A Major Project Proposal on

"GHAR SEWA"

Submitted in partial fulfillment of the requirements for the degree of Bachelor of Engineering in Software Engineering at Pokhara University

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KISMAT BAHADUR CHHETRI

PRASHANT BASTOLA

SHANDIP THAPA

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Lamachaur, Kaski, Nepal

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Supervisor

Er. KRISHNA KHADKA

Department of Research and Development

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APPROVAL CERTIFICATE

This project entitled "**GHAR SEWA**" is prepared and submitted by "**Kismat Bahadur Chhetri", "Prashant Bastola**" and "**Shandip Thapa**" under the supervision of "**Er. Krishna Khadka**" in partial fulfillment of the requirements for the Degree of Bachelor of Engineering in Software Engineering has been examined and is recommended for approval and acceptance.

Date of Evaluation: December 10, 2023

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Er. Krishna Khadka

(Project Supervisor)

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Er. Rajendra Bahadur Thapa

(Acting Coordinator)

Research Management Committee

Gandaki College of Engineering and Science

ABSTRACT

Day by day world population is growing rapidly and a huge amount of people are shifting to large cities and new places for work, education or job purpose, or a better life. That's why the housing demand is increasing and house renting is becoming the elemental part of our society. As a result, we realized the implementation of an online housing renting application and come up with a decision to implement such application. Through this application tenants can rent properties and house owner can upload their property details for rent. This application will help users to give or take rent houses without dealing with brokers to finally reach an agreement that suits the interest of all parties. Real-time notifications keep users informed about new listings, application statuses and other relevant updates. To implement and testing of the proposed system, this application interface has been developed using Flutter, Dart, etc. Integration with maps provides users with a visual understanding of property locations, while data analytical tools offer valuable insights for continuous improvement.Integration of recommendation systems using collaborative filtering, content-based filtering, and hybrid models emerge as prominent techniques.

Keywords:Real-Time Notifications,Technological Implementation,Map Integration and Analytic,Collaborative filtering, Content-based filtering and Hybrid models

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CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

We are living in the modern age of technology when we really want is just stuff that works for us. Technology is becoming more powerful and already involved in every sector still the housing sectors remains watchful to face the challenges of change by employing a new strategy that help in management of rental houses. This proposed project “GHAR SEWA” deals with online house for all tenants. Nowadays this is so tough for tenants to find suitable accommodation for living if they search it physically. The main foundation of this system is based on the owners and renters and main purpose of this project is to find desired house with the desired location for the tenants. User can login as a owner or a tenant. He/she can contact the administrator or the buyer to rent his house to him. House owners and landlords will have to be registered users then they can easily post a property with photos, price range, other details, and a short description but it will be added and shown only after verifying by admin or it may be rejected. Unregistered or general access users of this website can view the rent details and can contact a landlord.

1.2 PROBLEM STATEMENT

The traditional methods of house renting often pose challenges for both property owners and potential tenants. The lack of a streamlined and accessible platform hinders efficient property transactions and communication. Tenants face challenges in gathering comprehensive information about available rental properties such as location details, amenities, rental terms, leading to indecisiveness and prolonged search times. To address the issues, our project aims to develop a comprehensive Online House Rent Application. This application will help property owners to list their houses and for tenants to search, communicate, and securely transact for rental properties.

1.3 OBJECTIVES

The main objectives of this application named “GHAR SEWA” are:

General Objective:

- To develop a centralized platform that connects house owner with potential tenants.

Specific Objective:

- To improve a rental experience of both house owners and tenants by providing a facility such as property listings,searching,booking,and communication.
- To integrate an AI-based room recommendation system into the application that utilizes user location data, preferences, and historical choices to provide personalized and relevant suggestions for available rental rooms.

1.4 IMPLICATION

For renting a house, implementation and testing of the proposed system, a application interface has been developed using Flutter, Dart, etc. Whenever someone wants to rent a house he needs to search it manually by visiting door to door which kills his time and money also. For that this “GHAR SEWA” will increase customer retention and simplify house and staff management. This is online tool through which tenants can book available house online prior to their date of using the property instead of walking around and asking for a vacant house. The project introduces innovative approaches to property marketing through advanced features like map integration, and personalized recommendations. The project aim to contribute to the development of technological skills among users, including property owners, tenants, and local businesses.

CHAPTER 2
LITERATURE REVIEW

Many mobile applications have already been developed in the market which provides a platform for house renting. Some of them are listed below:

Gommans, Henry Peter, et al. (2014) researched how rental houses are currently being managed and realized during this modern age of technology all work was done manually with plenty of paperwork involved which may be a long-time process, risky, expensive, and really difficult task.So, they decided and developed a property rental management system that may solve all the problems experienced with this present manual system. Although their system was developed in such a way that it provides a maximum user-friendly interface, but the system isn't scalable.

Prasetyo, Septian Eko, et al. (2018) proposed within their research to develop an information system using the waterfall development method which will be helpful for the people to search out the boarding house in the outside area. The purpose of their research is to develop a geographic data system that will find the boarding house in keeping with the standards of user wishes.

Ganiyu, S. O., et al. (2018) investigated the challenges faced by stakeholders in rental housing within the Minna metropolis of Niger State and discovered the method of advertising and securing accommodation isn't convenient for tenants as well as agents are grappling with impersonation, financial crime, etc. The results of this study revealed that most of the tenants and landlords still engaged with the conventional approach of seeking apartments by going through posters prepared by agents. That’s why they aim of that research is to probe the likelihood of deploying ICT to problems of managing rental units within the Minna metropolis.

Hasnat, I., et al. (2019). Stated that nowadays this is very tough for bachelors to find their desired room forliving. Because sometimes house owners feel insecure to rent a house to the bachelors. That’s why the authors proposed a project named Bachelor House Rental Management System to alleviate the suffering of bachelors while they're trying to seek out an appropriate living area according to their choice.

Voumick, Dipta, et al. (2021) designed and developed an online-based smart house renting web application for both tenants and house owners. This research paper proposed a system for the people of Bangladesh where tenants can rent houses via sophisticated contact with the householders. The purpose of this study is to develop a typical web-based online platform for both tenants and house owners so that both of them will benefit from the system.

Rathore, K., et al. (2021) Stated that finding a desired rental property and looking for tenants is a difficult task for both factions. That’s why there's a necessity to develop a web rental house management system that may solve all the issues experienced with the present manual system. The focus of this scientific research is managing affordable housing. The purpose of this research is to develop an online platform for people to search out an ideal match for their liking, but the proposed system isn't well managed.

Setyarsih, E., (2017) stated that not having enough information about boarding houses is commonly an obstacle and an opportunity for boarding house brokers. This research result showed that has a mutually beneficial effect both between the homecoming seeker, the owner of the home stayer, and the real tor itself. Besides that,the boarding houses must be able to use technology to promote their boarding houses (Gommans, 2014). So,it's necessary to develop a data system that is ready to facilitate the users to search out the perfect boardinghouse in accordance with user wishes (Sulaiman et al., 2012).

Integration of recommendation systems stands as a pivotal focal point within the extensive literature on house rental systems. It will enhance user experience and decision-making, draw upon various recommendation methodologies, each with its unique advantages. Collaborative filtering, content-based filtering, and hybrid models emerge as prominent techniques, with collaborative filtering leveraging user interactions and preferences, content-based methods incorporating property features, and hybrid models amalgamating the strengths of both approaches. Within the real estate context, geospatial recommendation systems play a crucial role, emphasizing the importance of location-based suggestions in the realm of house rentals.

CHAPTER 3
TOOLS AND METHODOLOGY

3.1 REQUIRED TOOLS

The following tools will be used for the development of the application.

Table 3.1.1.:Required technology/tools

Category	**Technology/Tools**
Front-End Development	
Framework	Flutter
Integrated Development Environment	Vs Code
Back End Development	
Server-Side Frameworks	Spring Boot, Java,TensorFlow
Database	PostgreSQL
Authentication and Authorization	
Authentication	JWT Authentication
Map Integration	
Maps API	Google Maps API
Version Control	
Version Control System	Git
Testing	
Front-end Testing Framework	Flutter Testing Framework
API Testing	Postman
Deployment and Hosting	
Cloud Platforms	AWS, Google Cloud

3.2 METHODOLOGY

Our project is based on iterative waterfall model of software development cycle. The whole project phases are based on waterfall model while phases are design, construction and testing follow the iterative model. The iterative waterfall model provides feedback paths from every phase to its preceding phases, which is the main difference from the classical waterfall model. The whole process is repeated until final product is obtained.

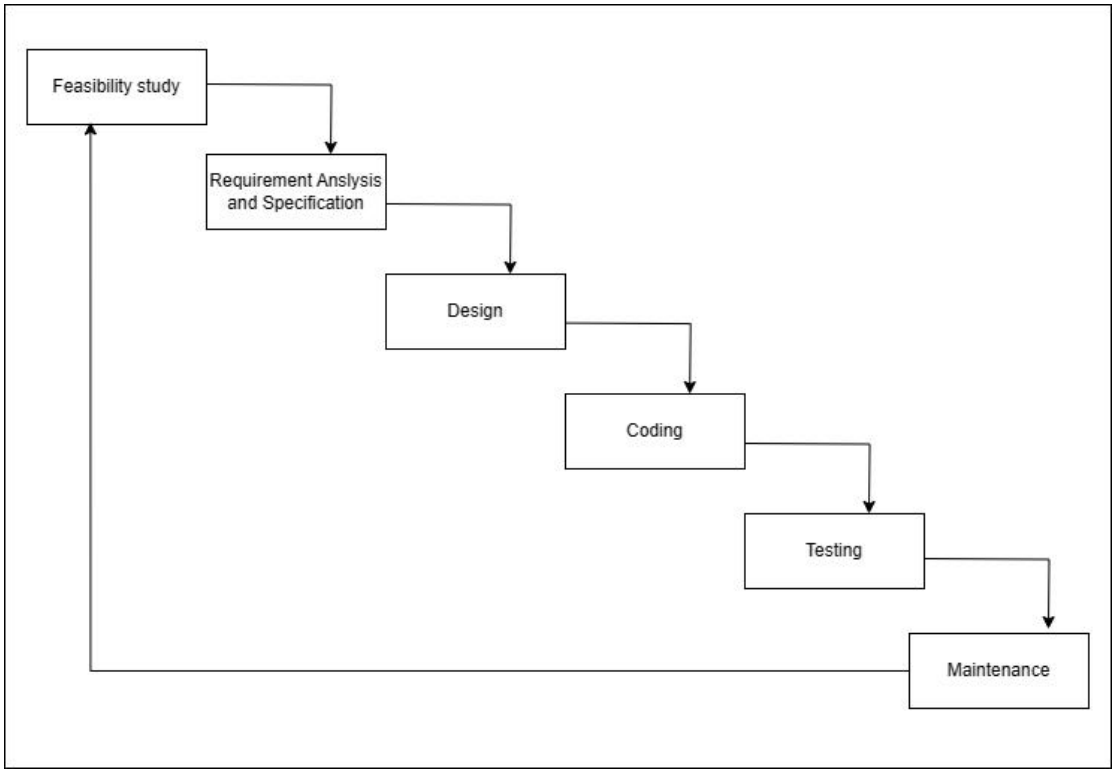

Figure 3.2.1.:Iterative Waterfall Model

3.3 DESIGNS

3.3.1 USE CASE DIAGRAM

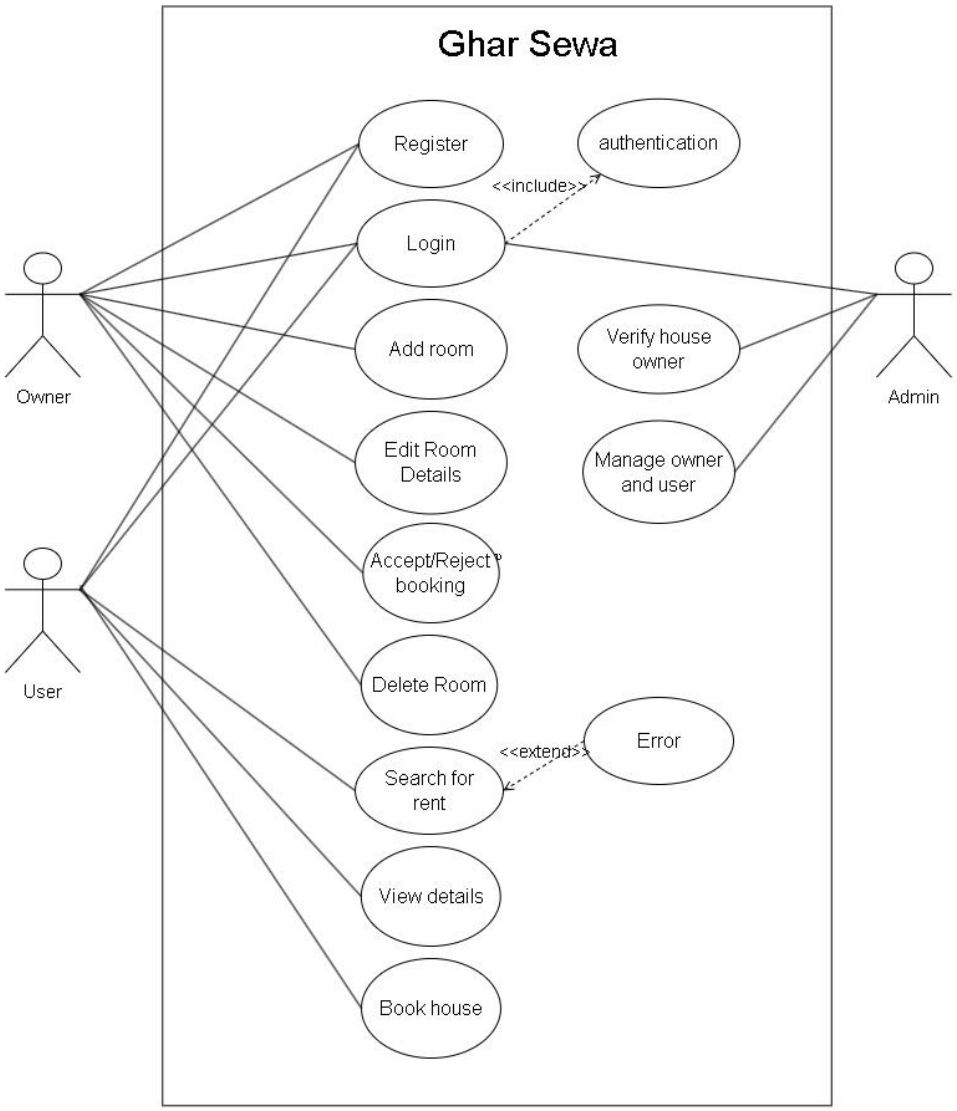

Figure 3.3.1.: Use Case Diagram of the system

Use Case (UC1): Login/Register
Actor: User/Owner
Pre-conditions: The respective profiles have been created already.

Post-conditions: User/Owner are now inside the system.
Alternatives: If the login fails, an error message is displayed and the users are redirected to login page.

Use Case (UC2): Add room

Primary Actor: Owner

Preconditions: User must be logged in.

Post conditions: Updated result is shown.

Main Success Scenario: Room is added successfully**.**

Use Case (UC3): Delete room

Primary Actor: Owner

Preconditions: Owner must add room.

Post conditions: Further details of the room is not visible.

Main Success Scenario: Room is deleted successfully**.**

Use Case (UC4): Search for rent
Actor: User
Pre-conditions: User must be logged in
Room must me available.
Post-conditions:
User can book room accordingly

Use Case (UC5): Verify House Owner
Actor: Admin
Pre-conditions: Admin is identified and authenticated.
Post-conditions: House owner is properly identified.

Use Case (UC6): Manage User and Owner
Actor: Admin
Pre-conditions: Admin must be identified and authenticated.
Post-conditions: User can search for rent and owner can rent a house.

3.3.2 SYSTEM SEQUENCE DIAGRAM

A System Sequence Diagram is a diagram that illustrates the interactions between an external actor and a system. It represents the sequence of messages exchanged between the actor and the system to achieve a specific use case.

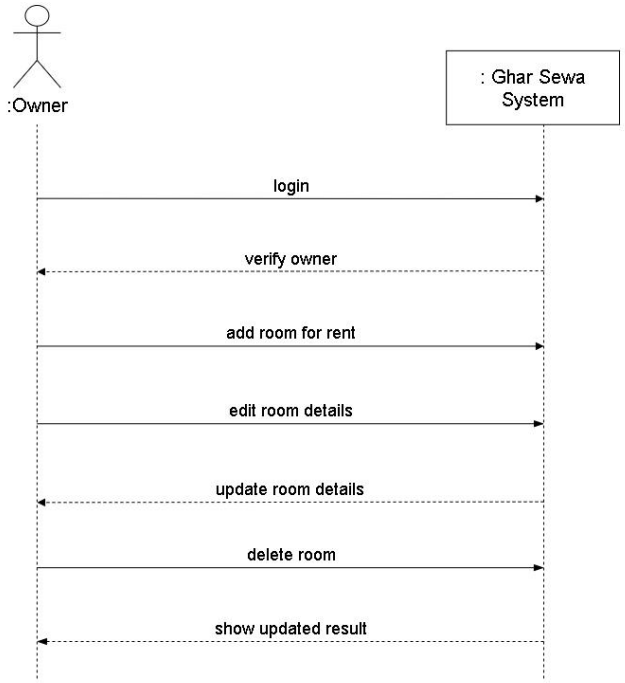

Figure 3.3.2.1: System Sequence Diagram between Owner and System

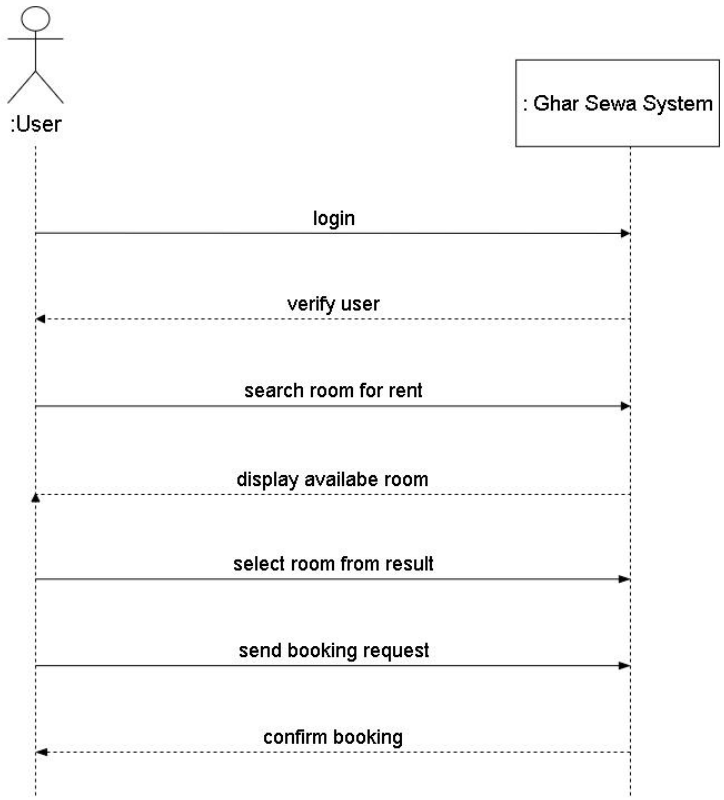

Figure 3.3.2.2: System Sequence Diagram between User and System

3.3.3 ENTITY RELATIONSHIP DIAGRAM

ER Diagram is a visual representation of data that describes how data is related to each other using different ERD Symbols and Notations.

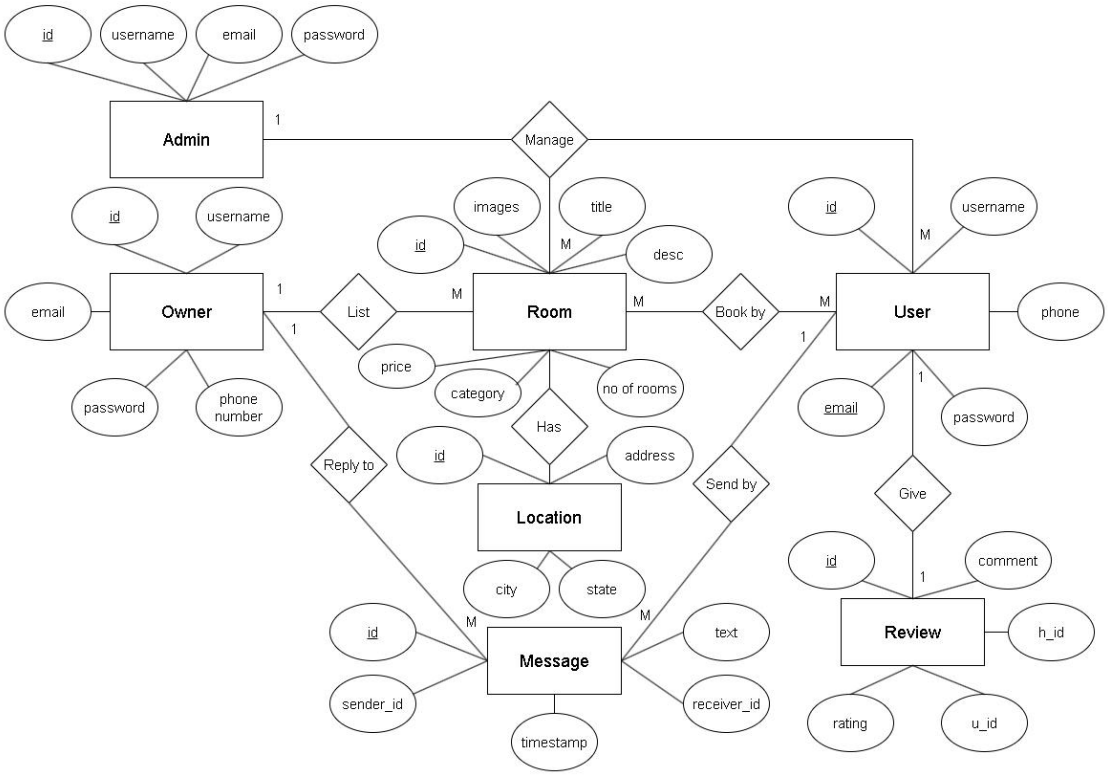

Figure 3.3.3: ER Diagram for the system

CHAPTER 4
EXPECTED OUTCOME

1. Detailed property listings with information such as location, size, number of rooms and rental price.

2. Intuitive search and filter options for users to find properties based on their preferences.

3. Personalized user profiles with the ability to manage listings, preferences and rental history.

4. Users can leave reviews and ratings for properties and property owners.

CHAPTER 5

TIMELINE CHART

Project Name: Ghar Sewa			
	Task Name	Start	ETA
1	Business Modeling	01.12.23	25.02.24
2	Requirements	01.12.23	20.03.24
3	Analysis and Design	18.12.23	16.04.24
4	Implementation	23.12.23	16.05.24
5	Testing	06.01.24	20.05.24
6	Deployment	15.03.24	26.05.24

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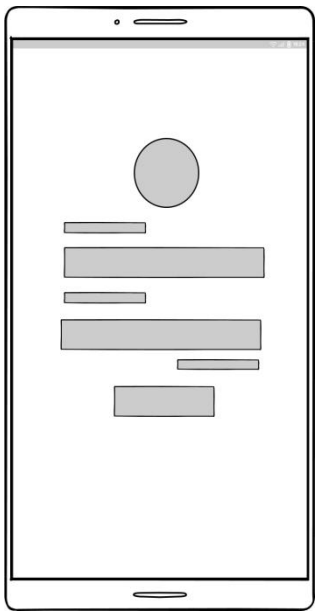
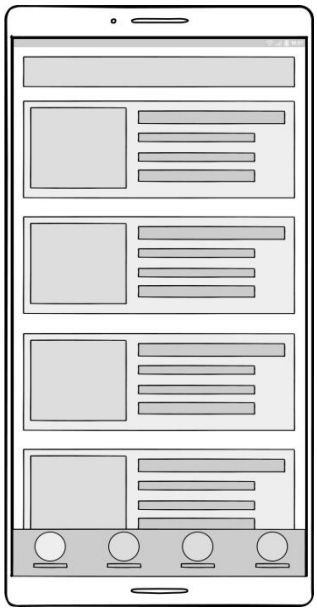
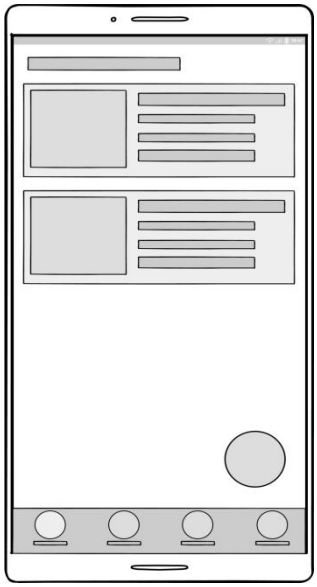
APPENDICES



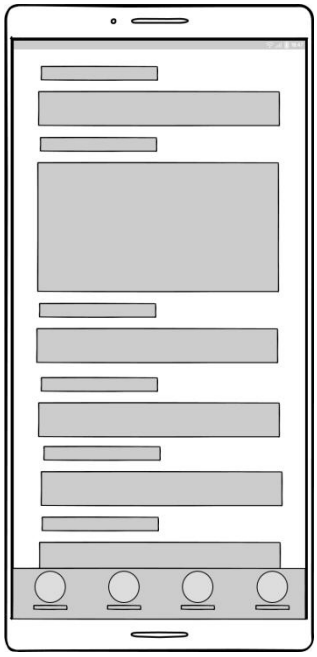
Appendix 1: LOGIN PAGE



Appendix 2: HOME PAGE FOR USER



Appendix 3: HOME PAGE FOR OWNER



Appendix 4: ADD ROOM SCREEN