Save the Children Sponsorship Management System

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Save the Children Sponsorship

BY

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ABSTRACT

This project concentrates on developing the Save the Children Sponsorship Management system which was seen necessary after it was discovered that the command prompt system that was being used for sponsorship child records management had weaknesses. Poor communication through the use of multiple communication mediums led to difficulties in tracking the support tickets raised by users at Zimbabwe Power Company. The current system shows a lot of bureaucracy and old fashioned way of running systems. The fact that the field team has to create data files which are then send to CO for campaigning and send to IO takes time. This has caused a lot of queries from sponsors and IO when deliverables take time to reach them. Running two separate systems causes a lot of errors and child mismatch thereby raising queries on whether such children exist or not. The current system is also costly to the organization since it still requires the use of postage. A feasibility study was carried out to assess if the project was technically, economically and operationally feasible. It was then seen favorable to continue with the project since it was feasible. Information was gathered using interviews, questionnaires and observation to gather functional requirements of the system and problems faced by users with the old system. The design phase was conducted which included the system dataflow design, interface as well as database tables design. The Sponsorship Management System was developed using PHP, Bootstrap and HTML with SQL Server Database. The system developed was tested thoroughly using unit testing, sub system testing, acceptance testing, validation and verification. This was carried out to see that system was working without errors whilst the specifications and objectives of the system were met. The system conversion methodologies were evaluated and a parallel changeover was recommended to install the system as it gives users time to familiarize with the system. Also this means that anomalies can be rectified during this period. The organization will have backup from the old system so it can revert to the old system if the new system fails. Maintenance strategies were discussed and it was seen necessary to use them to ensure the continuity of the system, efficiency and effectiveness. Recommendations were made so that the system will make Save the Children a good environment for work through introducing a mobile application.

DECLARATION

I, **Farai Musora (R168233A)** do declare that this project titled Save the Children Sponsorship Management System is a testimony of original work I have done under the supervision of Mr F Madzikanda. I therefore authorize Midlands State University to lend this dissertation to any institutions or individuals who may need it for purpose of scholarly research.

Signature: …………………………………

Date:…...………………………………….

APPROVAL

This dissertation entitled **Save the Children Sponsorship Management System** by **Farai Musora** meets the regulations governing the award of BSc Information Systems Honours degree of the Midlands State University, and is approved for its contribution to knowledge and literary presentation.

Supervisor………………………………………………………

Date………………………………………………………........

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My warmest gratitude are extended to the Lord almighty God whose love and mercy stands forever. It was through His grace that this project was a success. My credits goes to all the people who contributed in the making of this project.

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Lastly, my gratitude goes to my family for the encouraged they gave me during the course of coming up with this project. They are the ones who carried all the financial burden of coming up with this project. Without their support, this project might have never been a success.

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DEDICATION

I Musora Farai hereby dedicate this project to my wife Fortunate Matingo. She was by my side always and supported me financially, morally and spiritually. I am grateful and highly favored to have such a wife with unmeasurable love. She played a very big role in financial budgeting for this project to be success. Was very understanding and helpfully. No words can describe the support she gave me.

Contents

LIST OF ACRONYMS

CO	Country Office
FO	Field Office
ICT	Information Communication Technology
IO	International Country
I.T	Information Technology
ROI	Return on Investment
SO	Sponsorship officer
SQL	Structured Query Language
XAMPP	Cross-Platform Apache MariaDB (M), PHP (P) and Perl (P)

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

1.1 Introduction

Sponsorship Management System is a computerized online system which is a solution to the problems the organisation is facing when doing sponsorship business. The system will allow for real-time update for the sponsorship database which is housed in the United Kingdom. Furthermore, the system will help on cutting costs that arise as a result of sending Data files and mails too sponsors via ZIMPOST. Users will be able to register new children in the program with Identification Numbers being allocated instantly and track on child status and correspondences. Child information will be uploaded online without and delay and changes of details is instant on both ends. The system will simplify work as it combines the two current platforms being used to manage child data for sponsorship. The system will allow for offline data manipulation and then synchronization will happen once the user connects the computer to the internet.

1.2 Background of the study

The development of the system is as a result of need to support vulnerable children and provide required support accordingly, complains from Country Office on not being able to merge data, costly business process and sponsor retention. The current system also makes decision making difficult since it does not provide enough details as to who need support for education and health. A recent analysis on sponsors' retention and consents on why most supported children are losing sponsors showed that there is lack of trust as sponsors feel the children they are sponsoring do not exist. This necessitated the need to have an improved information capturing system that is on online in order to send information to sponsors in as little time as possible. The business is suffering from competition from other NGOs such as Plan International and World Vision who are in the same trade of child sponsorship hence need to improve on delivery to sponsors. The current system has a lot of bureaucracy which adds up to time to send required information to sponsors and International Office (IO). The use of two separate databases is leading to duplication hence the need to have one system which will address the issue. The users of the current systems are not satisfied with how they are working and the level of knowledge required in order for one to do the work. The current system does not have tracking capabilities that helps management in decision making. The system is not friendly as it required knowledge of command prompt codes which requires a lot of skill.

1.2.1 Background of the Organisation

Since 1983 when Save the Children began operations in Zimbabwe, the organisation has remained committed to children, by supporting the government and communities to deliver on their mandate and make the country a better place for children. By implementing relevant child rights programmes, responding to emergencies and advocacy efforts, major milestones have been reached. These have all contributed towards ensuring that the Zimbabwean child survives, learns and is protected. In 2018, Save the Children responded to the cholera emergency that hit Zimbabwe.

We believe in working together, empowering and strengthening local capacity, hence we work mostly through partner organisation, such as civic society organizations, government departments and ministries, local authorities, communities and children. All our support in the communities is given freely, regardless of ethnicity, religious or political affiliation.

Save the Children works mostly in the remote and hard to reach districts of Zimbabwe, although some programmes have a national focus. The country office is located in the capital city Harare. There are six field offices located in Gokwe, Rushinga, Nyaminyami, Mbire, Beitbridge and Binga. Save the Children also has programmes that are being implemented by partner organisations, local authorities and government ministries in other districts of Zimbabwe.

1.2.2 Organisation Structure

Bonnes (2017) defines an organizational structure as a system that is formal in which the tasks and authority relationships are clearly highlighted in a particular organization. He further goes on to propose that it governs ways people utilize resources and conduct to achieve organizational goals. Below is the Save the Children Zimbabwe organisational structure.
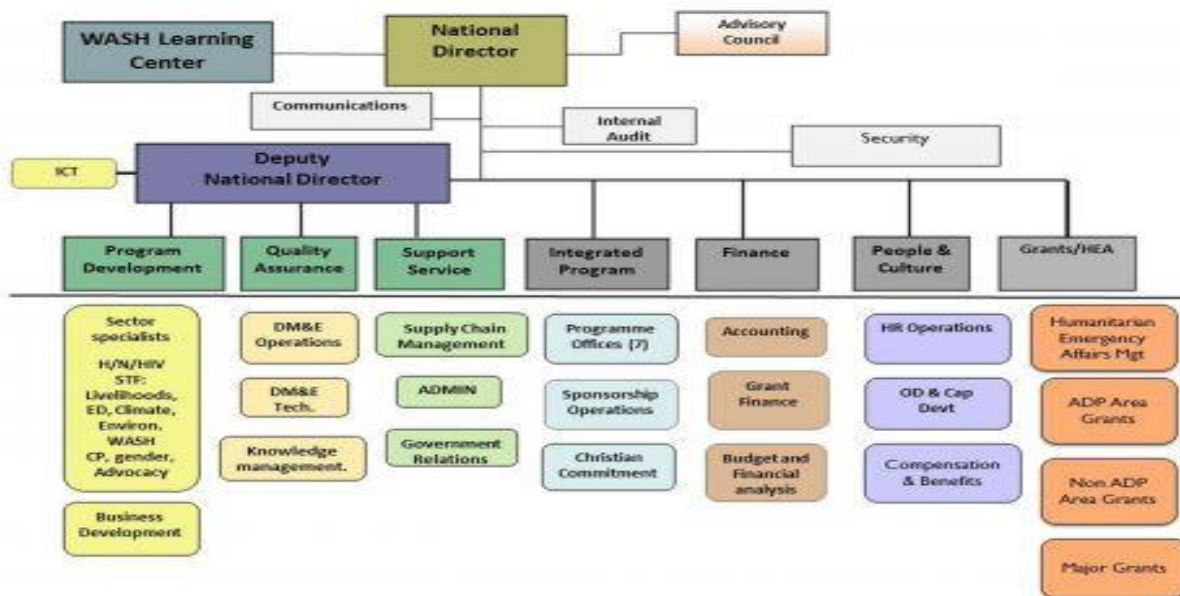
Figure 1.1 Organogram

1.2.3 Vision

Shelter (2016) clarifies a dream/vision likewise an explanation which obviously focuses out the thing that an association might want will accomplish alternately the place it sees itself later on. The dream from claiming this exchanging organization may be will make a unique, improvement oriented, pace-setting and stakeholder driven shares of the organization that produces calibre administrations of the stakeholders. Save the Children's vision is as below:

Our vision is a world in which every child attains the right to survival, protection, development and participation.

1.2.4 Mission Statement

Shelter (2016) clearly defines the mission statement as a statement that summarizes the direction and also the purpose for an organization's activities and it is also the basis of strategic planning and Save the Children's mission statement is as below is shown below.

Our mission is to inspire breakthroughs in the way the world treats children and to achieve immediate and lasting change in their lives.

1.3 Problem definition

This section is going to address the problems that are currently existing that need to be addressed. McQuain (2013) suggested that these problems are known as the problem statement. The issues are going to be clearly highlighted below and a brief description of each aspect.

1. The current system does not allow for tracking of correspondences which makes it difficult to know when they are getting overdue.

2. Allocation of child IDs is taking too long since IO have to send back files through the Country Office (CO) that then splits the data files to respective Field Offices (FO). This leads to a lot data distortion and corruption.

3. The FO operates with two databases. One on command prompt which works more on child registration and activation from Hold status and the other on Graphic User Interface which concentrate more on child monitoring. This is creating data discrepancies when merging the two database (which is also done at the IO level)

4. Responding to sponsor correspondences is being done by sending letters via the post thereby making it time consuming to reach the respective recipients and expensive to the organisation. This is also causing sponsors to raise many queries due to some mails not reaching their intended recipients and delay along the way like being held at the sorting office.

5. Failure by IO to read some of the data files send to them due to system errors resulting in loss of data and then meaning recapturing at the FO.

6. Command prompt is not very user friendly, requires a lot of skill and good understanding of the codes for someone to use it. This leads to a lot of people not interested in working with the database hence rate of staff willing to help in the area is very low.

1.4 Aim

To develop an online Save the Children Sponsorship Management System.

1.5 Objectives

According to Berndtson *et al.,*(2013), an objective refers to a measure of unit which can be attained. In this instance, it therefore refers to goals that the system seeks to achieve. The objectives of developing the system are:

1. To automatically allocate child identity number.
2. To enable tracking of sponsor letters and gifts so that they are responded to within standard of 60 days.
3. To enable upload and download of child materials.
4. To enable IO to view on new child registrations and allocate sponsors
5. To monitor child education for support request and decision making.
6. To automatically create a follow-up case if child health is not satisfactory and if not attending school.

1.6 Instruments and methods

This Sponsorship Management System will be developed using different tools and languages and these are as below:

- **PHP (Hypertext Pre-processor) -** PHP supports the creation of dynamic, customised websites. It is supported by many platforms that include Windows, UNIX and Linux; it's simple and also efficient.
- **Visual Basic** for the code to support PHP. It allows for development of graphic user interfaces and connection to databases using data access objects. It is integration of objects there allowing use of many tools inbuilt. It is easy to execute and use.
- **MySQL -** a multi-threaded SQL database server with a client/server implementation. It's fast, robust, and easy to use and this makes it a popular database for sites with dynamic content.
- References: The Internet and Textbooks.
- Server: XAMPP 2. 64 bit for Web server and Web scripting software. One of the great benefits of XAMPP is that it allows develop, upgrade components, perform any web development task and carefully test everything offline first, which reduces the risks of creating problems on the live server.
- Word Processor: Microsoft Visio 2013 and Microsoft Office 2013 for drawing DFDs and context diagrams

1.7 Justification and rationale

The presentation of this proposed framework will have an urgent influence on the way Save the Children conducts its sponsorship business processes. It will go a long way in supporter retention and making sure that sponsors are kept satisfied. No data loss will be experienced since this system will have a backup mechanism and real-time update to main server as well.. This system will also go a long way in reducing costs involved in sending responses to sponsors and reduce turnaround time. Time taken to deliver responses to sponsors and IO will be reduced thereby reducing the number of queries from sponsors. A great deal of trust can be built by use of this system between Save the Children and sponsors. The platform will be very user friendly thereby making it easy for users to navigate around other than command prompt which demands users to always know and remember codes. Data errors are also reduced since there will be restriction on type of data to be enter in different cells or areas. Reports from this system can be easily be generated even by someone who is not well versed with computers since they will be clearly appearing under reports tab with simple English titles.

1.8 Conclusion

The system has been introduced and the background of the study has also been shared. The background of the organization has also been explained. The problem statement, aim as well as the system objectives have been clearly spelt out as well as the tools that will be used in developing the system. In addition, benefits of developing the system have been explained. The next phase is the planning phase which will be primarily focused on the feasibility of developing the system. The feasibility study will be carried out in the next phase to ascertain whether the system is worthwhile developing.

CHAPTER 2: PLANNING PHASE

2.1 Introduction.

According to Dennis (2009), planning refers to the process of approximating all the resources required to carry out a project successfully. This stage carries out an in depth assessment of the business value of the proposed system. It entails analysis of the feasibility of developing the proposed system. It also includes the understanding of technical, economic, social and operational feasibilities to the new system being developed. Logistical schedule of developing the system is also laid in this chapter. In addition it also includes cost benefit analysis, risk analysis and production of a work plan. It is of importance that the business appreciates the development of the new system and its implementation.

2.2 Reasons for building the system

- o To integrate the two sponsorship platforms.
- o The system's ability to track child health helps management in decision making so that children with unsatisfactory health can get assistance.
- o The system's ability to track correspondences (letters and gifts) makes it easy to see when it is due and ensure that business procedures and standards are maintained as there won't be late responses to sponsors.
- o Since there is upload and download of child video and photo, marketing the child for sponsorship will be more realistic and intimate than just using information
- o Since there is capability of uploading and downloading of child response at IO there is reduced costs as ZIMPOST is eliminated and also reduced loss of letters in transit
- o Since this will be an online system, failure to read data files and loss of information due to corrupted data files is eliminated and real time updates are available.
- o Since it's an online system, time spend for responses to reach its intended recipients and for new registrations to be allocated Identification Numbers is reduced.
- o Since the system has a graphic user interface and in English there is no need to cram commands like in command being used.

Security measures have been enforced in the system therefore unauthorized access is prohibited. This ensures that the right user access the right information as will be set by the administrator.

2.3 Business value

By definition this refers to the contribution the proposed system will bring to the organization taking into consideration achieving its strategic objectives. This is part and parcel of the corporate strategy, consists of the development and declaration of shared view of business' direction and the benefits to be received by the organization. Systems should be developed in order to address certain problems in organizations. This means that a highly prized contribution should be realized as a result of developing a system. What follows are a set of business values that the system is ought to contribute to the organisation.

2.3.1 Organizational value

These are merits that accrue directly to the organization as a result of the introduction of the new system. The organisation is likely to benefit since this system will be an online system which enables quick updating of records and allowing of smooth flow of data from CO to IO.
The system will also help on reducing cost associated with postage and time taken to reach sponsor. Decision making will be made easy since child records are tracked.

2.3.2 Employee's value

Wiley (2015) submitted that employee values are those benefits that employees accrue as a result of the adaption of a new system. The proposed system will therefore have a positive contribution to employees. This means that they will be motivated since they will now able to work on a single online platform and no worries of running back up and cramming of commands to use in Command prompt. Tracking of correspondences and generation of reports will be faster and easy by use of this friendly system instead of having to wait for feedback from IO.

2.4 Feasibility Study

As described by Judy. C and Anwar, R. (2016), feasibility study is done by an organization in order to determine if a particular action makes sense from an economic, social, technical and operational standpoint. A feasibility study helps the management to make a decision whether to pursue with the proposed system or not. They do this by taking into consideration the advantages that the system is bringing into the business. The business benefits of the

proposed system should outweigh what is currently being used for management to consider a new system being developed. Feasibility study covers technical, economic, social and operational feasibilities as discussed below.

2.4.1 Technical Feasibility.

This answers the question as to whether the system can be built given the apparent constraints in terms of resources and time amongst many other factors. A look at the hardware and software required for the project to progress and availability of the technical expertise that will be required for the software to be developed. In this case, the company has a developer who have developed recent projects using the .Net platform. The developer is also familiar with SQL Server database so the project is going to be a success. This means that the technical skills required to carry out the project are available. Also the users have a basic understanding on how to operate computerized system so it will be easy to train them.

2.4.1.1 Hardware

Certain hardware resources should be put in place in order to successfully develop and implement the project. Following is a diagram showing the hardware and software requirements as well as the quantities required. The hardware and software specifications are also highlighted.

Table 2 1 Hardware requirements

Item	Specification	Quantity	Availability	Comment
Internet connectivity	60k/s and above	1	Yes	The organisation already have internet
Laptop	8GB RAM, 4GB Graphic Card, 500GB *HDD, Core i5*	1	Yes	The organisation already have a laptop
Printer	Canon i7200	1	Yes	The organisation already have a printer
IIS Server and Database	Ram 2.00GB , Intel 2.3GHz processor , 1TB hard drive	1	No	The organisation is willing to buy.

The table clearly shows that all the other required hardware resources are available with the exception of IIS and Database server which should be purchased in order to run the system.

2.4.1.2 Software

There are software packages which are required in order to develop the proposed system. These are key in the development and installation of the software. These include visual studio compiler which shall be used to develop the software. The compiler consists of four major programming languages and C# Language shall be used to develop the system using the Active Server Pages (ASP.Net) platform.

In addition, SQL Server 2017 will be used for the creation and management of the system database. This is more secure and highly professional database which is mostly used for developing enterprise databases.

All these applications will run on Windows 10 Enterprise Edition. Other software like McAfee antivirus have been chosen to safe guard the computer from viruses. PHP will also be installed for the development.

The Rationale of choosing each software.

The analyst has chosen Visual Studio 2017 which is the second latest version from Microsoft, has a wide range of changes and improvements as compared to other earlier versions. It supports unparalleled productivity for any application and platform. These and other advantages have resulted in the selection of Visual Studio 2017 as the best compiler for development.

Microsoft SQL Server 2017 have been chosen as the ideal database management system as it is more secure than other databases like MySQL and also it is also a professional DBMS usually used by many companies to develop their databases and manage them.

McAfee Antivirus has been chosen since it has the latest virus signatures therefore it is ideal to use the software. Also it has other added advantages that it has internet security as well as other features. The other reason for choosing it is because the organisation has a running license for the antivirus.

Microsoft office 2016 will be used to compile the system documentation. It is ideal since it is a latest version from Microsoft and it also has capabilities to publish documents as pdf documents (portable document format). Also it is easy to design diagrams using the software therefore the researcher also chose it.

Windows 10 is already installed in all of the organisation computers therefore it will be advantages to use a version which is already in use and also it is a latest version thus is secure.

PHP will be will be installed and used for integration with visual studio 2017 and it provides more advanced controls which are not available in Visual Studio Compiler. It is best used for designing good graphic user interfaces which are eye catching and user friendly.

Table 2.2 Software requirements

Software	Specification	Quantity	Availability	Comment
Microsoft Office	2016 Edition	1	Yes	The organisation already has it installed
Operating System	Windows 10 Enterprise	1	Yes	The organisation already has it installed
Microsoft Visual Studio	Visual Studio 2017 Enterprise Edition	1	No	The organisation is willing to buy
Server	Microsoft SQL server 2017 edition	1	No	The organisation is willing to buy
Antivirus	McAfee	1	Yes	The organisation is willing to buy
Scripting Language (Web developer)	PHP	1	No	The organisation is willing to buy

2.4.1.3 Technical Expertise

Looks at:

Familiarity of users and developers with system

Familiarity of users and developers with the technology involved

The project size

Familiarity of users and developers with the system

❑   Developers: the analyst is familiar with the software applications involved in the project.

❑ Users: most of the employees have been using an almost similar facility within the organization and it's expected that they will have few problems in using the system though there is still a need for user training. One of the current system being used has a graphic user interface thereby familiarisation won't be much of a problem.

Familiarity of users and developers with the technology involved.

❑ Developers: the developer has dealt with web-based systems and this system is not expected to pose any serious problems.

❑ Users: the users involved are able to use the Internet and other graphic interfaced systems thus they will be able to use the system efficiently after undergoing user training

2.4.2 Economic Feasibility

According to Milan, (2016), economic feasibility study identifies the overall benefits and costs that will be brought through the development of the system. It therefore aid in deciding whether the system should be developed or not. For a system to be economically feasible, the benefits accrued through developing the system should be more than the costs incurred.

There are a number of techniques which can be used for economic feasibility study which include the cost benefit analysis, payback period and return on investment.

2.4.2.1 Cost Benefit Analysis

As defined by McAther, (2016), cost benefit analysis is a tool used in project management that is used to assess the overall performance of the project. It is used to evaluate a project by weighing the benefits of the project against its costs. It is therefore a project analysis tool that is used widely for the evaluation of projects to see if a particular project is worth undertaking. If the benefits of the proposed system outweigh the costs, the project will be worth undertaking however it will not be perfect to take a project in which the costs are greater than the overall benefits. Save the Children Sponsorship Management System is valuable developing since the benefits of the system outweigh the costs.

Development Costs

Graham, (2016) says, developmental costs are those costs that are directly incurred in researching, production and introduction of a new system. He suggested that these costs are therefore incurred

in setting up the new system and improving it that is including maintenance costs. The following table illustrates the estimated costs for all the hardware equipment which will be purchased.

Table 2.3 Development costs

Item	Quantity	Amount (US$)
Hardware		
IIS Server and Database	1	200
Internet Switch	1	100
Backup Server	1	200
Software		
Visual Studio 2017 Enterprise Edition	1	50
Microsoft SQL server 2017 edition	1	100
PHP scripting language	1	50
Total		**700**

Operational and Setup Costs

According to Graham (2016), the costs involved when setting up a new system are referred to as setup costs. A good example of setup costs include installation costs which are costs incurred to get the equipment ready for the use of a new system. The following table illustrates the operational costs and setup costs which will be incurred.

Table 2.4 Operational costs

Operational Cost	Amount(US$)
Labor	500
Consumables	100
Maintenance Costs	200
User Training	80

Other Expenses	50
Total	930

Tangible Benefits

According to Graham (2016), tangible benefits are the things that can be categorized in monetary values. The following table shows the tangible benefits that the system will contribute.

Table 2.5 Tangible benefits

Tangible Benefits	2019 $	2020 $	Total $
Reduced labour	100	200	300
Reduction in bureaucracy	200	300	500
Reduction in operational expenses	400	600	1000
Reduced stationary	100	150	250
Total	**800**	**1250**	**2050**

Intangible benefits

Table 2.6 Intangible benefits

Intangible Benefits	2019 $	2020 $	Total
Shorter delivery time	500	700	1200
Increased employee moral	800	1000	1800
Goodwill	1000	1500	2500
Total	**2300**	**3200**	**5500**

Table 2.7 Cost benefit analysis

Costs and Benefits	2019 $	2020 $
Benefits to the organisation		
Tangible benefits	800	1250
Intangible benefits	2300	3200
Total benefit	**3100**	**4430**
Costs		
Development costs	700	
Operational costs	930	550
Total Costs	**1630**	**550**
Benefit/Loss	**1470**	**3880**

In this case, the benefits of developing the system are more than the cost. This has been clearly presented in the above tables. The organisation will enjoy a profit of $1470 within the first year. As the year progresses, the profits will therefore increase by $2410 that is up to $3880. The increase is a result of the development costs which will not be incurred by the company.

2.4.2.2 Return on Investment

It is important to consider the profit that can be obtained in relation to the capital employed. This technique is known as the Return On Investment (ROI). Frankwood (2005) outlined that it is important to calculate the ROI since it aids in estimating the amount that an investor will gain in relation to the investment that would have been put in place. This means investing where the percentage is higher will be considered a good practice since it would mean there is also a higher percentage of profits gained.

Formula: ROI = (Net Profit / Capital Employed) * 100
             Return on Investment = 1st Year (2019)
             $(1470/1630) \times 100 = 90\%$

The return on investment for the first year will be 90%. This is mainly because there are more costs in the first year than in the second in which it is higher. This therefore concludes that the project is worth undertaking.

2.4.2.3 Payback Period

Another factor which is of major importance is to consider the time taken to recover the initial project expense. Mollen (2010), this is known as the payback period. This means that in this case, if a project has a short payback period, it will therefore be considered viable. Projects which have

a long payback period are considered as risky projects. The major disadvantage of this technique is that it ignores the time value of money.

Table 2.8 Payback period

Year	Annual Cash flow	Cumulative
0	(1470)	(1470)
1	2300	830
2	3200	3100

Cost of Capital

This refers to the opportunity cost of making a specific investment. It is the rate of return that could have been earned by putting the same money into a different investment with equal risk.

Payback Period = _ ×12 months

Annual Net Cash Inflows
Payback Period = (1470_ ×12 months)
Therefore Payback =7 months
It is therefore worthwhile to carry out the project since it has a very short payback period of seven months. This means that the organisation can therefore quickly repay its initial outlay.

2.4.3 Social Feasibility

O 'brien and Marakas (2015) defined social feasibility as the project's positive and/or negative implications on the community or communities. An analysis of the possible effects of the system to the community should be carried out to make sure the system or project is socially acceptable. This study focus on the possible implications of the new system to the community. A project which is socially unacceptable, that is violating the social norms and values will not be worthwhile developing. An effective analysis is useful in building a good name and image for many other projects that may be done, which is loyalty earned without harming certain individuals' lives

Availability of skills - The product system of this project operations requires less of expert skills as the project's main is to simplifying technical issues being our looked by other systems. Some additional experts will be hired only during the development process.

Working conditions - The project aims to produce a working environment that is as safe as possible to the everyone involved in the development and use of the final system. This will be accomplished by creating a welcoming environment and not marginalizing any individuals that are being targeted.

Skills need to be learned on the job - some level of training will be conducted to those individuals that will be responsible of overseeing and maintenance of the system when it is implemented. This training will be able give a certain level of computer literacy that will be able to be implemented at any level.

Meeting of needs - efforts of the participating individuals will be acknowledged through provision of incentives for their effort, to some extent meeting some of their financial obligations and needs. Also considering the current level of unemployment their involvement in the development process may bring a certain level of satisfaction on the social needs.

The social impact reflected for this project is a positive one, helping in arriving at a conclusion the project is social feasible and to the society it is of paramount importance.

2.4.4 Operational Feasibility

Operational feasibility is mainly concerned with issues like whether the system will be used if it is developed and implemented. Whether there will be resistance from users that will affect the possible application benefits? The willingness of various stakeholders makes the system a success.

The following major influencing factors should be considered
  o Are there major barriers which can affect the system implementation?
  o Are the end users going to accept the system if installed?

Management
  o The system is likely to be accepted since it is efficient in data processing and tracking of health, correspondences and support towards decision making therefore the management is most likely going to accept as the system will add value to the overall business procedures.
  o In addition, the system eliminates paperwork and postage costs thus reducing company expenses. In this case, the system is more likely to be accepted.

Employees

o Employees are so eager to experience the fast business practices the system is going to bring. The system will reduce time taken to complete a transaction therefore there are limited chances of the system being rejected.

o The users have been involved in the planning and development of the project at an early stage so they are in it so acceptance is very much possible

o The proposed system has been placed in line with the organisation's main funding source and therefore sponsor satisfaction should also be met. In order to achieve this, consultations with several members of staff were made and through these problems within the current system were identified.

Based on the merits of the system through its features which benefit the employees, management and company as a whole, it can be concluded that the system is operationally feasible.

2.4.5 Risk Analysis

According to Milan, (2016), the study of the possible dangers or likely uncertainties that may be experienced is known as the risk analysis. A risk is therefore an uncertain occurrence caused by an unpredictable phenomenon. According to Oxford dictionary (2015), risk analysis is a process of removing threats to reduce chances of danger. It is therefore essential to carry out a risk analysis on every project since this aid in developing high quality secure software.

The following risk factors should be considered:

o The major aspect in software development is to make the best use of time - time management. If time is not well managed, this can pose a risk to the project since the project will not be completed in time. This means that it is essential to timely complete the system design phases. The developer will ensure that everything is done in time according to the project calendar/gantt chart.

o Virus attacks are a major threat to software. The system database server can be attacked by a virus resulting in loss of information. There is therefore need to install and regularly update antivirus software. A virus update shall be done constantly to safeguard the system.

o Also hardware failure can pose problems to the system development and installation process. This can result in delay of system phases and loss of information. A backup shall

be made regularly to ensure that data is not lost and in case of data loss a fallback is available.

- o Electricity power cuts can also be another problem. This can delay the project and may lead to overall project failure. This means that a backup plan should be put in place to address the problem. There is need to have a generator or solar system as a backup in case of power cuts.
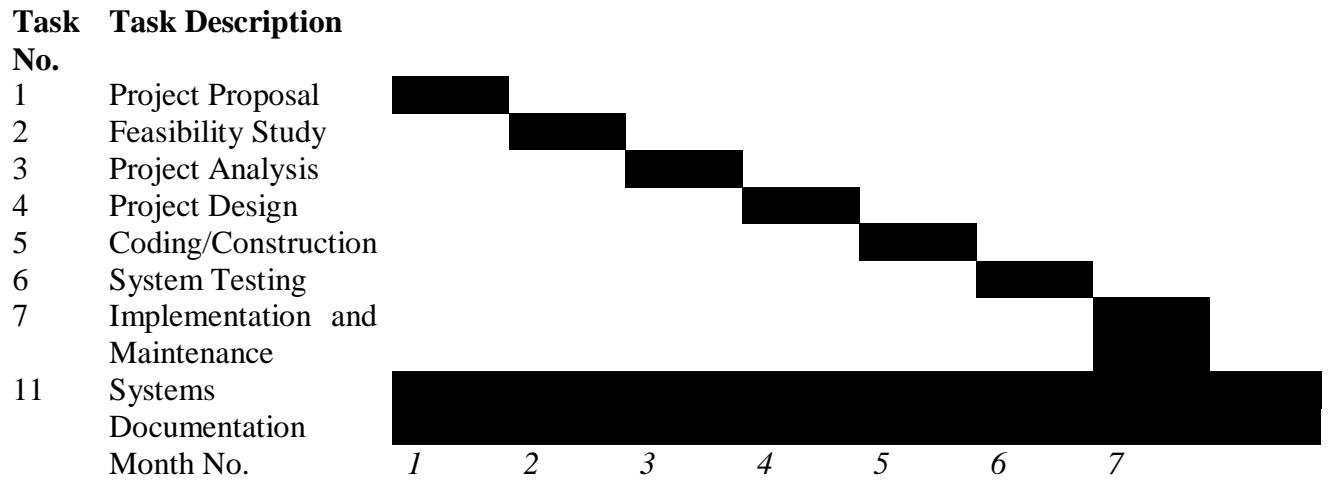
2.5 Develop work plan

This is a work plan that records and keeps track of all tasks that need to be accomplished over the life of the project. It identifies the tasks and their expected durations. The System Development Life Cycle will be used to model the activities that are going to be followed in the development of the project. The project time allocation for each phase is shown below with their respective dates in the Gantt chart that follows.

Task	Start	Finish	Duration (Months)
Project Proposal	05/11/18	30/11/18	1
Project Planning/Feasibility Study	1/12/18	31/12/18	1
Project Analysis	02/01/19	30/01/19	1
Project Design	1/02/19	28/02/19	1
Coding/Construction	1/03/19	29/03/19	1
Testing	01/04/19	26/04/19	1
Implementation and Maintenance	29/04/19	--19	Ongoing

Table 2.9 Work Plan

Gantt chart

Table 2.10 Gantt chart

Task No.	Task Description							
1	Project Proposal	█						
2	Feasibility Study		█					
3	Project Analysis			█				
4	Project Design				█			
5	Coding/Construction					█		
6	System Testing						█	
7	Implementation and Maintenance							█
11	Systems Documentation	█████████████████████████████████						
	Month No.	*1*	*2*	*3*	*4*	*5*	*6*	*7*

Key

█

= 1 month

2.6 Conclusion.

This chapter's was mainly focused on the feasibility study and the reasons why the system has been built. A feasibility analysis was carried out which included operational, economical, technical and social feasibilities. After carrying out all the phases, it was seen that the project was feasible therefore it can be developed since the benefits outweigh the costs. A risk analysis was also conducted to identify the possible threats or risks that are likely to affect the project and measures have been put in place to minimize the risks. The project Gant Chart was developed to show the various project phases which will be carried out and the duration. The next phase will focus on analysing the current system reflecting on how it works, the merits and demerits of the system. In addition, dataflow diagrams will be drawn to show how the current system operates.

CHAPTER 3: ANALYSIS PHASE

3.1 Introduction

According to Gupta (2015), the systems analysis phase is a process of examining the current system that is how it works as well as identifying its weaknesses and strengths. In this chapter, Systems analysis phase, a clear view of how the current system operates and what users require in the proposed system is highlighted. It gives a description of the operations of the current system, how processes are linked within the current system and how activities are going to be coordinated in the proposed system. A set of information gathering methodologies will be used to collect data to help find out how the system works. The collected data is analysed highlighting the strengths and weaknesses of the current system and alternative solutions to the system's weaknesses are evaluated.

3.2 Information gathering methodologies

The process of information gathering is more than simply asking the users what they need and them writing their answers down. The process of gathering requirements has a clearly defined process of its own depending on the complexity of the application. In an effort to gather all the important facts about the current system in order to allow its strengths and weaknesses to be discovered, the analyst used three information gathering techniques which clearly highlighted the weaknesses in the current system and also its strengths that need to be retained in the new system. The information gathering methodologies that were used are:

- o   Observation
- o   Questionnaires
- o   Interviews

3.2.1 Observation

This is a fact-finding technique in which one is interested in behaviour rather than perceptions of the users. The current system requires a lot of practical hands-on experience in order to get the best experience and appreciation of the system so as to come up with an informed decision. Complex tasks are sometimes difficult to clearly explain in words. Through observation, the analyst could identify tasks that had been missed or inaccurately described by other fact-finding techniques. The data describing the physical environment of the task i.e. physical layout was also

obtained. The Systems Analyst observed current system users doing their daily work by taking part in the daily activities. Refer to Appendix D for observation score sheet.

Advantages of observations:
- ○ The process did not disturb the work of the organizations employees as work continued smoothly.
- ○ They allowed observer to discover relevant information on his/her own without probing for it from somebody else.
- ○ The observer became part of the users by going through routine work and observing and experiencing the actual performance and bureaucracy of the system.

Disadvantages of observations:
- ○ The observed personnel who use the current system routinely could have changed their normal way of doing business when they became aware that they were being observed resulting in wrong and biased conclusions from the observer.
- ○ Not all activities were observed.

3.2.2 Questionnaires

Stanislaw (2011) describes questionnaires as data gathering instruments consisting of a series of questions and other prompts to serve the purpose of gathering information from respondents. They can be used to collect both qualitative and quantitative data and are often designed for statistical analysis of the responses. A set of questions were prepared for Save the Children staff in relation to the roles they play in the organization and were given out as hard copies to the members of staff for them to fill in their responses. They were given a period of two weeks to complete them and return. Two weeks was thought to be enough for them to response since giving a long period of time would make some loose/misplace/forget the copies or other happenings can take place. A shorter period on the other side would mean putting pressure on staff members and they would end up answering without much research or care since some activities might not have taken place during the period. The analyst noted some advantages and disadvantages that this information gathering technique brought about. Refer to Appendix C for the questionnaire.

Advantages of questionnaires
- o The data was easy to compile as it was gathered on standardised forms.

- o Respondents had room to ask where they did not understand on the questionnaires.
- o The Analyst gave respondents long enough time to think about the questions before responding and hence allowing them to give comprehensive answers.
- o They were easy to arrange and conduct compared to interviews as there was less need of personal monitoring.
- o Plenty of time was saved as they were distributed to many respondents con-currently.
- o Anonymity (privacy) was maintained therefore enhancing the chances of receiving genuine responses, there was no room for intimidation from other employees or senior staff members.
- o There was no influence from current system suppliers/supporters since they are not locally based.

Although this technique brought about the above mentioned advantages and the bulk of the overall information that was gathered, it had its own disadvantages.

Disadvantages of questionnaires

- o The number of questionnaires returned did not match those which were given out.
- o Questionnaires are time consuming as the responses did not come immediately as in the case with interviews
- o The respondents left some of the questions unanswered or gave irrelevant responses leaving some areas grey and making it difficult to come up with conclusions
- o The rate at which the questionnaires were being returned was very slow.

3.2.3 Interviews

Kumar (2014), defined an interview as a discussion which involves asking questions on a particular field of study and getting answers form the participant. The interviews provide immediate answers to questions that could not be answered by the former technique. Questions are asked and responses provided from both ends. The interviews were contacted by the systems analyst. Interviewed were system users, Sponsorship Officers, Community Development Workers, Sponsorship Coordinators, ICT team and managers. Interviews were contacted at individual level for free and conducive environment. The analyst had to book interview time of about twenty minutes so as to gather relevant information.

Advantages of interviews

- The analyst had direct conversations with the respondents which gave him the chance to clarify some questions that were not clear.

- Collection of data was immediate as the facts were noted down as soon as the responded gave an answer.

- Direct questioning enabled for probing to certain answers and certain questions.

- Social cues such as body language and facial expressions were noted and they allowed the analyst to observe the interviewee's non-verbal communication and also gather information by merely looking at the cues.

- They allowed the interviewer to motivate the interviewee to respond freely and openly.

- Interviews permitted the analyst to customize questions for the employees in relation to their respective departments and their positions.

- They gave room for direct interaction with the people who manage and operate the current system, hence the analyst could get first-hand information of :
    - How the system operates
    - The existing problems
    - Opportunities to improve performance

Disadvantages of interviews

- The probability of having gathered biased data was significantly high as the interviewer might have significantly influenced the user's responses.

- The major disadvantage was that the process required more time. This means that the exercise was to be done when employees were free and in most cases employees were occupied.

- Other employees were reluctant to provide information.

3.3 Analysis of existing system

After using the data obtained from the use of the three information gathering methodologies namely observation, questionnaires and interviews, the analyst obtained the following process in the current system. Community Development Workers (CDWs) collects Child History (CH) forms from the office to field and gather information about child registration. The required information on the CH includes Child Name and Surname, Date of birth, village, child lives with,

Parents/Guardian names, Number of sisters and brothers, health status and education. A photo of the child is also taken for submission.

The information is brought to office for capturing into Sponsorship Disk (SD) while the photo is cropped using image cropping software. The photo is matched to the child details and saved separately for submission to Country Office (CO). Separate files are then created then send to CO for compilation with those from other FOs then forwarded to IO for updating IO database. The process is done again from IO back to CO and the file split according to FOs and forwarded back to FOs for data updating. If child status is changed, that information is only found after reading files from IO. Child status can be Sponsored, Available or Hold.

Sponsored (Registered Child) RCs can receive (Gift Notification) GNs, parcels or letters from sponsors which need to be responded to. When they respond, sponsor labels with respective addresses are printed from SD then stuck on envelopes, postage stamp is also stuck on the envelop and then send to sponsors to through ZIMPOST.

The FO vehicle takes the mails to ZIMPOST weekly and if no vehicle that week, it means the mail will remain at the FO office till a vehicle is available because the mails are not allowed to be ferried to ZIMPOST in public transport.

SD requires a lot of knowledge for one to use it since it is built in command prompt mode. The current system requires use of 2 separate applications/platforms to accomplish work.

3.3.1 Data Analysis

Inputs

User details, Child details, Sponsor details, Correspondence details

Processes

Child Data gathering, Registration of child details in command prompt database, Cropping of child photo, Creation of data file, Capturing of correspondences, printing of sponsor labels, Reading of data file from IO, Data base synchronization

Outputs

Sponsor address label, child ID

3.3.2 System flow chart

Adolph (2013) describes a system flow chart as a diagram that depicts the various system processes which clearly shows how data flows in a particular system. The diagram below helps illustrate the processes that take place duration child registration in sponsorship program.
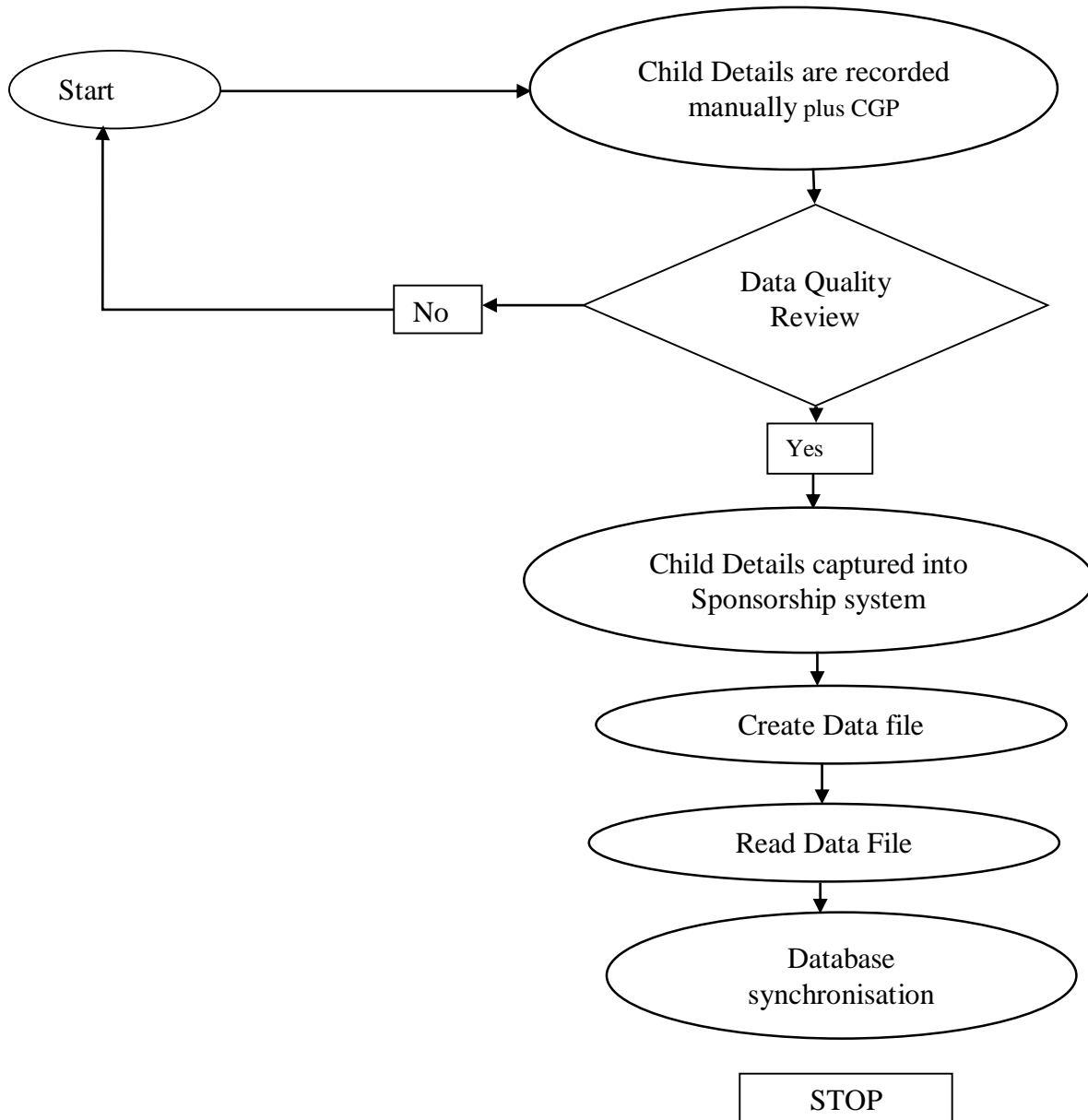
```
                          ┌──────────────────────────┐
  ┌─────────┐             │  Child Details are recorded │
  │  Start  │ ──────────▶ │   manually plus CGP       │
  └─────────┘             └──────────────────────────┘
       ▲                             │
       │                             ▼
       │                      ╱ Data Quality ╲
       │   ┌────┐            ╱    Review       ╲
       └───│ No │◀──────────◀                   ╲
           └────┘            ╲                  ╱
                              ╲                ╱
                                   │ Yes
                                   ▼
                          ┌──────────────────────────┐
                          │  Child Details captured into │
                          │     Sponsorship system    │
                          └──────────────────────────┘
                                   │
                                   ▼
                          ┌──────────────────────────┐
                          │      Create Data file     │
                          └──────────────────────────┘
                                   │
                                   ▼
                          ┌──────────────────────────┐
                          │      Read Data File       │
                          └──────────────────────────┘
                                   │
                                   ▼
                          ┌──────────────────────────┐
                          │       Database            │
                          │    synchronisation        │
                          └──────────────────────────┘
                                   │
                              ┌─────────┐
                              │  STOP   │
                              └─────────┘
```

Figure 3. 1 System flow chart

3.3.3 Context Diagram

Adolph (2013) defines a context diagram as a diagram that highlight the relationship or link between the system and the environment in which it operates in. It can also be defined as a snapshot of the system. As suggested by Bittner and Spencer (2013), it reflects the main system entities and highlights how the entities interact with the system showing the inputs and outputs. The following diagram is the context diagram for the current system.
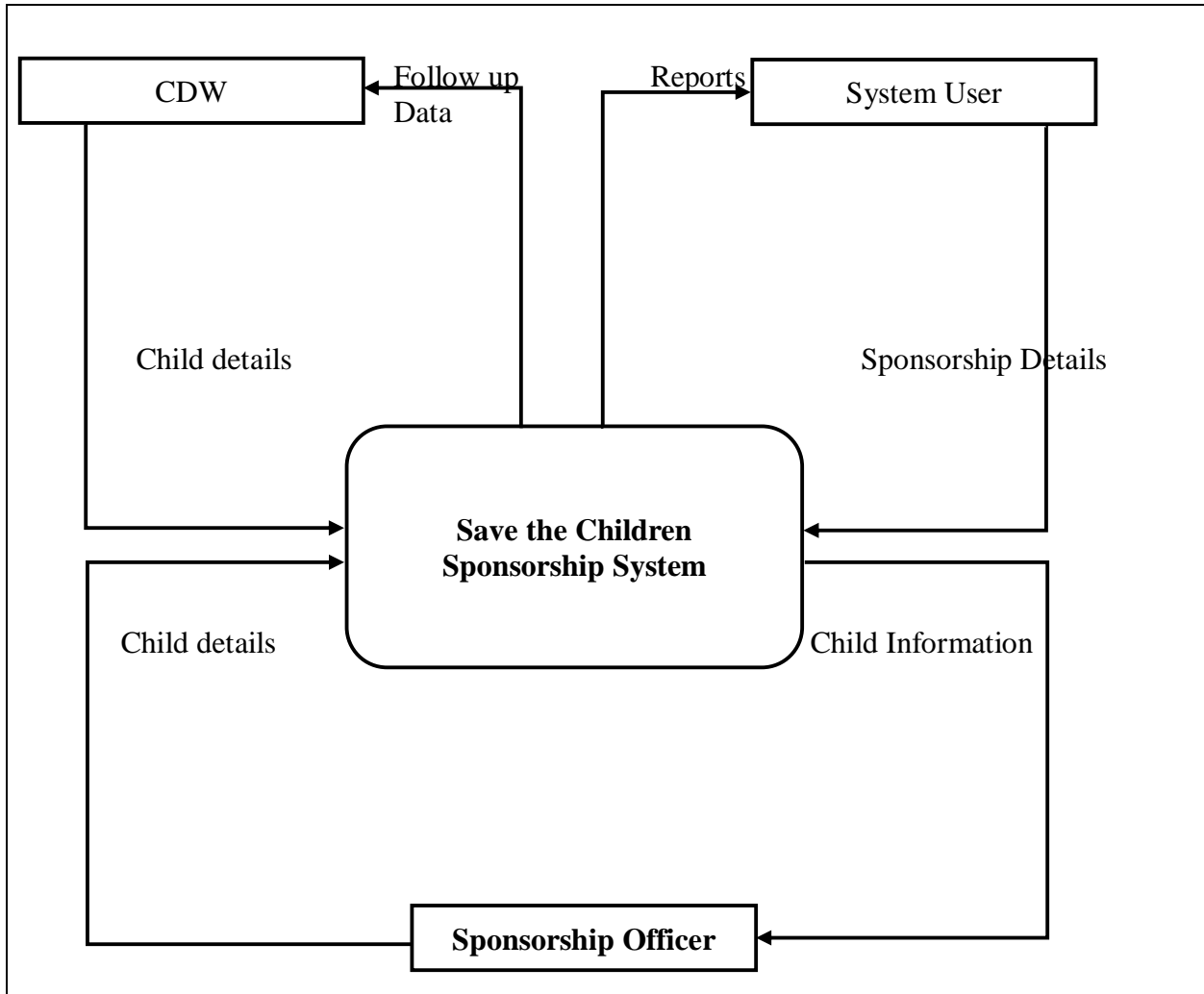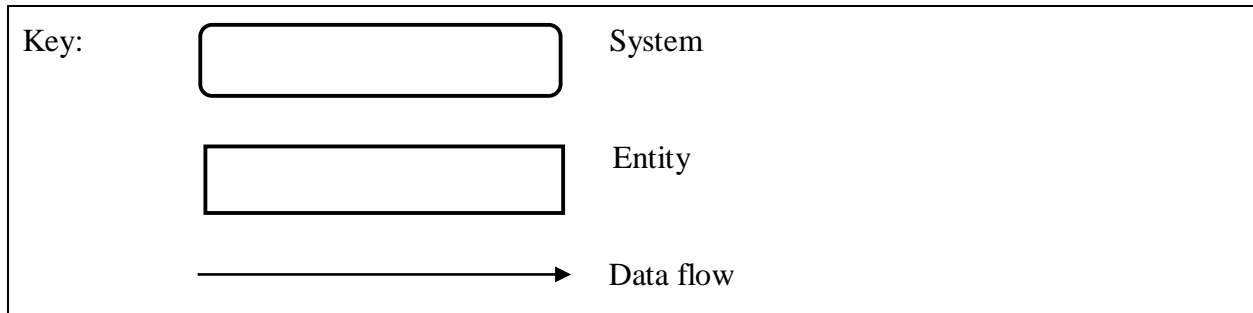

Figure 3. 2 Context diagram for the current system

Key: System

                                                               Entity

                                                               Data flow

3.3.4 Data Flow Diagram

According to Bendner (2014), a data flow diagram is a diagram which shows how data flows in a system. It therefore shows the various processes that are involved in the system, the entities and data stores. It therefore depicts the information using symbols which include processes, entities, data stores and dataflow. The diagram below shows the dataflow diagram of the current system.
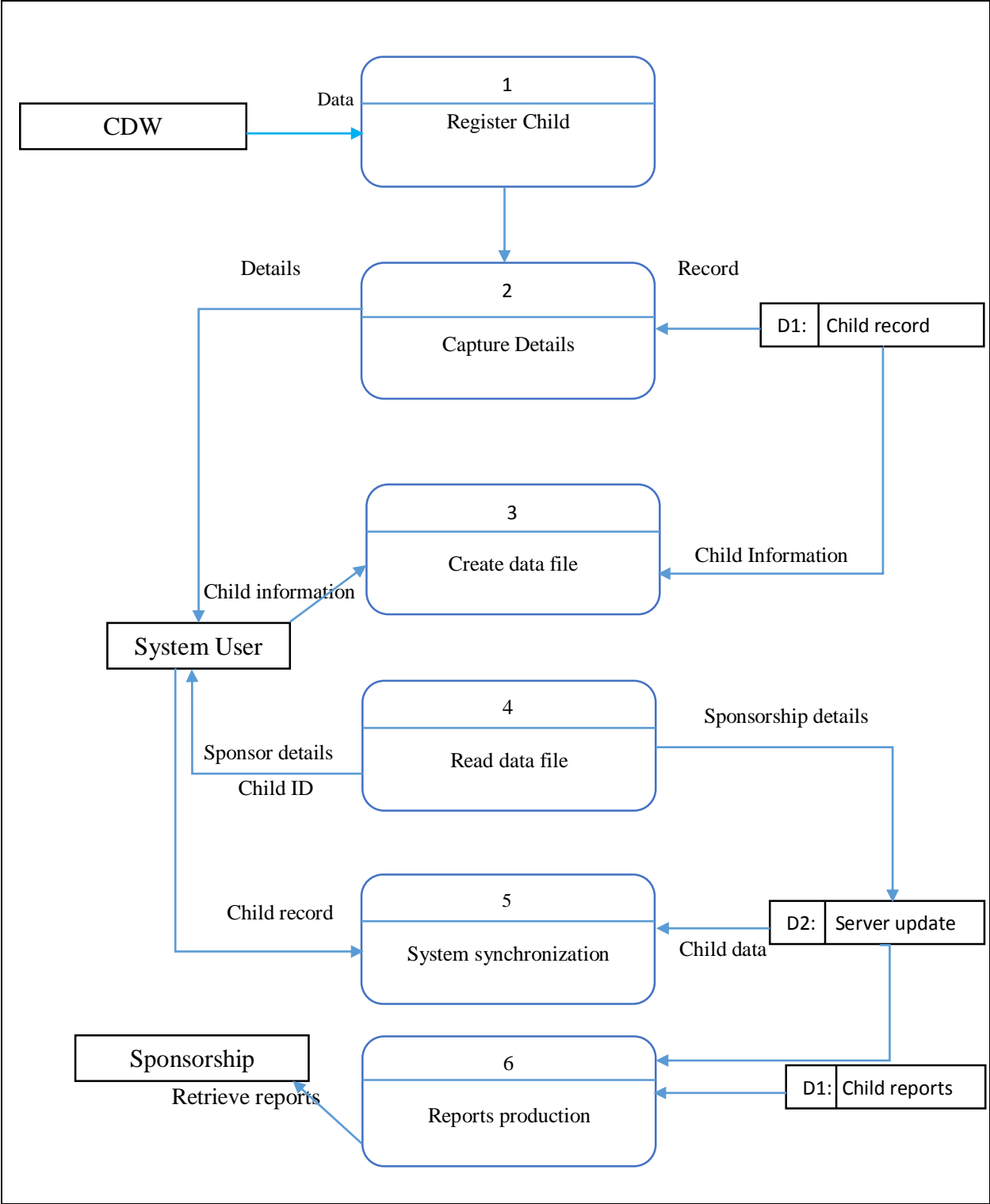
Figure 3. 3 Data flow diagram for the current system

Key:
                     System Process

                     Data Store

D1:   System Entity

                     Data Flow
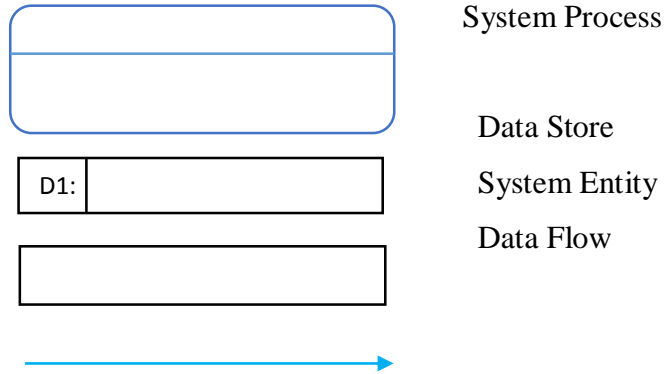
3.4 Weaknesses of current system

- Requires a lot of skill to use SD since it uses a lot of codes therefore requires a lot of training on the user part.
- Allocation of child IDs takes too long since its done at the IO and files send back, split and then send to FOs.
- The FO database is operating on 2 platforms. One on command prompt and the other on Graphic User platform creating data discrepancies when merging the two.
- There are a lot of cases of files getting corrupted along the way thereby leading to many discrepancies on the information being housed at the FO, CO and IO.
- Responding to sponsor correspondences is being done by sending letters via ZIMPOST thereby making it time consuming and expensive.
- Does not allow for tracking of health and education thereby making decision making difficulty.
- Some correspondences to sponsors are not reaching their intended destinations when sponsors have changed address and other happenings along the postage way such as being held at the sorting office or the address label getting erased/fading.

3.5 Evaluate Alternatives

After clearly defining the processes involved in the current system and also outlining the way data flows, the analyst had a much clear perspective of what was required in the new system. Alternative solutions were weighed in-order to find the most suitable solution. Alternatives that were considered are outlined below:

3.5.1 Outsourcing software

This is an option of buying software that is a ready-made and that seeks to quickly address the problem(s) that is being faced.

Advantages

- o There are no development costs involved.

- o Systems changeover will take a shorter time to implement.

- o The software can come with extra facilities that will be used in future or answer some un-identified needs.

Disadvantages

- o They might have high maintenance and complications especially if the vendor of the software doesn't offer efficient support for the software.

- o The packages end taking too much computer disk memory due to unnecessary functions that are not used in the organisation.

- o These packages are very expensive to buy.

- o High maintenance results in more costs being incurred thereby defying the purpose avoiding unnecessary costs by applying an efficient and reliable system to our problems.

- o They are Fixed and Rigid. Packages cannot be customized to the current activities.

3.5.2 Improving the Current System

This is when the organisation works on making improvements on the current system. In this case, the current system can be improve by having to upload child media.

Advantages

- o The development of the new system, which would be time consuming, and resource training is avoided and the organization will save on financial resources.

- o Procedures and policies continue to work in the normal way, which is familiar to everyone.

- Staff is well versed with system therefore cutting on cost of training.

Disadvantages

- Improving the command prompt system will mean retraining users so cost will rise.

- The system continue to on two separate platforms and bureaucracy won't be eliminated

- Technological advancements will be very difficult to apply in the current system.

3.5.3 In house development (Developing a new system)

This is producing software that is tailor made for specifically for the organisation and therefore meet all or attempts to meet all the requirements that would have been identified.

Advantages

- Offers control over system development.

- User specifications will be met.

- Optimum configuration is possible and is limited to what is needed.

- The new system will help reduce bureaucracy.

- It also offers more effective user training.

- Reduces data redundancy.

- Improves data consistency and integrity.

- Helps in to have a user friendly user platform.

- Solves unique user requirements and can be tailor made to function in a way all users can understand.

Disadvantages

- The system might be faced with resistance from employees.

- Development of the system will take time as compared to other alternatives.

o   It is expensive to develop the system though it has good advantages in the long run.

3.5.4 Recommendation

The recommended technique to use is in-house development. This is due to the fact that the approach is less costly as compared to other approaches. Also there is good communication between the developer and the final system users so a quality software is likely to be developed. In addition, confidentiality is enforced by the company since the system will be developed internally. Also maintenance costs are less as compared to other approaches of development. This therefore results in high quality software produced which will be matching the needs of the final users.

In house development was also chosen due the fact that its development costs were outweighed by its benefits to the organisation.

3.6 System Requirements

After investigating the functions and process flows of the current system, the next step is establishing the requirement needs of the current system. Requirements are divided into two namely functional and non-functional requirements. Functional requirements are tasks that the system must support, whilst non- functional requirements are limitations on various attributes of these tasks.

3.6.1 Functional Requirements

The functional requirements consists of various inputs, processes and outputs that are expected of the new system. The system's functional requirements should include:

o   Creating, Editing and Deleting user accounts.
o   Managing online user's accounts with security, each user should have a username and password. Users should be able to change their passwords whenever necessary.

o   Centralized database to enable real time access to child information and also reduce data redundancy.
o   Mechanism to check for data integrity and for allow for data verification during capturing of the data
o   Reports on child data should be produced to show issues to do with health, education, ages and those with outstanding correspondences

Case Diagram

According to Migely (2013), a case diagram shows the relations of actors in the system and how they operate in the system. The actors will therefore symbolize people or system users. The main objective of the use of case diagrams is to help developers in the development of the system that is they will be able to know the system access rights of each user as they will have discovered the relations between actors and the relationships involved.
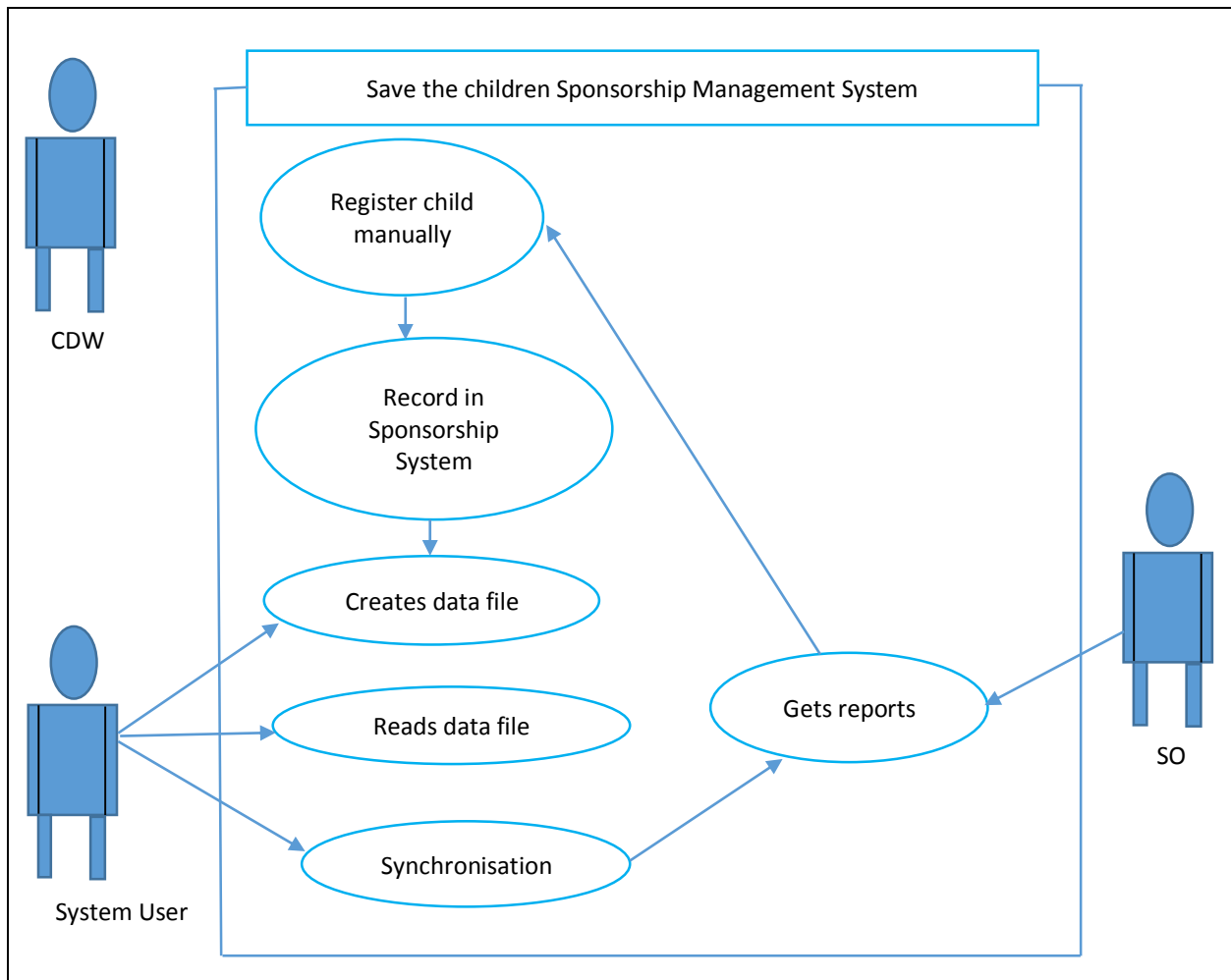
Figure 3. 4 Use of a case diagram on the current system

3.6.2 Non-functional requirements

When determining non- functional requirements of the new system we look at constraints that we face as we develop the system. The functional requirements of the proposed system range from the needs of general users to the needs of the organizations senior management.

User Interface and Human Factors

- o The system must be user friendly.
- o The system should be simple and easy to learn.
- o The user interface should be self-explanatory.
- o The system should allow for error recovery.
- o Colours used should be appropriate and friendly to eyes.

Error Handling

The system should have error handling for:

- o Data capture.
- o Data and or user details analysis.
- o Exporting of data to other formats. e.g. exporting to excel, word, pdf format.

Security Issues

The proposed system must be more secure through;

- o The use of secure authentication mechanisms such as passwords and access rights to system users.
- o Access levels should vary with different users to protect information.
- o Passwords must be more than eight characters.
- o Capturing the details of the user currently logging on to the system.

System efficiency and throughput

The proposed system is supposed to;

- o Allow for quick retrieval as well as availability of data whenever required.
- o Improve faulty logging process.
- o Eliminate job assignment duplication
- o Improvement of the services provided in terms of response time, efficiency and reliability.
- o Reduction of operational costs due to minimization on overtimes.
- o Provide for backups.

Technical constraints

In the development of the system the following maybe encountered during the different stages of development

- o   More technical staff will be needed to help develop the modules of the system.
- o   The system may become a bit complex and may need experts for support in the future.

3.7 Conclusion

The analysis of the system was carried out and the various activities to be carried out were outlined. The various information gathering methodologies were explained and the findings clearly reflected that the users were not satisfied with the current system. The company's current system was analyzed that is the various processes, inputs as well as outputs. The data analysis phase was clearly explained as well as the data flow diagram of the current system which highlighted the flow of data in the current system. All the weaknesses of the current system have been outlined and it was selected to adopt in-house development as a technique to develop a new system which will address the current system weaknesses. In addition, a functional and non-functional requirements analysis was done which outlined the various system requirements. The next chapter will be focused on the design of the new system, its architecture, modules as well as the interface and data requirements.

CHAPTER 4: DESIGN PHASE

4.1 Introduction

The focus of this chapter is on the design or building of the new system. According to Miller (2014), the design phase will focus on the new system's architecture, the hardware involved, the people as well as the various requirements of the new system. The business requirements will be outlined, and the various system aspects such as the user interfaces, the various system inputs and outputs will be outlined. The proposed system will be described in details that is how it works, the flow of data through context and data flow diagrams as well as its architectural design. The system physical design will be drafted which will highlight the hardware components interconnection with the software or system components. The system databases will be designed as well as an enhanced entity diagram. The system's abstract design will also be drafted which will show the various system modules.

4.2 How the systems works

The system was designed to enhance tracking of, child wellbeing aspirations (health and education), correspondences between the registered child and the sponsors and instant allocation of child IDs. Child data gathering is done in the villages by CDWs feeling in manually on Child History forms and also capture child's image. The gathered information and photo is handed to the Systems User for capturing into Sponsorship Management System. The SU quality reviews the information before capturing. The photo has to be clear for it to be uploaded. After capturing process is the Registration process of the new child into Sponsorship process. The SU also uploads the child photo to make a complete package. Once the registration process is completed and the information is submitted online, an ID should be allocated to the child. The Administrator will be able to view new registrations, view and print the information and download the photo so that it is used to find a sponsor for the child. The SU receives child correspondences from sponsors, capture them in the online system. A correspondence monitoring record is created which will help to respond within standard. CDW brings back child response and it is uploaded by the SU on the correspondence record. The administrator who is based at the IO downloads the response for sending to the respective sponsor. A registered child can receive letters and monetary gifts from the sponsor. This should be viewed under correspondences with a set turnaround time so that they are responded to within time. Child health is assessed using a scale of age, recorded weight and

height to see if the child health is up to standard or not. Education level should also correspond with age. If it does not correspond then a Case (Notification) should be raised so that field follow-up can be done and this will help to see if the child needs some support or not.

4.2.1 Context diagram

This refers to a tool which is used to depict the relationship between the system and its environment in which it is operating in. This is in accordance to Bittner and Spencer (2013). The diagram shows an overview of the whole system without much detail about other various system aspects such as system requirements. The proposed system's context diagram is as illustrated below:
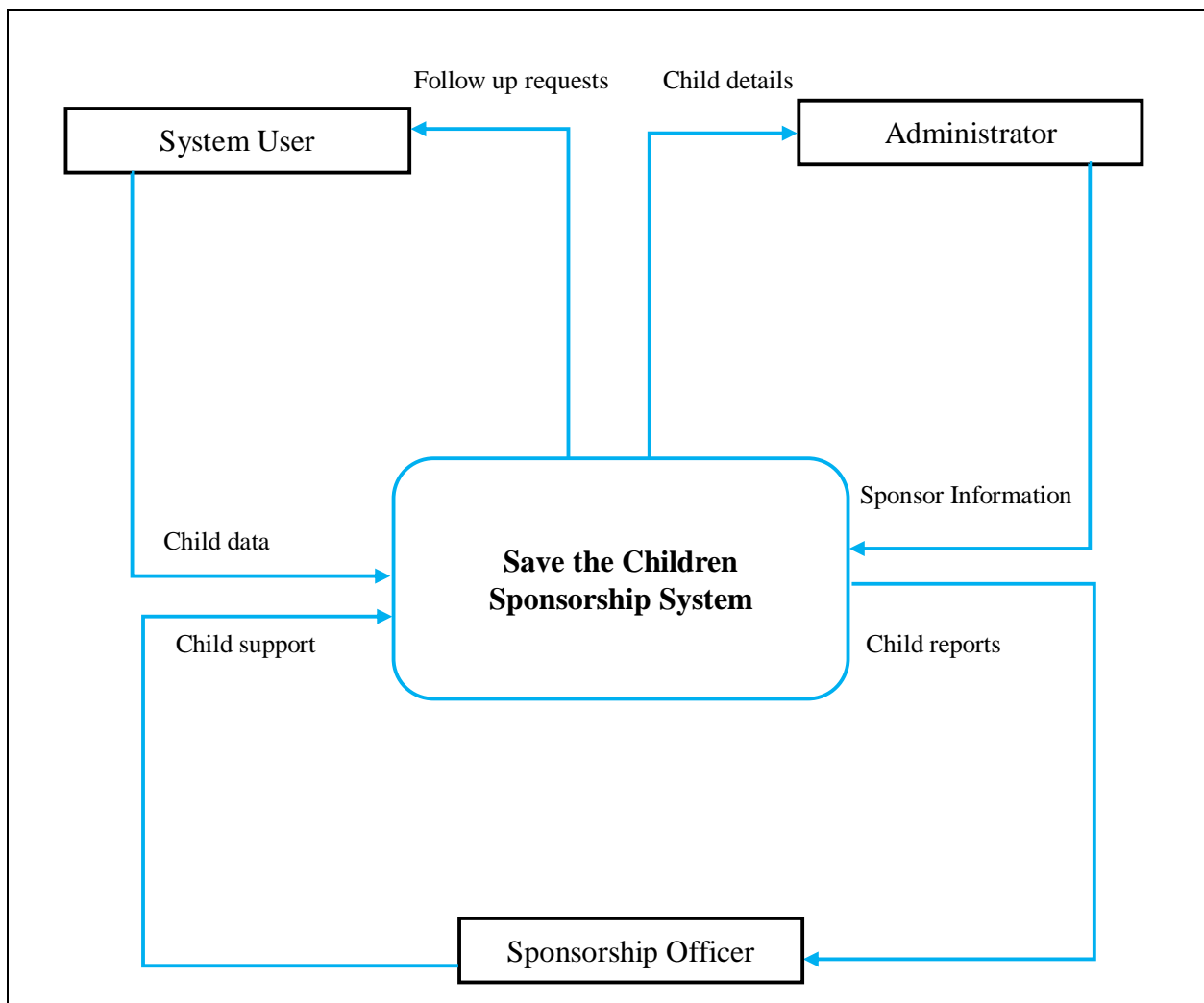
Figure 4. 1 Context diagram for the proposed system

Key:

System

Entity
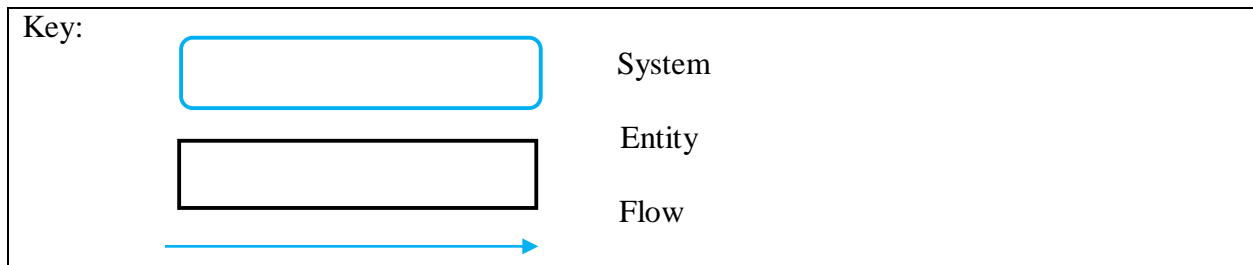
Flow

4.2.2 Data Flow Diagram

According to Bittner and Spencer (2013), a tool which illustrates the movement of data in the system is known as a data flow diagram. The data flow diagram does not highlight the program logic however it only reflects the flow of data in the system. It therefore uses four symbols to reflect data exchange in the system which are the entities, the processes, data stores and the data flow. The entities represent the individuals who will work with the system data. The processes are responsible for producing output given the data from data sources as well as the entities. The data flow will show the movement of data from source to destination and also the data sources are responsible for the collection of data or data storage repositories. The following diagram illustrates the proposed system data flow diagram.
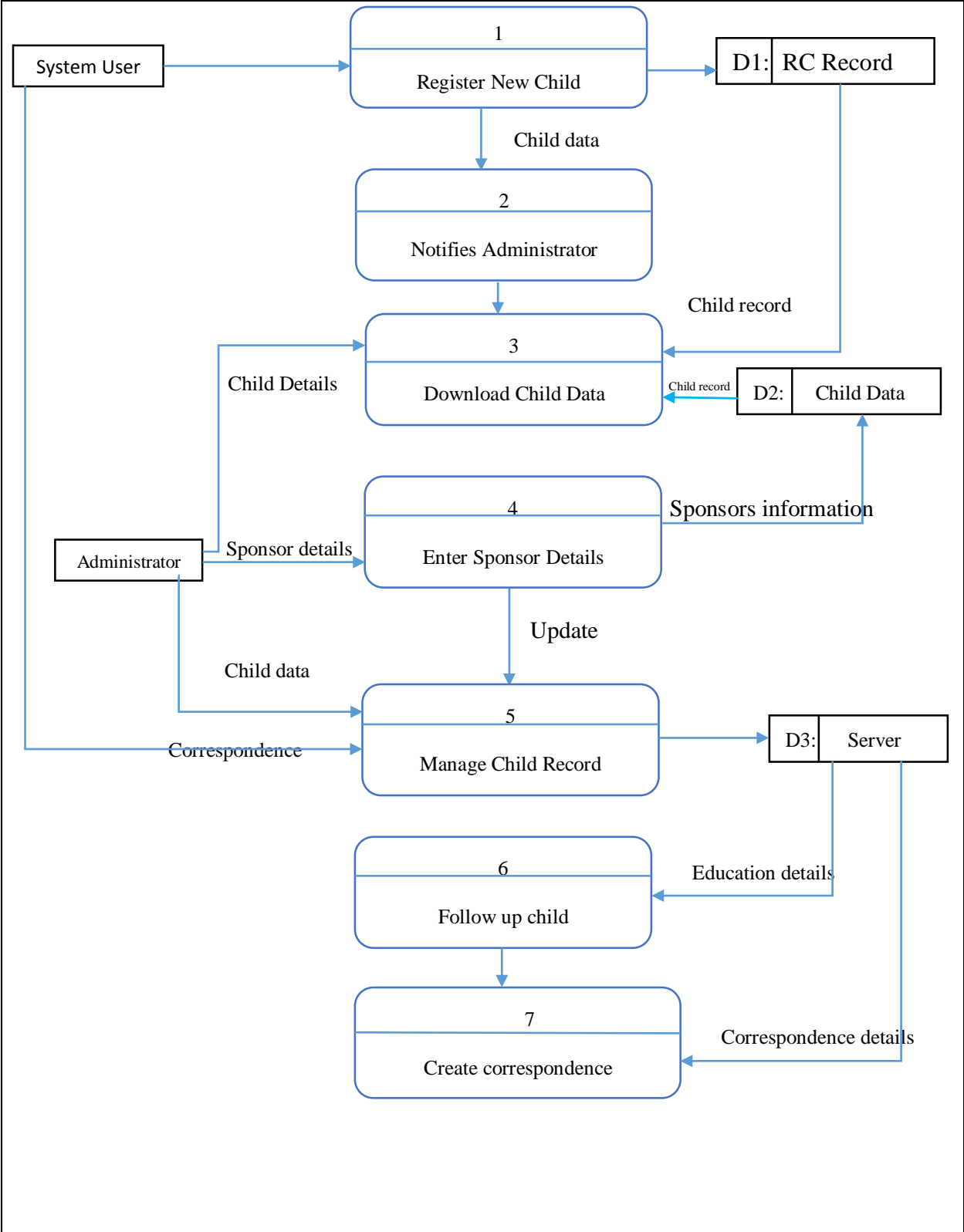
Figure 4. 2 Dataflow Diagram for the proposed system
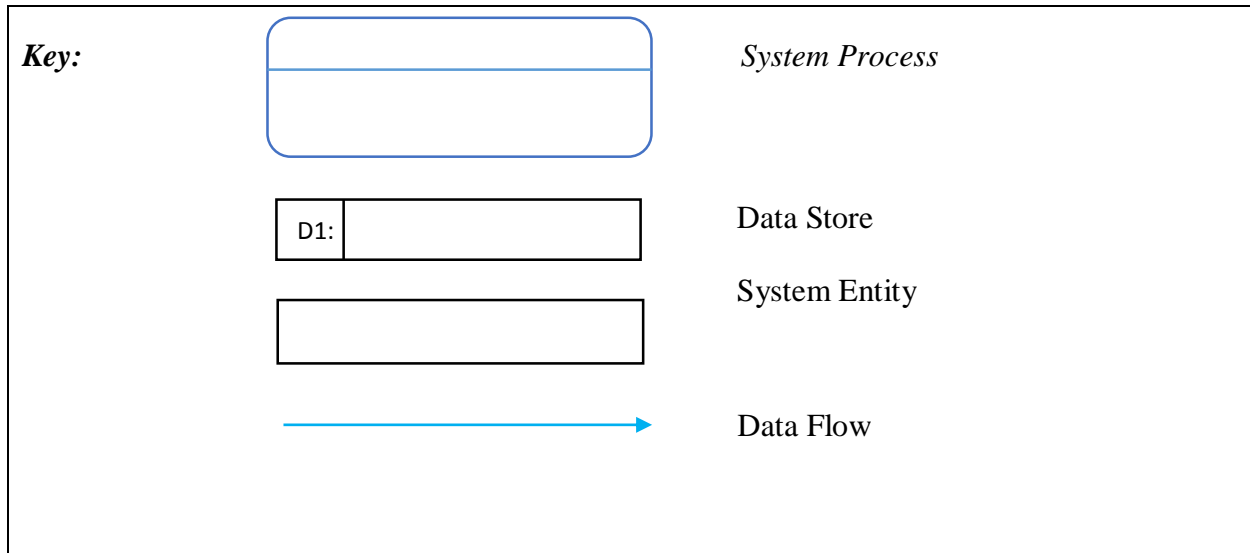
4.3 Architectural design

According to Mazmark (2015), the architectural design of the system is the overall system structure partitioned in terms of the system components as well as the interconnection of the various system components. The hardware and software components are reflected in the system's architectural design. It therefore shows how the various system components will be connected. These include but not limited to the clients, servers as well as the work stations. The architectural design ensures that all the hardware and software requirements are put in place to ensure reliability and efficiency of the new system.

The following are the components that will be included in the architectural design of the Save the Children Sponsorship Management System.

User Machines

These are the various computers (desktop and notebook) which will be used to access the system. The user interface will be displayed on the browsers since the system is web based.

Server

The system will run on IIS (Internet Information System) Server which will be installed together with the windows server package.

Network Cables

These will be used to interconnect the various network components such as network switches and routers.

Printers

These will be responsible for printing various reports which will be produced by the system that is Tickets reports, User reports as well as Network Logs reports.

4.4 Physical design

According to Mazmark (2015), Physical design is used to represent the system's internal and external entities. It therefore depicts the environment in which the system operates in, its structure as well as the physical components involved. It also involves the network configuration, physical data security, storage devices, structure of data as well as the input and outputs as well as other physical aspects of the system. The diagram below illustrates the system physical design.
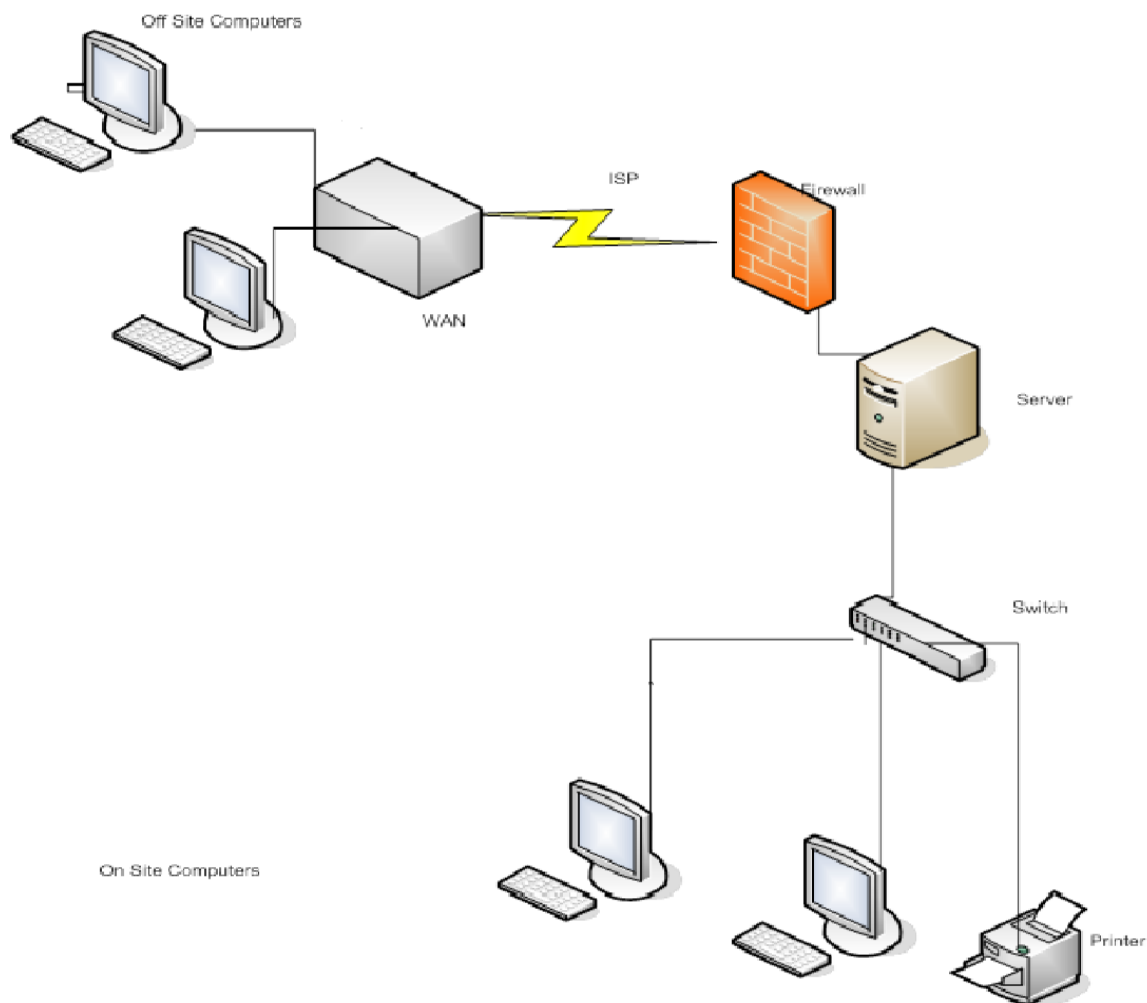
Figure 4. 3 Physical design

4.5 Database Design

Guliavy (2015) defined a database design as an organized data collection in digital form. It therefore enable data storage as well as retrieval of data by the system users. For the design of the database, the ANSI/SPARC architecture shall be used which consists of three schemas that is the internal level, conceptual as well as the external level. The architecture facilitates data independence. This means that the changes in one schema will not affect other schemas. The three database design levels are as follows:

The External level

This level is responsible for access restriction. At this level, data may be presented differently to each user. This means that information significant to each user is granted.

The Conceptual level

This is referred to as the community view of the database. It highlight the various entities as well as their attributes and relationship, information or data integrity as well as data constraints.

The Internal level

This refers to the physical database representation and therefore determines how the data is stores in the system database.
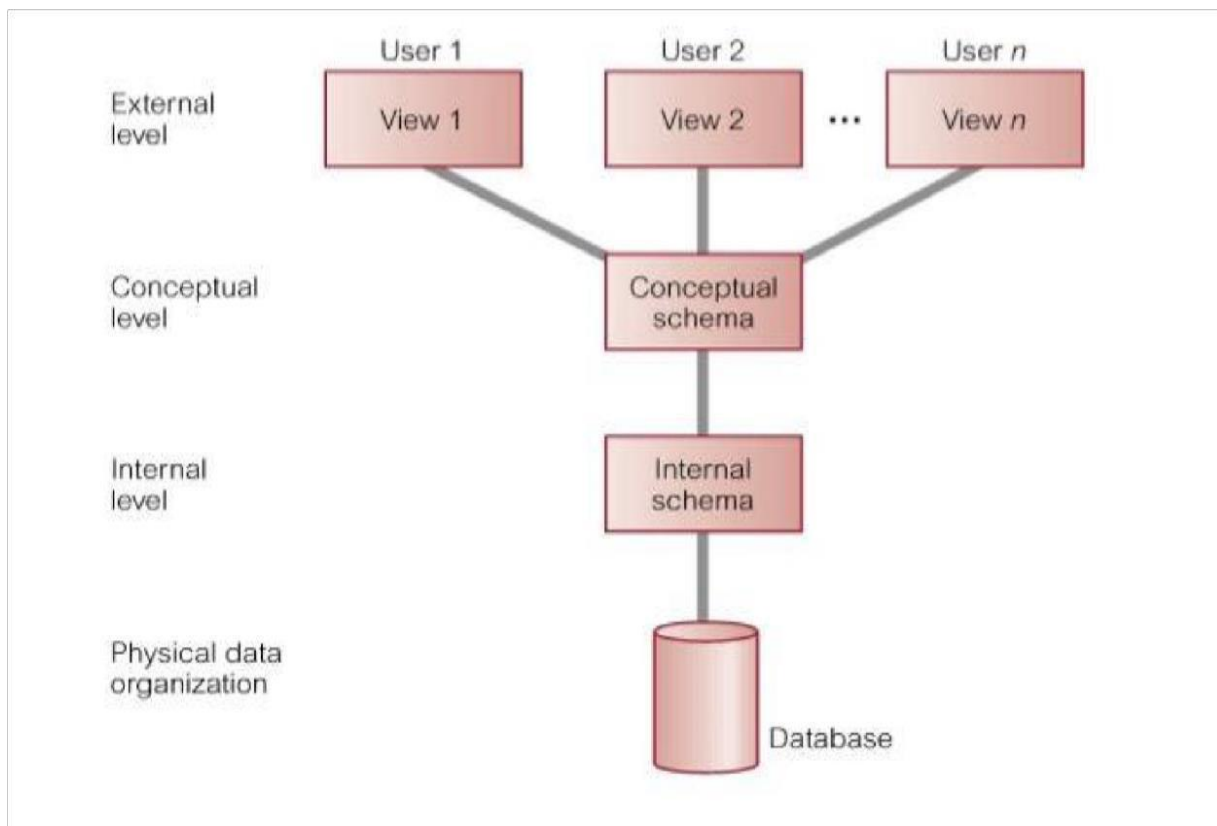
Figure 4. 4 Three level architectural diagram

4.5.1 Database tables

According to Gellengson (2013), all the data that is required in the system is stored in the database in rows and columns which are known as database tables. The proposed system's database tables are shown below:

User details table

Field	Data type	Description
Username	Varchar (50) [PK]	Personal Choice
Full name	Varchar (100)	Full Name of the User
Level	Varchar (50)	User Access Level
Password	Varchar (10)	User secret Password

Table 4. 1 Database design for user details

Child details table

Field	Data Type	Description
Child_ID	Integer (4) [PK]	Child assigned identity number
First_Name	Varchar (50)	Child's first name
Surname	Varchar (50)	Child family name
Date_of_birth	Date	Date child was born
Religion	Varchar (30)	Child's religion
Favourite_Play	Varchar (50)	What child does during spare time
Date_Registered	Date	When child was registered in the system.
Education_level	Varchar (50)	Level in school
Grade/Year	Integer	Grade in school
Favourite_subject	Varchar (50)	Subject favoured most in school
Reason_not_in_school	Varchar (100)	Explain why not in school
Health_Status	Varchar	Button to choose for health
Disability	Varchar (100)	If child is disabled
Health_problem_comment	Varchar (250)	Explain health if not satisfactory
Height	Varchar (5)	Child at registration
Weight	Varchar (5)	Weight of the child

Table 4. 2 Child details table

Sponsor details

Field	Data type	Description
Sponsor_Account	Varchar (10) [PK]	Unique sponsor account
Sponsor_Name	Varchar (60)	Full sponsor name
Date_Engaged	Date	When started to sponsor the child

Table 4. 3 Sponsor details

Correspondence table

Field	Data type	Description
Correspondence_type	Varchar (50)	Type gift received by child
Creation_date	Date	Date captured in the system
Due_date	Date	When the correspondence is due for response

Table 4. 4 Correspondence details

4.5.2 Logical data base design

According to Gellengson (2013), the logical database design is done to determine how the attributes of the various system entities can be arranged into database structures. The major role of database tables facilitate storage of data and to manage the relationship between the data within various database tables through the use of foreign keys. *Table 4.5 Entity and Attributes*

Entity	Attributes
System User	Username, Password, Level, Full name
Administrator	Username, Password, Level, Full name
Child	Child ID, First Name, Surname, Date of birth, Religion, Favourite play, Date Registered, Education Level, Grade/Year, Favourite subject, Reason not in school, Health Status, Disability, Height, Weight, Age

Table 4. 5 Entity and attributes

4.5.3 Entity relationship diagram

According to Tamrand (2013), an entity relationship diagram is a pictorial view which illustrates the relationship between the various system entities. It also have other concepts such as sub classes as well as super classes which also aid in showing the relationship between the entities of the system.

Below is an ERD that illustrates how the various entities in the database are related.
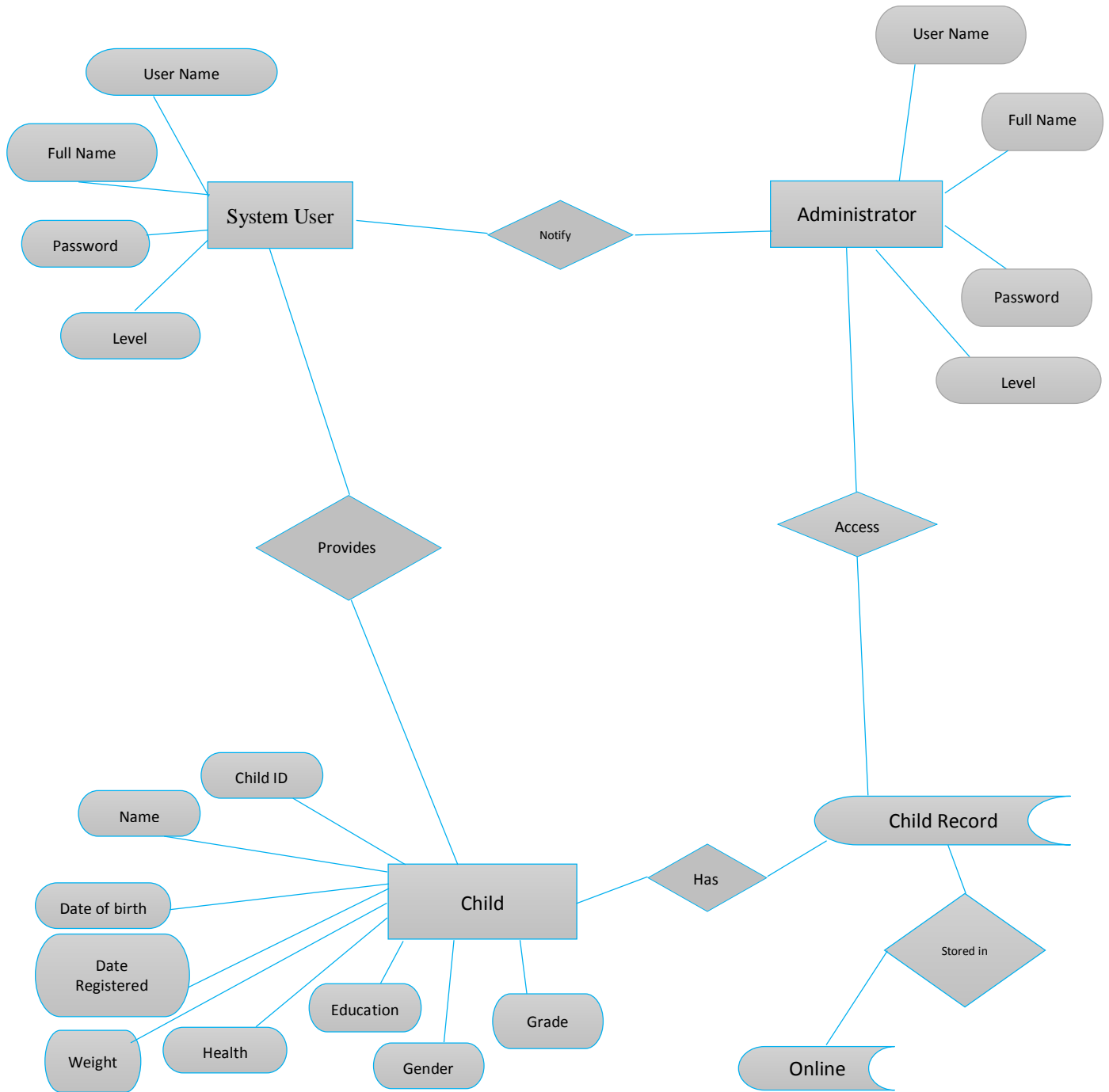
Figure 4. 5 Entity relationship diagram

4.6 Program design

The program design illustrates the various modules of the program that is how the various modules are going to be coded and how the modules will communicate with each other to form a single program. It includes the class diagram, package and sequence diagrams which therefore clearly specifies how the system will work.

4.6.1 Class Diagrams

Satzinger, Jackson and Burd (2016) submitted that a class diagram is a graphical presentation of objects sets and the associations between them. As it captures the view of the system, it is therefore essential in Unified Modeling Language.

Table 4. 6 Class diagram for the proposed system

<<Super Class>> ICT Person
User Name: Varchar [PK] Full Name: Varchar Password: Varchar Level: Varchar
Add Users

<<Super Class>> Administrator
User Name: Varchar [PK]
Add Sponsor Details Downloads Child details Downloads Child Photo

<<Super Class>> SU
User Name: Varchar [PK]
Add Children Uploads Responses Uploads Child Photo Generates reports

<<Super Class>> SO
User Name: Varchar [PK]
Request reports

<<Super Class>> Child
Child ID: Varchar [PK]
Provides details

Edits

View

4.6.2 Package Diagram

The diagram shows packages and their relationship in the system. Packages are essential in modelling elements for example cases and classes into sets. The relationship is illustrated in the diagram.
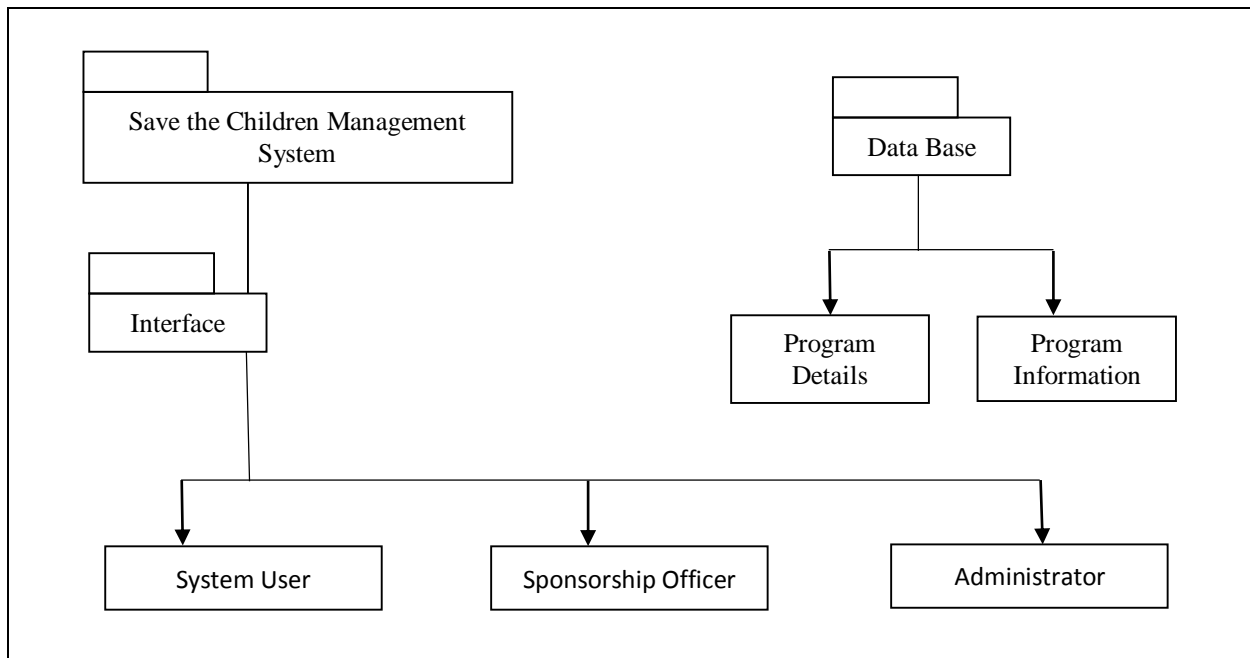
Figure 4. 6 Package diagram for the new system

4.7 Interface design

According to Rosenblatt and Tilley (2016), the interface design refers the design of hardware and software applications with the main thrust on the user interaction and experience. User Interfaces are done in order to simplify the operations of a certain application. It is therefore often called user-centred design as its main focus is on user interaction. The system shall be designed so that it is beautiful and interactive that is providing feedback if necessary so that it is easy to use. Textboxes shall be used for data input, message boxes for feedback as well as hyperlinks for redirecting users to various system pages.

The interface should be:

  ➢ Easy to use- easy even with inexperienced users

  ➢ Easy to learn- easy for users to remember

  ➢ Fast processing and responding speed

  ➢ Easy to develop

4.7.1 Menu design

The main menu is an interface that shows all the available navigation options for a given user. This means that different users will see a different menu depending on the access level of that particular user.
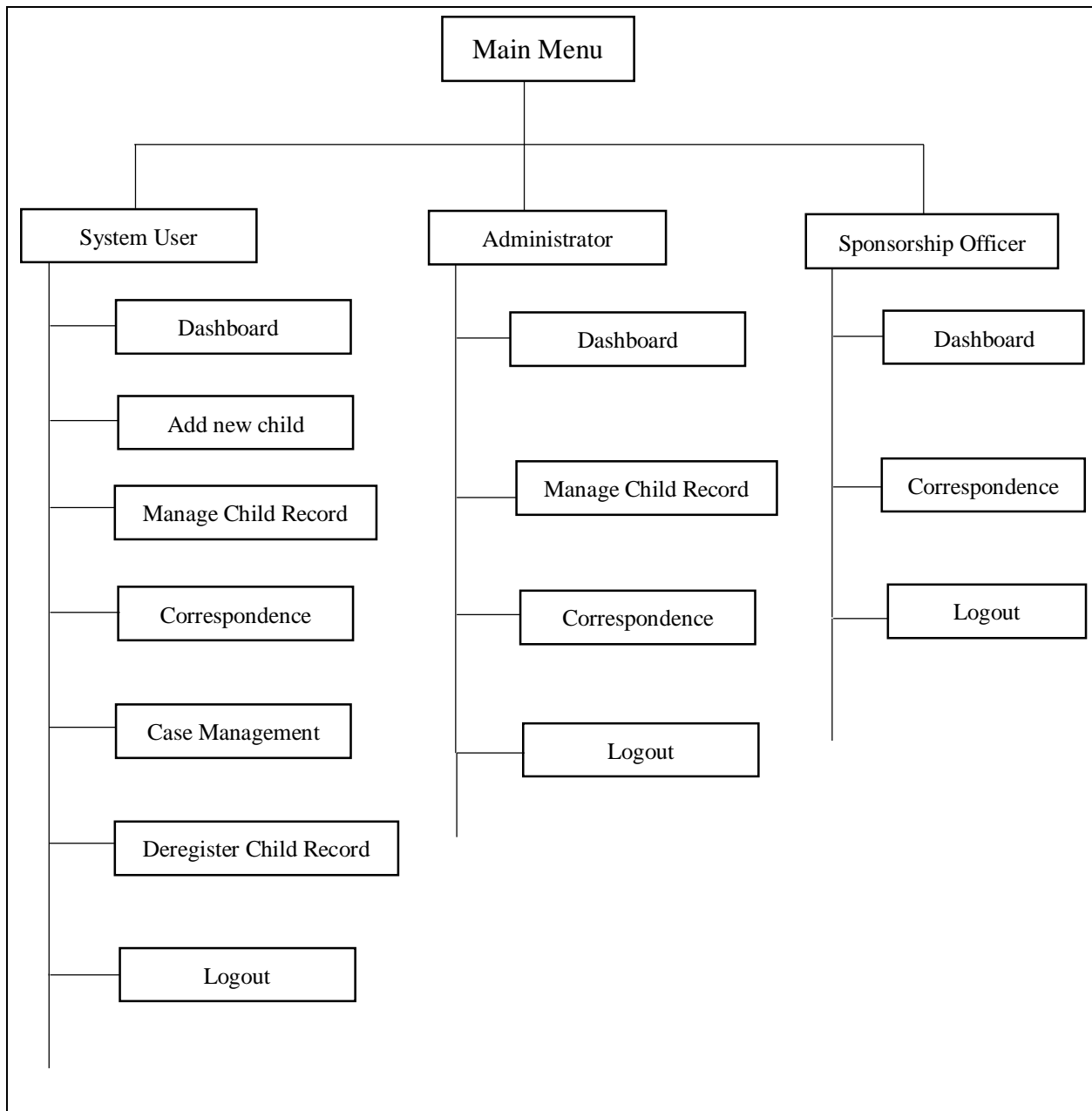
Figure 4. 7 Main menu design

Home Page Design

This is the homepage of the system page which is firstly loaded upon system launch. It will comprise of a brief description of the system, highlighting the system main functions, contact details, registration page as well as a login section where users can login to access various system options.

Figure 4. 8 System Homepage

Input Design

Add New User Form

Figure 4. 9 Add User Menu

User Login Page

Figure 4. 10 User Login page

Dashboard Page

Add New Child | Manage Child Record | Correspondence | Case Management | Reports

Figure 4. 11 Dashboard page

Add new child record form

Add New Child

Given Name: _____   Surname: _____

Date of birth: _____   Religion: _____▽

Is the child in School: Yes ⬤   No ◯

Education Level: _____▽   Grade/Level: _____▽

Reason Not in school:

Heath Status: Satisfactory ⬤   Unsatisfactory ◯

Health Problem Comment

Height: _____   Weight: _____

Upload Photo   Save

Figure 4. 12 Add new child page

56

Add Correspondence

Figure 4. 13 Add new correspondence page

Upload child response

Figure 4. 14 Upload child response

Sponsor details page

Sponsor Details	
Support Office	▽
Sponsor Name	
Date of Sponsoring	
Sponsor Language	
Sponsor Address	
	Save

Figure 4. 15 Sponsor details

Capturing education details page

Education Details	
Is the child in school	▽
Reason for not in school	▽
Education type	▽
Education Level	▽
Grade/Year	▽
Education commend	
	Save

Figure 4. 16 Education details

Output Design

Correspondence page

Figure 4. 17 Correspondence page

Administrator View - Manage Children Files

Figure 4. 18 Manage child page

List of response

<div align="center">

Child Response

List of response

Click the Link to download
</div>

Child_id	Uploaded by	Date	Download response
R168233A	Mangezi	5/12/2019	Dear Sponsor.doc
R188121R	User	13/04/2019	To nigel.doc

Search tasks

Project [   ]

Implementing office [   ]

Child_id	Family Name	Name	Community	Correspondence Type	Creation Date	Mail Action route	Due Date	Days before due date	Action
R188121R	Musora	Farai	Mharadze	EL	05/10/2019	Received in FO	04/07/2019	+59	

4.8 Pseudo code

4.8.1 Login code

Enter Username and password
Complete CAPTCHA authentication
Press Enter or login button
Application connect to SQL Server database
If credentials are correct then select login
Case "System User": {
    Direct to System User homepage
}
Case "Administrater": {
  Direct to Administrater homepage
}
Case "Sponsorship Officer": {
    Direct to Sponsorship Officer Homepage with less options
}
Else if the fields for username and password are empty
Print "Enter Credentials To Access System"
Clear textbox fields and remain on the login page
Else if password or username is incorrect
Print "Incorrect Credentials"
Else if CAPTCHA is valid equals False
Print "Incorrect CAPTCHA value"

4.8.2 Code for tracking correspondence

Search child details then edit to add new correspondence
Capture correspondence type, Creation Date and comment
If correspondence is created then
Case 1
Set date for Due date
Case 2
Subtract creation Date from Due Date and leave a balance of
Remaining days before due date.
Print Correspondence type, Creation Date, Due Date and Days before overdue

4.8.3 Managing child record

Search child record and click Update
Change the information you to change
Add new correspondence
Add sponsor details
View other correspondences
Save
Logout

4.9 Security Design

Lopez, Huang and Sandhu (2013) states that the security design of a system is crucial in ensuring system protection from all possible aspects of intrusion and damage. The security design therefore have three aspects which include physical security, network security as well as operational security. These ensure full system protection against intruders and hackers.

4.9.1 Physical security

According to Harris (2013), physical security is whereby all IT hardware equipment, software as well as network devices are safeguarded from physical actions that might cause harm to the equipment resulting in a loss. It therefore involves protecting equipment from things such as floods, theft, vandalism as well as other physical dangers. Measures have been put in place to safeguard the equipment from such dangers. These include biometric security with CCTV technology, alarms for fire detection as well as an uninterrupted supply of electricity. Alarms and security cameras have been put in place to detect unauthorized entry so as to reduce theft cases. Fire detection systems will serve as a fire guard to safeguard network and other hardware devices.

4.9.2 Operational Security

According to Voelz, Moran and Philpott (2011), this involves operational security procedures, administrative security which involves policies, procedures through policy and guideline documents. It involves an outline of the procedures that are allowed and those prohibited at by the organization. Business processes are outlined in the procedural document. Policies outline all the activities allowed and those not allowed by the organization. This is meant to protect the overall business security so that all activities are carried out in an efficient and effective manner. Also policy standards shall be used so that all the system input is secure. This will be done through use of CAPTCHAs and password complexity which shall also be used for authentication so as to reduce chances of a security breach. Guidelines will be used to outline how the various ICT procedures as well as other business procedures will be carried out to achieve desired goals. An ICT policy has been developed which will help to assist user so that they remain in line with organisational expectations.

4.9.3 Network Security

According to Kirza (2015), network security is meant to ensure protection of the network and data flowing in a network. It therefore includes hardware as well as software technologies. It is therefore meant to protect physical network infrastructure against unauthorized access, misuse, modification as well as destruction to ensure that users perform their daily activities in a secure environment. An updated antivirus software will be used to scan potential harmful programs so that the network infrastructure will continue to function in a more efficient manner. Also a firewall will act as a defence mechanism to filter requests so that hackers will not attack the network. Traffic will be blocked through various policies which will be set by the network administrator. This will therefore ensure a secure environment.

4.10 Conclusion

The overall system functionality was explained. The flow of data was also illustrated as well as the hardware and software needed were outlined in the system architectural design. The physical design has clearly reflected the communication between hardware and software. Also the database design have been fully explained and also the system tables have been designed. The relationship between various entities and the processes have been shown using the enhanced entity relationship diagrams. The program design have also been drawn which include the package and class diagram. The proposed system's interfaces where designed to reflect how the users will interact with the system. Also the security design was explained which included the operational security, physical as well network security. The last chapter is the implementation phase in which the final system implementation will be explained. The system will be tested and errors will be detected and corrected during this phase. It is also in this phase where the maintenance of the system shall be discussed and further system recommendations.

CHAPTER 5: IMPLEMENTATION PHASE

5.1 Introduction

The implementation phase refers to the execution of plan or a design as well as its practice. It therefore means that the blueprint will now be put into action. This is in accordance to Granvale (2015). The chapter will highlight the various coding as well as testing techniques, and installation alternatives highlighting their advantages and disadvantages. The maintenance methods will be explained and the system will be evaluated to see if it meets the specified objectives. Further recommendations will be done to highlight various areas which should be modified in the future.

5.2 Coding

According to Miskins, Stonewell and Mexen (2014), coding is whereby the system developer writes code, debug and maintain the system. This is also known as computer programming. The programmer will develop the system to suit with the specified objectives. In this system, Visual C#, PHP, Bootstrap and HTML was used to develop the system. Not only was the programmer involved in the coding exercise but also the system analysts, users as well as researchers.

5.3 Testing

According to Morreny (2015), the goal of software testing is to find out if the software meets functional and non-functional user requirements. This is a procedure which is done in order to detect errors, functionality as well correcting errors so that the developed system is of high quality and according to the required specifications. When testing software, all faults that might affect the system performance or security areas identified and rectified. Validation and verification are also part of software testing since these also increase the quality of the software. Validation ensures that the system fulfil user requirements at the completion of the system and also verification on the other hand, verification ensures that the system meets the expected objectives at the beginning of the development exercise. The testing procedure is further split into two types which are white-box testing and black-box testing.

Black box testing does not concentrates on the system's internal mechanism but rather checks the input against the system's output. This is in accordance to Macron, (2015). The technique is

therefore mostly used for validation. On the other hand, white box testing considers the system's internal mechanism and require experience in order to perform this exercise since it is largely for verification.

5.3.1 Unit Testing

This is also referred to as program testing and in this case, system sections are tested independently. The objective is to check if the various modules are performing as per user requirements on specific blocks of code and if there are any errors on the modules, they are then rectified. White box testing technique was used for testing blocks of code in the various modules. The modules were tested and the following screenshots highlight the testing procedure. Black box testing was used to check if the users were satisfied with the functionality of the system.

Figure 5. 1 System User registration form

5.3.2 Sub system testing

The different disintegrated modules are combined to form larger sub systems which are then tested to detect errors. This is carried out after completing the unit tests. The tests are run until all the sub systems errors are rectified. The tests were run on the various system sections. The following shows the login page in which is used for authentication purposes. All the users login and are then directed to their relevant homepages.
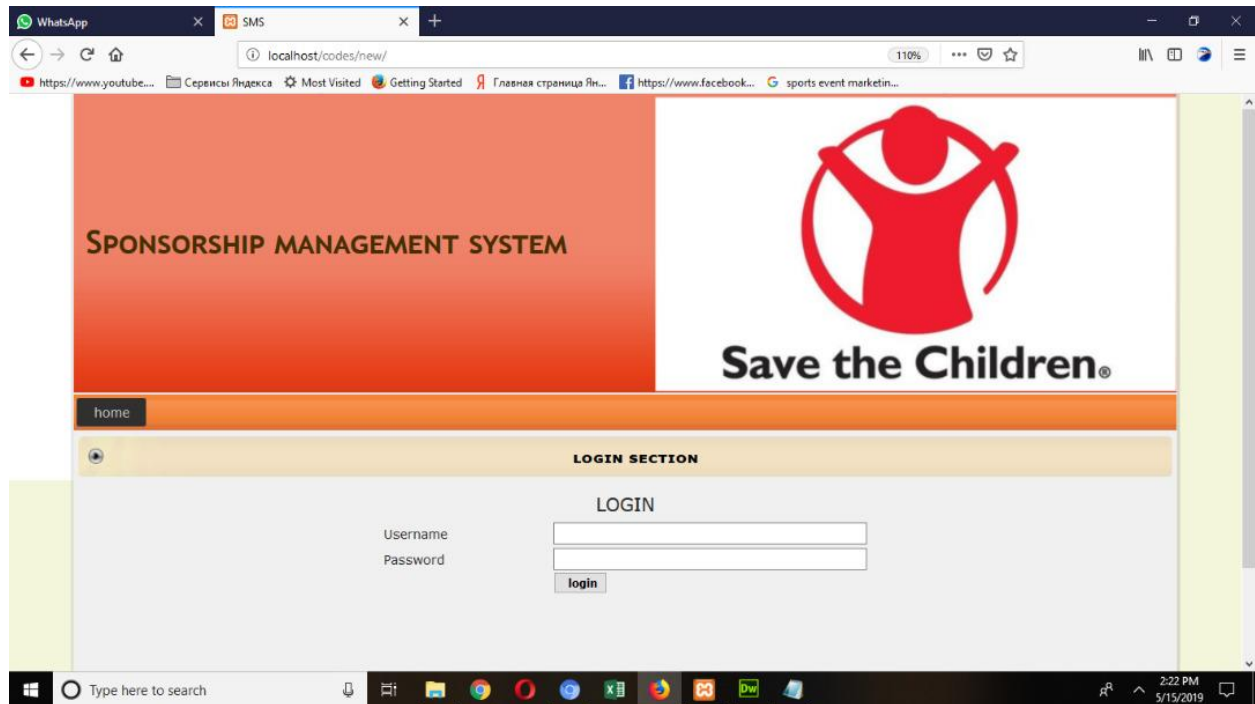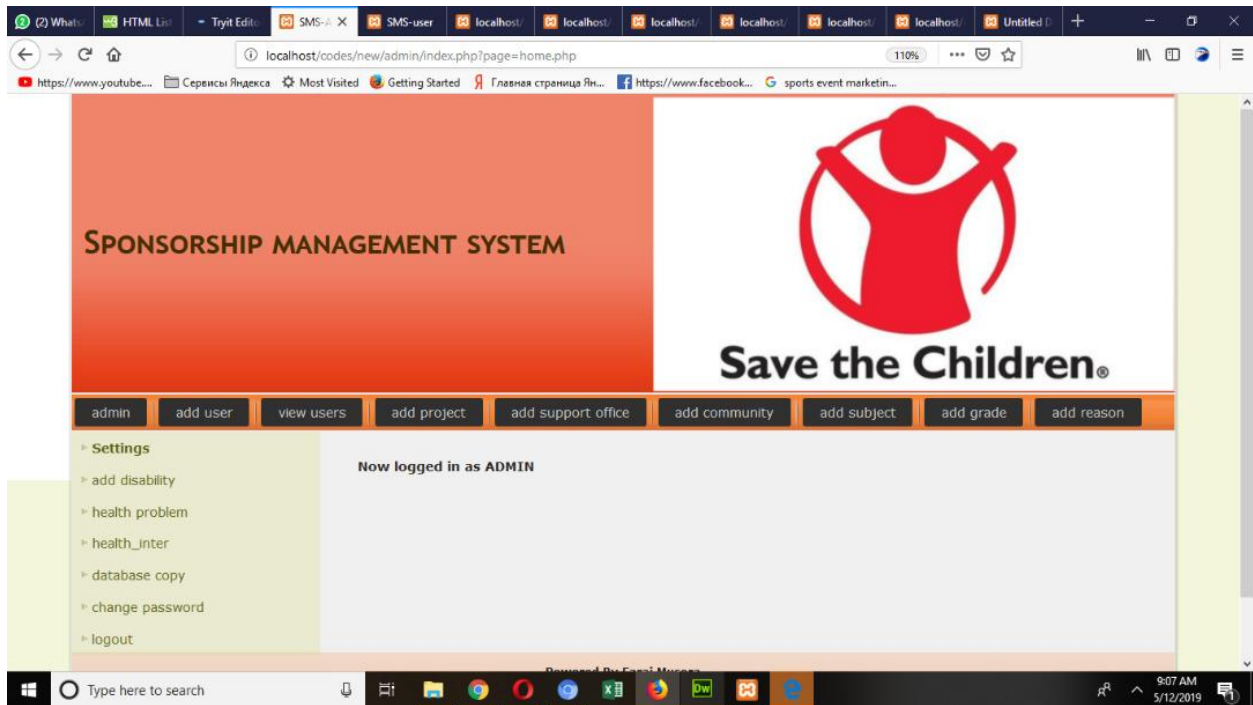

Figure 5. 2 Login page

Figure 5. 3 Admin Homepage

The system was tested if it is performing as required. The system successfully directed the administrator to the admin homepage. The admin dashboard was also tested if the correct results were displayed.
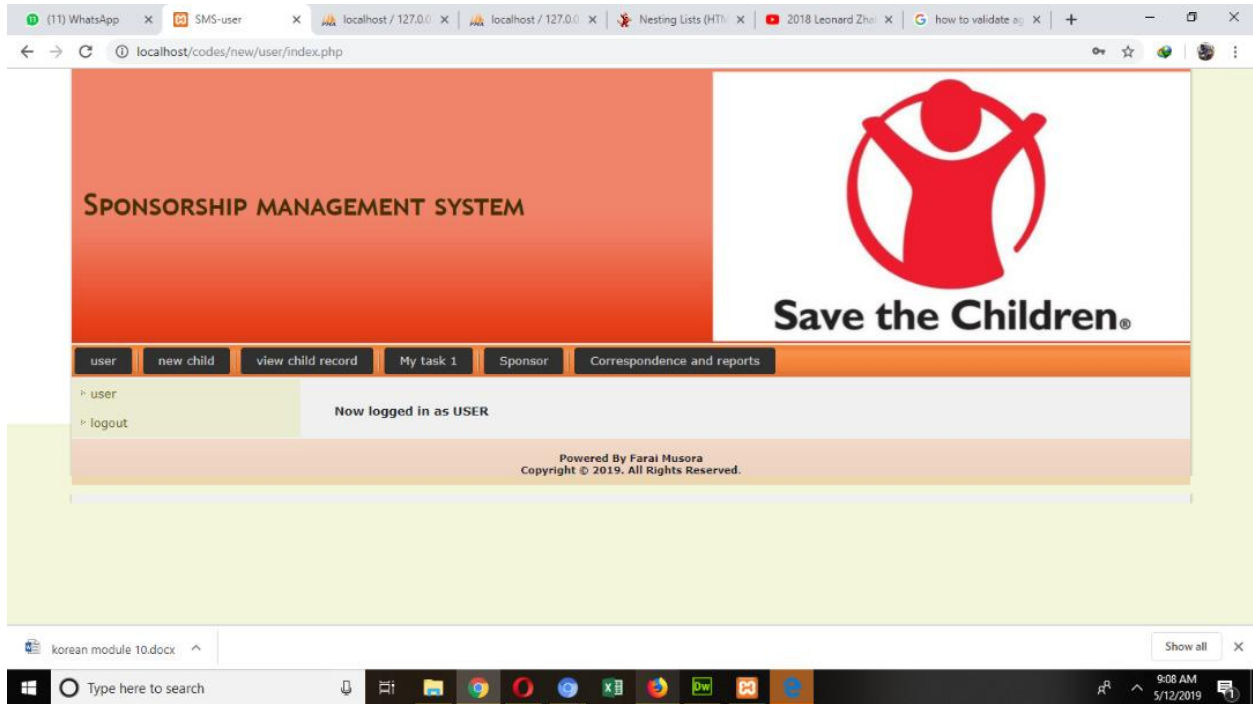
Figure 5. 4 User Dashboard

5.3.3 Acceptance Testing

This is a test done to find out whether the system is accepted for delivery and if it is complying with the requirements of the company. This stage is vital as it calls for user participation. This is according to Roger (2015). It is when the user requirements are matched against the system's functionality to check if the system is processing as per user requirements. This stage is therefore critical since the involvement of final users of the system is key to a good acceptable software. The acceptance testing is therefore done in two phases which are alpha and beta testing. The system is ready for implementation when the acceptance testing is completed.
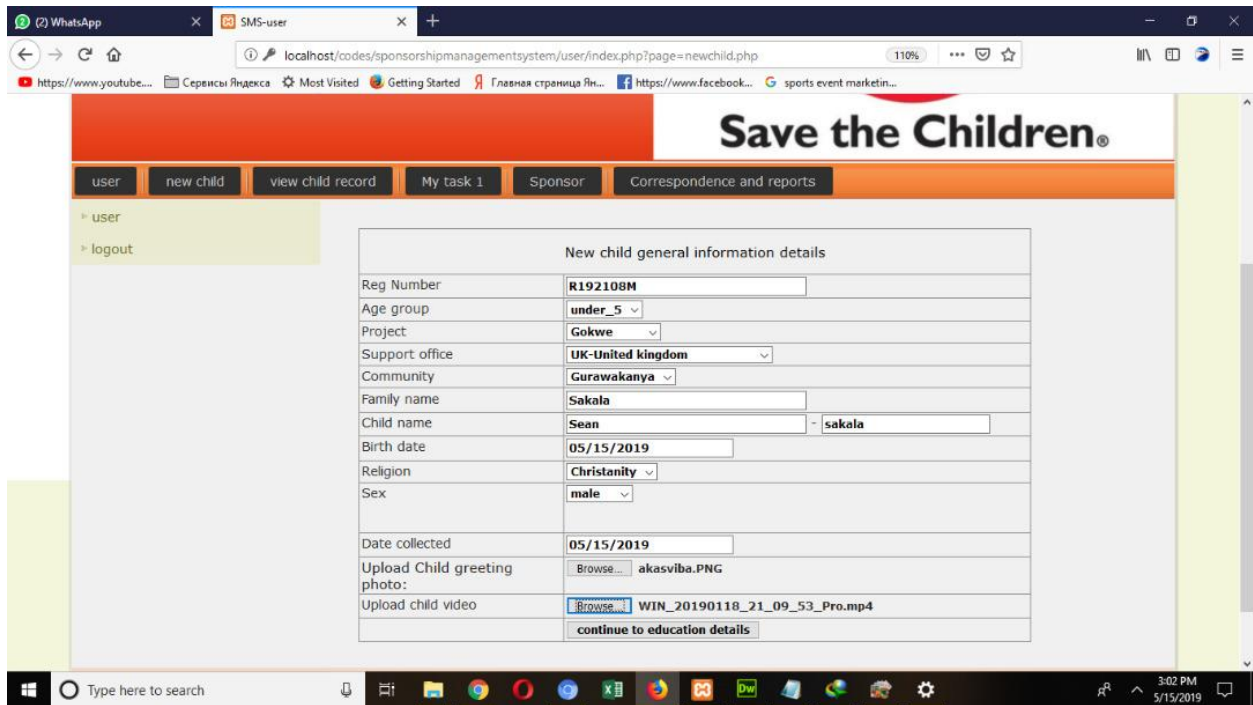
Figure 5. 5 Registering a new child

The validation of the system is checked in Beta testing. The user in this test tried to register a new child but failed since some of the fields were blank. The system is therefore validated in such a way that a user will not be able to register without sufficient data. In Alpha testing, the system was tested if it was functioning as anticipated. Since the system was supposed to register a child and allocate an Identity Number, the system successfully allocated child and identification number. This is as shown below.
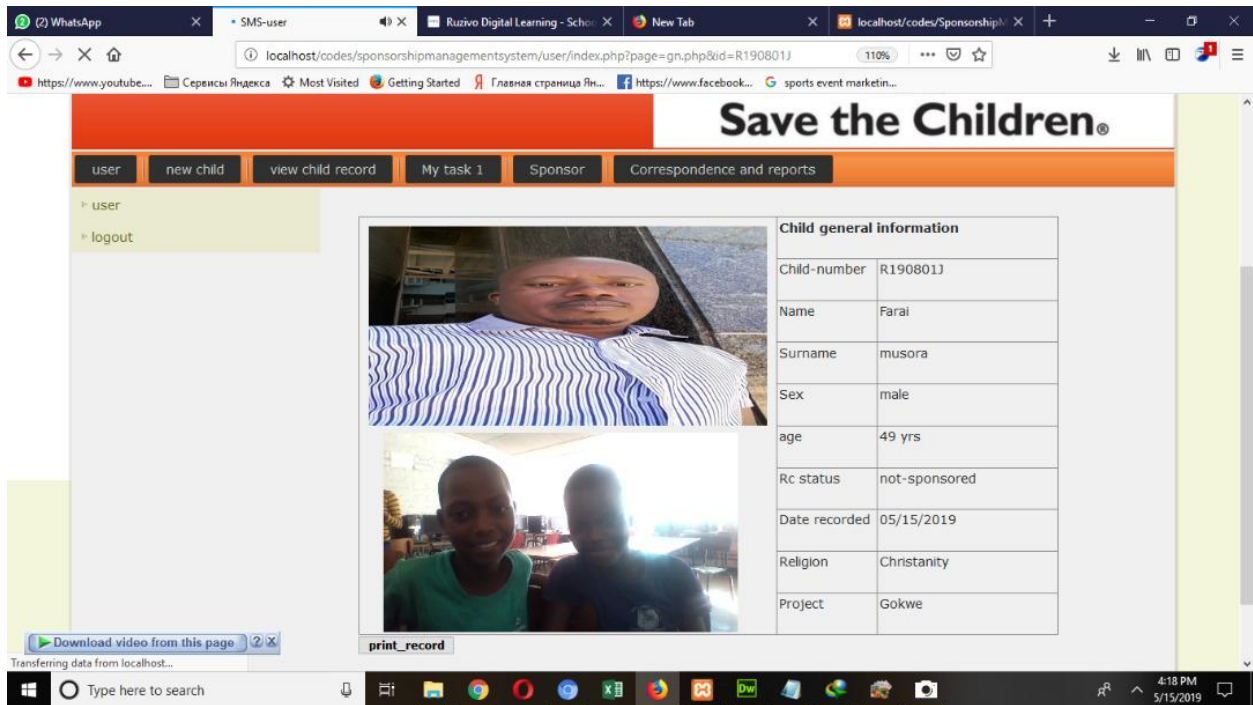
Figure 5. 6 Successfully registered a child

5.3.4 Validation

Dennis et al (2014), defines validation as a process of getting the right system. This means that the system developed should be the one that users are expecting. In this case there is need to involve the final users of the system throughout the design of the system. The system should therefore be efficient for its purpose through accepting the right data in the system. For the system to produce the required output, the right data should be captured. This has been achieved through validation of the system. The system must therefore reject input of alphanumeric content in fields were numeric content is required. This is demonstrated on the test below.
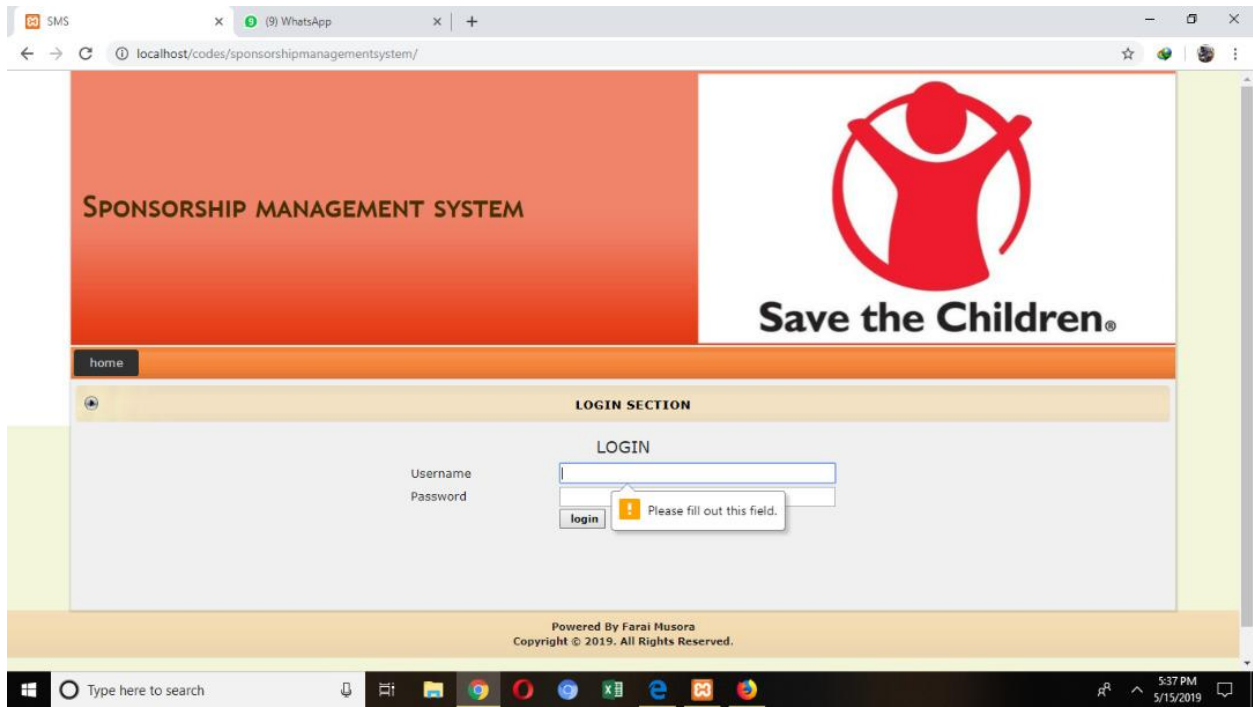
Figure 5. 7 Blank submission validation

The system will therefore show an error if the user attempts to login without entering his or her credentials. An error icon together with the error message will be displayed if there are fields required.
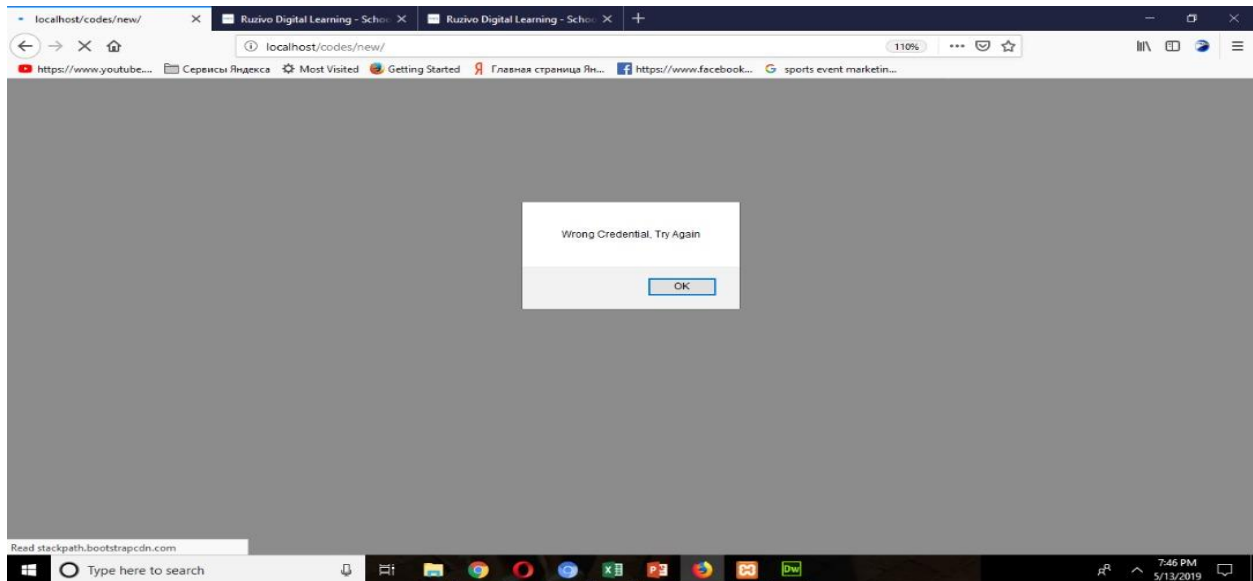

Figure 5. 8 Wrong user credentials used for login

72

The system will not allow an unauthorized user to gain access into the system. It will give the user an option to re-enter username and password.

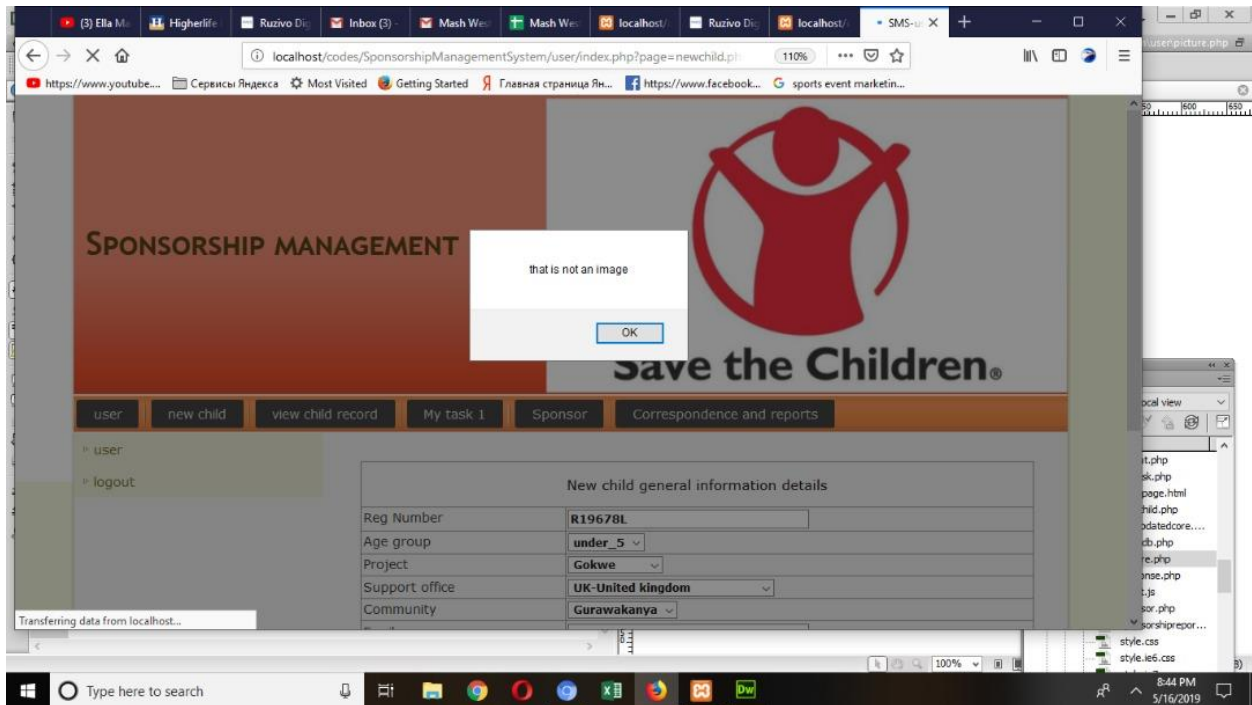Trying to upload something that is not an image when registering a new child

Figure 5. 9 Error after trying to upload a file which is not an image where an image is required.

5.3.5 Verification

According to Dennis et al (2015), verification is the process of getting the system right. This means testing the system to see if the system is being designed as required by the final system users. It checks or evaluates the work in progress of the system if the system phases are functioning as expected. The verification process therefore answers the question, "Are we developing the system right?". The following reflects a successful login by a user.
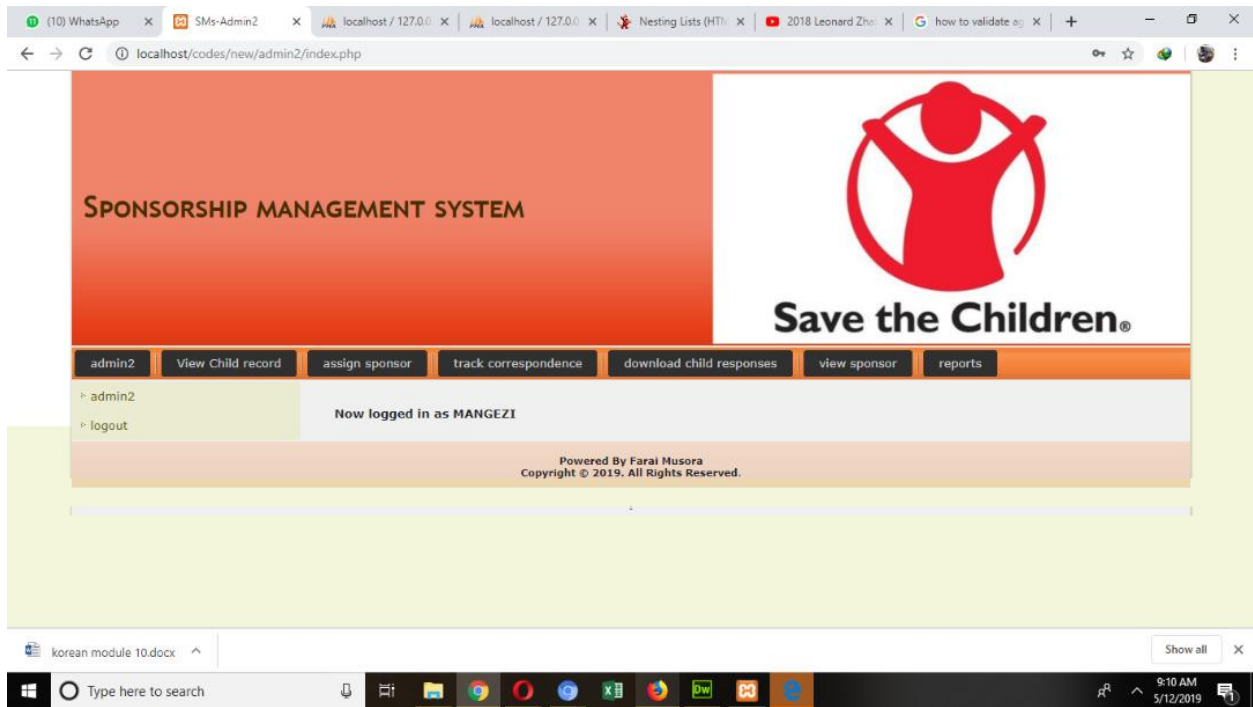
Figure 5. 10 Successful login

Successful login as admin

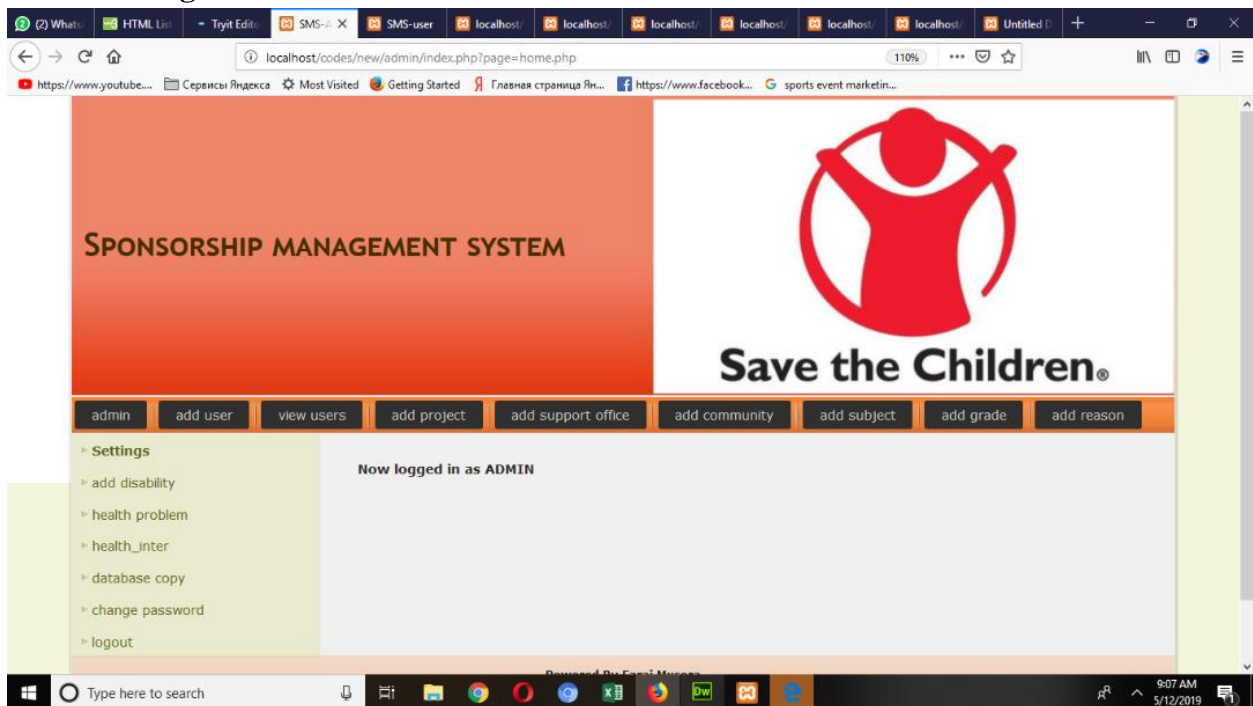Figure 5. 11 Successfully logged in as Administrator

When a user successfully login to the system, the user will be directed to his or her homepage and the user name is displayed.
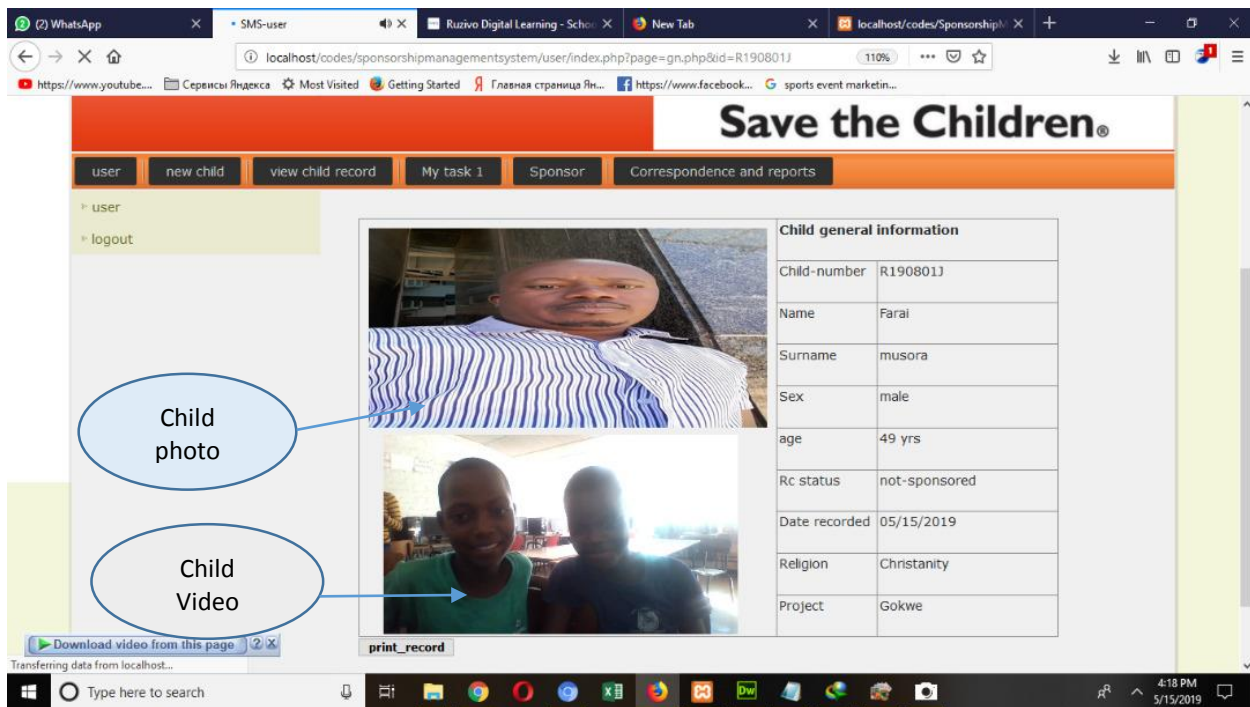
Figure 5. 12 Successful registration of new child

This form shows that the user successfully registered and allocated an identification number. This was one of the core objectives of the system.
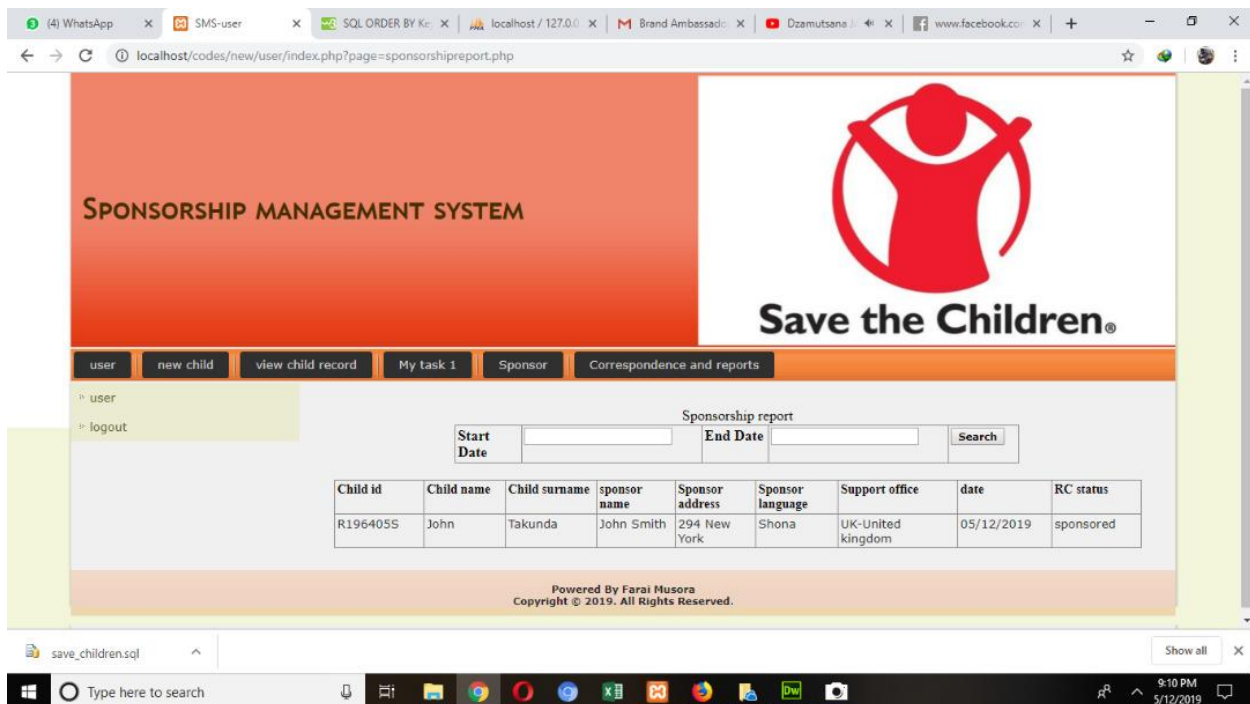

Figure 5. 13 Successful report creation
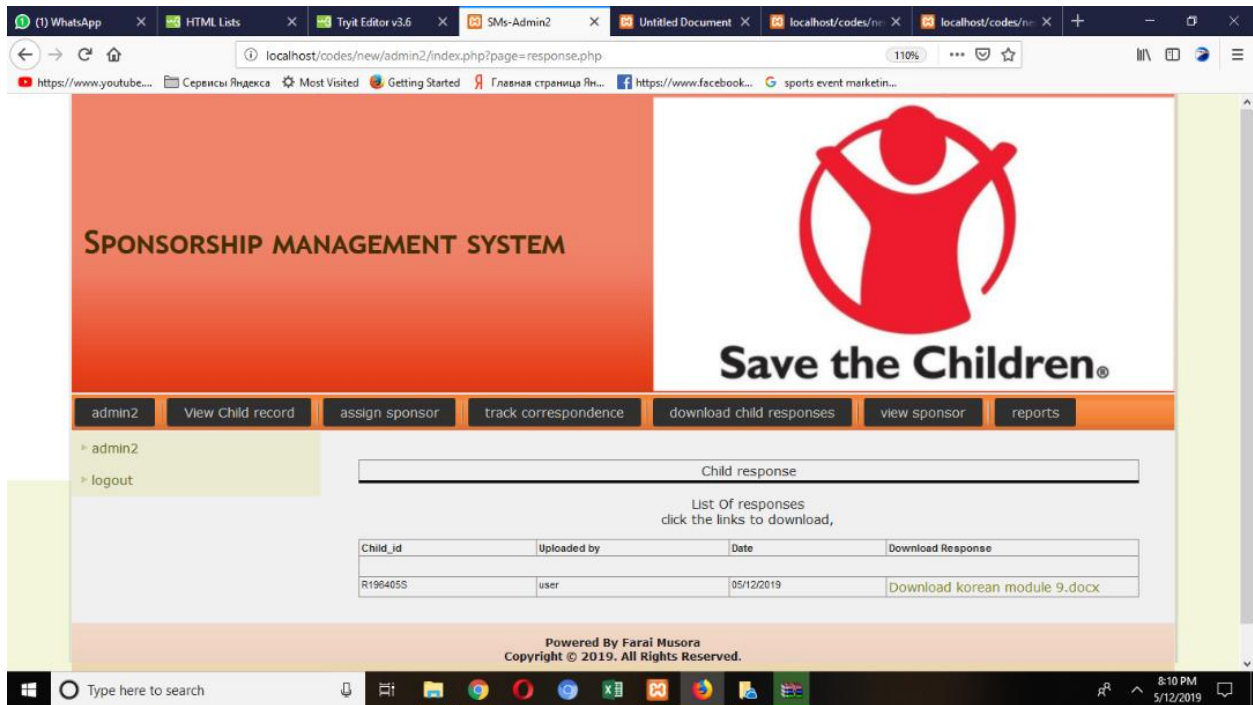
Figure 5. 14 Successful upload of child material

The form above shows successful upload of child response as illustrated.

5.4 Installation

This is the stage whereby the system is set for use by the final system users. It therefore involves implementing the new system for use by final system users. This is according to Magresy (2011). The system is going to be installed through the direct cutover conversion technique. This means that the old system will be switched off while the users start to use the new online system. The new system is going to be installed on the company's IIS (Internet Information Services) Server so that anyone can easily access the system using a specified URL.

System Installation procedures

Open IIS

Create Virtual directory and copy all the files of the published application to the directory folder.

Start the system in IIS.

Figure 5. 15 Installing system

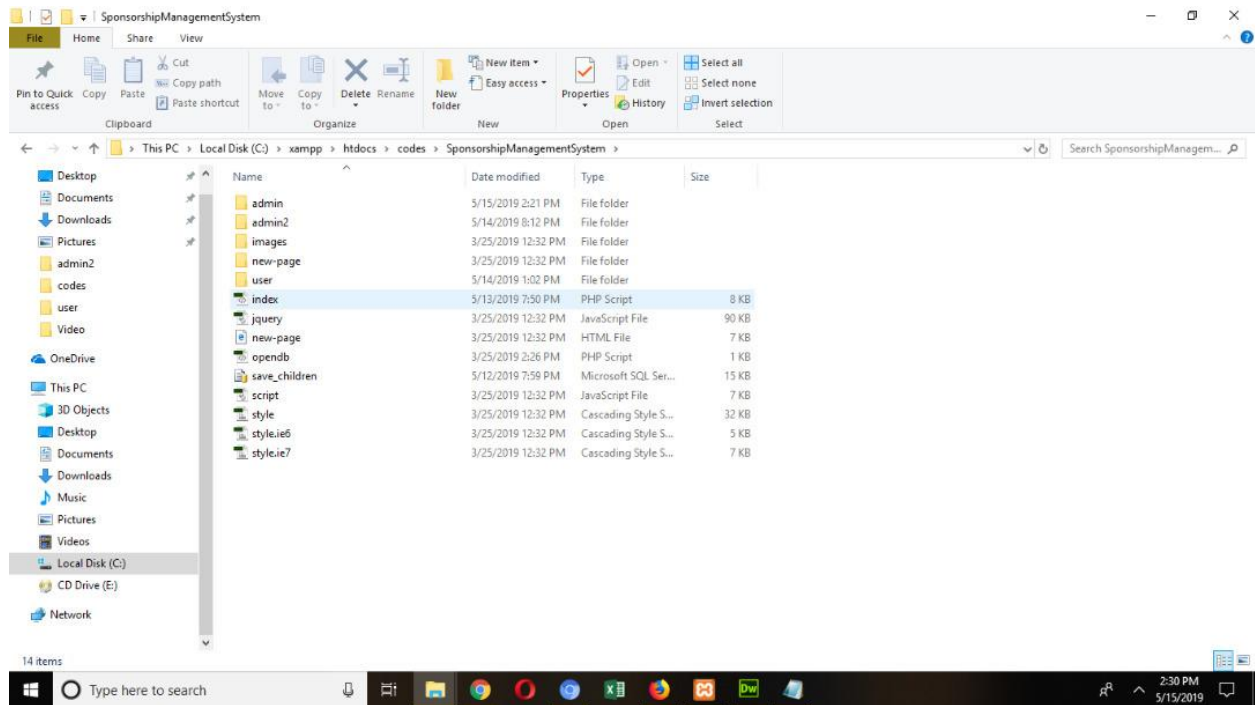**General User installation procedures**

Install a web browser (Chrome (recommended), Firefox, Opera etc).

Write http://172.15.10.1/supportdesk/net on URL.

Bookmark the URL for easy access

5.4.1 User Training

The new system is an advancement in technology which require a technical knowhow so that the final users are able to operate the system. This means workers should be trained in order to effectively use the system. The user must be able to record, view, edit as well as extract reports in the system. A workshop will be help for the general system users, the ICT Personnel as well as the administrators to demonstrate how the system is working. According to Ashish (2014), the goal of user training is to equip users with technical knowhow about the system, what it does and how it operates. The user manual or user guide will further assist users on how to operate the system. Questionnaires will be distributed to all the users which will help to measure the acceptance of the

new system. After the training, an exercise will then be done to check if the users understood the system.

5.4.2 Data Migration

According to Morreny (2015), data migration refers to the transmission of data between data stores or computer systems. It is done for various reasons which are to replace a server or upgrading it, to move data to third party cloud service providers, maintaining infrastructure and also for software upgrades as well as software implementation. There are also a number of factors that should be considered when carrying out this exercise. These include the duration, the risk as well as other technical issues. The research which has been done shows that the old system was using diskettes files to transfer data to IO. It was however concluded that the system will only work with data inputs from the day of installation.

5.4.3 System Conversion

After the system has been accepted by users, there is therefore need to change from the old system to the new system. There are a number of techniques which can be used to move or carry out the changeover exercise. These include pilot changeover, direct changeover, phased changeover as well as parallel changeover.

5.4.3.1 Parallel Changeover

According to Cannon (2014), parallel changeover is the implementation of the new system while the old system is still in use. This means running all the system concurrently. In this case, the system will be fully implemented in the long run while the old system is abandoned gradually. This is done for projects which have a high probability of failure. This means that if the new system fails, the users will simply revert to the old system since the two systems will be running concurrently.

Advantages

- The two systems can be easily compared to determine the best.

- If the new system fails, the organization will simply revert back to the old system.

Disadvantages

- It is expensive to run all the two systems concurrently since a lot of resources are required.

- There is data duplication since data is entered twice.

5.4.3.2 Phased Changeover

In this case, the system is delivered in a series of versions or modules. The first module is implemented and if it is accepted, the second is then implemented until all system modules are implemented. It is therefore an incremental type of implementation. In the long run, the entire system will then replaces the old system. This is according to Granvalle (2015).

Advantages

- There is limited loss of data when using this approach since the system is installed in phases.

- Users gradually familiarize with the system.

- Since user training is done in phases, users are likely to grasp the functionality of the system.

Disadvantages

- The implementation phase is time consuming.

- The procedure is costly since each phase will have its own costs.

5.4.3.3 Pilot Changeover

Morreny (2015) defined this as a process whereby a new system is firstly implemented to a defined cluster of users so that they can test, evaluate and give feedback on how the system is working. It

is therefore tried at a pilot site before it is implemented companywide. This means that those users that would have carried out the pilot survey will therefore provide feedback on the quality as well as reliability and performance of the new system. The feedback will be checked to see if it is satisfactory so that the system can be fully implemented.

Advantages

- The new system can be easily evaluated since both systems will be running.

- The risk of losing data is minimized through the pilot strategy.

- It is also easy to evaluate results.

- The pilot branch may assist other users in training since they would have familiarized with the system.

Disadvantages

- The strategy requires a lot of time.

- Huge costs are involved.

5.4.3.4 Direct Changeover

According to Rosenblatt (2015), direct changeover is whereby the new system totally replaces the old system. In this case, the old system is substituted by the new system in one operation. This strategy is usually done when users will not have too much workload so that there is no interruption to the ongoing processes at the organisation.

Advantages

- The system is delivered quickly.

- The new system will run independently after installation therefore there is no duplication of data.

- It is the cheapest changeover technique.

Disadvantages

- If the system fails, the users will not be able to revert to the old system.

- It is not easy to learn the functionality of the system in a short period of time.

- Data from the old system should be compatible with new system data which is stressful to the developers.

5.4.3.5 Recommendations

The parallel changeover strategy was considered the best strategy since it has more advantages than disadvantages. It gives users time to understand the functionality of the new system and also if the new system fails, users can therefore revert back to the old system. This means that the users will have time to access the system and once they gain confidence, the old system will therefore be abandoned.

5.5 Maintenance

According to Meichelt and Bittmann (2016), maintenance refers to the amendments that are done on the final system after its implementation with the goal of improving its performance, adding new features and other factors that might call for changes in the system. Since technology is evolving at a faster rate, there is need to remain on the technological bar by adding new features to the system as well as accommodating for various changes. There are various types of maintenance which are perfective maintenance, adaptive maintenance, corrective as well as preventive maintenance.

5.5.1 Perfective Maintenance

There is need to continuously add features to the system in order to improve the system functionality. According to Meichelt and Bittmann (2016), perfective maintenance is whereby the software is updated or modified with the aim of improving its lifespan. It therefore considers the requirements of the users, new technological changes as well as performance and reliability issues.

Perfective Maintenance plan

It was agreed to carry out this exercise on a monthly basis so that new features are added as required by the final system users.

5.5.2 Corrective Maintenance

This refers to the day to day repairing of errors or bugs in the system so that its quality is improved. This is in accordance to Granvale (2016). The errors or bugs are either identified by users or the development team. Error reports are collected daily, weekly or monthly so that the errors can be analyzed and resolved.

Corrective Maintenance plan

It was agreed that the corrective maintenance exercise should be done every day for the first 4 months and then the team will review report errors after three months so that they can revise the time schedule if error levels reduces.

5.5.3 Preventive Maintenance

According to Granvale (2016), preventive maintenance focus on updating or modifying the system so as to avoid or prevent future malfunctions. It therefore includes documentation update, optimization of code as well as restructuring of code. Documentation update involves updating the system documentation so that all system changes are reflected in the documentation for future reference. On code restructuring and optimization, certain blocks of code are modified so that the system provides for future developments or to prevent problems. For a system to process faster, utilize less disk space and to produce quality results, code optimization is of prime importance therefore this will be carried out to prevent problems.

Preventive Maintenance plan

The exercise was concluded to be performed on a yearly basis.

The project team therefore came up with a plan for each maintenance strategy since all the strategies are going to be used.

5.6 Recommendations for future or further developments

The recommendations are further developments that should be made so that the system's functionality is improved. The future expectations are as follows:

The system should be programmed so that it can be installed on mobile phones.

A chat facility should be added so that users can chat in an intranet based platform.

A service review module is to be added so that users can analyses the support services provided by the ICT Department.

There is need to include correspondence routes so that it can be tracked and see what action is currently required.

More recommendations except the ones listed are welcome so that the system is of high quality and effective in making Save the Children a conducive working environment.

5.7 Conclusion

The coding was clearly explained and the system was tested to ensure that it is error free and to ensure that it was in line with the user expectations. The system installation was explained which highlighted how the system was to be implemented. Data migration techniques and system changeover strategies have been explained highlighting the advantages and disadvantages of each as well as the recommended strategy. Also the maintenance strategies have been clearly outlined as well as the recommended strategy was highlighted. Recommendations were made which reflected future system expectations. The system is expected to be developed further to allow instant messaging to field and IO staff. It should also be able to be accessed on mobile phone offline mode to enable community workers to capture child data without using the manual way. This therefore highlighted that the implementation phase was a success however new improvements and additional functionality will be welcome so that the system makes Save the Children Sponsorship Management System a conducive working environment.

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Appendix A: User Manual

A user manual is created so that users get to have a clear understanding of the system. They can always refer to the manual when faced with a challenge in using the system. This user manual explains how Save the Children Sponsorship Management system work.

The Home page

The homepage is the main menu or the start-up page of the system accessed through www.savethechildren.org/home on the web browser.
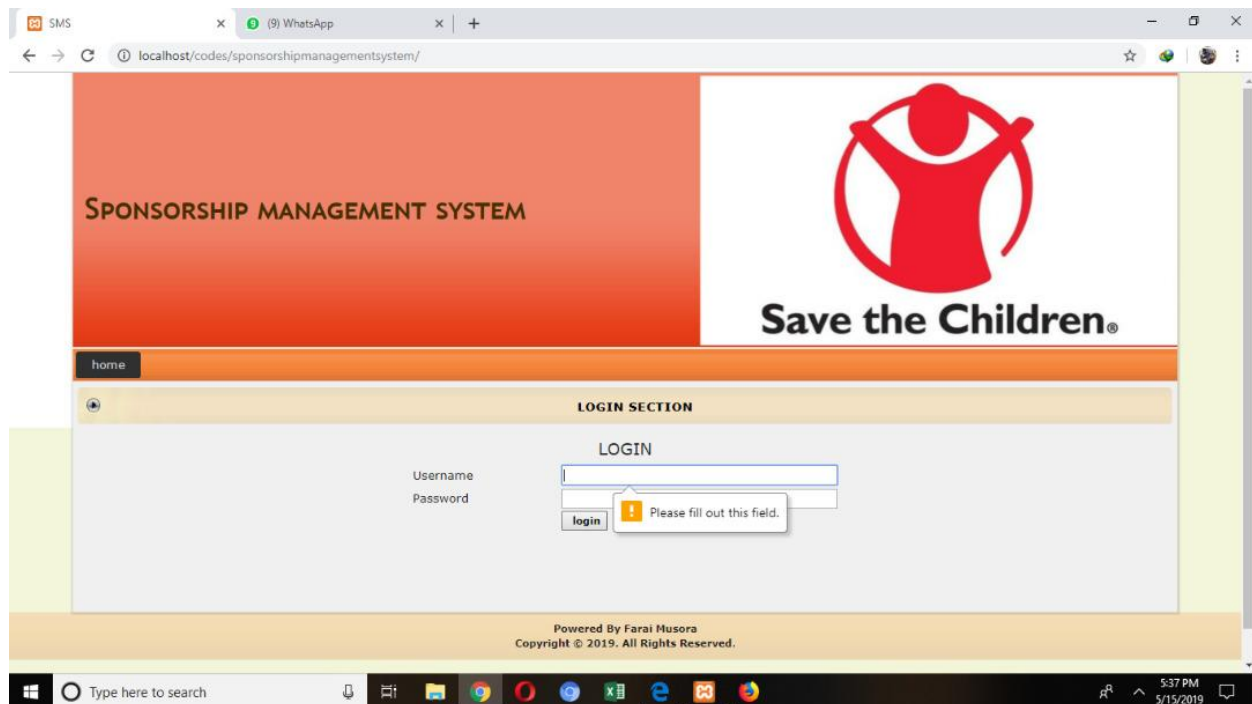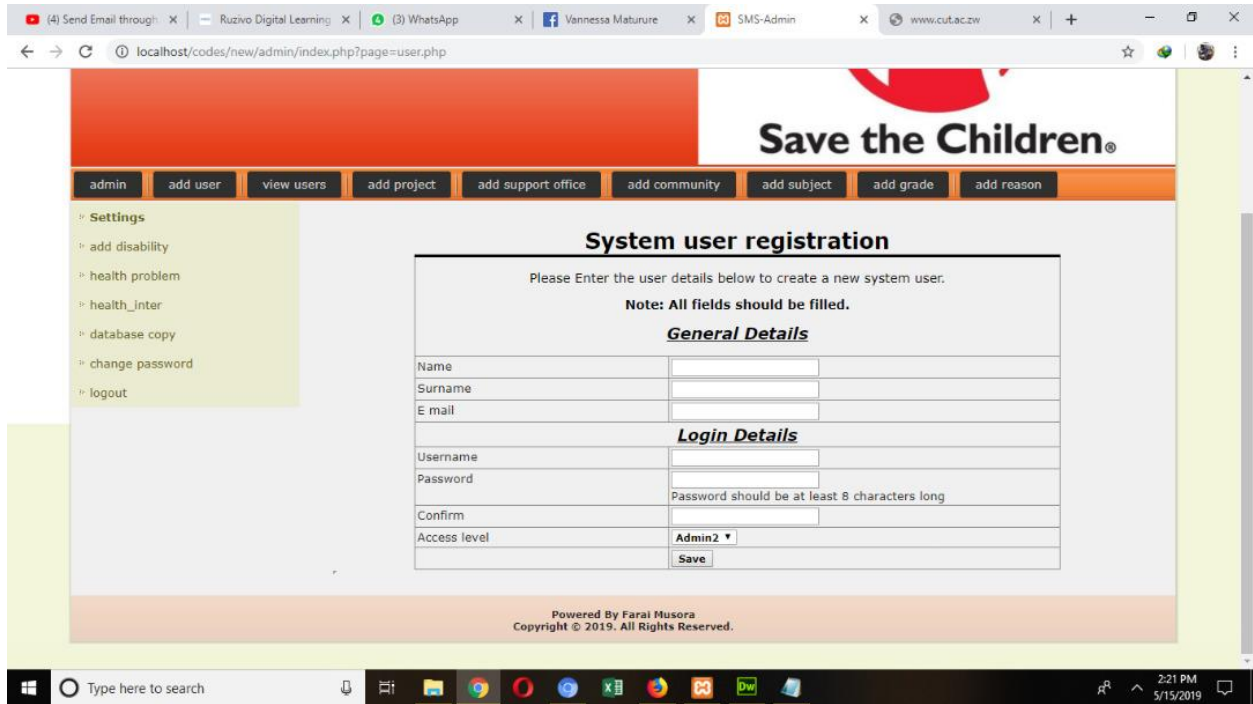

The home page will also show the title of the system opened.

Requesting user account.

When one wants to create an account, the register option will direct the user to a registration page where the user can therefore request for a user. The user has to enter his or her details which will be send to the ICT Department for account verification and
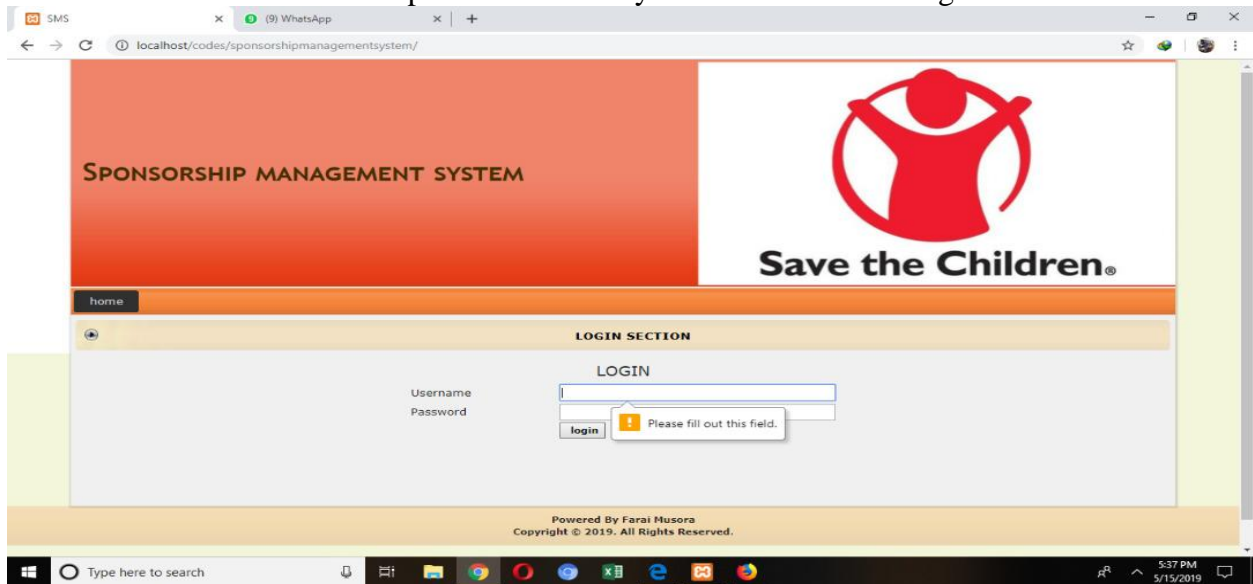
configuration.

Registration page

System login
The user has to enter correct credentials in the login page in order to gain access into the system. One has to enter username and password correctly as authorised in the registration form.

Login page

Invalid Login Error
When wrong credentials are entered, a message is displayed giving the user another option to re-enter correct credentials. A user get locked up after failing to 5 times to enter correct credentials.

Successful system login

When a user has sufficient rights and correct credentials, the user will be directed to the system homepage. This depends on the level of the user. A homepage is displayed depending with the level of the user. The following form shows a user homepage.

Registering a new child
The user has to enter child details including uploading a video and photo so that the child can be fully registered. The form below shows the registration form.
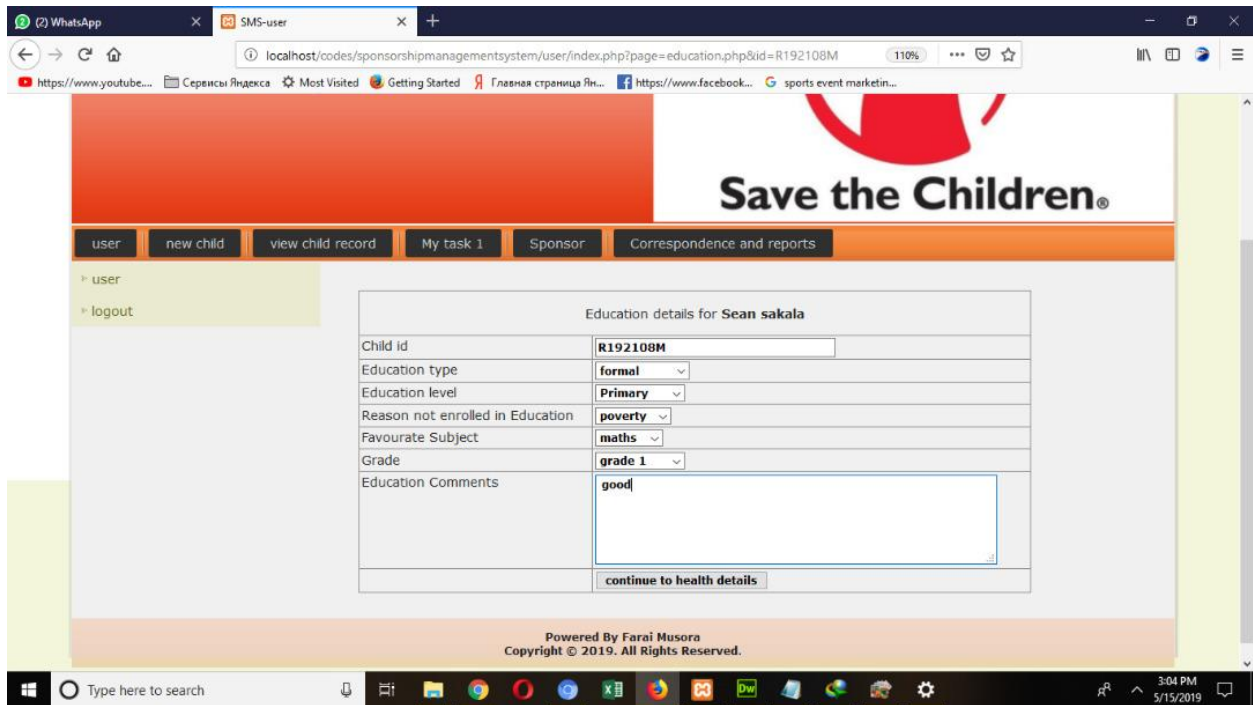

New child registration form

Education details
The child's education details should be captured in the form illustrated below.

Education details form

Health details form
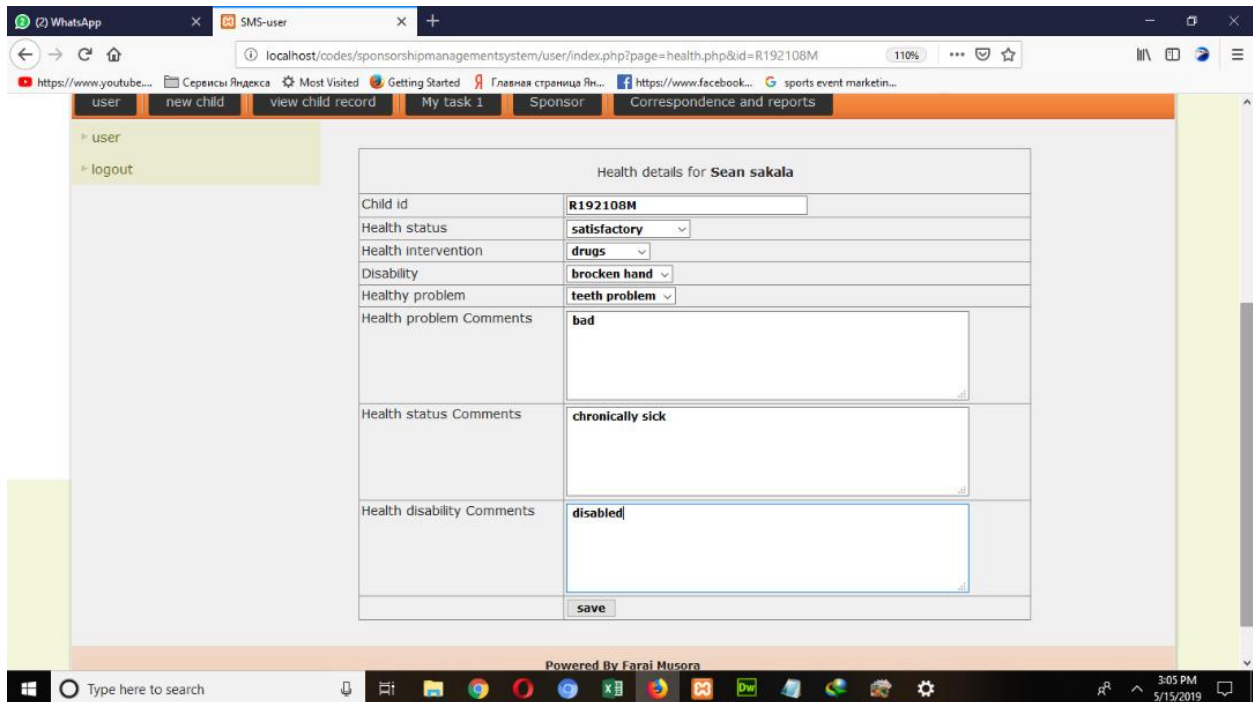
Health details page

Once a child is registered, a child record is created, admin2 can add sponsor details to the child records so that the user in the FO will be able to capture correspondences. The illustration below shows how to create a correspondence.

Creating a correspondence
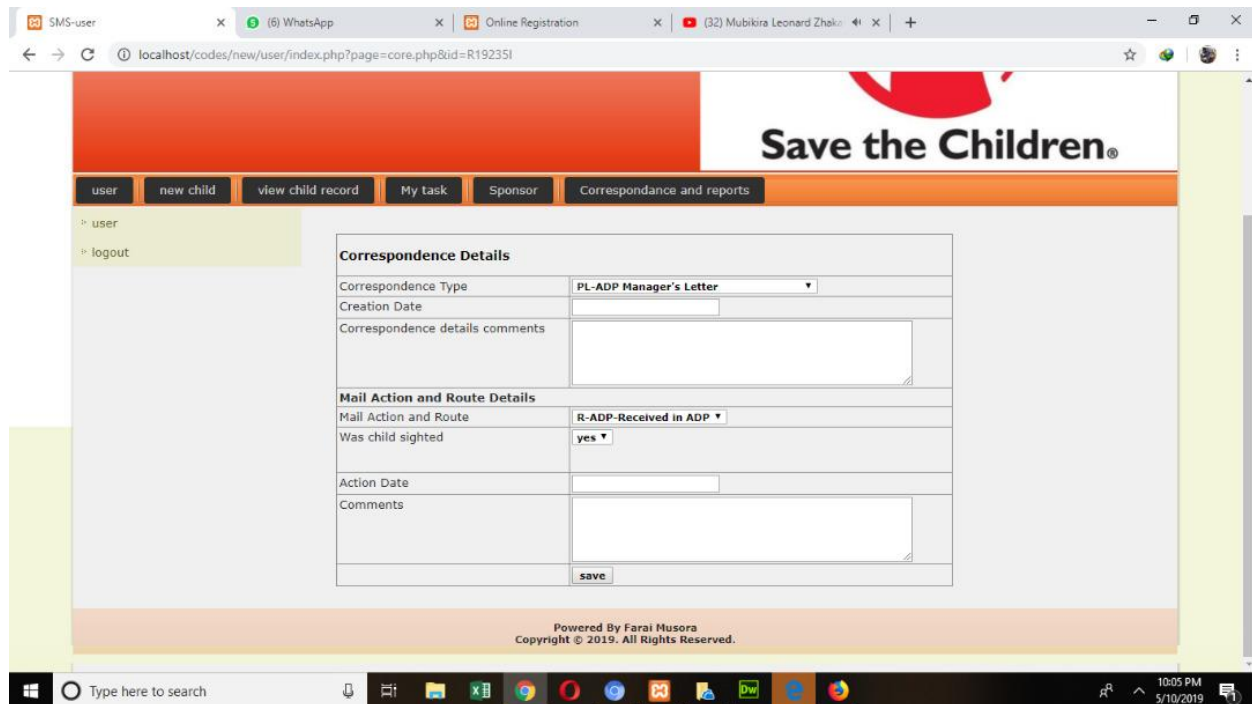
Correspondence creation form

Uploading child response

Child responses are scanned and uploaded as illustrated in the below form. First search the child record and click on update to access the uploading page as below

First find the child on the manage child record an click Correspondence

Update the correspondence

Uploading child response

Administrator pages

Adding sponsor details

Sponsor details page

Downloading child material

Downloading child material

Appendix B: Interviews

How does your current system works

The sample questions that were asked and answered during the interview sessions.

Interviewer name……………………………………………………………

Interviewee position.…………………………………………………………

Interviewee department…..………………………………………………….

Questions

Q1. We understand a need for a system to be developed has risen, what are the contributing factors?

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

Q2. How does the current system work?

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

Q3. What are the main challenges associated with the current system?

……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
…………………………………………..

Q4. What do you think can be done to curb all these challenges?

……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
………………………………………………………………

Q5. Do you think the new issue tracking system will be of benefit to your department and organization as a whole and what are your reasons?

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

DATE…………………………………………………………

THANK YOU FOR YOUR COOPERATION

Appendix C: Questionnaire

I am Farai Musora studying Information Systems at Midlands State University (MSU) doing a research on Sponsorship Management System for World Vision. I am doing my second year project on coming up with an improved sponsorship business process so as to effectively satisfy our sponsors, reduce on delivery time and come up with a user friendly system. Information from this study will be used solely for academic purposes only. Your assistance in filling this questionnaire is greatly appreciated.

What is your role and work area in WV:

…………………………………………………………………………………………………

…………………………………………………………………………………………………

Which system are you using?
A   Manual system [ ]   B   Computerised system [ ]

How do you save your data?
Manual File [ ]   Electronic file system [ ]   Online [ ]
Description of business process:_____

_____

_____

Would you prefer an online system?
Yes ☐   No   ☐   Not sure   ☐

If yes what are you expecting on the system?
_____
_____
_____
_____
_____
_____
_____

Do you have any other business process that you think needs to be online for convenience sack?
_____
_____
_____
_____

Thank you very much for your cooperation.

Appendix D: Observation score sheet

Date: ……………/…………/………….. (dd/mm/yy)

Location: ……………………………….

Observations:

_____

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Conclusions:

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Reccommendations:

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Appendix E: Child Information gathering form

Child Name:_____

Date of birth:_____/_____/_____(dd/mm/yy)

Gender(Male/Female)_____

Health status:

Satisfactory [____]   Unsatisfactory [____]

If unsatisfactory explain_____

Education:
Level:_____ Grade: _____

Reason not in school:_____

Allocated ID number:_____

Information provided by:……………………………………………

Parent/Guardian consent Date:……./……/2019

Appendix F: Code snippets

```php
<?php
include 'opendb.php';
$qry= mysql_query("select * from child_record where regnum='$_GET[id]'")or die(mysql_error());
while($res=mysql_fetch_array($qry)){
$reg= $res['regnum'];
$name= $res['name'];
$surname= $res['surname'];
$email= $res['email'];
$rcs= $res['rcs'];
$sex= $res['sex'];
$dc= $res['date_collected'];
$p= $res['proname'];
$bd= $res['bdate'];
$r= $res['religion'];
$image= $res['script'];
$vp=$row['vp'];
echo $vp;
}
?>
<script language="javascript">
function printDiv(divName) {
    var printContents = document.getElementById(divName).innerHTML;
    var originalContents = document.body.innerHTML;

    document.body.innerHTML = printContents;

    window.print();

    document.body.innerHTML = originalContents;
}
</script>
<form method="post" enctype="multipart/form-data"><div id="printableArea">
<table width="702" border="1">
 <tr>
  <td width="300" rowspan="10">  <img src="../user/<?php echo $image; ?> " height="200" width="400" /><?php
echo "<embed src='$vp' width='400' height='200 '></embed>"; ?>
  </td>
  <td colspan="2"><strong>Child general information</strong></td>
 </tr>
 <tr>
  <td width="126">Child-number</td>
  <td width="254"><?php echo $reg; ?></td>
 </tr>
 <tr>
  <td>Name</td>
  <td><?php echo $name; ?></td>
 </tr>
 <tr>
  <td>Surname</td>
  <td><?php echo $surname; ?></td>
```

```php
 </tr>
 <tr>
  <td>Sex</td>
  <td><?php echo $sex; ?></td>
 </tr>
 <tr>
  <td>age</td>
  <td><?php

$cd=date('m/d/Y');
$d1 = new DateTime($cd);
$d2 = new DateTime($bd);

$diff = $d2->diff($d1);

echo $diff->y; echo" yrs";
 ?></td>
 </tr>
 <tr>
  <td>Rc status</td>
  <td><?php echo $rcs; ?></td>
 </tr>
 <tr>
  <td>Date recorded</td>
  <td><?php echo $dc; ?></td>
 </tr>
 <tr>
  <td>Religion</td>
  <td><?php echo $r; ?></td>
 </tr>
 <tr>
  <td>Project</td>
  <td><?php echo $p; ?></td>
 </tr>
</table>
</div>
 <input type="button" onClick="printDiv('printableArea')" value="print_record" />
</form>
<a href="index.php?page=viewcr.php">back</a><?php echo "<embed src='$vp' width='300' height='250
'></embed>";?>
padding-top: 60px;
     padding-bottom: 40px;     }
     jQuery(document).ready(function($) {
   $('a[rel*=facebox]').facebox({
    loadingImage : 'src/loading.gif',
    closeImage   : 'src/closelabel.png'
   })
  })
</script></head>
<?php
function createRandomPassword() {
```

```php
        $chars = "0032323032320232320203456789";
        srand((double)microtime()*1000000);
        $i = 0;
        $pass = '' ;
        while ($i <= 7) {
                $num = rand() % 33;
                $tmp = substr($chars, $num, 1);
                $pass = $pass . $tmp;
                $i++;    }         return $pass;
}$finalcode='RS-'.createRandomPassword();
?><script>
function sum() {        var txtFirstNumberValue = document.getElementById('txt1').value;
        var txtSecondNumberValue = document.getElementById('txt2').value;
        var result = parseInt(txtFirstNumberValue) - parseInt(txtSecondNumberValue);
        if (!isNaN(result)) {
           document.getElementById('txt3').value = result;
                }                   var txtFirstNumberValue =
document.getElementById('txt11').value;
        var result = parseInt(txtFirstNumberValue);
        if (!isNaN(result)) {
           document.getElementById('txt22').value = result;
        }                        var txtFirstNumberValue =
document.getElementById('txt11').value;
        var txtSecondNumberValue = document.getElementById('txt33').value;
        var result = parseInt(txtFirstNumberValue) + parseInt(txtSecondNumberValue);
        if (!isNaN(result)) {
           document.getElementById('txt55').value = result;          }
         var txtFirstNumberValue = document.getElementById('txt4').value;
                   var result = parseInt(txtFirstNumberValue);
        if (!isNaN(result)) {
           document.getElementById('txt5').value = result;}
function showtime () {
var now = new Date();
var hours = now.getHours();
var minutes = now.getMinutes();
var seconds = now.getSeconds()
var timeValue = "" + ((hours >12) ? hours -12 :hours)
if (timeValue == "0") timeValue = 12;
timeValue += ((minutes < 10) ? ":0" : ":") + minutes
timeValue += ((seconds < 10) ? ":0" : ":") + seconds
timeValue += (hours >= 12) ? " P.M." : " A.M."
document.clock.face.value = timeValue;
timerID = setTimeout("showtime()",1000);
timerRunning = true;}
function startclock() {
stopclock();
```

```
showtime();
}window.onload=startclock;
// End -->
</SCRIPT><body>
<?php include('navfixed.php');?>
<div class="container-fluid">
    <div class="row-fluid">
        <div class="span2">
      <div class="well sidebar-nav" style="width:17%; background-color:#666666;">
        <ul class="nav nav-list">
        <li><a href="index.php"><i class="icon-dashboard icon-2x"></i> Dashboard </a></li>
                    <li ><a href="students.php"><i class="icon-group icon-x"></i>Manage
Children</a>  </li>
                    <li><a href="addstudent.php"><i class="icon-user icon-2x"></i>Add
Child</a>     </li>
                <br><br>                              <li>
                 <div class="hero-unit-clock">
                    <form name="clock">
                    <font color="white">Time: <br></font> <input
style="width:150px;" type="submit" class="trans" name="face" value="">
                    </form>                          </div>
                    </li>                  </ul>
        </div><!--/.well -->      </div><!--/span-->
                </div>         </div>
                <div class="span10">
        <div class="contentheader">
                    <i class="icon-table"></i>
                    </div>
                    <ul class="breadcrumb">
                    <li><a href="index.php">Dashboard</a></li> /
                    <li class="active"></li>
                    </ul>
<div style="margin-top: -19px; margin-bottom: 21px;">
<a  href="index.php"><button class="btn btn-default btn-large" style="float: left;background-
color:#666666;"><i class="icon icon-circle-arrow-left icon-large"></i>Return</button></a>
<center><?php
        include('../connect.php');
        $id=$_GET['id'];
        $result = $db->prepare("SELECT * FROM student WHERE id= :userid");
        $result->bindParam(':userid', $id);
        $result->execute();
        for($i=0; $row = $result->fetch(); $i++){
?><link href="../style.css" media="screen" rel="stylesheet" type="text/css" />
<form action="savemonitor.php" method="post" enctype="multipart/form-data">
<center><h4><i class="icon-edit icon-large"></i> Edit Child</h4></center>
<hr><div id="ac"><input type="hidden" name="memi" value="<?php echo $id; ?>" />
```

```php
<span>Child ID: </span><input type="text" style="width:265px; height:30px;"
name="student_id" value="<?php echo $row['student_id']; ?>" readonly Required/><br>
<span>First Name : </span><input type="text" style="width:265px; height:30px;"
name="name" value="<?php echo $row['name']; ?>" /><br>
<span>Last Name : </span><input type="text" style="width:265px; height:30px;"
name="last_name" value="<?php echo $row['last_name']; ?>" /><br>
<span>Grade: </span><input type    ="text" style="width:265px; height:30px;" name="grade"
value="<?php echo $row['grade']; ?>" /><br>
<span>Visit Date: </span><input type="date" style="width:265px; height:30px;" name="visit"
value="<?php echo $row['visit']; ?>" /><br>
<span style="margin-left:-37%;">Child Sighted: </span>
<label class="radio-inline" style="margin-left:-3%;margin-top:-3%;"><input type="radio"
name="sighted" value="yes" checked='true'> Yes </label>
<label class="radio-inline" style="margin-left:25%;margin-top:-3.5%;"><input type="radio"
name="sighted" value="no"> No</label>
<div></div><button class="btn btn-success " style="width:267px;margin-
left:110px;width:15%;"><i class="icon icon-save icon-small"></i> Submit </button>
</div></form>
<?php}?>
```