Four Weeks Industrial Training Project Report On

HomeSpaces: Rental Flat Hunting

Submitted in the partial fulfillment of the requirement for the award of degree of

Bachelor of Technology

in

Computer Science and Engineering

Batch (2022-2026)



Submitted to: Submitted by:

Dr. Ridhi Kapoor Paarth Gilhotra

12201114

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING DAV UNIVERSITYJALANDHAR-PATHANKOT NATIONAL HIGHWAY, NH44, SARMASTPUR PUNJAB-14401

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DECLARATION

I, PAARTH GILHOTRA, hereby declare that the work which is being presented in this

project/training titled "HomeSpaces: Rental Flat Hunting" by me, in partial fulfilment of

the requirements for the award of Bachelor of Technology (B. Tech) Degree in "Computer

Science and Engineering" is an authentic record of my own work carried out under the

guidance of Ms. Janki Singh (Course Instructor).

To the best of my knowledge, the matter embodied in this report has not been submitted

to any other University/ Institute for the award of any degree or diploma.

Dr. Ridhi Kapoor

Assistant Prof. CSE

Paarth Gilhotra

12201114

CERTIFICATE

This is to certify that Mr. Paarth Gilhotra has completed Industrial Training during the period from June 2024 to July 2024 in our Organization / Industry as a Partial Fulfilment of Degree of Bachelor of Technology in Computer Science and Engineering. He was trained in the field of Specialization in React Js & Firebase.



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ABSTRACT

The project **HomeSpaces** facilitates the seamless process of finding and renting flats in various cities. It includes functionalities for user registration, login authentication, and secure storage of user and property data in a cloud-based database. Each user is assigned a unique ID, allowing for personalized experiences and easy management of their account. Users can search for flats using filters such as location, budget, and amenities, view property details, and save their favorite listings. Landlords can list their properties, update details, and manage tenant inquiries. The platform is designed to ensure a smooth interaction, with a user-friendly interface that caters to both tenants and landlords. Built using ReactJS for the frontend and Firebase for backend services, **HomeSpaces** offers fast, real-time data synchronization and high reliability. It is a robust and flexible solution tailored to meet the demands of the modern rental housing market.

This system has two panels.

- ➤ Admin
- > User or Customer

INTRODUCTION

1) Introduction of Project Report

The project report is a comprehensive document that provides detailed information about the proposed project, HomeSpaces. It serves as a blueprint for all operations, outlining the goals, objectives, and strategies to transform this innovative idea into a functional and productive platform. The report acts as a guide to ensure clarity and direction in the execution of the project.

Project reports play a crucial role for both project teams and stakeholders, offering a clear overview of the project's progress and alignment with the original plan. Through these reports, potential risks can be identified early, and corrective actions can be implemented. The report for HomeSpaces includes a breakdown of operations, cost estimates, and expected outcomes, ensuring all stakeholders have a clear understanding of the project's scope and profitability. By providing these insights, the report ensures that the development and implementation of HomeSpaces remain efficient and goal-oriented.

Here are the points that validate the Importance of Project Report:

- Project reports are an important source for managers and stakeholders, to monitor the current progress and measure against the original schedule.
- It helps to predict the threats and develop proper steps to recover.
- There port makes it easier to control the co-stand budget apart from the budgeted cost.
- It will be a source of information to respond to success, stagnation, team results, or quality of work.
- The project report requires completeness and accuracy, also ensures coverage of all dimensions of the project, makes the data more viable.
- It helps the project manage to deal with potential or upcoming risks during projects.

• The report increases the amount of visibility into your projects and will give you full insight

into how your project is performing.

• It helps the entrepreneur to get an exact idea about the initial inputs required for the business.

2) Introduction to Project

HomeSpaces is an innovative platform designed to streamline the process of finding rental flats

across different cities. By leveraging modern web technologies like React JS and Firebase, the

platform offers users a seamless experience for browsing, saving, and managing property listings.

With features tailored for both tenants and landlords, HomeSpaces aims to provide a user-friendly

solution to the growing rental market Training Company

3) Training Company: O7 Services

COMPANY PROFILE

O7 Services is an established company founded in 2015 and authorized by the government.

They specialize in a variety of services including Web Development, Mobile Application

Development, Custom Software Development, UI/UX Designing, Hosting services, Digital

Marketing, Registration of Domain Names with various extensions, AMC & MMC Services,

Bulk SMS and voice calls. O7 Services offers advanced IT solutions supporting the entire

business cycle - from consulting to system development, deployment, quality assurance, and

24x7 support.

4) Period of Training

I have taken Six Weeks Industrial Training after the completion of Fourth Semester of

B.Tech(CSE) Degree. Regular classes were provided by the institute and at the end of the training,

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one week was given to complete our respective project and to submit it.

DAV University, Jalandhar

PROJECT TITLE AND OVERVIEW

1) Project Title - HomeSpaces: Rental Flat Hunting

Project Overview –

HomeSpaces is a web-based platform designed to simplify the search for rental flats across multiple cities. The project aims to provide a user-friendly interface where tenants can easily search for available properties based on their preferences, such as location, budget, and amenities. The platform also allows tenants to save and manage their favorite listings

Built using ReactJS for a dynamic and responsive frontend, and Firebase for backend services, HomeSpaces aims to bridge the gap between tenants and landlords with a modern, efficient, and secure platform for finding and renting properties.

This system has two panels.

1) Admin Panel:

On the landlord's or Admin's side. The Admin Panel of HomeSpaces is designed to manage the entire platform and ensure smooth operations. The admin has the authority to oversee user registrations, manage property listings, and monitor user activities on the platform. Admins can add, update, or remove listings, verify and manage tenant and landlord profiles, and handle any disputes or issues. The admin also has access to detailed analytics regarding platform usage, including the number of active users, popular listings, and overall performance, ensuring the platform is functioning efficiently.

2) User or Customer Panel:

The User Panel of HomeSpaces is designed for tenants and landlords, providing them with tailored functionality to meet their needs. Tenants can register, log in, search for rental properties based on various filters such as location, price, and amenities, view property details, and save their favorite listings. They can also contact landlords directly through the platform

OBJECTIVE

- Provide a user-friendly platform for tenants to easily search, filter, and find rental flats across multiple cities based on their preferences such as budget, location, and amenities.
- Enable landlords to efficiently list, update, and manage their rental properties, ensuring a smooth process for both property owners and potential tenants.
- Implement real-time data updates using **Firebase**, ensuring that users and landlords always have access to the most current property listings and availability.
- Ensure secure user authentication for both tenants and landlords to protect personal and property data, making the platform reliable and safe for all users.

PROGRAMMING LANGUAGES USED

HTML (HyperText Markup Language):

HTML (Hypertext Markup Language) is the standard language used to create and design webpages. It forms the backbone of all web content by structuring web pages with elements such as headings, paragraphs, images, links, tables, and lists. HTML is not a programming language in the traditional sense but a markup language used to define the structure of web content.

Key Points:

- ➤ Elements and Tags: HTML uses tags to define various parts of a webpage. Each element is enclosed in opening and closing tags (e.g., <h1> for headings, for paragraphs).
- ➤ **Hyperlinks**: One of the main features of HTML is its ability to link web pages through hyperlinks using the <a> tag. This allows navigation between pages and websites, forming the web's "hypertext" structure.
- ➤ Multimedia Integration: HTML allows the integration of images, videos, audio, and other media types through tags like , <video>, and <audio>, making webpages interactive and engaging.
- > Forms and User Input: HTML forms are used to collect user input such as text, passwords, checkboxes, and radio buttons. These forms can be submitted to the server for processing and storage.
- ➤ **Document Structure**: HTML defines the overall structure of a webpage with essential components like the <head> (containing metadata, links to stylesheets, scripts) and <body> (containing the content to be displayed on the page).

Importance of HTML in Project:

HTML (HyperText Markup Language) is the foundation of the **HomeSpaces** project. It structures the content of the platform, such as property listings, user dashboards, and forms. HTML ensures that the elements on the website are logically organized and accessible. It enables the creation of semantic elements like headings, buttons, and input fields, which are

essential for defining the user interface. Without HTML, the platform would lack a proper framework to present content to users.

CSS (Cascading Style Sheets):

CSS (Cascading Style Sheets) is a style sheet language used to control the visual presentation of a web page written in HTML or XML. While HTML provides the structure of a webpage, CSS is responsible for styling it, including layouts, colors, fonts, and overall design. CSS allows developers to create visually appealing and responsive websites that adapt seamlessly to different screen sizes and devices.

Key Points:

- > Styling Elements: CSS controls the appearance of HTML elements, such as changing font styles, sizes, colors, and spacing to improve readability and design.
- Layouts and Positioning: CSS enables precise control over the positioning and layout of elements on a page using properties like margin, padding, flexbox, and grid.
- > Responsive Design: With features like media queries, CSS ensures that websites look good on devices of all sizes, from desktops to smartphones.
- ➤ Cascading Rules: CSS follows a "cascading" order of rules, meaning styles can be inherited, overridden, or specified using selectors and priorities.
- > Animation and Interactivity: CSS supports animations and transitions, enabling developers to create interactive visual effects without relying on JavaScript.
- > Separation of Concerns: CSS keeps styling separate from HTML content, improving maintainability and allowing developers to reuse styles across multiple pages.

Types of CSS:

- 1. **Inline CSS**: Styles applied directly to an HTML element using the style attribute. Example: This is red text.
- 2. **Internal CSS**: Styles written inside a <style> tag within the HTML <head>. Example: <style> p { color: blue; } </style>
- 3. **External CSS**: Styles written in a separate .css file and linked to the HTML document. Example: k rel="stylesheet" href="styles.css">

Importance of CSS in Project:

CSS (Cascading Style Sheets) brings the visual appeal to the **HomeSpaces** platform by styling the HTML elements. It ensures the website is aesthetically pleasing and consistent across all pages. CSS is responsible for layouts, color schemes, typography, and responsive designs, making the platform visually engaging and user-friendly. Additionally, CSS allows customization of components to align with the branding of **HomeSpaces**, enhancing its professional look and feel.

JavaScript:

JavaScript (JS) is a high-level, versatile, and lightweight programming language primarily used to create dynamic and interactive web applications. It is one of the core technologies of the web, alongside **HTML** and **CSS**, enabling developers to enhance user experiences by adding interactivity to websites. JavaScript can run both on the client-side (in the browser) and server-side (using environments like Node.js).

Key Points:

- ➤ Interactivity: JavaScript allows developers to add interactivity to web pages, such as dropdown menus, sliders, pop-ups, and form validation.
- ➤ **DOM Manipulation**: JS can dynamically update and manipulate the HTML and CSS of a webpage, enabling features like live content updates without refreshing the page.
- Cross-Browser Compatibility: JavaScript works across all major web browsers, making it essential for building interactive web applications.
- > Event Handling: JavaScript allows developers to respond to user actions like clicks, hover, and input using event listeners.
- Extensibility with Libraries and Frameworks: Popular libraries (e.g., jQuery) and frameworks (e.g., React, Angular, and Vue.js) extend JavaScript's capabilities, simplifying and accelerating development.

- > Server-Side Programming: With platforms like Node.js, JavaScript can be used to build scalable server-side applications.
- ➤ Asynchronous Operations: JavaScript supports asynchronous programming using features like Promises, async/await, and AJAX, enabling smooth data fetching and background operations.

Importance of JavaScript in Project:

JavaScript adds interactivity and dynamic functionality to the **HomeSpaces** platform. It powers features like property search, filtering options, and real-time updates, providing a seamless user experience. JavaScript enhances user engagement by enabling interactive elements, such as dropdown menus, modals, and form validations. It also plays a crucial role in communicating with the backend (Firebase) to fetch and display data dynamically, making the platform more responsive and functional.

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ReactJS:

ReactJS is a popular open-source JavaScript library used for building user interfaces, especially single-page applications (SPAs). Developed and maintained by **Meta (formerly Facebook)**, React focuses on creating dynamic and responsive web applications with high performance and a seamless user experience. React's component-based architecture makes it easy for developers to build reusable and maintainable UI elements.

Key Features of ReactJS:

- ➤ Component-Based Architecture: React applications are built using reusable components, which encapsulate their logic and styling, promoting modular and maintainable code.
- ➤ Virtual DOM: React uses a virtual DOM to optimize updates and rendering, ensuring high performance by reducing direct manipulation of the real DOM.

- ➤ Declarative Syntax: React uses a declarative approach, meaning developers can describe "what" they want their UI to look like, and React efficiently updates and renders components as needed.
- > JSX (JavaScript XML): React allows developers to write HTML-like syntax directly in JavaScript, making it easier to create and visualize UI components.
- > State Management: React provides state and props to manage data within components. For more complex applications, tools like Redux or Context API can be used for global state management.
- > One-Way Data Binding: Data flows in a single direction, making it easier to debug and predict changes in the application state.
- > Rich Ecosystem: React has a vast ecosystem of libraries and tools, such as React Router for routing and Material-UI for pre-designed components.

Importance of React Js in Project:

In **HomeSpaces**, ReactJS plays a crucial role in creating an interactive and user-friendly interface for tenants and landlords. Features like dynamic property listings, search filters, and responsive layouts are efficiently built using React components. Its integration with **Firebase** ensures seamless real-time updates, making the platform engaging and functional.

Node.JS:

Node.js is an open-source, cross-platform runtime environment that allows developers to run JavaScript code on the server side. Built on **Google Chrome's V8 JavaScript engine**, Node.js is lightweight, efficient, and designed for building scalable and high-performance network applications. It is particularly well-suited for real-time applications and APIs due to its non-blocking, event-driven architecture.

Key Points:

Asynchronous and Event-Driven: Node.js operates on a non-blocking I/O model, meaning it can handle multiple requests simultaneously without waiting for one to complete.

- Single-Threaded Architecture: While single-threaded, Node.js uses an event loop to manage concurrent operations efficiently, making it highly scalable.
- Fast Execution: Powered by the V8 engine, Node.js executes JavaScript code at high speed, making it ideal for real-time applications.
- ➤ Cross-Platform: Node.js runs on Windows, Linux, macOS, and other platforms, making it versatile for various development environments.
- **Built-In Modules**: Node.js comes with a set of core modules, such as http, fs (file system), and path, that simplify backend development tasks.
- Package Ecosystem (npm): Node.js has the largest package ecosystem through npm (Node Package Manager), offering thousands of reusable libraries and tools.
- > **JSON Support**: Node.js works seamlessly with JSON, making it an excellent choice for building RESTful APIs.

Importance of Node.js in Project:

In **HomeSpaces**, Node.js can be used to build a robust backend server that handles property data, user authentication, and real-time updates. Its ability to scale and support RESTful APIs ensures smooth communication between the client-side (ReactJS) and the backend. Node.js's event-driven nature makes it an excellent choice for managing multiple users simultaneously, such as tenants searching for properties and landlords uploading listings.

Bootstrap:

Bootstrap is a popular open-source front-end framework used for developing responsive and mobile-first websites. It was initially developed by Twitter and is now maintained by the open-source community. Bootstrap combines **HTML**, **CSS**, and **JavaScript** components to create visually appealing and functional web pages with minimal effort. The server-side of web development involves handling business logic, database operations, and server communication.

Key Points:

- Responsive Design: Bootstrap is built on a mobile-first approach, ensuring that web pages are responsive and adapt seamlessly to various screen sizes, from desktops to smartphones.
- Pre-designed Components: It offers a wide range of reusable UI components like navigation bars, buttons, forms, modals, and carousels, which can be easily customized and integrated into projects.
- ➤ **Grid System**: The framework includes a powerful 12-column grid layout system for creating flexible and responsive layouts.
- ➤ Customizable Themes: Bootstrap allows developers to easily customize themes, colors, and typography to match the desired design.
- > Cross-Browser Compatibility: Bootstrap ensures that web pages look and function consistently across different browsers.
- > **JavaScript Plugins**: It includes built-in JavaScript plugins (e.g., tooltips, dropdowns, modals) to add interactivity without writing extensive custom scripts.

Importance of Bootstrap in Project:

Bootstrap has revolutionized web development by making it faster, easier, and more accessible for developers of all levels. Its responsive design capabilities and wide range of pre-designed components reduce the complexity of creating professional-looking websites while ensuring a consistent and modern design.

DATABASE USED

Firebase as a Backend

Firebase is a platform developed by Google that provides developers with a comprehensive suite of tools to build, manage, and scale web and mobile applications. It is a **Backend-as-a-Service** (**BaaS**) solution, which simplifies backend development by offering serverless infrastructure, real-time databases, and various other services. With Firebase, developers can focus on building user experiences without worrying about server management, scalability, or complex backend configurations.

Key Points:

- **Real time Database**: Firebase offers a NoSQL cloud-hosted database that allows developers to store and sync data in real time across connected devices.
- ➤ Cloud Firestore: A more advanced NoSQL database with flexible and scalable data storage, supporting richer queries and offline capabilities.
- Authentication: Provides secure and easy-to-implement user authentication using email/password, phone numbers, and third-party providers like Google, Facebook, and GitHub.
- ➤ **Hosting**: Offers fast and secure hosting for web applications, complete with automatic SSL certification and global content delivery.
- ➤ Cloud Functions: Enables server-side logic with server less functions that can be triggered by Firebase events or HTTP requests.
- > Storage: Facilitates storing and serving user-generated content, such as images, videos, and other files, through Firebase Cloud Storage.
- Analytics and Crash Reporting: Provides in-depth app analytics and real-time crash reporting to track performance and fix issues.
- **Push Notifications**: Enables communication with users through Firebase Cloud Messaging (FCM) for push notifications.
- **Easy Integration**: Firebase seamlessly integrates with popular frontend frameworks like **React**, **Vue**, and **Angular**, and mobile platforms like Android and iOS.

Importance of Firebase in Project:

In **HomeSpaces**, Firebase serves as a powerful backend solution to manage user authentication, store rental property data, and provide real-time updates for users and landlords. Its scalability and ease of integration allow seamless handling of user interactions, property listings, and secure data storage, making it an ideal backend for your project.

FLOW OF PROJECT

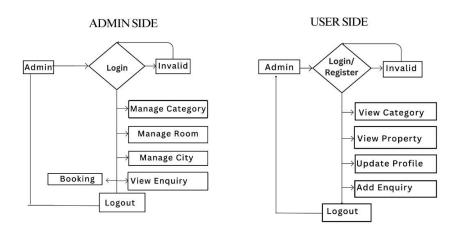
Systems are developed with the objective of addressing specific challenges or issues faced by users. Each system is tailored uniquely to meet the requirements of its intended problem. **HomeSpaces** addresses the challenge of finding suitable rental properties efficiently for tenants while enabling landlords to list and manage their properties seamlessly.

The system design begins with defining the overall architecture, which is then broken down into smaller, manageable components, modules, and interfaces. This modular approach simplifies understanding, development, and maintenance of the system. The architecture is designed to ensure a smooth flow of data and interactions between users and the platform.

In **HomeSpaces**, the system collects user input, such as search preferences for tenants or property details for landlords, and processes this data using well-defined algorithms. For example, property search algorithms filter and sort listings based on user requirements, while real-time data updates ensure accurate and current property availability. By structuring the project into logical and efficient components, the system provides a user-friendly, responsive, and reliable platform for tenants and landlords alike.

ARCHITECTURE DIAGRAM

An architectural diagram is a diagram of a system that is used to abstract the overall outline of the software system and the relationships, constraints, and boundaries between components. It is an important tool as it provides an overall view of the physical deployment of the software system and its evolution roadmap.



A use case diagram in the Unified Modelling Language (UML) is a type of behavioural diagram defined by and created from a use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

STEPS TO ACHIEVE OBJECTIVES

Hardware Used:

While developing the system, the used hardware is:

Laptop with Intel Core i5 11th Gen 11300H SERIES processor with 8GB ram and 512 GB SSD



The Software's used:

Microsoft Windows11 Home as Operating System.



Visual Studio Code (VS Code) as Integrated Development Environment



Firebase:



RESULT AND DISCUSSION

Images of Code:

Home page code

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Login page code

Property Page Code

Add Category Page Code

Register Page Code

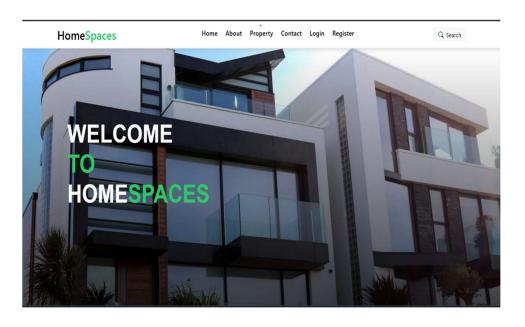
User Profile Page Code

View Contact Page Code

Manage Category Page Code

Images of GUI Design:

Home Page



Property page

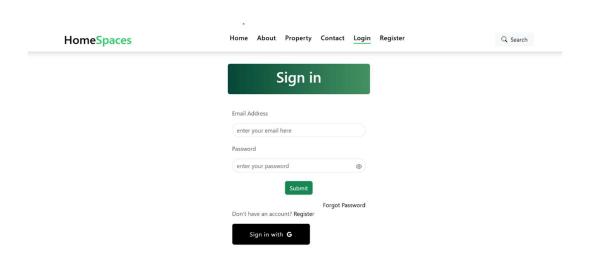


"Comfort and Convenience: Top Paying Guest Options in "

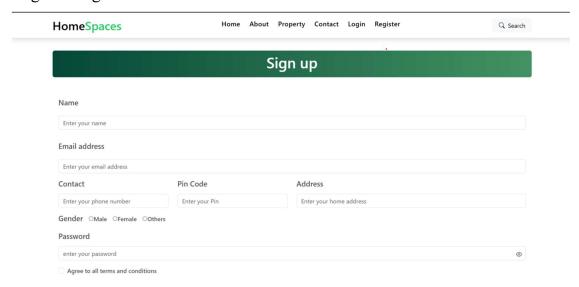




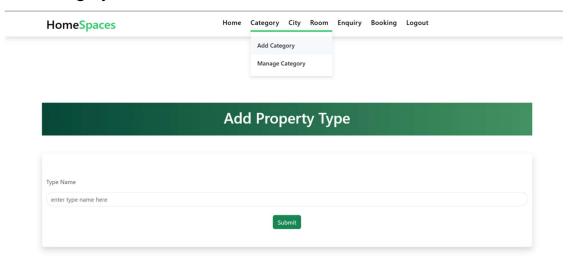
Login Page



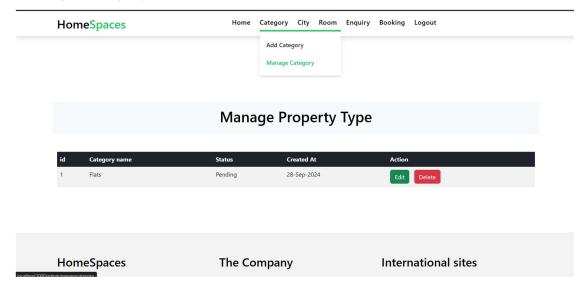
Register Page



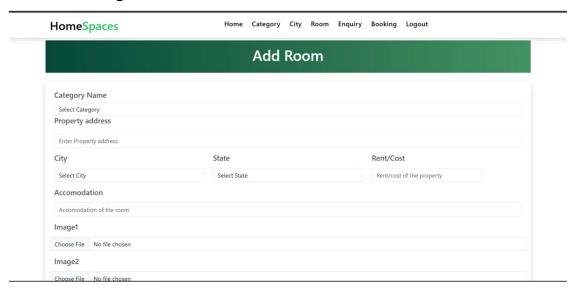
Add Category



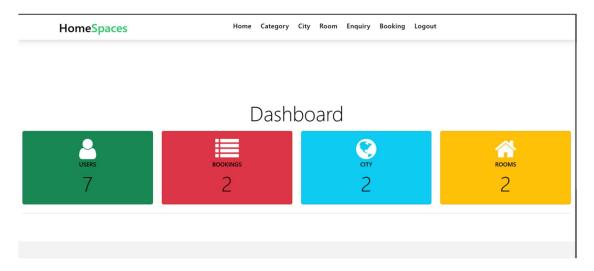
Manage Category



Add Room Page



Admin Home or Dashboard Page



Conclusion

The HomeSpaces project is a comprehensive solution that addresses the inefficiencies of traditional rental property management by providing a digital platform for landlords and tenants. By leveraging modern technologies like ReactJS, Firebase, and Bootstrap, the system ensures an intuitive and efficient user experience.

With its dual-panel approach, HomeSpaces simplifies property management for landlords while offering tenants a seamless process to find and book rental properties. The project not only saves time but also enhances transparency and accessibility in the rental market.

In conclusion, HomeSpaces is a scalable, user-friendly, and practical solution that has the potential to revolutionize the rental property ecosystem by bridging the gap between landlords and tenants.

References

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