JOMO KENYATTA UNIVERRSITY OF AGRICULTURE AND TECHNOLOGY

KAREN CAMPUS

Topic:

Housing Management System: A case of Ongata Rongai, Kajiado County.

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Diploma Information Technology

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Declaration:

I Richard Okoyo declare that this is my project and has never been submitted to this or any other university for the award of a Diploma Information Technology or any other award. All foreign materials have been cited in the references.

Student signature

Sign _____   Date _____

Supervisor's signature

Sign _____   Date _____

Acknowledgements

Just as it is said that the satisfaction that accompanies the successful completion of any task would be incomplete without the mention of the people who made it possible, I want to take this opportunity to thank the Almighty God for giving me good health and energy throughout this period.

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Abstract

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background

Descent housing is one of the basic human needs in every country today. Rental house management istherefore an important aspect in our society since most of the urban dwellers depend on the rented houses. Due to the rise in rural to urban migration, housing has become one of the challenges today due to the industry's growth by day. (Wikipedia, 2017)

Rental houses are houses that are built by individuals or companies for the primary purpose of leasing them to their clients. The clients can either use them for staying in them or for commercial purposes such as business. These houses are then paid at the end of the month or as agreed between the tenant and the company or the landlord (individual house owner).

According to business dictionary, rental property is any property that the owner receives payment from occupant(s), known as tenants, in return for occupying or using the property. Rental properties may be either residential or commercial. The owner of the rental property may be allowed to take certain tax deductions such as mortgage interest and depreciation.

Ongata Rongai is a town located in Kajiado County, Kenya. The town is situated 17 kilometers south of Nairobi city. Known locally as Rongai, the town is a fast-growing community with an approximate population of 66,042 according to the 2009 census report.

Due to rapid real estate development which started in the 1990s, Ongata Rongai has evolved into a highly populated Nairobi suburb covering around 16 square kilometres. The neighborhoods which include Kandisi, Rimpa, Nkoroi, Merisho, Olekasasi, Tuala and Maasai Lodge are located to the south and east of Ongata Rongai. It has a diverse population due to its proximity to Nairobi. (Wikipedia, 2012)

Housing management is a very challenging situation in Ongata Rongai. On one hand, many landlords find it very difficult to let their potential tenants and customers know that they have vacant houses that need to be occupied. On the other hand, many tenants equally find it very challenging to locate where exactly houses are vacant and the right people with information on how they can occupy those houses.

In Rongai as well as many urban towns in the Kenya, many houses go unrented for some months while there are many people who are in search of vacant houses for occupation. This type of imbalance happens because there is no clear way of finding out vacant houses and also no clear way by which new houses can be made known to the potential customers by the house owners.

1.2 Problem statement

As explained in 1.1 above, there is a big problem in that the present day landlords and house owners wait for the tenants to come looking and making enquiries for their houses. This makes it really difficult for them to reach their clients who may not be in their locality to discover that they have vacant houses. Moreover, Tenants equally find it very challenging to find vacant houses whenever they need to move to a new house or whenever they want to rent for the first time. This is because there is no forum where they can get to know where vacant houses are located especially if they want to move to a new area where they have not lived in before.

1.3 Aim

The researcher here aims at developing a web based platform where the landlords can upload their houses, tenants can view and reach their owners whenever they feel they need to through the provided contact.

Study wants to make it easy for the customers to easily get to know where there are available houses online without having to move from place to place looking for them.

It will also enable the customers to easily access the details of the owner of the available houses and make arrangements on the payment and the remaining requirements without having to stop their work to go and meet the house owners.

The study will also enable house owners to easily reach their customers who may not be in the locality. They can reach unlimited number of customers irrespective of which part of Rongai they are currently renting.

1.4 Specific objectives

1. To understand how the current housing systems operates in Ongata Rongai.
2. To establish the current ways in which landlords rent out their houses to their tenants.
3. To review the literature of the current and related computer based housing management systems.
4. To develop a house management system that will enable tenants know where vacant houses are.
5. To develop a house management system that will enable landlords display their houses for their potential tenants to find easily.

1.5 Research questions

1. How do landlords in Rongai currently rent out their houses to their clients?
2. How do tenants get to know the vacant houses that are present within the locality they want to move to?
3. How difficult or easy is it for one to find a house for rent in Ongata Rongai?
4. Of what benefit can a computer based house management system be to save the current situation?
5. What are some of the house management systems in place and how do they work?
6. What are the major challenges one faces whenever they are in need of a house for living or for business?
7. What are the software and hardware requirements for developing a computer based House Management system?

1.6 Justification

This study will eventually solve the stalemate that has always been in the process of looking for a new house. By developing a new way, a system that will make it very easy and reliably convenient for both house owners and tenants.

This study will make sure that there is an easier way of renting out the houses to the clients and also an easier way of discovering vacant houses in the preferred area. It will also help the house owners to comfortably reach their clients whenever they have new houses.

1.7 Scope

The research will cover the northern parts of Ongata Rongai. These places will include, Laiser hill, Exciting, Sironi, Total and their environs.

The targeted houses will be for rentals only. These will include both the commercial and homes for rent. The system will not be dealing with the buying and selling of the houses.

The system will only be dealing with houses ranging from bedsitters, one bedrooms, two bedrooms, three bedrooms and four bedrooms. High-end houses like private homes will not be included in the system. Likewise low -end houses (shanties) will not also be included in the system.

The system will depend and function entirely on the information entered by the users.

1.8 Limitations and Assumptions

Ongata Rongai is so big with very high population. This makes it very difficult to cover the whole of it. It may require more time and resources to do this. So, the researcher will only limit the study to the areas mention in section 1.7 above.

Most houses in Rongai are managed by agents. This makes it very difficult to reach the actual owners for the correct information. The agents may also not give the actual scenario because they feel threatened to give out any information because that is their secret of the business. So the researcher relied on the information availed by the agents, some few landlords who could be traced.

Most Rongai residents are business men and women which makes it very difficult to find time with them to gather the actual information from the perspective of the tenants.

The study assumes that every potential customer is computer literate, understands English and have access to the internet.

1.9 Conclusion

After understanding how the house management system works in Ongata Rongai. How landlords find their customers, how they rent out their houses and also how the tenants find out about a new houses ready to be rented out.

It is evident that a computer based system will be a great relief to both the tenants and the landlords. The landlords will not have to wait until a customer comes by their door, but they will be making enquiries over the system. The tenants will also just search and find the houses from where they are without having to move.

With this system in place, many questions will have been answered and many efforts that have been made to come up with a working system will have been paid and the dream of a rental house search engine will have been realized.

This will save many the number of hours they spend looking for houses and instead those hours can be used to uplift the county's economy in many ways by doing some constructive activities.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter helps to review or look through the basic concepts of the candidate system in comparison with the existing systems locally and globally highlighting the existing weaknesses, gaps and finally the need for the new system.

2.2 Types of systems in place locally

2.2.1 Agents

Agents are the persons who negotiate with the house owner to take care of the property, ensure that there are tenants in the houses, collect rent and deal with clearance of those tenants who are moving from the property. They charge some fee for these services. They have their advantages and disadvantages

In an article in the Standard newspaper, the writer highlight some of the challenges tenants find themselves in when looking for houses. The writer talks about the current change that is occurring in the housing sector that makes landlords to opt for other options rather than the agents that they used to trust for the management of their houses. This is because of the advantage the agents have taken to manipulate the landlords and the tenants.

The agents, who have become part and parcel of the booming Kenya's real estate sector, manage properties on behalf of landlords on commission of between 5 to 10 percent of rent paid. Their duties include getting new tenants, clearing those who are vacating houses, carrying out repairs in case of any fault and, most important, collecting rent and ensuring everyone pays.

With a majority of property agents managing more than one property, there is rise in demand for their services which has made some of the agents increase charges. On the other hand, many tenants have nasty experiences with property agents, a reason why majority insist on negotiating with the landlords to move into a house. It is for these reasons that the landlords are now shunning property agents. (The standard newspaper, October 14th, 2014)

Because of these factors, the landlords have decided to opt out of business with the agents. Instead, they are employing caretakers who undertake day-to-day management of the houses because they live within the compounds. Caretakers are better than property agents because they stay with the tenants, thus, will know their problems and inform the landlord in time unlike the agents who may decide to keep quiet about a repair because they don't want to spend in the expense of the comfort of the tenant which is a primary priority of the landlords if they want the tenant to pay without complain.

2.2.1.1 Advantages

The agents have actually relieved the landlords of the tedious job of looking for clients, collecting rent, making clearances with those tenants vacating.

It is a source of employment to the agents.

The landlord receive their money as agreed with the agents irrespective of whether the tenants have paid or not.

2.2.1.2 Disadvantages

The landlords have no way of reaching their clients to know how they feel. Because all complaints and compliments are addressed to the agents who may choose to deliver them or not especially if the complains are going to affect their contract.

The house rents could be hiked by the agents to get more money on top of their commission. This may discourage many from occupying the houses.

On the part of the tenants, their complains may not be addressed in time. Because the agents don't live in the property, they don't experience the problems the tenants are going through during their stay in the houses.

The tenants are manipulated by the unscrupulous agents who may either charge them higher rates or lie about the facilities in place.

The agents may also take advantage of the ignorant tenants who may not see it necessary to keep their record of payments. This mainly happen when the tenant loses a receipt. The agents may just maliciously insist that the customer has not paid simply because they don't have proof.

The agents have very many property to take care of. Therefore they don't have time to know what is happening in some of them. They only appear when they are collecting the rent.

2.2.2 Shela House Management system (in Lamu Island)

Shela is a company dealing with holiday houses in Lamu, in the coastal region of Kenya. This system is in form of a website that was developed in 1992.

The website allows their potential customers to view what they have and make contact. The customers can see the available houses, book houses, check booked houses and the date that those booked will be checked out.

They can also view the pictures and features of the house available ranging from their location, the number of people the house can accommodate, the number of rooms each house have and the price range.

They use residential managers whose email addresses and phone contacts are provided for so that an interested person can book through them or make more enquiries if the information provided is not sufficient.
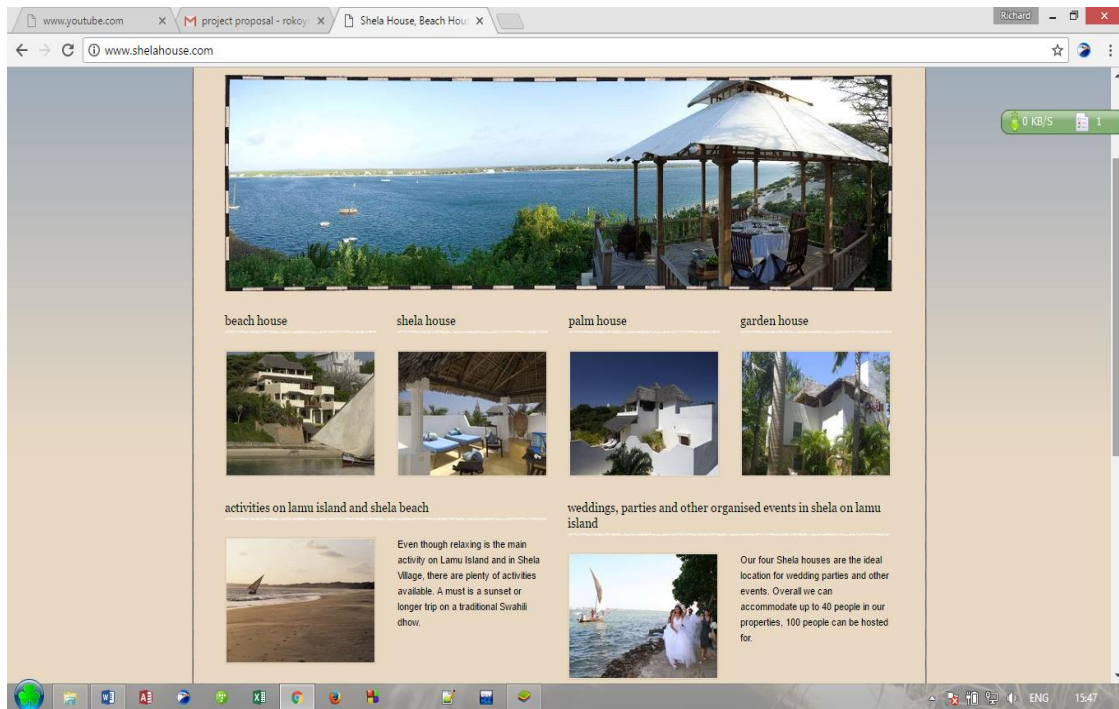
Figure 1: Screen shot of Shela website

2.2.2.1 Advantages

One can book without having to visit the place in person.

The pictures are provided. So, one can see the condition of the houses even without visiting.

The price range is there. So, one can just book the house within their price range.

2.2.2.2 Limitations

It only deals with holiday homes which may not be required by the masses. The masses especially in the area of study are in need of a system that can solve their basic human requirement rather than leisure.

They still use the residential managers who are just like the real estate agents. They may still manipulate the clients.

2.2.3 National Housing Corporation

The National Housing Corporation (NHC) is a statutory body established by an Act of Parliament Cap. 117. The primary mandate of NHC is to play a principal role in the implementation of the Government's Housing Policies and Programs.

They have a website where they deal with the sale of houses across Kenya. They mostly deal with the building of houses which they then sell or give out to their customers on loan.

They also offer schemes like tenant purchase, outright sale house loans and rental houses. Their main customers are the government employees and those in formal employment.

This website has a customer portal where old customers log in, fill rental or buying application forms. Their forms are then processed and their liability for the loans or the rentals are checked then approved or denied.

The portal also allow for the new users to sign up and they are registered. If one is not registered they cannot access the services.

Screen shot of the National Housing Corporation website:
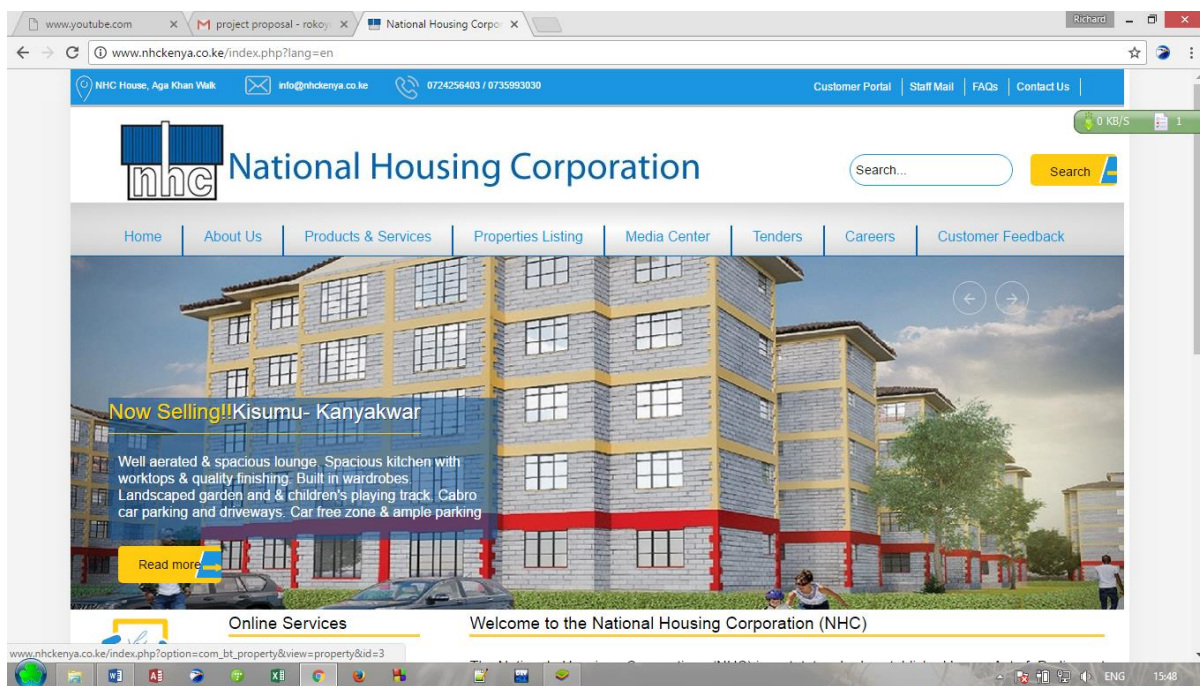
Figure 2: Screenshot of Housing Corporation website

2.2.3.1 Limitations

The corporation only works with the members. Nonmembers are not accepted until they sign up and register to be members.

The corporation only deal with government employees or those in formal employment. Those working in the private sector or those who don't have formal employment cannot be accepted.

It deals with the sale of houses which is not what many want because may not be in the position to buy. A huge majority rent houses because they can't afford to buy a house.

2.3 Global systems

2.3.1 Century 21.

In the US, there is this system which allows one has to register with the real estate agencies (realtor) such as century 21 system (www.century21.com) which features rental properties throughout the country. One registers online and goes through the rental process.

They provide a forum for finding homes, rentals, and their agents and also provide home owner with the option of selling that property.

Here, the client searches their website, keys in their location, or the location where they want to have the house. Then they have the ability of choosing from the variety of homes present, and contacting the agents.

The customer can view the features of all the houses that are displayed in the website through the pictures provided to make the customer make their decision based on what they can see.

Figure 3: Screen shot of Century21 website

2.3.2 Remax

There is remax system also in the US. A website where anybody who is in need of a house can use. This website allows one to sign up, sign in, and search for a property by entering the location where they are locating to.

They then get the idea of the price and other costs involved associated with using a realtor. They provide the estimates, agent's contacts and offices and pictures of those houses. The client can access the website from anywhere and can view the houses and then make contact with the agents to make further arrangements.
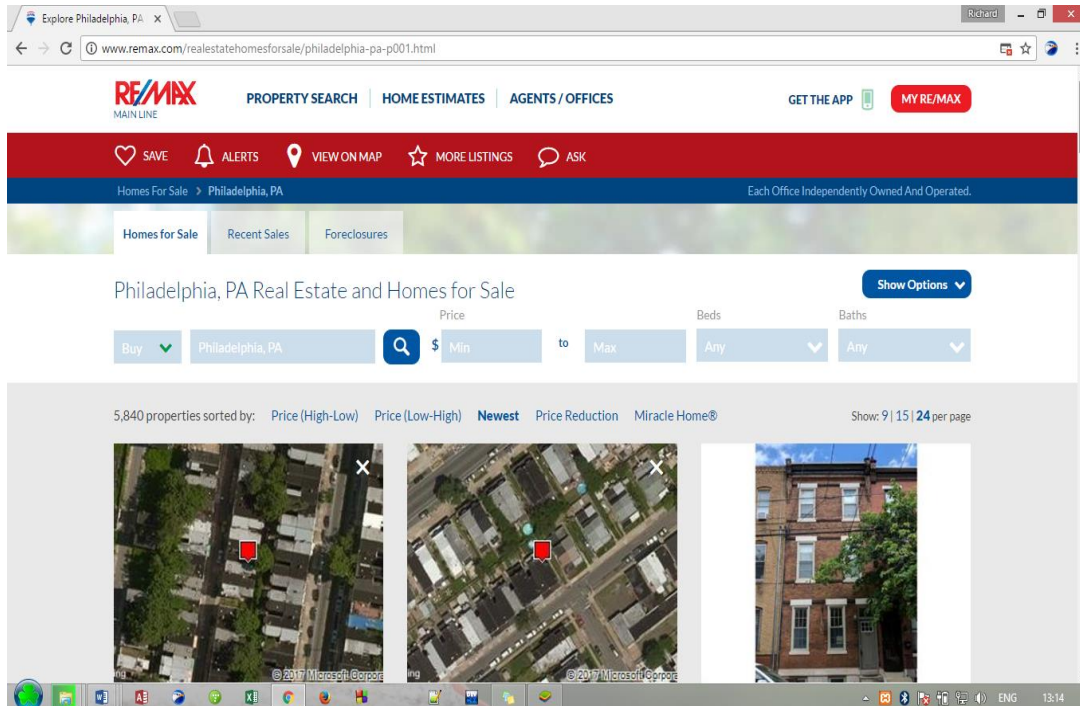
Figure 4: Screen shot of Remax website

2.3.2.1 Advantages

One can search for a house without necessarily going out there to look for the house physically

One can easily book a house even if they are not currently staying in that locality

The pictures allow the owner to see the state of the house before they can make up their mind whether to make the move or not.

The price estimates makes it easy for the client to search for the house within their price range and to avoid disappointments and embarrassments when you find that you can't afford after you have booked.
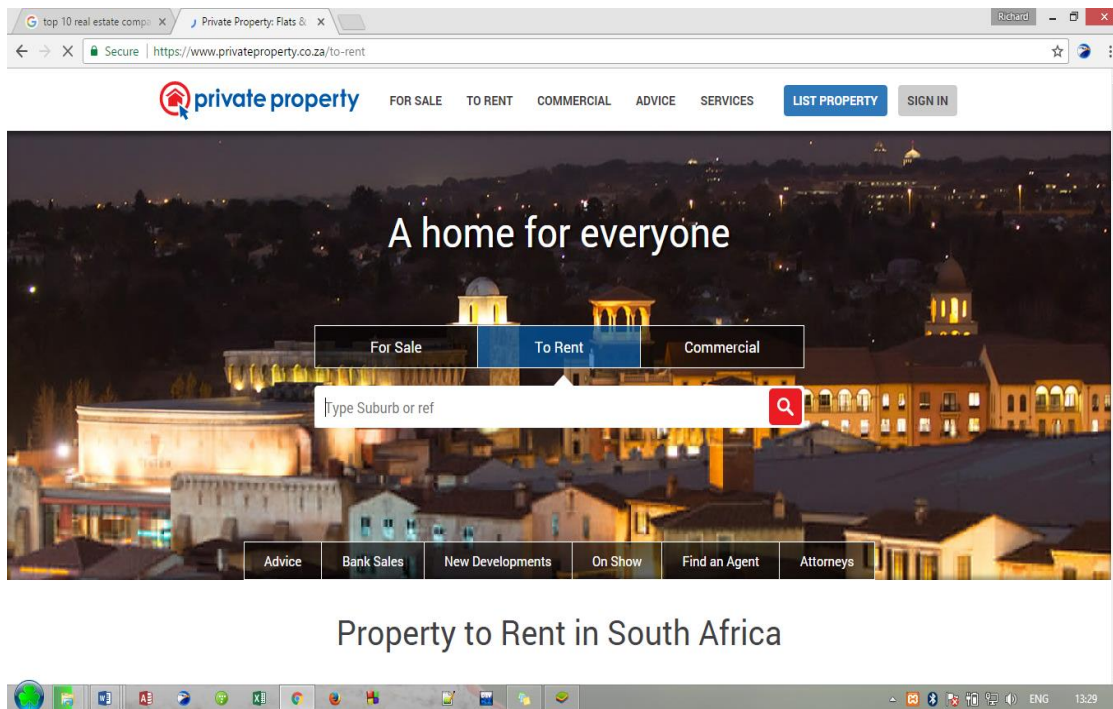
2.3.3 Private property

This a system working in South Africa, owned by one of the state property management firms called private state agency. They employ the online system. The client signs up to the website, searches for the houses by keying in the location they need the house in and then make decisions and later contact the agents.

This system is almost identical to the systems in the USA except that it mostly focusses on the rentals unlike the remax and century21 in the US which focusses on the sale of their property.

This system also allows for one to look for a house in there desired area within south Africa irrespective of how far they are from the house they need.

It provides pictures and details of all the houses available for occupation. Also deals with the sale of the houses to those interested in buying.

It is both helpful to the tenants and the landlords alike.

Figure 5: Screen shot of Private property

2.6 Proposed system (House Management system)

The proposed system will capitalize on the strengths of the existing systems and also try to solve the challenges that are still not addressed by the systems in place. The researcher would want to incorporate various strengths and add some functionality to what exists and come up with a system with sufficient solution to the problems people face in the housing sector.

The system will do away with the agents. This will not only save the landlords from the extra charges they incur on the agents, but will also make the house rates to be fair for tenants and this will increase the number of people who will want to occupy their houses. This will be a double gain in the side of the landlord because more people who shy away from renting due to high rates will be attracted. On the other hand it will be a relief for the tenants who were paying high rates under the agents.

The system will include the booking capabilities, pictures of the premises, availability checks which are some of the features in the Sheda system examined in section 2.2.2 above. These features will be used to come up with a system where tenants can view the available houses, see their pictures, and make booking. Of course it will also do away with the use of residential managers. The system will make sure that the landlords deal with the tenants directly without middlemen.

It will also use the feature where a customer can check the price range in the Sheda system to allow customers check for the houses within their price range. But it will be different in that it will allow anybody to sign up irrespective of whether you are a government employee, in a formal employment or in the jua kali sector.

The system will also use the sign up capabilities in the National Housing Corporation system to keep the record of the new users. But the users don't have to be registered as members, their details will only be kept to allow them to sign with their credentials the net time they visit the website and want to contact the owner.

The proposed system will be computer based and this will make it easy for the landlords to reach their clients without any hassle and without the need of the agents or residential managers.

Finally the system will be modelled in such a way that it will be open to improvements as the demands will dictate in the future. At present it will be one of the up to date systems that will help the property owners have an easy task to reach their customers and also easy task for the clients to find houses in real time depending on the availability of the houses.

2.7 Conclusion

The proposed system will combine all the capabilities of some of the available systems and come up with one that incorporates them and improves on their weaknesses to come up with a whole rounded system that will not only solve the current problems, but also look at the future will optimism.

With the daily expansion in the housing sector and the increasing demand for houses, this system will make it very convenient for those investing in the real estate doing away with unnecessary expenses such as those from agents.

It will also allow the house owners to know the facts about the business they are involved in making it easy for them to make decisions based on the facts rather than the use of realtors who make not provide some information to protect their contract.

The system will also serve as a great relief for the tenants who are being manipulated by the agents and also save them the hassle of moving miles to look for a house which at the end they may not be lucky enough to find.

CHAPTER 3

3.0 METHODOLOGY

3.1 Definition

Business Dictionary defines methodology as a system of broad principle or rules from which specific methods or procedures may be derived to interpret or solve different problems within the scope of a particular discipline.

A project methodology is a model, which project managers employ for the design, planning, implementation and achievement of their project objectives. There are different project management methodologies to benefit different projects.

A software development methodology or system development methodology in software engineering is a framework that is used to structure, plan, and control the process of developing an information system.

(http://www.businessdictionary.com/definition/methodology.)

3.2 System Development

3.2.1 Prototype model

Prototyping Model is a systems development method (SDM) in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed. (http://searchcio-midmarket.techtarget.)

The users provide feedback to the developers regarding the prototype: what is correct, what needs to be modified, what is missing, what is not needed, etc. Based on the feedback, the prototype is modified to incorporate some of the suggested changes that can be done easily, and then the users and the clients are again allowed to use the system.

This cycle repeats until, in the judgment of the prototypes and analyst. Based on the feedback, the initial requirements are modified to produce that final requirements specification, which is then used to develop the production of a quality system.

The researcher proposes to employ the prototype system development model. This is because the prototype allows the developer to work on the system as well as testing of it along the way until the user requirements are achieved.

The researcher chose this method because it allows users to take an active part in the development of the system; there is improved collaboration and communication between developers and users. Unlike waterfall method where a client is not very clear of what they exactly wants from the software, this method accommodates the users in the development process and any changes that they need to be made to the system can still be made.

Unlike in the waterfall method where any changes made within the development process causes a lot of confusion, this method will not bring confusion because it accommodates user involvement in the development process.

This model will allow the users to start interacting with the system as soon as the developer starts the work of developing it. The users will be allowed to add their inputs through raising their concerns even as the work continues. This will make the users feel part of the development process and will therefore find it easy during implementation since they will have known how the system operates and this will reduce resistance in the implementation stage.

This development method can also detect an error at a previous stage and go back and rectify it unlike waterfall method where you cannot go back once a stage has been passed. If the design phase has gone wrong, things can get very complicated in the implementation phase. This is taken care of because this method does not follow a fixed process, but review is done at every stage.

Since this is a new system that is going to computer based, there are no clear requirements of how the system should work or how it would be used. The researcher therefore chose this method because it work well where there are no exact requirements from the customer. (http://www.ianswer4u.com/2011/11)

The prototype gives the user an actual feel of the system. At any stage, if the user is not satisfied with the prototype, it can be discarded and an entirely new system can be developed. Because of this, the researcher decided to use this method to allow the user get the feeling of the system and also give room for an overhaul of the system whenever the users don't feel satisfied with it.

The researcher settled on this method because the system to be developed is large and looks complicated. But prototype is known to be an attractive idea for complicated and large systems like this for which there is no manual process or existing system to help determine the requirements. Risks associated with the projects will also be reduced through the use of prototyping.

The model follows the steps as shown in the figure below;
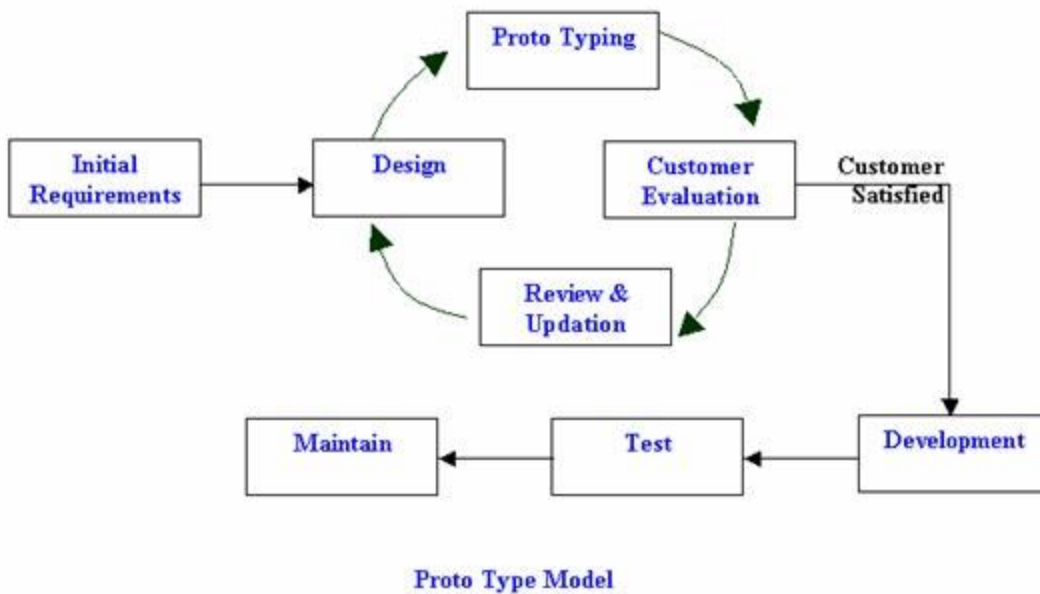
Figure 6: SDLC of Prototype model

3.2.2 Research Methodology

The researcher decided on a number of methods to collect the necessary information needed to make informed decisions about the system development. The methods used were; interviews, observation, internet, social media e.g. WhatsApp and Facebook groups. These will help the researcher to come up with a solid resolution.

3.2.3 Data collection methods

3.2.3.1 Interviews

This is the technique where the researcher books a face to face appointment with the individuals in the research area to know how they interact with the systems in place.

This method was very helpful for this research since it gave the developer the opportunity to physically meet the system's potential users and could easily read from their responses and also from their expressions the agony that they are passing through in their day to day operations due to the absence of a reliable system.

The researcher used this method by preparing a set of questions that were asked to the residents within the study area. With interviewing, it was concluded that talking to people is a good way to get information. It can be used to gather information that is not publicly available, or that is too new to be found in the literature and usually achieves a high response rate. Although often valuable, the information has questionable validity because it is highly subjective and might not be representative of the population.

So as to ensure validity of the information a gathered from the residents, the researcher also interviewed the property owners to get their side of the hassle. The researcher had the opportunity to read through the interview responses by identifying the responses that seemed enthusiastic, as opposed to those that the participant answered in only few words.

Instead of asking direct questions to the potential tenants, property management companies and owners of the houses, the researcher rephrased the questions in a manner that they could answer without feeling uncomfortable.

A sample of the interview questions looked like the ones below:

To the tenants;

What are some of the challenges you get when you want to move to a new house?

How do you know that there is a vacant house in the area where you want to move to?

If you were in the position of house owners, what would you do to ensure that those who are in search of houses find it easier to find yours?

To the property owners;

How do you get to inform the people that you have vacant houses ready for renting?

How long can you stay with unrented house and why?

What do you think can be done to solve these challenges?

3.2.3.2 Observation

For the researcher to be certain about the responses given by the interviewed audience, the researcher resolved to use the observation method to ascertain the views of the interviewees. The researcher settled on this system because it lessens the work load since the researcher could check all the required data at a sitting as compared to the current systems where the data are scattered in different books kept in the shelves making it very difficult and time consuming to navigate through all the books searching for a particular information about a client or a house.

The researcher has been part of the system by default because the researcher is a tenant and has faced all these problems when looking for a house or when a friend is looking for a house. The facts prove to be very real because this is one big headache for anyone I search of a house for the first time or moving to different house.

The researcher also took time to observe how much time it took people to find a house and also for the landlords to find the tenants. A house could take up to two months before a new tenant was found while others could be forced to stay in their current houses against their will because they could not find a house easily.

3.2.3.3 Social Media

The researcher also had time to discuss this problem in different social media platforms such as WhatsApp groups and Facebook groups. These groups' members were mainly from the study locality.

The group members overwhelmingly agreed to the fact that there was a great challenge in finding a house also finding tenants. Some even suggested if there could be an online system to solve this menace since most of the people are currently computer literate and are going digital in all that they are doing. They also alluded to the fact that many people are nowadays very busy to find time to go round looking for a house since many are tied to their places of work till very late and they can't move in the night looking for houses with also the prevailing insecurity at odd hours.

3.2.3.4 Studying online materials

The researcher checked through the internet to how different countries were doing. It was a common problem, but different countries dealt with it differently.

USA, UK, South Africa and other developed countries used an online system which made it possible for anyone anywhere to see almost all the vacant houses in their area of interest and also for the property owners to reach all potential customers irrespective of where they are so long as they are connected to the internet.

3.3 System Development Tools

The system database will be developed using MySQL.

The abbreviation SQL stands for Structured Query Language which is an open-source relational database management system.

3.3.1 Database

MySQL is a central component of the LAMP open-source web application software stack (and other "AMP" stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python". Applications that use the MySQL database include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, and Drupal. MySQL is also used in many high-profile, large-scale websites. (https://en.wikipedia.org/wiki/MySQL)

3.3.2 User Interface (UI)

Because the system is web-based, the User interface will be developed using HTML(Hypertext Markup Language) which is the standard language for making web pages and web applications on the client side. It will also use PHP (Hypertext Processor) which is used as the server-side scripting language. The PHP codes will be embedded in HTML.

3.3.3 Hosting

The system will require testing before implementation even as the developer continues with the development process. This cannot be achieved without a server that is based in the coputer. Because of these reasons, the researcher proposes the use of xampp as the local host server. XAMPP here stands for Cross-Platform (X), Apache (A), MariaDB (M), PHP (P) and Perl (P). It is free and open source cross-platform web server solution stack package developed by Apache

Friends, consisting mainly of the Apache HTTP Server, MariaDBdatabase, and interpreters for scripts written in the PHP and Perl programming languages. (https://en.wikipedia.org/wiki/XAMPP)

3.3.4 Text editor

The text editor used is Notepad++. It provides the platform which HTML and PHP codes can be written.

3.4 Users of the System

4.4.1 System Administrator

The system admin will be allowed by the system to perform the following:

- Add new users
- View and edit existing users
- Delete users
- Monitor the system

4.4.2 Landlords

The landlord will have the following privileges:

- Sign up
- Sign in
- View the status of all houses
- Upload photos of new or vacant houses
- Unload house photos of houses already booked

4.4.3 Tenants/ potential tenants

The tenants also enjoy their privileges as listed:
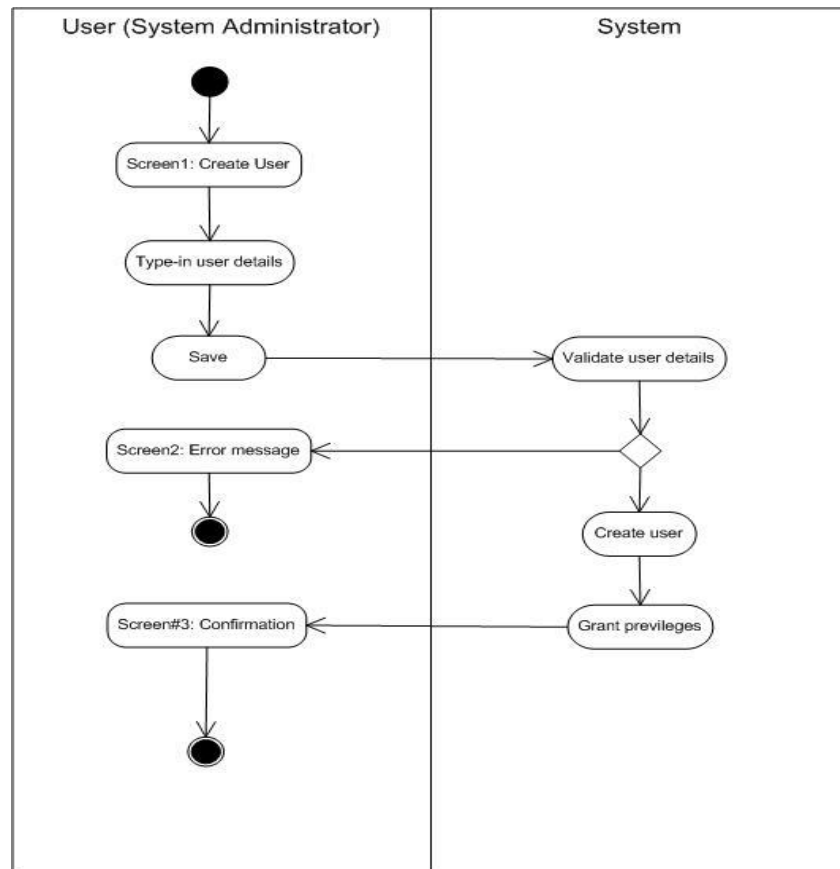
- Sign up
- Sign in
- View status of all the houses

- Book a vacant house

3.5 System Design Model

System design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements.

This describes how different users will be interacting with the system. The steps involved are:

- ➢ Sign up
- ➢ Login
- ➢ Validation
- ➢ Loading of the home page

Figure 7: Sign up and Login process (activity)

3.6 Project Deliverables

Table 1: Deliverables table

ACTIVITY	START	END
Basic requirements	07/01/2017	30/01/2017
Developing initial prototype	01/02/2017	30/02/2017
Review the prototype	01/03/2017	10/04/2017
Revise and enhance the prototype	15/05/2017	07/06/2017

CHAPTER 4

4.0 SYSTEM ANALYSIS AND DESIGN

4.1 Narrative

Systems analysis is a process of collecting factual data, understand the processes involved, identifying problems and recommending feasible suggestions for improving the system functioning.

This chapter involves studying the business processes, gathering operational data, understand the information flow, finding out bottlenecks and evolving solutions for overcoming the weaknesses of the current system so as to come up with a better system meeting the objective of this project.

Having collected necessary information about the current systems, the researcher now looks through all the data collected to understand how the system works, and try to identify problems that need to be fixed or to come up with a better system which can solve the in the current system.

As seen in the previous chapters, the current system is very tiresome, insecure, time wasting among other problems associated with it. Because of this endless list of limitations every user thinks a better system should be in place to help curb the current problem. And this is the aim of this research, to bring a better idea into play.

This online system (HMS) is designed to improve the quality and management of the properties. The system is designed and programmed to deal with day to day operations like; registration of new clients, posting ready to rent houses, remove already booked houses and already registered users can just login with their credentials and search through the website.

4.2 Project Requirements

This lists down all the requirements that must be available for the system to be put in place. They are divided into functional and non-functional requirements.

4.2.1 Hardware Requirements

Table 2: Hardware requirements

Hardware Requirements		
Processor	*RAM*	*Disk Space*
i3 CPU1.70 GHz or higher	4 GB or higher	500 GB or higher

4.2.2 Software Requirements

Table 3: Software requirements

Software Requirements	
Operating System	*Database*
Windows 7, or 8, or 10	My SQL

4.3 Characteristics of the system

Every user should have the following qualifications:

- Comfortable working with computer.
- Must have knowledge in housing or rent management field.
- Must also have basic knowledge of English.
- Users can change their passwords.
- Users can contact the agents through their numbers provided.

- The users have the freedom to visit the houses to ascertain that what is in the website is the actual thing.
- The system does not completely eliminate the option of coming physically to ask for a house.

4.3.1 Approximated budget of the new system

Table 4: Budget of proposed system

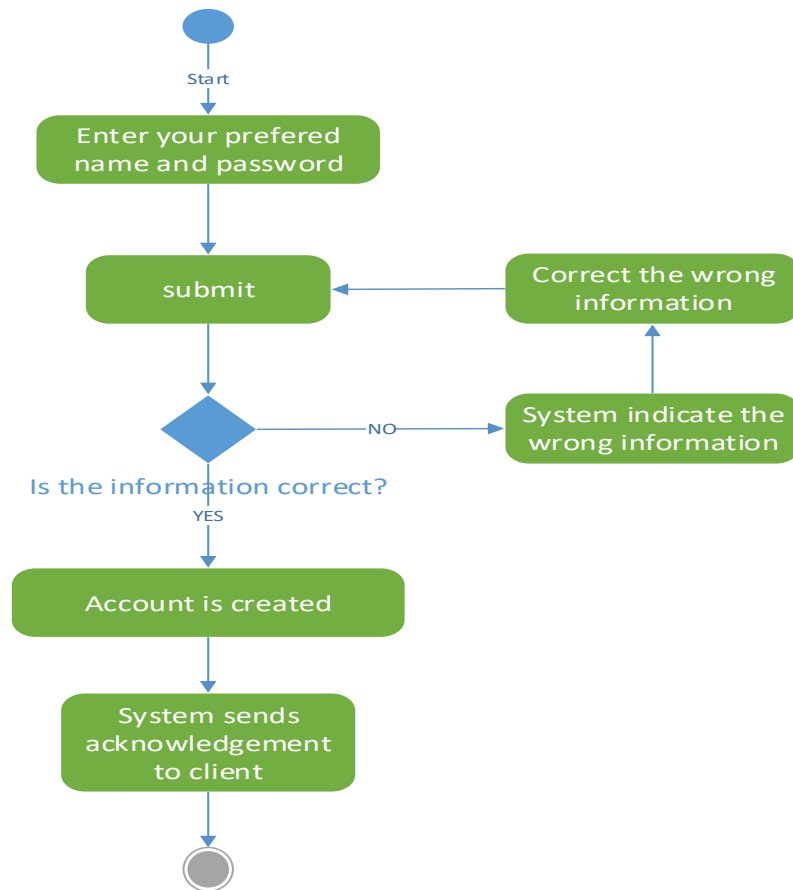| Item	Specification	Price (Ksh)	Total
Computer	1 Pc	15000/=	15000/=
Software installation	Microsoft office	4000/=	4000/=
Flash Disk (4GB)	4 pcs	1200/=	4800/=
Total		23800/=	

4.4 Use case for the users of the system
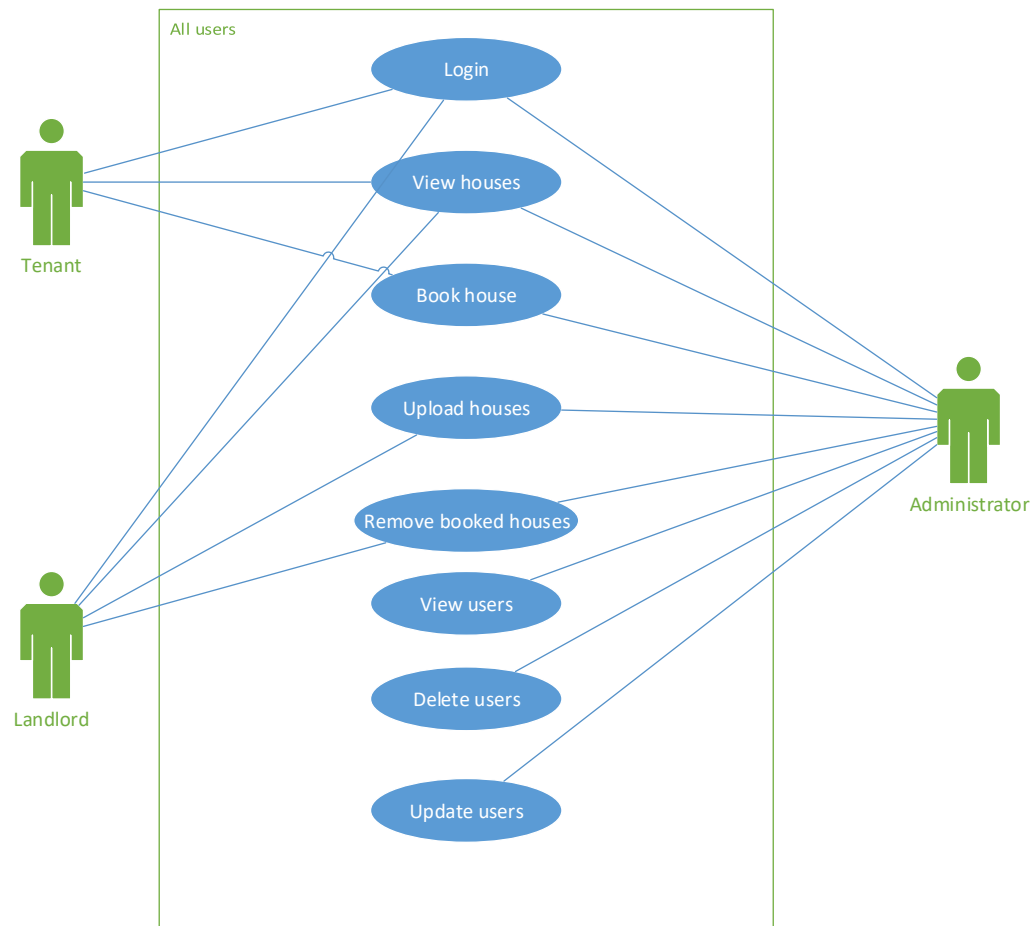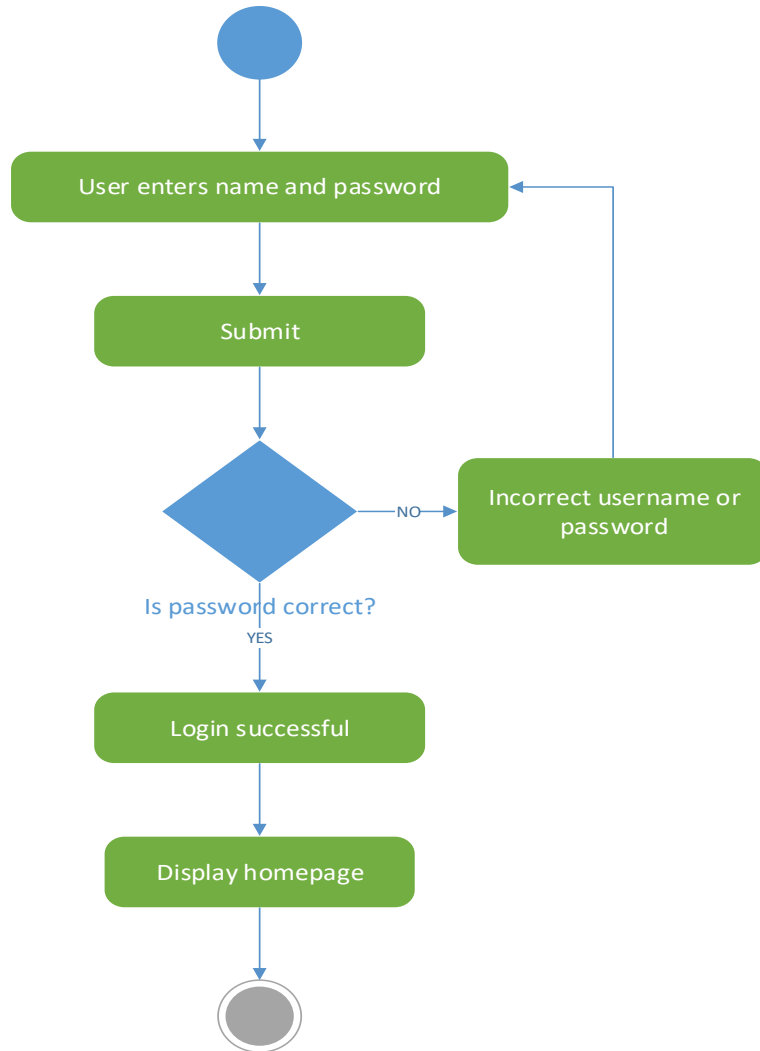

Figure 8: Use case for all users

4.5 Activity diagrams

Sign up process:

Figure 9: Sign up activity diagram
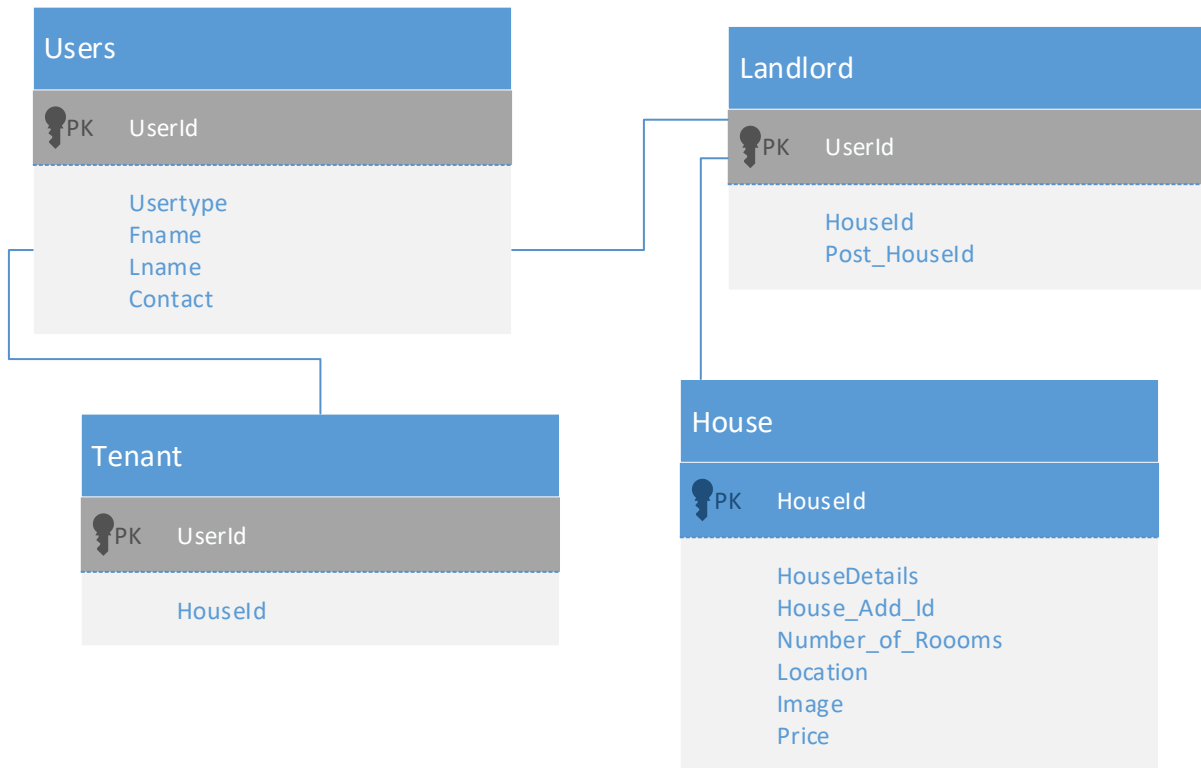
Sign in process:
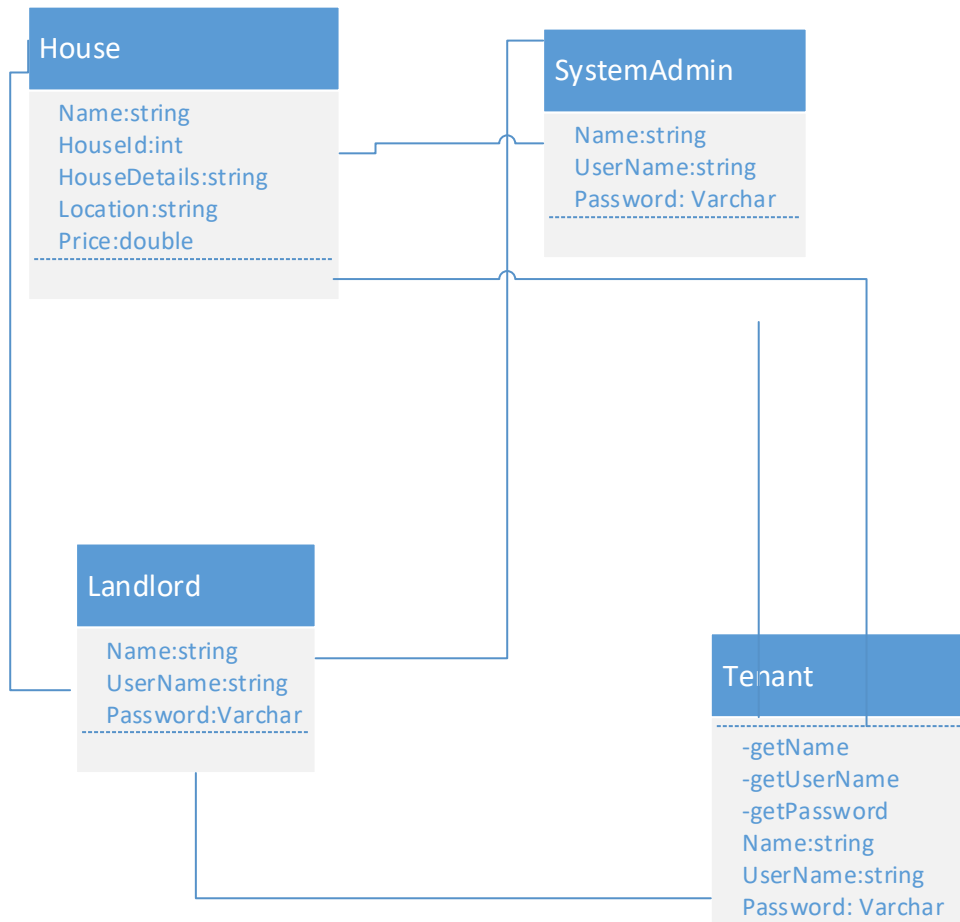

Figure 10: Sign in activity diagram

4.6 Class diagram

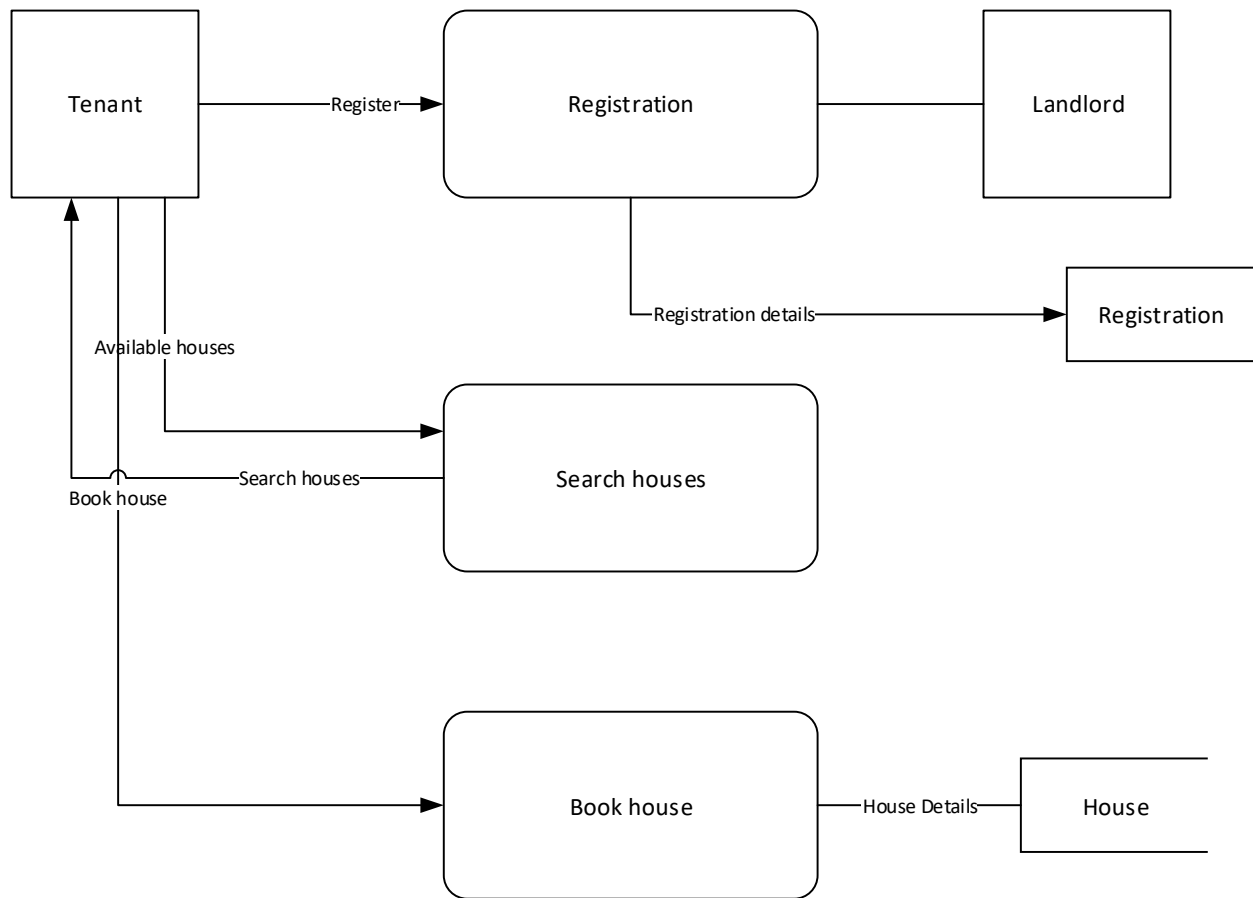Class relationship between Landlord, tenant and System administrator

Figure 11: Class diagram for all users

4.7 Entity Relationship (ER) Diagram

House

Name:string
HouseId:int
HouseDetails:string
Location:string
Price:double

SystemAdmin

Name:string
UserName:string
Password: Varchar

Landlord

Name:string
UserName:string
Password:Varchar

Tenant

-getName
-getUserName
-getPassword
Name:string
UserName:string
Password: Varchar

Figure 12: ER Diagram

4.8 Data Flow Diagram for Tenant

Figure 13: DFD (Tenant)

4.9 Conclusion

This system is an improvement of the current system as both the tenants and owners are relieved the hassle of getting houses and tenants respectively.

It is more efficient since the users can do everything at the comfort of their homes or just at the nearest cyber cafes.

This system is going to be user friendly since it will have an attractive general user interface (GUI) and easy to navigate through the pages which are represented in buttons that just need the user to click and see all that they need to see or do.

The system will solve the security issues associated with the manual search of the houses and will be reliable since it will have a backup so that in case of any unfortunate, the information can always be recovered.

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