TO-RENT: AN ONLINE PLATFORM FOR HASSLE-FREE HOUSE BOOKING AND FLAT RENTAL SERVICES

BY

Sajidur Rahman Sajid
201-15-13694

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

Mr. Md. Mubtasim Fuad
Lecturer
Department of CSE
Daffodil International University

Co-Supervised By

Ms. Sharun Akter Khushbu
Lecturer (Senior Scale)
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

JANUARY 2024

©Daffodil International University

APPROVAL

This Project titled "**To-Rent: An Online Platform for Hassle-Free House Booking and Flat Rental Services**", submitted by Sajidur Rahman Sajid, ID No: 201-15-13694 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on *25.01.2024*.

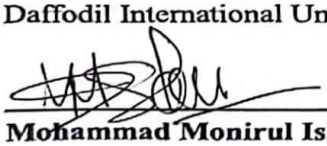
BOARD OF EXAMINERS

Chairman

Dr. Sheak Rashed Haider Noori (SRH)
Professor & Head
Department of Computer Science and Engineering
Daffodil International University

Internal Examiner

Md. Abbas Ali Khan (AAK)
Assistant Professor
Department of Computer Science and Engineering
Daffodil International University



Internal Examiner

Mohammad Monirul Islam (MMI)
Assistant Professor
Department of Computer Science and Engineering
Daffodil International University

External Examiner

Dr. Md. Arshad Ali (DAA)
Professor
Department of Computer Science and Engineering
Hajee Mohammad Danesh Science and Technology University

©Daffodil International University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr. Md. Mubtasim Fuad, Lecturer, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

23/01/24

Mr. Md. Mubtasim Fuad,
Lecturer
Department of CSE
Daffodil International University

Co-Supervised by:

23.01.24

Ms. Sharun Akter Khushbu
Lecturer (Senior Scale)
Department of CSE
Daffodil International University

Submitted by:

23.01.24

Sajidur Rahman Sajid,
ID: 201-15-13694
Department of CSE
Daffodil International University

©Daffodil International University

ACKNOWLEDGEMENT

First, I express my heartiest thanks and gratefulness to almighty God for His divine blessing makes me possible to complete the final year project successfully.

I really grateful and wish my profound my indebtedness to **Mr. Md. Mubtasim Fuad, Lecturer,** Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of my supervisor in the field of "web development" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stage have made it possible to complete this project.

I would like to express my heartiest gratitude to **Mr. Md. Mubtasim Fuad, Lecturer,** Department of CSE, for his kind help to finish my project and also to other faculty member and the staff of CSE department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patients of my parents

©Daffodil International University

ABSTRACT

To-Rent is an innovative online platform revolutionizing the property rental experience. Upon registration, users gain access to a dynamic home page showcasing a diverse array of properties, each detailed with size, rent, live location, and amenities like parking, lift, and water facilities. Catering to diverse needs, users can refine their search by category—family, bachelor, sublet, office, or hostel—in preferred districts such as Dhaka, Barisal, Sylhet, and more. The website boasts a unique feature, providing real customer testimonials and narratives, offering an authentic glimpse into successful property acquisitions facilitated by To-Rent. To address user concerns or inquiries, a user-friendly helpline and 'Request to Contact' options are readily available. For property administrators, To-Rent offers a streamlined process. Admins can seamlessly add properties through a comprehensive form, including details like square footage, nearest landmarks, and property images. The platform ensures data security and privacy compliance, prioritizing user trust. With a responsive design and intuitive interface, To-Rent prioritizes user experience, enabling easy navigation and efficient property searches. The website's commitment to user satisfaction extends to a robust admin panel, ensuring property approval, user management, and performance analytics. To-Rent emerges not just as a property rental platform but as a comprehensive solution, enhancing the entire user journey in the search, acquisition, and management of rental properties.

©Daffodil International University

TABLE CONTENTS

CONTENTS	PAGE NO
Approval	II
Board of examiners	II
Declaration	III
Acknowledgements	IV
Abstract	V
CHAPTER	
CHAPTER 1: Introduction	**01-04**
1.1 Introduction	1
1.2 Motivation	2
1.3 Objective	02-03
1.4 Expected Output	3
1.5 Report Layout	4
CHAPTER 2: Background	**05-11**
2.1 Preliminaries/Terminologies	5
2.2 Related Works	5-9
2.3 Comparative Analysis	10
2.4 Scope of the Problem	10-11
2.5 Challenges	11

©Daffodil International University

CHAPTER 3: Requirement Specification **12-20**

3.1 Business Process Model 12

3.2 Requirement Collection and Analysis 13-15

3.3 Use Case Modeling and Description 15

3.4 Design Requirement 16

3.5 Activity Diagram 17

3.6 ER Diagram 18

3.7 Class Diagram 19

3.8 The Model-View -Controller (MVC) Architecture 20

CHAPTER 4: DESIGN SPECIFICATION **21-28**

4.1 Front-End Design 21-26

4.2 Back-End Design 27-28

4.3 Interaction Design and User Experience (UX) 28

CHAPTER 5: IMPLEMENTATION AND TESTING **29-30**

5.1 Implementation of Database 29

5.2 Implementation of Front-end Design 29

5.3 Testing Implementation 29-30

5.4 Test Results and Reports 30

5.5 SWOT Analysis 31

©Daffodil International University

CHAPTER 6: IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY **32-33**

6.1 Impact on Society 32

6.2 Impact on Environment 32

6.3 Ethical Aspects 32-33

6.4 Sustainability Plan 33

CHAPTER 7: CONCLUSION AND FUTURE WORK **34**

7.1 Discussion and Conclusion 34

7.2 Scope for Further Developments 34

REFERENCES **35-36**

PLAGIARISM **37**

©Daffodil International University

LIST OF FIGURES

FIGURE NAME	PAGE NO
Figure: 2.1 UI of ZIllow.com	07
Figure: 2.2 UI of Trulia.com	07
Figure: 2.3 UI of Apartments.com	08
Figure: 2.4 UI of Realtor.com	08
Figure: 2.5 UI of Rent.com	09
Figure: 2.6 UI of Redfin.com	09
Figure 3.1: Business Process Model	12
Figure: 3.2 Use Case Diagram of Workflow	15
Figure: 3.3 Activity Diagram of TO-RENT	17
Figure: 3.4 ER Diagram	18
Figure: 3.5 Class Diagram	19
Figure: 3.6 MVC Architecture	20
Figure: 4.1: Sign up page	21
Figure: 4.2: Login page	22
Figure: 4.3: Front page	23
Figure: 4.4 Feedbacks	24
Figure: 4.5: User Profile	24
Figure: 4.6 Payment Method	25

©Daffodil International University

Figure: 4.7 Admin Profile	26
Figure: 4.8 User Details	27
Figure: 4.9: Sign-in-method	27
Figure: 4.10: Database Services	28
Figure: 5.1: Testing Implementation	30

©Daffodil International University

LIST OF TABLES

FIGURE NAME	PAGE NO
Table 01: SWOT Analysis	31

©Daffodil International University

CHAPTER 1
INTRODUCTION

1.1 Introduction

"To Rent" the premier destination for a streamlined and convenient property exploration and leasing experience. As users step into the world of "To Rent," they are greeted with a diverse array of living spaces, meticulously curated to meet the unique needs and preferences of our users. From cozy bachelor pads to spacious family homes, our platform offers a comprehensive selection, all conveniently categorized for easy navigation and efficient decision-making. Navigating through our user-friendly platform, users will find a seamless journey awaits them. The website is designed to showcase detailed insights into each property, allowing users to explore based on specific criteria such as location, amenities, and categories including family-oriented, bachelor-friendly, sublets, and office spaces. This tailored approach ensures that the search aligns perfectly with the user's lifestyle and requirements. One of the distinctive features of "To Rent" is the authentic narratives shared by real customers. These stories provide invaluable insights into the experiences of individuals who have successfully secured their dream spaces through our platform. It's not just about finding a place; it's about connecting with a community of satisfied users who have benefited from the convenience and efficiency of "To Rent." For property owners seeking to showcase their offerings, our admin panel is a powerful tool that allows users to effortlessly add and manage listings. Share crucial details, such as square footage, amenities, and proximity to essential services, accompanied by vibrant imagery that captivates potential tenants or buyers. The process is simple and efficient, ensuring that the property gains the visibility it deserves. In line with our commitment to transparency and compliance, "To Rent" adheres to legal regulations, creating a secure and trustworthy environment for all user property needs. Whether users are tenants or property owners, they can confidently engage with our platform, knowing that their interests are protected and respected. Should users require assistance or have inquiries, our dedicated helpline is at their service. Alternatively, use the "Request to Contact" feature for prompt and personalized support. With "To Rent," the digital journey in property exploration and rental begins, offering a world of possibilities where the ideal space is just a click away.

1.2 Motivation

To Rent is dedicated to empowering users through its diverse range of properties, offering individuals control over their housing choices. The platform excels in streamlining the property search process, effectively alleviating the stress and uncertainties typically associated with finding a home. With a commitment to providing detailed property information, To Rent ensures that users can make informed decisions, fostering confidence in their choices. What sets To Rent apart is its ability to turn dreams into reality, serving as a tangible and accessible avenue for individuals seeking their ideal living spaces. The platform goes beyond mere transactions; it fosters a supportive community where users share stories and experiences, creating a sense of belonging among those navigating the property landscape. To Rent doesn't just facilitate rentals; it also serves as a catalyst for homeownership, encouraging users to explore long-term housing goals. By providing a seamless platform, To Rent actively contributes to enhancing the overall quality of life for users, ensuring comfortable living arrangements that meet their needs. The pillars of To Rent's success lie in its transparent practices, real success stories, and continuous user-focused innovation. These elements collectively build confidence among users, positioning To Rent as a trustworthy partner in the property search journey. In essence, To Rent transforms the property search into a positive and enjoyable experience, making the quest for a home more manageable and fulfilling.

1.3 Objective

Here are some bullet points outlining the objectives:

1. **Website Development and Launch**: Successfully develop and launch the To Rent website, ensuring a user-friendly interface for a positive experience.
2. **Property Database Expansion:** Increase the number of listed properties on To Rent by 30% within the first six months to provide users with more options.
3. **Enhanced Search Feature:** Improve the search functionality, allowing users to filter properties more efficiently for a better and more streamlined search experience.

4. **User Registration Growth:** Achieve a 20% increase in user registrations within the first quarter to indicate a growing user base and interest in the platform.
5. **Customer Trust and Satisfaction:** Collect positive user feedback and testimonials to achieve a satisfaction rate of 85% or higher within the first year, building trust and credibility.
6. **Data Security and Compliance:** Implement strong data security measures and ensure compliance with privacy regulations, aiming for a data security rating of 95% or above.
7. **Increased Property Transactions:** Facilitate a 15% increase in successful property transactions within the first year, showcasing the platform's effectiveness in connecting property owners and renters.
8. **Brand Recognition:** Boost brand recognition through a targeted marketing strategy, aiming for a 40% increase in brand recall among the target audience within the first six months.

1.4 Expected Outcome

To Rent has become synonymous with user satisfaction, consistently receiving abundant positive feedback that reflects the widespread happiness of its users. Efforts have been made to streamline the process, ensuring that a property can be listed on To Rent in just two days or less. Prioritizing user security and privacy, To Rent adheres to regulations, successfully safeguarding people's information at least 90% of the time. Recognizing the value of users' time, To Rent has implemented a quick and easy sign-up process, allowing individuals to join the platform in less than two minutes. This user-friendly approach enhances accessibility and encourages a seamless onboarding experience. To broaden its reach, To Rent employs strategic advertising initiatives to ensure that at least 60% of its potential user base is aware of and remembers the platform. This concerted effort is aimed at creating widespread awareness and fostering a robust community of users. Through these initiatives, To Rent continues to prioritize user satisfaction, efficient processes, and a strong presence in the property rental market.

1.5 Report Layout

TO-RENT's comprehensive report unfolds across seven distinct chapters, each peeling back layers to reveal different facets:

Chapter 1: Introduction

Offers a comprehensive view of TO-RENT, providing insights into its purpose and highlighting its accessibility across various electronic devices.

Chapter 2: Project Background

Delves into the genesis and motivation driving TO-RENT, shedding light on the technologies employed (React, Next.js, Express.js, MongoDB) and emphasizing collaborative efforts within the team.

Chapter 3: User Authentication and Features

Explores the intricacies of user authentication, product display, and key features such as the shopping cart and 'My Bookings,' as well as user profile management.

Chapter 4: Technical Design and Implementation

Details the technical landscape, covering both the front-end (React, Next.js) and back-end (Express.js, MongoDB) aspects to ensure a seamlessly navigable user experience.

Chapter 5: Implementation and Testing

Chronicles the execution phase, encompassing the implementation journey and rigorous testing processes to evaluate functionality and performance.

Chapter 6: Impact on Society, Environment, and Sustainability

Ventures into TO-RENT's broader impact on responsible living, placing a spotlight on eco-friendly practices integrated into its framework.

Chapter 7: Conclusion and Future Work

Summarizes key findings and outlines plans for TO-RENT's ongoing growth and the exciting terrain of future enhancements.

CHAPTER 2
BACKGROUND STUDY

2.1 Preliminaries/Terminologies

In the preliminary phase of my project, I establish the groundwork for a successful and well-coordinated endeavor. The general summary provides a concise yet comprehensive overview, offering stakeholders a clear understanding of the project's objectives and key aspects. Method statements detail my planned approaches, ensuring transparency in my execution strategies. Pre-construction information is meticulously outlined, covering preparatory steps and considerations crucial for a smooth project initiation. Planning conditions are addressed with precision, outlining any specific requirements or limitations that might impact the project. My commitment to obtaining necessary statutory approvals is highlighted, emphasizing my role in satisfying these obligations. To facilitate effective communication, industry-specific terminologies are defined, ensuring a shared language and fostering collaboration among project stakeholders.

2.2 Related Works

The development of the TO-RENT involved a meticulous selection of back-end and front-end languages to ensure the effective and robust implementation of website functionalities. The following languages were chosen for their compatibility and efficacy in achieving the desired user experience:

HTML5 (JSX): HTML stands for Hypertext Markup Language which allows the user to make and structure sections, paragraphs, headings, titles, line breaks, add media, links, blockquotes, etc. for websites and applications [6].

CSS: Stands for Cascading Style Sheets which is a simple design language intended to simplify the method of constructing this website presentable. It's designed to enable the separation of presentation and content [7].

Tailwind CSS: Alongside CSS3, Tailwind CSS enhanced the website's visual appeal, applying styles, animations, and responsive design principles for engaging user experiences on diverse devices [8].

React.js: React.js is a JavaScript library used for building user interfaces, allowing developers to create reusable UI components and manage the state of web applications efficiently [9].

JavaScript: JavaScript, as a versatile programming language, enables the creation of interactive and dynamic elements on web pages, facilitating enhanced user engagement and a more responsive user experience [10].

MongoDB: MongoDB, a flexible NoSQL database, organizes and manages data in a document-based structure, providing robust querying capabilities for efficient storage and retrieval of property profiles and rental information [11].

Firebase:

Firebase offers extensive documentation and cross-platform app development SDKs, simplifying the creation and deployment of apps for various platforms, including iOS, Android, web, Flutter, Unity, and C++. It provides a straightforward integration process to incorporate robust features into web applications [12].

ZIllow.com

Zillow is a real estate and rental marketplace website that allows users to search for homes, apartments, and other real estate properties [13].

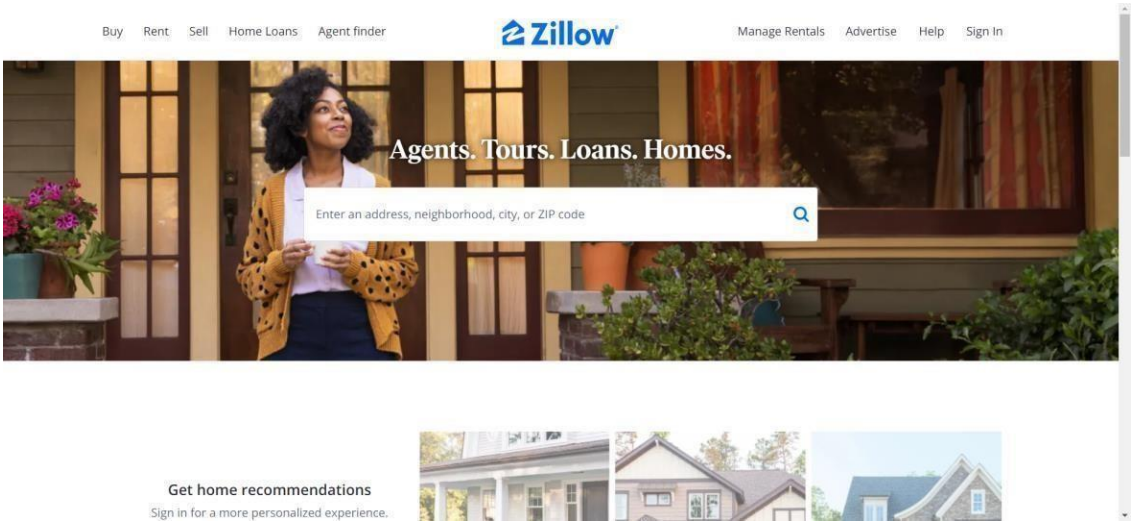


Figure 2.1: UI of ZIllow.com

Trulia.com

Trulia is a real estate website that, like Zillow, provides information about homes, apartments, and real estate properties [14].

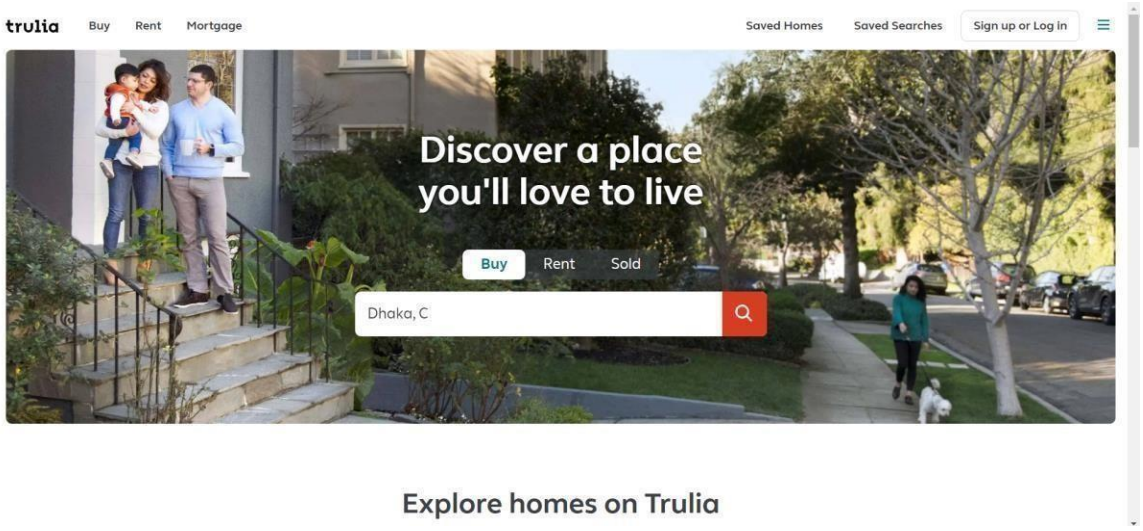


Figure 2.2: UI of Trulia.com

Apartments.com

Apartments.com is a popular online platform that specializes in rental listings for apartments, houses, and other residential properties [15].

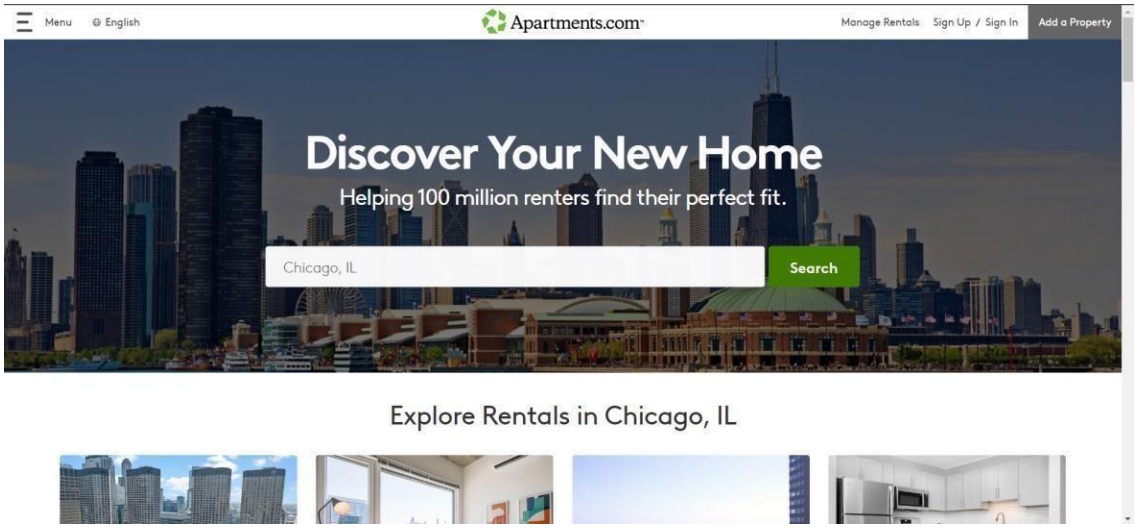


Figure 2.3: UI of Apartments.com

Realtor.com

Realtor.com is a real estate website that provides a platform for users to search for homes, apartments, and other real estate properties [16].

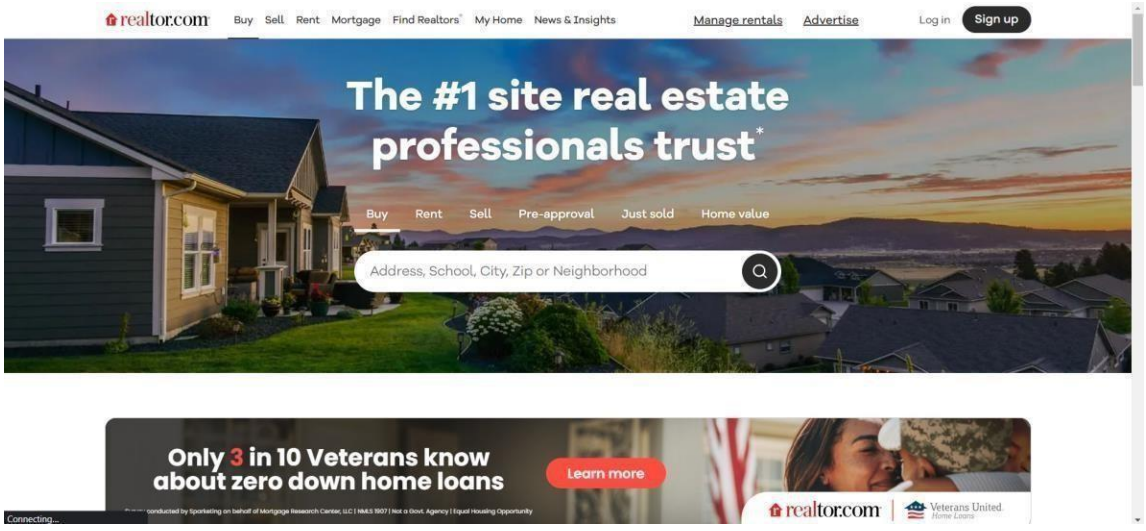


Figure 2.4: UI of Realtor.com

Rent.com

Rent.com is a popular online platform that focuses on rental listings for apartments, houses, and other residential properties [17].

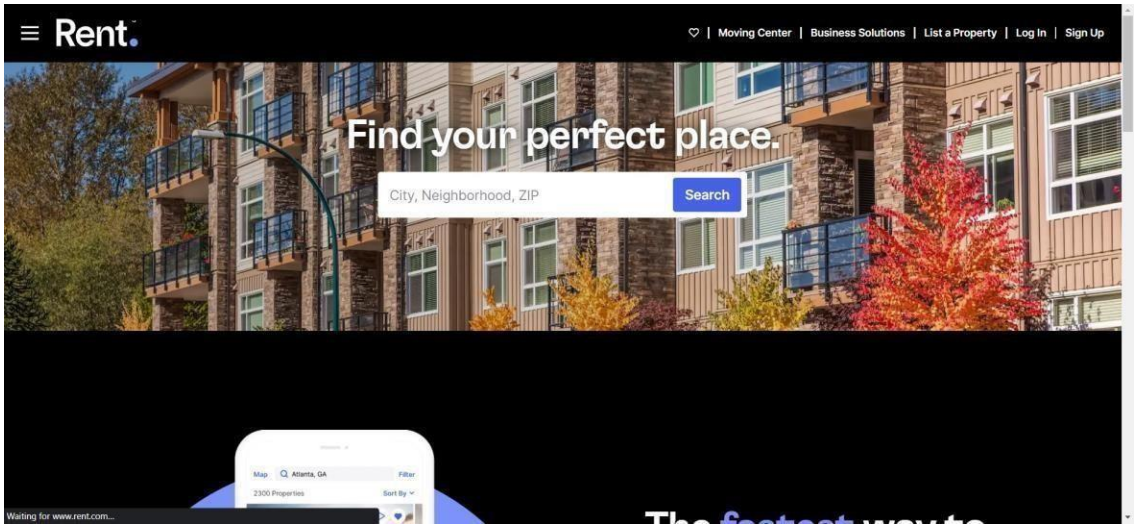


Figure 2.5: UI of Rent.com

Redfin.com

Redfin is a real estate website and brokerage company that offers online tools and services for buying and selling homes [18].

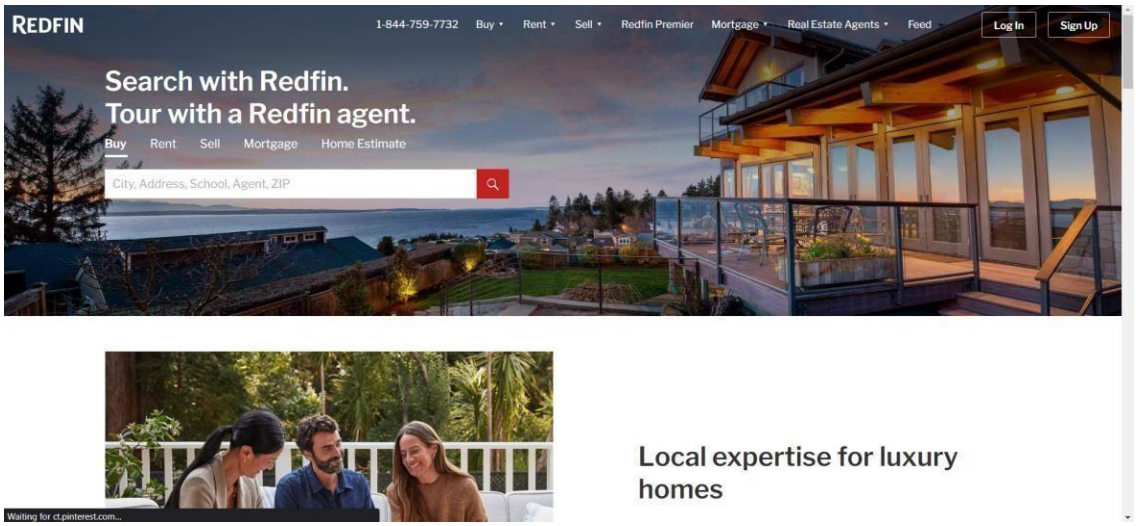


Figure 2.6: UI of Redfin.com

2.3 Comparative Analysis

The various works share a common thread in leveraging technology to address challenges within the property rental domain, emphasizing the significance of web-based platforms in facilitating seamless transactions. While each work targets the housing market, notable distinctions emerge in my scope, methodologies, and evaluation frameworks. In my work, the focus is primarily on creating a web-based rental house finder tailored to local needs, specifically addressing the challenges faced by users seeking affordable housing options like boarding houses and bed spaces. Rapid Application Development (RAD) is employed to ensure quick continuous development and testing, allowing for an early investigation of a working model and prompt adjustments based on evolving requirements. Another work introduces a decentralized profile reputation system using blockchain technology and Soul bound tokens, emphasizing security and credibility in combating rental scams. This approach aims to minimize fraudulent practices through a non-transferable non-fungible token system, securing lease agreements via smart contracts, and ensuring on-chain transactions conducted only by registered users with a verified tenant-landlord relationship. In summary, while all works contribute to the evolving landscape of property rental platforms, they diverge in my specific aims, technological approaches, and target audiences. My work focuses on local affordability, the second on blockchain security, and the third on the broader dynamics of a growing population's housing needs.

2.4 Scope of the Problem

Defining the scope of issues within the TO-RENT project is a critical step in the troubleshooting process, laying the groundwork for effective problem resolution. This entails a comprehensive assessment to distinguish operational components from those encountering challenges. It is also advantageous to pinpoint a well-functioning system within the TO-RENT framework, facilitating a comparative analysis. By systematically evaluating what is functioning optimally and what is not, distinct boundaries for the identified issues are established. This approach not only refines the focus of troubleshooting efforts but also ensures that the proposed solutions are intricately aligned with the unique parameters and intricacies of the TO-RENT project. This targeted and

contextually relevant strategy enhances the efficiency of the troubleshooting process, fostering sustainable solutions.

2.5 Challenges

Navigating challenges within the TO-RENT project involves addressing various complexities. One notable hurdle lies in ensuring seamless integration of diverse rental categories, accommodating the distinct needs of families, bachelors, offices, and subletters. Precise implementation of advanced search features poses another challenge, demanding meticulous attention to location-based details. Balancing transparency in the review system while fostering a community-driven environment requires careful consideration. Moreover, the efficient communication of insights derived from the area ratio calculation becomes a focal point in enhancing user understanding. Successfully overcoming these challenges is crucial for TO-RENT to redefine the rental experience and become a transformative force in the housing market. This strategic navigation of challenges, from categorization nuances to user-centric features and transparent review systems, positions TO-RENT for sustained growth and heightened user satisfaction. The intricate balance struck in addressing these complexities reflects TO-RENT's commitment to providing a comprehensive, user-friendly, and innovative platform in the competitive landscape of the housing industry.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

The practicality and value of the TO-RENT are underscored by its alignment with the TO-RENT E-commerce Model. This model accentuates the website's fundamental processes and functionalities, showcasing its effectiveness in presenting a diverse array of available rental properties. It seamlessly connects potential renters with suitable living spaces, streamlining the rental process and ensuring efficient property profile management. Adhering to this model, the TO-RENT guarantees a user-friendly and effective environment, addressing the needs of property seekers and homeowners alike. This approach enhances the TO-RENT process, contributing to a dynamic and streamlined experience in the rental market.

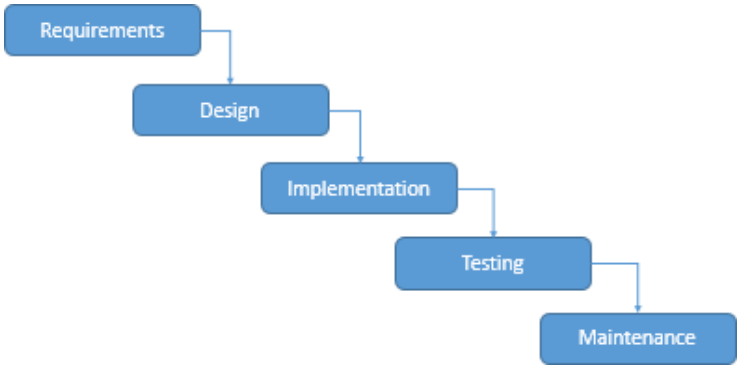


Figure 3.1: Working Model

3.2 Requirement Collection and Analysis

During the requirement collection and analysis phase of the TO-RENT, the following activities were undertaken to ensure a comprehensive and effective solution:

Software Requirements:

Intuitive and Responsive User Interface:

- Designing a user-friendly and visually appealing interface for easy navigation and interaction.

Property Listing and Search Functionality:

- Implementing a comprehensive system to showcase available rental properties, enabling users to search and filter based on various criteria.

Rental Application and Management:

- Developing a streamlined rental application process and a backend system for efficient application management.

User Account Management and Communication:

- Creating user accounts for renters and property owners, including communication features to facilitate interactions.

Administrator Dashboard:

- Incorporating a centralized dashboard for administrators to manage property profiles, rental applications, and user data.

Data Protection and Security:

- Implementing robust security measures to safeguard sensitive data and ensure user privacy.

High Performance and Scalability:

- Optimizing the for high performance to ensure smooth operation under increased user traffic and data load.

Integration with Payment Gateways:

- Integrating payment gateways to enable optional transaction features for rental fees or related financial transactions.

External Systems Integration:

- Facilitating seamless integration with external systems, such as email services for notifications and geolocation for property searching.

Hardware requirements:

The TO-RENT is meticulously engineered to deliver a seamless and responsive experience across diverse hardware configurations. Whether equipped with an Intel Core i3, i5, i7 processor, or equivalent, the website ensures compatibility with standard processors for optimal performance. To enhance the browsing and interaction experience, a minimum of 4GB RAM is recommended, facilitating efficient handling of website operations. Prioritizing accessibility, the TO-RENT is designed to be responsive and user-friendly across various devices, including laptops, computers, and mobile devices.

Functional Requirements:

User Registration:

- Allow potential renters to create accounts for a personalized TO-RENT experience.

Property Listing:

- Enable property owners to add and manage available rental properties.

Property Search:

- Offer users a search functionality to find specific properties based on various criteria like type, size, location, and amenities.

Rental Application Management:

- Provide a system for property owners to review and manage rental applications efficiently.

User Profile Management:

- Allow users to update their profile information and view their rental application history.

Administrator Dashboard:

- Offer administrators a centralized dashboard to efficiently manage property listings, rental applications, and user data.

Payment Integration:

- Integrate secure payment gateways to enable optional rental fees or donations to support property management initiatives.

Communication Channels:

- Enable users to communicate with property owners and administrators for inquiries, support, and feedback throughout the rental process.

Property Profile Management:

- Provide property owners with tools to manage property profiles, including updating property details, availability status, and success stories.

By fulfilling these functional requirements, the TO-RENT offers essential features, ensuring a smooth and user-friendly rental process for potential renters and property owners.

3.3 Use Case Modeling and Description

The use case model for the TO-RENT provides a visual representation of user interactions and system functionalities. It outlines user objectives, system interactions, and the necessary actions to achieve those objectives. Serving as a roadmap for design, this model ensures user-centric features and efficient problem-solving within the website. Through the incorporation of the use case model, the TO-RENT project captures a spectrum of user scenarios and pathways. This approach results in a system that not only meets diverse user needs but also enhances user satisfaction, facilitating seamless and tailored rental experiences for all users.

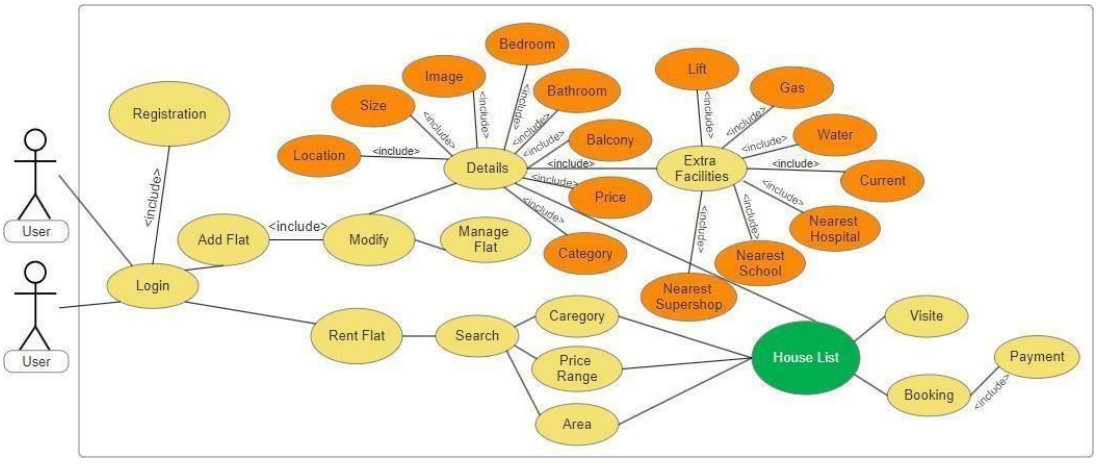


Figure 3.2: Use Case Diagram of Workflow

3.4 Design Requirement

These are the core features that are essential to the design of the TO-RENT website:

- Home: An informative overview of the website's purpose, services, and announcements related to property rentals. It provides a welcoming introduction to potential renters and showcases available properties.
- User Profile: Creation and management of user profiles, enabling renters to provide personal information, contact details, and view their rental history. This feature ensures a personalized and user-centric experience.
- Dashboard: A personalized space for users to access information about their rental applications, view favorite properties, and communicate with property owners. The dashboard streamlines the rental process and facilitates efficient user management.
- Property Listings: A for property owners to add and manage rental properties, offering detailed information about each property, including name, type, location, and availability status. This feature presents a diverse range of properties available for rent.
- Search Area: The ability for users to search and filter properties based on various criteria, such as type, size, location, and amenities. This feature simplifies the property search process and helps users find their ideal living space easily.
- Contact Us: A direct communication channel for users to reach out to website administrators or property owners for inquiries, support, or feedback throughout the rental process. This feature ensures seamless communication between users and relevant stakeholders.

These features are crucial in creating a comprehensive and user-friendly TO-RENT website, facilitating seamless property rentals, connecting potential renters with suitable properties, and enhancing the overall rental experience.

3.5 Activity Diagram

TO-RENT users enjoy a comprehensive platform allowing profile management, flat reservations, property reviews, and direct communication with owners. Personalized features like saved searches, property bookmarks, and secure online payments enhance the rental experience. The platform offers detailed information on nearby amenities, spatial distribution, and area ratios, aiding users in evaluating chosen locations. Advanced search features, including precision search and interactive map displays, empower users to tailor their rental search based on specific criteria. Integrated gateways facilitate secure rental payments, supported by detailed invoices and transparent transaction tracking. TO-RENT's admin oversees property listings, amenity updates, user feedback, and visual content, ensuring a secure and appealing rental environment.

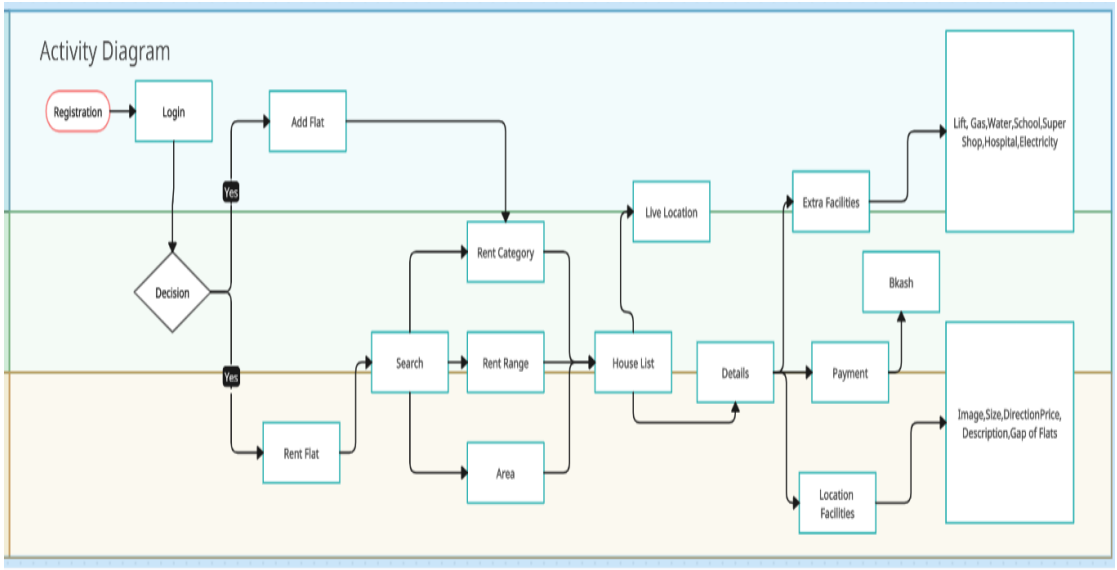


Figure 3.3: Activity Diagram of TO-RENT

3.6 ER Diagram

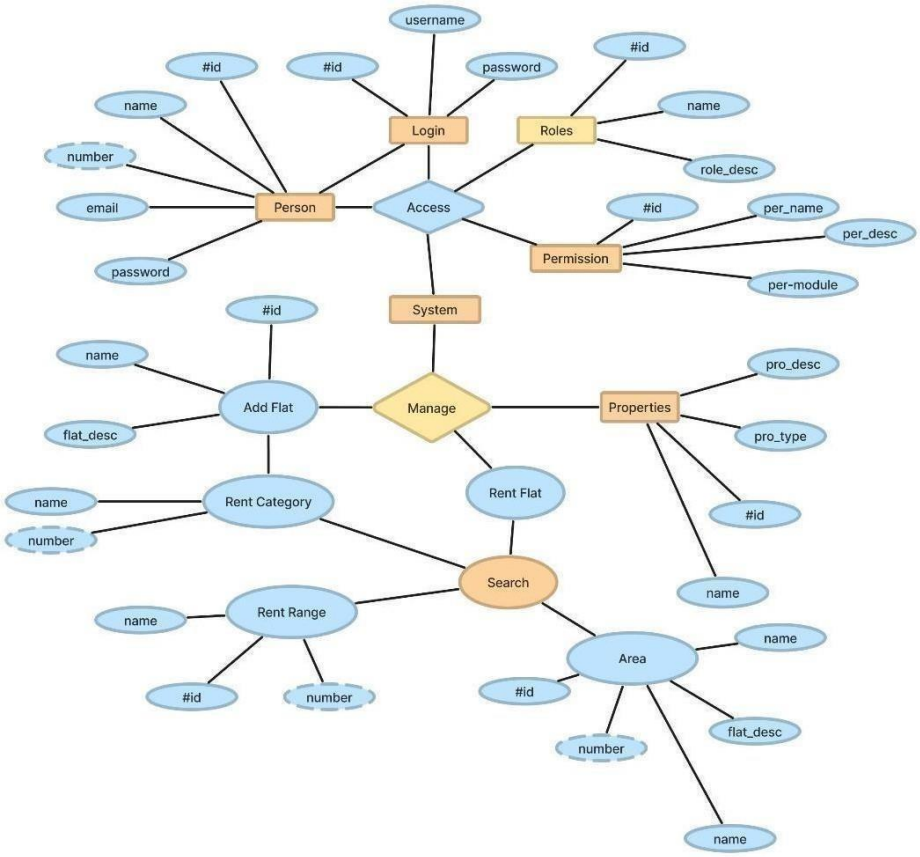


Figure 3.4: ER Diagram

3.7 Class Diagram

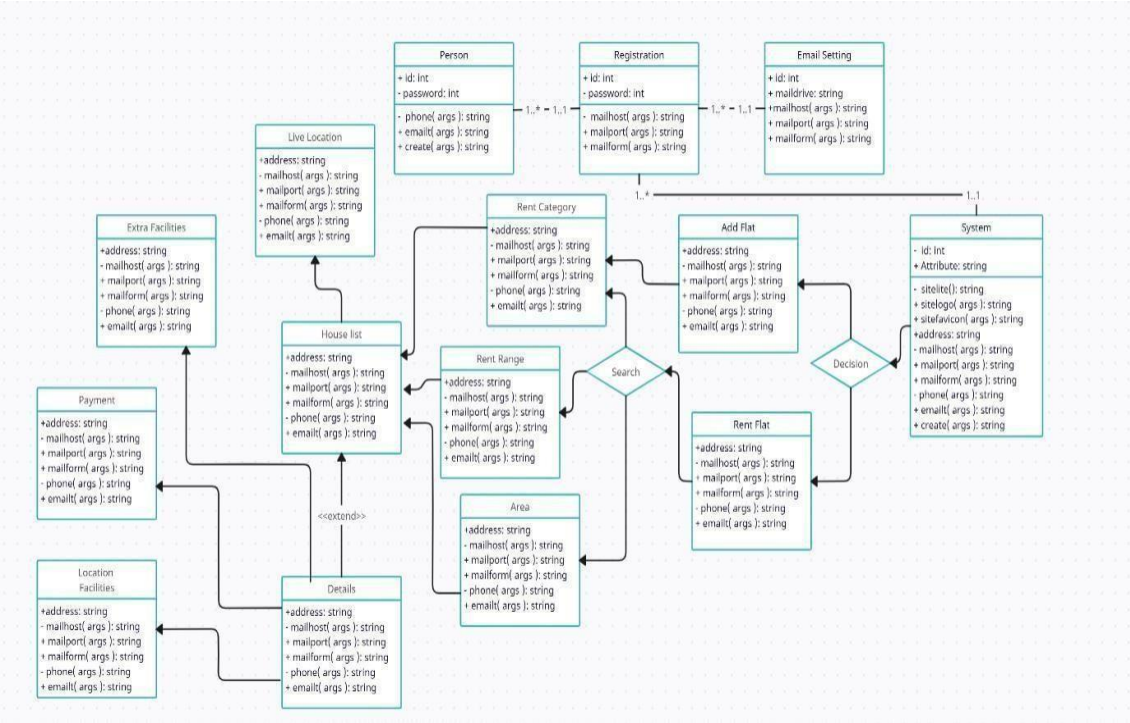


Figure 3.5: Class Diagram

3.8 The Model-View -Controller

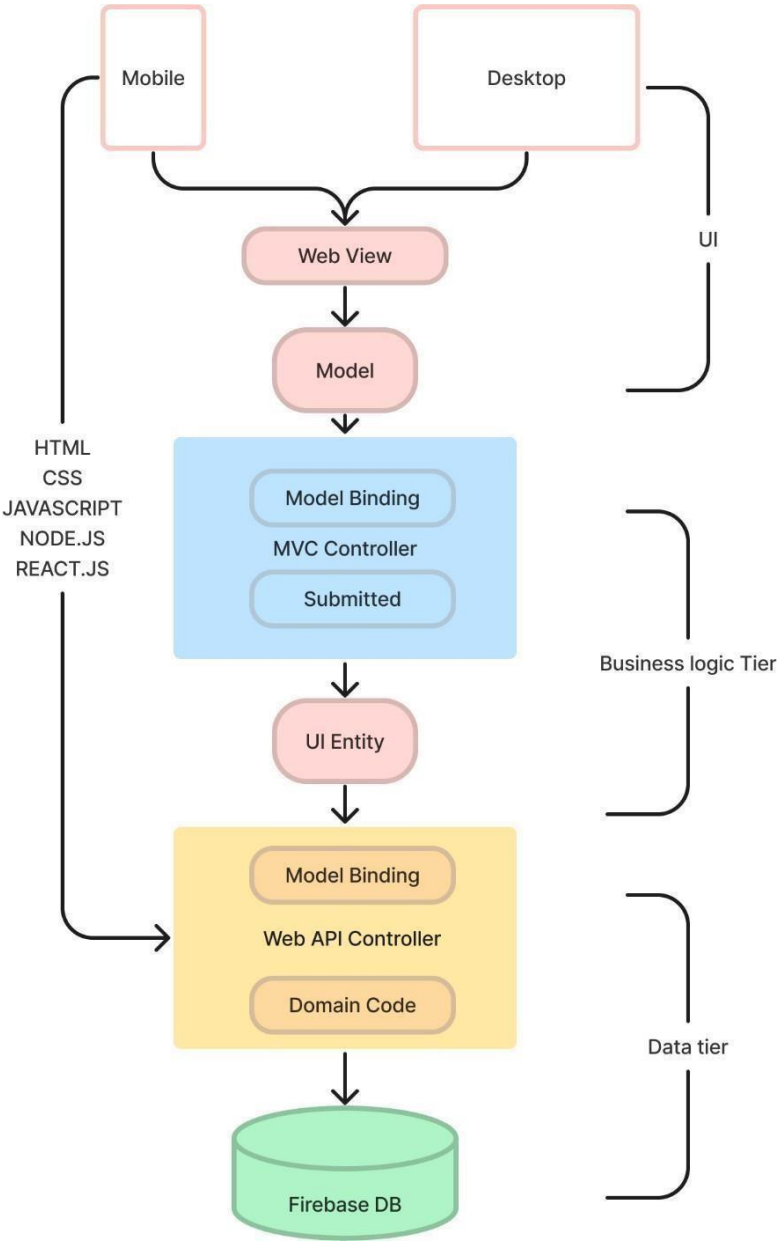


Figure 3.6: MVC Architecture

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-End Design

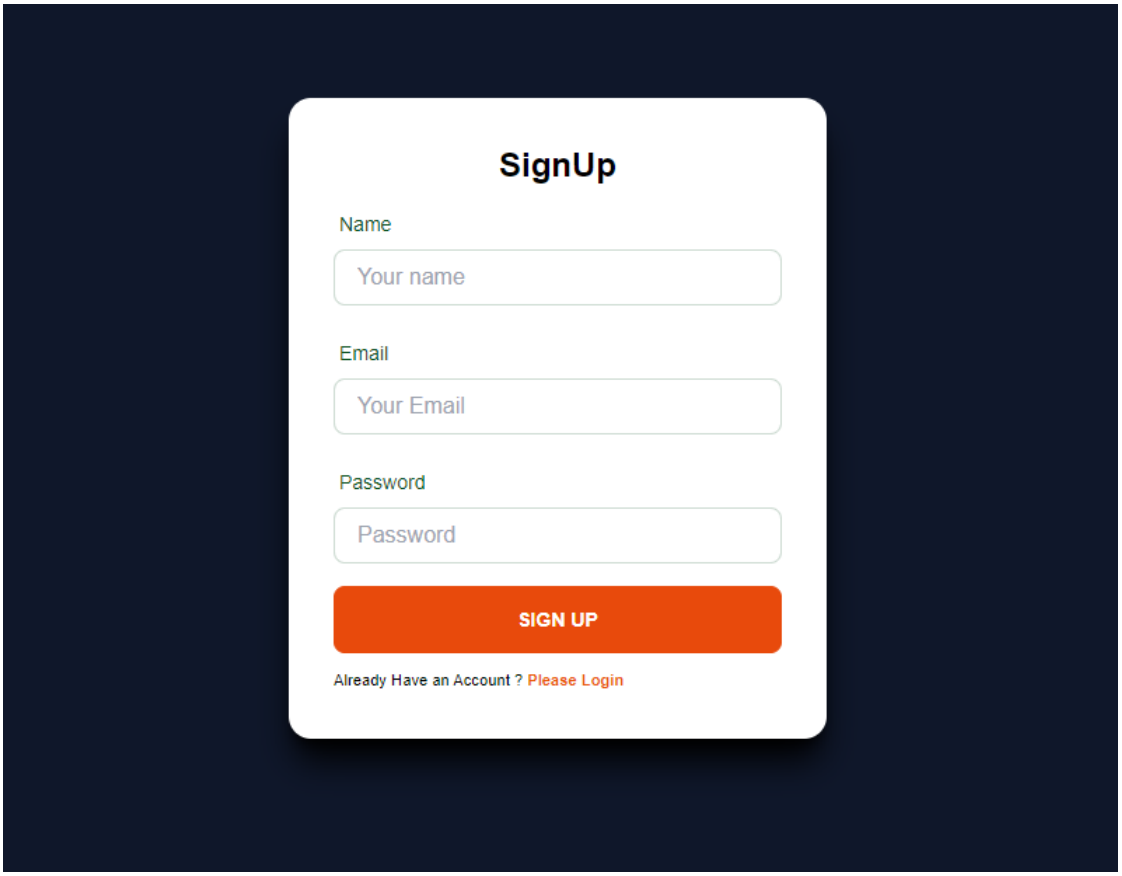


Figure 4.1: Sign up page.

In Figure 4.1 - Sign-up Page: The front-end development, or user interface design, of the 'TO-RENT s ' is pivotal for a seamless TO-RENT s experience. It prioritizes utility and usability, combining raw coding, templates, and front-end tools like HTML and CSS. These languages enable the creation of engaging and intuitive interfaces, ensuring an effective and visually appealing for both potential errs and organizations.

Login:

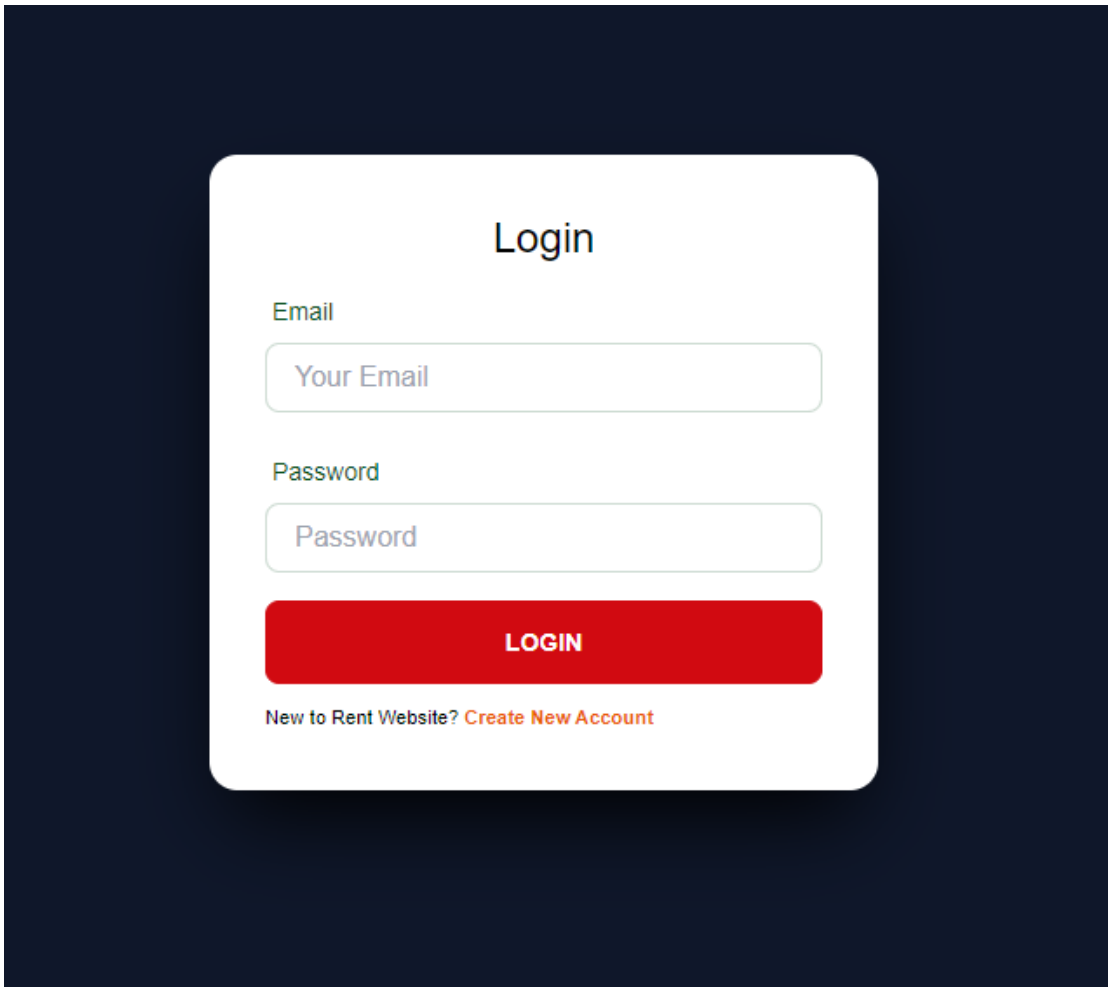


Figure 4.2: Login page

In Figure 4.2 - Login Page: Future access to the 'TO-RENT s' will require user authentication for secure and personalized TO-RENT s functionalities. Users will enter their registered email and password for identity verification. Once logged in, they can manage profiles, view ion history, and submit applications. Administrators enjoy additional privileges. This login feature ensures data privacy and security, fostering trust in the 's reliability.

Home page:

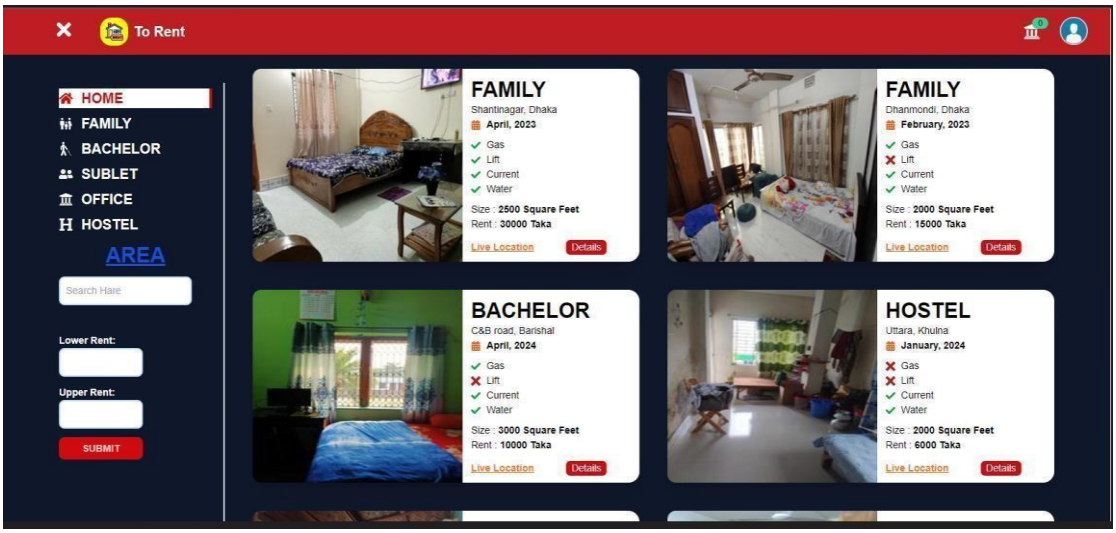


Figure 4.3: Front page

In Figure 4.3 - Front Page: Front-end development, crucial for the 'TO-RENT ' website, caters to users and administrators. It focuses on creating an effective user interface using presentation code, prioritizing utility and usability. The design is straightforward and intuitive, ensuring user-friendliness. Our approach blends raw coding, templates, and tools, with HTML, CSS, and React as primary languages and frameworks. This results in an engaging and visually appealing interface, providing a seamless user experience on the 'TO-RENT ' website.

Specifications of the services:

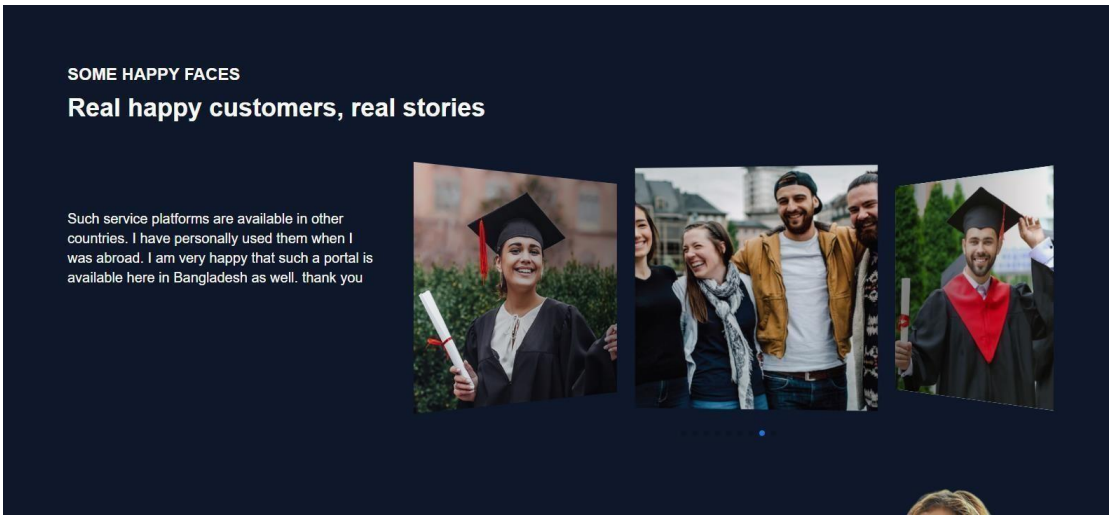


Figure 4.4: Feedbacks

In Figure 4.4 - Feedbacks: TO-RENT values user feedback as an integral part of the community-driven environment. Users can transparently provide and receive insights through the platform's review system, enhancing trust and credibility. The feedback system facilitates constructive comments on house experiences, aiding others in making informed decisions. Admins can monitor and moderate the feedback, ensuring the platform's integrity. Users have the opportunity to contribute to a dynamic and evolving rental community by sharing their perspectives. The robust feedback mechanism fosters a collaborative space where individuals can make confident choices in their rental journey.

User Section:

Figure 4.5: User Profile

In Figure: 4.5 User Profile: TO-RENT's User Profile is a personalized hub for individuals to manage and update their information, including a profile picture. Users can customize communication preferences and access a record of their rental history. The profile enables easy tracking of saved searches and bookmarked favorite properties for a streamlined experience. It acts as a central dashboard for communication, allowing users to engage with property owners and receive updates. Secure document uploads and management make it a comprehensive space for crucial rental-related documentation. TO-RENT's User Profile ensures a user-centric and organized approach to the rental journey.

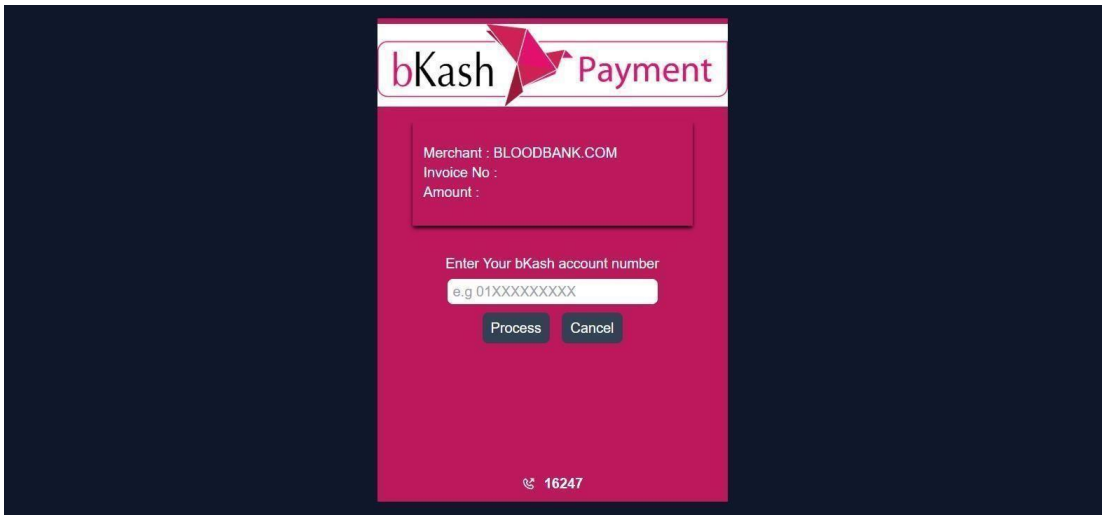


Figure 4.6: Payment Method

TO-RENT has seamlessly integrated bKash as a secure and convenient payment method, offering users an efficient way to make rental payments. With this addition, users can enjoy the flexibility of using bKash for transactions, ensuring a hassle-free and familiar payment experience. The platform provides a user-friendly interface for managing bKash payments, allowing users to access detailed invoices, track payment history, and receive timely reminders. This integration enhances the overall user experience, providing a trusted and widely-used payment solution for seamless financial transactions within the TO-RENT platform.

Add Flat Section:

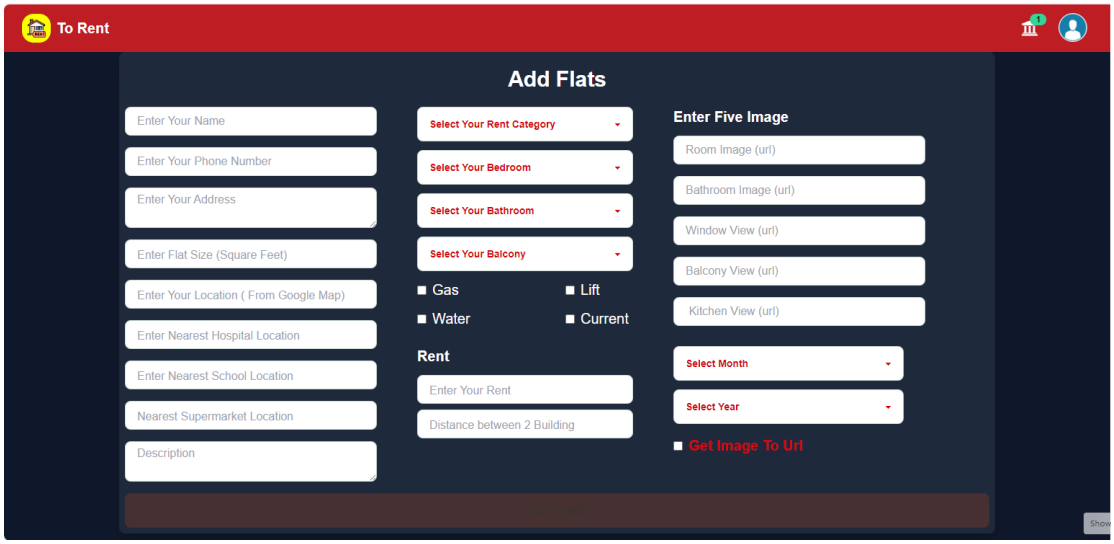


Figure 4.7: Admin Add Flat

In the Figure: 4.7 Admin Add Flat: The admin section of the 'TO-RENT ' website equips authorized administrators with robust tools to efficiently manage and oversee TO-RENT S operations. Administrators can handle listings, review and approve adoption applications, manage profiles, generate reports, and communicate with potential adopters and organizations. This section streamlines processes, enhances coordination, and empowers administrators to make informed decisions, ensuring the smooth functioning of the TO-RENT website. It offers comprehensive control and management capabilities, enabling administrators to effectively facilitate adoptions and maintain the overall efficiency of the 'TO-RENT ' website, thereby promoting successful matches between s and loving homes. Update is with TO-RENT 's.

4.2 Back-End

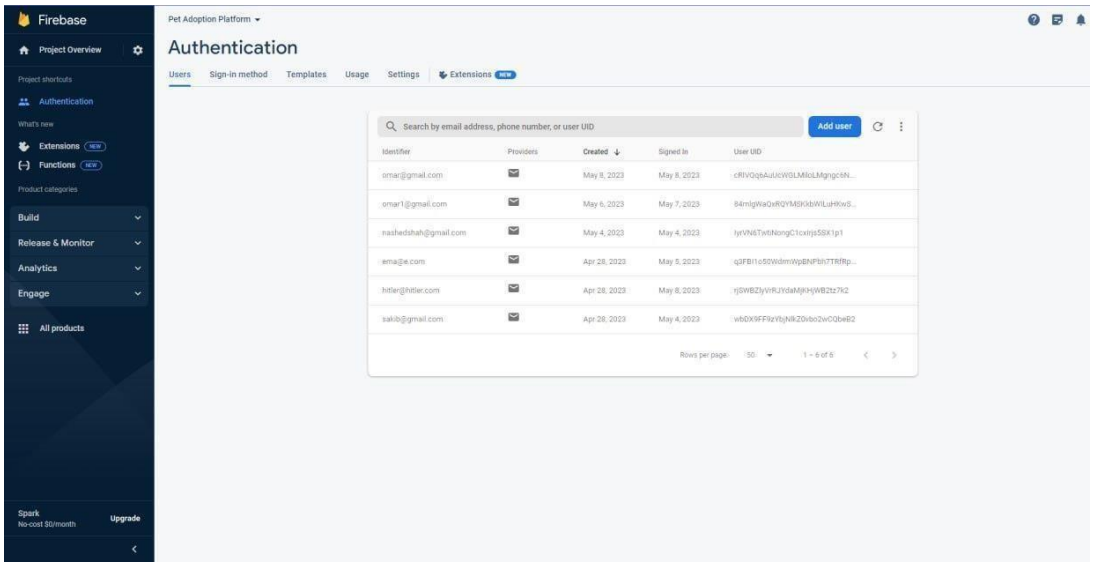


Figure 4.8: User Details

In Figure 4.8, user details display the authentication process, confirming users' login information in the database. Additionally, TO-RENT checks the similarity of the newly entered password with the previously saved one for added security during subsequent logins.

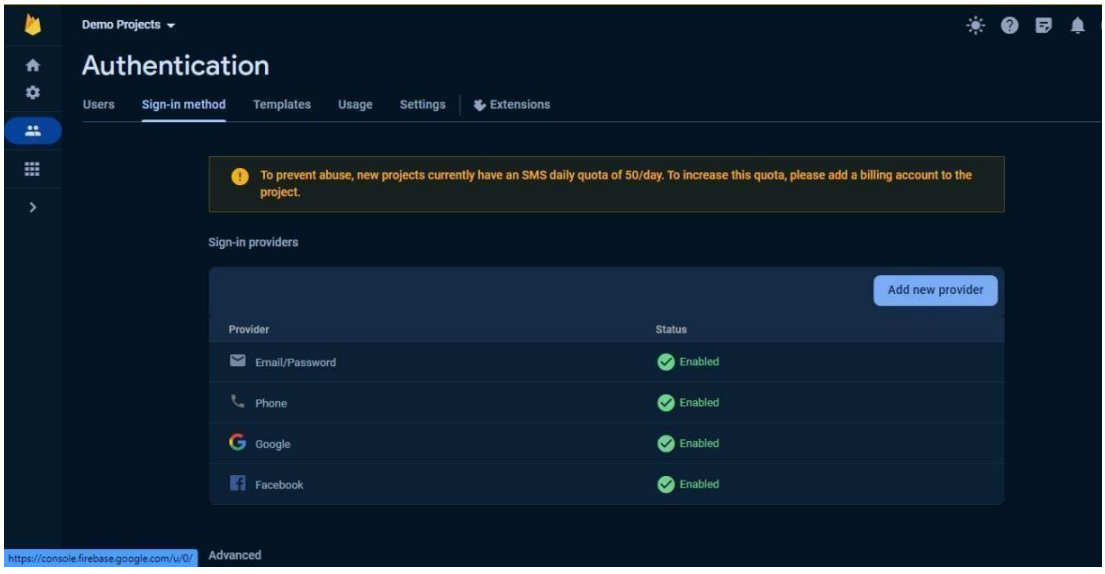


Figure 4.9: Sign-in-method

Figure 4.9 illustrates the sign-in process for TO-RENT, demonstrating how users can log in using either their Gmail or Google-provided email along with a password

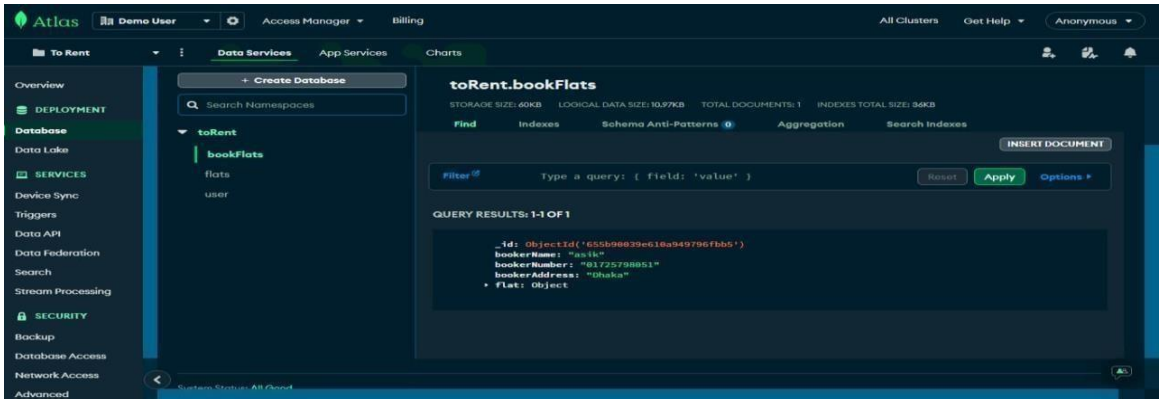


Figure 4.10: Database Services

In Figure 4.10, the database service depicts MongoDB, a product that stores all data, including user logins, admin details, and various product information on TO-RENT.

4.3 Interaction Design and User Experience (UX)

Tailored Search Experience:

- Implementing clear and logical organization of rental categories and sections for effortless exploration.
- Intuitive menus and filters for a user-friendly browsing experience, enabling seamless searches for ideal living spaces.

Responsive Interface:

- Optimizing TO-RENT for various devices, ensuring a consistent and user-friendly experience on desktops, laptops, tablets, and mobile phones.
- Providing accessibility across all screen sizes, prioritizing a seamless interface regardless of device preference.

Aesthetic Presentation:

- Showcasing properties through visually appealing images and graphics, capturing the attention of potential renters.

Efficient Reservation Process:

- Streamlining the property reservation process with a simplified, step-by-step approach for hassle-free transactions.
- Offering transparent details on property availability, features, and requirements for an informative and straightforward user experience

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

The implementation of the database for the TO-RENT involves utilizing MongoDB as the preferred database management system. MongoDB's flexible and scalable NoSQL structure proves ideal for managing diverse property-related data, encompassing property profiles, rental applications, and user information. The database schema is strategically designed to efficiently store and retrieve property details such as property name, type, location, and availability status. User information, including user profiles, rental application history, and communication preferences, is securely stored within the database. To ensure data integrity and seamless interaction between the front-end and back-end, the implementation incorporates Node.js and Express.js on the server-side to handle database operations and API requests. Additionally, Firebase is integrated to securely handle user authentication. The MongoDB database facilitates easy querying, sorting, and filtering of property data, enabling users to search and find properties based on their preferences. Efficient indexing and data caching techniques are employed to enhance database performance, ensuring a smooth and responsive rental experience on the TO-RENT.

5.2 Implementation of Front-end Design

The TO-RENT front-end, built with React.js, HTML5, CSS3, and Tailwind CSS, offers a dynamic and visually appealing user interface. React.js enables interactive features, while HTML5 organizes content logically. CSS3 maintains consistent branding, and Tailwind CSS streamlines responsive design. Integrations like React Lottie and React Icons enhance visuals, and React Hot Toast improves user communication with notifications. The design prioritizes intuitive navigation, user-friendly menus, and responsive layouts, ensuring an enjoyable TO-RENT experience for both renters and property owners.

5.3 Testing Implementation

To enable hassle-free house renting, I've developed a web application interface using HTML, CSS, JavaScript, and React.js. "To-Rent" simplifies the renting process, letting

users book properties online instead of traditional manual searches. The ongoing project requires effective management and adaptability to changing needs. Software components include logically organized data in the database, secure data transfer, and processing phases. The frontend design prioritizes simplicity for easy access on devices like smartphones, laptops, notebooks, and tablets.

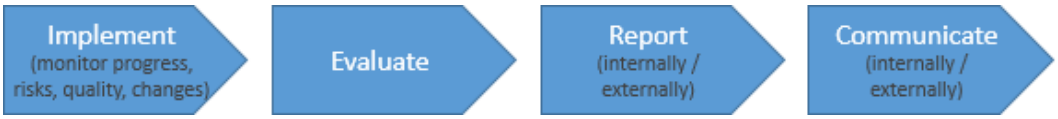


Figure 5.1: Testing Implementation

5.4 Test Results and Reports

The preliminary user feedback from friends indicates positive experiences on TO-RENT. However, as testing has been limited to a small group, potential scalability issues or broader user patterns might not have been thoroughly assessed. It's advisable to conduct extensive testing on a larger scale to uncover any unforeseen challenges that may arise with increased usage. This will ensure a more comprehensive evaluation of the website's performance, user experience, and potential areas for improvement.

5.5 SWOT Analysis:

"TO-RENT: is a gateway to diverse properties with intuitive insights. uncover strengths, address weaknesses, seize opportunities, and navigate threats in the rental landscape.

Strengths	Weaknesses
1. Wide Range of Property Choices **2.** Easy-to-Use Website Interface **3.** Detailed Property Insights	1. Relies Heavily on the Internet 2. Overreliance on Customer Narratives 3. Possible Technical Issues
Opportunities	**Threats**
1. Expand to New Markets with Local Partnerships **2.** Implement Virtual Reality for Property Tours **3.** Collaboration with Emerging Technologies	1. Growing Competition 2. Legal Changes affecting Real Estate 3. Economic Downturn affecting Real Estate Demand

Discover the strengths of TO-RENT, offering a vast array of properties through an easy-to-use interface with detailed insights. However, challenges arise from a heavy internet reliance and potential technical issues. Opportunities beckon to expand into new markets, embrace virtual reality property tours, and collaborate with emerging technologies. Yet, looming threats include growing competition, legal changes in real estate, and the potential impact of economic downturns on rental demand. Navigate the dynamic real estate landscape with TO-RENT, your trusted platform for informed and secure property decisions.

CHAPTER 6
IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Society

TO-RENT's societal impact extends beyond housing solutions, influencing how individuals experience and perceive their living spaces. By prioritizing transparent information and tailored search features, the empowers users to make informed decisions, fostering a community-driven environment. The streamlined ion of eco-friendly practices in property searches contributes to a collective awareness of sustainable living. As TO-RENT redefines the rental experience, it not only addresses housing needs but also cultivates a positive societal shift towards conscious and personalized lifestyle choices. Through accessible and efficient rental processes, TO-RENT becomes a catalyst for shaping healthier, informed, and community-centric living experiences.

6.2 Impact on Environment

TO-RENT's impact on the environment lies in its promotion of eco-conscious living. By facilitating searches for environmentally friendly housing options, the encourages users to consider sustainable practices. The integration of proximity details to essential amenities promotes efficient resource utilization and reduces transportation-related environmental impacts. Additionally, the emphasis on spatial efficiency insights through area ratio calculations contributes to a more sustainable use of space. As TO-RENT transforms the rental landscape, it plays a role in fostering awareness and action towards environmentally responsible living choices, thus influencing a positive ecological footprint in the realm of housing.

6.3 Ethical Aspects

Ethical considerations within TO-RENT revolve around ensuring fairness, transparency, and respect for user privacy. The prioritizes equal access to rental opportunities, avoiding discriminatory practices. Transparent property information and user reviews foster trust and ethical decision-making. TO-RENT upholds privacy standards, safeguarding user data and maintaining confidentiality. The streamlined ion process emphasizes honesty and

clarity in property details, adhering to ethical norms. By embedding these principles, TO-RENT cultivates an ethical framework, promoting responsible practices and contributing to a trustworthy and respectful environment within the realm of property rentals.

.

6.4 Sustainability Plan

The sustainability plan for TO-RENT centers on fostering eco-friendly practices. Integrating green building features and promoting energy-efficient options contribute to a reduced environmental impact. The advocates for sustainable transportation by emphasizing proximity details to essential amenities. Encouraging spatial efficiency through area ratio calculations aligns with environmentally responsible urban planning. TO-RENT further supports sustainable living by prioritizing properties with eco-conscious attributes, thereby influencing a positive shift toward environmentally friendly housing choices. This commitment to sustainability not only addresses current environmental concerns but also actively contributes to shaping a more responsible and eco-centric future within the domain of property rentals.

CHAPTER 7
CONCLUSION AND FUTURE WORK

7.1 Discussion and Conclusion

In the discussion, TO-RENT 's profound influence on the rental paradigm is evident. The 's commitment to tailored solutions, advanced search functionalities, and a community-centric ethos underscores a transformative shift in the user experience. The incorporation of eco-friendly practices aligns seamlessly with societal and environmental consciousness, sculpting a comprehensive and sustainable living narrative. In conclusion, TO-RENT stands as a catalyst, not merely revolutionizing the process of finding a home but significantly impacting societal values. By addressing ethical considerations and championing responsible living, TO-RENT pioneers a conscious and interconnected living environment, positioning itself as a harbinger of positive change in the realm of property rentals.

7.2 Scope for Further Developments

Nowadays, house renting proves crucial, yet finding the ideal home in a suitable area remains challenging. The current manual system is both time-consuming and costly. TO-RENT aims to simplify lives by providing an online platform for users to effortlessly find and rent houses, making the process hassle-free. Our focus is to enhance convenience and save users time and money. With a user-friendly interface and location-based search functionality, TO-RENT allows renters to easily find affordable houses, hostels, or flats, ultimately increasing customer satisfaction and retention.

Reference:

[1] J. Paul, "The Rental Zone (House Renting Website)," *International Research Journal of Modernization in Engineering Technology and Science*, vol. 4, no. 08, pp. 2582-5208, 2022.

[2] S. Sharma, A. Kumar, N. Sengar, and A.K. Kaushik, "Implementation of Property Rental Website Using Blockchain with Soulbound Tokens for Reputation and Review System."

[3] A.L. Monteverde, J.J.S. Maderazo, K.C.M. Cruz, and N.A. Magnaye, "A Web-Based Rental House Smart Finder using Rapid Application Development basis for Evaluation of ISO 205010."

[4] A.F. Nurzaman and N. Legowo, "Rentcomp-Website Design for Renting Computer in Information System Laboratory XYZ University," in *2021 International Conference on Information Management and Technology (ICIMTech)*, Aug. 2021, pp. 159-164.

[5] D. Hariyanto, R. Sastra, and D. Ardyanto, "WATERFALL METHOD IN WEBSITE-BASED MOTORCYCLE RENT INFORMATION SYSTEM DESIGN AND SERVICES," *Jurnal Teknologi Informasi Universitas Lambung Mangkurat (JTIULM)*, vol. 7, no. 1, pp. 63-68, 2022.

[6] MozDevNet, “HTML5 - MDN Web Docs Glossary: Definitions of Web-related terms: MDN,” MDN Web Docs Glossary: Definitions of Web-related terms | MDN, https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/HTML5, Accessed Jun. 16, 2023.

[7] MozDevNet, “CSS: Cascading style sheets,” MDN, https://developer.mozilla.org/en-US/docs/Web/CSS, Accessed Jun. 16, 2023.

[8] React, https://reactjs.org/, Accessed Jun. 16, 2023.

[9] Node.js, https://nodejs.org/, Accessed Jun. 16, 2023. [1] “Node.js web application framework,” Express, https://expressjs.com/, Accessed Jun. 16, 2023.

[10] MozDevNet, “JavaScript,” MDN, https://developer.mozilla.org/en-US/docs/Web/JavaScript, Accessed Jun. 16, 2023.

[11] “The developer Data,” MongoDB, https://www.mongodb.com/, Accessed Jun. 16, 2023.

[12] Google, https://firebase.google.com/, Accessed Dec. 7, 2023.

[13] Zillow, “Real estate, apartments, Mortgages & Home values,” https://www.zillow.com/, Accessed Nov. 25, 2023.

[14] Trulia Real Estate Search, “Discover A place you’ll love to live,” https://www.trulia.com/, Accessed Nov. 25, 2023.

[15] Apartments.com, “Apartments and homes for Rent,” https://www.apartments.com/, Accessed Nov. 25, 2023.

[16] Realtor.com®, “Homes for sale, apartments & Houses for Rent,” https://www.realtor.com/, Accessed Nov. 25, 2023.

[17] Rent.com, "Rent. find user next place | apartments and houses for rent.," https://www.rent.com/, Accessed Nov. 25, 2023.

[18] Redfin, “Search with redfin.tour with a redfin agent.,” Newest Listings Sitemap RSS, https://www.redfin.com/, Accessed Nov. 25, 2023.

To-Rent: An Online Platform for Hassle-Free House Booking and Flat Rental Services

ORIGINALITY REPORT

22%	20%	2%	17%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Daffodil International University Student Paper	4%
2	dspace.daffodilvarsity.edu.bd:8080 Internet Source	3%
3	www.irjmets.com Internet Source	1%
4	Submitted to Bedford College Student Paper	<1%
5	Submitted to Victorian Institute of Technology Student Paper	<1%
6	journals.e-palli.com Internet Source	<1%
7	Submitted to Bryant College Student Paper	<1%
8	Submitted to University of Northumbria at Newcastle Student Paper	<1%
	Submitted to Sunway Education Group	