
MBARARA UNIVERSITY OF SCIENCE & TECHNOLOGY

# PROJECT REPORT: **RENTAL MARKETING AND MANAGEMENT SYSTEM.**

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE: WEB APPLICATION DEVELOPMENT CSC 2207.

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# ABSTRACT

With the current advancements in technology, there is a pressing need to leverage these innovations in the housing sector. The challenges faced by property owners and tenants call for a system that simplifies rental house management and marketing, ensuring efficiency and effectiveness. The Rental Marketing and Management System is designed to address these needs by providing a streamlined platform for property owners and tenants.

This project was initiated after thorough research on existing rental property management systems. The goal is to develop a system that enables property owners and landlords to effectively promote and advertise their rental properties, thereby increasing visibility and awareness among potential tenants. This system not only facilitates better communication and management but also helps generate revenue, enhancing the overall business prospects for property owners.

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# 1. Introduction

## 1.1. Background

Uganda, as a developing country, faces significant housing challenges. The high cost of homes leaves much of the population reliant on rental properties, particularly in urban areas and slums. Rapid urbanization exacerbates these issues, highlighting the need for better housing solutions. Housing is a fundamental human right and a critical factor for economic growth and social stability.

National prosperity is not solely measured by economic terms; its true value lies in inclusive benefits that address social deficiencies, such as housing (Erguden, 2001). Adequate housing is essential for economic growth, with shelter being a key indicator of development. The Universal Declaration of Human Rights recognizes the right to a decent standard of living, including access to adequate housing (United Nations, The Human Rights-article 25, 1948).

Addressing housing challenges in Uganda requires substantial investment and social entrepreneurship. Issues such as poor management and marketing, dishonest tenants, and low occupancy rates impact revenue generation for property owners. These challenges underscore the need for a system that can streamline management and marketing, ensuring efficient and effective solutions for all stakeholders involved.

## 1.2. Problem Statement

Finding a house to rent can be a challenging process. Many rental properties are managed by caretakers and agents who are often perceived as untrustworthy. The process of walking around different estates in search of available houses is not only time-consuming but also physically demanding. Additionally, agents typically charge fees for their services, which can further complicate and delay the process of finding a suitable house.

Landlords face difficulties in effectively publicizing their rental properties and often struggle with poor and untimely communication with potential tenants. Without walking around or relying on word-of-mouth, it is difficult for potential renters to find available apartments.

Furthermore, the lack of customer feedback mechanisms hinders landlords from improving their services and deters future renters.

Many agents still rely on manual systems, which complicates property management and reduces efficiency.

Therefore, there is a clear need for a more efficient solution to address these challenges. This project aims to develop a web application that will advertise, market, and manage rental properties online. The application will enhance visibility for landlords, streamline the rental process for tenants, and ultimately increase revenue for rental businesses by improving their return on investment.

### 1.3. General Objective

To produce a web-application that allows landlords to manage properties, tenants to find rental homes, and facilitate better communication and transactions between the two parties.

### 1.4. Specific Objectives

1. To analyze the challenges facing rental property management.
2. To review existing rental property management systems.
3. To design and develop a web application to advertise, market, and manage rental properties.
4. To test and validate the system to ensure it meets user needs.

### 1.5. Motivation

As an urban resident and frequent tenant, I often find myself searching for rental houses in different residential areas due to job relocations and better opportunities. The current rental systems do not adequately address the needs of mobile tenants, making the process cumbersome and time-consuming.

There is a clear need for rental property owners to effectively advertise and market their properties. A web application can assist tenants by providing a platform to search for available houses and receive notifications for houses that will soon be vacant. This application will also

benefit rental managers and property investors by enabling them to reach their target market more easily through online advertisements.

Developing and implementing this system will streamline the rental search process, saving time and money for tenants and providing a more efficient marketing tool for landlords. It will address the current challenges associated with finding rental properties and improve the overall experience for all parties involved.

# 2. Literature Review

## 2.1. Role of Technology in Real Estate Management

Technology has significantly transformed real estate management, improving efficiency, reducing costs, and enhancing decision-making processes. Key technologies include:

- **Cloud Computing**: Enables centralized data storage and access, facilitating real-time updates and collaboration among stakeholders.
- **Data Analytics**: Helps in making informed decisions by analyzing market trends, tenant preferences, and operational performance.
- **Mobile Applications**: Provide on-the-go access to property information, allowing for efficient communication and management.
- **Internet of Things (IoT)**: Enhances property management through smart devices that monitor and control various property functions, such as security systems and energy usage.

## 2.2. Review of the Benefits and Challenges of Real Estate Management Systems

- **Improved Efficiency:** Automation and process streamlining reduce manual efforts, enhancing operational efficiency. For example, automated rent collection and maintenance scheduling can save time and reduce errors.
- **Enhanced Communication:** Real estate management systems facilitate effective communication between stakeholders, leading to faster issue resolution and improved tenant satisfaction. Tools like tenant portals and automated notifications improve transparency and responsiveness.

- **Challenges:** Data migration, system integration, and user adoption can pose significant challenges during implementation.

### 2.3. Review of Existing Systems

I chose to review these systems among many others since they are mostly In line with what I wanted to develop:

- **Zillow Rentals:** Offers a broad selection of listings but lacks specific search filters and direct booking capabilities, which can limit user experience.
- **Apartments.com:** Primarily focuses on apartment rentals and may not cater to diverse property types. However, it provides comprehensive property details and user reviews.
- **Jiji.com:** Provides a free platform for listings but can be cluttered with unreliable listings and security concerns, impacting trust and user experience.
- **Kodisher Property Management Software:** Helps manage rental properties but lacks decision-making modules involving rental property owners and tenants, which could enhance engagement and satisfaction.

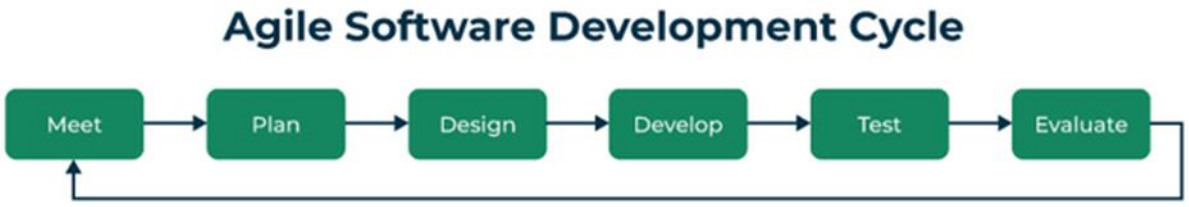
### 2.4. Review of Emerging Trends in Real Estate Management Systems

- **Artificial Intelligence (AI) and Machine Learning (ML):** Used for predictive analytics, automated property valuation, and chatbot-based customer support. For instance, AI can predict market trends and property values, aiding investment decisions.
- **Blockchain:** Explored for secure and transparent property transactions, smart contracts, and ownership verification. Blockchain can reduce fraud and enhance trust in property dealings.
- **Sustainability:** Incorporating features to monitor and optimize energy consumption, support green building practices, and comply with sustainability regulations. Systems are increasingly integrating eco-friendly features to attract environmentally conscious tenants and comply with regulatory standards.

# 3. System Development Methodology

## 3.1. Agile Development Methodology

Agile development was chosen for its iterative, flexible, and collaborative nature. This approach allows for continuous feedback, adaptation to changing requirements, and early delivery of valuable features.




## 3.2. Key Principles of Agile Development

- **Iterative Development:** Dividing the project into small increments called sprints.
- **Continuous Feedback:** Involving stakeholders throughout the development process.
- **Adaptation to Change:** Welcoming evolving requirements and prioritizing flexibility.
- **Collaborative Approach:** Close collaboration between stakeholders and the development team.

## 3.3. Agile Development Process

1. **Requirements Gathering:** Collecting and prioritizing customer requirements.
2. **Planning:** Creating a plan for delivering the software in iterations.
3. **Development:** Building the software through frequent and rapid iterations.
4. **Testing:** Ensuring the software meets customer requirements and is of high quality.
5. **Deployment:** Putting the software into use.
6. **Maintenance:** Ensuring the software continues to meet customer needs and expectations.

# 4. Requirements Specification and Analysis

## 4.1. Functional Requirements

1. Users should be able to register as landlords and tenants.
2. Landlords should be able to register tenants, income, and expenses.
3. Users should be able to create and manage their profiles.
4. Landlords can provide detailed property information, including location, amenities, and rental price.
5. Advanced search filters for location, availability, and number of bedrooms.
6. Tenants should be able to book properties directly through the platform.
7. Users should be able to leave reviews and ratings for properties and other users.

## 4.2. Non-functional Requirements

1. The system should handle a large number of users and properties.
2. The platform should provide quick search results and property listings.
3. Data encryption to protect user information and communications.
4. Regular security audits to identify and address vulnerabilities.
5. High availability and reliability with minimal downtime.

## 4.3. Business Requirements

- Implement a monetization strategy, such as premium listings or commission on bookings.
- Ensure compliance with relevant housing and rental regulations.
- Provide responsive customer support.
- Develop marketing strategies to attract tenants and landlords.
- Implement a feedback system for continuous improvement.

# 5. System Development and Implementation

## 5.1. Technical Architecture

The system architecture includes the following components:

- **Frontend:** Developed using HTML5, CSS3, JavaScript, and Bootstrap.
- **Backend:** Developed using Python (Django) and SQLite3.
- **Database:** Managed by SQLite3.
- **Development Environment:** Visual Studio Code.
- **Testing and Quality Assurance:** Tools like Prettier for code quality.

## 5.2. Tools and Technologies

- **Frontend Development:** HTML5, CSS3, JavaScript, Bootstrap.
- **Backend Development:** Python (Django), SQLite3.
- **Development Environment:** Visual Studio Code.
- **Testing Tools:** Prettier for code quality.

# 6. Testing and Quality Assurance

## 6.1. Testing Strategy

- **Unit Testing:** Ensuring individual components work as intended.
- **Integration Testing:** Verifying that different components work together.
- **User Acceptance Testing:** Involving users to validate the system meets their requirements.

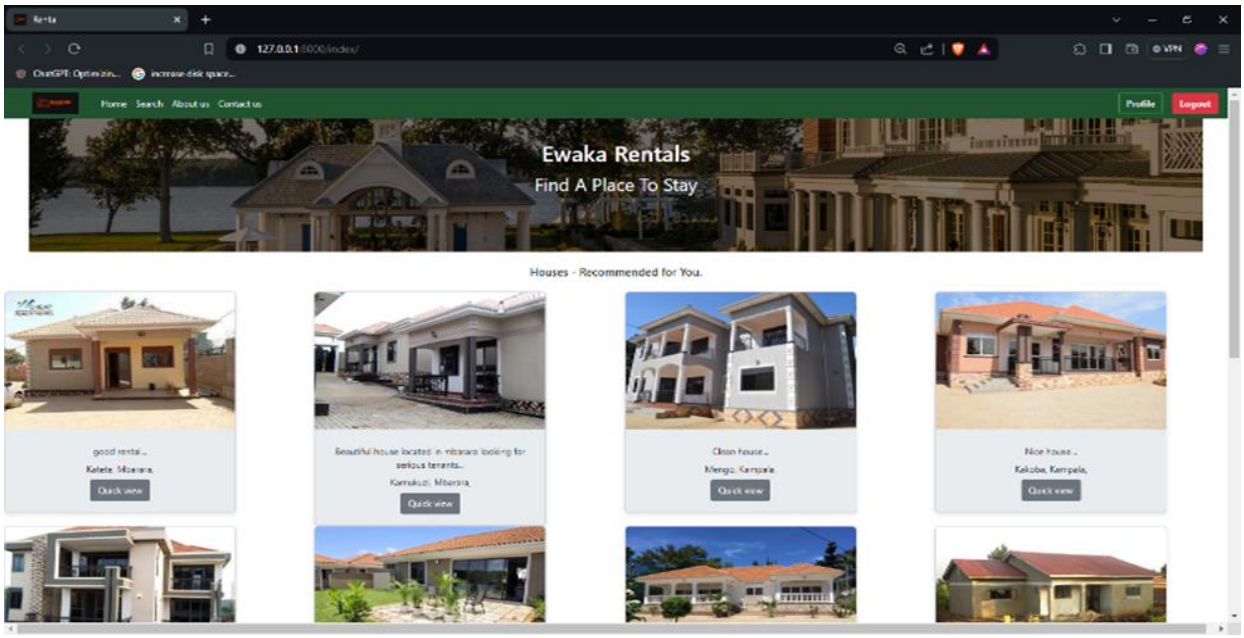
## 6.2. Quality Assurance

- Regular feedback sessions with stakeholders.
- Implementing extensive security protocols to protect user data.
- Monitoring system response times and reliability.

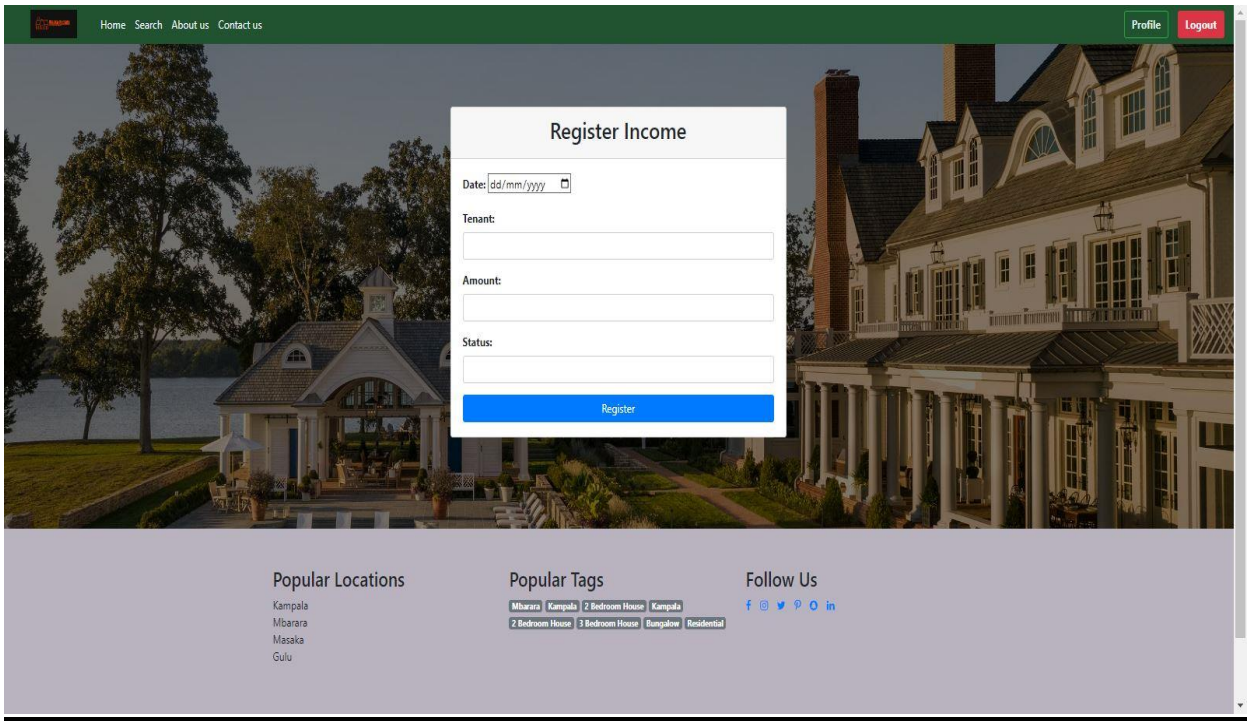
# 7. Results and System Presentation

## 7.1. System Screenshots

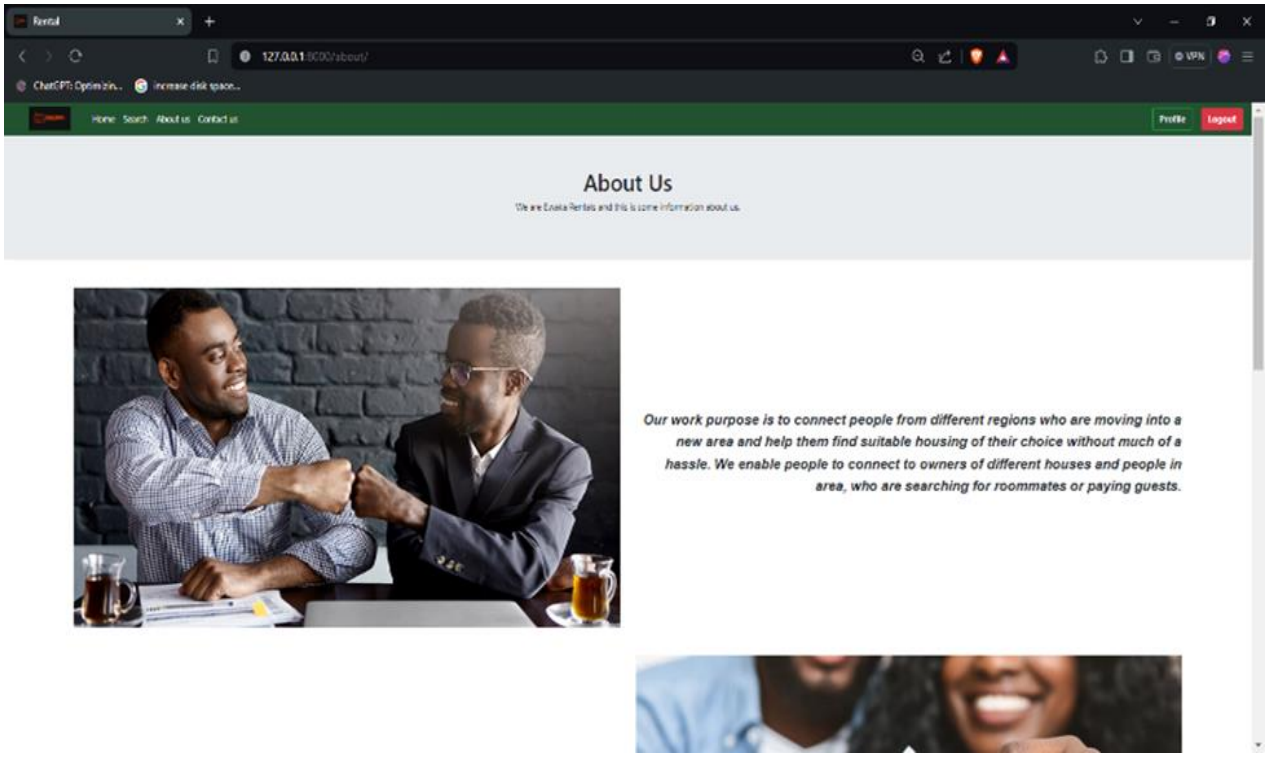
- **Homepage:** Displays advertised houses.



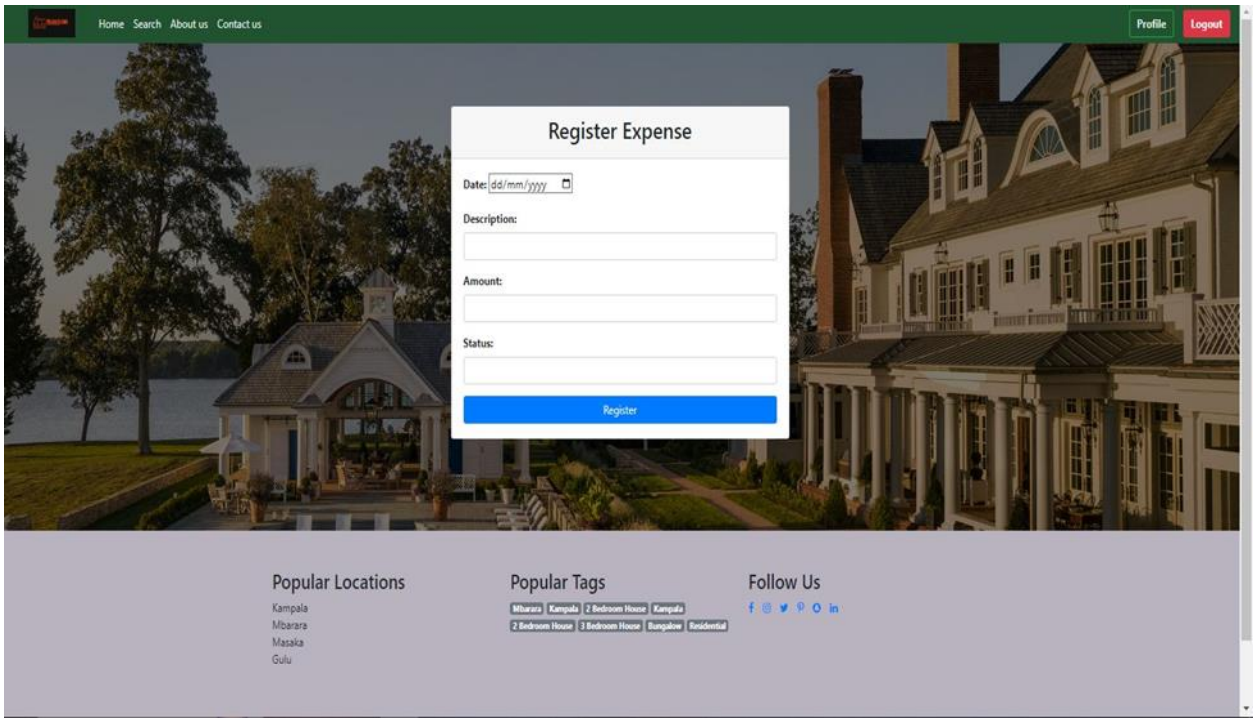

- **Register Income Page:** Allows landlords to register property income.



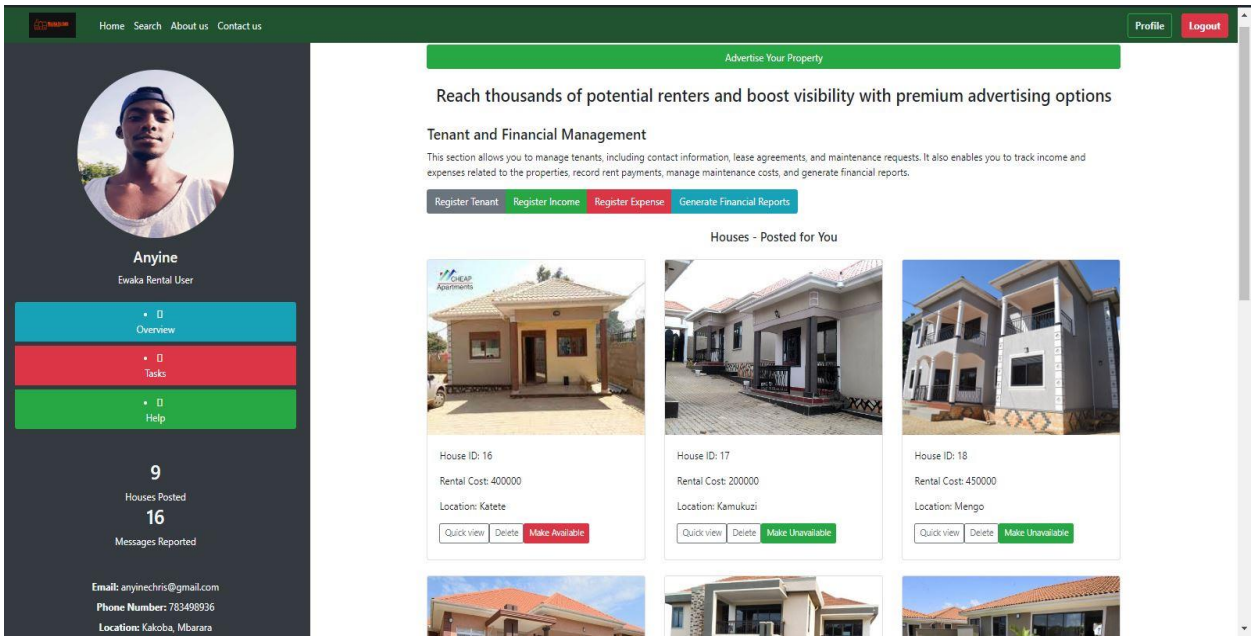
- **About Us Page:** Provides information about the web application.



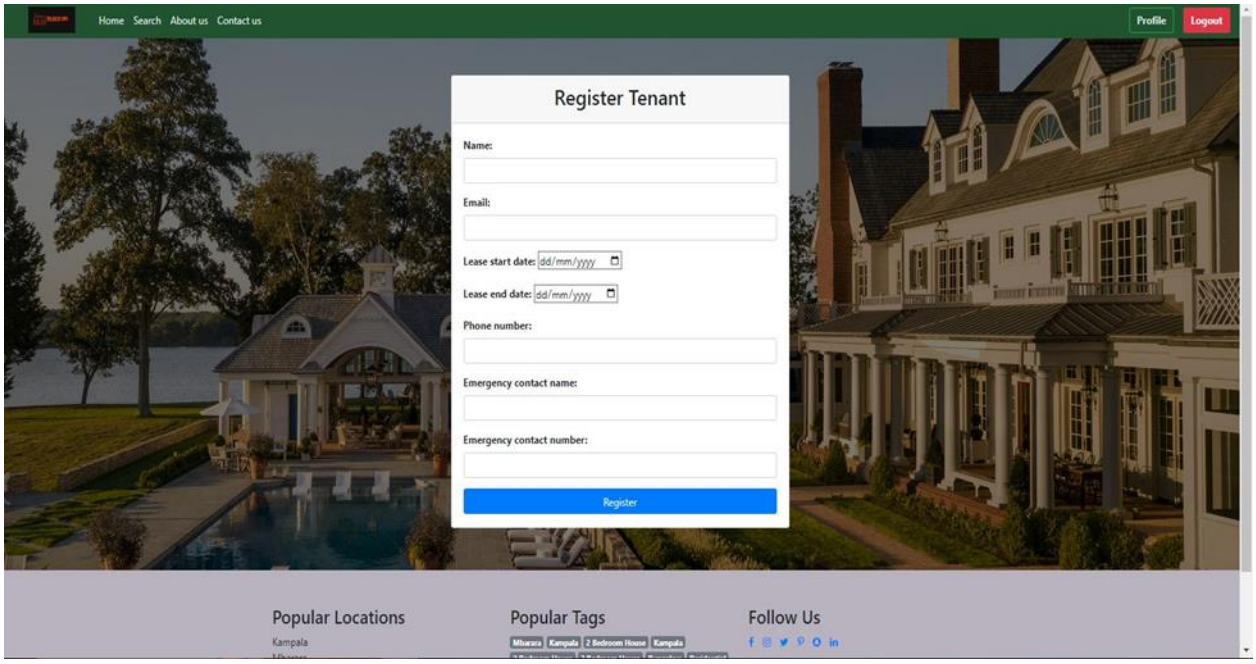

- **Register Expense Page:** Allows landlords to register property expenses.



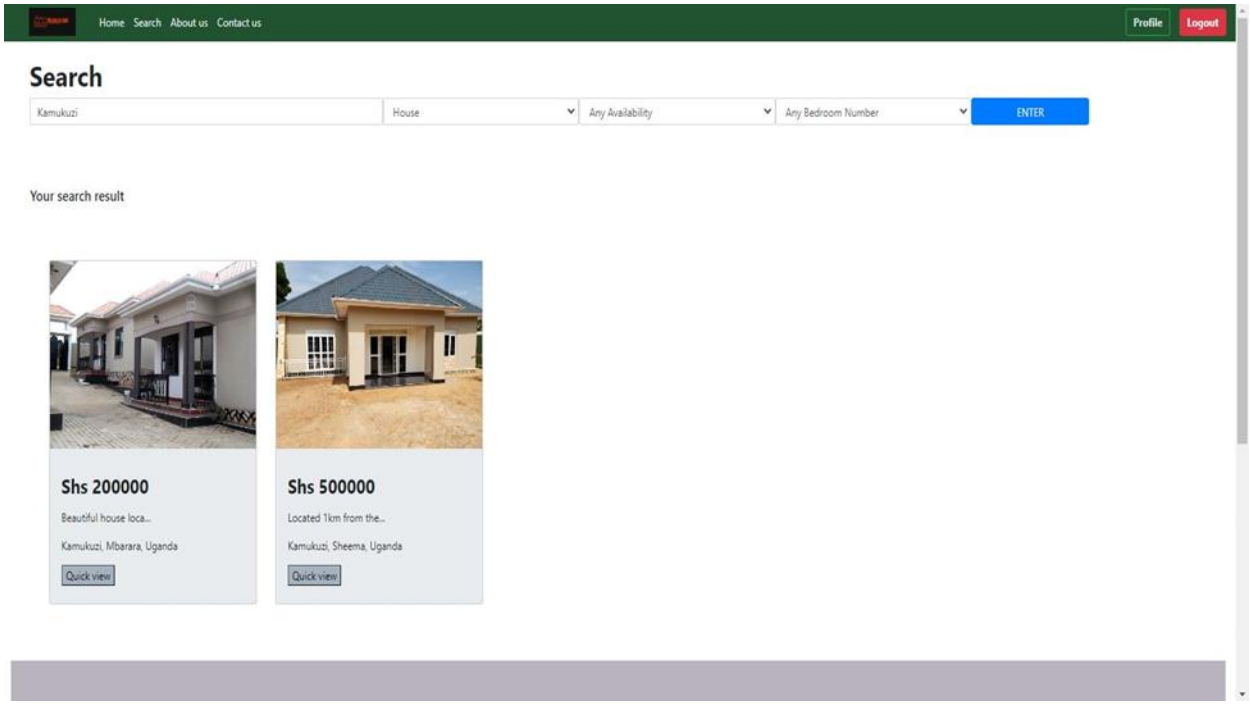
- **Profile Management Page:** This page that is the genesis of all the management tasks that a house owner can perform on the site. Displays houses posted and messages reported too.



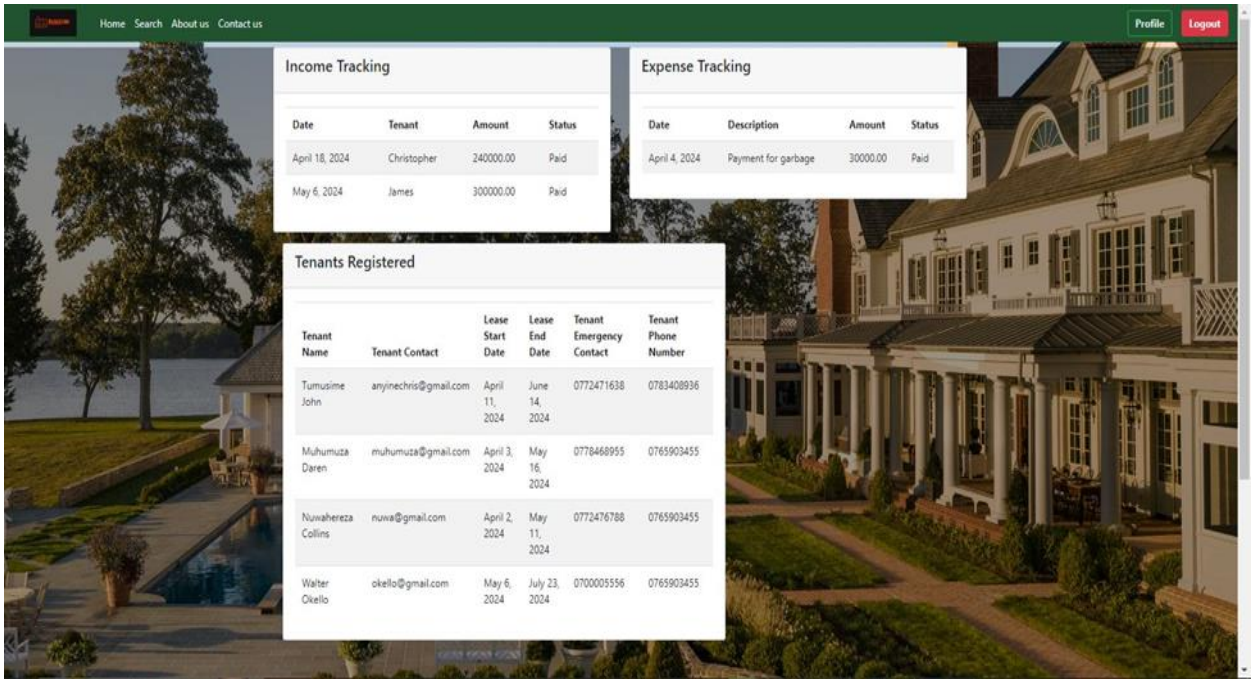

- **Register Tenant Page:** Registers current tenants.



- **Search Page:** Allows tenants to search for houses based on location, number of bedrooms and availability filters.




- **Report Page:** Displays a summary of expenses, income, and tenant information.



### 7.2. User Feedback

The system has not yet been deployed for use.

# 8. Discussion

### 8.1. Challenges Faced

- **Technical Challenges:** Security breaches, integration issues, and data migration.
- **Organizational Challenges:** Low user adoption and competition from existing platforms.

### 8.2. Limitations of System

- The system doesn't include features like credit checks or background checks.
- Relies on landlords to update property availability (encourage frequent updates).
- May not cover all rental types (expand as needed based on user demand).
- Adoption and illiteracy about the use of the platform.

### 8.3. Future Work

- **Mobile Application Development:** Expanding the platform to mobile devices.
- **Additional Features:** Integrating credit checks, background checks, and more detailed property management tools.

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