DESIGN AND IMPLEMENTATION OF ONLINE REAL ESTATE MANAGEMENT SYSTEM

CASE STUDY: AVRACK REAL ESTATE AGENTS AND BROKERS

BY

ATINDA KEMUNTO EVANGELINE
BCS/12761/62/DF

AND

GAKUMO BENJAMIN MATHARA
BCS/11145/62/DF

A research project report submitted to the School of Computer Studies
In partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science of Kampala international university

December 2009
DECLARATION

We, Atinda Kemunto Evangeline and Gakumo Benjamin Mathara hereby declare to
the best of our knowledge that this graduation project is our original work and that it has
never been submitted to any university or any other institution.

The literature and citation from other people’s work have been dully referenced and
acknowledged in the text, footnotes and bibliography.

Signed:

........................................

Atinda Kemunto Evangeline

STUDENT

Date.................. 18TH DEC. 2009

Signed:

........................................

Gakumo Benjamin Mathara

STUDENT

Date.................. 18TH DEC. 2009
APPROVAL

This research is submitted for examination with my approval as the candidates’ University supervisor.

Signed:

Esther Wabule Makai
SUPERVISER

Date 18/12/09
DEDICATION

To our beloved parents who gave us their undivided attention and shown unlimited support and contribution.
ACKNOWLEDGEMENTS

Without the support of the following people, carrying out this project would have proved to be an impossible task:

Madam Esther Wabule our supervisor who offered immense guidance throughout the project.

Our beloved parents Mr. and Mrs. Gakumo and Mr. and Mrs. Atinda who gave us their undivided attention and shown unlimited support and contribution, both financially and morally to the success of this project. Also to our brothers and sisters and to our loved friends Sally, Moses, Habiba, and Catherine for the generous support they gave us.

We thank you all.

We would also like to thank our colleagues who gave support in the actual implementation of the project and the staff workers at Avrack Real Estate Agent and Brokers who gave us vital information for this project and last but not least to God almighty who gave us good health and willpower to do this project.

Thank you all.
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ABSTRACT

With the advent of digital age, it is inevitable for Real estate's organizations to reinforce security measures to protect data from loss, unauthorized viewing or corruption. The need to secure stored data and data on transit in a network birthed, and also to ensure data is managed and controlled with efficient measures, to avoid redundancy, inconsistency, incompatible file formats and fixed queries among other limitations of paperwork.

The gist of this project revolves around data sharing, security issues pertaining to authentication. It explores Real estate Management System that has been used for data sharing and security systems that ensure control and management in the session they use the system. This is necessary especially for landlord/landlady applications on the Avrack real estate agents and brokers' services and tenants' applications on available rental or residential premises available in the systems. The AVRACK REAL ESTATE AGENTS AND BROKERS SYSTEM has been implemented using macromedia and wamp. It's a form of property management System that has been customized for agents and brokers for their landlords/landladies.
CHAPTER I

GENERAL INTRODUCTION

1.0 INTRODUCTION

This chapter covers the introductory view of the project, it involved the introduction of the entire project, background of the project, statement of the problems that results to a project, objectives of the study that was obtained on project completion, research questions of the study, scope of the study that shows how far the project covered, significance of the study, justification of the study and conceptual framework, not forgetting the termination portion of the chapter.

1.1 BACKGROUND OF THE STUDY

Real estate is often one of the largest capital investments a company will make, and management of it is a complicated business. Unfortunately, the technology to manage multiple locations isn't comprehensive enough for growing businesses, according to expert (Shamus, 2007).

The project was dedicated to improving the services offered by property management system, in this case being the AVRACK Real Estate Agents and Brokers. This system was aiming at improving online reservation, which was viewed as part of an ongoing, long-term process involving and improving AVRACK Real Estate Agents and Broker’s resource management throughout its properties.
The projects targeted on enabling all residents to submit applications for reservation make rent payments, submit maintenance requests and view their account status online through resident payment. This reduced paper work which was so cumbersome to maintain and store.

Property management system was a system that has been used over years in most developed world countries and now it is extending to most the third world countries. Discovering of this system has brought about new and innovative way to perform property management task more efficiently regarding how reliable it was.

AVRACK Real Estate Agents and Brokers was established over two decades ago by Mr. Sighn Smith in Nairobi Kenya which is a strategic and centralized point to offer equal services to most of its branches, at the time it had few residential premises, as it developed many landlords registered their buildings because they needed good managerial and efficient services to both their client and themselves.

1.2 STATEMENT OF THE PROBLEM

Property management system was a system which had faced quite a number of problems for years now, which led to poor management and inefficient services to its clients. This made the system to lag behind other competitive systems in terms of development. When landlord work as individual, it become difficult for them to get their houses occupied as they can’t access the tenants easily; on the other hand tenants also get it hard and tiresome to trace vacant houses to rent. As a result advertisement of the houses was expensive to carry out. Rents are delayed due to late payments. There was no restriction to data access
in the current system hence important data is not securely kept and there was no backup of the records. There was also a lot of paper work due to minimal computerization this led to long queues because it was normally slow, inefficient and inaccurate. Management was poorly conducted on site which led to poor customer relationship.

1.3 OBJECTIVES OF THE STUDY

The objectives of the study were:

1.3.1 Main objectives

To create a system that serves the property management organization right, by giving it the best and most efficient managerial online reservation.

1.3.2 Specific objectives

- To establish a shared database which was able to cooperatively and economically purchase multiple licenses for database
- To emphasize on an easy access to real-time data for real-time decisions.
- To produce end product which is a web based system that enhances ability to online reservation throughout the user.
- To create a good customer relationship to its clients.
- To target on cheap advertisement of the houses.
- To create a GUI, this was easy to use.
1.4 RESEARCH QUESTIONS

1. Will the introduction of online reservation increase the number of tenant applicants in the organization?
2. Can emphasize of easy access to real-time data and decision create a real communication?
3. Will good rapport increase the number of clients in the organization?
4. Can the creation of a shared database result to the best management and maintenance of the properties in the organization?
5. Will online advertisement be cheap?
6. Will the creation of GUI ease the use of the system?

1.5 SCOPE OF THE STUDY

The study was about property management system and was conducted at AVRACK real estate agents & brokers in Nairobi, Kenya as from May 2009 to October 2009. It was based on online property management system, to enhance easy reservation of houses by clients and the landlord will be able to access their accounts with the agency.

The respondents of this system include management, employees, current tenants and also prospective applicants.
1.6 SIGNIFICANCE OF THE STUDY

- The other researchers used the findings of the study as future references for future work.
- The organization used the end product to offer the best efficient and accurate managerial, whereas uplifting its management to reach different residents who were apply for their services and this resulted to creation of employment and increased income at the same time.
- The tenants used the system for online reservation hence saving them from going to liaison office and this was an indication of efficient services to them.
- Prospective property buyers were able to buy property on sale online thus saving them time to go to the agency offices.

1.7 JUSTIFICATION OF THE STUDY

- The proposed system enabled the prospective clients to place their reservations requests online and hassle free.
- The system reduced paper work, because shared database have to replace it and offer data backups so as to reduce data loss.
- The system offers easy access to real-time data for real-time decisions, made online, to allow real-time communication.
- The system gives a good rapport to its clients.
1.8 CONCEPTUAL FRAMEWORK

The concept of this system was that of an integrated web-based system specifically for receiving reservation requests of which gives a chance to prospective tenants to reserve online for vacant rooms or apartment’s so there is no need for the tenants to go to the agency’s offices. Also it was to give information on available apartments or rooms and also it was to give information to present tenants on there accounts on rental issues. The system incorporate a decision support system of decides who was granted his or her reservation request basing on the rules and regulations of the agency and the rule of law. It has also given the management board a chance to verify the number of the accepted reservation request and given the number of occupants per house. The application has also allowed finance department of the agency to keep financial records.

On the other hand it was to allow prospective landlords to apply online to the agency’s office, in request for tenants who are looking for vacant rooms. Landlords were to get information on the status of their houses weather occupied or vacant, paid or have some balance, and also the number of houses they have.

Also it allowed prospective property buyers to view available properties for sale and also to make purchase online.

So that this concept can be realized the following was designed and implemented using Mysql server, Apache web server, PHP.

There is:

- A graphical user interface for use by the management of the agency and that of the tenants, landlord and buyers was created using PHP.
❖ A database created using Mysql.

❖ Steps of reserving of rooms or apartments online and also on how to download reservation Forms.

❖ Steps of landlord application forms for management services and how to download them.

❖ Information on available properties for sale and how to make the purchase.
The concept follows a client-server concept with an online Database. It is illustrated as below.

Figure 1.1 conceptual model

Expected input was:

1. The tenants Bio-details.
2. Payment details.
3. House details.
4. User Details.
5. The landlord Bio-details.
6. Buyer details

Expected output was:

1. On tenant web browser is reservation request to be accepted or rejected.
2. Information and details of services offered by the agency and also the available rooms and their details.
3. On the management application shows financial reports, the tenants’
details, landlords’ details, and number of houses each landlord has the
details of each apartment and also tasks reports, property available for
sale.

4. Landlord web browser shows application forms for landlord to apply
for management services.

This report is about AVRACK Real Estate Agents and Brokers property management
system that allows residents to apply for their reservation requests online. All the
information concerning the project has been detailed in the subsections: introduction,
background to the study, statement of the problem, objectives of the study, research
questions, scope, significance, justification of the study and we also highlighted the
conceptual framework of the system. The study was clear when thorough investigation in
the scope of the study was done.
CHAPTER II

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter covers what other scholars have said about the study title. This involved reading what other studies in the same field have revealed and in addition identifies a case that is implemented in reference to the revealed knowledge by previous authors. It also includes the tools that were used in the research and the system development methodology.

Much has been said by authors from developed countries. However regardless of this growing technology in developing countries like Kenya not many publications have been done. Therefore the main purpose of the researcher was to contribute to the knowledge in this topic.

In America, Lone Wolf Real Estate Technologies is the North American leader in real estate software, services and solutions that help real estate offices realize their full potential. They have been in the business since 1989 pioneering real estate technologies and are in over 5,000 offices throughout North America. "They believe that if you know more about your client's business than they do, they will look to you for guidance", says (Wallace, President, 1989).
2.1 SCOPE OF LITERATURE REVIEW

This review accommodated the understanding the area of study, the application of the web based database system, data collection methods, its design methodology and the tools involved in its development.

2.2 THEORETICAL REVIEWS

On the past the real estate industries have been using their agents who are situated in different countries. The agents have offices; whereby all the relevant information about the real estate and its facilities is available. The information is usually available in colored brochures containing all the information and all the maps. This is a very expensive way of management system putting in mind that the brochures are expensive to produce and the staff in the different offices are paid and also the premises is usually rented.

Such problems aggravates more when it comes to accessing the clients who are very far from this agents, most of them have to move from a very far to reach the agents offices and to add on that the offices are usually congested. This can be made much easier by having a common pool of information for all the customers, this is only possible by putting up a website which consists of all the activities and services offered and also an online reservation form.

"In any given year, 20% of the tenants and landlords might come up for lease renewal; there is quite a lot of paperwork to deal with on a monthly basis. Historically, all our leases have been on paper. That's pretty common in retail." (Jewett, 2001). As seen the industry faces the problem of lack of information backup since the work is done through paperwork which proves to be bulk when it comes to storage area of the files. This was solved through the creation of a centralized database thus creation of backup was possible.
and the paperwork was reduced.

2.3 APPLICATION AREA

The system was designed to provide customers with full-featured, web-based property management system which developed to handle all property management needs and to create a product that allows property owners to organize their properties, maximize profits and avoid costly management errors. Due to the competitive world property management automation has increasing grown in most organizations and companies thus the need for it in AVRACK Real Estate Agents and Brokers. Other organizations which have adopted this modern technology include; hotels, vehicle managements and tours and travel agencies.

2.4 DATA COLLECTION METHODS

2.4.1 Questionnaires

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Although they are often designed for statistical analysis of the responses, this is not always the case. The questionnaire was invented by Sir Francis Galton. Retrieved from "http://en.wikipedia.org/wiki/Questionnaire" or according to other authors;

A questionnaire is document containing standard questions asked to be answered by a large group of people so as to gather data from them. It is mainly used when a group of people are geographically scattered. (According to Jeffrey I et al, 2003)

Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data. However, such
standardized answers may frustrate users. Questionnaires are also sharply limited by the fact that respondents must be able to read the questions and respond to them. Thus, for some demographic groups conducting a survey by questionnaire may not be practical. For the lower cadre level the researcher will use questionnaires based on the time and money available. this method is cheaper and saves time and also gives honest answers.

### 2.4.2 Interviews

A structured interview (also known as a standardized interview or a researcher-administered survey) is a quantitative research method commonly employed in survey research. The aim of this approach is to ensure that each interviewee is presented with exactly the same questions in the same order. This ensures that answers can be reliably aggregated and that comparisons can be made with confidence between sample subgroups or between different survey periods.

Structured interviews are a means of collecting data for statistical surveys. In this case the data are collected by an interviewer rather than through a self-administered questionnaire. Interviewers read the questions exactly as they appear on the survey questionnaire. The choice of answers to the questions is often fixed (close-ended) in advance, though open-ended questions can also be included within a structured interview.

A structured interview also standardizes the order in which questions are asked of survey respondents, so the questions are always answered within the same context. This is important for minimizing the impact of context effects, where the answers given to a survey question can depend on the nature of preceding questions. Though context effects can never be avoided, it is often desirable to hold them constant across all respondents. (Retrieved from "http://en.wikipedia.org/wiki/Structured_interview"). Other authors also define an interview as:

Interviews are a fact finding method where the interviewer interacts with the interviewee
directly and face to face, or over the telephone. (According to Jeffrey 1 et al, 2003)

The researcher will use exploratory approach and interview in depth the key managers closely connected with the customer care and reservation management. This is the best because it’s rich in information accuracy compared to questionnaires, though it’s very expensive and time consuming.

2.4.3 Observation

It’s a method of data collection where the researcher goes to the organization and observes what happens. It gives first hand information about how activities are carried out. It’s time consuming because you have to watch and see before you understand and it may be so many times. Its one limitation is that people do not like to be observed and when observed they work consciously.

2.4.4 Document Analysis

It’s a fact finding method where you collect copies of blank and completed documents during data collection. They contain the operations that take place in the organization, information used by people in their work, input and output from the processes they carry out and also determine statistics analysis of documents in order to find out patterns of data. (Jeffrey 1 et al, 2003).

2.5 DEVELOPMENT METHODOLOGY

- System Development Life Cycle (SDLC)

The chosen software methodology for the development of the information system shall be the classical System Development Life cycle (SDLC). It is a step by step development procedure as depicted by (Ian Sommerville, 2001). This is also known as the waterfall model. It is a structured approach for managing the development of information systems (Aaronson’s, 2002). The SDLC breaks up the steps of developing software into
independent stages that can be carried out at various times. Although the stages are visually depicted as being separate, the whole process of software development is highly dependent on the other phases of the SDLC. The process of software development can be summarized as follows:

![Diagram of the system development life cycle]

**Figure 2.1 Summarized stages of the system development life cycle**

**Need Stage**

The need for a new system is determined by the inadequacies of the existing which, as have been determined by the statement of the problem stage. The needs of the system arose from failures of the current system such as data redundancy and lack of data integrity and security and consumption of storage space.

**Planning Stage**

Planning of the system occurs after identification of the value of having an efficient information system. It involves determining the requirements of both the user and the system and noting the functions the system is expected to accomplish after it has been developed.
Analysis Stage

The analysis phase serves to determine what shall the system need for its inception as well as how viable is the prospect of developing the new system. This accomplished by carrying out a cost benefit analysis of the proposed information system. This phase is aimed at ensuring the new system shall meet its objective and that of the organization considering its implementation shall benefit from the desired system. It will also determine where and when it will be run.

Design Stage

After the analysis phase comes the design of the system which covers the development of the system in depth. It is here that all aspects of the program shall be determined. Design of the structure of the database, the user interfaces, input forms, reports and the tables is done here. The values to be held by the tables are stated. This is followed by the development of the system using an appropriate software program.

Implementation and Integration Stage

Implementation of the developed software program is the sequel to the design phase. It involves transformation of planned ideas into work and putting into use of the developed system. Integration amounts to assembling the application from the set of components that were developed and tested separately. The real estate management system shall conform to the following hierarchical structure that shall oversee the collection of information that is currently done manually.
Maintenance Stage

System maintenance is the set of activities that are performed after the system is implemented. It consists of correcting and removing errors in the system (corrective maintenance), adapting the application to changes in the environment (adaptive maintenance), and improving, changing or adding features and qualities to the software (perfective maintenance).

Retirement Stage

Retirement stage involves ending the process of system development life cycle. After the system is put into operation and its operating as required.

- **Joint Application development**

  JAD centers on a structured workshop session and brings together business area people (users) IT professionals in a highly focused workshop. It takes a short time to complete a project and improves the quality of the final product by focusing on top front position of the development life cycle thus reducing errors.

- **Prototyping**

  Turban, decision support systems and intelligent systems argue that prototyping is a process of building a quick and dirty version of the systems. It aims at building a system in a series of short steps with immediate feedback from the users to ensure that development is preceding correctly longest follow by design, the analysis and planning least.

  Lack of knowledge about the application area can lead to delays in completion of the project. There is need to read and understand the application area from relevant sources.

  Design good questionnaire and interview questions can be under estimated. Ample time needs to be allocated to this activity.
2.6 DEVELOPMENT TOOLS

Database Management System (DBMS)

It is software that enables users define, create and maintain databases and also provides controlled access to database. This system will have database in which all the data captured online can be stored and later retrieved from the agency. A database is a shared collection of related data designed to meet the information needs of an organization. (According Dittman, 2001).

Operating System

An operating system (OS) is software that manages computer resources and provides programmers/users with an interface used to access those resources. An operating system processes system data and user input, and responds by allocating and managing tasks and internal system resources as a service to users and programs of the system. An operating system performs basic tasks such as controlling and allocating memory, prioritizing system requests, controlling input and output devices, facilitating computer networking and managing files.

Common contemporary desktop OSs is Linux, Mac OS X, Microsoft Windows and Solaris. Windows is most popular on desktops while Linux is most popular in server environments. Linux, Mac OS X and MS Windows all have server and personal variants. With the exception of Microsoft Windows, the designs of each of earlier mentioned OSs were inspired by, or directly inherited from, the UNIX operating system. UNIX was developed at Bell Labs beginning in the late 1960s and spawned the development of numerous free and proprietary operating systems. (Retrieved from

Browsers

A browser is an application program that provides a way to look at and interact with all the information on the WWW. Technically, a web browser is a client program that uses hypertext transfer protocol (HTTP) to make requests of web servers throughout the Internet on behalf of the browser user (CMC, 2001). The researcher will use Windows explorer 8 which is the latest browser.

Design Tools

For a user to use this application online there must be an interface which he should be working in. Will use Macromedia dream weaver to create the WebPages, this software is very easy to use and also its very flexible because you can use it create different interfaces, and also we have experience in the use of this software and that makes us to prefer using it. According to Susanna, 2004, PHP is a loosely coupled programming language gives the programmer the power to manipulate the system.

Hardware

Hardware here we will classify it as a functional specification that the computers using the new system will require.

<table>
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<th>Specification</th>
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<td>Hard disk</td>
<td>200GB</td>
</tr>
<tr>
<td>Processor</td>
<td>3.8 GHZ</td>
</tr>
<tr>
<td>RAM (memory)</td>
<td>1 GB</td>
</tr>
<tr>
<td>Monitors</td>
<td>17” TFT</td>
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</tbody>
</table>
In general therefore, the ultimate objective in this chapter was to come up with the right methodology, design techniques and development tools with the help from various literature books and finally come up with an efficient and effective system. This could be with the help of the literature review introduction, scope, theoretical review, data collection methods, application area, development methodology and development tools.
CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter gives the details of the project design, methods, instruments, data collection and analysis and presentation, development tools, operating systems, feasibility analysis, project plan and schedule and risk assessment. It mentions the project limitations and was conducted at Avrack Real Estate Agents and Brokers in Nairobi.

3.2 SYSTEM DESIGN

The system was designed using the following tools:

In the database design, MySQL (database management), PHP for windows was used to design the tables, forms and relationships between the tables and the creation of reports.

3.3 ORGANIZATION UNIT TO BE STUDIED

Avrack has different units; we have the maintenance, finance and management departments. For them to be well efficient there must tenants and landlord to attend to and this can only be possible if the real estate management system is efficient. The offices are organized in three parts; the top managers, operation managers and the staff (receptionists, the welcome people, agents...)

3.4 STUDY POPULATION

A number of stakeholders were approached and their systems studied to give an insight of how each sub-system functions to come up with a problem definition. The following departments’ staff was studied sales, marketing, finance and management, others to be studied includes current and prospective tenants, landlords and also property buyers.

3.5 SAMPLE SIZE

A sample of the population to be studied was the following: marketing 10, sales 8, finance 5, management 5, current tenants 20, prospective tenants 10, current landlord 10, prospective landlords 5 and property buyers 4.

3.6 RESEARCH INSTRUMENTS

This method was very useful especially where the required information was not easily obtained due to restrictions imposed on the obtaining of such information that was relevant to this research.

The following fact-finding methods were used:

3.6.1 Observations

Observation involved visiting the offices where the information was kept and take note of what was going on and then come up with conclusion. Observation included where the researchers went and pick bits of information they required. By observing this pattern, it was possible to define from the information they picked their role and possibly come-up with an analysis that could help in developing a better system.
3.6.2 Structured interviews

This involved physical contact with direct questions posed to the people being interviewed. It proved to be useful in obtaining first-hand information on the topic being investigated and therefore identifying requirements and gathering ideas and opinions. The interviews were mainly structured type with specific questions asked. This was suitable when studying the management.

3.6.3 Document examination and analysis

Our research was also included examining and analyzing invoices, customer forms, receipts, magazines, reports and journals and also the financial statements.

This proved to be a useful fact finding technique to research the application and problem. Documents such as journals, magazines, lecture notes, reference books and the internet including user groups and bulletin boards provided good sources of relevant information.

3.6.4 Questionnaires

This method involved written questions sent to the targeted group to acquire information that may not be obtained from the above research methods. It proved to be useful as it provided ample time for the respondents to collect relevant information and send the feedback at their convenient time.

3.7 DATA COLLECTION AND PRESENTATION

The primary data was to be obtained from customers and staff of the real estate management system, in addition to direct observation of the reservation and house allocation task in process while secondary data was collected from the books filled by staff during the process of reservation, operating procedure manuals and some specific internet search.
3.8 DATA ANALYSIS AND ANALYSIS OF USER REQUIREMENTS

The data collected was to be checked, coded and edited, table were to be drawn and data entry necessary forms were to be designed and reports established.

The queries was to be formulated, all the schematic representation of the DB was to be developed before hand to allow comparison and identification.

3.9 SYSTEM DEVELOPMENT METHODOLOGY

After gathering and analyzing the information, we designed a new system that overcame the problems highlighted in the statement of the problem since the proposal was for a data based web application.

This was how the electronic form on the website looked like:

The tables

1. Tenant information table
2. House information table

<table>
<thead>
<tr>
<th>1</th>
<th>Fname</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Oname</td>
<td>Text</td>
</tr>
<tr>
<td>3</td>
<td>Sex</td>
<td>Text</td>
</tr>
<tr>
<td>4</td>
<td>tenantID</td>
<td>Auto Text</td>
</tr>
<tr>
<td>5</td>
<td>Occupation</td>
<td>Text</td>
</tr>
<tr>
<td>6</td>
<td>ArrivalDate</td>
<td>Date/Time</td>
</tr>
<tr>
<td>7</td>
<td>house type</td>
<td>Auto Text</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>houseNo</th>
<th>Auto Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>houseTvne</td>
<td>Text</td>
</tr>
<tr>
<td>3</td>
<td>StaffID</td>
<td>Text</td>
</tr>
<tr>
<td>4</td>
<td>Amt</td>
<td>Currency</td>
</tr>
<tr>
<td>5</td>
<td>housefloor</td>
<td>Number</td>
</tr>
<tr>
<td>6</td>
<td>BlockName</td>
<td>Text</td>
</tr>
</tbody>
</table>

Figure 3.1 forms
3.10 DESIGN TECHNIQUES AND DESIGN TOOLS

For the database containing all the information about the real estate management system the researcher used MySQL.

Reasons for use,

- It offered a compatible database management system.
- It provided criteria of a customized application that would meet specific needs.
- Has integral data manipulation like updating, deleting etc.
- Ease in accessing data in any way desired

We would prefer it, because it was suitable for web application performance and concurrent access as compared to Microsoft access.

**PHP**

This is a scripting language that uses a server side approach.

Basically it has two main advantageous characteristic,

- Allows you to test your codes as you work/write them out,
- Its’ compatible with MySQL,
- Its’ user friendly
- Its cautious for writing codes,

3.11 DEVELOPMENT TOOLS

3.11.1 Operating systems

**Windows Vista**

This is software that controls the execution of programs and that provides services such as resource location, scheduling, input & output tools and data management (William 2003)
Merits,

- Reliability, able to control operation of MySQL for a long time without failure.
- Compatibility, it integrates well with MYSQL & PHP which effect the operation of the mysql

3.12.2 Web browser

This refers to a program that allows a person to browse the www by navigating from site to site using http; it presents online information in a readable form.

There are many types: Mosaic (Netscape), Opera, Windows Explorer, Mozilla Firefox just to name a few.

The researcher used internet explorer 8, which was compatible with other browsers. The main reason being its platform independent, that is, it interprets data regardless of the type of computer the document was created from or being sent from and to. (Barbara et al., 2000)

3.12 INFORMATION SYSTEM PLANNING

3.12.1 System request

Before hand we had to go back to chapter one and analyze the project statement of objectives, and produce a document that emphasizes the need for the new system, its' compatibility to the future and the environment at large.

This tackled the project, what it was to do, how it was to function, its' output value via its acquiring cost.

3.12.2 Feasibility Analysis

The first stage that takes place in this methodology is the feasibility study. The main objective of the feasibility study was to establish whether the information system can
meet the specified company’s requirements. Other objectives of the feasibility study were to establish the company’s case for the information system and it enabled us, who are the developers of the system to select from a range of feasibility options. The major deliverables at this stage are current physical dataflow model, requirements catalogues and the selected feasibility option.

There are different types of feasibility analyses that we carried out. These were:

- **Technical feasibility:** This searches if the solution is technically practical, it also tends to check if the developers have the technical expertise to design and build this solution. The hardware, software and other components to be used for development of this system by use of PHP for the front end and MySQL for the database.

- **Operational feasibility:** This tends to find out if the solution fulfills the users’ requirements; it also checks if the system will fit into the operations of the company; it finds out how the solution will change the users’ work environment and how do users feel about such a solution.

- **Economic feasibility:** This checks if the solution is cost-effective.

Cost effectiveness of a project or solution takes into account costs and benefits. Thus it is called cost benefit analysis. Costs can be divided into development costs, (one-time costs to set up a system) and operating costs (ongoing costs after system has been placed in operation). Operating costs are either fixed (same or nearly the same every month, quarter, year, etc.) or variable (vary in proportion to some usage factor - i.e. production costs, hourly workers wages, supplies, etc.). Benefits can be divided into tangible benefits (those that are easily quantified - change in savings for the company after the system is implemented) and intangible benefits (those which are almost impossible to quantify -
customer goodwill, employee morale, better service, etc.).

3.12.3 Project plan and scheduling

This will underline each activity to be taken and assign each activity its time frame as stipulated by use of Gantt chart below,

![Gantt chart]

(Adopted from Capron & Johnson 2002)

Figure 3.2 Gantt chart

3.12.4 Risk assessment

This was to identify any risk that would probably occur and how much they would affect the project activities. They may include:

i. Level of corporation from the top management related to researcher's level of his works' importance)

ii. Lack of knowledge on the technological skills needed to design and implement the system.
iii. Designing and implementing the data collection methods especially questionnaires.

iv. Difficulty in managing the different SDLC,

v. Level of funds and resources available to complete the project,

Thus the researcher will take due preparation on the technical skills.

In all, this chapter should be the most intriguing part of all design phases: it has clearly shown the use of techniques and tools of designing and developing the new system for efficiency and effectiveness of the services.

It has given a glimpse to the working of the new system by showing the relation through use of designed forms reports and the standardized forms for interface interaction of the system to be.
CHAPTER FOUR

SYSTEM ANALYSIS, DESIGN AND IMPLEMENTATION

4.0 Introduction

This chapter deals with the conceptual, logical and physical design of the online property management system. It deals with the preliminary design then the detailed design. It is well described with diagrams which will facilitate the users' understanding of the new system. The purpose of this chapter is to develop a design of the system.

4.1 Systems Analysis

4.1.1 Results from Questionnaire.

![Figure 4.1 Number of respondents.](image)

Figure 4.1 Number of respondents.
From the questionare we were able to see that most of our respondents were of the favor for the creation of the new system since 5 members of the management out of 6 members, 10 members of the employee fraternity out of 13 members, 20 current tenants out of 30, 20 prospective tenants out of 25. So it was wise to develop the system because it would help every stake holder in the company.

4.1.2 Response on advertisement of properties

![Pie chart]

Figure 4.2 representation of data on response on advertisement.

Most of our respondents on the issue regarding advertisement they favored internet as the media of advertisement since it has a wide coverage of the masses. Thus the system developed catered for the need of creating a system that will be widely used via the internet.
4.2 Systems Design

According to Jeffrey (2003) [3], system can be described as a process of defining the hardware and the software architecture, components, modules and data for a system to satisfy specified requirements. The preparation of an assembly of methods, procedures or techniques united by regulated interaction to form an organized whole. In other words this chapter describes the hardware and the software which will be used to develop the system.

This phase follows the analysis phase. After the analysis phase has been completed successfully, this phase uses the information already obtained in system analysis and it produces a design specification for the new system by building its representation. It normally involves two broad stages namely; logical design or physical design. At this stage the interaction between users and the developers is key to a successful system which will meet the required information requirements determined by the system analysis.

4.3 Development Tools

4.3.1 DBMS

It is specialized computer software available from computer vendors that is used to create access, control and manage the database. The core of DBMS is often called database engine. The engine responds to specific commands to create database structures and then to create, read, update and delete records in the database.

A system analyst designs the structure of the data in terms of record, fields contained in those records. The structures are defined using DDL.

4.3.2 Web Servers

They host internet and intranet websites. They communicate with fat and thin clients by
returning top those documents (in formats such as HTML) and data (in formats such as XML). Some web servers are specifically designed to host e-commerce applications such as Netscape Commerce Server.

4.4 New Computerized System

A new computerized online property management system was developed with the capability of storing a vast piece of data/information. The main difference between the old system and new system is that data capturing and processing is computerized and that computers are used instead of papers or books. It requires less storage space, it is also much more efficient since it can generate results within minimum time and with minimal flaws.

In this section each process is explained precisely including inputs, conditions /logic outputs and data stores associated with each process. The functionality of the new system is built on the processes shown.

4.4.1 Input

Data being received or to be received by a device or by a computer program is captured into the computer system using a keyboard by just typing it. Required details about a given activity like the filling in details of a new tenant, landlord or any payment done at this stage.

4.4.2 Data Manipulation

Data manipulation and processing is in different forms for example updating and editing to make it legible to the admission of new tenant or a new landlord and users. Data is changed into information and saved awaiting retrieval for the purpose of generating financial reports and general running of the organisation.
4.4.2 Storage
Looking at storage, data is automatically stored on the hard disk. Backups are regularly created to some other external disks to avoid loss of data like backup tapes. It can be updated or edited and these changes are stored into the system. Data can also be transferred using external devices like flash disks, zip disks.

4.4.3 Output
Data processed into information is output in the form of reports generated from the database and presented to the management for evaluation for decision making. Specific data can also be output depending on the request given for example the number of tenants in a certain building.

4.5 Stages of System Design

4.5.1 Logical Design
This is concerned with the conversion of logical record structures to a data model supported by database management system identifying the entities and their matching attributes and the relationship types determining the attributes domain.

4.5.2 Physical Design
Transforms the logical design material into real computer work by designing the input/output processes and to decide how logical structure is to be physically implemented (as relations) in the target database management systems.

Under physical database design the following are to be accomplished: designing database relations for tables, designing representation of derived data, designing enterprise constraints, analyzing transactions, choosing file organizations, indexes, estimating disk space requirements, designing user views, designing security mechanism, considering the
introduction of controlled redundancy, monitoring and tune the operational system.

The following are the data stores which are the back end of the database; they are tables

Table 4.1: Account details

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data type</th>
<th>Size</th>
<th>Constraints</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment No.</td>
<td>Number</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Payment no</td>
</tr>
<tr>
<td>Account</td>
<td>Number</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Account</td>
</tr>
<tr>
<td>Lease start date</td>
<td>date</td>
<td>25</td>
<td>Null</td>
<td>yes</td>
<td>Lease start date</td>
</tr>
<tr>
<td>Lease start date</td>
<td>date</td>
<td>4</td>
<td>Null</td>
<td>Yes</td>
<td>Lease start date</td>
</tr>
<tr>
<td>Amount due</td>
<td>currency</td>
<td>30</td>
<td>Null</td>
<td>yes</td>
<td>Amount due</td>
</tr>
<tr>
<td>Date paid</td>
<td>date</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Date paid</td>
</tr>
<tr>
<td>Payment method</td>
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<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Payment method</td>
</tr>
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<td>currency</td>
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<td>Null</td>
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<td>deposit</td>
</tr>
<tr>
<td>Late charge</td>
<td>currency</td>
<td>10</td>
<td>Null</td>
<td>yes</td>
<td>Late charge</td>
</tr>
<tr>
<td>Late day</td>
<td>numeric</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>Late day</td>
</tr>
<tr>
<td>Due date</td>
<td>numeric</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>Due date</td>
</tr>
<tr>
<td>Period</td>
<td>Text</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>period</td>
</tr>
</tbody>
</table>
Table 4.2: Landlord Information

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Type</th>
<th>Size</th>
<th>Constraints</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L account</td>
<td>Numeric</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Account no</td>
</tr>
<tr>
<td>First name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>First name</td>
</tr>
<tr>
<td>Last name</td>
<td>Text</td>
<td>100</td>
<td>Null</td>
<td>Yes</td>
<td>Last name</td>
</tr>
<tr>
<td>Address</td>
<td>Numeric</td>
<td>15</td>
<td>Null</td>
<td>Yes</td>
<td>Address</td>
</tr>
<tr>
<td>Home phone</td>
<td>Numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Home phone</td>
</tr>
<tr>
<td>Work phone</td>
<td>Numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Work phone</td>
</tr>
<tr>
<td>Property name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Property name</td>
</tr>
<tr>
<td>Property location</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Property location</td>
</tr>
<tr>
<td>Date built</td>
<td>Date</td>
<td>8</td>
<td>Null</td>
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<td>Date built</td>
</tr>
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<td>10</td>
<td>Null</td>
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<td>Blocks</td>
</tr>
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<td>Numeric</td>
<td>10</td>
<td>Null</td>
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<td>Units</td>
</tr>
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<td>Null</td>
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<td>Property purpose</td>
</tr>
<tr>
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<td>Currency</td>
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<td>Null</td>
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<td>Cost price</td>
</tr>
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<td>Management charges</td>
<td>Numeric</td>
<td>10</td>
<td>Null</td>
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<td>Management charges</td>
</tr>
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<td>15</td>
<td>Null</td>
<td>Yes</td>
<td>Tax</td>
</tr>
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<td>Monthly rent</td>
<td>Numeric</td>
<td>15</td>
<td>Null</td>
<td>Yes</td>
<td>Monthly rent</td>
</tr>
<tr>
<td>Property length</td>
<td>Numeric</td>
<td>15</td>
<td>Null</td>
<td>Yes</td>
<td>Property length</td>
</tr>
<tr>
<td>Field name</td>
<td>Data Type</td>
<td>Size</td>
<td>Constraint</td>
<td>Required</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>------</td>
<td>------------</td>
<td>----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Account no</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>First choice</td>
</tr>
<tr>
<td>First name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Second choice</td>
</tr>
<tr>
<td>Last name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>numeric</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Home phone</td>
<td>numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Home phone</td>
</tr>
<tr>
<td>Work phone</td>
<td>numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Work phone</td>
</tr>
<tr>
<td>Occupation</td>
<td>Text</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Occupation</td>
</tr>
<tr>
<td>Property name</td>
<td>text</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Property name</td>
</tr>
<tr>
<td>Location</td>
<td>Text</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Location</td>
</tr>
<tr>
<td>House no</td>
<td>Varchar</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>House no</td>
</tr>
<tr>
<td>Email</td>
<td>Varchar</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Email</td>
</tr>
<tr>
<td>Nationality</td>
<td>Text</td>
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<td>Null</td>
<td>Yes</td>
<td>Nationality</td>
</tr>
<tr>
<td>Lease agreement</td>
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<td>Null</td>
<td>Yes</td>
<td>Lease agreement</td>
</tr>
</tbody>
</table>
### Table 4.4: User details

<table>
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<tr>
<th>Field name</th>
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<th>Size</th>
<th>Constraint</th>
<th>Required</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>First name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>First name</td>
</tr>
<tr>
<td>Last name</td>
<td>Text</td>
<td>15</td>
<td>Null</td>
<td>Yes</td>
<td>Last name</td>
</tr>
<tr>
<td>User name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>User name</td>
</tr>
<tr>
<td>Password</td>
<td>Varchar</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Password</td>
</tr>
<tr>
<td>Privilege</td>
<td>Numeric</td>
<td>25</td>
<td>Null</td>
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<td>privilege</td>
</tr>
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<td>Yes</td>
<td>Account no</td>
</tr>
</tbody>
</table>

### Table 4.5 Prospective tenants

<table>
<thead>
<tr>
<th>Field name</th>
<th>Data Type</th>
<th>Size</th>
<th>Constraint</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
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<td>Null</td>
<td>Yes</td>
<td>First name</td>
</tr>
<tr>
<td>Last name</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Last name</td>
</tr>
<tr>
<td>Address</td>
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<td>10</td>
<td>Null</td>
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<td>Address</td>
</tr>
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<td>Home phone</td>
<td>numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
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</tr>
<tr>
<td>Work phone</td>
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<td>Work phone</td>
</tr>
<tr>
<td>Occupation</td>
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<td>Yes</td>
<td>Expected charges</td>
</tr>
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<td>Nationality</td>
<td>Text</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>Nationality</td>
</tr>
<tr>
<td>Expected payment method</td>
<td>Text</td>
<td>25</td>
<td>Null</td>
<td>Yes</td>
<td>Expected payment method</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------</td>
<td>----</td>
<td>------</td>
<td>-----</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Bedrooms</td>
<td>Numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Bedrooms</td>
</tr>
<tr>
<td>Bathrooms</td>
<td>Numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Bathrooms</td>
</tr>
<tr>
<td>Date needed</td>
<td>Date</td>
<td>10</td>
<td>Null</td>
<td>Yes</td>
<td>Date needed</td>
</tr>
<tr>
<td>Sample picture</td>
<td>Picture</td>
<td>100</td>
<td>Null</td>
<td>Yes</td>
<td>Sample picture</td>
</tr>
<tr>
<td>Email</td>
<td>Text</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Email</td>
</tr>
<tr>
<td>No of rooms</td>
<td>Numeric</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>No of rooms</td>
</tr>
<tr>
<td>Lease agreement</td>
<td>Text</td>
<td>20</td>
<td>Null</td>
<td>Yes</td>
<td>Lease agreement</td>
</tr>
</tbody>
</table>
4.6 Data Flow Diagrams for the New System

These are Diagrams that are used to model the flow and transformation of data through a system.

Level 0 DFD summarizes the flow of data from the user’s point of view, processing done on data, storage, up to the reporting functionalities of the system.

4.6.1 Level 0

![Data Flow Diagram Level 0](image)

Figure 4.3 Data flow diagram level 0

4.6.2 Data Flow Diagram (DFD)

4.6.3 Level 1

This describes in details the flow of data right from the data entry point, processing, storage through to the reports. Its much detailed as compared to the Level 0 DFD shown above.
Figure 4.4 Data flow diagram level 1
4.7 Flow chart for the new system

Figure 4.5 flowchart

4.7 IMPLEMENTATION

4.8 SOFTWARE USED

The website was technically put up using macromedia Dreamweaver and the database management system is SQL and the engine was Wamp server.
4.8.1 Macromedia Dreamweaver

Macromedia Dreamweaver is a truly superb piece of software; it enables rapid and easy for development of web applications. It is a great step forward because it incorporates the server-side development tools plus some new features, such as built-in support for PHP and better support for standards like XML and CSS.

This was preferred because the website was dynamic and the built in support for PHP which makes it a reality to connect to the database and also retrieve the data stored in the DB.

4.8.2 Wampp Server

This is a computer program that is responsible for accepting HTTP requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which usually are web pages such as HTML documents and linked objects.

It was used because it’s an open source which is easier to get and it can also handle large amount of requests without using a lot of system resources. It also has loaded extensions which includes the SQL.

4.9 SYSTEM IMPLEMENTATION AND TESTING

Having finished the system design, the researcher went on to system testing, implementation and evaluation in which overview of the entire system was done. It combines all concepts that led to the development of the HTML code.
4.9.1 Testing the codes

The system was used experimentally to make sure that the system does not fail. To ensure that the system runs according to its specifications, special data was used for processing and the results examined.

4.9.2 Unit Testing

Unit testing is a software verification and validation method where the programmer gains confidence that individual units of source code are fit for use. A unit is the smallest testable part of an application. In procedural programming a unit may be an individual program, function, procedure, etc., while in object-oriented programming, the smallest unit is a class, which may belong to a base/super class, abstract class or derived/child class.

The goal of unit testing was to isolate each part of the program and show that the individual parts were correct. A unit test provided a strict, written contract that the piece of code must satisfy. As a result, it affords several benefits.

4.9.3 Integration testing

Integration testing (sometimes called Integration and Testing, abbreviated "I&T") is the activity of software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before system testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing.

The purpose of carrying out integration testing was to verify functional, performance and reliability requirements placed on major design items. These "design items", i.e.
assemblages (or groups of units), are exercised through their interfaces using Black box testing, success and error cases being simulated via appropriate parameter and data inputs.

4.9.4 System Testing

System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. System testing falls within the scope of black box testing, and as such, should require no knowledge of the inner design of the code or logic. System testing was performed on the entire system in the context of a Functional Requirement Specification(s) and/or a System Requirement Specification. System testing is an investigatory testing phase, where the focus was to have almost a destructive attitude and tests not only the design, but also the behavior and even the believed expectations of the system users.

4.10 USER GUIDE DOCUMENTATION

This is the instruction manual that was designed to provide information to those responsible for operating and using the new system. It was also used in user training for guidelines.

4.11 Presentation of the Website
4.11.1 Default Page:

This is the first page a user will visit. It is also known as the Home Page. It also gives brief information of Avrack Real Estate Agents and Brokers.

4.11.2 Administrators page:

This is the navigational page for the administrator of the system after login.
4.11.3 User page:

This page is used by the users of the system to navigate through the system.
4.11.4 For Sale Page:

This page is used for advertising properties for sale online.
On this page visitors to the online system view properties for rent.
4.11.6 User view Page

This page displays the users of the system details.

4.11.7 Account view Page

This page displays the account details.
4.11.8 Deposit view Page

This page displays the deposit amount.

4.11.9 Add property Page

This page shows add property form.
4.11.10 Property view Page

This page displays the properties managed by the company.

4.11.11 Prospective tenant view Page

This page shows the details of the tenant.
4.11.12 Online landlord view Page

This page will display the details of online landlord details.

4.11.13 Add tenant Page

This page will help the user to add new tenants.
This page will help prospective tenants to book houses on line.

This chapter covered analysis of the data collected about the system, design of the system which included the logical and physical design of the system showing clearly the preliminary system and the detailed system. Then it shows the implementation of the system.
CHAPTER FIVE

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.0 INTRODUCTION

This chapter covers discussion of what has been done throughout the project, also recommendations, conclusion and future works.

5.1 DISCUSSION

The aim of developing the system was to enable prospective tenants to view properties online and be able to book for rooms; also it was aimed at landlords being able to access their details online and the management being able to conduct their services online. All the aims were achieved by following the selected development process and development tools.

5.2 RECOMMENDATION

The Real estate management system is recommended for implementation and updating should be done at as the need arises since the organization experience changes in terms development and management such as availability of new rental or sale properties. Therefore this online real estate system needs modification as a unit.

MYSQL has been used thus the functionality of the whole system has been affected because languages give a lot of operational flexibility such that any other organisation can take the same system, edit it and use it for their own institution.
5.3 CONCLUSION

The system developed can be considered to have achieved most of the objectives that were set out as stated in the first chapter. The main objective was to come up with a system that will make the management of properties process in Avrack easier because the former system was done manually and wasted resources. The online system has improved the way of dealing with the tenants and landlord records because they are stored in the database where they are stored safely.

On designing the online real estate management system the following activities were done:

1) A study of the management in the Avrack Real Estate Agent and Brokers offices in Nairobi
2) Identification of the problem
3) Designing an online system to solve the problem. And
4) Implementing the online system.

Thus we can conclude that the system is reliable, productive and dependable.

5.4 FUTURE WORKS

As the developers of the real estate management system we would recommend future developers during the evolution of the system to cover some fields that were not covered in the development of the system such as inclusion of online electronic payment and use of online maps such as Google maps to direct prospective tenants to directions of their new homes.
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Internet


APPENDIX I

QUESTIONNAIRES

COMPANY QUESTIONNAIRES

Study questionnaires for the senior management, staff, tenants and landlords of
AVRACK Real Estate Agents & Brokers Nairobi, Kenya. Please fill the questionnaire
with the experience and information you have on real estate management.

(Tick in the appropriate area)

1. Respondent
   a) Management  b) staff  c) landlord  d) tenant

2. Which is your most targeted age bracket for your services?
   a) 18-25  b) 26-35  c) 36-50  d) 50-60  e) 61 and above.

3. Which class of tenants do you mostly target?
   a) Business  b) Economical  c) Both

4. Do you think the pricing of same services by your competitors affects the way the
   market consumes services?  Yes  No

5. Which is advertising media do you find favorable to pass the intended message?
   a) Television  b) Radio  c) Billboards  d) Newspapers and Magazines
   e) Internet.
6. With the creation of online real estate management system do you think it will meet the companies advertisement needs?

Yes ☐ No ☐

7. If no why?

__________________________________________________________________________
__________________________________________________________________________

8. Does your current system offer fast retrieval of information when required? And does it take time to get reports of the selling or purchasing information collections?

__________________________________________________________________________
__________________________________________________________________________

9. Generally how would you rate the current system performance in relation to data retrieval, updating, deleting and modifying of records?

a) Excellent  b) Good  c) Poor.

10. How would you rate your current real estate information keeping system and what have you done to improve them?

a) Excellent  b) Good  c) Poor
11. Do you use any technology in your current system to manage materials?

Yes ☐  No ☐

USE OF REAL ESTATE MANAGEMENT AGENCIES

12. Do you manage/look for your properties?

Yes ☐  No ☐

13. If No which management specialists do you turn to (real estate agencies)? Give the names of the agencies.

__________________________________________________________________________
__________________________________________________________________________

14. If you use agencies, how do you meet their payments?

a) Commission basis  b) Based on results

15. Which is the major conflict you experience with the use of the agencies?

a) Management oriented  b) Ethical conflicts

16. Do you think the agencies use the same ideas to meet the demands of different properties?

Yes ☐  No ☐

17. How do you as a customer perceive the services offered by AVRACK as related to those of their competitors?

a) Of quality and value  b) Affordable  c) Reliable
Sample Code

The code below is for the login page.

```php
<?php

//Check type of user
$user=$_POST["username"];  
$password=$_POST["password"];

$server="localhost";
$username="root";
$pass="";

$db="real_estate_manager";

$con=mysql_connect($server,$username,$pass) or die("the connection has failed".mysql_error());

mysql_select_db($db,$con) or die(mysql_error());

/* Performing SQL query */

$query="SELECT account_no,first_name,last_name,password,username,priviledge FROM user WHERE username='$user' AND password='$password'";
```
$result = mysql_query($query) or die("Query failed");

if (mysql_num_rows($result) == 0) {
    echo "<font color="#FF0000" size=+3>Invalid user</font>
    echo "<br><a href="/home page.php">Try Again</a>
}

while(list($user,$first_name,$last_name,$privilege,$password,$account_no) = mysql_fetch_array($result)) {
    echo "$fname $lname is a manager"
    if($privilege == "0") {
        echo "<br><b>$fname $lname is a Guest</b>
        //User cannot access any page on site
    } else if($privilege == "1") {
        echo "<br>$fname $lname is an Administrator"
        echo '<script>
            window.location="real estate management system\manager\Admin.php?username='$user.'";
            </script>
        //redirect to Admin's page
    } else if($privilege == "2") {
        echo "<br>$fname $lname is a tenant"
        echo '<script>
            window.location="tenant payment.php?username='$user.'";
            </script>
        //Redirect to tenant page
    } else {
        echo "$fname $lname is a guest"
    }
}
} else if($priviledge=="3"){
    echo "<br>$fname $sname is a manager";
    echo '<script>
    window.location="admin.php?username='.$user.'";
    </script>';

    //Redirect to tenant page
}

} else if($priviledge=="4"){
    echo "<br>$fname $sname is a Landlord";
    echo '<script>
    window.location="tenant payment.php?username='.Suser.'";
    </script>';

    //Redirect to tenant page
}

} else{
    echo "<br>$fname $sname is a Teller";
    setcookie("user",$username,time()+60*60,"/E-valuation/");
    echo '<script>
    window.location="admin.php?username='.Suser.'";
    </script>';

    //redirect to Lecturer page
    $_GET["username"]=$user;
The code below is for the landlord connection page.

```php
<?php

//picking and displaying items from the form to php page

echo "FIRST NAME ":

echo $_POST['first_name']."<br>";

echo "LAST NAME ":

echo $_POST['last_name']."<br>";

echo "ADDRESS ":

echo $_POST['address']."<br>";

echo "HOME PHONE ":

echo $_POST['home_phone']."<br>";

echo "WORK PHONE ":

echo $_POST['work_phone']."<br>";

echo "LANDLORD ACCOUNT ":

/* Closing connection */

mysql_close($con);

/****************** ********** ****************** */

?>
```

Design and Implementation of One-to-One Real Estate Management System
by Gakumo B. and Atinpak
echo $_POST['l_account'].$br$br;

echo "PROPERTY NAME: ";

echo $_POST['property_name'].$br$br;

echo "PROPERTY LOCATION: ";

echo $_POST['property_location'].$br$br;

echo "DATE BUILT: ";

echo $_POST['date_built'].$br$br;

echo "BLOCKS: ";

echo $_POST['blocks'].$br$br;

echo "UNITS: ";

echo $_POST['units'].$br$br;

echo "PROPERTY PURPOSE: ";

echo $_POST['property_purpose'].$br$br;

echo "COST PRICE: ";

echo $_POST['cost_price'].$br$br;

echo "MANAGEMENT CHARGES: ";

echo $_POST['management_charges'].$br$br;

echo "PICTURE: ";

echo $_POST['picture'].$br$br;

echo "TAX: ";

echo $_POST['tax'].$br$br;

echo "MONTHLY RENT: ";

echo $_POST['monthly_rent'].$br$br;

echo "PROPERTY LENGTH: ";

echo $_POST['property_length'].$br$br;
echo "PROPERTY HEIGHT : 
";
echo "$_POST['property_height']."<br><br>";

// getting from inputs and storing those inputs into the variables

$fname=$_POST['first_name'];

 lname=$_POST['last_name'];

 $address=$_POST['address'];

 $home_phone=$_POST['home_phone'];

 $work_phone=$_POST['work_phone'];

 $1_account=$_POST['l_account'];

 $property_name=$_POST['property_name'];

 $property_location=$_POST['property_location'];

 $date_built=$_POST['date_built'];

 $blocks=$_POST['blocks'];

 $units=$_POST['units'];

 $property_purpose=$_POST['property_purpose'];

 $cost_price=$_POST['cost_price'];

 $management_charges=$_POST['management_charges'];

 $picture=$_POST['picture'];
$tax=$_POST['tax'];

$monthly_rent=$_POST['monthly_rent'];

$property_length=$_POST['property_length'];

$property_height=$_POST['property_height'];

$property_area=$_POST['property_area'];

$property_width=$_POST['property_width'];

//connection string

$server="localhost";

$username="root";

$password="";

$database="real_estate_manager";

$connection=mysql_connect($server,$username,$password) or die("the connection has failed".mysql_error());

echo "connected";

mysql_select_db($database,$connection) or die("the database selection has failed".mysql_error());

$sql="insert into landlord(first_name,last_name,address,home_phone,work_phone,account,property_name,property_location,date_built,blocks,units,property_type,cost_price,management_charges,picture,tax,monthly_rent,property_length,property_width,property_height,property

```
values('fname', 'lname', 'address', 'home_phone', 'work_phone', 'l_account', 'property_name', 'property_location', 'date_built', 'blocks', 'units', 'property_purpose', 'cost_price', 'management_charges', 'picture', 'stax', 'monthly_rent', 'property_length', 'property_width', 'property_height', 'property_area');

mysql_query($sql) or die("the sql query has failed<br>").mysql_error();

echo "<p>DETAILS SENT SUCCESSFULLY";

// closing connection

mysql_close($con);

// this script helps in uploading images

if ($_FILES['file']['error'] > 0)
{
    echo "Return Code: ". $_FILES['file']['error'] . "<br/>";
}else
{
    if (file_exists("upload:" . $_FILES['file']['name']))
    {
        echo $_FILES['file']['name'] . " already exists.";
    }
else
{
move_uploaded_file($_FILES['file']['tmp_name'],
"upload/" . $_FILES['file']['name']);
echo "The Picture Has Been Successfully Sent";
}
?>

The code below displays landlord details.

```php
<?php
$server="localhost";
$username="root";
$password="";
$db="real_estate_manager";

$conn=mysql_connect("localhost","root","");
if(!$conn)
{
die("could not connect to database<br>").mysql_error();
}
mysql_select_db("real_estate_manager".$conn);
```
$result=mysql_query("select * from landlord");

echo "<center><b>LANDLORD DETAILS</b></center><br>

echo"<center><table border='1'>

<tr>
<th>Landlord Account</th>
<th>First Name</th>
<th>Last Name</th>
<th>Address</th>
<th>Home Phone</th>
<th>Work Phone</th>
</tr>

while($row=mysql_fetch_array($result))
{
    echo "<tr>
    echo "<td>".$row["l_account"]."</td>";
    echo"<td>".$row["first_name"]."</td>";
    echo"<td>".$row["last_name"]."</td>";
    echo"<td>".$row["address"]."</td>";
    echo"<td>".$row["home_phone"]."</td>";
    echo"<td>".$row["work_phone"]."</td>";
    echo "</tr>";
}

echo "</table></center>

mysql_close($conn);
?>
APPENDIX III

Screenshots

The screen shot below is for editing tenants account details.
Screenshot for services online registration


REAL ESTATE MANAGEMENT SYSTEM
WHERE WE MAKE YOUR DREAM HOUSE REAL

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BY GAKUMO B. AND ATINDA K.
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CREATE A LISTING

BUY YOUR DREAM

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