**CHAPTER 1. INTRODUCTION**

* 1. Background of the project
  2. Statement of the problem
  3. Objective of project
     1. General objectives
     2. Specific objectives
  4. Research Questions
  5. Scop of the Project
  6. Significance of the project/interest of the project
     1. Personal interest
     2. Institutional interest
     3. Public interest
     4. Conception of
  7. Limitations
  8. Organization of project

**CHAPTER 2. LITTERATURE REVIEW**

2.1 Introduction

2.2 Review of the existing system

2.3 Specific terminologies

2.3.1 Equivalence

2.3.2 Online

2.3.3 Application

2.3.4 Tracking

2.3.5 System

2.3.6 Applicant

2.3.7 HEC

2.4 The program Languages

2.4.1 MySQL

2.4.2 PHP

2.4.3 HTML

2.4.4 CSS

2.4.5 JavaScript

2.5 Database Concept

2.5.1 Database

2.5.2 Data

2.5.3 Information

2.5.4 Primary Key

2.5.5 Foreign Key

2.5.6 Table

2.5.7 Entity

2.5.8 Attribute

2.6 Context Diagram

2.7 Review of past studies

2.8 Critical Review

2.9 Proposed system

2.10 Summary

**CHAPTER 3. RESEARCH DESIGN AND METHODOLOGY**

3.1 Introduction

3.2 Data Collection Technique

3.2.1 Observation

3.2.2 Internet research

3.2.3 Interview

3.3 Software engineering methods

3.3.1 Interactive model

3.4 Tools and languages to be used in software development

**CHAPTER 4. SYSTEM ANALYSIS, DESIGN AND IMPLEMENTATION**

4.1 Introduction

4.2 The system Study

4.2.1 Weakness observed in the current system

4.3 System Analysis

4.3.1 User Requirement of the proposed system

4.3.2 Functional of Requirements

4.3.2.1 Examples of Functional requirement

4.3.3 Non-Functional requirement

4.3.4 System requirement

4.4 System Specification

4.4.1 Hardware Specification

4.4.2 Software Specification

4.5 Description of The System

4.6 System Design

4.6.1 Overview

4.6.2 Architecture Design

4.6.3 Context (Level 0) Diagram

4.6.3.1 Context Diagram

4.6.4 Data Flow Diagram Level 1

4.6.4.1 Data Flow Diagram

4.7 Entity Relationship Diagram

4.8 Physical Data Model

4.9 Data Dictionary

4.10 System Implementation

4.10.1 Screen Shots of a running System

4.11 System testing

4.12 Validations

**CHAPTER 5. CONCLUSION AND RECOMMENDATION**

5.1 CONCLUSION

5.2 RECOMMENDATION

REFERENCE

APPENDICES

Online Equivalence tracking system

**CHAPTER 1. INTRODUCTION**

* 1. **Background of the project**

Nowadays people are trying to increase the development of their countries by forming computerized system, this will help them to shift from manual system where they use papers to keep some information. By making everything computerized the development of a country will be a high level and this also will be important to different organization or others to complete their tasks and arrange very well the information [1].

There are many things that show us how manual systems are not good to use. By using this system, it will take you a lot of time searching the file that you want, way of keeping those files will also be manually, changes have to be done manually. Not forgetting that the security of that system is very poor, when you lost a document and you don’t have copy of it you will be required to rewrite it and this will take time to complete it.

This project of Online Equivalence Application and tracking system comes as an answer or a solution to the Higher Education Council and Applicant. This system will be computerized where HEC use it to arrange and manage the file of their applicant, it will be easy to search a document in a computer and this cannot take you much time to do it. Also, by using this system your document will be safe by just putting password in your computer.

When a file is deleted, there is an option of restoring it due to its capability of having a backup. This system will not be to HEC only but also the applicant will benefit from it by sending some documents online without going to the office of HEC, following up the documents, adding some comments to the service they want.

* 1. **Statement of the problem**

A problem statement is usually one or two sentences to explain the problem your process improvement project will address. In general, a problem statement will outline the negative points of the current situation and explain why these matters. It also serves as a great communication tool, helping to get buy in and support from others [2].

The first problem is that the information of applicants of equivalence that collected by HEC are hard to manage and it can be easily lost because of file disorders.

The second problem is poor communication between HEC and Applicants, when those applicants go to the office of HEC trying to communicate with them and make follow up about their documents and they spend more than 30 minutes waiting the response. Here also I can say that there’s waste of time and money of that applicant.

* 1. **Objectives of project**

**1.3.1- General Objectives**

This general objective of this project is to analyze, design and implement Online Equivalence Application and Tracking System.

**1.3.2- Specific Obje ctives**

1. To upload the required documents

2. To record files

3. To delete or update the list of applicants

4.To record submitted documents

5. To generate equivalence certificate

* 1. **Research Question**

Online equivalence application and tracking system can speed up the communication between HEC and applicant day to day? And generate equivalence certificate?

* 1. **Scop of the project**

There are other activities that can be computerized at HEC like applying for accreditation of new program for the universities, auditing student’s files, but due to time and budget constraint, only equivalence can be computerized.

* 1. **Significance of the project and interest of the project**

1.6.1- **Personal interest**

This system called “Online Equivalence Application and Tracking System” will be very important to me because it will build confidence in me and contribute a lot to my knowledge. This also will contribute to the development of my future career.

1.6.2- Institutional interest

The system will be important and useful to the HEC in Rwanda because it will facilitate to deliver good services to their applicants, it can also be used to apply for other things like school.

1.6.3- Public interest

The applicants will get their interest in this system by getting services without spending money as means of transport. They will get interest also in saving their time.

* 1. Limitation

One of the limitations of this study is poor internet facilities.

* 1. Organization of project

Chapter one will provide an introduction to the project

Chapter two will provide literature review

Chapter three will be about research design and methodology

Chapter four will be about analysis, design and implementation of the project

Chapter five will provide a conclusion and recommendation of the project.

Chapter 2. LITTERATURE REVIEW

2.1. Introduction

To have clear image of the new system, this chapter will briefly discuss to the existing system of getting equivalence certificate at HEC, point out some problems caused by its functionality in order to understand well the new system, we tried to define the concepts that are related to “Online Equivalence Application and Tracking System “, it has also a context diagram, critical review, proposed system and the summary of this chapter.

2.2. Review of the existing system

Equivalence is generated in different ways depending on the means and technology of each country. Developed countries do it using technology while most of the developing countries do it manually or intelligently. Here are in Rwanda they use computerized system but it’s not accessible by foreign people. The foreign have to go to Irembo to fill the application form then submit all required documents to get that equivalence by email. But sometimes HEC post the available equivalence on their website.

According

2.3. Specific terminology

2.3.1. Equivalence

It’s a process that sets out to assess the similarity of studies or parts of studies completed abroad .

2.3.2. Online

The meaning of ONLINE is connected to, served by, or available through a system and especially a computer or telecommunications system (such as the internet). It is the condition of being connected to a network of computers or another device. The term is frequently used to describe someone who is currently connected to the internet.

2.3.3. Application

An application is a use of technology, the term application is a short term of application program. It is a program designed to perform a specific directly to the user.

2.3.4. Tricking

It is a software application that allows an enterprise or institutional to record and follow the program of every problem that a computer system user identifies until the problem is resolved.

2.3.5. System

System is a set of detailed methods, procedures and routine created to carry out a specific activity, perform a duty, or solve problem.

2.3.6. Applicant

A person who applies for or requests something: a candidate.

2.3.7. HEC

Higher education council (HEC) is responsible for ensuring the structure, organization and functioning of higher education institution and monitoring and evaluating the quality and standard of provision and ensuring the quality enhancement of teaching and research.

2.4. The Program languages

2.4.1. MySQL

MySQL is an open-source relational database management system (RDMS) based on structured Query Language (SQL).

2.4.2. PHP

PHP is a server-side scripting language designed primarily for web development but also used as a general-purpose programing language.

2.4.5. HTML

HTML is the standard markup language for Web pages. With HTML you can create your own website.

2.4.5. CSS

CSS is a language of style rules that we use to apply styling to our HTML. Content for example setting background color and fonts, and laying out our content in multiple columns.

2.5. Database Concept

2.5.1. Database

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a [database management system (DBMS)](https://www.oracle.com/database/what-is-database/#WhatIsDBMS). Together, the data and the DBMS, along with the applications that are associated with them, are referred to as a database system, often shortened to just database.

2.5.2. Data

Data is a collection of numbers represented as bytes that are in turn composed of bits (binary digits) that can have the value one or zero. Data is processed by CPU, which uses logical operations to produce new data (output) from source data (input).

2.4.3. Information

Information is data that has been processed in such a way as to be meaningful to the person who receives it. It is everything that is communicated.

2.3.4. Primary key

It is a key in relation database that is unique for each record. Primary keys typically appear as columns in relation database tables.

2.3.5. Foreign key

It is a column or group of columns in a relation database table that provides a link between data in two table. It acts as a cross-reference between tables because it references the primary key of another table, there by establishing a link between them.

2.3.6. Table

It is an arrangement of information in rows and columns containing cells that make comparing information easier.

2.3.7. Entity

In database, an entity can be a single thing, person, place or object. Data can be stored about such entities.

2.3.8. Attribute

It defines the information about the entity that needs to be stored.

2.3.8. Context Diagram

Context diagrams focus on how external entities interact with your system. It's the most basic form of a data flow diagram, providing a broad view of the system and external entities in an easily digestible way. Because of its simplicity, it's sometimes called a level 0 data flow diagram.

2.7. Review the pass studies

Equivalence is generated in different ways depending on the means and technology of each country. Developed countries do it using technology while most of the developing countries do it manually or intelligently. For example, in Kenya, when you met all the condition for equating your degree, you must submit all document to the Chief Executive Officer, Kenya national Examinations Council. In Chad, the applicant has to go to ONECS for submitting their document by handy. In Pakistan they use computerized system where they submit all the required information online. Here, in Rwanda they use computerized system but its not accessible online by foreign students.

2.8. Critical review

There are so many things that can be critical in using current system, the following are some of them.

First, waste of time and money: Here applicant spend a lot of time moving to HEC or Irembo to see and ask for applying for equivalence certificate at the same time it consumes their money that the use in transport going to that office, it seems difficult cause some of the applicants are far way of HEC office or Irembo.

Second, some of the vital documents can be lost because of the filing system.

Third, when you are looking for some information in the file it requires much time to get it specially when the file gets larger.

By using current system, it will require a large space in storing the file. It can also cause a damage of documents due to fire or rain incident.

2.9. Proposed System

Proposed system is expected to be more accurate, efficient and less consuming than existing one. All the criticized points in the existing system will be handled sometimes, and sometimes its accessible online only by Rwandan student. The need for the new system is to work effectively and solve the critics discovered in the current system. The proposed system will facilitate the applicants to apply online, to track their documents and its accessible by everyone all around the world. Also, this system will secure all the activities by recording them in database. There is will be an option of restoring deleted file by doing a backup.

2.10. Summary

This chapter has been providing an easy way of tracking the equivalence and managing the applicant’s information regarding to his/her degree. We did that by referring to what other people have done about it, by seeing the technology they used and also by trying to see the challenges they faced in order to learn from them and make some improvements.

Chapter 3. RESEARCH DESIGN AND METHODOLOGY

3.1- Introduction

This chapter discuss the different methods used to collect the required and relevant data to the research work. It outlines the study design, analysis, an interpretation of the collected data and the techniques used to collect them. This chapter also presents the software development model used to cover all the necessary phases to achieve the development of the new proposed system. Moreover, in this chapter, the system analysis and requirements of this new system will be clearly discussed.

3.2. Data Collection Techniques

Information you gather can come from a range of sources. There are a variety of techniques to use when gathering primary data. Listed below are some of the most common data collection techniques.

3.2.1. Observation

It is the action or process of carefully watching someone or something. By observing, I tried to analyze and examine the process that applicants go through at Higher Education Council to find the equivalence certificate. Then I found that there is many problems to be solved like wastage of time and money, data insecurity.

3.2.2. Internet research

It is a wonderful resource. It has all the information that a person are likely to need about topic. Internet research can be a very effective and it is a way to finding the information that you need. So, we tried to see how other country use to generate the equivalence to students obtained their qualifications from abroad.

3.2.3. Interview

An interview is a procedure designed to obtain information from a person through oral responses to oral inquiries. An interview is a face-to-face conversation between the interviewer and the interviewee, where the interviewer seeks replies from the interviewee for choosing a potential human resource. So, this technique was used to know the feelings of applicants about the Service given by HEC. We tried to listen to their ideas by asking them what the changes they need that must be made. We chose to use this technique in order to check if our project can meet their needs.

3.3. Software Engineering Methods

According to the institute of electrical and electronics engineers (IEEE), software engineering means applying the principles of engineering to the software development field. Software engineers apply engineering principles and knowledge of programming languages to build software solutions for end users.

3.3.1. Iterative model

The iterative model is a particular implementation of a software development life cycle (SDLC) that focuses on an initial, simplified implementation, which then progressively gains more complexity and a broader feature set until the final system is complete. The basic ideas behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental).

**Advantages**

* Results are obtained early and periodically
* Parallel development can be planned
* Progress can be measured
* Less costly to change scope/ requirements
* Testing and debugging during smaller iteration is easy

**Disadvantages**

* More resource may be required
* Although cost of change is lesser, but it is suitable for changing requirements
* More management attention is required
* Defining increments may require definition of complete system
* Not suitable for smaller projects

**Application**

* Requirements of the complete system are clearly defined and understood
* Major requirements must be defined; however, some functionality or requested enhancements may evolve with time
* There is a time to the market constraint
* A new technology is being used and is being learnt by the development team while working on the project
* There are some high-risk feature and foals which may change in the future.

3.6. Tools and Language to be used in software development

**HTML**: HTML, or **Hyper-text Markup Language**,allows web users to create and structure sections, paragraphs, and links using elements, tags, and attributes. However, it’s worth noting that HTML is not considered a programming language as it can’t create dynamic functionality. Without HTML, a browser should not know how to display text as elements or load images or other elements.

**CSS**: is the acronym of “Cascading Style Sheets”. CSS is a computer language for laying out and structuring web pages (HTML or XML). This language contains coding elements and is composed of these “cascading style sheets” which are equally called CSS files (.css). Without CSS, every web page would be drab plain text and images that flowed straight down the page. With CSS, you can add color and background images and change the layout of your page, your web pages can feel like works of art!

**PHP**: PHP is an acronym for "PHP: Hypertext Pre-processor" PHP is a widely-used, open-source scripting language. PHP scripts are executed on the server. PHP is free to download and use.

**Xampp**: XAMPP (or) is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible. XAMPP's ease of deployment means a WAMP or LAMP stack can be installed quickly and simply on an operating system by a developer, with the advantage a number of common add-in applications such as Wordpress and Joomla! can also be installed with similar ease using Bitnami.

**MySQL**: is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language.

Chapter 4. SYSTEM ANALISIS, DESIGN AND IMPLEMENTATION

4.1. Introduction

This chapter describes the development of the “Online Application and Tracking System” it includes the weakness observed in the current system , screenshots of how the system will work.

4.2. System study

4.2.1. Weakness observed in the current system

* Poor communication between HEC and applicants
* Time and money consuming
* The information of the applicants are hard to manage

4.3. System Analysis

4.3.1. User requirement of the proposed system

It is generally a planning document, created when a business is planning on acquiring a system and is trying to determine specific needs. When a system has already been created or acquired, or for less complex system, the user requirement specification can be combined with the functional requirements document.

4.3.2. Function requirements

It is any requirement which specifies what the system should do. In other words, functional requirement will describe a particular behavior of function of the system when certain conditions are met.

4.3.2.1. Example of function requirements

* To delete or update the list of applicants,
* To record feedback
* To generate Equivalence certificate
* To upload the required documents
* To record submitted document

4.3.3. Non-Function requirements

Non-functional Requirements (NFRs) define system attributes such as security, reliability, performance, maintainability, scalability, and usability. They serve as constraints or restrictions on the design of the system across the different backlogs.

Example of non-functional requirements of this proposed system:

* Usability: it is understandable and easy to use to both side (developer and user)
* Availability: it is available 24 hours per day
* Confidentiality: the degree to which the software system protects sensitive data and allow only authorized access to the data.
* Maintainability: developer can add new features easier.

4.3.4. System requirement

There are the necessary specifications your computer must have in order to use the hardware and software.

4.4. System specification

4.5. Description of the system

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