**FINANCE INFORMATION SYSTEM:  
FOR INSTITUTIONS( Football club) TO MANAGE AND TRACK THEIR FINANCES**

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# CHAPTER ONE : INTRODUCTION

## Background to the study

A financial information system is an organized approach to collecting and interpreting information, which is usually computerized. A well-run financial information system is essential to a business, since managers need the resulting information to make decisions about how to run the organization

Many organizations and individuals are obsessed with making sure that they are financially stable in order to satisfy all their financial needs and carry on with their daily activities. The same applies to Muranga University Football Club.

Muranga Football Club is a club that lacks knowledge and skills to manage their finances and this amounts to one of the major problems that bring conflict among members hence adversely affecting the club.

Measures have not been put to ensure that the clubs finances are managed perfectly. This is a challenge because the members may need to know how their finances are spent on a daily or monthly basis but lack the resource that will enable them achieve that. The proposed system aims on providing the resources where one can key in some information about their finances monthly and yearly then budget on the amount they want to spend. The system also gives club the option on the amount to spend.

When the club is spending too much on one activity/commodity than the others, the system warns them. After a spending period, reports are generated on how one has been spending and if the club set a target of how they want to save and spend, the system generates reports of their achievement so far.

## Problem Statement

One of the clubs main problems is tracking how finances have been used within a certain period of time, although the club has a personal finance assistant who helps them in budgeting and tracking how their assets and finances have been used, trust issues and lack of proper communication daily may lead to miscommunication amongst the club members. Another challenge could be lack of the right resources needed to manage the clubs finances, lack of the knowledge and ignorance when spending money.

## Objectives

**General objective**

To develop the MUT football club financial information system.

**Specific objectives**

1. To identify and analyze requirement specifications of the financial information system.
2. To design the financial information system .
3. To develop the clubs financial information system.
4. To test the proposed application on the clubs financial account.
5. To implement/ validate the financial information system.

## Justification

The MUT football club members find it difficult to track how their finances are being used especially when they have many activities hence not having enough time to manage their money, therefore leaving all their financial work to one of their member, treasurer becomes burdensome to him and a lot of time is lost in managing the finances and keeping tracks of their spending.

A system is needed that will not only save on time but also help the club track their financial usage in any geographical area, this system helps to reduce overspending.

**1.6 Scope**

The proposed project scope is to understand the requirements of the project, design and develop the information system That will handle the clubs finances, track usage, generate reports and statement of how the club has been spending their money, warn on any overspending and spending too much on a certain activity/service or commodity (Hendricks, 2013).

Reference

# Literature Review

## Introduction

In this chapter I will discuss on how a financial information system will be developed for the Muranga football club to keep track of their finances.

This project aims on developing the clubs expenditure and budgeting system where an individual is able to create an account that is signed up in the website. By signing up the members are able to login and view their financial status. Also, manuals are available to guide them on how to use the system. When they login they are able to choose whether they want to save or spend and the reports are generated within a specified period or budget.

Depending on the option chosen, the system will help the club budget the money accumulated on every commodity and activity they want and if any unplanned costs are to be incurred, the system will include that as an option so as to allow the individual to make some changes. If the club spends too much on one commodity, the system automatically warns them.

The system also allows the club to set a target they wish to save within a specified period of time. When the members are unable to attain their target, the system reminds them. After a specified period determined by the members, reports the club’s financial pattern are generated.

Use of graphs will be preferred as it is easier for every member of the club to understand their progress that way. The system is easy to use and user-friendly as it is web based hence easy to develop and use. The project takes a period of three months all starting from the project selection to the project demonstration.

Different challenges are expected to occur while developing the project. For example, the exact tools to be used and whether the knowledge about the available tools is enough to help one develop the system. Time is also a challenge as the duration allocated is limited and may lead to some requirements left out during the process. The main aim is to ensure that the system produces an important output that is expected by the developer and the end user.

* 1. **gathering and analysing the requirements of the system.**

A software requirement is the capability needed by the user to solve a problem or to achieve an objective. At the long run, what we want is to develop quality

software that meets the customers’ real needs on time and within the budget.

Requirement analysis is critical to the success or failure of a system or software projects.

2.2.1.gathering requirements.

It is the process of generating a list of requirements from the various stakeholders.

To ensure that the requirement gathering activity give optimal results, there methods through which the requirements will be obtained as discussed below.

One-on-one Interviews

Face to face interviews are one of the most common types of data collection methods in a qualitative research. An interview is a conversation for gathering information. A research interview involves an interviewer, who coordinates the process of the conversation and asks questions, and an interviewee, who responds to those questions.

You can use structured or unstructured interviews. Structured interviews are comparable to a questionnaire, with the same questions in the same order for each subject and with multiple choice answers. For unstructured interviews, there is no fixed set of possible answers.

Interviews are helpful because the interviewer is able to capture both verbal and non-verbal ques. Also, it helps in keeping focus since the interviewer is the one that has control over the interview and can keep the interviewee focused and on track to completion. Face to face interviews are in the moment, free from the technological distractions and the answers provided may all be truthful.

For data analysis the data maybe inaccurate and misleading. The quality of data will often depend on the ability of the interviewer and some of the interviewers may lack the required skills to successfully conduct an interview and gather data well.

Focus group

Focus group is a form of qualitative research during which a group of individuals, (usually 6 -12 peiple) is brought together in a room to engage in a discussion of a topic. Questions are asked about **their** perceptions attitudes, beliefs, opinion or ideas. They are helpful in obtaining detailed information about personal and **group** feelings, perceptions and opinions. they save time and money compared to individual interviews.

Questionnaires

A **questionnaire** is a [research](https://en.wikipedia.org/wiki/Research) instrument consisting of a series of questions for the purpose of gathering [information](https://en.wikipedia.org/wiki/Information) from respondents.

 They are cheap and 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 and compare results. 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](https://en.wikipedia.org/wiki/Demographic_group) conducting a survey by questionnaire may not be concrete.

Observation

Observation is the process of gathering knowledge through making observations of the phenomena, as and when it occurs.  It is used to evaluate the overt behaviour of individuals in controlled or uncontrolled situation. It is a method of research which deals with the external behaviour of persons in appropriate situations. The advantage of this method of data collection is that it is the simplest method to use and ones gets to capture more accurate data as compared to other methods of data collection. However this method has a limitation that it involves a lot of time as one has to wait for an event to happen to study that particular event.

2.2.2 requirement analysis.

Requirements Analysis is the process of defining the expectations of the users for an application that is to be built or modified. Requirements analysis means to analyze, document, validate and manage software or system requirements.

It includes the following.

### Flowchart technique

A flowchart depicts the sequential flow and control logic of a set of activities that are related. Flowcharts are in different formats such as linear, cross-functional, and top-down.  The flowchart can represent system interactions, data flows, etc. Flow charts are easy to understand and can be used by both the technical and non-technical team members. Flowchart technique helps in showcasing the critical attributes of a process.

**2.2.2.2 Data flow diagram**

This technique is used to visually represent systems and processes that are complex and difficult to describe in text. Data flow diagrams represent the flow of information through a process or a system. It also includes the data inputs and outputs, data stores, and the various subprocess through which the data moves. DFD describes various entities and their relationships with the help of standardized notations and symbols.  By visualizing all the elements of the system it is easier to identify any shortcomings. These shortcomings are then eliminated in a bid to create a robust solution.

### 2.2.2.3 Role Activity Diagrams (RAD)

Role-activity diagram (RAD) is a role-oriented process model that represents role-activity diagrams.  Role activity diagrams are a high-level view that captures the dynamics and role structure of an organization. Roles are used to grouping together activities into units of responsibilities. Activities are the basic parts of a role. An activity may be either carried out in isolation or it may require coordination with other activities within the role.

**2.2.2.4Gantt Charts**

Gant charts used in project planning as they provide a visual representation of tasks that are scheduled along with the timelines. The Gant charts help to know what is scheduled to be completed by which date. The start and end dates of all the tasks in the project can be seen in a single view.

### 2.2.2.5 UML (Unified Modelling Language)

UML consists of an integrated set of diagrams that are created to specify, visualize, construct and document the artifacts of a software system. UML is a useful technique while creating object-oriented software and working with the software development process.  In UML, graphical notations are used to represent the design of a software project.  UML also help in validating the architectural design of the software.

* 1. **system design**

Systems design is the process of defining the [architecture](https://en.wikipedia.org/wiki/Systems_architecture), modules, interfaces, and [data](https://en.wikipedia.org/wiki/Data) for a [system](https://en.wikipedia.org/wiki/System) to satisfy specified [requirements](https://en.wikipedia.org/wiki/Requirement). The purpose of the design process is to supplement the **system** architecture providing information and data useful and necessary for implementation of the **system** elements.

The two types of system design are;

2.3.1 Physical design

The physical design relates to the actual input and output processes of the system. This is laid down in terms of how data is inputted into a system, how it is verified/authenticated, how it is processed, and how it is displayed as output.

* + 1. logical design

The logical design of a system pertains to an abstract representation of the data flows, inputs and outputs of the system. This is often conducted via modelling, which involves a simplistic (and sometimes graphical) representation of an actual system.

* 1. **system development**
  2. Systems development is the process of defining, designing, testing and implementing a new software application or program

2.4.1 PHP

php (*Hypertext Preprocessor)* is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.

As a programming language that is commonly used on the Internet, one of the advantage PHP have, is the ability to connect to a database. This is due to the importance of database for several websites including e-commerce and many other website types. PHP has made it easy to connect to a database with a built-in module. When building a website that is driven by data or content, database will be used frequently. PHP comes in handy in the management of this type of websites and also significantly decreases how much time will be needed to create a web app. Besides this, PHP has is disadvantaged when we come to security of a system. Its open source nature makes it possible for everybody to view the PHP’s source code, it is possible for hacker to identify bugs in the code and subsequently use such bugs to attack unsuspecting users.

2.4.2 CSS

Cascading Style Sheets (CSS) is a [style sheet language](https://en.wikipedia.org/wiki/Style_sheet_language) used for describing the [presentation](https://en.wikipedia.org/wiki/Presentation_semantics) of a document written in a [markup language](https://en.wikipedia.org/wiki/Markup_language) like [HTML](https://en.wikipedia.org/wiki/HTML). CSS is a cornerstone technology of the [World Wide Web](https://en.wikipedia.org/wiki/World_Wide_Web), alongside HTML and [JavaScript](https://en.wikipedia.org/wiki/JavaScript).

CSS is designed to enable the separation of presentation and content, including [layout](https://en.wikipedia.org/wiki/Page_layout), [colors](https://en.wikipedia.org/wiki/Color), and [fonts](https://en.wikipedia.org/wiki/Typeface).[This separation can improve content](https://en.wikipedia.org/wiki/Cascading_Style_Sheets" \l "cite_note-3)[accessibility](https://en.wikipedia.org/wiki/Accessibility), provide more flexibility and control in the specification of presentation characteristics, enable multiple [web pages](https://en.wikipedia.org/wiki/Web_page) to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content. The main benefit of CSS is that style is applied consistently across a number of web pages. One command line can control several areas at one time, which is quite advantageous if there are changes that need to be made. You only need to alter one thing and the rest will follow. Because you don’t have to change each page one at a time, web designers can be very efficient in creating and changing a website with only a few lines of code.On the other hand CSS comes in different levels which can result in confusion among developers. One type of CSS should be enough rather than than having to choose which CSS level to use.

2.4.3 Html

*HTML* stands for Hypertext Markup Language. It allows the user to create and structure sections, paragraphs, headings, links, and blockquotes for web pages and applications. When working with *HTML*, we use simple code structures (tags and attributes) to mark up a website page. Some of its advantages are :it can be intergrated with other programming language like php,css and javascript.Html is supported by every browser .Beside HTML being simple to learn and to code, it requires writing a lot of code to make simple webpages.

2.4.4 Python-

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

Although programmers prefer python to other languages because its code is easy to learn and to code, its disadvantaged when it comes to mobile computing.It appear to be a weak language in mobile application development.

2.4.5 Javascript-

JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of the web pages, whose implementation allows a client-side script to interact with a user and to make dynamic pages. It is an interpreted programming language with object-oriented capabilities. The advantages of using JavaScript include: Less server interaction, immediate feedback to the visitors and has increased interactivity. Javascript on the other hand it lacks client side security. Since the JavaScript code is viewable to the user, others may use it for malicious purposes. These practices may include using the source code without authentication. Also, it is very easy to place some code into the site that compromises the security of data over the website.

2.4.6 Java-

Java is a general-purpose, high-level programming language initially designed for handheld devices and set-top boxes. Java was repurposed in 1995 to create applications on the World Wide Web. Today, Java is commonly used for creating web and mobile applications. Java is designed to be easy to use, write, compile, debug, and learn than other programming languages. Java is much simpler than C++ because Java uses automatic memory allocation and garbage collection. The problem with java is that it is : significantly slower and more memory-consuming than natively compiled languages such as C or C++.

2.4.7 my sql-

MySQL the most popular relational database management systems in the world, although it’s recently been losing supporters. Some hold that it’s [actually on the way out](http://blog.smartbear.com/open-source/5-reasons-its-time-to-ditch-mysql/), and that we’ll see it replaced by a better alternative in a matter of years. A major advantage of mysql is that its support is readily available whenever necessary .What has been disappointing mysql users is its stability issues and sometimes poor performance scaling.

* 1. **System implementation**

Systems implementation is the process of defining how the information **system** should be built (i.e., physical **system** design), ensuring that the information **system** is operational and used, ensuring that the information **system** meets quality standard (i.e., quality assurance).

### 2.5.1 Parallel.

This is where the new system is used at the same time as the old system the two systems are said to be running in parallel. Its advantage is that users can can compare the output of the old system with the output of the new system, to ensure correctness and again it reduce the risk of data loss since the known system is still learning. Parallel implementation on the other hand consumes a lot of time to enter data into two different systems and again data could be different in two different systems if there is intensive data entry.

### 2.5.2 Phased

In this type of implementation, small parts of the new system gradually replace small parts of the old system. Advantages include: Training on using the new can be completed in small parts, a failure of the new system has minimal impact because it is only one small part and issues around scale can be addressed without major impact. Beside the merits ,phased implementation also got some demerits which include: Takes more time to get the new system fully online as compared to other implementation methods,There is a possibility of data loss if part of the new system fails.

### 2.5.3 Pilot

When a one section or department within an organization uses a new system prior to wider use, the system is said to be piloted. Its advantageous in that, training can be supported by pilot group and problems can be identified and addressed without wide-spread impact to the organization. However, the limitation associated with it is that, issues of scale can cause problems. For example, the system might work well for 10 users, but not for 100 users.

### 2.5.4 Direct

When the system is ready for use, the organization selects a particular date in which to replace the old system with the new one. It is less expensive as compared to the parallel method and the transfer process is less time-consuming. However, this method of implementation may not be a good idea in the case where theres no guarantee that the new system will work.

* 1. **validation and testing**

The main purpose of validation is to ensure customers satisfaction. It is intended to ensure that the developed system meets the operational requirements of the user.on the other hand, testing aims at  evaluating the system's **compliance** with the specified requirements.

**2.6.1Alpha Testing**

Alpha testing aims at identifying all possible issues or defects before releasing it into the market or to the user. It is conducted at the developer’s site.

Alpha Testing is carried out at the end of the software development phase but before the Beta Testing. Still, minor design changes may be made as a result of such testing.

#### 2.6.2 Acceptance Testing

An [Acceptance Test](https://www.softwaretestinghelp.com/what-is-acceptance-testing/) is performed by the client and verifies whether the end to end the flow of the system is as per the business requirements or not and if it is as per the needs of the end-user. Client accepts the software only when all the features and functionalities work as expected.

It is the last phase of the testing, after which the software goes into production. This is also called User Acceptance Testing (UAT).

#### 2.6.3  Beta Testing

[Beta Testing](https://www.softwaretestinghelp.com/beta-testing/) is a formal type of Software Testing which is carried out by the customer. It is performed in **the Real Environment**before releasing the product to the market for the actual end-users.

Beta Testing is carried out to ensure that there are no major failures in the software or product and it satisfies the business requirements from an end-user perspective. Beta Testing is successful when thse customer accepts the software.

It is the final testing done before releasing an application for commercial purpose. Usually, the Beta version of the software or product released is limited to a certain number of users in a specific area.

So end-user actually uses the software and shares the feedback to the company. Company then takes necessary action before releasing the software to the worldwide.

#### 2.6.4 Black Box Testing

Internal system design is not considered in this type of testing. Tests are based on the requirements and functionality. It facilitates **testing** of high-level designs and complex applications and testers focus on software functionality.

#### 2.6.5. Functional Testing

This type of testing ignores the internal parts and focuses only on the output to check if it is as per the requirement or not. It is a Black-box type testing geared to the functional requirements of an application.

#### 2.6.6 Graphical User Interface (GUI) Testing

The objective of this GUI Testing is to validate the GUI as per the business requirement. The expected GUI of the application is mentioned in the Detailed Design Document and GUI mockup screens.

The GUI Testing includes the size of the buttons and input field present on the screen, alignment of all text, tables, and content in the tables.

It also validates the menu of the application, after selecting different menu and menu items, it validates that the page does not fluctuate and the alignment remains same after hovering the mouse on the menu or sub-menu.

#### 2.6.7 Back-end Testing

Whenever an input or data is entered on front-end application, it stores in the database and the testing of such database is known as Database Testing or Backend Testing.

There are different databases like SQL Server, MySQL, and Oracle, etc. Database Testing involves testing of table structure, schema, stored procedure, data structure and so on.

In Back-end Testing GUI is not involved, testers are directly connected to the database with proper access and testers can easily verify data by running a few queries on the database.

There can be issues identified like data loss, deadlock, data corruption etc during this back-end testing and these issues are critical to fixing before the system goes live into the production environment.

**2.7 related works**

**CHAPTER 3**

**RESEARCH METHODOLOGY**

3.0 Introduction

This chapter will include: development model, system methodology, data collection methods, development tools and the technologies to be used.

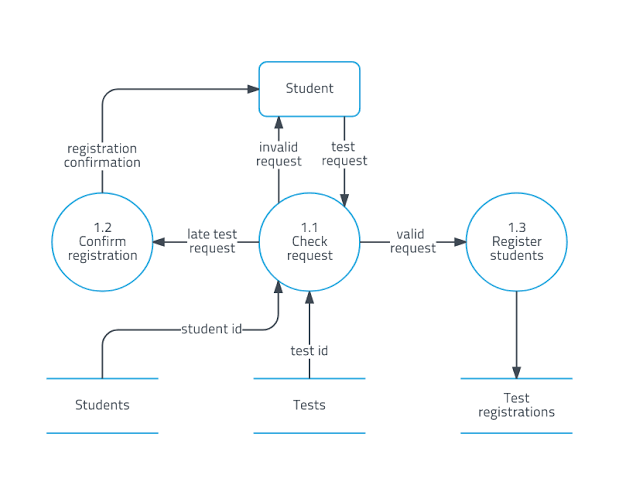
**3.1.1 Entity Relationship Diagram**

**ERD**-entity relationship diagram, the above tools shows the relationship set stored in the database, the above tool will be used to connect entities and show how the entities found in the database are related.

**3.1.2 The Data Flow Diagram.**

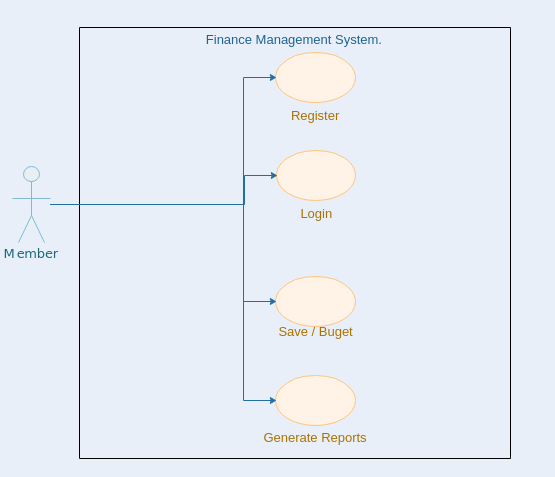
This mainly focus on the flow of information in the system, that is, how data is input all the way to the processing of the data then the final output, DFDs show exactly how the entire system should function.

Example of the registration process in dfd



**3.1.3 USE CASE DIAGRAMS**

USE CASE DIAGRAMS- Galen (2017) said that a use case also referred to as behavioural diagram, is used to describe a set of actions that a system intends to perform in collaboration with one or more external user.in the project use cases will be important mainly to show how actions between internal and external users are performed.



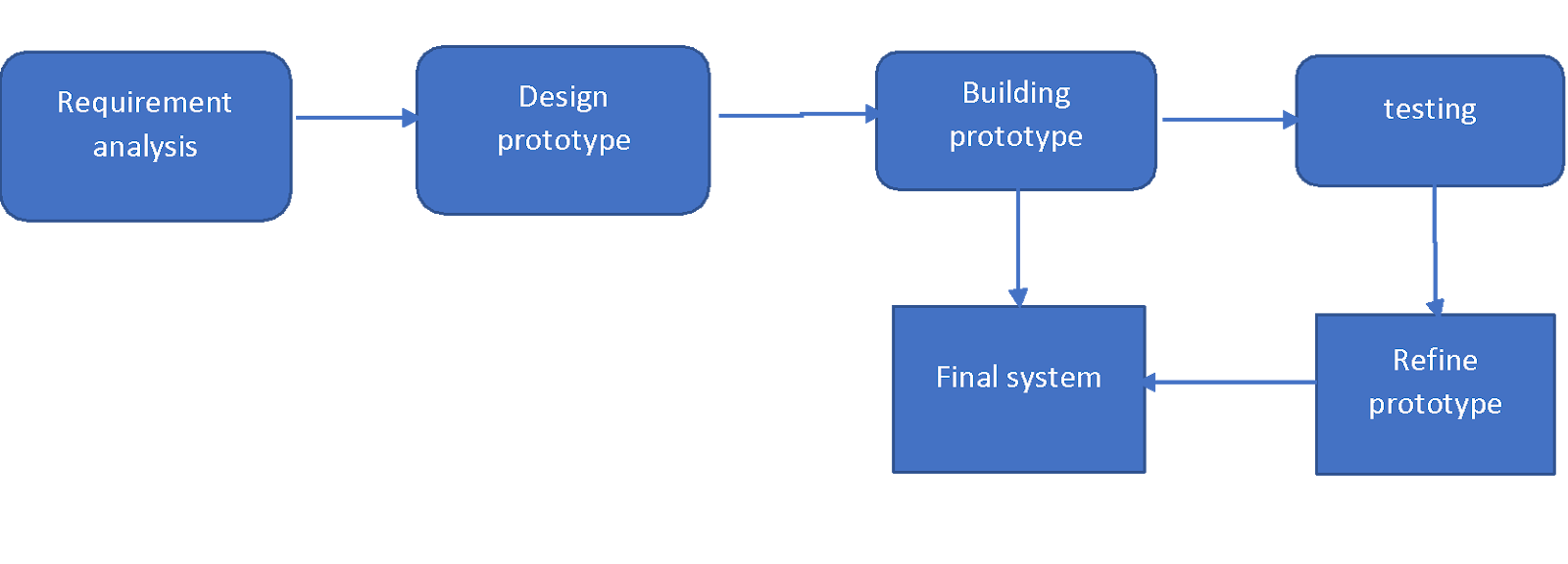
**3.2 System methodology**

The main methodology to be used for the system is prototyping. Prototyping is not only user-friendly but also flexible such that any changes required in the system can be made as the project is still in progress.

Bowman (2009) mentioned that it is an incomplete project where developers must demonstrate a portion of the project in stages before fully presenting the whole project. As the requirements of the system changes become less or more demanding, the developer can change the system.

The advantages of prototyping include: users active involvement in the development of the system thus helping them understand the workability of the system and errors can be identified at an early stage and rectified.

The limitation associated with this methodology is that it is a slow process and too much involvement of the client is sometime not required by the developer.



**Figure 3.2** Prototype Development Process

### 3.2.1 Requirement Analysis

In this phase, the collection of all the requirements needed to develop the system is done, all the requirements must be well defined and achievable. Various techniques discussed earlier may be used to gather the information needed. In the requirement analysis, the requirements may be changed, deleted or added depending on the functionality of the system.

### Design prototype

Depending on the requirement collected, the design phase is where the flow of how data will move in the system is designed, different tools may be used to draw the diagram example, lucid charts or star UM L where entity relationship diagram (ERD) and data flow diagram(DFD can be drawn to show how information will flow from in the system from one level to another. Basically, in this phase, data is seen to be flowing from one part to another and how the entire system functions.

### Building prototype

For the above project, the building of the system will be designed using HTML (hypertext markup language) because html can be supported by all web servers. CSS (cascade style sheet) basically used to beautify the system as a whole. The database MySQL will be used to hold related data and Xamp as the link used to access the database in the computer local host ,PHP, and JAVASCRIPT will also be used as it is also supported by web servers. The entire system is mainly web based. Jquery and Ajax(Asynchronous JavaScript and XML) will be used in combination with the PHP language to develop a web based System that resembes a Single Page Application (SPA). Ajax will be used to asynchronously send data to the server and load content from the server. JQuery is a JavaScript library. Being so, it will ensure that the javascript code created for this system is optimized. This will greatly improve the overall performance of the system. The System will use JSON(JavaScript Object Notation) encryption format to share data between The Client front-end and the server side language format.

### Testing

After the system has been created, it is then tested. Different tools have been used before to test such a system. The system will be tested by function testing. Testing is mainly done to identify, and fix errors and the function testing basically aims on finding out whether the system functions are as expected by the system developer and client.

***3.2.5 Refine prototype***

The prototype is presented to the user and any necessary changes made depending on the users demands. In this phase, the prototype is rechecked to ensure that the product can be submitted as a final product to the end user.

### Final system

The final system is the presented to the client having fixed all errors and made sure that it satisfies the specification and requirements listed.

### 3.2 Data collection

**3.2.1 One-on-one Interviews**

One-on-one (or face-to-face) interviews are one of the most common types of data collection methods in qualitative research. A sample of people are picked and interviewed on how the system available help them in budgeting their finances, and how the system can be improved. Their views on a new system and how they want it to work is also collected.

**3.2.2 Questionnaires**

A questionnaire is a [research](https://en.wikipedia.org/wiki/Research) instrument consisting of a series of questions for the purpose of gathering [information](https://en.wikipedia.org/wiki/Information) from respondents.

Use of questionnaires will also be efficient especially in areas that are difficult to access, although biasness is a challenge when it comes to use of questionnaires and it is also characterized by a low response rate.

**3.3 software development tools**

**3.3.1 MySQL**

Using a MySQL data base is cheap and easy and does not require special hardware or software requirements.It works well on any web server. It is an excellent database to use whe developing web applications because its an independent platform.

The database will hold related data that is beneficial to the system and Xamp will be the software to access the database.

**3.3.2 HTML (hypertext makeup language )**

HTML defines the structure of the and layout of a web document by the use of a variety of tags and attributes.it is supported by all browsers and it is easy to use and understand. The main limitation is that errors can be costly since it involves a lot of code writing.

**3.3.3 CSS (cascade style sheet**

It is a language used to describe the presentation of a document written in HTML or XML. It is a too that will be used to beautify the system and make it appealing. The many levels of CSS has resulted in confusion among many developers and web browsers.

**3.3.4 JavaScript**

JavaScript is the programming language of HTML and the web. It is used to create and control dynamic website content, that is, anything that moves, refreshes or changes on the screen without manually reloading the web change.

**3.3.5 PHP**

PHP is a general-purpose programming language originally designed for web development. It is a server side scripting language that is embedded in HTML. It is used to manage dynamic content , databases, session tracking etc.

Microsoft word will also be used to document the entire system.

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### My Budget.

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| NO. | Item | PRICE(KSH) |
| 1 | Laptop with the following properties :   1. 2gb ram minimum, 2. 320gb hdd minimum, 3. Processor 2.0Ghz minimum | 37,000 |
| 2 | Windows 7 | 5,000 |
| 3 | Internet connectivity | 7,000 |
| 4 | XAMMP software | 11,000 |
| 5 | Atom Editor | FREE |
|  | TOTAL | 60,000 |