**REAL ESTATE INFORMATION SYSTEM**

**A Case study of KAGUNGA Estate**

**By**

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**D/BIT/15/09/2889**

**Research project submitted in partial fulfillment of the requirement for the award in Bachelor of Information Technology submitted to school/Faculty of IT&ARCHITECTURE, University of Kigali.**

**November 2017**

DECLARATION

I declare that this project entitled, “**Real Estate Management System** case study of Kagunga Estate” is my original work and has not been presented to any other Institution. No part of this research should be reproduced without the authors’ consent or that of University of Kigali. It is my own research where by references provided are cited. I thus declare this work is mine and was completed successfully under the supervision of **BATAMULIZA *Jennifer.***

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Declaration by the supervisor(s)

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Signature ………………………. Date …………………..

DEDICATION

To the Almighty God,

To my lovely parents, brothers and sisters,

To my friends and relatives,

Especially my supervisor BATAMULIZA Jennifer

This work is dedicated.

ACKNOWLEDGMENTS

First and foremost, I want to express my infinite gratitude to the Almighty God for His wonderful providence and care throughout my studies at University of Kigali.

I would like to express my deep gratitude to BATAMULIZA Jennifermy research supervisor for her patient guidance, enthusiastic encouragement and useful critiques of this research work. I would also like to thank my lecturers of University of Kigali for their advice and assistance in keeping my progress on schedule.

My grateful thanks are also extended to my parents for their support and encouragement throughout my entire study of my undergraduate level.

May God bless you all!

ABSTRACT

This is a documentation of the computerized approach to improve record keeping. The system will improve on the efficiency of such estate’s management through easy and quick access to all records. The computer system is called REIS.

REIS also provides a centralized management of kagunga estate’s data by storing it in a database system where the data is managed by the database management system and all access to the data is through the database management system providing a key to effective data processing. This also reduces redundancies, making data management more efficient.

The REIS also offers secure storage of the estate’s data by ensuring that only authorized users use the system and providing backup facilities for the data.

In summary, a real time record keeping and analysis system will realize from the study.

The following major contributions were made as a result of the study:

1. A linear regression forecasting system for any amount of data
2. An efficient record keeping system allowing data entry, update and deletion, while checking the consistency of the data.
3. A database backup facility for the estate’s data.

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CHAPTER ONE

REAL ESTATE INFORMATION SYSTEM

1. INTRODUCTION

Home is the dream of everyone finding a better house with optimal cost is both frustrating and time consuming to meet such needs of people a system called Real Estate Information System (REIS) will be developed.

Real estate information system is the essential part for a real estate, it is very important for the decision makers and managers. However, previous office management methods have many faults, it could not meet the requirements of modern society. Nowadays, more and more office software come in force, but they are short of a new methodology for tackling the difficult problems.

The aim of this project is to develop a prototype real estate. This is a basic web-based application where user can register then log in and manage their property. This website helps the process and removes the overhead documents. The availability of website makes the process more user friendly and makes it more effective. User can register post, buy, rent their property as well as know the rates of property in KAGUNGA. There are some important issues in developing the real estate web application. First, the search time should be minimum. This depends on 2 techniques. Second, the web application should give the services that both buyer and seller want. Third, the web application should have a friendly user interface.

* 1. BACKGROUND OF THE PROJECT

KAGUNGA II real estate is one of the leading real estate in GIKONDO sector. This estate is known as RUJUGIRO houses these houses are located in Kigali city GIKONDO sector KAGUNGA II cell, this estate is made of more than 100 houses and more than 80 families. The estate is now so large that more and more families are migrating to this estate. The estate currently uses the manual filing system to hold all external and internal correspondence relating to people who lives in that estate. A number of registration book information are labeled and stored in the house of the elected leader of the estate. For security purposes, the leader keeps it at home. Whenever reference is to be made in the files, one has to go through the filing system (Registration book), starting from the first entry until he or she finds what they want. This system used to work well when the estate was not much occupied and the numbers of kagunga were still small. However, with the increase in the number of families and houses, the filing system is breaking down.

To handle this problem the estate management needs to use an computer system and shift from manual system to handle this, the real estate information system that will help estate managers on decision making and help also new comers to register and search for houses and land of their needs.

* 1. STATEMENT OF THE PROBLEM

With the increase in the number of houses and families, the total workload of the staff has become so big that the estate is delegating staff to handle the ever increasing amount of paper work to record each house with the family in. There is also a legal requirement to produce detailed monthly, quarterly and annual reports. Management also needs summarized statistical data in order to have access to all the data pertinent to a decision. Inferential statistics always act as a tool to have a look at all the data of the estate in a precise, summarized form.

Clearly, the manual system is inadequate for this type of work. The file system is to be developed in response to the needs of the estate for more efficient data access. However, rather than establish a centralized store for an estate’s operational data, a decentralized approach was taken, where each delegated person should pass in every house recording every family member. This kind of system has some disadvantages.

Data is isolated making it more difficult to access, most records handled by more than one person are duplicated and the record is not secure since any time the files can be stolen or can catch fire.

The management information system makes the data to be easily accessed it act as the data librarian, it also helps in granting privilege of handling records with more than one person and also the management information system helps in reducing redundancy.

The management information system allows the back up of information means the information cannot be lost data are secured.

* 1. OBJECTIVES OF PROJECT

### 1.3.1. General Objectives

This study was mainly aimed at raising other researcher’s interest in the design of management information systems for real estates in Rwanda with a web-based application.

### 1.3.2. Specific Objectives

The system has many objectives such as:

1. To handle details for rent, owners, new comers in the estate.
2. To allow different departments of an estate to access specific information through application programs designed especially for them.
3. To handle staff’s details and their different transactions with clients
   1. RESEARCH QUESTIONS

KAGUNGA estate has got many movements of people who come to stay for long other come just for renting and at a given time they leave

* How does the estate keep records of new comers in the estate?
* How do they head of estate know that there is a new comer?
* How transactions are made with clients?
  1. SCOPE OF THE STUDY

**1.5.1.** Geographic Scope

This study will be conducted in Kigali city precisely in Gikondo sector in Kagunga real estate Rebero side.

### 1.5.2 Content scope

I expect that, I will design and implement a computer-based system that is responsible for the selling and renting of properties. It also handles inquiries from clients at Kagunga estate.

### 1.5.3 Time scope

This project has started in October 2017 and will end in November 2018

* 1. INTEREST OF THE PROJECT

The main interest of the project is to strengthen our skills to build our confidence in information technology professional and to prepare for a future profession career.

### 1.6.1. Personal Interest

The final project program fulfils part of the requirement in completing the Bachelor Degree in information technology. This project summarizes the professional activities and experiences and problem solving that I have gained during the project.

### 1.6.2. Institutional interest

This project will help the KAGUNGA estate to understand the advantage of using an information management system where this system is going to easy their monthly work of collecting records from every house and provides reports.

This project will be the property of the university and be put in their library and it will also help in motivating the University of Kigali to continue increase the efforts for their students to bring solution to the society upcoming with innovation and contribute in problem solving and the development of the country since it proves that the education of the university can make good software developers.

### 1.6.3. Public interest

In social life, many people are interested on how they can improve their knowledge of developing a computer system. This project will help in future anyone who needs all this knowledge.

* 1. LIMITATIONS OF THE PROJECT

The study work will be focused on sales department responsible for the selling and renting of properties and also handles inquiries from clients at Kagunga estate.

* 1. ORGANIZATION OF THE PROJECT

The system is subdivided into five chapters:

Chapter one gives general introduction also shows the problem statement, the objective of the project, research questions, scope of the study, interest of the project, limitations of the project and the organization of the project.

Chapter two deals with theory and literature review related to this work where we have the introduction part the definition of key terms, review of past studies, database concept, data modelling, used tools and languages, existing system and summary.

Chapter three gives research methodology and system analysis it has the introduction, data collection techniques, software engineering method, system specifications, hardware specifications, software specifications, functional requirements, context diagram, data flow diagram, entity relationship diagram, physical data model and the data dictionary.

Chapter four is the design and implementation this concerns with presentation of graphical interface of the system

Chapter five is the last one and presents conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter involves a review of previous studies in relation to the research topic of analyzing, developing and implementing a web based application of real estate management system for registering, collecting data and sending notification about new comers in the estate from computer or smart phone. Nowadays, the business is about managing the collection of records systematically which results in management of marketing, finance, production and personnel with more efficiency.

## 

## 2.1**. DEFINITION OF KEY TERMS**

**2.1.1 System**

**Kroenke David and Richard Hatch**, Management information systems. 3rd Edition. Newyork, McGraw-Hill, 1994 defines a system as a network of interrelated procedures that are joined together to perform an activity or accomplish a specific objective. They noted that, a system could be classified as being open or closed.

**2.1.2** A **closed system**

is one which automatically controls or modifies its own operation by responding to data generated by the system itself. It seldom if ever interacts with its environment to receive input or generate output. (**James C. Wertherbe**, System Analysis for Computer based Information Systems. United states of America, West Publishing Estate, 1979)

**2.1.3** **An** **open system**

is one, which does not provide for its own control or modification. It does not supervise itself so it needs to be supervised by people.

2.2. REVIEW OF PAST STUDIES

In their study of the role computer based management information systems can play in real estates in Asia, (**Vijayanand Kommaluri, Venigandla Kishore Babu**,The role computer based management information systems can play in real estates in Asia

2003) noted that, the unprecedented population growth coupled with unplanned developmental activities has led to urbanization, which lacks infrastructure facilities. Part of the problem with today’s urban structure is that it was built at a time when planning awareness was substantially different from today’s. Consequently, in trying to retrofit existing system to achieve today’s urban performance objectives, a major issue of concern today in the survival of our cities is the problem of real estate management. estate information management system is the essential part for a real estate enterprise and is very important for the decision-makers and managers.

They carried out a study on part of Hyderabad city area in developing Real Estate Management Information System (EMS). In order to pose questions in finding a home acceptable to all family at the right place at the right cost; a real estate management information system with an appropriate decision support system is necessary. Factors influencing decision-making were allocated weights and scores reflecting their importance. Once the weighting process had been completed, the data selected were combined in a GIS using a multi-criteria modeling Technique. The Multi Criteria Evaluation (MCE) technique allows map layers to be weighted to reflect their relative importance. A range of criteria that will influence the decision must be defined. The criteria can be thought as data layers for a GIS. Therefore, MCE provides a framework for exploring solutions to decision-making problems.

(Real Estate News November 1st, 2001) reported that in order to remain competitive while also addressing the needs of clients and tenants, the real estate industry is embracing a variety of technology applications ranging from management information systems, Web-based and wireless programs and building security.

” Another important factor in security technology is the need for user-friendly systems. The more complicated the system, the more likely the operator won't be able to maintain It.” says Gene Sandburg, chairman of Kastle Systems, one of the largest security technology providers in the real estate industry. (Real Estate News November 1st, 2001)

### 2.2.1 Review of real estate renting

One of the fastest growing technology applications in the real estate industry involves improving the ability of building owners, property managers, corporate real estate departments and others to manage the vast amount of documentation involved in leasing and managing both a large number of properties and a large amount of space. The overall thrust of most of the services is to get real estate information on leased or owned property into an electronic format in order to be able to administer properties, process, pay and/or collect rent.

One of the first challenges addressed by many of the latest real estate management information systems is the need for companies to be able to convert thousands of paper documents - from leases to contracts - into a secure digital form. Once in electronic or digital form, Brown says, the software program needs to be able to integrate with the estate's other accounting and management information systems, regardless of whether those systems are from SAP, PeopleSoft, Oracle or another third-party supplier. In addition, the information needs to be linked to the estate's other applications for fixed assets, maintenance and repairs.

### 2.2.2. Accessing of real estate renting

Another factor driving the rise in technology applications in the real estate industry, says Robert Cummings of SS&C Technologies, is the need to be able to handle more properties and more information with less people. Companies are recognizing that with increased activity, they need more information, faster in order to stay competitive.

In addition, he notes that, staff members are being asked to do more, especially in larger companies. “Companies want the ability to do more analysis such as a lease analysis when renegotiating for a renewal.” Cummings says that the management information systems need to be robust and be able to handle many assumptions for a variety of factors, including expense fluctuations, especially utilities. Rather than offer just today's price, they need to be able to offer a system that gives an overview of operating costs over a period of time. Everyone is nervous about utility costs.

The proliferation of information management systems for the real estate industry, however, has also raised some concerns.

2.3 **DATABASE CONCEPT**

### 2.3.1. Data

Known facts that can be recorded and have an implicit meaning or elements that can be manipulated by a computer. The term data refers to quantitative or qualitative attributes of a variable or set of variables. Observation of a set of variables. Data are often viewed as the lowest level of abstraction from which information and then Knowledge are derided.

### 2.3.2 A Database

A database is an organized collection of data. A structured set of data held in a computer, especially one that is accessible in various ways.

### 2.3.3 Database Management System

A database management system is system software for creating and managing databases.

* Better access to data
* Increase in productivity of the end user
* Effective data integration
* Improve in data security

List of some DBMS: IDMS, MySQL, Postgres, SQL Server, Oracle, UniSQL, Microsoft access, Raima database manager.

2.4 WEB SERVER

A web server is a computer system that processes requires via HTTP the basic network protocol used to distribute information on the world wide web. The term can refer to the entire system, or specifically to the software that accepts and supervises the HTTP requests.

2.5 DATA MODELLING

Data modeling is a representation of the data structures in a table for a company’s database and is very powerful expression of the company’s business requirements. This data model is the guide used by functional and technical analysts in the design implementation of a database.

### 2.5.1 Entity

The entity is a person, object, place or event for which data is collected. For example, If you Consider the information system for a business, entities would include not only customers, but the customer’s addressed and orders as well. The entity is represented by a rectangle and labeled with a singular noun.

### 2.5.2 Table

A table is a set of data element (values) that is organized using a model of vertical columns and Horizontal rows. A table has a specified number of columns, but can have any number of rows. Each row is identified by the values appearing in a particular column subset which has been identified as a candidate key.

### 2.5.3 Record

In database a record (sometimes called a row) is a group of fields within a table that are relevant to specific entity. For example, in a table called customer, contact information, a row would likely contain fields such as: ID number, name, street address, city, telephone number and so on

### 2.5.4 Fields

A space allocated for a particular item of information. A tax form, for example, contains a Number of fields: one for your name, one for your social security number, one for your income And so on, in database systems, fields are the smallest units of information you can access.

### 2.5.5 An Attribute

An attribute is a characteristic or property of an entity. The term is used in this text exactly as it is used in everyday English. For entity person, for example, the list of attributes might include such things as eye color and height. For Premiere Products, the attributes of interest for the Entity customer is such things as customer name, street, city, and so on. An attribute is also called a Field or column in many database systems.

**2.5.6** A Primary Key

Is the unique identifier for each record in a table, Is a value that can be used to identify a unique record in a table, Is a set of attributes which identifies a tuples.

**2.5.7** Foreign Key

Other key that point to the Primary Key of another table.

2.6 STRUCTURED QUERY LANGUAGE (SQL)

SQL Is a query language that allows user to specify the conditions (Instead of algorithms).

2.7 USED TOOLS AND LANGUAGES

To reach the running software application, different tools and language are used for Database Management System (DBMS), server side and client side programming languages.

### 2.7.1 **XAMPP Server**

XAMPP is a free open source application and a web server like apache HTTP Server, MySQL, FileZilla, Mercury, and Tomcat servers and written in PHP and Perl programming languages. XAMPP is easy to install on any type of OS (Windows, Linux, and Mac OS X)

### 2.7.2 **HTML**

HTML is a language for describing web pages, HTML stands for Hyper Markup Language. A markup language is a set of Markup tags. HTML uses markup tags to describe web pages. HTML markup tags are usually called HTML tags. HTML tags are keywords surrounded by Angle brackets like <html>. HTML tags normally come in pairs like <b> and </b> the first tag in a pair is the start tag; the second tag is the end tag. Start and end tags are also called opening Tags and closing tags.

**2.7.3**.PHP PHP is a general-purpose server side scripting language originally designed for web development to produce dynamic web pages. For this purpose, PHP code is embedded into the HTML source Document and interpreted by a web server with a PHP processor module which generates the web Page document.

### 2.7.4 **CSS**

CSS stands for Cascading Style Sheets. A style sheet is a numeric document which can specify All characteristics of formatting a document linked with a tag on which it is applied. Styles define how to display HTML elements.

2.8. EXISTING ESTATE MANAGEMENT

REIS is an estate information management computer software that provides the service of registering new comers the delegated person collects information from every house and enters the data into the system. Had to have updated information on time because this requires to continue passing around collecting information.

### 2.8.1. Conceptual Framework

**1. Administrator**:

* Administrator manages the whole system and all users.
* Admin has the database control.
* Admin has all rights to select, insert, update and delete of all data.
* Admin has also activated and deactivate the user and their properties.

**2. Agent/Client**:

* In the Client section user can buy or sell Property.
* This system also provides the central login facility.
* Buyer can create his profile and add property details.
* Seller can search and sell their property.

**Conceptual framework**

**Buyer**

**seller**

* **Creates account**
* **Manages account**
* **Manages account**

Figure 1 Conceptual framework diagram

### 2.8.2 Mission of Existing system

1. Collecting residents’ information
2. Registering house members
3. Provide statistic information

### 2.8.3. Vision of existing system

The vision is to keep records of all people who stays in kagunga estate to keep track of all people who enters into the estate to live or to visit.

### 2.8.4. Critical Review

**2.8.4.1 Problem of Existing System**

The present system is not dunce proof and has certain drawbacks. Being a manual system the possible limitations and loopholes in the present system is large. Some of them are:

1.Human resource The current system has too much manual work from filling a form to filing a document, delivering manifesto. This increases burden on workers but does not yield the results it should.

2.Thorny Job in current system if any modification is to be made it increases manual work and is error prone.

3.Error as the system is managed and maintained by workers’ errors are some of the possibilities.

**2.8.4.1 Solution to The Existing System**

Our proposed system give all the features provided by the traditional existing systems, but instead of working only with non-spatial database, the system also works with spatial data. The system will have the following prominent features:

1. The System Which Will allow the user to quickly and easily search a property for buy and 2. Sell. The register user can upload his property for sale or rent out.

3. The system being an online system will give accurate information regarding the property which helps to view all the stuff information directly from anywhere

2.3. SUMMARY

REIS is web-based estate management system that comes to provide collection registration and notification to users.

Agent Notification Once the user is focused in a particular property and clicks the “Confirm” button a mail type message would automatically be sent to the agent who manages the Kagunga, informing agent about the user’s name, his contact number and email address. Adding property for sale A user can add his property that he is willing to sale so that it can be viewed by other potential clients focused in similar property. For this purpose, the client is supposed to enter the address and the cost at which he is willing to sale that property. Notifying interested users Whenever a new stuff is added, then a mail type notification is automatically sent to all those clients who were interested or were searching for a near property. Thereby notifying those users about the availability of that property.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. INTRODUCTION

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

3.2 DATA COLLECTION TECHNIQUES

For the purpose of gaining vital information that will help us in better understanding different processes that is used to record families and houses joined or exist in the estate.

In addition, several other secondary data streams were consulted such as websites and press release in order to get more information from KAGUNGA estate.

**3.2.1** Documentation

This was the main method used when collecting secondary data from reports, files and official documents in EPI (Electronic Processing Interchange). It describes techniques to collect required data on research problem. All needed information about the guide management was gathered by content analysis and interview techniques. This method allows the researcher to refer to company, organization or people documents and promotional materials. Websites visited during the research played a significant function in data collection.

**3.2.2** Internet research

Internet research is the practice of using internet information, especially free information on the worldwide web, or internet-based resources (like internet discussion forum).

Internet research provide quick, immediate, and worldwide access to information, although results may be affected by unrecognized bias.

**3.2.3**  Interview

An interview is a conversation between two or more people where questions are asked by the interviewer to elicit facts or statements from the interviewee. Interviews are a standard art of qualitative research. There is information that we could not get in the documentation but that we get with the interview.

A detailed list of questions that were helpful to define the KAGUNGA estate needs, the estate’s goals are included in appendices. The interview was conducted face-to-face between the interviewer (researcher) and interviewee. This technique proved to be efficient in enlightenment, orientation and in development of this software; while analyzing the current existing system.

**3.2.4 Observation**

It has been also a tool so important in developing this research as it is in a scientific research, one cannot do anything without relying on observation as it is among the tools that help us in mastering the existing system. This technique helped us witnesses how the conductors and supervisors operate on the field. We could observe all activities done for the individual's treatment and this observation was a complement that we collected with the other techniques. The specialty of this technique justifies itself because it allowed us to note some facts that no other method could reveal.

3.3. SOFTWARE ENGINEERING METHOD

**SDLC** System Development Life Cycle is the process of developing, implementing, and retiring information systems through a multistep process from initiation, analysis, design, implementation, and maintenance to disposal. It helps in establishing a system project plan, because it gives an overall list of processes and sub-processes required for developing a system, which means that it is a combination of various activities.

Computer systems are complex and often (especially with the recent rise of service-oriented architecture) link multiple traditional systems potentially supplied by different software vendors. To manage this level of complexity, a number of SDLC models or methodologies have been created, such as waterfall, spiral; Agile software development; rapid prototyping; incremental and synchronize and stabilize.

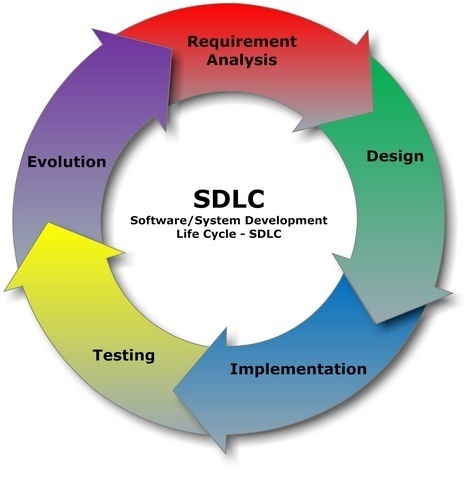


Figure 2 System development life cycle

### 3.3.1. The Waterfall Model

The Waterfall Model was first process model to be introduced. It is also referred to as a **linear-sequential life cycle model**.  It is very simple to understand and use.  In a waterfall model, each phase must be completed fully before the next phase can begin. This type of model is basically used for the project which is small and there are no uncertain requirements. At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or discard the project. In this model the testing starts only after the development is complete. In **waterfall model phases** do not overlap.

The standard phases of waterfall are shown in the diagram below:

**Requirements**

**Design**

**Implementation**

**Verification**

**Maintenance**

**PHASE 1**

**PHASE 2**

**PHASE 3**

**PHASE 4**

**PHASE 5**

Figure 3 Phases of the Waterfall model

Very less customer enter action is involved during the development of the product. Once the product is ready then only it can be demoted to the end users. Once the product is developed and if any failure occurs then the cost of fixing such issues are very high, because we need to update everywhere from document till the logic.

**3.3.1.1 Advantage of waterfall model**

Waterfall model is simple to implement and also the amount of resources required for it are minimal. In this model, the output is generated after each stage, as seen before, therefore it has high visibility. The client and [project manager](http://www.ianswer4u.com/2011/11/advantages-and-disadvantages-of.html) gets a feel that there is considerable progress. Here it is important to note that in any project psychological factors also play an important role.

Project Management, both at internal level and client's level, is easy again because of visible outputs after each phase. Deadlines can be set for the completion of each phase and evaluation can be done from time to time, to check if project is going as per milestones. This methodology is preferred in projects where quality is more important as compared to schedule or cost.

#### **3.3.1.2 Disadvantages of waterfall model are:**

* It does not allow for much reflection or revision;
* Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage;
* No working software is produced until late during the life cycle;
* High amounts of risk and uncertainty;
* Not a good model for complex and object-oriented projects;

3.4. ORGANIZATION OF THE PROJECT

The system is subdivided into five chapters:

* Chapter one gibes general introduction of the work
* Chapter two deals with theory and literature review related to this work
* Chapter three gives research methodology and system analysis
* Chapter four is the design and implementation this concerns with presentation of graphical interface of the system
* Chapter five is the last one and presents conclusion and recommendation.

3.5. SYSTEM SPECIFICATION

A System Requirements Specification (SRS) (also known as a Software Requirements Specification) is a document or set of documentation that describes the features and behavior of a system or software application. It includes a variety of elements (see below) that attempts to define the intended functionality required by the customer to satisfy their different users. In addition to specifying how the system should behave, the specification also defines at a high-level the main business processes that will be supported, what simplifying assumptions have been made and what key performance parameters will need to be met by the system

### 3.5.1 Hardware specifications

Computer hardware specifications are technical descriptions of the computer's components and capabilities.

* Processor speed, model and manufacturer. Processor speed is typically indicated in gigahertz (GHz). The higher the number, the faster the computer. 2.10 GHz is required
* Random Access Memory (RAM), This is typically indicated in gigabytes (GB). The more RAM in a computer the more it can do simultaneously. 2GB of RAM and above is required
* Hard disk (sometimes called ROM) space. This is typically indicated in gigabytes (GB) and refers generally to the amount of information (like documents, music and other data) your computer can hold.
* Other specifications might include network (ethernet or wi-fi) adapters or audio and video capabilities.

### 3.5.2 Software Specifications

**A computer:** A computer is an electronic device which is capable of receiving information (data) in a particular form and of performing a sequence of operations in accordance with a predetermined but a variable set of procedural instructions (program) to produce a result in the form of information or signals.

**Backup Restore Software** The backup restore is software that is used to backup data that reside either locally or remotely to a form of media that can then be used to restore data if necessary. Backup-restore software is implemented either on a local server or used as an enterprise solution to backup many servers. The server does not have to be stopped to do a backup, web based work with any back-up software appropriate to the operating system.

**Web server APACHE:** Apache is the most widely used web server software. Developed and maintained with apache software foundation. Apache is an open source software available for free it runs on 67% of all web servers in the world it is fast reliable and secure.

**Database:** Database normalization is the process of organizing the fields and tables of a relational database to minimize redundancy. Normalization usually involves dividing large tables into smaller (and less redundant) tables and defining relationships between them. The objective is to isolate data so that additions, deletions, and modifications of a field can be made in just one table and then propagated through the rest of the database using the defined relationships.

**MySQL** is a relational database management system (RDBMS), and ships with no GUI tools to administer MySQL databases or manage data contained within the databases. Users may use the included command line tools, or use MySQL "front-ends", desktop software and web applications that create and manage MySQL databases, build database structures, back up data, inspect status, and work with data records. The official set of MySQL front-end tools, MySQL Workbench is actively developed by Oracle, and is freely available for use.

3.6. FUNCTIONAL REQUIREMENTS

Functional requirement defines a function of a system or its component. A function is described as a set of inputs, the behavior, and outputs.

Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish

### 3.6.1. Examples of Functional Requirement Used

**Interface requirements**

Field 1(username) accepts string data entry.

Field 2(password) accepts both numeric data and string.

Screen 1 can print on-screen data to the printer.

**Business Requirements**

Clicking the delete button delete the family accounts.

All personnel using the system will be trained according to internal organization

**Regulatory/Compliance Requirements**

The system will limit access to authorized users.

**Security Requirements**

Members of the Data Entry group can enter requests but cannot approve or delete requests.

Members of the Managers group can enter or approve a request but cannot delete requests.

3.7. CONTEXT (LEVEL 0) DIAGRAM

The context diagram represents the system as a whole and its inputs and outputs from/to users. The context diagram shows interactions between the system and users for whom the system is designed for. While it is conceptually trivial, a context diagram serves to focus attention on the system boundary and can help in clarifying the precise scope of the analysis.



Figure 4 context diagram (level 0)

## 

3.8 DATA FLOW DIAGRAM (LEVEL 1)

Data Flow Diagram is a graphical representation that illustrates how data is processed by a system in showing data movement storage and transformation. The Level 1, DFD below show how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from external agent, and which to gather provide all of the functionality of the system as a whole.

### 3.7.1 Data Flow Diagram (Level 1) of my Project



Figure 5 data flow diagram level 1

3.9 ENTITY RELATIONSHIP DIAGRAM

* **Definition** An entity-relationship (ER) diagram is a specialized graphic that illustrates the interrelationships between entities in a database. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to represent relationships and ovals are used to represent attributes.
* **Entity Relationship Diagrams Concepts**

An entity is an object or concept about which you want to store information.

Entity

**Key attribute**: A key attribute is the unique, distinguishing characteristic of the entity.

**Relationships**: Relationships illustrate how two entities share information in the database structure.

Relashionship

**Cardinality:** Cardinality specifies how many instances of an entity relate to one instance of another entity.

**Ordinality:** is also closely linked to cardinality. While cardinality specifies the occurrences of a relationship, ordinarily describes the relationship as either mandatory or optional. In other words, cardinality specifies the maximum number of relationships and ordinarily specifies the absolute minimum number of relationships. Entity Relationship Diagram for Staff Shift management

### 3.8.1 Entity Relationship Diagram of my Project



Figure 6 Entity relationship Diagram

3.10. PHISICAL DATA MODEL (PDM)



Figure 7 Physical Data Model (PDM)

3.11. DATA DICTIONARY

A data dictionary is a collection of descriptions of the [data](http://searchdatamanagement.techtarget.com/definition/data) objects or items in a data model for the benefit of programmers and others who need to refer to them. A first step in analyzing a system of [object](http://searchsoa.techtarget.com/definition/object)s with which users interact is to identify each object and its relationship to other objects. This process is called data modeling and results in a picture of object relationships. After each data object or item is given a descriptive name, its relationship is described (or it becomes part of some structure that implicitly describes relationship), the type of data (such as text or image or binary value) is described, possible predefined values are listed, and a brief textual description is provided. This collection can be organized for reference into a book called a data dictionary.

**Table1: Table of The Postproperty\_sell**

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data Type | Field Size | Description |
| Property\_type | Varchar | 50 | Residential property |
| locality | Varchar | 50 | Area of user |
| Address | Varchar | 50 | Detailed address of user |
| Type\_of\_owners | Varchar | 50 | Number of bedrooms |

Table 1 Table of The Postproperty\_sell

**Table2: Table of The Postproperty\_rent**

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data Type | Field Size | Description |
| Property\_type | Integer | 10 | Unique number id |
| Locality | Varchar | 30 | The username of admin |
| Address | Varchar | 50 | Detailed address of user |
| Bedrooms | Int | 20 | No of bedrooms |
| Furnished | Varchar | 50 | Furnished or not |
| Monthly\_rent | Double | 20 | Rent per month |

Table 2 Table of The Postproperty\_rent

**Table3: Table of Postrequirement\_buy**

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data Type | Field Size | Description |
| Buyer\_id | Integer | 10 | Id of buyer |
| Bedrooms | Varchar | 20 | No of bedrooms |
| Budget\_min | Varchar | 50 | Minimum amount of land |
| Budget\_max | Varchar | 50 | Maximum amount of land |
| Login\_id | Int | 20 | User login id |

Table 3 Table of Postrequirement\_buy

Table 4: Table of Postrequirement\_sell

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data Type | Field Size | Description |
| Property\_type | Integer | 11 | Residential property |
| locality | Varchar | 30 | Area of user |
| Address | Varchar | 30 | Detailed address of user |
| Bedrooms | Int | 30 | No of bedrooms |
| Bathrooms | Int | 10 | No of bathrooms |
| Login\_id | Int | 20 | User login id |

Table 4 Table of Postrequirement\_sell

3.12 TOOLS AND LANGUAGES TO BE USED IN SOFTWARE DEVELOPMENT

**1. PHP**

**Rasmus Lerdof** define PHP as a general-purpose server side scripting language originally designed for web development to produce dynamic web pages. For this purpose, PHP code is embedded into the HTML source Document and interpreted by a web server with a PHP processor module which generates the web Page document.

**2. CSS**

According to **Hakon Wium Lie and Bert Bos** CSS stands for Cascading Style Sheets. A style sheet is a numeric document which can specify All characteristics of formatting a document linked with a tag on which it is applied. Styles define how to display HTML elements.

**3. XAMPP SERVER**

**W3schools** considers XAMPP as a free open source application and a web server like apache HTTP Server, MySQL, FileZilla, Mercury, and Tomcat servers and written in PHP and Perl programming languages. XAMPP is easy to install on any type of OS (Windows, Linux, and Mac OS X)

XAMPP developers are **Apache friends group**

**4. HTML**

HTML is a language for describing web pages, HTML stands for Hyper Text Markup Language. HTML is not a programming language it is a markup language.

HTML tags are keywords surrounded by Angle brackets like <html>. HTML tags normally come in pairs like <b> and </b> the first tag in a pair is the start tag; the second tag is the end tag. Start and end tags are also called opening Tags and closing tags.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes the contents of the project report and the RIS in general. The section first discusses about the entire system as a whole, then makes conclusions and recommendations and finally presents the areas for further study.

5.1 Designed software

The study came up with information system, designed to help a real estate manager make good use of the big amount of information at his disposal by summarizing it into descriptive and inferential statistical values. This program increases the decision making capability of a manager by maximizing the efficiency and accuracy of the data inputting process with the use of forms and linked fields, eliminating any unnecessary rekeying of data.

The designed system also offers security to the estate’s data by storing all the information in a database and backing it up each and every time changes are made to the database.

### 5.1.1 Estate information details

The system handles all the information that the estate uses and presents it to the user in a precious way whenever needed by storing it into a relational database. The system uses forms to navigate through records make the necessary changes and add/delete records from the database.

### 5.1.2 Data security

The system offers high security to the estate’s data by authenticating the users of the system, thus unauthorized users of the estate data cannot have access to its data. This is done through the use of usernames and passwords provided by the system’s administrator for a particular user to log into the system.

The system also offers safety to the estate data stored in the system by allowing users to make regular backups to the data stored in the database. This is implemented by a database backup facility where by a user is prompted to backup the data on the computer's disks which is made periodically and kept on magnetic tape or other removable medium. This essential precaution was included to cater for cases of disk crash or accidentally deleting the only copy of the database. The backup copies should be kept at a different site or in a fire safe since, though estate hardware may be insured against fire, the data on it is almost certainly neither insured nor easily replaced.

5.2 CONCLUSION AND RECOMMENDATIONS

Research and design efforts successfully produced a real estate system that increases the decision-making capability of a real estate manager by maximizing the efficiency and accuracy of the data inputting process with the use forms and statistical data analysis. The key main objectives for designing this system were:

1. Handle details for new comer family and current family states information: the system uses a relational database to handle these details, which can be manipulated easily with the wide variety of search facilities in the system.
2. Provide security to the estate’s data at a house: the RIS allows the system administrator to authenticate all the users by the use of user names and password so that unauthorized users do not get access to the estate’s data. The system also provides backup facilities to the estate’s data each and every time a user logs in.

The development and implementation of this system has also helped the researcher gain a lot of knowledge concerning systems design and implementation during the course of the study, which was one of the aims the research was undertaken.

The RIS system cannot be considered a finished application as yet. It is still at an alpha version stage. There is work to be done to get the program to a commercial level. There are, as well, points that offer opportunities for further development:

During the development of RIS, to reduce the program's complexity, and thus make it manageable by just one coder, some compromises had to be made. This affected especially the program's functionality as concerns the needs of a real estate agency. The routines that were simplified in this way should now be revised and versions with more Real estate functionalities adopted.

The errors still present in the program have to be fixed. No large program, however, is error free, but an acceptable level has to be achieved.

The system’s help facility is still too broad to offer help to users. This needs to be upgraded to a full RIS help version.

Authentication of the system should be further improved to allow the system administrator to grant data access privileges to the users so that user’s can have read or write or both privileges to the database.

Apart from these changes and others that have passed the developer’s consent, the system has to be used. That is the best way of finding errors and getting feedback from the users for new improvements. These changes do not affect the basic structure of the program.

They are expected in a system moving from alpha version to a full commercial version.

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