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## Housing Marketplace Web Application

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# **Chapter 1**

## **Introduction**

### **1.1 Overview**

The real estate industry is a significant sector of the economy that plays a pivotal role in connecting buyers and sellers of properties. As society embraces the digital age, there is a growing demand for online real estate platforms that simplify property searches, streamline communication, and provide a wealth of information for prospective buyers, renters, sellers, and agents.

With the advancement in technology, the demand for online real estate platforms has been steadily increasing. Buyers and sellers now expect a streamlined and transparent experience. They want to access property information, view high-quality images, and communicate securely with ease, all from the convenience of their computers or mobile devices. It is in this context that the development of a full-stack, responsive real estate website becomes not only relevant but imperative.

This project aims to create a fully responsive, full-stack real estate website using React, catering to the needs of potential buyers and sellers in the real estate market.

### **1.2 Motivation**

The motivation behind this project stems from the increasing reliance on digital solutions for everyday tasks. For example:

- In the real estate sector, the need for a user-friendly platform that simplifies property search, provides essential information, and facilitates contact between buyers and sellers is evident.
- Our website seeks to address this need by offering a feature-rich, responsive, and intuitive real estate platform.
- One of the key motivators for this project is making the complex processes involved in real estate transactions.

## **1.3 Problem Definition**

### **1.3.1 Problem Statement**

The real estate industry faces several critical challenges that hinder its efficiency, transparency, and accessibility. The conventional methods of buying, selling, and renting properties are marked by inefficiencies and a lack of user-centric solutions. This online system has some challenges that have to face them.

- Project Problem Phases:**

1. Requirements Gathering: The first step in developing a web application project is to identify the requirements of the client. We need to have a clear understanding of the business objectives and the target audience.
2. Design and Development: Once the requirements are gathered, we will work on creating a user-friendly and visually appealing interface for the web application. We will use various programming languages, such as PHP, HTML, CSS, and JavaScript, to create the functionality of the application.
3. Testing and Deployment: The next phase is to test the web application for bugs and errors. Our team will test the application thoroughly to ensure that it is functioning correctly and that all the features are working as intended.
4. Challenges: One of the biggest challenges in developing a web application project is ensuring the security of our customer data. Our web application must be secure enough to prevent unauthorized access to customer information and prevent cyber-attacks.
5. Scalability: As the business grows, our web application project must be scalable enough to handle an increase in traffic and transactions. Our team must ensure that the web application can handle the expected load and can be easily scaled up or down as needed.

### **1.3.2 Complex Engineering Problem**

One complex engineering problem in a real estate website revolves around scalability and handling high-traffic loads.

## **1.4 Design Goals/Objectives**

The primary objectives of this real estate website project are to design, develop, and deliver a platform that serves the needs of various stakeholders in the real estate industry. So, the main objectives of this project are:

Table 1.1: Complex Engineering details for our housing market place Project

Problem Attributess	Explain how to address
<b>P1:</b> Depth of knowledge required	A real estate website is an online platform designed to facilitate the buying, selling, renting, or leasing of real estate properties, which include residential, commercial, industrial, and land properties
<b>P2:</b> Range of conflicting requirements	None
<b>P3:</b> Depth of analysis required	For a real estate website, we should consider various aspects to ensure a comprehensive assessment of the website's performance, usability, and effectiveness
<b>P4:</b> Familiarity of issues	A real estate website typically refers to challenges or difficulties that users encounter when they are not accustomed to the platform, its interface, or its unique features. These issues can hinder user engagement, frustrate visitors, and even lead to users abandoning the website.
<b>P5:</b> Extent of applicable codes	Our project has stakeholder involvement with my course teacher, university, lab technician, lab server, and my university friends all are connected.
<b>P6:</b> Extent of stakeholder involvement and conflicting requirements	Stakeholder involvement is crucial due to the multifaceted nature of the project and the potential impact on various parties. Stakeholders can include clients, end-users, regulatory bodies, project managers, engineers, suppliers, and more.
<b>P7:</b> Interdependence	Yes, I have interdependence for our project.

- To create a user-friendly and responsive real estate website that can be easily accessed by any device, including desktops, laptops, tablets, and mobile phones.
- To implement a full-stack solution that includes a robust backend server to manage data efficiently.
- Develop a comprehensive property listing system that allows property sellers and agents to create detailed property listings.
- To implement advanced search and filtering options to enable users to refine their property searches efficiently. These options should include location-based filters, property type filters, price range filters, and more.
- Create a secure messaging system that facilitates direct communication between property buyers and sellers, ensuring privacy and security.

## 1.5 Application

The application of this real estate website project is extensive, encompassing a wide range of benefits for various stakeholders within the real estate ecosystem and beyond. There are some of the applications of real estate website:

1. Efficient Property Search: The real estate website will provide an intuitive and robust property search feature. Users can easily find properties based on their preferences, including location, price range, property type, and other customizable filters.
2. Comprehensive Property Information: Potential buyers and renters will have access to comprehensive property listings.
3. Time and Effort Savings: By offering a user-friendly, all-in-one platform, the project aims to save users valuable time and effort that would otherwise be spent on multiple websites or in-person property visits.
4. Data Analytics: The website can provide valuable insights into user behavior, market trends, and property performance.
5. Direct Communication: The website will incorporate a secure messaging system that facilitates direct communication between sellers/agents and potential buyers/renters

## 1.6 Literature Review

Here are the problem domains we found by reading some papers objective, process, performance, limitations, etc. This literature review explores the key features:

1. User Interface: One of the most important factors in the success of an e-commerce website is its user interface. A well-designed and user-friendly website can improve the user experience, increase customer satisfaction, and lead to higher conversion rates.
2. Security: Another key factor in the success of e-commerce websites is security. Consumers are increasingly concerned about the safety of their personal and financial information when making online purchases.

## 1.7 Methodology

We will use the agile method from the Software development life cycles. There have some requirements to use the agile method.



Figure 1.1: Agile Method

- **Requirement:**

1. Define clear project goals: Before starting the project, it is important to define clear project goals and objectives.
2. Build a backlog of user stories: Our project team should build a backlog of user stories that define the features and functionalities.

3. Define sprints and milestones: Our project team should define sprints and milestones that will be used to track progress and measure success.

Overall, an Agile methodology can help ensure that our project is completed on time, within budget, and meets the needs of customers and stakeholders.

- **Implementation:**

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with the team and continuous improvement at every stage. Once the work begins, teams cycle through a process of planning, executing, and evaluating.

## 1.8 Feasibility study

**Technical Feasibility:** The purpose of this technical feasibility report is to evaluate the feasibility of a housing marketplace website application project. The project aims to develop a platform that allows businesses to sell their property and services online. The report outlines the technical aspects of the project, including hardware and software requirements, development tools, and potential challenges.

- **Operational Feasibility:** Operational feasibility is a measure of how well a proposed system solves problems and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.
- **Economical Feasibility:** Housing Marketplace website has become a booming industry in recent years, and the trend is only set to continue. With the rise of online, businesses have been able to reach a much larger customer base and offer a wider range of products and services. For any system if the expected benefits equal or exceed the expected costs, the system can be judged to be economically feasible. In economic feasibility, cost benefit analysis is done in which expected costs and benefits are evaluated. Economic analysis is used to evaluate the effectiveness of the proposed system.

## 1.9 Gantt Chart

Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
UI/UX Design						
Front End Development						
Back End Development						
Final Updates and Project Showing						

Figure 1.2: gantt Chart

## 1.10 Budget

No	Estimation Item	Budget (Taka)
1	UI/UX Design	80,000
2	Front End Development	2,00000
3	Back End Development	2,50000
4	API Cost	25,000
5	Domain / Hosting Cost	35,000
6	Future Maintenance Cost	3,00000
7	Meeting Purpose	20,000
8	Security Updates	40,000
		Total:- 9,20,000 (Taka)

## 1.11 Expected Output

Our team has thought that these are the outcomes when our project will be fully done: -

1. A user-friendly and responsive website design that offers a great user experience across all devices, including desktops, tablets, and smartphones.
2. A well-organized with clear property descriptions, images, and pricing information.
3. An easy-to-use system that allows users to add and remove property, change, and check out seamlessly.
4. A reliable order management system that tracks records, manages inventory, and generates notifications.
5. A robust customer management system that enables customer registration, login, and account management.

Ultimately, the expected output of an E-commerce website project is a fully functional and user-friendly online store that meets the client's expectations and drives sales.

## **1.12 Conclusion**

The development of a website application project has become a necessity for businesses in today's digital age. The benefits of having an online store that is accessible 24/7 to customers all over the world cannot be overstated. With the right design, user interface, and functionalities, a website can increase brand awareness, reach a larger audience, and drive sales. With the right approach, it can provide a seamless web experience for customers and help businesses achieve their goals.

# **Chapter 2**

## **Design/Development/Implementation of the Project**

### **2.1 Introduction**

Real Estate websites have revolutionized the way to conduct business online. These platforms provide a seamless online experience, allowing customers to browse through a vast array of products and services from the comfort of their homes. With secure payment gateways and robust logistics networks, real estate websites enable customers to easily search for and rent property to their doorstep. As a result, real estate websites have become an integral part of modern-day on-line business, connecting businesses and customers worldwide.

### **2.2 Project Details**

We are making a housing marketplace website where users can log in and sign up for free. Then, he/she can search for property to rent and buy. And, your sign-up and login information will store in the Firebase database and will check authentication. Our product will be stored in the MongoDB cloud. Also, Our website project aims to create a user-friendly and visually appealing platform that offers a wide range of products and services to customers. We will implement a responsive design, ensuring seamless browsing and shopping experiences across devices. The website will incorporate robust security measures to safeguard customer information and transactions.

### **2.3 Implementation**

We will implement a responsive design to ensure seamless browsing and purchasing experiences across various devices. Furthermore, we will prioritize efficient order fulfillment and implement a streamlined logistics network to ensure timely delivery. Overall, our implementation will aim to create a compelling

housing marketplace platform that meets customer expectations and fosters business growth.

### 2.3.1 Use case Diagram

A use case diagram for a housing marketplace website would include several actors and their interactions with the system. Use case diagram would illustrate the relationships between these actors and the system, represented by actors and use case symbols connected by lines. We can create a visual representation of the use case diagram using various diagramming tools or consult a professional in systems analysis and design.

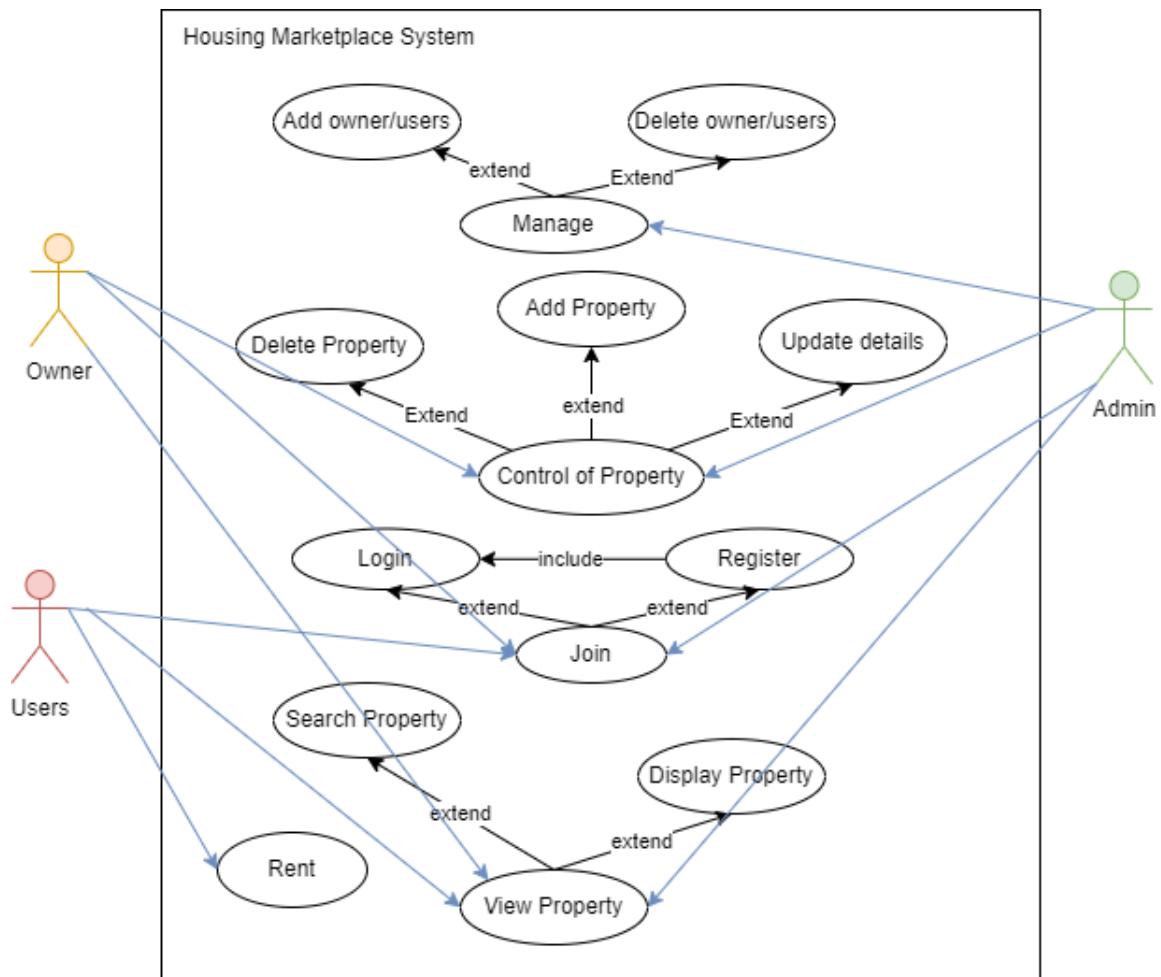


Figure 2.1: Use Case Diagram

### 2.3.2 High Level Design

High-level design or HLD refers to the overall system, a design that consists description of the system architecture and design and is a generic system design.

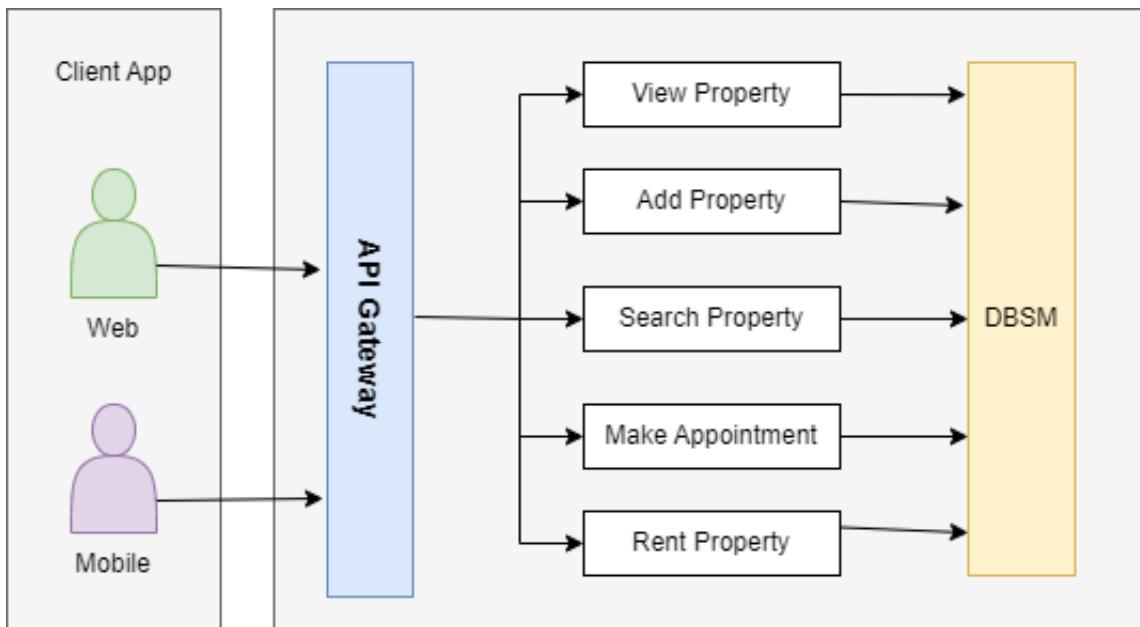


Figure 2.2: A client-server architecture

### 2.3.3 Low Level Design

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. This process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work. Post-build, each component is specified in detail.

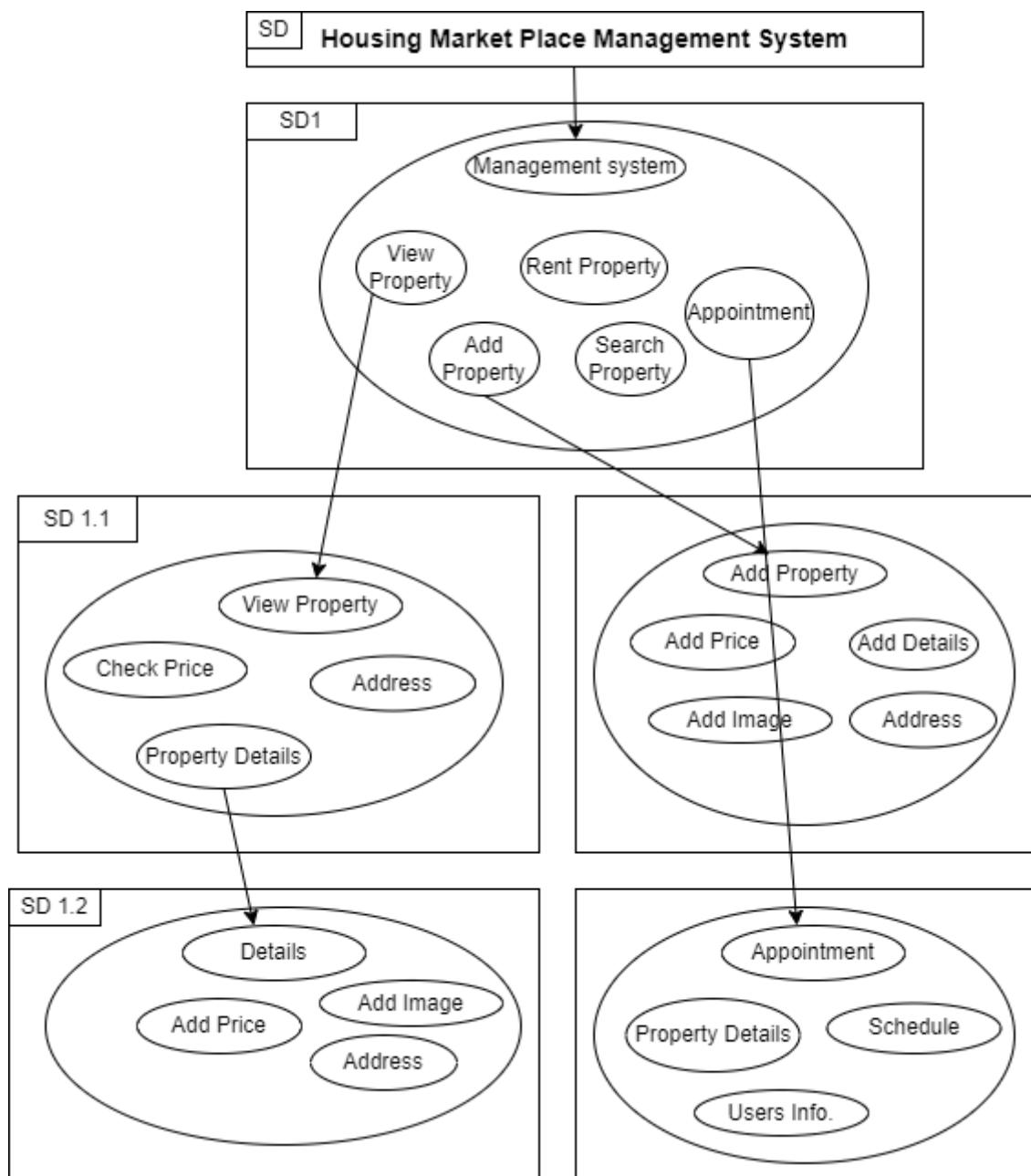


Figure 2.3: High level view to low level view

### 2.3.4 ER Diagram

This ER diagram for property management represents the model of a property management system entity. The entity-relationship diagram of property management systems depicts all of the visual tools of database tables and the relationships between buyers, property types, properties, registrations, etc.

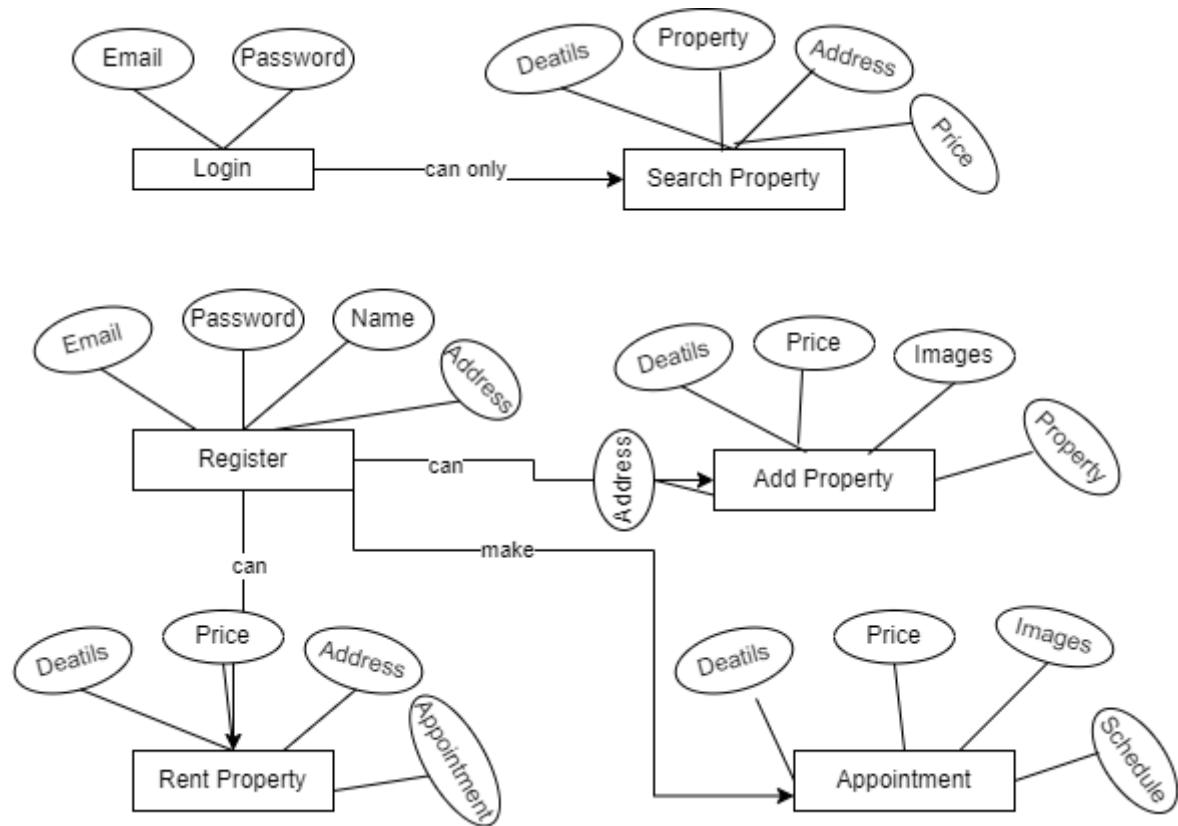


Figure 2.4: ER Diagram

### 2.3.5 Source Code

Here, is the codes for the auth0 system. Auth0 allows us to add authentication to our react application quickly and to gain access to user profile information. This guide demonstrates how to integrate Auth0 with any new or existing React application using the Auth0 React.

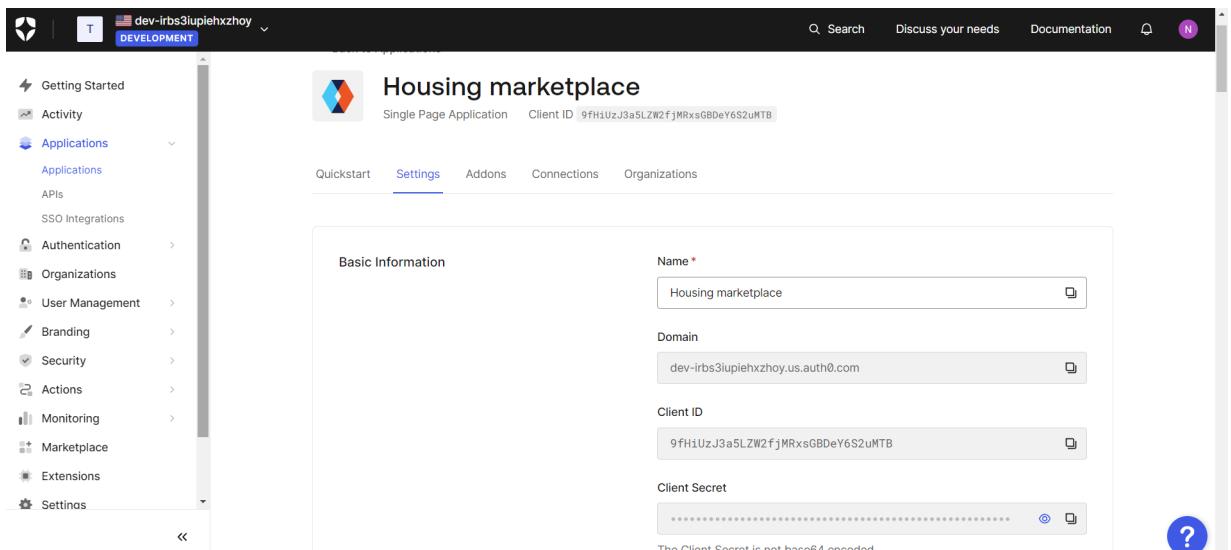
## Applications

+ Create Application

Setup a mobile, web or IoT application to use Auth0 for Authentication. Show more >

 Generic	<b>Auth0 Account Management API Management Client</b>	Client ID: uUfffBoqXYjgqnrap2mf0jnDhtbgjb4T		
 Generic	<b>Default App</b>	Client ID: yVhWbcTIvsTKJKbxhYstSqjxZR95bKIZ		
 Single Page Application	<b>Housing marketplace</b>	Client ID: 9fHiUzJ3a5LZW2fjMRxsGBDeY6S2uMTB		

Figure 2.5: Auth0 setup



The screenshot shows the Auth0 Settings page for the 'Housing marketplace' application. The left sidebar includes sections like Getting Started, Activity, Applications (selected), APIs, SSO Integrations, Authentication, Organizations, User Management, Branding, Security (with a checked checkbox), Actions, Monitoring, Marketplace, Extensions, and Settings. The main content area displays the application's details: Name (Housing marketplace), Domain (dev-irbs3lupiehxzhoy.us.auth0.com), Client ID (9fHiUzJ3a5LZW2fjMRxsGBDeY6S2uMTB), and Client Secret (a long string of characters). A note at the bottom states: 'The Client Secret is not base64 encoded.'

Figure 2.6: Auth0 setup

# Chapter 3

## Performance Evaluation

### 3.1 Simulation Environment/ Simulation Procedure

We use the Firebase database system for the authentication system, and MongoDB cloud storage to store our product details. Also, we use VS code as our IDE, and also, we use draw.io to draw our diagram.

### 3.2 Results Analysis/Testing

Results analysis and testing are crucial aspects of any web-based project. Through rigorous testing, we can identify and rectify any potential issues such as broken links, slow loading times, or compatibility problems across different devices and browsers. So, we completed our manual testing for our project.

1	Date	test id	Module	Feature	test scenario	Steps	pre requ	bug comment	url	snap shot	Dev mark	Re-check comment
2	22/12/2023	w-110	Appointment_confirmation		when i tried to appoint a schedule but it didn't confirm me appointment. i think there is problem in	1. login 2. dashboard 3. appointment	None	cannot confirm my appointment	<a href="https://classeroom.google.com/w/NjlxODMxMk0MTM5/t/all">https://classeroom.google.com/w/NjlxODMxMk0MTM5/t/all</a>		Checking	Checking and trying solving
3	29/12/2023	w-111	Add Porperty	Property	When i tried to add porperty it didn't work	1. login 2. dashboard 3. Add property	None	didnot add	<a href="https://app.diagrams.net/#G1xzLjcjBQqzAeg3-UmjmfYFzC8Wqa">https://app.diagrams.net/#G1xzLjcjBQqzAeg3-UmjmfYFzC8Wqa</a>		checking	Solving
4	04/12/2024	w-113	Logout from w	Logout	I cannot logout fi	1. login 2. d	None	didn't logout	<a href="https://www">https://www</a>		checking	Trying to s

Figure 3.1: Manual test report

### 3.2.1 Result\_portion\_1

Here, we can see our login and sign-up for users. For a new user, he/she must have to sign up first to login in website. And, if their email and password match anyone can log in. So, our login and signup information will store in the Firebase database system and they will check the authentication system for our website.

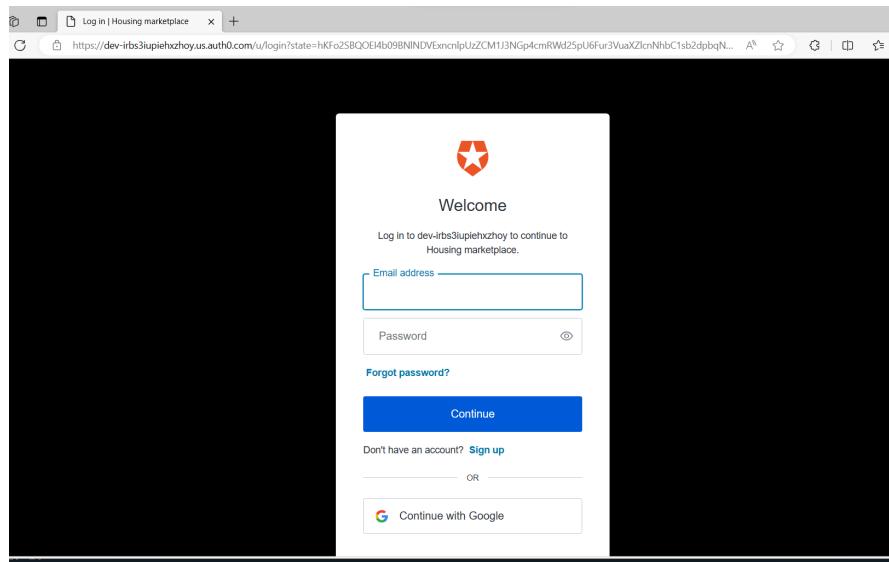


Figure 3.2: login System

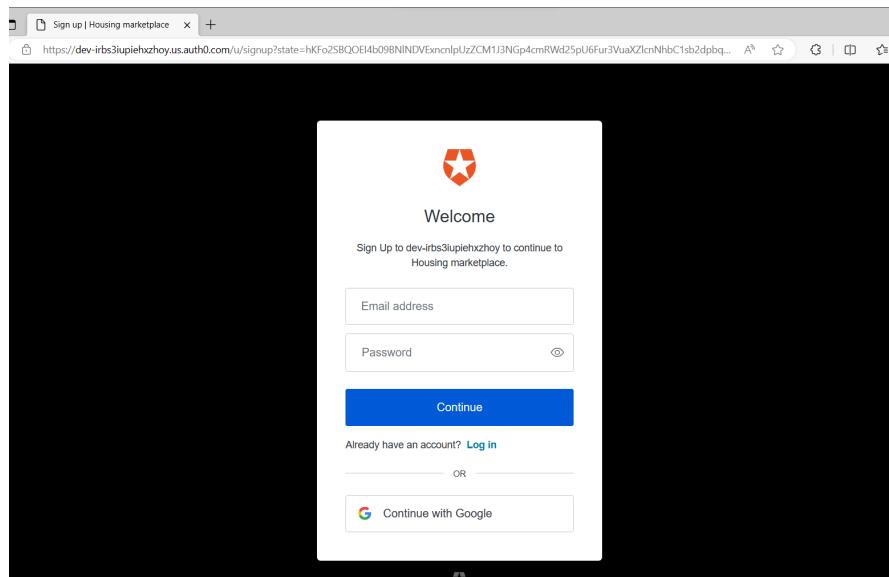


Figure 3.3: Signup System

### 3.2.2 Result\_portion\_2

Here, we can see the dashboard of our website. Also, we can see the search property list here.

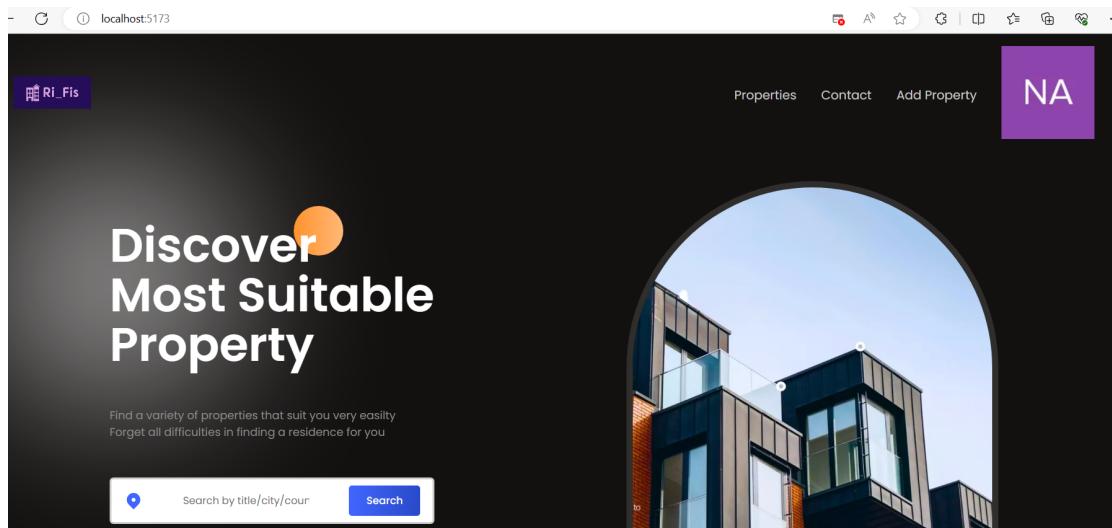


Figure 3.4: Dash Board of our website

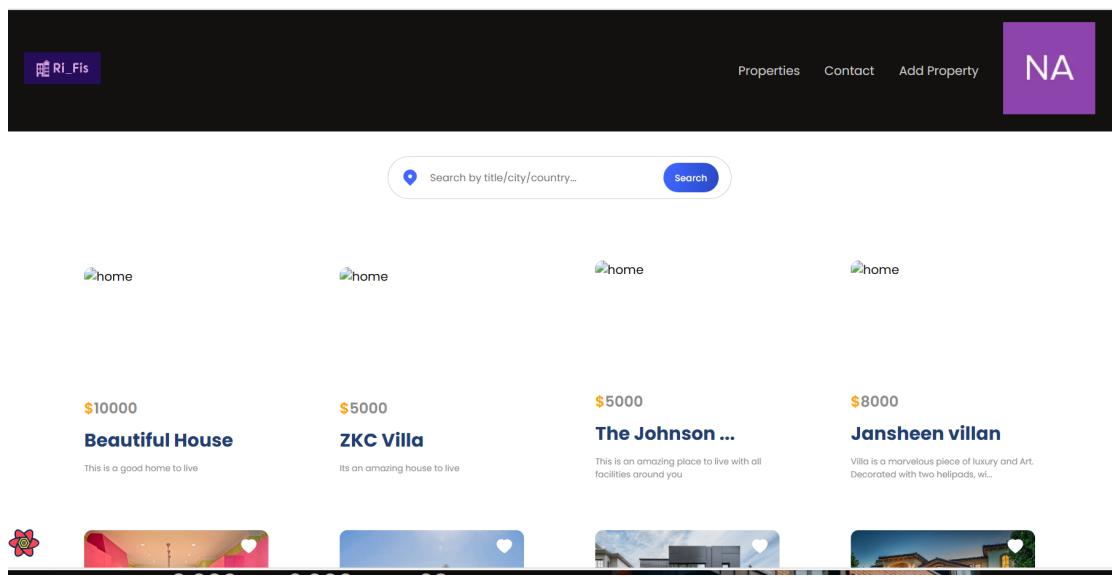


Figure 3.5: Search Property option

### 3.2.3 Result\_portion\_3

Here we can see that we use a slider so that we can see multiple properties by scrolling right and left and a single property functionality of our project.

**Best Choices**  
**Popular Residencies**



\$2000

**Modern Marve...**

Massive opportunity to build your dream home at the base of Mummy Mountain in...



\$2000

**Cedar Ridge ...**

Massive opportunity to build your dream home at the base of Mummy Mountain in...



\$2000

**Crimson Peak...**

Massive opportunity to build your dream home at the base of Mummy Mountain in...



\$2000

**Summerhill E...**

Massive opportunity to build your dream home at the base of Mummy Mountain in...

Figure 3.6: Add a slider



\$2000

**Modern Marve...**

Massive opportunity to build your dream home at the base of Mummy Mountain in...

Figure 3.7: porperties fuctionality

### 3.2.4 Result\_portion\_4

Here, we can like a property and it will stay saved in our cart. Also, we can book a visit so that we can make a physical visit.

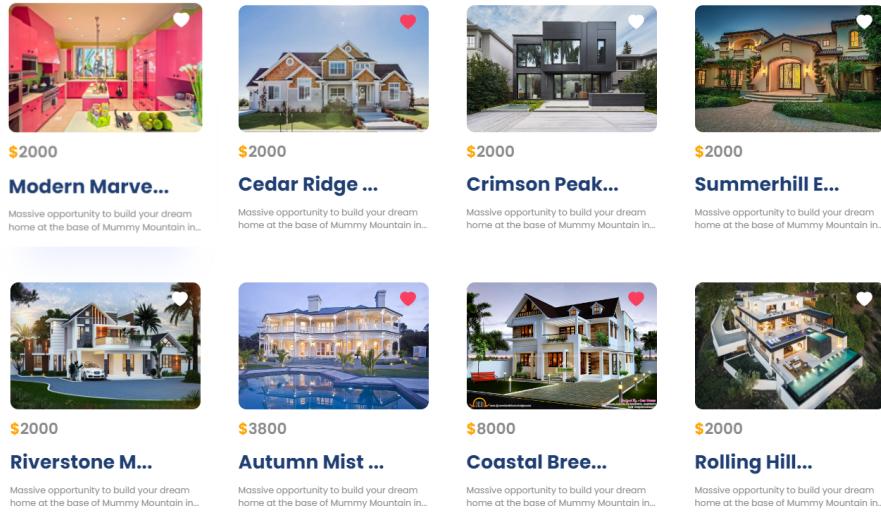


Figure 3.8: Like a property

The image is a screenshot of a property listing page. At the top, there is a navigation bar with links for Properties, Contact, Add Property, and Login. Below the navigation bar is a large image of a modern, two-story house with dark grey panels and large glass windows. To the right of the image is a map showing the location of the property in a coastal area. Below the image and map, the property details are listed:

**Crimson Peak Chalet** \$ 2000

3 Bathrooms, 1 Parking, 4 Room/s

Massive opportunity to build your dream home at the base of Mummy Mountain in the 3 C's school district. Home is currently updated and very livable if your plans are to build or do later date.\* Bonus \* to live hillside without hillside restrictions in the town of PV. I don't want to capture this needle in a haystack.

Street 8 Chicago US

**Book your visit**

**Information**

Figure 3.9: Book a visit

## 3.3 Results Overall Discussion

Our housing marketplace website project has yielded remarkable results and has proven to be a successful endeavor. Throughout the development and implemen-

tation stages, we focused on creating an intuitive user interface, optimizing site performance, and ensuring a seamless experience for our customers. As a result, we have witnessed a significant increase in website traffic and user engagement. Overall, our project has surpassed expectations, positioning us as a competitive player in the industry.

### **3.3.1 Complex Engineering Problem Discussion**

Developing a website involves tackling a complex engineering problem that encompasses various aspects. The architecture, and scalability, and security of the website need to be carefully designed to handle a large number of concurrent users and heavy traffic. This requires implementing efficient server infrastructure, load-balancing mechanisms, and database optimization techniques. Overcoming these complex engineering problems demands meticulous planning, skilled development teams, and thorough testing to create a reliable and efficient e-commerce platform.

# **Chapter 4**

## **Conclusion**

### **4.1 Discussion**

Housing marketplace websites have revolutionized the way we conduct business and shop online, offering convenience, accessibility, and a wide array of products and services. One of the key advantages of online platforms is the ability to check from anywhere, at any time, eliminating geographical constraints and opening up a global marketplace. However, discussions surrounding website also involve concerns about data privacy, cybersecurity, and the impact on traditional brick-and-mortar retail. So, at least our websites will provide a seamless and personalized shopping experience.

### **4.2 Limitations**

There have some limitations to our project but we will improve it day by day. For example:

- a. We can improve our design and also we can add more functionality to our website.
- b. We have some security concerns and the potential risks of online transactions, and there is always a risk of data breaches, hacking, or fraudulent activities.
- c. Return and refund processes can be complex and time-consuming. Unlike physical stores where returns and exchanges can be made on the spot.
- d. The dependency on reliable internet connectivity can be a limitation.
- e. Limited personalized customer service is also a drawback.

### **4.3 Scope of Future Work**

Our housing marketplace website project holds immense potential for future growth and success. With the rapid expansion of the digital marketplace, we can anticipate several exciting opportunities.

- a. In the future, we can implement advanced technologies such as artificial intelligence and machine learning to enhance customer experience.

- b. Furthermore, we can explore new markets and reach a global customer base.
- c. In addition, we can explore partnerships with local property owners.

Overall, our project has a promising future with endless possibilities for growth and innovation.

## 4.4 References

1. <https://app.diagrams.net/> [1]
2. <https://www.bproperty.com/>[2]
3. <https://www.youtube.com/watch?v=ksuEEHGvpWEab>*channel = HasanRaheem – Topic*[3]
- 4.<https://www.edrawmax.com/templates/1016565/>[4]