Property management system for landlords to advertise houses and tenants search for houses to let

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Abstract

The evolution technology and the increasing rate of urbanisation has led to people moving from one place to another, in search of both livelihood and for educational purposes. This has led to increase in property letting. However, the process of searching for an ideal property of your suiting can be a tedious job. With advancement in technology, it is wise to come up with a platform that allows landlords and house owners to advertise their property and on the other hand people looking for property to let can browse through the listed houses, based on location from the comfort of their homes, without having the need to travel to the place itself. With more people nowadays using smartphones, the following project discusses on a proposed property management system based on mobile that utilises technologies like google maps and aims to bridge the gap between landlords and tenants.

Contents

List of Figures

1 Introduction

1.1 Background

Over the past four decades, between 1970 and 2010, the urban population of Eastern Africa soared from 11.2 million to 77.2 million with the urban proportion increasing from 10% to 24% during the same period (UN-HABITAT and UNEP, 2010). Without enough land for everyone to build their own houses, the issue of landlordship has become necessary. People that own land in these densely populated areas build residential and commercial houses, which they lease out to tenants for an agreed amount of rent.The concept of a landlord may be traced back to the feudal system of manoralism (seignorialism), where a landed estate is owned by a Lord of the Manor (mesne lords)("Landlord", 2021). Ordinalily individuals of the lower respectability which came to make the rank of knights within the tall medieval period, holding their fief by means of subinfeudation, but in a few cases the arrive may moreover be directly subject to a part of higher respectability, as within the illustrious space straightforwardly possessed by a ruler, or within the Sacred Roman Realm royal towns specifically subject to the sovereign. In present day times, "landlord" is used to describe any person, or substance such as a government body or an institution, giving lodging for people who don't claim their possess homes. The decision to buy or rent a house depends on economical and psychological reasons. While both income and wealth constraints reduce the likelihood of buying a home , wealth constraints have a stronger impact (Linneman, 1989). House letting is simply an argument between a house owner and a tenant where the tenant occupies the house in exchange for payment of rent. A person may find the urge to relocate to a place near his/her workplace, so as to save the amount of time taken to go to workplace. A tenant may want to put up their business in a place where owning land would be much expensive and thus opts to let a business house. The economics perspective assumes that households are economically rational and that tenure choices depend

on maximizing economic benefits given budget constraints (Fu, 2014). Renting a house would be cheaper on the shorter run compared to buying a house, which would include extra costs for buying the piece of land that the house is built on, and construction costs in case of constructing the house yourself. This also depends on the person's income and net wealth. Jones found that tenure decisions are associated with not only income but also households' liquefiable net wealth (Jones, 1995). On the psychological perspective, demographic factors such as income, age and race continue to have direct affects of residential satisfaction and mobility intention (Lu, 1998). People with families are figured to feel more comfortable if they have a home of their own, as compared to the younger and youthfull ones who wish to live around the urban areas and closer to cities. There has been numerous web apps and systems designed to help bring property to the online market. Most of them however, are geared towards real estate :- investing, buying and selling of houses.

1.2 Target Group

There are two target groups in the proposed system. First is propery owners who wish to advertise their houses to let. Second is people who are looking for a house to set up their business or one to relocate to.

1.3 Problem Statement

House finding shouldn't be a tedius task. Tenants should be able to easily find a house to let without must struggle of walking around for hours. Landlords should also have a platform where they can advertise their property, and make direct contact with potential tenants. Why should we fix this problem? Because it affects a lot of people who look to relocate to a place, which they are unfamiliar to, and they end up spending long hours looking for property to let. A case in point is a student who has been called to a school, far away from his/her home.

They will have to look for a residential apartment to stay during their term in school. Idealy, what the student would do is set aside a day and dedicate it to going up to the area surrounding the school, to look for a room that fits his needs, whether a bedsitter, one or two bedroom. The student therefore will have to pay bus fare to and fro the school neighbouring, and also it would be time consuming.

1.4   Scope

The scope of the project is to come up with a system that will serve both property owners and those looking to rent some property. The system is intended to serve all the counties, where property to let will be listed according to the county in which they are located.

1.5   General Objective

The aim of coming up with this system is to help come up with a platform that will help ease people the hustle of looking for houses to let.

1.6   Specific Objective

The specific objectives that will lead to achieving the general intended goal is creating two sides of the system, the tenant panel and the landlord panel. Landlord panel will allow landlords and house owners to create an account, post their houses that they are letting. The system will also allow tenants to create an account and look for houses to let, either for residential or commercial purposes. They will be able to communicate directly with the owners of the houses. Another reason to build the system is also as a source of income. The revenue will be generated by charging landlords for their houses/ads to appear among the first searches. The landlords will also be charged a verification fee in order for their houses to be physically verified and approved. This is so as to discourage scammers who may try to con people off by

posting houses that they do not own.

1.7   Justification

The system will be able to be beneficial to those people who are intending to relocate to a new area, and who do not know much about it, to be able to search through for houses to rent, hence saving them time. It will be as a platform for landlords to advertise their houses, thus bringing them more tenants, hence more income.

1.8   Limitations

The main challenges that may be faced by the system include scamming - since the system is designed to be free to use by anyone, some people may take advantage of this and post houses that they do not own and go ahead and ask users for money beforehand. This will be solved by first hiding the house owners' phone number, and when the tenant on the other hand clicks to view it, the system will be able to record that the user really viewed the number, so chances are high that they indeed communicated. In case they communicated and the user was scammed, he/she may report to the support team.
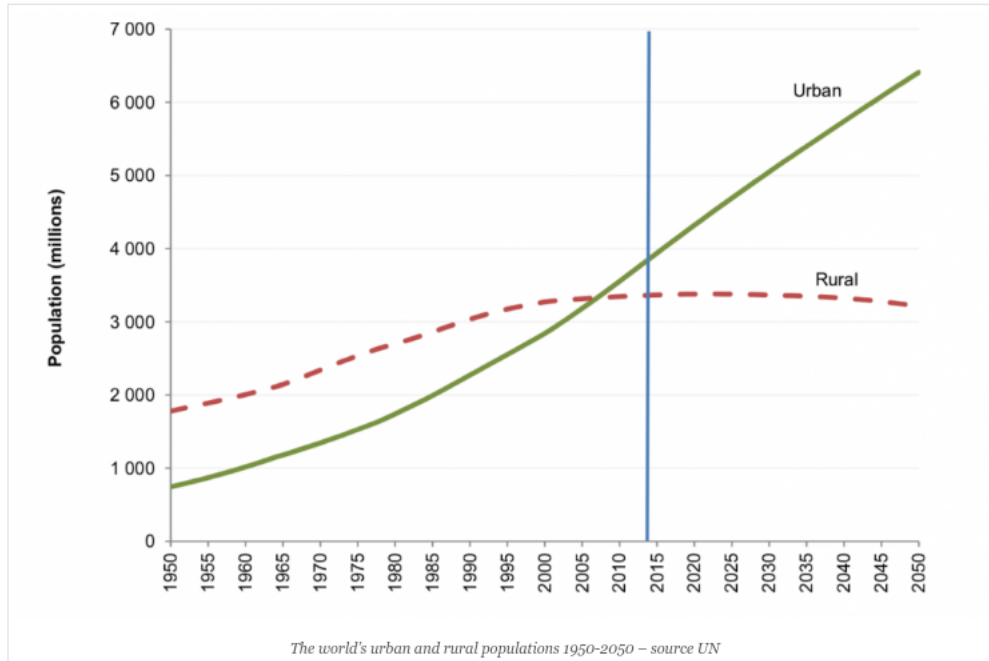
2   Literature Review

This is a review of the causes of the increasing need for rentals and the rapid growth of the real estate industry.

2.1   Theoretical Review

2.1.1   Urbanisation in Kenya

Urbanisation is the increase in the proportion of people living in towns and cities. There has been an increase between 1950 and 2014, from 0.8 billion to 3.85 billion people as shown on figure 1 . The rapid

Figure 1: World urbanisation

The world's urban and rural populations 1950-2050 – source UN

growth of urban populations in Kenya is as a result of shift in balance between the urban and rural economies.("(PDF) Urbanisation in Kenya", n.d.). This link is caused by changing patterns of demand for, and supply of employment. It is estimated that by 2030, nearly half of Kenya's population will be living in cities.("UK and Kenya host research symposium on affordable housing", n.d.) According to the 2019 census, the conventional population of youth aged 18 to 34 was 13.7 million, out of which 61% were working while 1.6 million were seeking work. The population pyramid for urban areas indicates that the majority of the population is concentrated between ages 20 and 34. ("Census 2019 Data Reveals Kenya's Youths in Rurals - Kenyan Wallstreet", n.d.)

Affordable and sustainable housing is therefore needed to cater for this increased demand. KNBS reveals that Homeownership stood at 61.3%, while 38.7% of the population reports occupying rented/provided
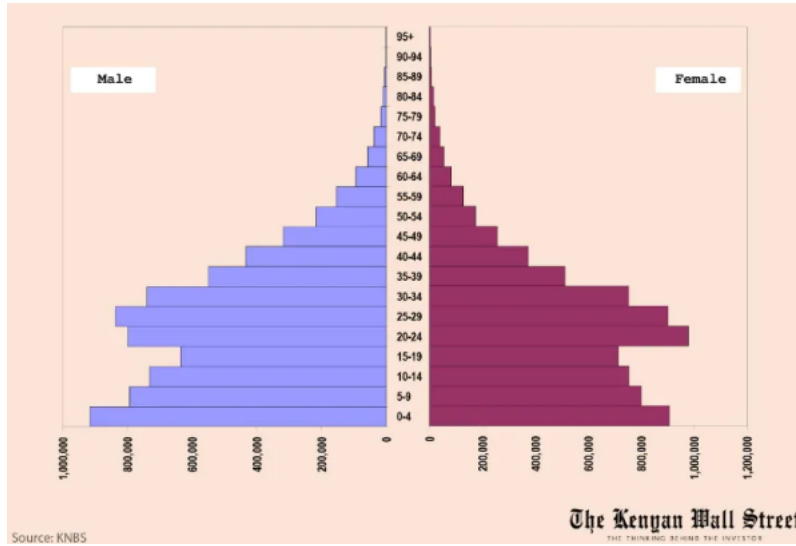
Figure 2: Census Kenya, 2019

dwelling units. The majority (93.9%) of the owned dwelling units were constructed, 3.3% were inherited, and 2.8% were purchased. According to these statistics, it shows that the number of people looking for houses to let is continously increasing. Urban centres, and in particular capital cities like Nairobi, will continue to offer important opportunities for economic and social development (Cohen, 2006). This therefore proves the need to have a system where that connects house owners to their tenants in both residential and commercial property.

2.1.2 Government Strategy In The Housing Sector

Adequate housing is declared as an important component of the right to standard of living under The Universal Declaration of Human Rights of 1948, which has been further reaffiremed by subsequent various international instruments which Kenya is a signatory. The Kenyan constitution provides for the right to accessible and adequate housing, and to reasonable standards of sanitization in article 43(1)(b). ("The Constitution of Kenya, 2010", n.d.). The benefits of a functioning

housing market include creation of employment, increased tax base and reduced expenditure on Health and security.

2.1.3 The role of the private sector in house management

Private sector can be described as the part of the economy that is run by individuals and companies for profit and is not state controlled. In Kenya however, the housing sector is affected by deteriorating housing conditions arising from house demand that surpasses the supply particularly in urban areas. A study done shows that annual housing demand in urban areas is estimated at over 150,000, supply estimated at 40,000 annualy, thus creating a deficit of about 110,000 housing units. Currently more than 80% of new houses produced are for high and middle income housing. This is due to the private sector developing high and middle income housing. Thus, housing is one of the main factors that improve economic growth of Kenya , shelter being recognized as one of the tools of development.

2.2 Similar Projects

2.2.1 Renters Hub

According to their website, Renters Hub is a national company that makes house searching a simple, fast and cheap exercise.("Renters Hub — Find the house you will love to live or do business in." n.d.) Here, a person is required to register as a landlord/agent or as a tenant.

Listing items on renters hub Register - Register as a landlord/house manager. Upload your national id photo, name, phone number and password Upload photos of your house - Upload from the phone/computer pictures of the property youwish to list Enter property details - Enter the location, type and price of the property. Answer messages and calls from clients
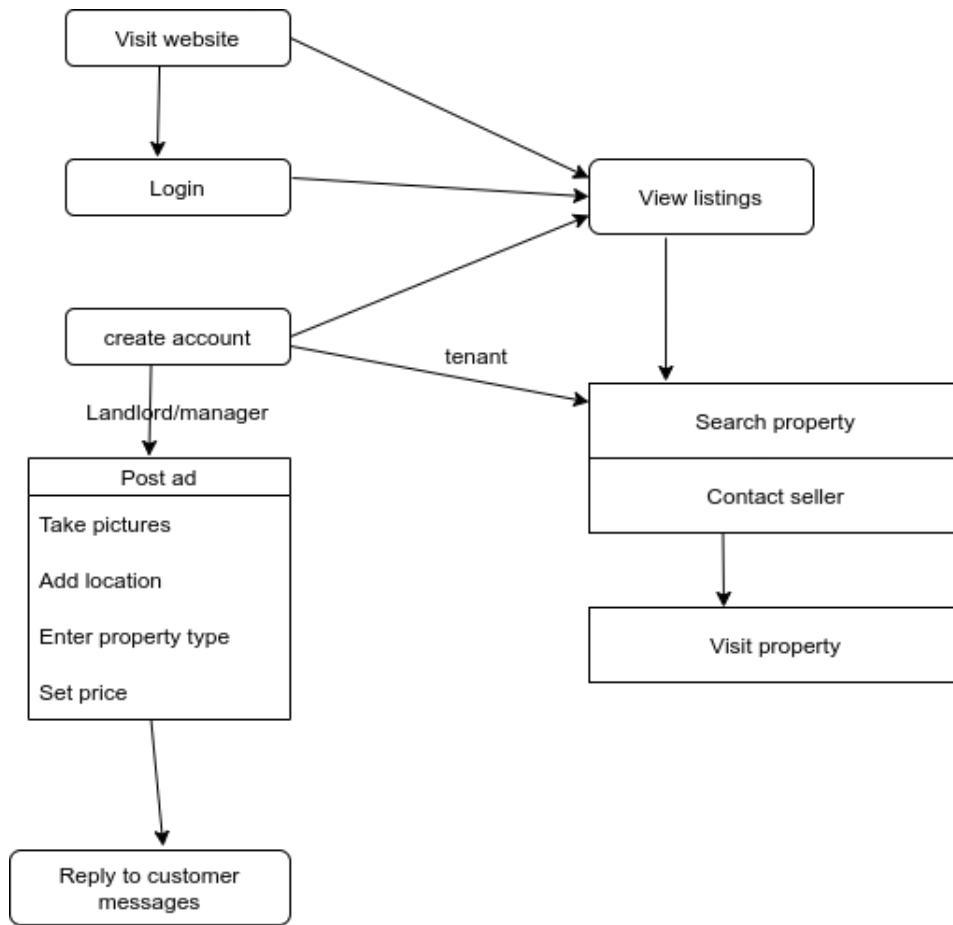Wait for customer calls and messages.

Figure 3: Renters Hub

Renting on renters hub Register - Register as a renter. Enter name, phone number and password Search for property - Filter according to property location, property type, and maximum rent. Contact property owner/manager - Call the property manager through the phone number provided

2.2.2 Jiji

According to their website, jiji is the biggest free online classified with an advanced security system.("About JIJI", n.d.).

How to sell on Jiji Register- Register your e-mail and phone number(or do it via Facebook or Google) Make photos of your item Make photos of your product using camera or upload from the phone/computer Press SELL- Choose product category, upload your photos and write a clear title and a full descrition of your item. Set the price and send. Answer messages and calls from clients - If advert was successfully listed on jiji, a notification message will be sent to you when it goes live. Wait for customer calls and messages.
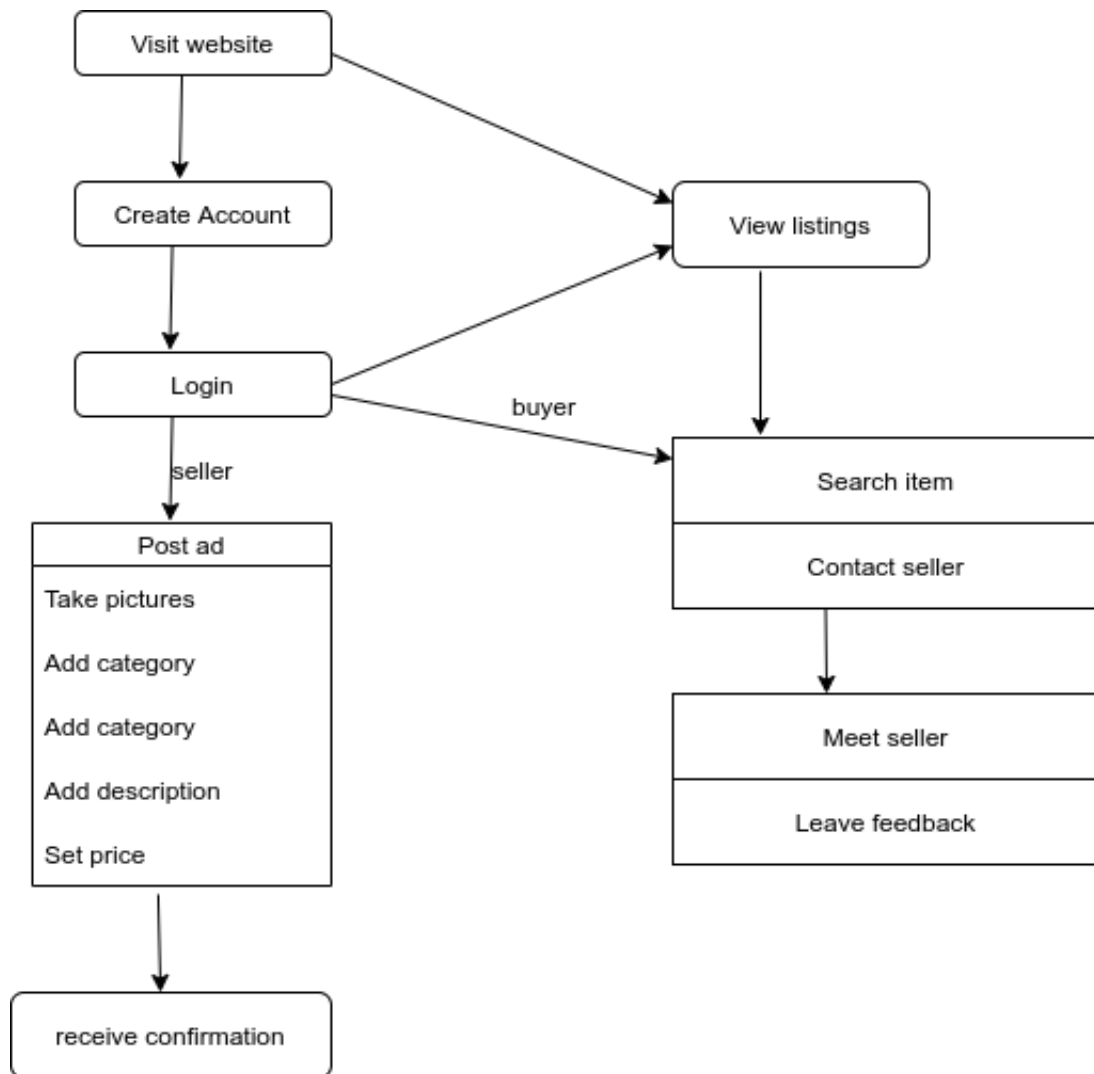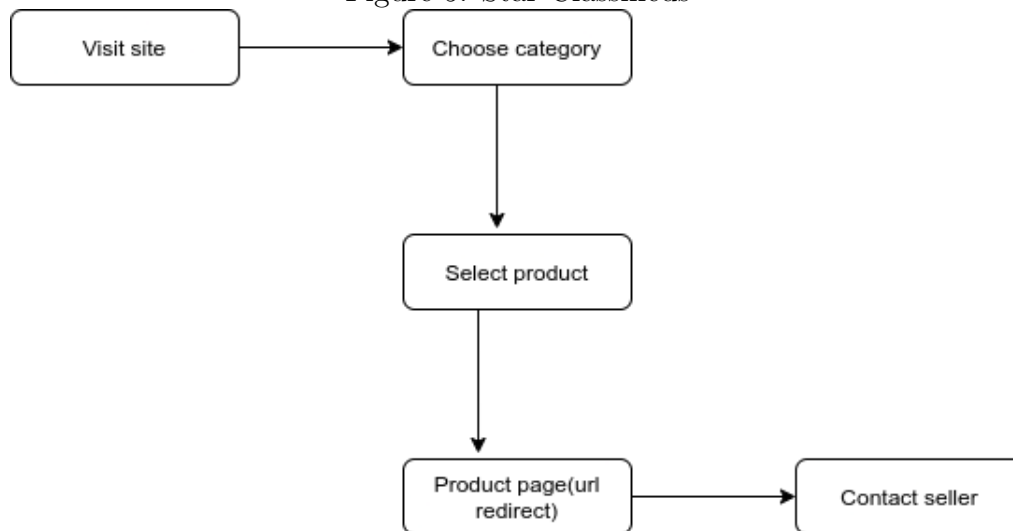
Figure 4: Jiji

How to buy on Jiji Search for the item - Find what you need using search panel and filters Contact a seller - You may use chat on Jiji or call them via phone. Discuss all the details negotiate about the price. Take your item or order a delivery - Meet a seller in public place and be sure to pay only after collecting you item. Leave your feedback about the seller

2.2.3 The Star Classifieds

The star Classifieds is a property, jobs and car listing website (https://www.the-star.co.ke/classifieds/). On the landing page of the site, a user is prompted to select the type of property he/she is interested in. After choosing the category, the page then redirects the user to another page where they are presented with adverts related to that category. The user selects then chooses the product that interests them, and the website redirects to the original website where the product is located where he/she can contact the seller.

Figure 5: Star Classifieds

15

2.3 Conceptual Framework

The following diagram shows the conceptual framework of the system, which includes the inputs, processes and outputs. The user is required to register to the system, where they will input their name, email and password, location. The sytem validates the user credentials and stores them in the databae. The user is then prompted to login, he/she should add the details used during registration. On successfull login, the system will allow the user to post property adverts on the system if they registered as a landlord/property manager. If the user successfully logged in as a tenant, then they will be able to browse through different property, filter and search for property that they are interested in depending on location, property type and the rent payable. The following diagram shows the inputs, processes involved and the outputs.
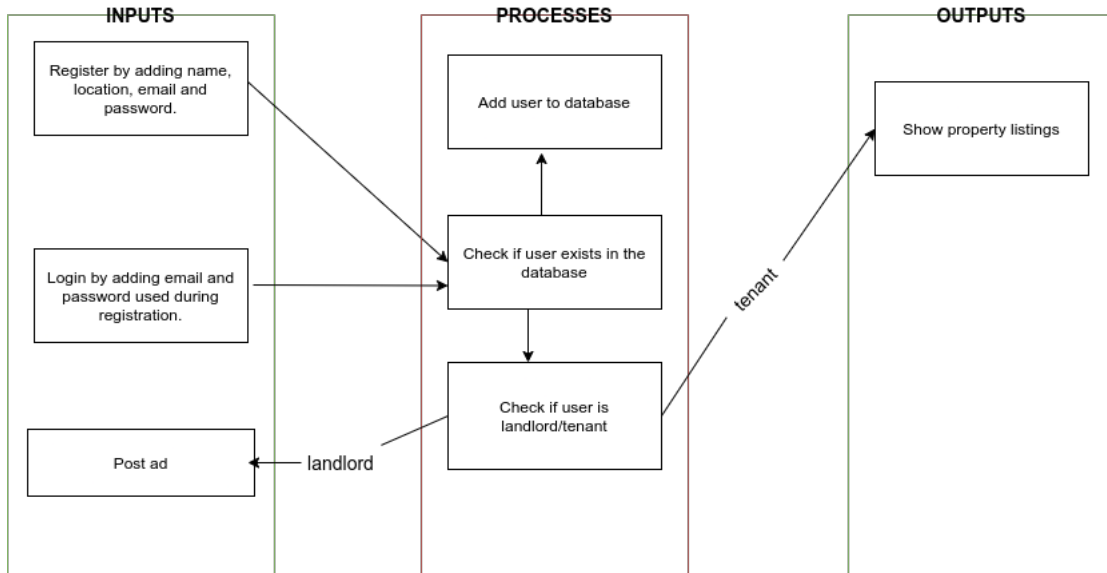

Figure 6: Conceptual framework

3   Methodology

The term methodology refers to the actions taken to investigate and the rationale for the specific processes and techniques used within the research to identify, collect and analyze information that helps you understand the problem better.

3.1   Data Source

The primary source of data for the proposed system is landlords/ property managers and also people who live in rentals. Other secondary data sources will include the internet, existing reports and researches done on the same topic. These will be used to analyze and come up with a better understanding of the existing issues in the society and formulate ways on how to solve them within the proposed system.

3.2   Data Collection

3.2.1   Observation

Observation as a method of data collection will involve looking at the current trends in the neighbourhood and understanding what features or specifications that people want when looking for property to let.

3.2.2   Interviews

Several interviews will be conducted among fellow friends and family where they will be provide information that will help come up with better understanding of the user expectations of the proposed system. Personal interviews will also be administered on landlords and property managers.

3.2.3   Secondary Data Collection

This data will be gotten from existing researches that have been done on similar topic. The data will then be compared to the primary data

in order to realise and decision and conclusion.
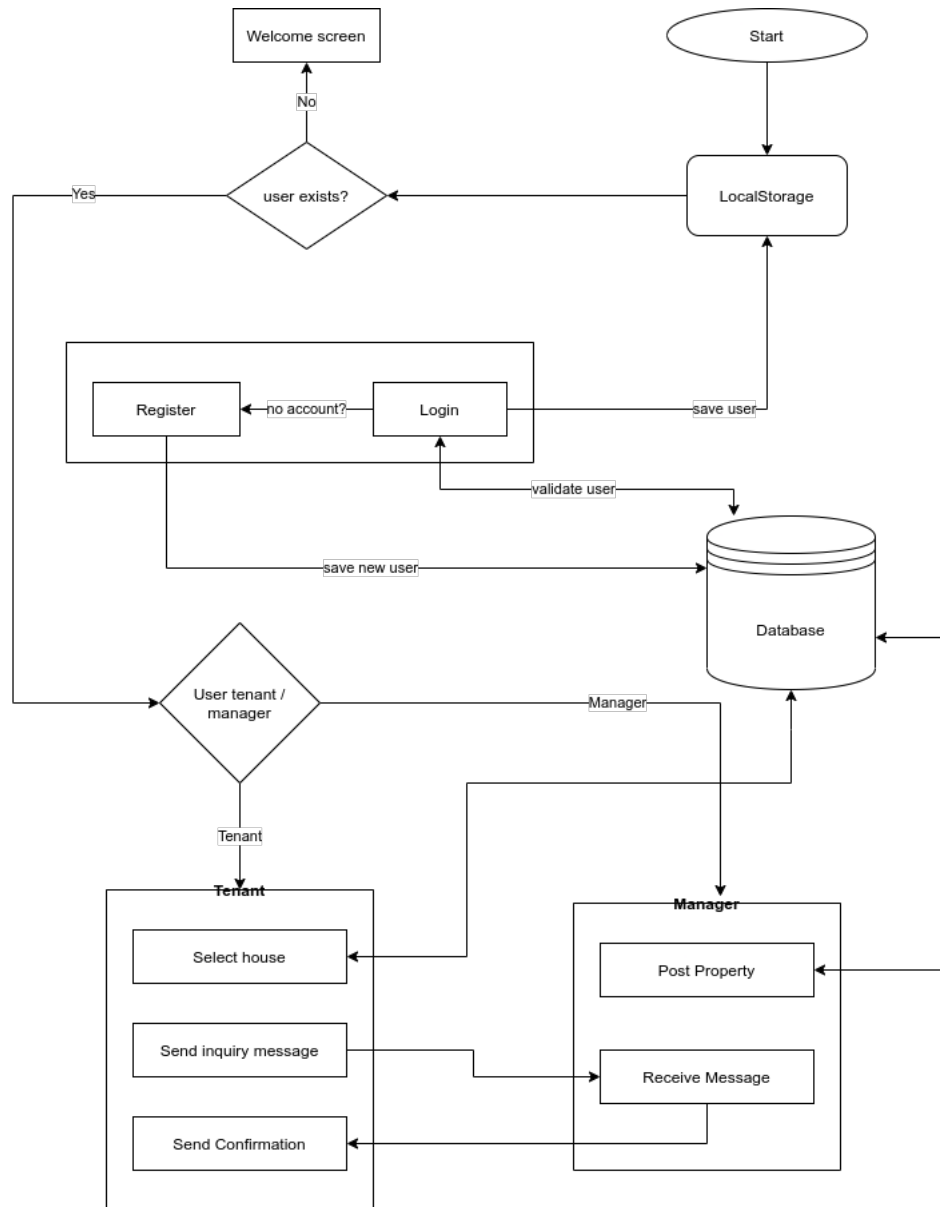
3.3   System Design

Figure 7: System design

3.4   Implementation

In order to achieve the objectives of the system, the following modules will be implemented:

3.4.1   Auth Model

This includes the register and the login modules. The register module will collect user details like username, email, password, location. These information is then stored in the database after validation. The login module consists of a form that the user will use to fill the email and password, that will be used to allow the user access to the system. The user details input will be cross checked with those present in the database and if they match, the user will be allowed access to the system. On successfull login, the user json web token will be stored in the device's localStorage. This token is used to uniquely identify the user and will be sent along with the api requests to the server.

3.4.2   Welcome panel

Here the user chooses whether to continue as a manager/property owner or as a client/tenant. Once this is done, the session will be saved to the local storage of the device, hence the users will only be presented with this screen only once.

3.4.3   Database module

This database is where the details and property are stored. A relational database model will be used where relationships between the user, the manager and the property will be created. User roles will be applied hence restricting CRUD operations to users, based on their roles.

3.4.4 Customer module

This is wher the system redirects you if you login as a tenant. Operations permitted on this module are viewing of houses, sending messages and updating their account details. A user will browse through houses, select a house of his interest and then send the property owner a message of inquiry asking if the house is still available. They will be able to communicate on the system, sending each each other messages.

3.4.5 Property owner module

After logging in as a property manager, user will be redirected to this panel. Here, operations to be carried out includes posting of propertym where the user takes videos and images of their property gives a location and the property description, and posts the advert. They will also be able to view and reply to messages from potential clients. Here they can also update their account details.

3.4.6 Tools

React Native - This is a react library used for making cross plarform mobile applications.

Postgres - This is an opensource relational database that uses SQL to query.

Hasura - This is a qraphql engine that provides a graphql api based on your postgres database.

Auth0 - This is an identity provider, that does all the heavy lifting of user authentication and validation.

Vs code - This is a source code editor made my Microsoft for Windows, Linux and Mac OS.

4 Testing

Two testing techniques will be used to ensure proper working of the proposed system. These are black box testing and white box testing.

Black box testing will involve giving the application to different users e.g. friends and family to try out the application and report back their experience. From this, I will gather any reviews and recommendations to improve it.

White box testing will involve the internal working of the software. This involves testing the system code. Several levels of testing will be performed:

Unit testing - this is a test that will be used to ensure that every component is functioning/operating as intended. Testing library jest will be used.

Integration testing - different components will be tested on how they intergrate with each other. There should be no flaws and all components should work together as expected. The testing library to be used here is the react testing library.

System Testing - This will be the overall testing of the system, whether the system works as intended, now having the actual data, and how it interacts with other systems.

Acceptance testing - the system will be distributed to several people where they will be expected to give a feedback/rating of their experience with the system.

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