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ONLINE EQUIVALENCE APPLICATION MANAGEMENT SYSYTEM

Case study: ONECS (Chad)

By:

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Dissertation Submitted in Partial Fulfilment of the requirements for the award of Bachelor's Degree in Computer Science

Kigali, August 2024

DECLARATION

I, **ADNAN MAHAMAT ABAKAR NAHAR** with registration numbers 202110635 do hereby declare this project report entitled ‘‘**ONLINE EQUIVALENCE APPLICATION MANAGEMENT SYSTEM**’’ is my original work and that the information state here is credited to me and that is reported has never been submitted for any other degree award to any University.

ADNAN MAHAMAT ABAKAR NAHAR

Signature…… Date…….

APPROVAL

This is to certify that the project report entitled ‘‘**ONLINE EQUIVALENCE APPLICATION MANAGEMENT SYSTEM’’** is a record of the original work done and submitted by **ADNAN MAHAMAT ABAKAR**, roll number: **202110635** to the Kigali Independent University in partial fulfillment of the requirement for the award of Bachelor’s degree of Computer Science.

Supervisor name: **Mr. KWIZERA Jean Pierre**

Date :……../……..../…….

Signature:…….

Dedication

With Genuine Gratitude,

We dedicate this Research Project

To my parents and Siblings,

To the family of NAHAR SANARA DERME,

To all my friends and relatives

To All Lecturers and my colleagues at ULK.

Acknowledgement

First and foremost, we are very grateful to the Almighty God for his love that endures forever and his faithfulness and by whom this work has been made possible. This work was made possible by the support and contribution from individuals to whom we are indebted and would like to express our gratitude.

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May the almighty God bless you all abundantly!

ADNAN MAHAMAT ABAKAR

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List of abbreviations and acronyms

CPU: Central Processing Unit

CSS: Cascading Style Sheet

DBMS: Database Management System

DFD: Data Flow Diagram

EDP: Electronic Data Processing

ERD: Entity Relationship Diagram

GUI: Graphical User Interface

HEC: Higher Education Council

HTML: Hypertext Markup Language

MIS: Management Information System

MySQL: My Structured Query Language

ODS: Operational Data Store

ONECS: National Office for Higher Education Exams and Competitions

OS: Operating System

PHP: Hypertext Preprocessor

RAM: Random Access Memory

RDBMS: Relational Database Management System

ST: Science and Technology

ABSTRACT

Online equivalence application management system is as web based application system that apply for admission Equivalence degree as well as process their system admission details the manual the process of applying for and processing a student's admission is very stressful and time-consuming. Forms and files are lost during the process, and students must wait days for admission details to be processed while staff members sit through long, exhausting shifts tending to students. These issues have been looked into, and an appropriate solution has been offered: the online equivalency application and tracking system, which has a centralized database to maintain track of all the students' records in the system. Prospective students can apply for Equivalency using a module, where they can also submit their information and upload all necessary documents. Additionally, there is an administrator module that allows system administrators to view student details and deliver created equivalencies to shortlisted students by email or SMS.

A three-tiered application design strategy will be used in the development and implementation of this task. MySQL is the preferred database, and PHP will be used to link the user to the database's contents. Hypertext Mark-UP Language (HTML) will be utilized to construct the graphical user interface. The SDLC (Systems Development Life Cycle) Waterfall model will serve as the foundation for the methodology. Planning, Analysis, Design, and Implementation are the stages. An interactive web-based solution that addresses the issues of the manual record-keeping system is anticipated as the final product.

Keywords: Equivalence, Application, System……

CHAPTER 1. GENERAL INTRODUCTION

1.1. Introduction to the study

Universities all over the world discharge various regulatory functions like validation, approval, recognition of academic programmer, degrees, and certification of equivalency as part of academic quality assurance. They facilitate the function without much bureaucratic procedure and invariably protect the meritorious. University is the one and only constitutionally ordained authority to award Academic Degrees and to decide upon the recognition, approval, and equivalency thereof. No Employer can demand a Government Order to validate a certificate issued by the University. Degrees should be specified in generic terms and their nomenclatures should be such that are generally recognized, globally acknowledged and widely accepted and are indicative of the level of the degrees and the broad subject, discipline, knowledge area universities/institutions, The ability to express originality or specialization in parenthesis against the designated generic degrees will be granted in the context of curricular innovation.

This research will look into Online equivalence application management system and how they can be applied in system using mobile, smartphone, Tablets and other electronic device. This introduction has been apportioned into various parts as follows the first part is the background of the project to the research, the problem statement, the major purpose of study, research question, scope of the project, project methodology, significance of the project, limitation of the project, time frame, and the structure of the project.

1.2. 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. Developed a Document Validation and Verification System develop new technics to generate comparative solution for validation purpose, and investigate new technics for examining the quality of the new system (Singh,2017)..

The system authorizes certificates in government sectors using cloud computing environments. The design model where the user can request and administrator can authorize certificate through online in several sector. The system serves as a tool that aids in the facilitation and coordination of the safe and seamless movement of both paper-based and electronic documents as required by authorized parties. That flow is comprised of document storage, processing, routing, distribution and retrieval. 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, and 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.

The Applicant System, is a software application specifically designed to automate equivalence and hiring process. The solution provides hiring an administrator with tools they need to intelligently monitor and progress the candidate through the hiring process. The system will support the candidate for instance to record the personal information, contact information, experience and educational background, resume and cover letter. When an applicant applies for a job via online and will send the acknowledgement message of application to the applicant. The software itself will scrutinize the resumes and then these resumes if matched with the needs of the company or selection agency are then forwarded to the management. In contrast, those resumes that fail to meet the requirements of the company or the agency will get regret message sent by the software automatically. It will also help the management to schedule the interview time and send the message to the shortlisted applicants at prefixed time. Once the applicant is selected for the job, the software will automatically transfer the data of the applicant to the employee file of the organization(Jewel Kyle Fabula, 2020)..

This project of Online Equivalence Application management system comes as an answer or a solution to the National Office for Higher Education Exams and Competitions (ONECS) and Applicant. This system will be computerized where ONECS 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 ONECS, following up the documents, adding some comments to the service they want.

1.3. Problem Statement

Despite the information of applicants of equivalence that collected by ONECS are hard to manage and it can be easily lost because of file disorders. The second issue is poor communication between ONECS and Applicants, when those applicants go to the office of ONECS trying to communicate with them and make follow up about their documents, it is a time consuming to both applicant and ONECS Administration. Here also I can say that there's waste of time and money of that applicant. According the above challenges, our online tracking system will handle all problems facing the current system.

1.4 Objective of the project

1.4.1 General Objective

The aim of this project is to design and develop a system that helps the applicants and management of ONECS (Chad) in the equivalence application and system of its day-by-day activities.

Modes of providing it within higher learning institution and make sure that graduates from such institutions are knowledgeable for the betterment of Chad resident's welfare and development of Chad.

1.4.2. Specific Objectives

i. To collect and mining system requirements from targeted respondents;
ii. To develop a database that stores all the information on ONECS activities;
iii. To provide to users with interactive and Graphical user-friendly interfaces that help and facilitate them to navigate through the system easily;
iv. To solve problems of the current system used to upload the required documents.
v. To design and implement and adaptive Online Equivalence Application Management System for ONECS.

1.5. Research Questions

i. How to collect and mining system requirements from targeted respondents?

ii. How to develop a database that stores all the information of ONECS activities?
iii. How to provide to users with interactive and Graphical user-friendly interfaces that help and facilitate them to navigate through the system easily?
iv. What are the problems of the current system used to upload the required documents?
v. How to design and implement and adaptive Online Equivalence Application and Tracking System for ONECS?

1.6 Scope of the project

1.6.1 Content Scope

This project will be focusing on designing and developing an online equivalence application and tracking system of ONECS within the main goal of improving the quality of the system, decision making of its administration and the quality-of-service delivery.

1.6.2 Geographical Scope

This project will conductive on National Office for Higher Education Exams and Competitions (ONECS) as an independent agency, located in N'djamena of the Republic of Chad.

1.6.3 Time Scope

This project focusing on a period of eighteen years from 2006 to 2024. The researcher will be focusing more on this period because most issues and limitation focused on that period.

1.7. Project methodology

Project methodology is the road map that acts as an itinerary for researchers to accomplish the goals in the journey of research.
In this project, Observation, Interview and Documentation were used as data collection tools, Waterfall Model were used as a software development model and Structured System Analysis and Design Methodology.

1.7.1 Data collection Techniques

This project is a result from the sincerity of data collection, research and analyzing of existing home automation systems, which were found to be non-open source, complex and high costing for implementation, sometimes mechani c. Regarding to this and with many data collection methods or techniques, in our projects we will use the following Techniques to collect data:

1.7.1.1 Observation Technique

Observation is an action of attentive phenomenon follows up, without the willing to dity them, using investigation and appropriate study. The observation has been found a tool that helps the researcher to know and muster the real situation of existing system. With the observation, the researcher notices with own eyes that is going on practically on the field.

1.7.1.1 Documentation Technique

The documentation is a technique that is applied to gather the manipulated documents gether in various forms. This technique permits the researcher to consult books, aviews, memories, class, notes and web pages related to the subject of this work.

1.7.2 Software Development methodology

Many models for software development have been put out but not all of them have to be used, with our project we will use Waterfall model because is linear-sequential life cycle model and each development step has to be finished before the next begins.

The sequence phases in waterfall method are the followings:

- Requirement analysis: During this stage, every potential need for the system that has to be developed is gathered and recorded in a requirement specification document.
- System Design: In this phase, the system design is prepared and the requirement specifications from the first phase are examined. This system design aids in determining the overall system architecture as well as the hardware and system requirements.
- Implementation: The system is first constructed as units, or small programs, using inputs from the system design. These units are then integrated in the subsequent phase. Unit testing is the process of developing and evaluating each unit for functionality.
- Integration and Testing: Following each unit's testing, all of the units created during the implementation phase are combined into a system. The entire system is tested for errors and malfunctions after integration.

- System deployment: Following the completion of both functional and non-functional testing, the product is either made available to customers or is put on the market.
- Maintenance: The client environment occasionally has problems. Patches are published to address certain problems. Better versions of the product are also released in an effort to improve it. To implement these modifications in the client environment, maintenance is carried out.

We do know that Waterfall model is not the best model in software development but it is suitable with our project.

1.7.3. System Analysis and System Design methods

Because it is based on a waterfall model and takes a formal, step-by-step approach to the System Development Life Cycle phases and activities where the activities of one phase must be completed before moving on to the next the Structure System Analysis and Design Method is the software development methodology that we chose for System Analysis and Design.

1.8 Significance of the project and interest of the project

After analyzing the way, the online management system of ONECS which is like IREMBO system, where they use the online application system to records, request, register, and observation. We have chosen this subject, from our observation, we found that if this application is computerized, it can provide a solution to the challenges they encountered, hence making management easy.

1.8.1 Personal interest

This study will help us to build online equivalence application system, means this project will bring a knowledge to the researchers, more opportunities to be familiar with new information technology tools. This also contributes to the development of my future career. This has been also a marvelous opportunity to be familiar with new information technology tools putting them in practice which has been used during this project development, analyzing, survey and remark revising process. This study alerted the researcher to make everything learned during academic studies to be applied while resolving practical problems and making acquired concepts come and appear as real solutions for every existing problem in our lives. As a final point, the study assisted the researcher to fulfil the moot, hypothetical, abstract and academic requirements.

1.8.2 Institutional interest

This study will help academic institution, the project will significant to ULK fraternity and especially to the students who may have interest in studying in this field since the project report will be depositing in the school library, will be using as reference. The system is important and useful to the ONECS in Chad because it facilitates to deliver good services to their applicants, it can also be used to apply for other things like school. The project will be significant to Kigali Independent University (ULK), in department of Computer Science and especially to the students who may have interest in studying in this field since the project report will be deposited in the school library and at the end it will serve as a reference material to other library users both internal and external and researchers as well.

1.8.3 Public interest

This study will help Government of Chad, the project will be more beneficial to the public and interesting hence they will be getting a new digital solution for emerging their profit and encourage them to improve the quality of their activities. The applicants 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. The project will be more beneficial to the public and interesting hence they will be getting a new digital solution for emerging their profit and encourage them to improve the quality of their activities. Implementation of this web application will facilitate the users to safely store their data and manage daily operations within ONCES.

This study will help Companies or others institution private and public which will be in touch of ONECS. Both applicants and ONECS can economize time, it provide some aesthetical interface rich in functionality.

1.9 Limitations of the Project

In this study, the problem of availability of the respondents is the main challenge met by the researcher. It required the researcher to wait for them until their free time come. Some respondents were not willing to give information because they thought that the information collected would be used for political purposes. This took time for researcher to explain the reasons of conducting this study.

1.10 Time frame

My project is scheduled to start on **1st May 2024** and is expected to end in **September 2024.**

Below there is Gantt chart and details of different tasks I will do in order to provide a good project that meet the standards.

NOTE: the date format on that Gantt chart is **Month/Date/Year**.

TAST TO DO	STARING DATE	ENDING DATE	DURATION (DAY)
Planning	4/17/2024	4/28/2024	11
Analysis	5/02/2024	5/14/2024	12
Coding & Implementation	6/01/2024	6/10/2024	9
Testing	6/11/2024	6/28/2021	17
Maintenance	7/05/2024	8/02/2024	26

1.11 Organization of project

The structure of dissertation comprises five chapters namely:

Chapter one: General Introduction; In this chapter, we talked about the reason which motivates us to develop this system according to the existing problems and possible solution that are expected to be done. We stated where this system is going to be used and we talked a brief of some other topics which belong to the next chapter and the period which we are supposed to finish

Chapter two: Literature review; this chapter will handle with all theoretical concepts within the project.

Chapter three: System Analysis and Design, this chapter is all about the system used to design the software and focusing on the requirement that are need to be fulfilled.

Chapter four: System implementation; It is in this chapter where all information regarding to the implementation of the new system are highlighted using charts, screenshots, tables and so on.

Finally: Conclusion and recommendations; this is the chapter dedicated for the designer's general conclusion about the system and what can be done in order to improve upcoming system designs

Chapter 2. LITTERATURE REVIEW

2.1. Introduction

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 Management System ", it has also a context diagram, critical review, proposed system and the summary of this chapter.

2.2. Definition of concepts

2.2.1. Online

The meaning of ONLINE [2] 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.

2.2.2. Equivalence

It's a process that sets out to assess the similarity of studies or parts of studies completed abroad. Equivalence [1] is granted to students if he/she meets the following eligibility conditions:

- The student completed the program of study as a full-time, regular student on the campus of the foreign university;
- The minimum eligibility qualification for admission to the program of study is at least the same as prescribed by their respective university;
- The degree has been awarded by a university that is duly approved, recognized, and accredited in its own country.
- The program of study lasts for at least as long as stated in their degree. (SSRMC)

2.2.3. Applicant system

An applicant system [3] is a type of software application that handles the recruitment process, namely by sorting through thousands of resumes, to determine which ones are the best fit for the positions for which they were submitted. Since both applicant tracking systems and recruiters skimming resumes are searching for certain inclusion criteria, applicant systems do not handle resumes in a significantly different way. While applicant tracking systems work by examining

resumes for keywords, human recruiters are more likely to seek for reasons to automatically reject an application, such as spelling mistakes or a lack of relevant skills. Employers may keep organized and save time and paper by using applicant tracking tools. Employers who use application tracking systems don't have to worry about misplacing files or inadvertently erasing emails that include resumes of candidates they wish to hire. Employers can easily monitor the employment process and contact with applicants directly by using an applicant tracking system (G Tai, 2012).

2.2.4. Management System

A management system [4] is a collection of intricate practices, guidelines, and processes designed to carry out a certain task, fulfill a responsibility, or resolve an issue. In order to perform value-added processing and enable a user to satisfy mission-oriented operational needs in a prescribed operating environment with a specified outcome and probability of success, the system is an integrated set of interoperable elements, each with explicitly specified and bounded capabilities (Drucker, 1954).

2.2.5. Data collection

The process of obtaining and assessing data on certain variables in a pre-existing system is known as data collection [5]. This allows one to assess results and respond to pertinent inquiries. In all academic subjects, including the arts, business, social and physical sciences, and data collecting, research is a necessary component. Although techniques differ depending on the field, making sure that the collection is honest and accurate always comes first. The aim of any data collecting is to obtain high-quality evidence so that analysis can result in the development of believable and persuasive responses to the issues that have been put forth (Jackson, M. C, 2000).

2.2.6. Applicant

A candidate is a person who submits an application or makes a request. According to the statement, [6] the term applicant should only include people who have:

- Applied for a particular, open position that a business is looking for candidates for.
- Fulfill the minimum qualifications that have been specified and documented for a particular available position.
- Submit an application for the job while the applicant flow log is still open.

- Comply with the hiring organization's formal recruitment practices (dictionary Cambridge).

2.2.7. ONECS

National Office for Higher Education Exams and Competitions (ONECS) [7] 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. Higher Education institutions will be required to include a strategy for developing research and knowledge transfer activities across the range of their academic provision to support teaching at honor's degree and post graduate levels (bac tchad).

Higher education institutions are responsible for delivering education that leads to qualification in the Higher Education Qualification Framework for Chad as well as short courses that may, but do not have to, lead to certificates that are credit rated at higher education level. They also carry out research and innovation and offer knowledge transfer and community service.

2.3. Other Related Literatures

2.3.1 Equivalence Evaluation Systems

Overview: Equivalence evaluation systems are designed to assess and recognize academic credentials from different educational institutions and countries. These systems ensure that academic qualifications are comparable and meet specific standards required by educational institutions or employers.

Key Elements:

- Standardization: Equivalence evaluation systems rely on standardized criteria to compare and validate different educational credentials. These standards may vary by country, institution, or specific educational program.
- Data Verification: The process includes verifying the authenticity of academic documents, such as transcripts, diplomas, and certificates.
- Comparative Analysis: Evaluators compare the curriculum, credit hours, and academic outcomes of the credentials with the local education standards.
- Outcome: The evaluation results in a determination of equivalence, which may include recommendations for further coursework or certification.

Example Study: "A Framework for Credential Evaluation: Best Practices in Higher Education"

- Summary: This study provides a comprehensive framework for evaluating academic credentials, highlighting best practices adopted by higher education institutions.
- Findings**:** It emphasizes the importance of transparency, consistency, and accuracy in the evaluation process. The study also discusses the challenges faced by institutions, such as variations in educational standards and the need for trained evaluators.
- Implications**:** Implementing a standardized equivalence evaluation system can improve the recognition of international credentials, facilitating student mobility and employability.

2.3.2. Online Application Management Systems

Overview: Online application management systems streamline the application process for students, faculty, and administrative staff. These systems digitize the submission, processing, and review of applications, making the process more efficient and user-friendly (Jack, Online2019).

Key Elements:

- User Interface (UI): A well-designed UI is essential for ensuring that users can easily navigate the system and complete their applications without issues.
- Automation: Automating repetitive tasks, such as sending confirmation emails and tracking application status, reduces the administrative burden and speeds up the process.
- Data Management: The system must securely store and manage large volumes of applicant data, ensuring compliance with data privacy regulations.
- Communication**:** Integrated communication tools, such as messaging and notification systems, keep applicants informed about their application status and any required actions.

Example Study: "Design and Implementation of a Web-Based Student Application System"

- Summary: This article explores the technical aspects of developing a web-based student application system, including system architecture, database design, and user interface development.
- Findings: The study highlights the benefits of web-based systems, such as accessibility, scalability, and real-time data processing. It also discusses common challenges, like ensuring data security and handling high traffic during peak application periods.

- Implications: Implementing a robust online application management system can enhance the overall efficiency of the application process, improve user satisfaction, and reduce processing time.

2.3.3. Online examination administration system for universities

An online test is one that is conducted via the internet or an intranet utilizing a computer system. It is a web-based exam system. It works well as a mass education evaluation solution. With the help of Microsoft Visual Studio 2008 for design, C# 3.5 for coding, and Microsoft SQL Server for database management, we have created an online examination system built on a Browser/Server architecture. The recommended web technology is ASP.NET. The multiple choice questions that are fed into the system are examined and automatically graded by the system.

The Manual Examination System has a lot of issues. Even a cursory look at the Manual Examination Administration System reveals instances of student immorality and examination malpractice, which are violations of university policies on both the administration of exams and human morality. This has stolen a tool from the country since it generates graduates who are not ready for the workforce and cannot compete with international university graduates. It is imperative to safeguard both the reputation of the Nigerian people and the University System.

According to this research, there will be a relative balance and harmony within the university system if an efficient and effective online examination system is developed, where exams will be taken online, results will be computed and released immediately, and they will be stored in a central database for documentation and future planning and evaluation purposes. In order to complete their research, the personnel will benefit from the time that would have been spent grading exams and compiling results. Additionally, this will make the indifferent kids dedicated to their academics (kalves 2027).

Questions for candidates taking the tests are randomly generated by the system. One contestant may receive question number 4 as question 1 if twenty candidates are taking the exam, while candidate number 40 will receive question number 20 as question 1. Therefore, no two candidates may provide the same question number as the first one.

A timer included into the application controls how long each candidate spends on the test.

Test scheduling, test ID assignment, and question storage are all handled by the preparation system. The questions, a set of potential answers, question kinds, and other metadata make up the question database. These are indexed based on a number of criteria, including subjects, keywords,

complexity and difficulty, etc. The administrator can add questions and answers to the database by opening it.

The student selects the user link from the top menu in order to begin writing the tests. The student logs in using the password and username they were given upon registration. The PIN that the administrator generated during registration is another prompt the student must input. The student choose the exam type after logging in, then clicks the next button to begin answering the questions one at a time. The student clicks the submit button when they have completed all of the questions. The student instantly sees the preliminary result after clicking the submit button (The World Health Report, 2010).

2.4. Overview on Online Equivalence Application Management System

An academic document is an official document, which confirms a student's basic programmed and award information. It includes a student's course start and end dates, date of award and classification, if applicable. Verification is the process of establishing the truth, accuracy, or validity of something such as the verification of official documents.

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 National Office for Higher Education Examinations and Competitions (ONECS) for submitting their document by handy. In Pakistan they use computerized system where they submit all the required information online. Here, in Chad they use computerized system but it's not accessible online by foreign students(ONECS web 2019).

2.5 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. SYSTEM ANALYSIS AND DESIGN

3.1 Introduction

Systems analysis is a process of collecting factual data comprehending the procedures involved, spotting issues, and making workable recommendations for enhancing the system's operation is known as systems analysis. A new system needs to be built based on the user requirements and a thorough study of the current system. This stage of the system design process is it. It is the most important stage of a system's development. Physical system design is created from the logical system design that systems analysis produced.

This point only introduces chapter three. It briefly presents what is expected in this chapter.

3.2. Analysis of the current system

3.2.1 Introduction

This section will discuss about the data collection on current system which currently working. Issues regarding the current system were analyzed and explained with more detailed.

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 Chad they use computerized system but it’s not accessible by foreign people. The foreign have to go to ONECS to fill the application form then submit all required documents to get that equivalence by email. But sometimes ONECS post the available equivalence on their website.

3.2.2 Problem of the current system

The existing system is not user friendly because the retrieval of data is very slow, and it is not maintained efficiently because it is kept on papers. It does not have the security of data, for it requires a lot of paper work, the loss of even a single record lead to a difficult situation, it could lead to a wrong decision making. It is time consuming due to the operation of data record that are taken on papers instead of being digitalized.

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 ONECS 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 ONECS office.

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 especially 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.

3.3. Analysis of the new system

3.3.1. Introduction

The new System is a well-designed and reliable web-based application, with user-friendly and responsive graphical user interfaces alongside with a well secured database to keep securely all the data of the company. To record, edit, delete, view, search or update any kind of data into the system is done by an authorized user, this means that each user, to log into the system must have his/her own and unique credentials, to restrict unauthorized users to access the system for data security purpose. It is time saving for it provides an easy way of searching or filtering data stored in the database. It allows a real time communication and online support to the customers from the Company.

3.3.2. System requirements

System requirements[27] are the required specifications a device must have in order to use certain hardware or software. For example, a computer may require a specific I/O port to work with a peripheral device. A smartphone may need a specific operating system to run a particular app. Typical system requirements for a software program include: Operating system, Minimum CPU or processor speed, Minimum GPU or video memory, Minimum system memory (RAM), Minimum free storage space, Audio hardware (sound card, speakers, etc.).

i. Functional requirements

In software engineering and systems engineering, a functional requirement[28] defines a function of a system or its component, where a function is described as a specification of behavior between inputs and outputs.

The main functional requirements of our systems are to provide to students an interactive web-based information system that will be able to provide the required information they want to know

about applying for equivalence in Chad especially in the field of National Office for Higher Education Exams and Competitions (ONECS)

ii. Non-functional requirements

In this non-functional requirement[29], we define the system the system property and constraint. And they are classified into three groups: external requirements, product requirement and the organizational requirement.

- The system can run on any operating system
- The system will operate 24h/24 through the internet connection
- The software can run on any web browser installed on the computer
- Security of the system
- All platform oriented

The system must be always available and accessed from anywhere and it has the higher reliability where in case of failures the downtime will be minimal.

3.3.3 Functional Diagram

Function diagrams show the relationship between the principal parts of a total system and are well-suited for process or drive control.

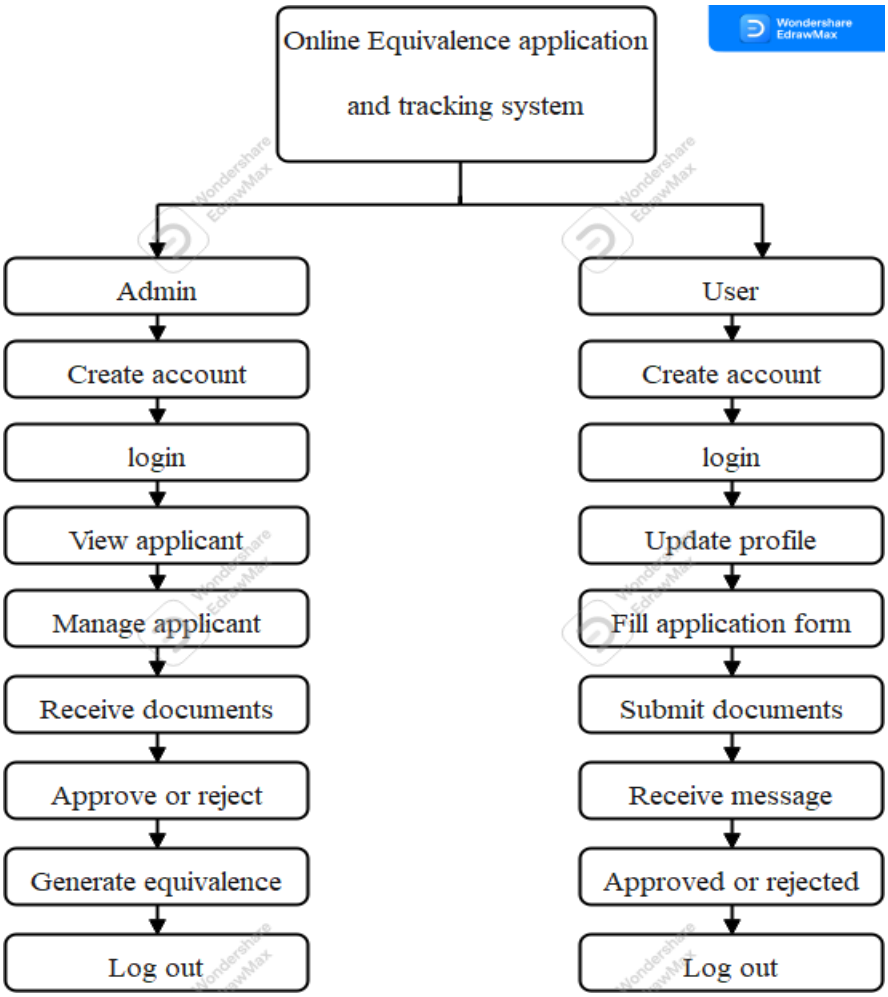

Figure 3.1: Function Diagram

Source: Own drawing

3.3.4. Methodological approach

Methodology[30] is "'a contextual framework' for research, a coherent and logical scheme based on views, beliefs, and values, that guides the choices researchers (or other users) make". It is the road map that acts as an itinerary for researchers to accomplish the goals in the journey of research (Thomas., 2021).

3.3.4.1 Data collection techniques

Data collection is a methodical process of gathering and analyzing specific information to proffer solutions to relevant questions and evaluate the results. Its goal is to learn everything there is to know about a specific topic. In order to test hypotheses and attempt to explain a phenomenon, data is gathered. The equipment and instruments used to gather data, such as observation,

questionnaires, interviews, and documentation, are referred to as data collecting techniques or tools.

However, the researcher adopted to use Observation, Interview, and documentation.

i. Observation

Observation, as the name implies, is a way of collecting data through observing[31]. It is a method of data collection in which researchers observe within a specific research field. It is sometimes referred to as an unobtrusive method.

ii. Interview

An interview in qualitative research is a conversation where questions are asked to elicit information. The interviewer is usually a professional or paid researcher, sometimes trained, who poses questions to the interviewee, in an alternating series of usually brief questions and answers.

iii. Documentation

Documentation is collecting, abstracting, and coding of printed or written information for future reference it is everything, which may be preserved or represented in order to serve as evidence for some purpose.

3.3.4.2 Software Development Methodology

Software development methodology[32] (also known as SDM) refers to structured processes involved when working on a project. It is a blend of design philosophies and pragmatic realism that stretches back to the early days of computing. The goal is to provide a systematic approach to software development. It is also known as a software development life cycle (SDLC). Pre-defining particular deliverables and artifacts that a project team creates and completes in order to develop or maintain an application is one possible component of the technique. These techniques include spiral development, rapid application development, waterfall, prototyping, incremental and iterative development, and spiral development, and extreme programming.

However, the researcher opted to use waterfall model as software development methodology.

The waterfall model, the sequential development approach [33] views development as happening in numerous phases at a steady downward flow, much like a cascade. The Waterfall technique, sometimes known as "The Waterfall" approach, split the entire software development process into distinct phases and was the first SDLC Model to be extensively utilized in Software Engineering

to guarantee project success. The output of one phase in a waterfall model usually serves as the sequential input for the subsequent phase.

In Royce's original waterfall model, the following phases are followed in order:

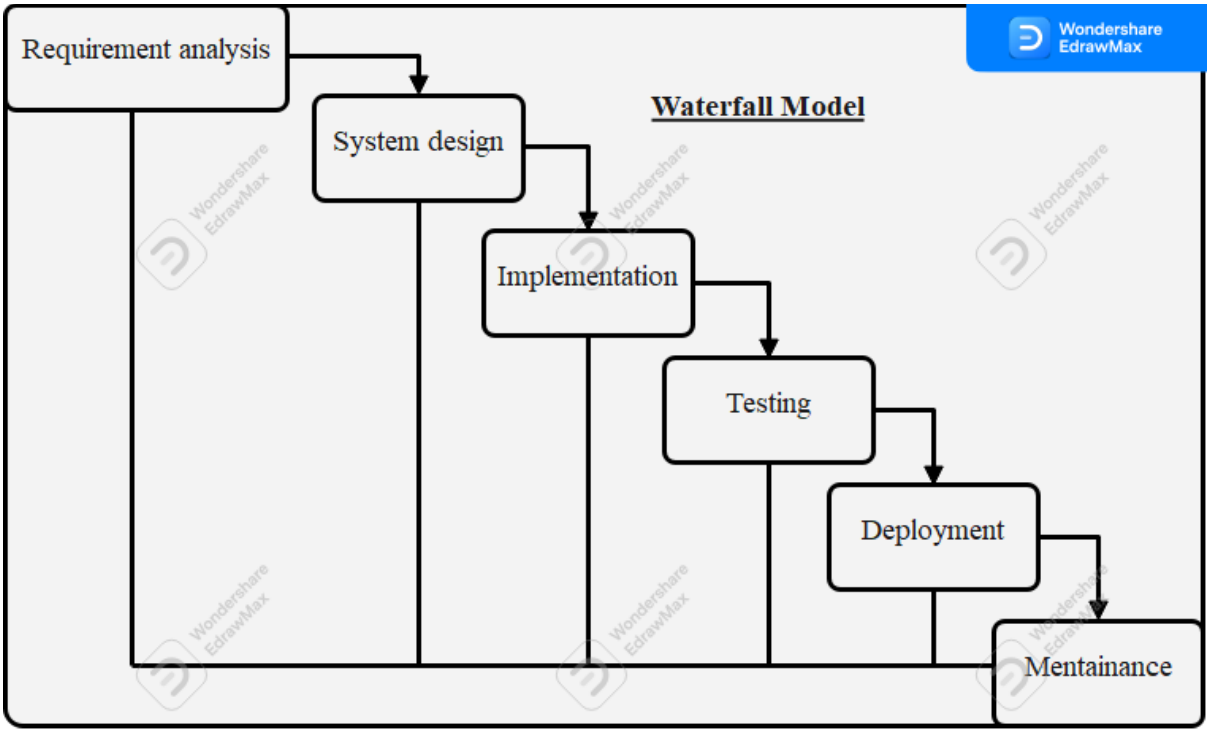

Figure 3.2: Waterfall model

Requirement analysis: All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document.

System Design: This phase involves studying the need specifications from the previous phase and preparing the system design. This system design aids in determining the overall system architecture as well as the hardware and system requirements.

Implementation: The system is first developed in units, or discrete programs, using inputs from the system design. These units are then integrated in the subsequent phase. Unit testing is the process of developing and evaluating each unit for functionality.

Testing: After each unit is tested, all of the units created during the implementation phase are combined into a single system. The entire system is tested for errors and malfunctions after integration.

Deployment of system: The product is either released into the market or deployed in the client environment once both functional and non-functional testing is completed.

Maintenance: In the client setting, some problems can arise. Patches are published to address certain problems. Better versions of the product are also released in an effort to improve it. To implement these modifications in the client environment, maintenance is carried out.

3.3.4.3 System Analysis and Design Methodology

Systems Analysis and Design[34] (SAD) is a broad term for describing methodologies for developing high quality Information System which combines Information Technology, people and Data to support business requirement. The SAD technique is not only limited to IT systems and can be used to create just about anything, from a family house to the international space station. But there is no silver bullet in simplifying the development of computer systems. This principle is still true today. In other words, there is no single, simple technique that developers can use to ensure successful Information Technology (IT) projects. However, there are development methodologies that can be followed which will greatly assist an IT professional in developing and enhancing systems. A methodology is essentially a procedure to get something done. A development methodology can be thought of as a roadmap. Whereas a traveler's roadmap would provide instructions on how to get from point A to point B, an IT professional's development methodology will offer guidance on how to take a system from conception to implementation and beyond.

i. Dataflow diagram

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. Another tool for visualizing data processing (structured design) is a data flow diagram. It is customary for a designer to start with a context-level DFD that illustrates how the system interacts with external elements. After that, the context-level DFD is "exploded" to reveal additional specific information about the system under model.

The DFD has the following four components: External entities/ Terminators/sources/sinks (represented in an Oval), Processes (represented in a round-edge rectangle), Data flows (represented by an arrow) and Data stores (represented by two parallel lines)

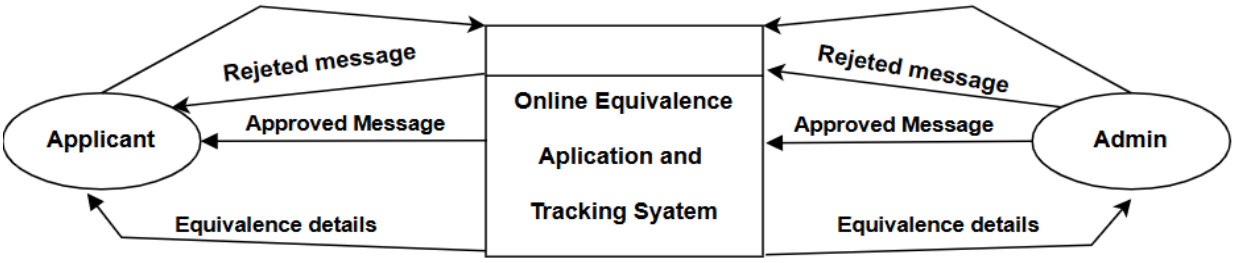

Figure 3.3: Data Flow Diagram level 0 1

Source: own drawing

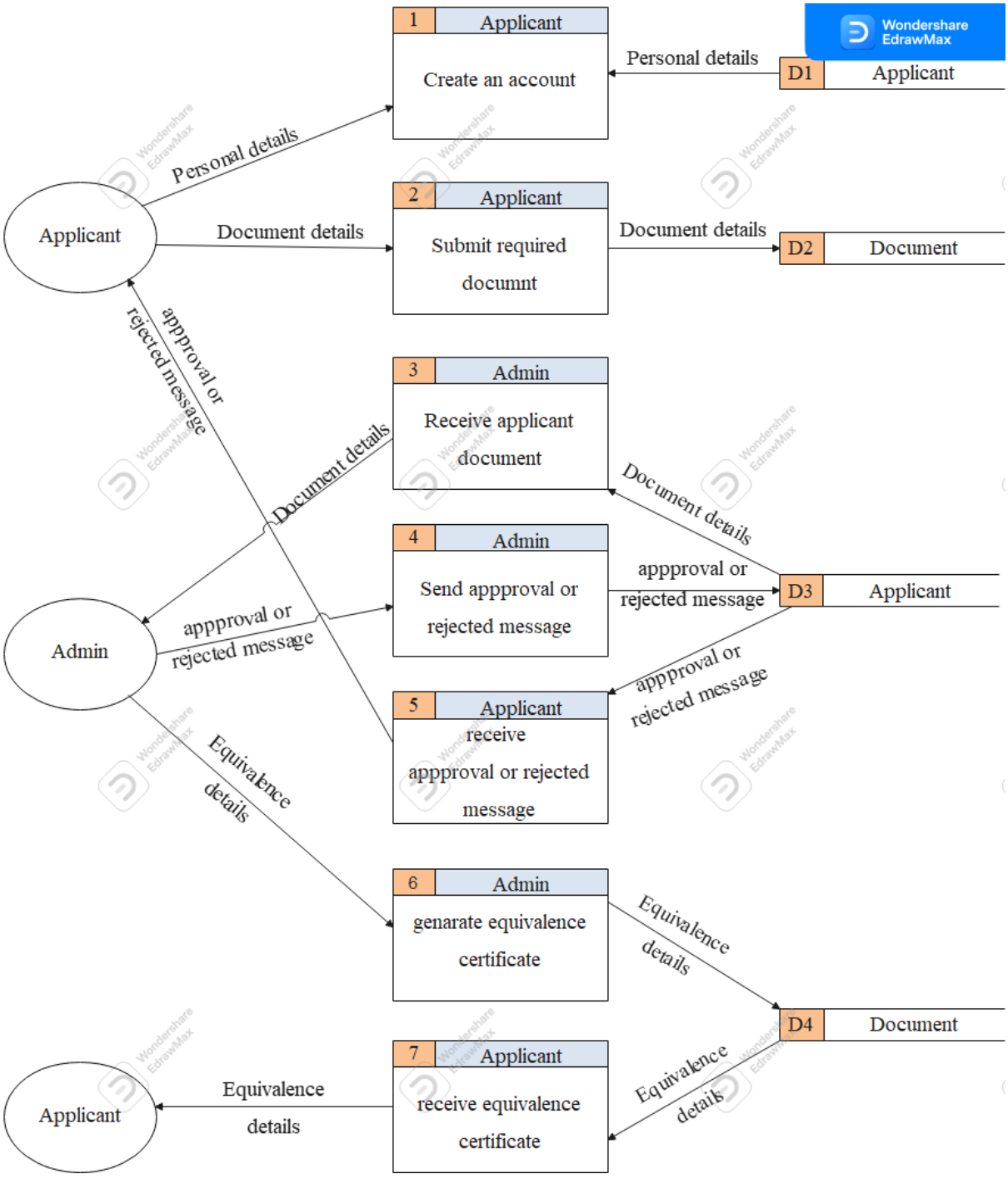

Figure 3.4: Data Flow Diagram Level 1

Source: Own drawing

ii. Entity Relationship Diagram (ERD)

An entity–relationship model[34] (ER model for short) highlights interesting connections within a particular field of study. Entity categories, which categorize the objects of interest, make up a basic ER model. It also describes the interactions that can exist between instances of those entity types. An ER model is often created in software engineering to symbolize items that a company must keep in mind in order to carry out business procedures. As a result, the ER model turns into an abstract data model that describes a data or information structure that can be used in a relational database, which is the standard type of database (Chen, Peter 2019).

In the ERD, the researcher will exhibit and explain:

1. All the entities found in the proposed Database
2. All relationships among entities (how entities work together)
3. All attributes of every entity

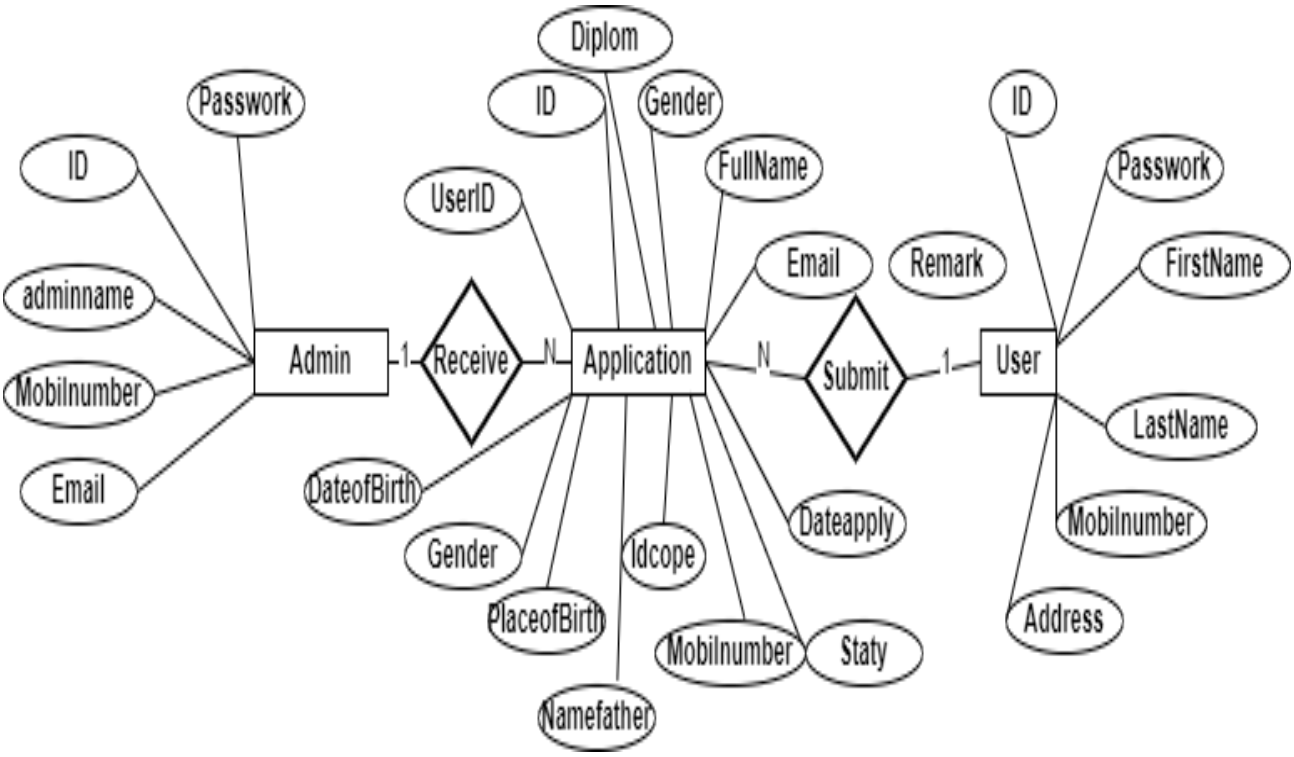

Figure 3.5: Entity Relationship Diagram 1

Source: own drawing

iii. Data dictionary

A data dictionary, or metadata repository, as defined in the IBM Dictionary of Computing[35], is a data dictionary, also known as a metadata repository. It is described by Oracle as a group of tables with metadata. There are multiple closely related definitions of the phrase that are linked to databases and database management systems.

Researcher employed a data dictionary can be consulted to understand where a data item fits in the structure, what values it may contain, and basically what the data item means in real-world terms. The tables created in the database of this system are: admin, user, tblequivalence these are the attributes we find in these tables:

Table 1: structure for table admin

Column	Type	Constraint	Description
ID	int(11)	Primary key	Identity
AdminName	varchar(30)	Null	Amine name
UserName	varchar(30)	Null	User name
MobileNumber	Int(10)	Null	Phone number
email	varchar(30)	Null	Email of admin
password	varchar(60)	Null	password

Table 2: structure for table User

Column	Type	Constraint	Description
UserID	int(11)	Primary key	Identity
FirstName	varchar(30)	Null	Amine name
LastName	varchar(30)	Null	User name
MobileNumber	Int(10)	Null	Phone number
Address	varchar(30)	Null	Email of user
Password	varchar(60)	Null	password

Table 3: structure for table tbleapplication

Column	Type	Null	Description
ID	int(11)	Primary key	Identity
UserID	int(20)	None	User identity
ApplicationID	varchar(50)	Null	Application number
DateofBith	date(11)	Null	Date of birth
Gender	varchar(50)	Null	Gender
FullName	varchar(50)	Null	Full names
PlaceofBirth	varchar(50)	Null	Place of birth
NameofFather	varchar(50)	Null	Mane of father
MobilNumber	int(30)	Null	Mobil number
Email	varchar(30)	Null	Email
DateofApply	timestamp	Null	Date of apply
Remark	varchar(30)	Null	Remark
Status	Varchar(50)	Null	Status
AcademicTranscript	varchar(30)	Null	Academic transcript
DiplomCertificate	varchar(30)	Null	Diplom certificate
IDCopy	varchar(30)	Null	ID cope or passport

3.3.4.4 ACTIVITY DIAGRAM

The activity diagram involves major activities to define the workflow of the project. These activities come with user decisions that result in more effective interaction.

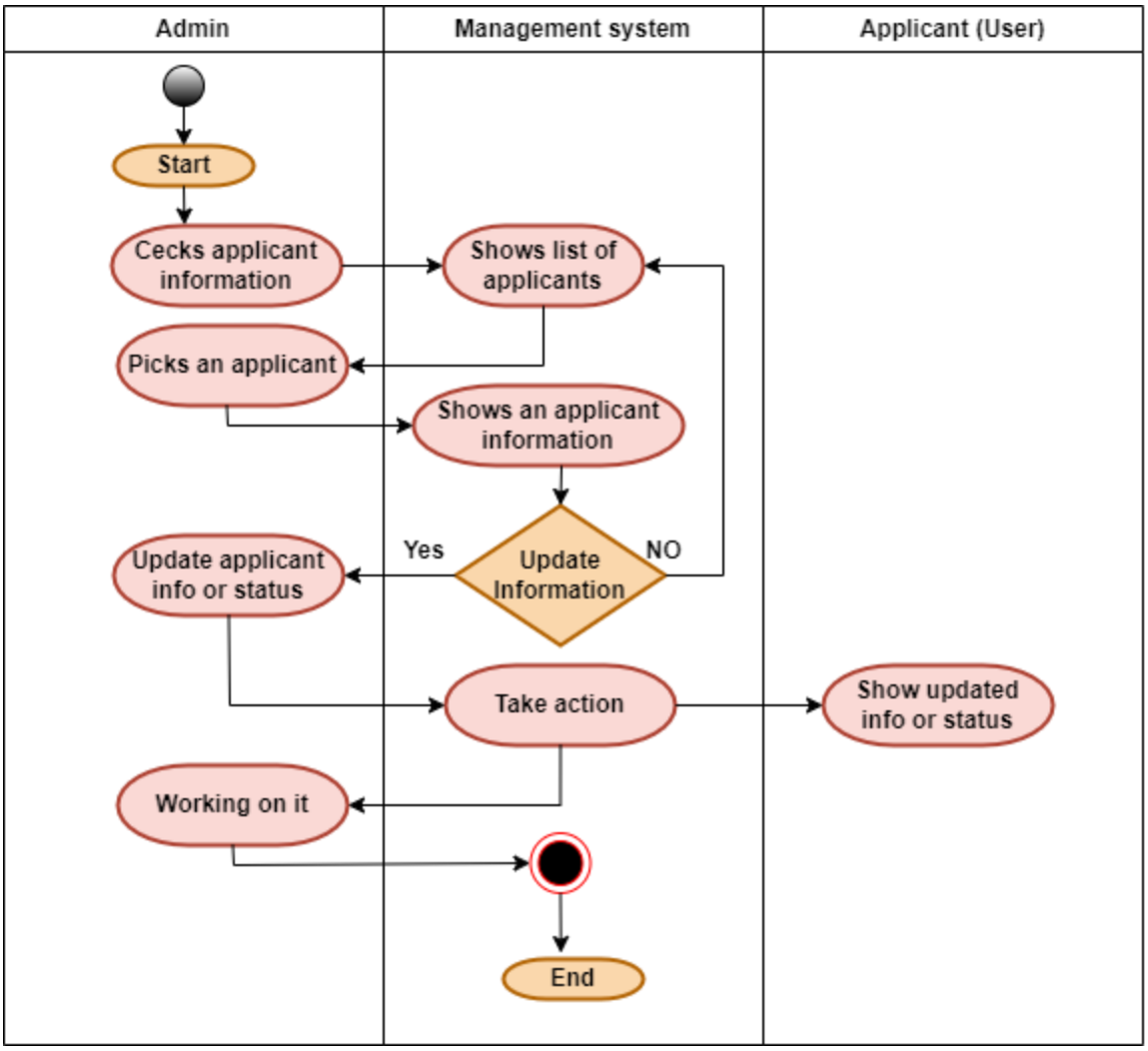

Figure 3.6: Activity Diagram

Chapter 4. SYSTEM IMPLEMENTATION

4.1 Implementation and coding

4.1.1 Introduction

The purpose of System Implementation can be summarized as follows: making the new system available to a prepared set of users (the deployment), and positioning on-going support and maintenance of the system within the Performing Organization (the transition). More specifically, implementing the system involves putting the newly created system into production, making sure all the data needed to begin operations is correct and available, and verifying that business processes that communicate with the system are operating as intended. It also involves carrying out all the necessary actions to train consumers on how to use the new system. The Project Team transfers ownership of the new system to the Performing Organization as part of the transition of system support responsibilities from system development to system support and maintenance.

This chapter describes the development of the "Online Equivalence Application and Tracking System" it includes the system Implementation, system testing, and screenshots of how the system will work.

4.1.2 Description of implementation tools and technology

4.1.2.1 Server-side tools

4.1.2.1.1 MySQL

MySQL is an open-source relational database management system based on Structured Query Language (SQL). It was supported and owned by a single for-profit organization, MySQL AB, a Swedish business that is currently part of Oracle Corporation. Several premium editions with more features are available for proprietary usage. Almost any operating system, including Windows, Linux, and UNIX, can run MySQL. Despite its broad range of uses, it is most commonly linked to online publication and web-based applications. It is also a crucial part of the open-source LAMP enterprise stack. Using MySQL as the relational database management system, Apache as the Web server, PHP as the object-oriented scripting language, and Linux as the operating system, LAMP is a platform for developing websites (Sometimes Perl or Python is used instead of PHP).

4.1.2.1.2 PHP

Originally created by Rasmus Lerdorf in 1994, PHP (Hypertext Preprocessor) is a server-side scripting language designed primarily for web development but also used as a general-purpose programming language. PHP executes on the server, while a comparable alternative,

JavaScript, executes on the client. This is an alternative to

Microsoft's Active Server Page (ASP) technology. The PHP script is embedded within a Web page along with its HTML. Before the page is sent to a user that has requested it, the Web server calls PHP to interpret and perform the operations called for in the PHP script. The web server combines the created web page with the output of the PHP code, which can be any kind of data, including graphics, when it is interpreted and executed. PHP code can be used to create standalone graphical apps and can also be run via a command-line interface (CLI).

4.1.2.2 Clint-side tolls

4.1.2.2.1 HTML

Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. Web browsers transform HTML documents into multimedia web pages after receiving them from a web server or local storage.

HTML provided signals for the document's design and provides a semantic description of a web page's structure. For Hypertext Markup Language, this stands. It is a programming language designed to make websites possible. The author of the website types a sequence of brief codes into a text file to create tags. After that, the text is stored as an HTML file and may be viewed with a browser such as Netscape Navigator or Internet Explorer. Hopefully, this browser renders the page as intended by the author after reading the file and translating the text into a viewable form.

4.1.2.2.2 CSS

A style sheet language called Cascading Style Sheets (CSS) is used to specify how a document written in a markup language is presented. Even though HTML and XHTML are most frequently used to define the visual style of web pages and user interfaces, the language can be used to render any XML document, including plain XML, SVG, and XUL, for use in speech or other media. CSS

is a fundamental technology that most websites employ in conjunction with HTML and JavaScript to build visually appealing webpages, web apps' user interfaces, and several mobile applications' user interfaces.

4.1.2.2.3 JavaScript

JavaScript, often abbreviated as JS, is a high-level, dynamic, weakly typed, prototype-based, multi-paradigm, and interpreted programming language. One of the three fundamental technologies for creating content for the World Wide Web, together with HTML and CSS, is JavaScript. It is utilized to offer online content, such as video games, and to make webpages interactive. Most websites use it, and with to an integrated JavaScript engine, all contemporary web browsers support it without the need for plugins. JavaScript is a multi-paradigm language that facilitates functional, object-oriented, event-driven, and prototype-based programming techniques. JavaScript and Java share many external features, such as language names, grammar, and standard libraries, yet they are two quite different languages with very different designs. JavaScript was influenced by programming languages such as "Self and Scheme".

4.1.3 Screen shorts and source codes

a. **Homepage**

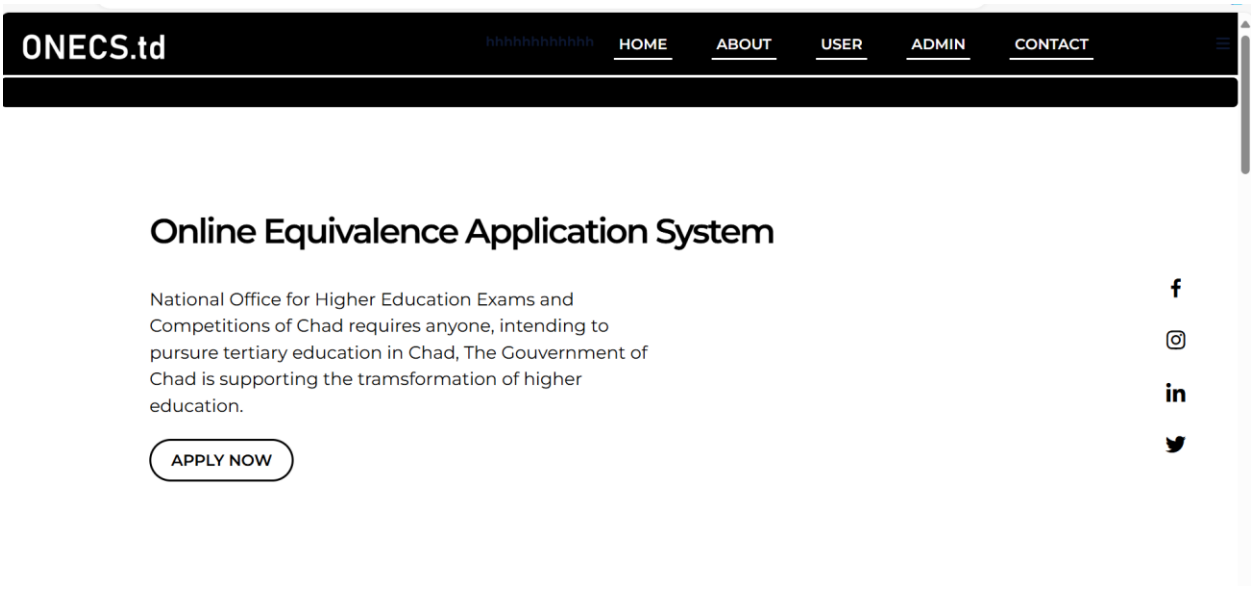

Figure 4.1: Show home page

This the homepage which links all other pages of the system, at the top left corner there is a hidden link of user's login and also the button registration for user means only for those who need to apply for equivalence.

b. Admin Login

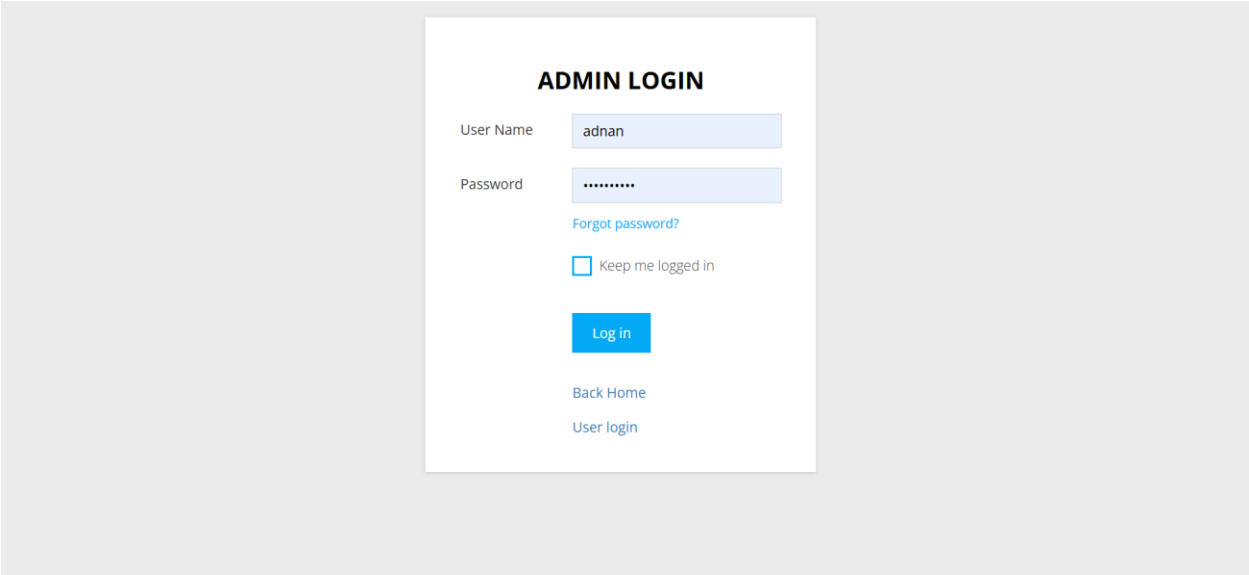

Figure 4.2: Show admin login page

The admin login page is well-structured with a clean layout and effective use of color contrast, making it visually appealing and easy to navigate. Key usability features like "Forgot password?" and "Keep me logged in" enhance the user experience, while the "Back Home" link provides convenient navigation.

After the login page of admin this is his/her dashboard which has all functional navigation bar so that he can fulfil the functional requirement of the system.

c. Admin Dashboard

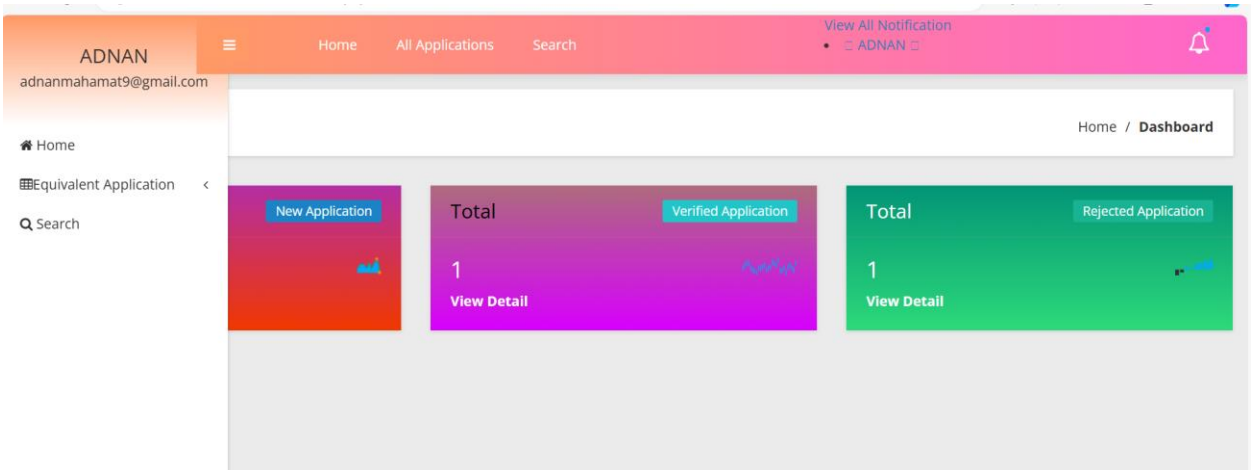

Figure 4.3: Show admin dashboard page

The dashboard is clean and visually appealing with color-coded application status cards and an intuitive sidebar. The gradient header adds style, but text contrast could be improved for better readability. It's functional and user-friendly, with minor adjustments needed for consistency and responsiveness.

d. Admin manage Applicant for Equivalence

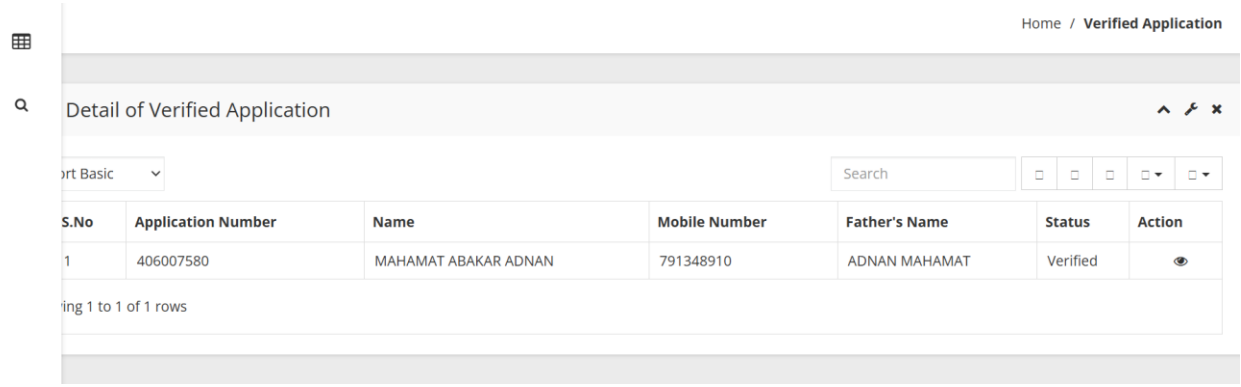

Figure 4.4: Show admin can manage applicant

From this page the admin can verify the detail of applicant and he can take action.

e. Other services

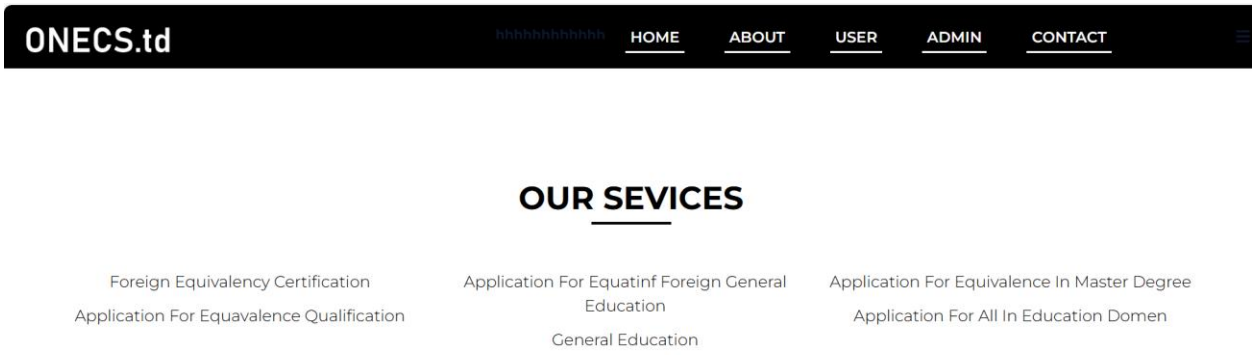

Figure 4.5: Show other services

This page show the all services than the system can do it.

f. Registration page for User

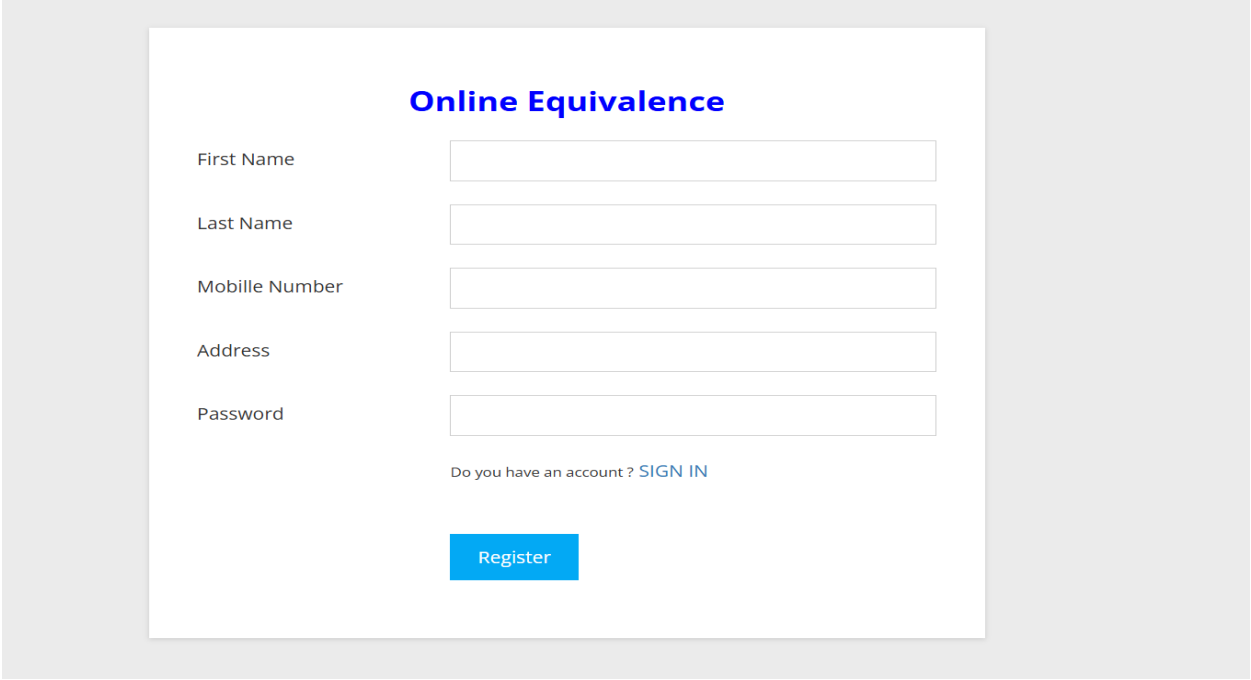

Figure 4.6: Show Registration page for user

The figure is the registration page where new user can create an account by filling the form.

g. User login page

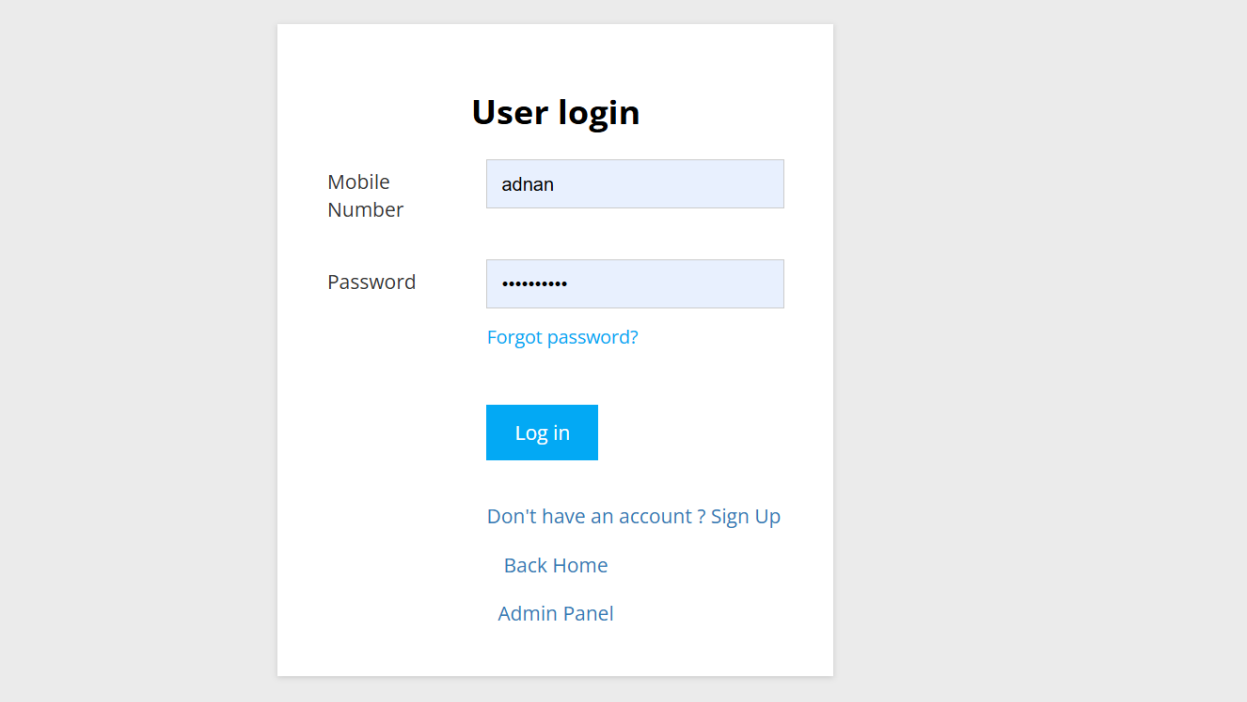

Figure 4.7: Show User Login page

This login page is well-structured with a clean layout and effective use of color contrast, making it visually appealing and easy to navigate. Key usability features like "Forgot password?" and "Keep me logged in" enhance the user experience, while the "Back Home" link provides convenient navigation.

h. Dashboard for User

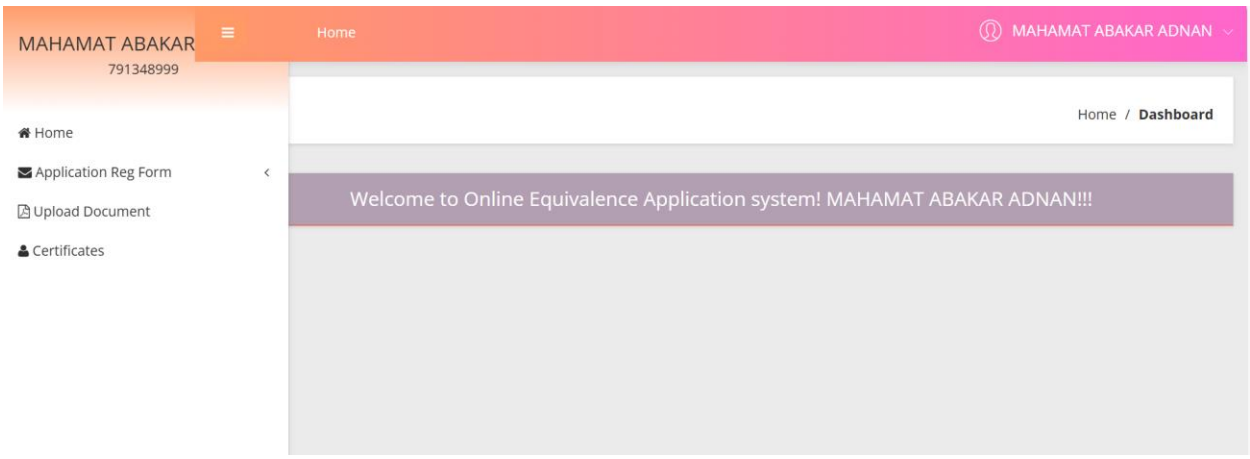

Figure 4.8: Show Dashboard page for user

The image shows a web application for an “Online Equivalence Application system,” welcoming a user named Mahamat Babakar Adnan. It has tabs like ‘Home’, ‘Application Reg Form’, ‘Upload Document’, and ‘Certificates’, indicating it’s a dashboard for managing equivalence applications.

i. User profile

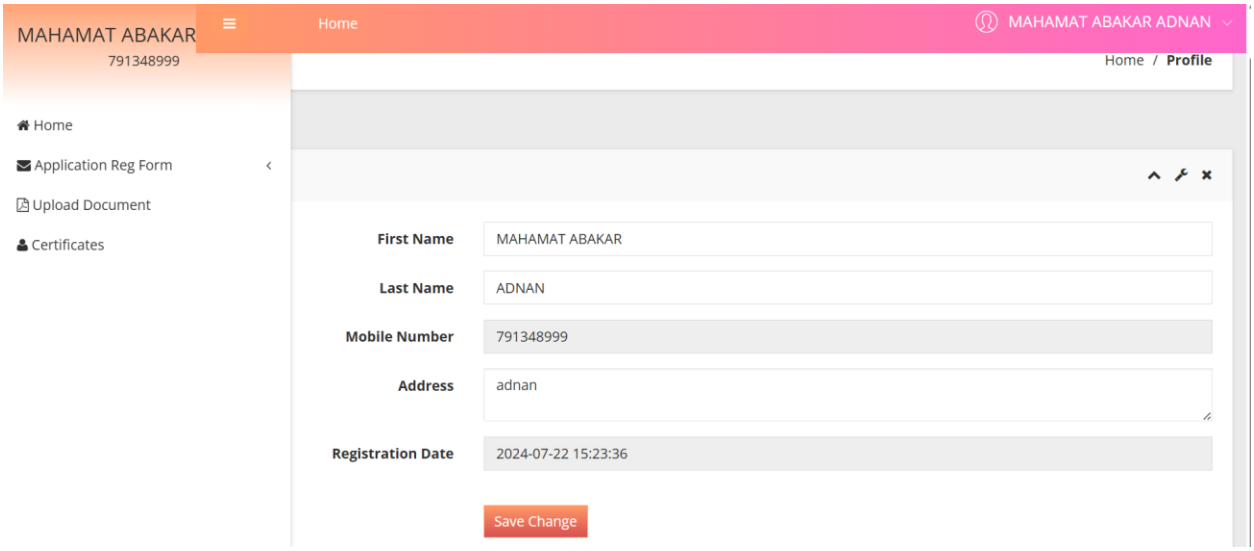

Figure 4.9: Show profile page for user

The image shows a web page a form to update personal details like name, mobile number, address, and registration date.

j. Overview of ONECS

Figure 4.10: Show the overview of ONECS

k. Our mission

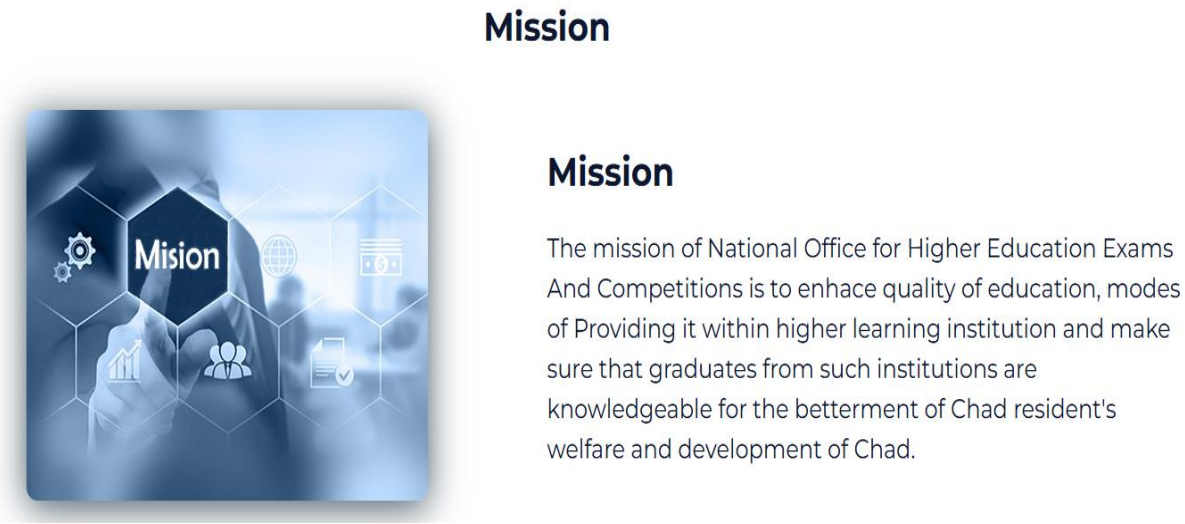

Figure 4.11: Show our mission

l. Our vision

Figure 4.12: Show our vision

4.2. System Testing

System testing is to verify and validate behaviors of the entire system[37] against the original system objectives. Software testing is an investigation conducted to provide stakeholders with information about the quality of the software product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects), and verifying that the software product is fit for use.

Below are the Types of System Testing used in our system?

Objective of testing

Major objectives for performing Software Testing are to ensure that the solution meets the business and user requirements [38]; to catch errors that can be bugs or defects; to determine user acceptability; to ensure that a system is ready for use; to gain confidence that it works; evaluating the capabilities of a system to show that a system performs as intended; and verifying documentation.

4.2.1. Unit testing

Unit testing refers to tests that verify the functionality of a specific section of code[39], This often happens at the class level in an object-oriented system, and the constructors and destructors are the most basic unit tests. To make that a particular function is operating as intended, developers typically write these kinds of tests as they are working on the code (white-box approach). Several tests may be included in one function to identify potential weak points or additional coding branches. Unit testing is used to make sure that the software's components function independently of one another; it cannot, by itself, verify a piece of software's operation.

Unit testing is a software development approach that lowers risks, time, and costs associated with software development by applying a wide range of fault prevention and detection techniques synchronously. During the construction phase of the software development life cycle, it is carried out by the software developer or engineer. Before code is sent to further testing, unit testing seeks to remove construction flaws; this tactic strives to improve both the overall development process' efficiency and the quality of the software that is produced.

4.2.2. Validation test outputs

The process of evaluating software during the development process or at the end of the development process[40] to determine whether it satisfies business requirements. In the validation, the researcher wanted to prove that the system is not accepting the wrong data, if it is able to detect the error and refuse them for the security purpose. Like in the above figure, it you enter the wrong password or username the system cannot allow you to enter. Which means that where is written name, should remain a name not a number, where is a number remain a number not a name, date stay a date in number, and for mail remain an email with a complete email include @. Or deny of service when entering wrong password (Menzies, T, 2019).

4.2.3. Integration testing outputs

Integration testing is any type of software testing[41] that seeks to verify the interfaces between components against a software design. Software components can be incorporated all at once ("big bang") or iteratively. The former is typically seen as preferable practice since it makes it possible to identify and address interface problems more rapidly. Defects in the interfaces and interactions between integrated components (modules) are revealed through integration testing. Up until the software functions as a system, progressively bigger groupings of tested software components that match to architectural design aspects are merged and tested.

Integration tests usually involve a lot of code, and produce traces that are larger than those produced by unit tests. This has an impact on the ease of localizing the fault when an integration test fails. To overcome this issue, it has been proposed to automatically cut the large tests in smaller pieces to improve fault localization.

4.2.4. Functional and system testing result

Functional testing[42] is a method of black-box testing and quality assurance that builds its test cases on the requirements of the software component being tested. Internal program structure is rarely taken into account while testing functions; instead, input is fed into the function and the output is examined (unlike white-box testing). A system or component's compliance with predetermined functional requirements is assessed through functional testing. Typically, functional testing explains the functionality of the system. Functional testing can be done without having to understand the inner workings of the program because it is a form of black-box testing. This means that testers do not need to know programming languages or how the software has been

implemented. This, in turn, could lead to reduced developer-bias (or confirmation bias) in testing since the tester has not been involved in the software's development. System testing checks that an integrated system satisfies its criteria by testing the system as a whole. In a system test, for instance, the logon interface might be tested first, then an entry could be created and edited, results could be sent or printed, summary processing might then be performed, or entries could be deleted (or archived), and finally the user would logoff.

4.2.5. Acceptance testing report

User acceptance testing consists of a process of verifying that a solution works for the user[43]. Software manufacturers frequently refer to this as "Beta testing"; however, it is actually testing that the solution will function for the user (i.e., tests that the user approves of the solution) rather than system testing (ensuring software does not crash and meets defined requirements).

User acceptance of a system is the key factor of success of any system. The system under study is tested for the user acceptance by constantly keep in touch with the prospective user at the time of developing and making changes wherever required.

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The accomplishment of this research is the work that took enough time as it is described in five chapters of this research and the implementation of the web-based system (**Online Equivalence Application Management System**) which is considered as the tool made to solve problem faced by system users in the current system.

The main objectives to design and implement online Equivalence Application and Tracking System, and it is designed to the Equivalence Certificate that administrators in charge of generate equivalence certificate in different country's branches to very well manage all users related information and give opportunities for people who need equivalence to get information easily from every place and they will be able to apply online without leaving their everyday activities and jobs and of course brought to them for free.

The goal of this web application is to improve document management, increase staff efficiency, save staff energy and time, reduce cost and improve the work efficiency by using the latest and fastest technologies.

It provides also a very trusted communication channel between national office for higher education exams and competitions (ONECS) in Chad and their users, as the users will find an easy way to view different document required and the price for equivalence and they will be able to apply for equivalence without leaving to manual system.

5.2. Recommendation

In the light of the advancements made in technology in this century and considering our experience while building this system, below are our recommendations:

- We urge the department to emphasize on the use of artificial intelligence and data science as they play a very important role in nowadays technologies;
- We urge the department should help the students in getting components that are not locally available while working on modern projects;
- We urge the department to emphasize on instilling an entrepreneurial mindset to students so that they may learn to make businesses out of software they build;
- We urge the department should take into consideration the competitiveness of today's tech-world and introduce more challenges into the curriculum to encourage creativity and critical thinking.
- Finally, the researcher recommended to the company to use the system so that it will reduce or facilitate the way they have been working, the system handle the issue of storing and searching Equivalence information it reduces the lost of data damage, the system controls or makes a follow-up of the activities and least it generates well report.

5.3. Future Work

In closing this work, I cannot present that this work was accomplished, that why I recommend to everyone who will be interested to add other functions to my work like developing mobile application that can facilitate better communication between ONECS and their Applicant

In conclusion, The project created an online system that improves document management, increases staff efficiency and reduces costs. It allows users to request equivalence certificates online, saving time and resources. The system offers real-time communication, secure data storage and user-friendly interfaces, improving service delivery for ONECS. Future enhancements include mobile applications and AI integration.

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APPENDICES

Appendix A: Interview Transcripts

This section includes the transcripts of interviews conducted with

General Questions

1. **Can you describe your current process for managing equivalence applications?**
    - **Answer:** "Currently, we manage equivalence applications manually. Applicants submit their documents in person, and we store these in physical files. The process involves several steps, including verification, review by a committee, and finally, issuing the equivalence certificate."
2. **What are the biggest challenges you face with the current equivalence application process?**
    - **Answer:** "The biggest challenges include the time-consuming nature of the process, the risk of losing documents, and the difficulty in tracking the status of each application. Communication with applicants is also a challenge, as they often have to visit the office multiple times to get updates."
3. **How do you typically follow up on the status of an equivalence application?**
    - **Answer:** "We follow up by manually checking the status in our records. Applicants usually call or visit our office for updates, which is inefficient and can lead to delays."
4. **What features would you like to see in an online equivalence application management system?**
    - **Answer:** "I would like to see features that allow applicants to submit their documents online, track the status of their application in real-time, and receive notifications about important updates. A secure way to store and retrieve documents would also be beneficial."

System-Specific Questions

5. **How comfortable are you with using online systems for submitting and tracking applications?**

- **Answer:** "I am somewhat comfortable, but I think there needs to be a user-friendly interface. Some of our staff and applicants might need training to use the system effectively."

6. **What documents do you usually submit during the application process, and how do you prefer to submit them?**
    - **Answer:** "We typically submit academic transcripts, certificates, and identification documents. Currently, these are submitted in hard copy, but it would be much more convenient to submit them online."
7. **How important is it for you to receive notifications or updates on the status of your application?**
    - **Answer:** "It's very important. Timely notifications would reduce the need for follow-up calls and visits, making the process smoother for both applicants and staff."
8. **What kind of support would you expect when using an online application system?**
    - **Answer:** "I would expect clear instructions, a help desk for troubleshooting, and perhaps a FAQ section. It would also be helpful to have video tutorials for first-time users."

Feedback and Improvements

9. **Have you encountered any issues with similar online systems in the past?**
    - **Answer:** "Yes, I have faced issues such as slow loading times, unclear error messages, and difficulty in navigating through the system. I hope the new system will address these problems."
10. **How do you think an online system could improve the current equivalence application process?**
    - **Answer:** "An online system could make the process faster and more transparent. It would also reduce the workload on our staff by automating many tasks, such as document submission and status updates."

Data Security and Privacy

11. **How concerned are you about the security of your personal information when using an online system?**

- **Answer:** "I am quite concerned. I would expect the system to have strong security measures, such as encryption, to protect my personal information from unauthorized access."

12. **What measures would you expect an online system to have in place to protect your data?**
    - **Answer:** "I would expect the system to have secure login procedures, data encryption, regular security audits, and a clear privacy policy explaining how my data will be used and protected."

Appendix B: System Source Code

a. HTML source code

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>NAHAR</title>
    <link rel="stylesheet" href="stylee.css">
    <link rel="stylesheet" href="styl.css">
    <link rel="stylesheet" href="ser.css">
    <link rel="preconnect" href="https://fonts.googleapis.com">

<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link href="https://fonts.googleapis.com/css2?family=Montserrat:ital,wght@0,100..900;1,100..900&display=swap" r
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.5.1/css/all.min.css" integri

<link rel="stylesheet"
  href="https://unpkg.com/boxicons@latest/css/boxicons.min.css">
  <style>···
    </style>
</head>
<body>
    <header>
        <a href="#" class="logo"><img src="img/gooo.PNG" alt="" ></a>
        <div class="bx bx-menu" id="menu-icon"></div>
        <DIv>

        </DIv>
        <DIV>
```

Figure 1: Source code of home page using HTML

b. PHP source code

```php
<?php
session_start();
error_reporting(0);
include('includes/dbconnection.php');

if(isset($_POST['login']))
  {
    $mobno=$_POST['mobno'];
    $password=md5($_POST['password']);
    $sql ="SELECT ID FROM tbluser WHERE MobileNumber=:mobno and Password=:password";
    $query=$dbh->prepare($sql);
    $query->bindParam(':mobno',$mobno,PDO::PARAM_STR);
$query-> bindParam(':password', $password, PDO::PARAM_STR);
    $query-> execute();
    $results=$query->fetchAll(PDO::FETCH_OBJ);
    if($query->rowCount() > 0)
{
foreach ($results as $result) {
$_SESSION['obcsuid']=$result->ID;
}


$_SESSION['login']=$_POST['mobno'];
echo "<script type='text/javascript'> document.location ='dashboard.php'; </script>";
} else{
echo "<script>alert('Invalid Details');</script>";
}
}
```

Figure 2: Source code of login page using PHP

c. CSS source code

```css
html, body {font-family: 'Open Sans', sans-serif;font-weight:400;background: #03a9f0}
html, body.materialdesign {background: #ebebeb}
.floatleft {float:left}
.floatright {float:right}
.alignleft {float:left;margin-right:15px;margin-bottom: 15px}
.alignright {float:right;margin-left:15px;margin-bottom: 15px}
.aligncenter {display:block;margin:0 auto 15px}
a:focus {outline:0px solid}
img {max-width:100%;height:auto}
.fix {overflow:hidden}
p {margin:0 0 15px;}
h1, h2, h3, h4, h5, h6 {
  margin: 0 0 10px;
  font-weight:400;
}
a {transition: all 0.3s ease 0s;text-decoration:none;}
a:hover {
  color: #ec4445;
  text-decoration: none;
}
a:active, a:hover, a:focus {
  outline: 0 none;
  text-decoration:none;
}
```

Figure 3: Source code of admin dashboard page using CSS