps and websites - Asks friends or brokers for help - Visits locations physically to check homes

Section	Insights
Feels	- Frustrated by lack of reliable information - Worried about scams or hidden charges - Stressed about time and budget

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🔍 **User Needs (From Empathy Map)**

- A **trusted platform** with verified listings
- **Easy search and filtering** based on personal preferences
- **Clear details** like rent, amenities, and nearby facilities
- **Virtual tours** to save time on physical visits
- **Safe and direct communication** with landlords

2.3 Brainstorming :

💡 **Brainstorming for HOUSEHUNT: Finding Your Perfect Rental Home**

🔍 **Main Goal:**

To build a digital platform that helps users easily search, view, and secure rental homes based on their specific needs.

☐ **Ideas Generated During Brainstorming:**

1. User Needs and Pain Points

- Difficulty finding reliable rental listings
- Lack of transparency in pricing and amenities
- No real-time availability status
- Inconvenience of physically visiting multiple properties
- Risk of scams or fake listings

2. Platform Features

- Advanced search filters (location, rent, rooms, pet-friendly, etc.)
- Map integration to show properties with nearby facilities
- Verified listings and user reviews
- Virtual house tours via video or 360° images
- Save favorite properties and set alerts for new listings
- Secure messaging between tenant and landlord

- Document upload and digital rental agreement option

3. User Roles

- **Tenants/Property Seekers**
  - Can search, filter, and contact owners
- **Landlords/Property Managers**
  - Can list properties, respond to inquiries, manage availability
- **Admins (Platform Owner)**
  - Can verify listings, manage users, handle reports

4. Monetization Ideas

- Premium listings for landlords
- Featured ads for properties
- Subscription plans for frequent seekers or agents

5. Technology Possibilities

- React Native for mobile app
- Firebase for real-time database and authentication
- Google Maps API for location features
- AI-based recommendation system (optional future enhancement)

✅ **Final Selected Ideas:**

- Clean UI with real-time filters
- Map view with nearby amenities
- Verified listing system
- Virtual home tours
- Notification alerts for saved searches
- Direct landlord-tenant messaging

3. REQUIREMENTS ANALYSIS

3.1 Customer Journey map:

The **Customer Journey Map** outlines the step-by-step experience of a **rental home seeker** using the HOUSEHUNT platform. It helps understand the user's needs, emotions, and interactions at each stage to improve the design and functionality of the system.

🗺️ Customer Journey Map: Tenant (Rental Seeker)

Stage	User Action	User Goal	Touchpoints	Pain Points	Opportunities
1. Awareness	Hears about HOUSEHUNT via ad/social media	Learn about rental options	Ads, Friends, Social Media, App Store	Doesn't know if the platform is trustworthy	Provide testimonials, ratings, and real images
2. Onboarding	Installs the app and signs up	Start using the platform	App/Website	Lengthy sign-up or confusing UI	Simple sign-up with Google/Facebook login
3. Search	Searches based on location, budget, etc.	Find relevant rental properties	Search bar, Filters, Map view	Too many irrelevant listings	Smart filters and suggestions
4. Exploration	Views property details and virtual tours	Get clear understanding of property	Property page, Photo gallery, Video tour	Lack of detailed information or images	Add virtual tours, reviews, nearby places info
5. Communication	Contacts landlord/agent	Ask questions or schedule visit	In-app chat, Call or Email options	Unresponsive landlords or delayed replies	In-app messaging & availability indicators
6. Decision Making	Shortlists and compares homes	Choose the best rental option	Wishlist, Compare feature	Difficult to compare listings easily	Add side-by-side comparison feature
7. Booking/Visit	Books visit or requests a rental	Secure or finalize the property	Booking form, Scheduler	Manual visit scheduling is inconvenient	Offer online appointment booking
8. Post-Move Support	Moves in and shares feedback	Share experience, report issues	Rating system, Feedback form	No way to review or rate landlord	Add tenant reviews and feedback system

3.2 Solution Requirement:

Certainly, Pavan! Here is **Section 3.2 – Solution Requirement** for your project **HOUSEHUNT: Finding Your Perfect Rental Home**, under the Requirements Analysis chapter.

✅ 3.2 Solution Requirement

The **solution requirements** define the functional and non-functional needs that the HOUSEHUNT platform must fulfill to solve the user problems and deliver a smooth, efficient rental home search experience.

🔧 A. Functional Requirements

These describe what the system **should do**:

1. **User Registration & Login**
    - Users (tenants and landlords) must be able to create accounts and log in securely.
    - Support for social login (Google, Facebook).
2. **Property Listing**
    - Landlords can list rental properties with details (rent, location, amenities, photos, etc.).
3. **Advanced Property Search**
    - Users can search/filter properties based on criteria such as:
        - Location
        - Price range
        - Number of bedrooms/bathrooms
        - Furnished/unfurnished
        - Pet-friendly, etc.
4. **Map Integration**
    - Display properties on an interactive map using Google Maps API.
    - Show nearby amenities (schools, hospitals, metro, etc.).
5. **Property Details Page**
    - Show full information about a property with images, videos, virtual tours.
6. **Favourites and Comparison**
    - Allow users to bookmark/save properties.

- Allow comparison of multiple properties side-by-side.

7. **Communication System**
    - In-app chat or messaging system for tenants and landlords.
    - Option to schedule visits.
8. **Notifications and Alerts**
    - Notify users about new listings matching their saved search.
    - Send alerts for price drops or availability updates.
9. **Ratings and Feedback**
    - Users can rate landlords and leave feedback after renting a property.
10. **Admin Panel**

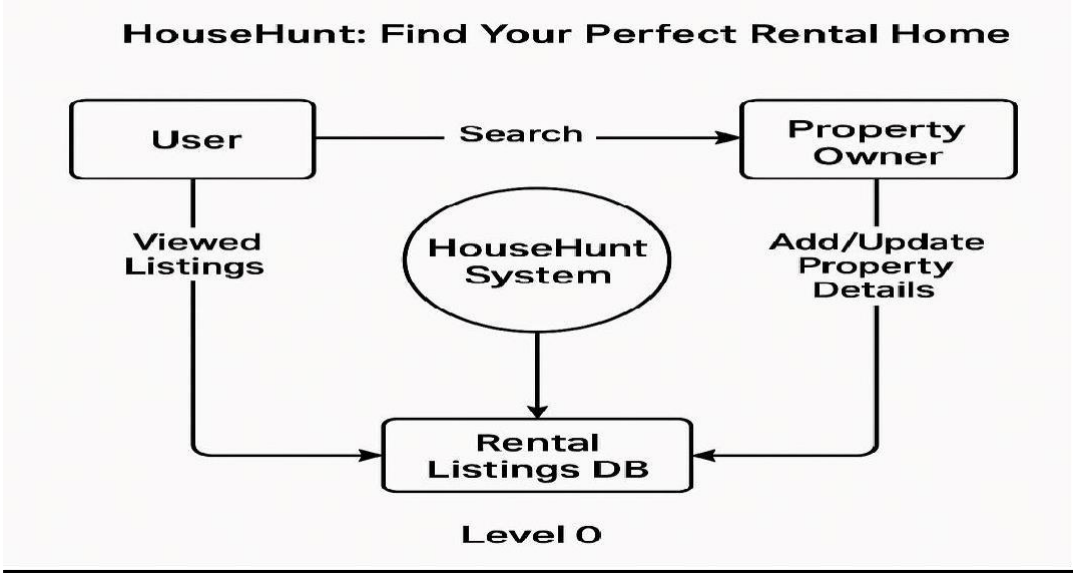
- Admins can manage users, verify listings, and remove inappropriate content.

⚙ B. Non-Functional Requirements

These describe how the system should **perform**:

1. **Usability**
    - Clean, intuitive, mobile-friendly user interface.
2. **Performance**
    - Fast loading time even with multiple property listings.
3. **Scalability**
    - Ability to handle increasing number of users and listings.
4. **Security**
    - Secure user authentication and data storage (e.g., Firebase Auth, SSL encryption).
5. **Reliability**
    - Platform should be available 99.9% of the time with proper error handling.
6. **Maintainability**
    - Easy to update listings, fix bugs, and roll out new features.

3.3 DATA FLOW DIAGRAM:



3.4 TECHNOLOGY STACK:

✅ What is a Technology Stack?

A **Technology Stack** is a set of technologies (programming languages, frameworks, tools, and services) used to build and run an application. It typically includes:

- **Frontend (Client-side):** What users interact with.
- **Backend (Server-side):** Where the business logic and database interactions happen.
- **Database:** Where data is stored.
- **DevOps/Hosting:** How the app is deployed and maintained.

🏗️ Example Technology Stack for HouseHunt – Rental Home Platform

Layer	Technology Used
Frontend	HTML, CSS, JavaScript, React.js or Vue.js
Backend	Node.js with Express.js or Django (Python)
Database	MongoDB or PostgreSQL
Authentication	Firebase Auth, JWT (JSON Web Tokens)

Layer	Technology Used
APIs	RESTful APIs or GraphQL
Cloud/Hosting	Vercel (for frontend), Render / Heroku / AWS (for backend)
DevOps & Tools	Git, GitHub, Docker (optional), Postman
Maps Integration	Google Maps API
Search Function	Algolia or ElasticSearch (optional)

4. PROJECT DESIGN

4.1 Problem Solution Fit:

Definition:
Problem-Solution Fit is the stage where you clearly identify a real-world **problem** and validate that your **solution** effectively solves it. It's a critical early step in building a successful product — ensuring you're not building something no one needs.

🏠 **Problem-Solution Fit for "House Hunt – Rental Home Platform"**

🔍 **Problem:**

- Finding rental homes is **time-consuming**, **unorganized**, and **frustrating**.
- Tenants struggle to filter homes based on **budget, location, amenities**, and **owner type (broker vs. direct)**.
- Owners and agents have no unified platform to **list and manage properties** effectively.
- **Fake listings** and **lack of trust** in online rental platforms lead to poor user experience.

💡 **Solution:**

- **House Hunt** provides a **smart and user-friendly platform** to connect renters with verified property listings.
- Offers advanced **search filters** (location, price, BHK, amenities, etc.).
- Uses **verified owner profiles** and **user reviews** to build trust.
- Integrates **Google Maps** for location accuracy.
- Supports **direct communication** between tenants and landlords or agents.
- Mobile-friendly design with **instant alerts** for new listings matching user preferences.

🎯 Outcome of Problem-Solution Fit

- Users **save time**, **gain trust**, and **find homes faster**.
- Property owners/agents can reach more potential tenants efficiently.
- Platform builds loyalty through **transparency**, **ease of use**, and **reliable data**.

4.2 Proposed Solution:

🏠 Proposed Solution: HouseHunt Platform

To address the challenges faced by renters and property owners, we propose the development of **HouseHunt**, an intelligent and user-friendly rental housing platform designed to streamline the property search and listing process.

🔧 Key Features of the Proposed Solution:

1. **Smart Property Search**
    - Advanced filters: location, price range, number of rooms (BHK), furnishing type, etc.
    - Interactive map view with Google Maps integration.
    - Real-time search suggestions and location autocomplete.
2. **Verified Listings**
    - Owner and property verification using document uploads.
    - User reviews and ratings to ensure authenticity.
3. **User Profiles & Authentication**
    - Role-based accounts: Tenant, Owner, Agent.
    - Secure login system using OTP or Email (with JWT/Firebase Auth).
4. **Property Listing & Management**
    - Easy listing form with image upload, rent details, and amenities.
    - Owners can manage multiple listings from a dashboard.
5. **Communication Tools**
    - In-app chat or messaging system between tenants and property owners/agents.
    - Appointment scheduling for property visits.
6. **Notification System**
    - Alerts for new listings based on saved search preferences.

- Updates on message replies, appointment reminders, etc.

7. **Mobile-Responsive UI**
    - Seamless experience across desktop and mobile devices.
    - Lightweight and intuitive frontend (React.js or Vue.js).

🌐 **Technologies Used:**

- **Frontend:** React.js, HTML5, CSS3, Bootstrap/Tailwind
- **Backend:** Node.js with Express / Django (Python)
- **Database:** MongoDB / PostgreSQL
- **Hosting:** Vercel (Frontend), Heroku/AWS (Backend)

4.3 Solution Architecture:

📍 **Overview:**

The **solution architecture** outlines how the various components of the HouseHunt platform interact to deliver a smooth and efficient rental experience for both property seekers and owners. It includes the **frontend**, **backend**, **database**, and **external services**, all working together.

🔄 **Architecture Layers:**

1. Frontend Layer (Client-Side)

- **Technology:** React.js / Vue.js, HTML5, CSS3, JavaScript
- **Role:**
    - Provides an interactive user interface for tenants and property owners
    - Handles user inputs, filters, and search queries
    - Communicates with backend via REST API or GraphQL
    - Responsive design for mobile and desktop

2. Backend Layer (Server-Side)

- **Technology:** Node.js with Express / Django (Python)
- **Role:**
    - Manages business logic and routes
    - Handles authentication, data validation, and authorization

- Connects to database and third-party APIs
- Sends data to frontend via APIs

3. Database Layer

- **Technology:** MongoDB (NoSQL) / PostgreSQL (SQL)
- **Role:**
  - Stores user profiles, listings, chat messages, ratings/reviews, appointment data
  - Ensures data integrity and security

4. Authentication & Security

- **JWT / Firebase Auth:** For secure user login, signup, and session management
- **Role-based access:** Differentiates between tenants, owners, and agents

5. Third-Party APIs

- **Google Maps API:** For map-based property search and location autocomplete
- **Notification APIs (e.g., Firebase Cloud Messaging):** For sending real-time alerts and updates

6. Hosting & Deployment

- **Frontend Hosting:** Vercel / Netlify
- **Backend Hosting:** Heroku / Render / AWS EC2
- **Database Hosting:** MongoDB Atlas / AWS RDS

7. DevOps & Monitoring

- **Git & GitHub:** For version control
- **CI/CD Tools:** GitHub Actions or Jenkins (optional)
- **Monitoring Tools:** Postman for testing, LogRocket / Sentry for debugging

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📊 Diagram (Textual Representation)

[Frontend (React)] <--> [Backend (Node.js/Django)] <--> [Database (MongoDB/PostgreSQL)]

| |

| |

[Google Maps API] [Auth System - JWT/Firebase]

| |

[User Device] [Notifications API]

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning:

🗓️ Week-wise Breakdown

Week	Activities	Deliverables
Week 1	🔹 Requirement Gathering & Analysis 🔹 UI/UX Design (Wireframes) 🔹 Architecture Planning (DFD, ERD)	📄 SRS Document □ Empathy Map □ System Architecture
Week 2	🔹 Frontend Setup (React.js/HTML/CSS) 🔹 Design Login, Signup, Home, Search pages 🔹 Setup Database (MongoDB/PostgreSQL)	💻 Basic Frontend Pages 🗂️ Database schema ready
Week 3	🔹 Backend Development (APIs using Node.js/Django) 🔹 User Auth, Listings, Search API 🔹 Connect Frontend with Backend	🔁 Working API Integration ✅ Authentication & Search
Week 4	🔹 Testing & Debugging 🔹 Final Deployment (Vercel + Heroku) 🔹 Documentation & PPT Preparation	🚀 Live Deployed App 📑 Report & PowerPoint Slides

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performing Testing:

□ Objective of Testing:

To ensure the House Hunt platform works as intended by identifying bugs, verifying functionalities, and improving overall performance and reliability.

🔍 Types of Testing Performed

1. Unit Testing

- **What it does:** Tests individual components like functions, APIs, or UI buttons.
- **Tools:** Jest (for React), Mocha/Chai (Node.js), Pytest (if using Django)
- **Example:**
    - Validate user input on registration form
    - Test login function with correct/incorrect credentials

2. Integration Testing

- **What it does:** Tests interactions between frontend, backend, and database.
- **Tools:** Postman, Insomnia, Supertest
- **Example:**
    - Ensure search results from backend display correctly on the UI
    - Add a new listing and retrieve it through API

3. Functional Testing

- **What it does:** Ensures that the platform's features work as expected.
- **Method:** Manual testing or automation with Selenium
- **Example:**
    - Login/signup flow
    - Listing a new property
    - Viewing property details and location on map

4. UI/UX Testing

- **What it does:** Checks the usability, responsiveness, and consistency of the UI.
- **Tools:** Browser Developer Tools, Lighthouse
- **Example:**
    - Mobile responsiveness
    - Navigation through menu, home, and listing pages

5. Performance Testing

- **What it does:** Assesses how the app performs under load.
- **Tools:** Google Lighthouse, JMeter (basic)
- **Example:**
    - Page load speed
    - API response times under multiple requests

6. Security Testing

- **What it does:** Checks for vulnerabilities like unauthorized access or insecure endpoints.
- **Tools:** OWASP ZAP (optional), Manual testing
- **Example:**
    - Test for secure login and logout
    - Ensure role-based access (tenant vs. owner)

📝 Bug Tracking & Fixing

- Track issues using a simple **spreadsheet** or **GitHub Issues**
- Prioritize bugs by severity (High, Medium, Low)
- Fix issues before final deployment

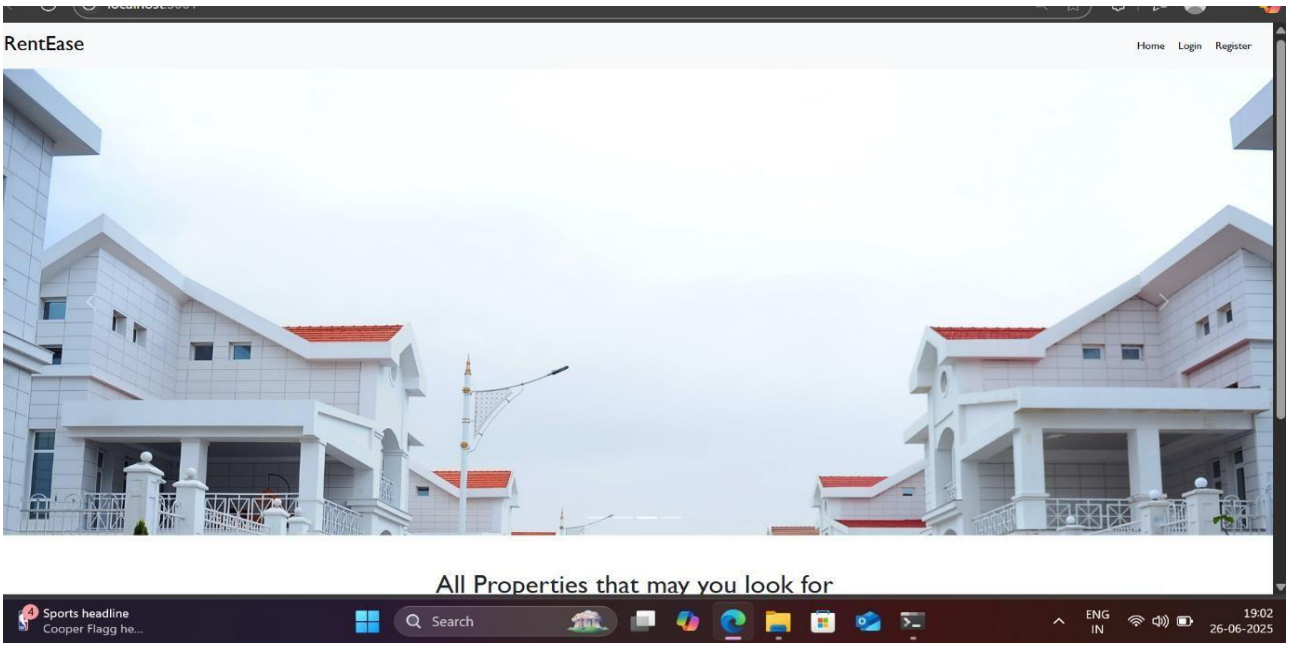
✅ Final Testing Checklist:

- All forms validated (Login, Signup, Listing)
- API calls are working (Add, Search, View Listings)
- Responsive UI on mobile/tablet
- Authentication securely handled
- Deployed site tested with real user scenarios

7. RESULTS

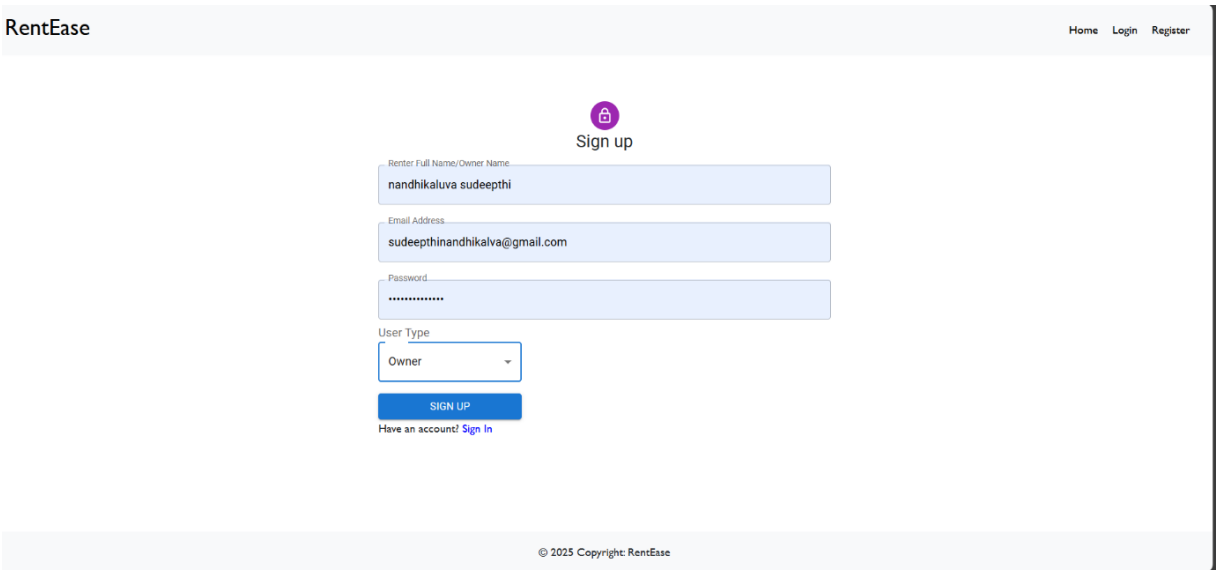
7.1 Output Screenshots:

🖼️ 1. Home Page

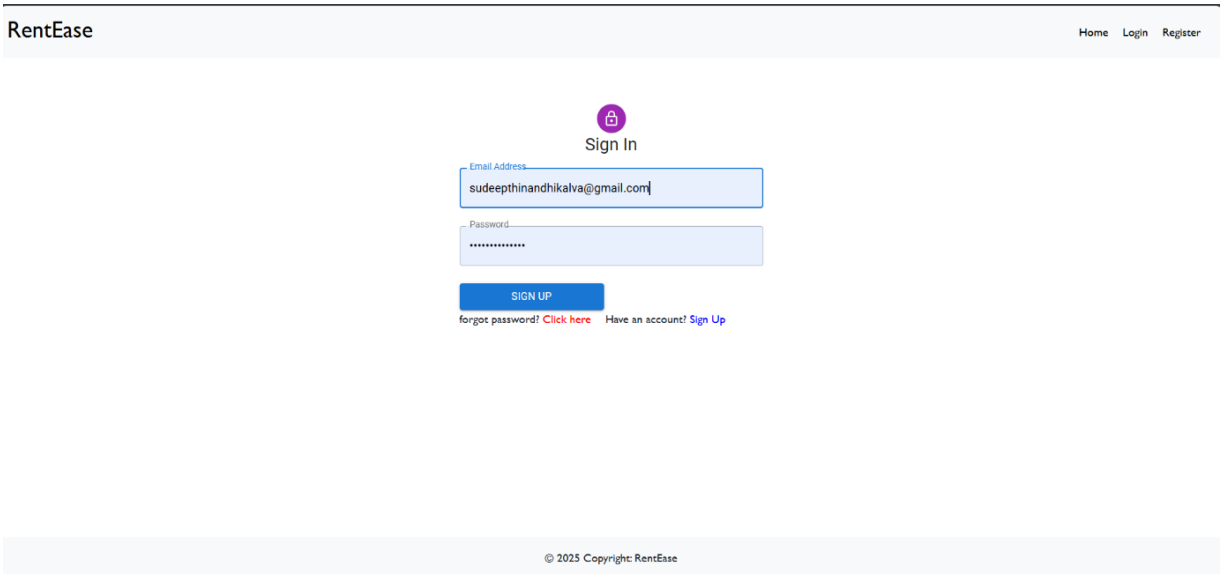


- Welcome message and property search bar
- Quick filters (e.g., 1BHK, 2BHK, Rent Range)

🖼️ 2. User Registration/Login Page

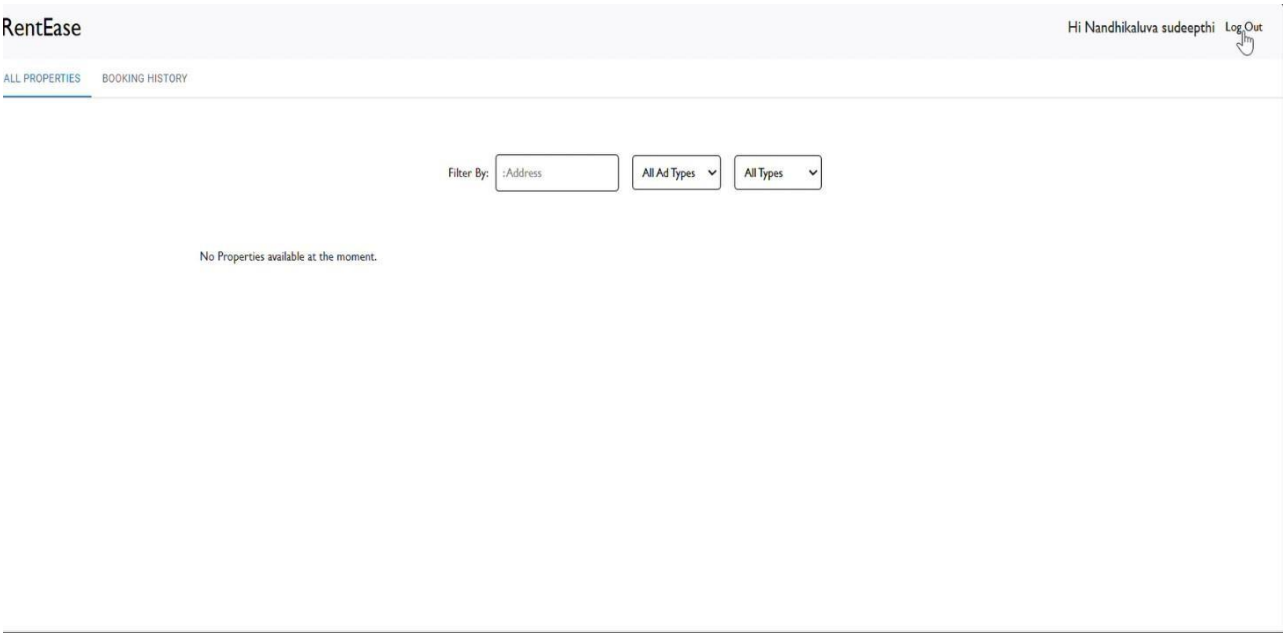


- Signup with email/mobile number
- Login form with validation or sign up



ALL PROPERTIES:

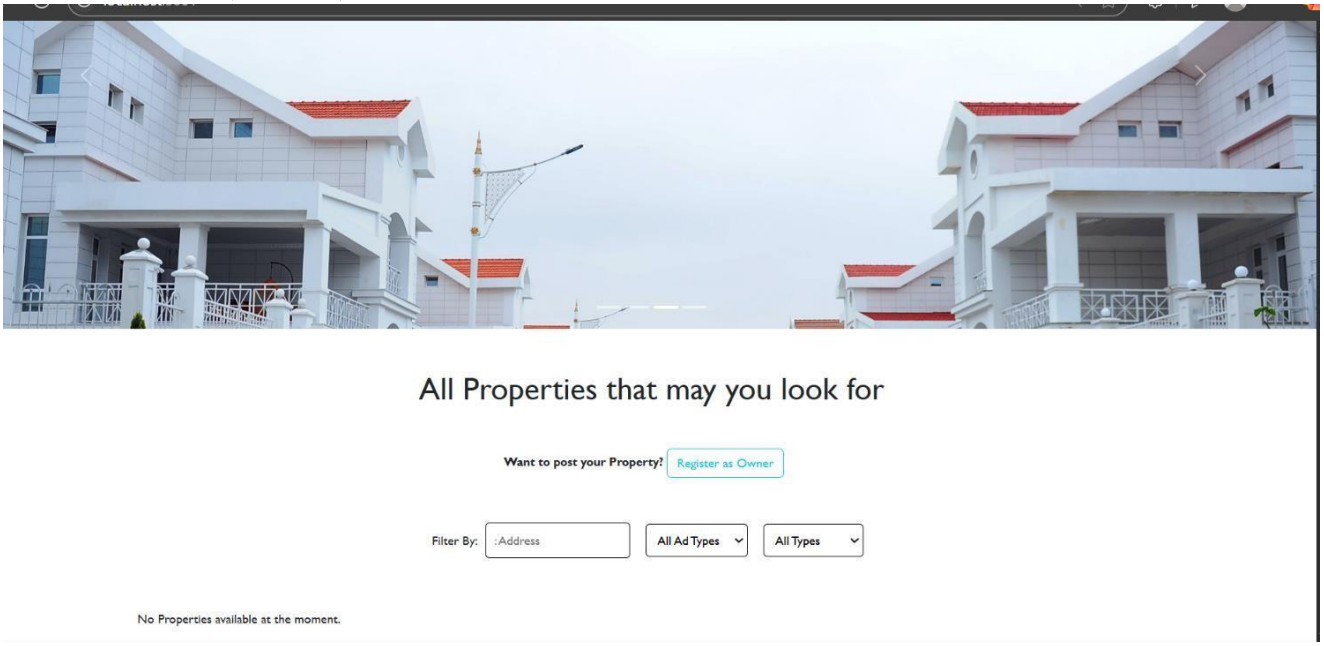
- Grid or list of available properties
- Each card with rent, image, and details



BOOKING HISTORY:

- It contains information about who are booked rooms as a rent
- It includes booking history of persons

PROPERTY POST(OWNER):



8. ADVANTAGES & DISADVANTAGES

✅ Advantages:

1. **User-Friendly Interface**
   - Simple, intuitive design makes it easy for users to search, filter, and view rental properties.
2. **Time-Saving**
   - Advanced filters and real-time search reduce the time needed to find suitable homes.
3. **Verified Listings**
   - Builds trust by ensuring property listings are real and authenticated.
4. **Direct Communication**
   - Tenants and landlords can interact without third-party interference (like brokers).
5. **Responsive Design**
   - Works smoothly on both desktop and mobile devices, improving accessibility.
6. **Map Integration**
   - Google Maps API helps users visualize the location of properties.
7. **Scalable Architecture**

- The modular backend and frontend can easily be scaled to handle more users and listings.

❌ **Disadvantages:**

1. **Initial Development Cost**
   - Building and hosting a full-stack application (with backend, database, and APIs) can be resource-intensive.
2. **Dependency on Internet**
   - Users must have a reliable internet connection to access the platform.
3. **Data Privacy Concerns**
   - Storing user data (e.g., phone number, property location) requires strong security and privacy policies.
4. **Moderation Required**
   - Without active moderation, fake or spam listings may still appear.
5. **Learning Curve (For Owners)**
   - Non-tech-savvy property owners might find it hard to upload listings or use all features initially.
6. **Platform Trust Building**
   - New platforms may take time to gain user trust and compete with existing giants like 99acres, No Broker, etc.

9. CONCLUSION

The **House Hunt** platform offers an innovative and practical solution to the challenges faced by tenants and property owners in the rental housing market. Through a user-friendly interface, smart search filters, verified listings, and real-time communication tools, it simplifies the entire process of finding and listing rental properties.

By integrating modern web technologies such as **React.js**, **Node.js**, **MongoDB**, and **Google Maps API**, the platform ensures a responsive, secure, and scalable experience for users. It bridges the gap between landlords and tenants, reducing dependency on brokers and enabling direct interactions.

Throughout the project, we followed a structured approach including **requirement analysis, design, development, testing**, and **deployment**, resulting in a functional and efficient rental management system.

This project not only demonstrates the application of full-stack development skills but also emphasizes the importance of solving real-world problems with technology. With further

enhancements and real-time deployment, **House Hunt** has the potential to scale into a reliable platform for local rental property needs.

10. FUTURE SCOPE

The current version of **House Hunt** serves as a strong foundation for a full-fledged rental housing platform. To enhance user experience, scalability, and market impact, several improvements and features can be considered for future development.

Possible Future Enhancements:

1. **Mobile App Development**
    - Build native or cross-platform mobile apps using Flutter or React Native for better accessibility.
2. **AI-Powered Recommendations**
    - Use machine learning to suggest properties based on user behaviour and preferences.
3. **Chatbot Support**
    - Add a virtual assistant to help users with FAQs, navigation, and listing queries.
4. **Payment Integration**
    - Enable secure rent payments, deposits, and booking fees directly on the platform (e.g., Razor pay, Stripe).
5. **Document Verification System**
    - Use OCR or APIs to verify documents like rental agreements, ID proofs, etc.
6. **Review and Rating System**
    - Let tenants rate landlords/properties and vice versa to build trust and transparency.
7. **Subscription Plans for Owners/Agents**
    - Provide premium features (e.g., featured listings, analytics) through paid plans.
8. **Real-Time Chat or Video Calls**
    - Improve communication with built-in video calling features for remote property tours.
9. **Localization & Multilingual Support**

- Support regional languages to cater to a wider audience across India or globally.

10. **Admin Dashboard for Platform Management**

- A dedicated admin panel to manage users, monitor listings, handle disputes, and view analytics.

🚀 **Impact of Future Scope:**

Implementing these features will enhance the platform's functionality, improve user satisfaction, and make **House Hunt** competitive in the real estate tech space — with potential for startup incubation or commercialization.

11. APPENDIX:

Project demo link:
https://drive.google.com/drive/folders/1_YhE8omAZgNAhqh1btEtNPa4_kxPOYyh

Git hub link:

https://github.com/Sudeepthi102/HouseHunt-Finding-your-perfect-Rental-home