

GreenVille E-State Management

A PROJECT REPORT

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Requirements for the Degree of

MASTER OF COMPUTER APPLICATION

Under the Supervision of
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Submitted to

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(MAY 2024)

CERTIFICATE

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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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GreenVille E-State Management

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ABSTRACT

The Real Estate Management System (REMS) is an innovative software solution designed to enhance the management and operational processes within the real estate industry. With the exponential growth of the global real estate market, the need for efficient and automated systems to handle property management tasks has become crucial. REMS addresses these challenges by providing a comprehensive platform that integrates various aspects of real estate management, including property listings, tenant management, financial tracking, and maintenance scheduling. REMS leverages advanced technologies such as cloud computing, artificial intelligence, and data analytics to deliver a robust and user-friendly system for real estate professionals. It offers a centralized database that enables real-time access to property information, facilitating streamlined communication and collaboration among property owners, managers, tenants, and service providers. Through its intuitive interface, users can efficiently manage property listings, track tenant details, monitor rental payments, generate financial reports, and streamline maintenance requests. The system's key features include an intelligent property listing module that allows real estate agents to create and update property listings with detailed descriptions, images, and pricing information. The tenant management module enables seamless onboarding, lease agreement management, rent collection, and communication with tenants. REMS also provides a comprehensive financial tracking component, which automates rent calculation, generates invoices, tracks expenses, and offers detailed financial reports. Furthermore, REMS incorporates a maintenance scheduling module, which allows property managers to schedule and track maintenance tasks, assign service providers, and monitor progress. The system can also leverage data analytics to generate insights and predictions related to property performance, market trends, and investment opportunities, empowering users to make informed decisions. The Real Estate Management System aims to revolutionize the way real estate operations are managed, improving efficiency, reducing administrative overhead, and enhancing customer satisfaction. By centralizing critical processes and leveraging cutting-edge technologies, REMS provides a powerful tool for real estate professionals to optimize their operations, minimize manual efforts, and maximize profitability in a highly competitive industry.

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CHAPTER 1

INTRODUCTION

The online Real Estate Property Management is a web portal helping the clients seeking to sell their property and the clients seeking a property for their use easy by providing them an easy platform. The clients just need to register on the portal and he/she will get options to add a property or search a property according to the location and other parameters. Thus reducing their time to go places in search of a property and moreover the need to register their property with the local agents which indeed is a very tedious task.

1.1 Motivation

Technology plays a very important role in today's life. Everything from regular routine work to big industry operations are getting digitized. Computers today are making everyone's life much easier than before. Everything nowadays is online from buying clothes, travel ticket reservation to booking movie tickets etc. E-commerce is becoming a competitive industry and according to experts it is still in its infant stage and has a very good future to look forward to.

The real estate properties have always been a point of interest among the people and after technological revolution people have started trading properties over the internet. Due to the advantage of large data storage and easy access people can now easily browse through wide range of properties easily over the internet with minimal effort and then can invest or buy more conveniently. The internet has changed the real estate business drastically and will continue to revolutionize it with new concepts.

This project is another step in that direction. It will enhance the real estate market even more by providing a website which will take care of all users' needs and will help them in every possible way to buy and sell properties online. It will become a point of contact between the interested

buyers and property sellers.

Each user will be able to register him/herself on the website and then will be able to either buy a property posted by another user or post a property on the website for the purpose of selling it.

1.2 Problem Statement

- It is a basic system that will keep record of housing properties available on sale, and will work as connecting bridge between customer and property sellers.
- The information of various properties in various locations can be accessible at one place.
- It will also keep record of contact information of customer to inform them about an event related to their property.
- It will manage the properties effectively and efficiently.

1.3 Scope

- The project will deliver an altogether new version of online real estate property management with an added feature of home page displayed properties.
- Will reduce the work and improve efficiency as a user will be having everything on one website.
- The portal will provide a facility of notifications to the user.(Eg: A user wants to share some property details with his friend, then he view his contact info and send him the required details).
- Daily feeds will be provided to the user when he logs in. A person can directly start browsing the properties from there itself.
- FAQ's and other interactive features will make website more user friendly.
- Feedback option will be available.
- Loan provider details will also be available.
- Important support Email Ids will be displayed on the website.
- The website administrators contact details will also be available.

Key Features:

1. Property Listing and Marketing: Our project includes a robust system for listing and marketing properties. It allows property owners and managers to showcase their available properties with detailed descriptions, high-quality images, and relevant information to attract potential tenants or buyers.

2. Tenant and Lease Management: Efficiently managing tenants and leases is a critical aspect of real estate management. Our project provides tools to handle tenant onboarding, lease agreements, rent collection, maintenance requests, and lease renewals. This feature ensures smooth tenant interactions and helps maintain positive landlord-tenant relationships.

3. Financial Management: Our real estate management project includes financial management capabilities, such as tracking income and expenses, generating financial reports, monitoring cash flow, and handling accounting tasks. These features assist property owners and managers in maintaining accurate financial records and making informed financial decisions.

4. Maintenance and Work Order Management: Property maintenance is vital for preserving the value and functionality of real estate assets. Our project facilitates maintenance and work order management by allowing users to log and track maintenance requests, schedule repairs or inspections, and manage vendor relationships efficiently.

5. Analytics and Reporting: Data-driven decision-making is essential in real estate management. Our project incorporates analytics and reporting tools that provide insights into property performance, occupancy rates, rental trends, financial metrics, and other relevant data. These features enable users to make informed decisions to optimize property operations and maximize returns.

Benefits: By utilizing our real estate management project, stakeholders in the real estate industry can enjoy several benefits, including:

1. Improved Efficiency: Automation and streamlined processes reduce manual effort and enhance operational efficiency, allowing property managers to focus on strategic tasks.

2. Enhanced Communication: The project facilitates seamless communication between property owners, managers, tenants, and vendors, promoting effective collaboration and timely resolution of issues.

3. Cost Reduction: Optimizing property operations, monitoring expenses, and identifying cost-saving opportunities help minimize operational costs and improve profitability.

4. Increased Occupancy and ROI: Effective marketing strategies, efficient tenant management, and data-driven decision-making contribute to higher occupancy rates and improved return on investment for property owners.

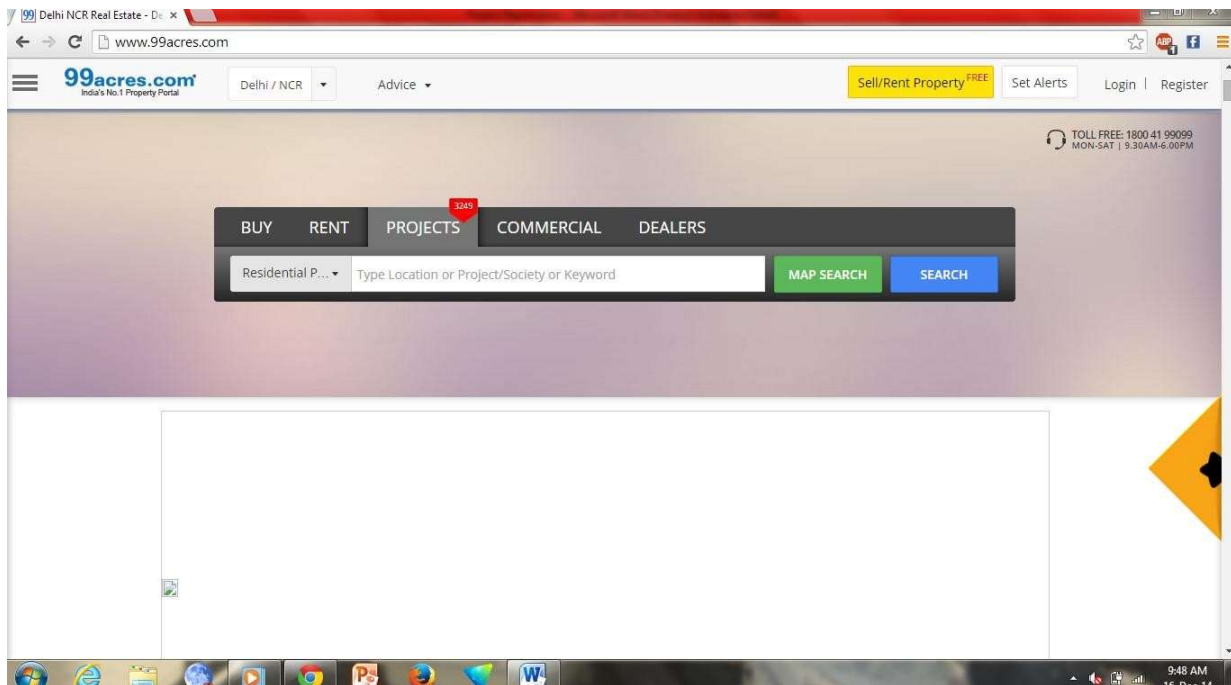
5. Centralized Data Management: Our project centralizes property-related data, making it easily accessible, organized, and secure, thereby simplifying data management and ensuring data integrity.

1.4 Literature Review

➤ 99 acres.com

Website: www.99acres.com

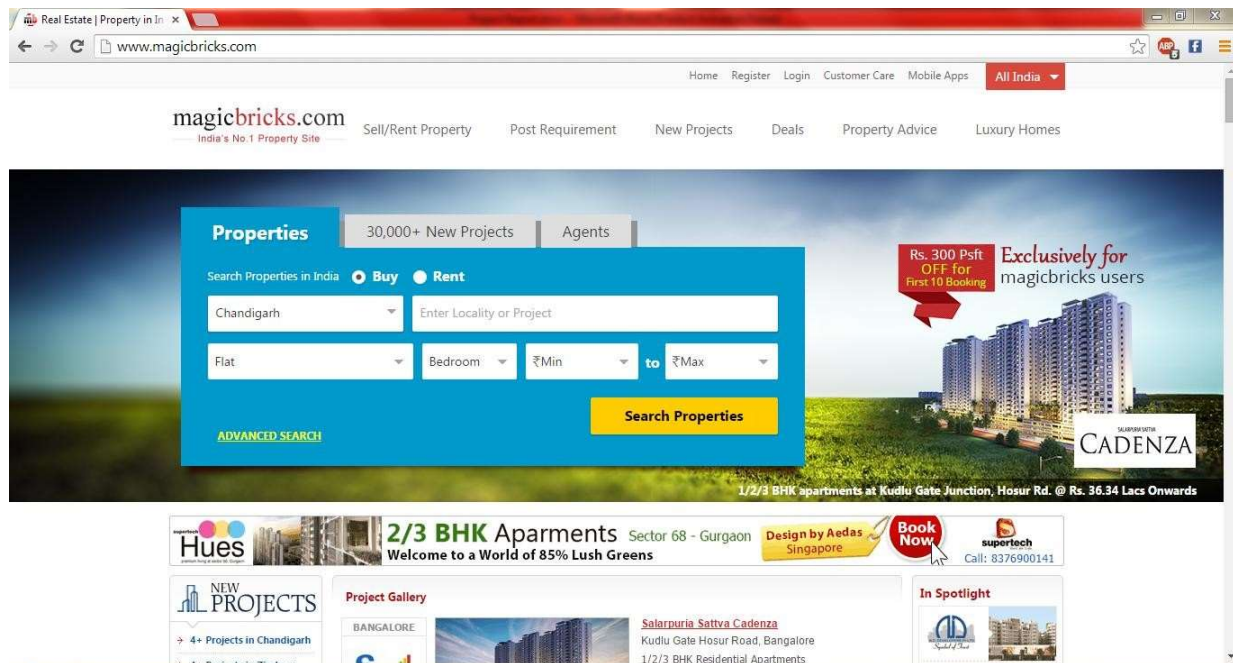
- Most property listings and great listing information are given in their website.
- You can go into a deal negotiation feeling comfortable and educated.
- Includes in-depth neighborhood statistics and usual property types.
- It has very minute details of every real estate property listed in their website.
- They have an instant property search option in their homepage.



➤ Magicbricks

Website: www.magicbricks.com

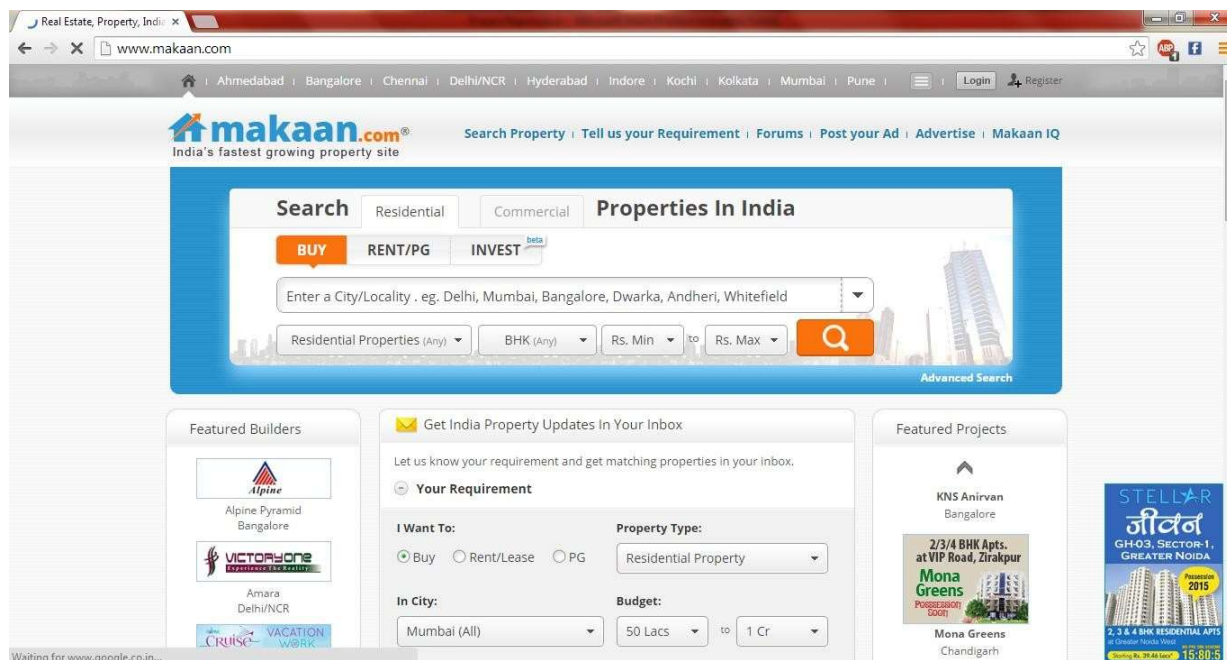
- To really improve the user experience they have some of the most common searches in their area accessible through a single click.
- They have blog based website.
- They post regularly in there blog.
- They have a great search interface for their clients, so that they can find it easily on the internet.
- They are using mysql as their backend database to store all their data.



➤ Makkan

Website: www.makaan.com

- It has a clean, captivating traditional design.
- It is very simple and user friendly especially good for a first time buyer of real estate properties.
- It presents a housing locator to visitors in the top half of the home page.



1.5 Objectives

- To make user know information about the customer before signing the deal to know if there is any unpaid money or if it using the property is bad.
- To link with a network and share information in a central data base that gives the user beneficial information like:-
 1. All properties those are available.
 2. Details on all the properties those are available.
 3. Information about the sellers.
- To make user interface where user can either buy or sell a property according to his/her requirement.
- To give administrator unlimited access to all the website's operation and function.
- To give administrator the rights to edit, delete or modify any user's detail or property detail in the website from the central database.
- To make buyer directly contact the seller to sign the deal on the property he/she is intending to buy.
- To make user modify details about the property uploaded by them in the website.
- To make the home page that have new and featured properties displayed for sale.

CHAPTER 2

Requirement Specification

The main basic requirement of this real estate management property system is to provide a user friendly interface and manage all the property management tasks efficiently and effectively.

The following preliminary list are the main requirements:

2.1 Business Requirements

The business goal for the application is to increase efficiency of registration process and powerful search facilities and capable of matching property with client's requirement while increasing the productivity and managing it effectively.

The main business requirements are as follows:

- Improve the search facility and all the users of Property Management System should get all the information in a second.
- The application should support the capability to use multi user environment.
- Administrator should be able to view all types of profiles as and when required by the organization.
- System should store all the property details in the database which should be easily accessible.
- Improve client's ability to analyze property and easily find what they need.
- The system should be refreshing and updating the database from time to time and should be able to identify the best properties for the featured properties section.
- The system should also update properties in the new property section and also in the feature ads section so that users and the administrator can view the new and featured properties on the website.
- The system should display all the property details instantly when the user clicks on the properties.

- The images should not take time to display.

2.2 User Requirements

User requirements are categorized by user type:

1. Visitor:

- Able to browse through the website.
- Register himself as the user.
- Should be able to perform quick search.
- Should be able to view featured properties.

2. User:

- Able to search and view his or her own read only information.
- Able to register himself quickly.
- Should be able to login and view his profile easily.
- Should be able to view his posted profile on the website.
- He/she should experience a user friendly environment when browsing the website.
- He/she should be able to change and edit its own profile information.

3. System Administrator:

- Create new user, assign role and privileges.
- Database backup and maintenance.
- It should be able to view all the user profiles that exist in the database.
- It should be able any user profile if it wants to.
- The administrator should be able to edit and even delete any user profile.
- The administrator should be able to edit and delete any property posted on the website.
- It should have unlimited access to the user profile, the property details and the website's database.

2.3 Operational Requirements

The following requirements provide a high-level view of how the system will run:

- A full weekly backup is required to WORM drives.
- The server should be monitored from time to time.
- The website should have a quick access time.
- Application should run in Client-Server architecture.

2.4 System Requirements

These are additional constraints from a system perspective:

- The administrator must be able to monitor everything from the IT department.
- The administrator should have unlimited access to the websites operations and its database.

2.5 Specific Requirements

Following are the functional and non- functional requirements:

1. Functional Requirements:

- The home page to consist of features like: featured properties, new properties.
- Database to be maintained.
- Feedback to be supported to enhance the user experience.
- Guests can view the featured properties.
- Prevent standard automated software from filling out a form.
- Any person can register as members.
- Registered members can perform their required functions.
- File can be downloaded in various formats.
- File can be downloaded in various formats.
- File can be uploaded in various formats.
- Registered users and Administrator will have their own profile, where they can

perform their work.

2. Non Functional Requirements:

- Secure access of confidential data (user's details).
- 24 X 7 availability.
- Better component design to get better performance at peak time.
- Flexible service based architecture will be highly desirable for future extension.

CHAPTER 3

Design

3.1 Project Perspective:

The website will provide the means for the users to use the services at their own convenience. The website will automate the whole system of Real Estate Property buying and selling and sharing it easily, all online.

3.2 Software Interface

Server Requirements:

- Operating System – Windows 11
- Database – MONGODB DATABASE

Technologies:

- REACT JS
- NODE JS
- EXPRESS JS
- MONGODB

Client Requirements:

- Operating System – Windows
- Browser – Internet Explorer, Mozilla Firefox, Google Chrome, Pale Moon

Front End :

- REACT JS

- TAILWIND CSS
- JSX

Platform :

- V8

Backend :

- Node js
- Express js

Web Servers :

- Express js

Communication Interface:

- Client on Internet will be using HTTP/HTTPS protocol.
- Client on Intranet will be using TCP/IP protocol.

3.3 Designed Modules

→ **Master Modules**

1. Property Registration
2. User registration
3. Website Login
4. Change Password

→ **Administrator Modules**

1. Matching Properties
2. User detail
3. Seller's Detail
4. Storing Details
5. User's post

→ **Search Query Modules**

1. Instant Search
2. Extensive Search
3. Update keyword

→ **User Modules**

1. User Registration
2. User Login
3. User Requirements
4. User Records
5. User Properties

❖ **Master Modules**

1. Property Registration:

- A user can register his property.
- An option would be displayed to upload property images.
- An address bar would take the address and store it in the database.
- A property document option would store the property details.
- The property details would then be validated.
- The property details would then be stored in the database.

2. User Registration:

- This module will be available at the home page.
- The user has to register by filling up the User Registration Form.
- The user has to give the following details
 1. Name
 2. Address
 3. Phone
 4. State
 5. Pincode
 6. Email-ID
 7. Password
- Then he would get a registration confirmation and then he can start buying and

selling or dealing properties by logging in to the website.

3. Website Login

- This module will ask for username and password.

4. Change Password

- The user can change to his desired password.

❖ Administrator Modules:

1. Matching Properties

- It will match the properties with the clients.
- It will be done by using the instant search.
- After a successful match it will wait for the user response.
- After the user gives his response he would then store the user response.

2. User Details

- The Database will store the user details and it will be readily available for the operator and the user.
- It would also store the user activity on the website.
- It would also store the property search preference for new properties.

3. Seller's Detail

- The user can view the property owner's details.
- A notification would also be generated to the operator.

4. User's Post

- It would store all the properties posted by the user.
- And his/her details.
- And his/her activities.

❖ Search Module

1. Property Locator:

- It is an instant search which would search for property details.
- It will ask the details of the property to be searched.
- Enter an Appropriate keyword to search.

2. Extensive Search

- It would ask for more details for a specific type of property as follows:
 1. The Property location.
 2. The building's characteristics.
 3. The property size.
 4. The land rate for a building.
 5. The purpose of the property that is if it is a commercial or a residential property.
- The details filled would be more exact and matching very closely to the property desired.

3. Update Keyword

- The user with the help of this function can update a keyword to change his search.
- The search will then again start from the beginning.
- The update keyword could be used in normal search and also in extensive search.

❖ **User modules**

1. User Registration

- The new user can register his details in form available in the home page.

2. User Login

- The user can login from the homepage with his user name and password.

3. User Requirements

- The user can give his requirements and then the search algorithm will search for the property for the user.

4. User Records

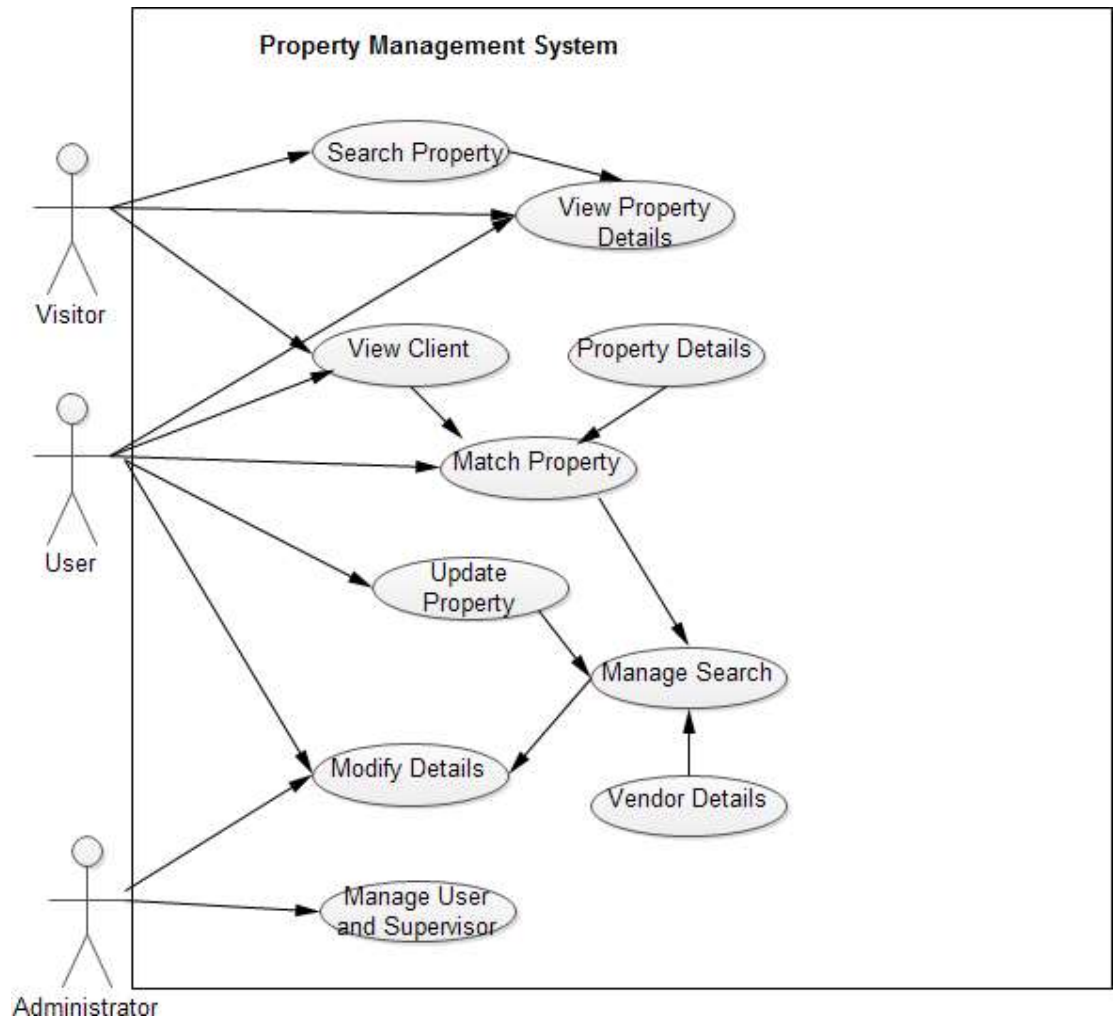
- All the user details will be stored in Database.

5. User Properties

- The user's properties will be stored since his/her registration would be stored.
- Property suggestions would be made according to his/her activities.

3.4 Software Engineering Design

Use case Diagram:



Use Case Diagram

Event Table:

Event	Trigger	Source	Activity/Use Case	Response	Destination
Client Registration	New User	System User	Create User	Show User	System User
Match Property With Client	Match	System User	Manage Transaction	Show Transaction	System User
Seller Details	New User	System User	Create User	Show User	System User
Property Registration	New Property	System User	Property registration	Show Registered Property	System User

Context Level DFD:

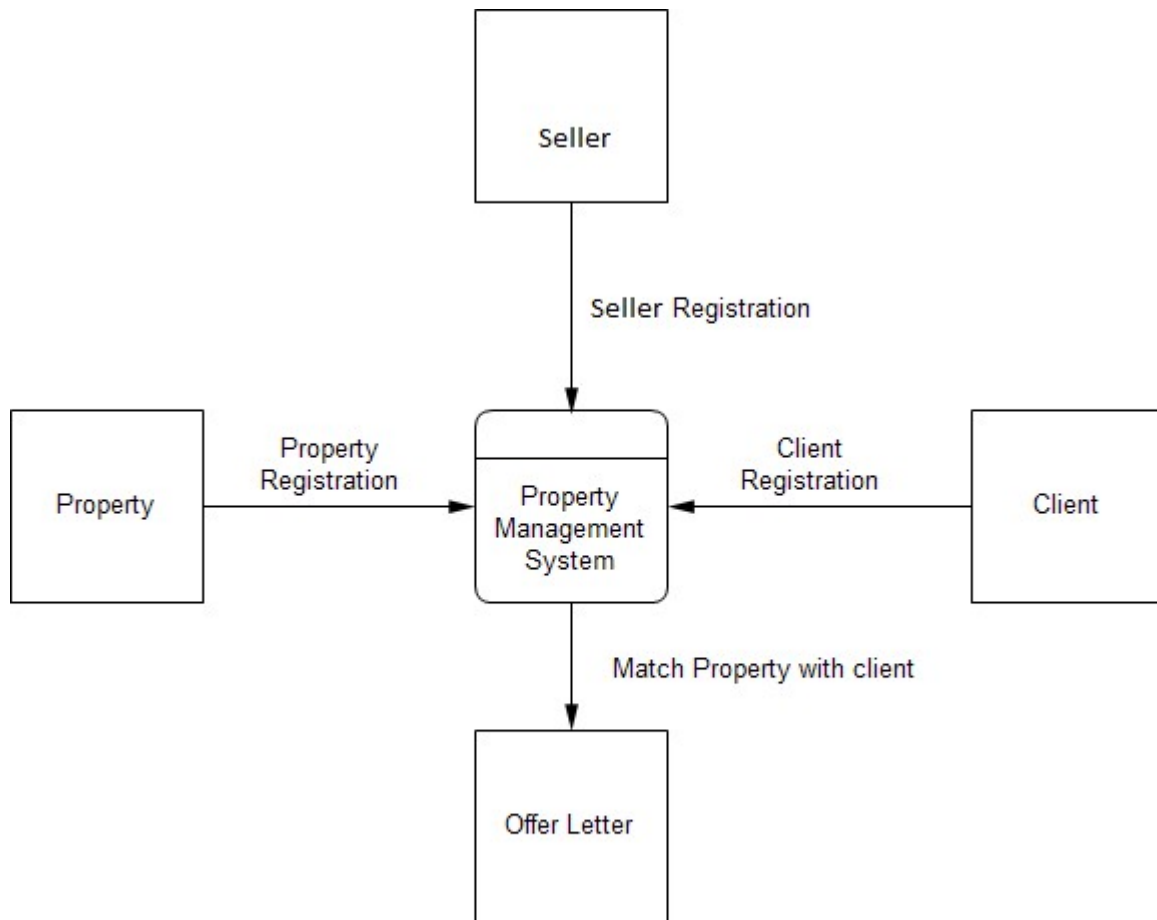


Fig 2

The four objects which are client, seller, property and offer letter would perform their functions which are registration done by client/ seller which then registers their property and if it is matched with the client demands offer letter is generated.

Level 1 DFD:

(To match property with Client)

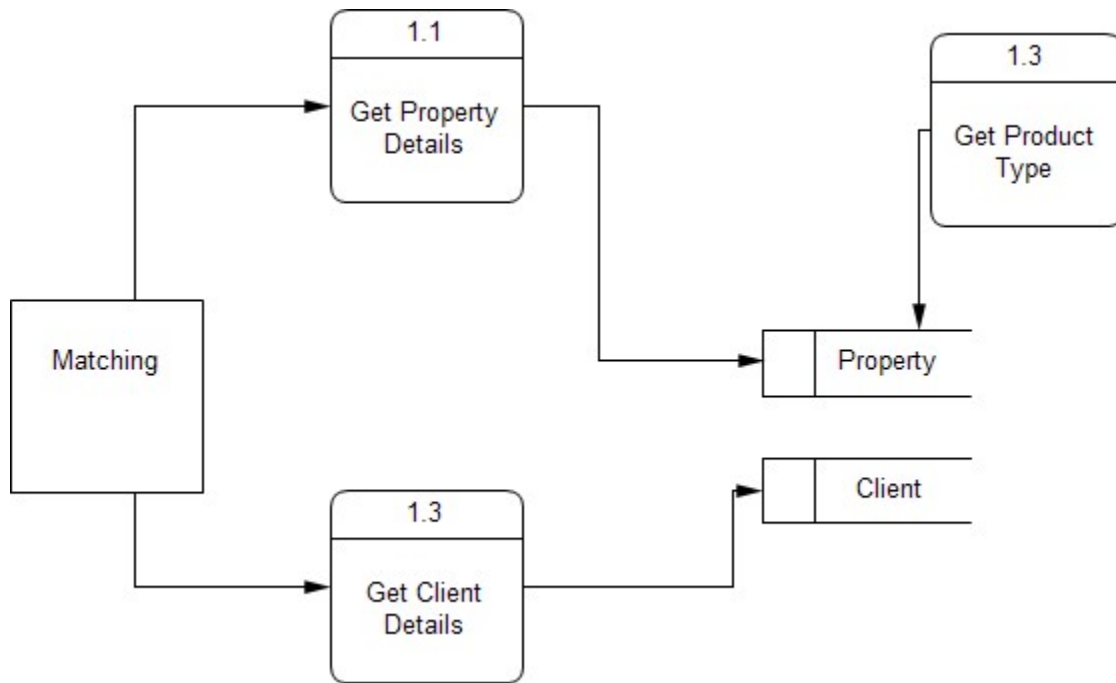


Fig. 3

For Matching property we will get the property and client details from the database and then the matching algorithm would match the property and after a successful match an offer letter would be sent to user.

Level 2 DFD:

(Client Registration)

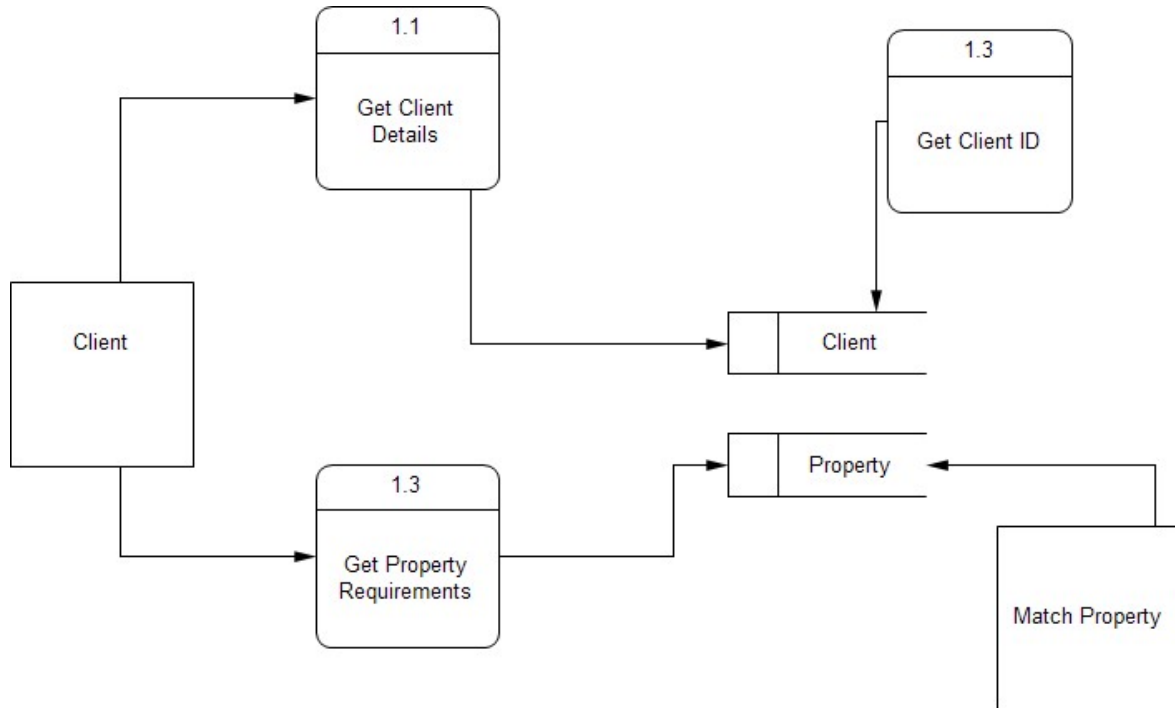


Fig 4

The client would enter his/her details and the type of property he is looking and after this the details would then be stored in the database and a client id would be generated and after successful generation of client id the match property functions would then be executed.

Level 3 DFD:

(Seller Registration)

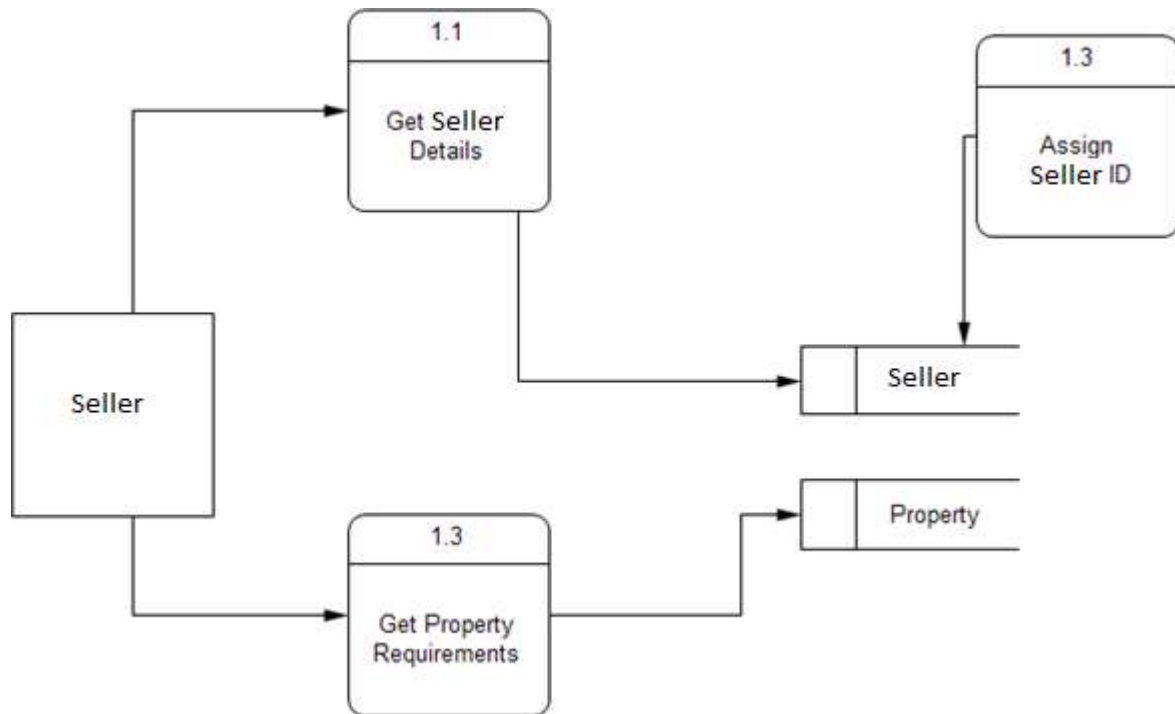


Fig. 5

The Seller would register himself/herself by giving his/her details and the property he/she is selling. After the generation of the Sender Id the details would then be stored in the database.

Level 4 DFD:

(Property Registration)

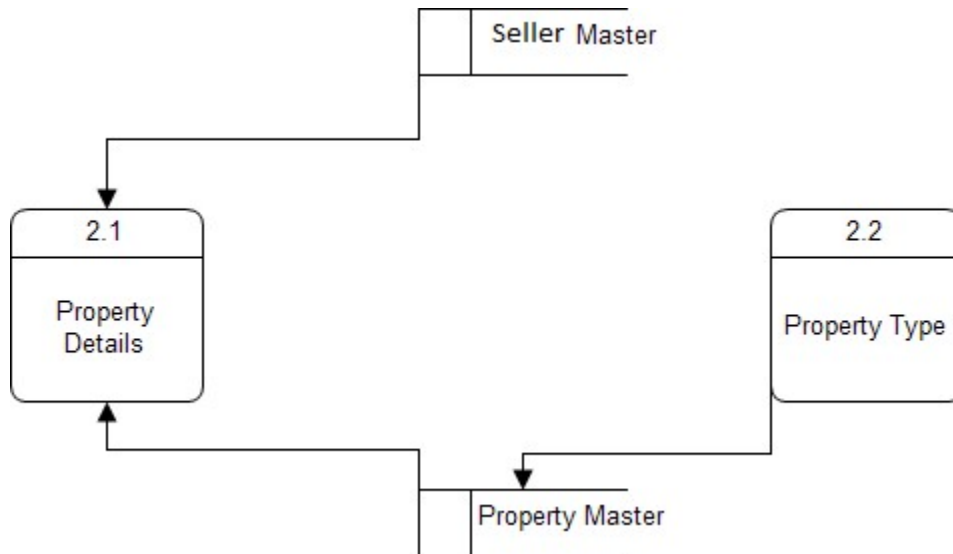


Fig. 6

The Property details would be registered by the Seller and then stored in the Database and it would be assigned a Property Type.

This Property would then be available to view in the website.

3.5 Databases

A **Database** is a structured collection of data. The data are typically organized to model relevant aspects of reality in a way that supports processes requiring the information.

Database Design:

- Database design is done before building it to meet needs of end-users within a given application information- system that the database is intended to support.
- The conceptual level is designed, which defines the over-all picture view of the database, and reflects all the real-world elements(entities) the database intends to model, as well as the relationships among them.
- A common way to carry out conceptual level design is to use the entity relationship model.

Requirements:

- Statement of the Problem
- Data Requirements
- Transaction Requirements
- Domain Objectives

Database Design Objectives:

- Represent the data and the relationships between data required from the database application.
- Provide a data model that supports any transactions required on the data.
- Specify a minimal design that is appropriately structured to achieve the stated performance requirements for the database application.

Relational Database Design Phases:

- Building the logical/ conceptual data model.
- Building the physical database design.

3.6 Test Plan

The complete test strategy for the Real Estate Property Management System is to perform the following kinds of tests, in sequence.

1. **Component Testing** of each component that makes up the Property Management System.
2. **Integration testing** of the Property Management System, to ensure the correct interworking of its components.
3. **Validation Testing** of the Property Management System, to ensure that it works correctly in a pseudo-live environment.
4. **User acceptance Testing** of the Property Management System, to ensure that its function is acceptable to its users.

Preconditions:

The following items are required before testing can take place:

- A complete and coherent functional specification of the Property Management System expressed as use cases and usage scenarios.
- Sufficient, suitable resources to carry out the testing.
- A proper collection of test cases for each of the testing phase.

Rules and Responsibilities:

The following rules are defined:

- A person responsible for planning and ensuring the smooth running of the test process.
- A person who is a tester who carries out the tests according to the test plan, and then reports the results.
- A person who ensures that the tests are carried out successfully from a user perspective.

Threats to Testing:

Potential threats to the testing process are as follows:

- **Insufficient Resources Available for Testing:** Testing Resources might lack to the real-world testing requirement of the website.
- **Unavailability of Professional Tester for testing.**
- **Lack of test cases to carry out the testing.**

Final Testing and Implementation:

Rigorous Testing is crucial to the implementation and maintenance of a reliable system that will create customer confidence.

Test Results:

Summarized Results of the system test, Include the completion status of each test case associated with the tests.

Test Analysis:

Summarizes the results of tests already conducted and identifies testing that remain to be conducted. Provide a brief summary of the project objectives, and identify the System Proponent and users.

3.7 Design Goals and Constraints

- **Performance**

- No more than a 5-percent degradation in average query response is allowed while all concurrent user are using the system.
- Processor utilization should not exceed 80 percent during all concurrent users are using the system.

- **Availability**

- Because the system is accessed by more than one concurrent users so their should not be any single point of failure.

- **Reliability**

- The system should be reliable to all the users.

- **Scalability**

- **Security**

- Every resource in the system are defined by the role and privileged. System administrator assigned user role and privileged for their access rights.
- The system should have anti-hacking programs.
- The communication should be done with the help of encryption and decryption programs.

- **Interoperability**

- The system should be interoperable that is able to use and exchange information efficiently between large heterogeneous networks.

- **Setup/Installation**

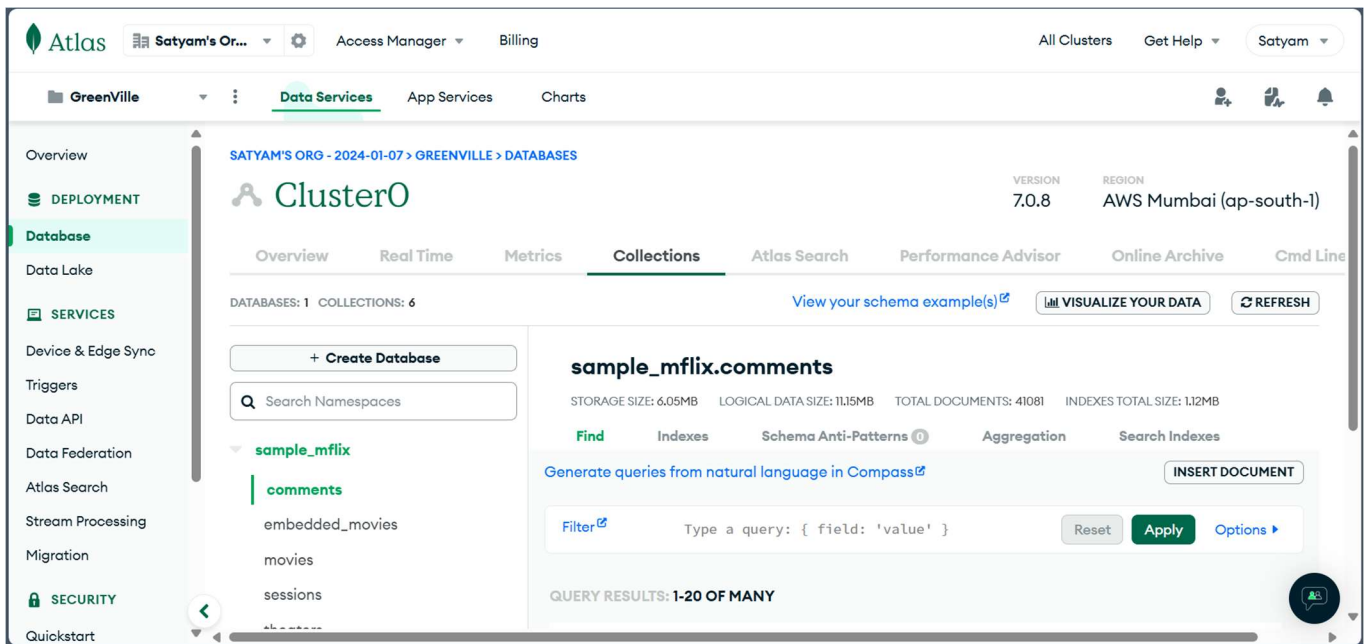
- Setup and Installation must not interrupt the system user's daily tasks and work flow.

CHAPTER 4

Screenshots

4.1 Database Code and Screenshots

- **Registration Table:**



Query: For Registration

This table is used to store the details of every user who is registering onto our website and later the same information is used to Log in that user.

▪ AddProperty Table:

sample_mflix.users

STORAGE SIZE: 36KB LOGICAL DATA SIZE: 28.88KB TOTAL DOCUMENTS: 185 INDEXES TOTAL SIZE: 48KB

Find Indexes Schema Anti-Patterns 0 Aggregation Search Indexes

[Generate queries from natural language in Compass](#) **INSERT DOCUMENT**

Filter Type a query: { field: 'value' } **Reset** **Apply** [Options](#)

```
_id: ObjectId('59b99dbfcfa9a34dcd7885cd')
name : "Melisandre"
email : "carice_van_houten@gameofthron.es"
password : "$2b$12$ZdSvCDMwVLFgJGD0sDbFLOD/utICnkbJV00VJJ8lUHqSK3VbuqKuS"
```

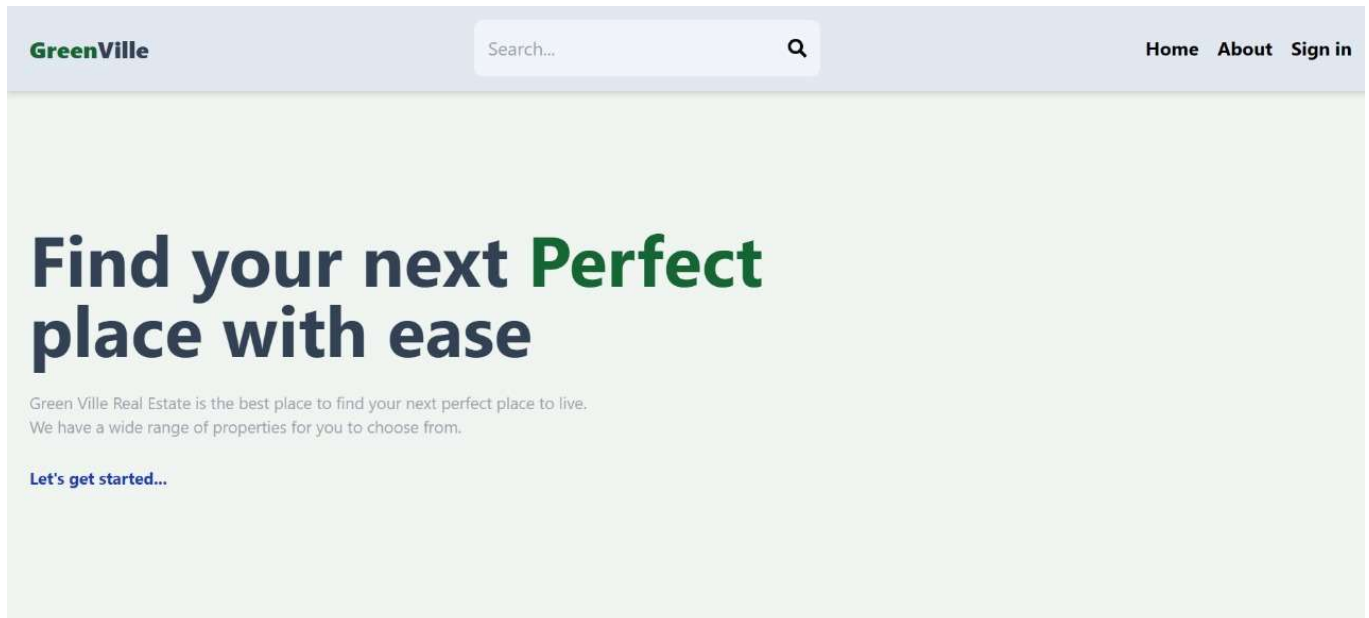
< PREVIOUS **1-20 of many results** **NEXT >**

Query: For AddProperty

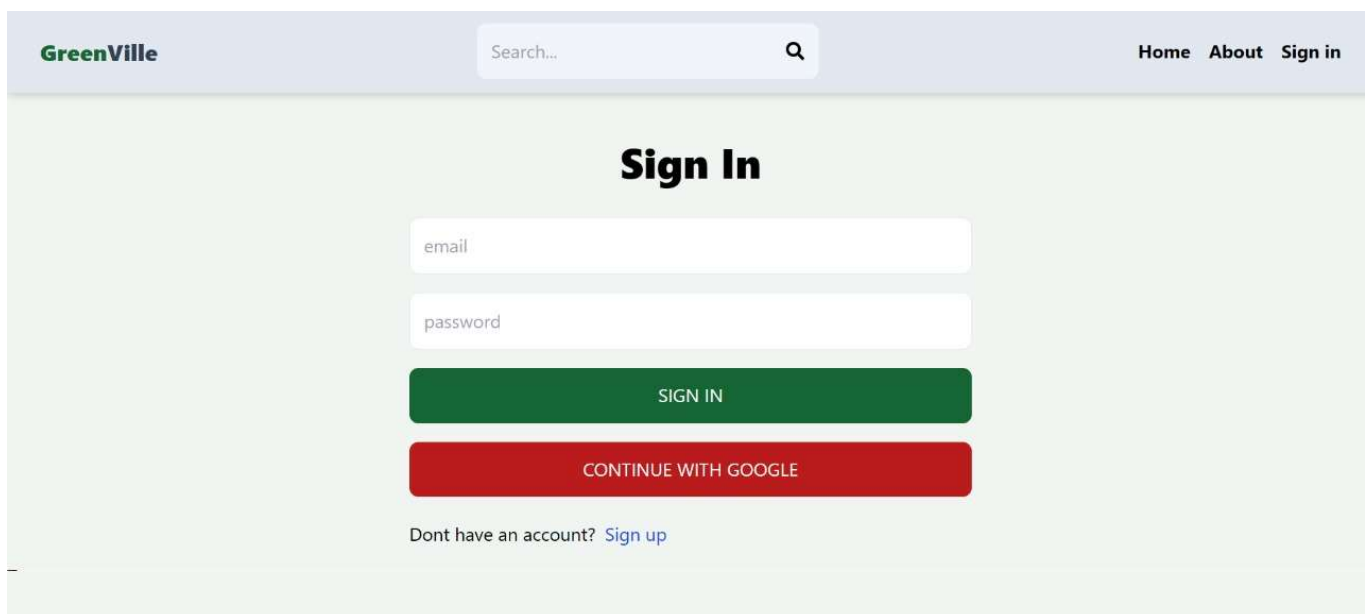
This table is used to store the details of the property that is put on our website by any registered user. Property can only be put by registered users only. Later the same table is used to fetch the property for any buyer who enters the location he /she wants the property in.

4.2 User Interface Screenshots


Homepage:



Login Page:



Registration Page:

GreenVille

[Home](#) [About](#) [Sign in](#)


Sign In

[SIGN IN](#)

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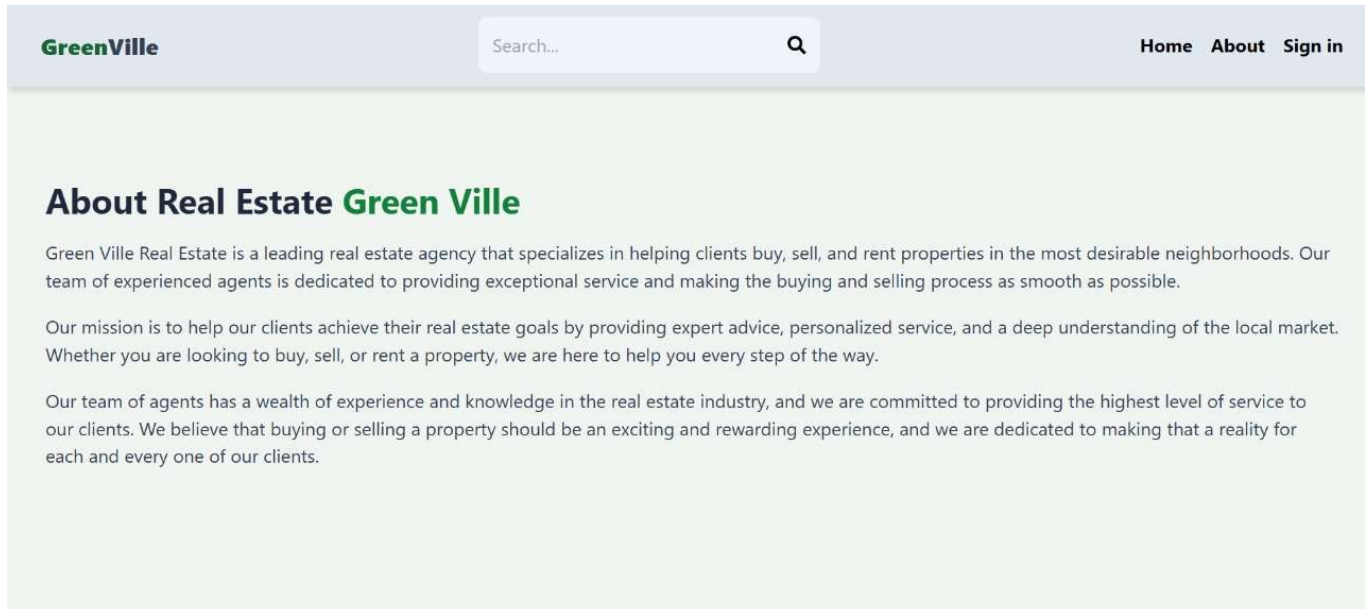
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Chapter 5

Conclusion and Future Work

5.1 Conclusion:

- All the literature survey regarding the project has already been completed. The project is now under the implementation phase. Basic modules i.e. The Registration Module, Login Module, Add Property Module are implemented to completion. Other module such as the Search Property Module have been implemented with a single type of search i.e. using the location of the property.
- Session Management has also been implemented in the project to take care that nobody is able to access any page without getting into the session. Also if some registered user is out of the session then he/she has to login again to access the options available on the website.

5.2 Future Work:

- The work to be done is to implement searching in the website using different filters or using multiple filters at the same point.
- While adding the property the user should be able to upload images related to the property because till now he/she is just able to upload the URL having the link of the image associated with this property, that I have to implement.
- Agent Service will also be provided by the company running the website so that if a property related to a location comes it goes to the respective agent only.
- Security Feature to send passwords in encrypted form will also be implemented.

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