

## DECLARATION

I, BOLAMBA KALENGA Elie do declare that this dissertation is my own work. I have to the best of my knowledge acknowledged all authors or sources from where I got information. I further declare that this work has not been submitted to any university or institution for the award of a degree or any of its equivalents.

Signed.....

Date...../...../.....

## **CERTIFICATION**

This is to approve that the research work entitled “Alumni job seekers students hub information system. A case study of Rubavu district”, has been carried out under my guidance and supervision.

Signature: .....

Supervisor: .....

## **DEDICATION**

The researcher would like to dedicate this research project to Almighty God for His unconditional love, and His mercy both before and throughout the research project, Family, Colleagues and most importantly to my parents for their supports both financially, morally and their encouragement to making sure things are done in an appropriate way and to all my beloved ones, the researcher says a very big thank you.

May God bless you all!

**BOLAMBA KALENGA Elie**

## ACKNOWLEDGEMENT

First and foremost, I thank Almighty God for his abundant blessings and protection during the whole elaboration of this research. I would like to take this opportunity to thank all of the individuals who helped me to carry out the present research.

I thank strongly the friends, colleagues and relatives for their devotion during elaborating this project.

Our sincere thanks are especially conveyed to my institution my supervisor and lecturers of UTB for providing me professional supports during my study program and for facilitating us to carry out this dissertation.

I express again my gratitude and thanks to my supervisor, for his enormous support during the whole process up to the completion of this dissertation. My heart-felt thanks go to my family which for its support throughout my studies. Furthermore, I am grateful to all for their moral support during the three years' period of our studies at the school.

May God bless you all!

BOLAMBA KALENGA Elie

## **ABBREVIATIONS/ ACRONYMS**

ICT:	Information and Communication Technology
IT:	Information Technology
UTB:	University of Tourism Technology and Business studies
HTML:	Hyper Text Makeup Language
CSS:	Cascading Stylesheet
PHP:	Hypertext Pre-Processor
SQL:	Subscribers Query Language
UTB:	University of Tourism, Technology and Business studies
DBMS:	Data Base Management System
DFD:	Data Flow Diagram
USD:	Use Case Diagram
ERD:	Entity Relationship Diagram
IT:	Information Technology

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## ABSTRACT

*Successful recruitment is a direct reflection of the legitimacy and professionalism of your business. Employing the right people for your business is the most important part of your organization. It is necessary to have a good recruitment process to attract the right kind of staff for the needs of your business. Your recruitment process must be cost-effective as well as time-consuming. Recruitment and training can be expensive and time-consuming, so when you are recruiting, make sure that you are making the right choice. A good recruitment process can reduce the time involved in searching, interviewing, recruiting and training. The development of online job seekers information system enhance recruitment services in Rubavu district and in Rwanda guided by some research methodologies such as data collection methodology include interviews, observations, document review and The population was composed of 70 alumni and 10 parents of the district 5 staff of the district office and 2 staff of human resources of BRALIRWA Gisenyi. The system was developed using different programming languages: PHP, MYSQL (Database), CSS (Style sheet), and JAVASCRIPT (Scripting language). This study consists of five chapters: Introduction, Literature review, Methodology, System Analysis and Design, implementation and testing. The system was designed with user-friendly interface, which was connected to the database. This software optimizes multiple services within recruitment services and improves the manual system. The current system was found to be manual and powerful computerized system faced with numerous problems like online inadequate information, provided services, which is not skillful, unavailable. Finally the conclusion is made and some recommendations have also been suggested for further research to enhance, revise and add more functionality to the system give.*

## **CHAPTER ONE:**

### **INTRODUCTION AND BACKGROUND TO STUDY**

#### **1.0 Introduction**

Recruitment means to estimate the available vacancies and to make suitable arrangements for their selection and appointment. Recruitment is understanding as to the process of searching for and obtaining applicants for the jobs, from among whom the right people can select. This chapter introduces the Background of study, problem statement, objective of the study such as general and specific objectives, research question, significance of the study, and scope of study among others.

#### **1.1 Background**

Successful recruitment is a direct reflection of the legitimacy and professionalism of your business. Employing the right people for your business is the most important part of your organization. It is necessary to have a good recruitment process to attract the right kind of staff for the needs of your business. Your recruitment process must be cost-effective as well as time-consuming. Recruitment and training can be expensive and time-consuming, so when you are recruiting, make sure that you are making the right choice. A good recruitment process can reduce the time involved in searching, interviewing, recruiting and training. It can streamline these procedures and make your search more efficient for viable candidates. Creating a positive image to your customers, peers, and competitors are very important. New employees must list the skills needed to fulfill their duties. To get better and successful results in your recruitment process, promote specific criteria relevant to the job. Recruitment criteria are standards; it's used to measure all candidates and their ability to perform a job. It looks primarily for the best possible match between a candidate's knowledge, skills, and abilities and the requirements for successful performance of a job. Every Company in the world knows the importance of the recruitment step in increasing. The performance of the company and increasing the productivity of the products. A different purpose of deciding a recruitment strategy is how talent will be identified and business will be attracted, how the employer brand will be marketed for talent and ultimately how it will be evaluated for employment for candidates. Attracting talent depends on your recruitment brand. In order to reduce costs, firms look into labor markets most likely to offer the required job seekers. Generally, companies look into the national market for managerial and professional employees,

regional or local markets for technical employees, and local markets for clerical and blue-collar employees.

Until recently, rising demands for African commodities boosted most of the region's economies. Yet unemployment, especially among the youth, remains high. Africa Renewal's Franck Kuwonu spoke with Aeneas Chuma, the head of the International Labour Organization (ILO) in Africa, about the state of employment and other labour challenges facing the region. There are several challenges around unemployment in Africa. One is the sheer number of the unemployed. The others are underemployment and the informal sector. One of the challenges we face is that African economies have grown sustainably over the last decade but this has not generated enough employment opportunities in the formal sectors to absorb the large number of school graduates entering the labour force every year. Africa also has a very young population. It is risky to have such young, well-educated, able-bodied young Africans just being idle. If you look at the conflicts that we witnessed in Liberia, among others, and current ones in the Central African Republic and Somalia, these are being fought by disaffected young people. (Franck Kuwonu, 2018) While the unemployment rates in Africa are unacceptably high, the challenge is not only to have economic growth but also to create decent jobs. Much of the economic growth in Africa has been jobless growth.

The young people in Rwanda represents hope for the future as a resource that holds a big reserve of human energy, and they can play a big role particularly in developing the economy. The Government of Rwanda established five year action plan for youth employment promotion and the strategies which is meant to help in developing her human capital by empowering the young people in the labour market so as to get decent jobs. However, it is also good promote the graduates students to get job, those are like the products of high-level education of the country. many studies in developing countries show numerous constraints in vocational training institutions, a situation whereby vocational training graduates hardly succeed when trying to seek economic activities or create employment, (Haan,2016).

The goal of this research is to design and implement intelligent platform that will promote graduates students to get job in Rubavu and around the country. The companies, different organizations to have access to information, locations of graduate's students of the district and get an appointment with them for the next step of recruitment.

### **1.3 Statement of the problems**

The graduates students or job seekers don't have a hub somewhere can be like their market that can promote them with full information required by the recruiters. They are many smart graduates students in the district, with good skills to work in any company but they don't have the way or hub platform where can be promoted or expose their profiles. The stated problems caused the researcher to develop an online platform called "Alumni jobless students hub information system". In this system, there will be a system administrator who will have the rights to accept the request of the recruiters and organize the appointment with students and the recruiter, add the new jobless students and deleting the unavailable ones, that will solve those problems mentioned.

### **1.3 Objectives of the study**

#### **1.3.1 General objective**

The main objective of this study is to develop an Online Alumni job seekers hub information system that will facilitate the graduate's students of the district of Rubavu to expose or promote their profiles.

#### **1.3.2 Specific objectives**

- ❖ To develop a database that will store all information related to the graduated students, and management of the recruitments.
- ❖ To create a user friendly and reliable interface that allows users of the system to add, update, and deleting graduated students to maintain necessary information of those graduated students.
- ❖ To develop a web based system that facilitate the user to access the profile of the graduated students and send an appointment.

### **1.4 Research questions**

- ❖ How to develop a database that will store all information related to the graduated students, and management of the recruitments?
- ❖ How to create a user friendly and reliable interface that allows users of the system to add, update, and deleting graduated students to maintain necessary information of those graduated students?

- ❖ How to develop a web based system that facilitate the user to access the profile of the graduated students and send an appointment?

## **1.5 Significance of the study**

### **1.5.1 To the researcher**

In view of the rapid development of computer technology in almost all the fields of operation and its use in relation to information management, it has become important to look into the development of online recruitment system for firms to meet up with demands of the job seekers. For the researcher, this is an opportunity to be familiar with new information technology tools which will be used during my project development process; improve personal capacity in the field of software development using the knowledge given by lecturers during my academic studies.

### **1.5.2 To the community**

To the community, the study will solve a lot of problems related to the online recruitment as long as the system will help alumni graduates students to be promoted with their profile, to reduce frauds in the present system in recruitment processing, to create a platform for online recruitment, finally to keep accurate record on the job seeking and companies recruited.

### **1.5.3 To the UTB**

The study will be significant to University of Tourism, Technology and Business Studies (UTB) fraternity and especially to the students who may have interest in studying in this field since the project report deposited in the university library and at the end, it served as reference to other library users and researchers as well.

## **1.6 Scope of the study**

### **1.6.1 Content scope**

The researcher interested to design an online platform that can provide better user experience for both job seekers and the companies recruiters in order to rapidly the service recruitment. The system will run in the user browser, so it can be used with personal computer or a smartphone.



### **1.6.2 Geographical scope**

The study investigation was restricted to a limited geographical area, but the system can be used by different districts from different places. The information gathering was conducted in Gisenyi town, RUBAVU district, and Western province of Rwanda.

### **1.6.3 Time scope**

In time, this study considered a period of 3 years: From 2017 to 2020, because that was the period when the two campus universities in the district of Rubavu started to produce more graduated students.

## **1.7 Limitation of the Study**

The researcher faces many challenges especially during the data collection from the respondents at the field of data gathering. One of the most difficult challenges the researcher faced was a language barrier, as a foreigner student, the researcher found it difficult in communicating in the aims of gathering data due to the language barrier. The researcher solved all this problem by preparing a questionnaire forms to the respondents so as the questions to be filled in with answers.

## **1.8. Summary**

This chapter was about the introduction of our project where researcher started with a background and purpose of the research project, and then its explained the research focus and gives a brief overview of the project's approach towards a literature research. The introductory section ended with a mission statement and an overview of the proposed research method.

## CHAPTER TWO:

### REVIEW OF THE RELATED LITERATURE

#### 2.0 Introduction

This chapter provides an idea on the system the researcher designed. Moreover, it provides a deep definition and description of key terms and related literatures to the study topic in order to reach by the side of conceptual interpretation. The purpose of this chapter is to stretch a brief description of the hypothetical concepts and essentials that can be used during the development of this system. It provides meanings and features of technologies, which are used. The description provided an overview on those concepts which led researcher on the development of the system.

#### 2.1 Definition of key terms

##### 2.1.1 Alumni

An alumnus (Latin pronunciation: [a'loɪnɒs]; masculine) or an alumna ([a'loɪnə]; feminine) of a college, university, or other school is a former student who has either attended or graduated in some fashion from the institution (The State of Corporate Alumni: 2017). The word is Latin and simply means *student* is a former student or pupil of a school, college, or university. The plural is alumni [a'loɪni:] for men and mixed groups and alumnae [a'loɪnəɪ] for women. The term is not synonymous with "graduate"; one can be an alumnus without graduating (Burt Reynolds, alumnus but not graduate of Florida State, is an example).

##### 2.1.2 Job Seeker

In the career industry, professional resume writers and career coaches like myself often use the word, "Job Seekers." (Julie Walraven, 2012) Think about it. A seeker of a job someone who is looking for a job. We could say career seeker because most job seekers are really seeking a career as much as an individual job. We tend to be defined by our work. We seek a career path that we can follow that will bring us all the other things we want in life. I define a job seeker as the person who wants to change their current work. They can be employed, unemployed, a new graduate, or someone seeking to move from being a business owner to an employee role. A job seeker is definitely not always unemployed. They are seeking. Most people will be job seekers several times in their life and for some, they will be job seekers many times in their life. All are seeking

that meaningful work. For me, meaningful work is helping job seekers find what they are looking for through teaching them the best strategy for their own search.

### **2.1.3 Hub**

Hub Culture runs its main social media website and platform. It also provides websites and application technologies; Members can create profiles with tags tied to areas of expertise, access membership and concierge services, build their own digital identity, and share information to help others in the network (Alexa Internet, 2014). The focus is on business related activities. Members may build their own hubs to manage collaborative projects with, file sharing, discussions and event planning. They can exchange through virtual currency to acknowledge benefits that come from the sharing of information, or for goods and services. In 2006 and 2008, United Kingdom operations were incorporated, Hub Culture Services and Hub Culture Pavilions, respectively. As of March 2017, Hub Culture lists over 25,000 members and has exchanged over 500 million units of its virtual currency.

### **2.1.4 Information**

Information is the meaningful data that is there to help record and have real evidences in our business development. Information is stimuli that have meaning in some context for its receiver. When information is entered into and stored in a computer, it is generally referred to as data. After processing (such as formatting and printing), output data can again be perceived as information (John Kostolansky, 2019). In terms of communication, information is expressed either as the content of a message or through direct or indirect observation facts about a situation, person, event, etc.

### **2.1.5 System**

A system is a regularly interacting or interdependent group of items forming a unified whole every system is delineated by its spatial and temporal boundaries, surrounded and influenced by its environment, described by its structure and purpose and expressed in its functioning (Merriam 2019).

## 2.2 Other Related literature

### 2.2.1 Database concepts and application

#### 2.2.1.1 Database management systems

Is a general-purpose software system, which facilitates the process of defining, constructing and manipulating the database there are four main functions, which are the following:

1. Create, modify, and delete data structure
2. Retrieve data easily

The mostly purpose of the database online system (DBMS) is designed to manage data into database within the system is basically a collection of programs that enables users to store, modify, and extract information from a database as per the requirements, the following are the advantages of the DBMS (Ullman, J. & Widom, J.,2010).

#### 2.2.1.2. Advantages of DBMS

The database management system has promising potential advantages, which are explained below:

- a) Controlling Redundancy:** In file system, each application has its own private files, which cannot be shared between multiple applications. This can often lead to considerable redundancy in the stored data, which results in wastage of storage space(Grice, 2015).
- b) Integrity can be enforced:** Integrity of data means that data in database is always accurate, such that incorrect information cannot be stored in database. In order to maintain the integrity of data, some integrity constraints are enforced on the database (Tom Johnston, 2014).
- c) Inconsistency can be avoided:** When the same data is duplicated, and changes are made at one site, which is not propagated to the other site, it gives rise to inconsistency and the two entries regarding the same data will not agree. At such time, the data is said to be inconsistent. So, if the redundancy is removed chances of having inconsistent data is also removed(Cloud Williams, S 2014).

**d) Standards can be enforced:** Since DBMS is a central system, so standard can be enforced easily may be at Company level, Department level, National level or International level. The standardized data is very helpful during migration or interchanging of data (Century Merchant CL 2012).

**e) Restricting unauthorized access:** When multiple users share a database, it is likely that some users will not be authorized to access all information in the database. For example, the office data is often considered confidential, and hence only authorized persons are allowed to access such data (John T. 2014).

**f) Solving Enterprise Requirement than Individual Requirement:** Since many types of users with varying level of technical knowledge use a database, a DBMS should provide a variety of user interface. (ISO/IEC/IEEE. 2015)

#### **2.2.1.3. Database Security**

Database security entails allowing or disallowing user actions on the database and the objects within it.

##### **a) Security Domain**

Each user has a security domain a set of properties that determine such things as:

1. The actions (privileges and roles) available to the user
2. The table space quotas (available disk space) for the user
3. The system resource limits (for example, CPU processing time) for the user

##### **b) Authentication Methods**

Authentication means verifying the identity of someone (a user, device, or other entity) who wants to use data, resources, or applications. It also enables the system by making it possible to link access and actions to specific identities. After authentication, authorization processes can allow or limit the levels of access and action permitted to that entity (ISO/IEC. 2013).

### 2.2.2. User-Friendly interface

The researcher found that the proposed system would provide to the users the friendly interaction so that the users can perform the work with a high performance due to the facilities within the system. The researcher provided some review on the way a system can be interact with the user friendly (Wingfield, N. 2015).

#### 2.2.2.1. Characteristics of Successful User Interfaces

**a) Clear:** Clarity is the most important element of user interface design. Indeed, the whole purpose of user interface design is to enable people to interact with the system by communicating meaningfully and functionally (Kalus K, 2015).

**b) Concise:** Keep things clear but also keep things concise. When you can explain a feature in one sentence instead of three, when you can label an item with one word instead of two, save the valuable time of your users by keeping things concise. Keeping things clear and concise at the same time is not easy and takes time and effort to achieve, but the rewards are great (Abraham S, 2012).

**c) Familiar:** Many designers strive to make their interfaces ‘intuitive’ .But what does intuitive mean. It means something that can be naturally and instinctively understood and comprehended. However, how can you make something intuitive? You do it by making it ‘familiar’. Identify things that are familiar to your users and integrate them into your user interface (Cairo L, 2014).

**d) Responsive:** Responsive means a couple of things, first of all responsive means fast. Seeing things load quickly, or at the very least, an interface that loads quickly improves the user experience (Rowley H, 2013).

**e) Consistent:** Consistent interfaces allow users to develop usage patterns, they’ll learn what the different buttons, tabs, icons and other interface elements look like and will recognize them and realize what they do in different contexts. They will also learn how certain things work and will be able to work out how to operate new features quicker, extrapolating from those previous experiences (Mars K. 2016).

**f) Attractive:** This one may be a little controversial, but I believe a good interface should be attractive. Attractive in a sense that it makes the use of that interface enjoyable. Yes, you can make your UI simple, easy to use, efficient and responsive, and it will do its job well (Smart F, 2016).

**g) Efficient:** A good interface should allow you to perform those functions faster and with less effort. Now, 'efficient' sounds like a vague attribute (Kayus W, 2012).

**h) Forgiving:** A forgiving interface is one that can save your users from costly mistakes. For example, if someone deletes an important piece of information can easily retrieve it or undo this action (Penny Z, 2014).

### 2.3. Summary

This chapter introduced the review of related literature, definition of key terms that was used during the design and implementation of online Alumni job seekers hub information system. In this chapter, overview on different concepts such as keys terms, database, user interface. The next chapter is going to cover the research methodology.

## CHAPTER THREE:

### RESEARCH METHODOLOGY

#### 3.0 Introduction

Research Methodology is the systematic method/process dealing with identifying problem, collecting of facts or data, analyzing these data and reaching at certain conclusion in either the form of solutions towards the problem concerned or certain generalization for some theoretical formulation. It also comprises of a number of alternative approaches and interrelated and frequently overlapping procedures and practices. Since there are many aspects of research methodology, the line of action is to be chosen from a variety of alternatives (Garg, G., & Kothari, C. R.2014).

### **3.1 Research design**

A research design is the process to perform tasks such as problem identification, previous literature exploring, data gathering, synthesizing of that data, followed by analyzing of that data and presenting it. It necessitates —planning, continuous monitoring, control and evaluation. Concerning the methodology to be adopted, there is not a right research process for all the types of researches and studies; it depends always on what researcher intends to derive at the end of the research (Colombes, 2018).

The present study is conducted through a descriptive design based on interviews and the waterfall Model was used as the software development model used to develop and/or create a software product. This type of research method was preferred because the study attempt to obtain general information concerning the current status of job seeking sector and the purposes of these methods is to describe “what exists”, “how it works”, “who are involved” and “what are its characteristics” in order to look for different ways of improving.

### **3.2 population and selection of the sample**

The population is a collection of objects, events or individuals having some common characteristics that the research is interested in studying (Coffey &Atkinson 1996).

#### **3.2.1 Target Population**

The target population is the entire population, or group, that a researcher is interested in researching and analyzing. The population under this study was 70 Alumni graduated students interviewed by researcher in three consecutive days, 5 workers in the headquarter office of the district of Rubavu, 2 workers in department of human resources in BRALIRWA Ltd Gisenyi and 10 Parents in the city of Gisenyi so the total of 87 respondents were considered.

#### **3.2.2. Sampling**

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population (WG Cochran, 2017).



<b>categories</b>	<b>population</b>
Alumni graduates students	70
Headquarter District of Rubavu	5
BRALIRWA Human Resources	2
Parents in Gisenyi City	10

### **3.2.3 Sampling technique**

The researcher decided to use Universal sampling technique, and this implies that all the target population was used in this study as the researcher had enough time to collect data and analyses data from them.

### **3.3. Tools collection of data**

Data collection is the process of gathering and measuring information on targeted variables in an established system, which then enables one to answer relevant questions and evaluate outcomes. Data collection is a component of research in all fields of study including physical and social sciences, humanities and business. While methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same. The goal for all data collection is to capture quality evidence that allows analysis to lead to the formulation of convincing and credible answers to the questions that have been posed (Ho, Manh-Tung, 2018).

There are two sources of data collection techniques. Primary and Secondary data collection techniques, Primary data collection uses surveys, experiments or direct observations. Secondary data collection may be conducted by collecting information from a diverse source of documents or electronically stored information, census and market studies are examples of a common sources of secondary data. This is also referred to as "data mining."

#### **3.3.1 Interview**

The technique of personal interviewing is undertaken in order to reach the objectives since it is the most versatile and productive method of communication, enabled spontaneity, and also provided with: "The skill of guiding the discussion back to the topic outlined when discussions are unfruitful while it has the disadvantages of being very costly time consuming and can introduce bias through

desires of the respondent to please the interviewer” (Aaker& Day, 1990). For the purpose of this project, semi-structured face-to-face interviews will be conducted involving two interest groups: local authorities and company providers. The choice will be based on researcher’s knowledge about different educational levels among interviewees, their different lifestyles and ages, which make imperative an adaption in questions so that they ensure the comprehension by the interviewee i.e., repeat, or rephrase the question.

### **3.3.2 Observation**

Observation, as the name implies, is a way of collecting data through observing. Observation data collection method is classified as a participatory study, because the researcher has to immerse himself in the setting where her respondents are, while taking notes and/or recording.

Observation as a data collection method can be structured or unstructured. In structured or systematic observation, data collection is conducted using specific variables and according to a pre-defined schedule. Unstructured observation, on the other hand, is conducted in an open and free manner in a sense that there would be no pre-determined variables or objectives (Research methods & methodologies in research, 2012).

### **3.3.3 Documentation**

With documentation as research method, the researcher had access to outside sources, internet website, electronic books and written documents, to support the viewpoint or argument on hot spring water tourism services.

### **3.4.0 Collection of data**

Primary data and secondary data were collected to help in the analysis and interpretation of the result of the findings. Those data helped in to see if the research objectives and questions were achieved.

#### **3.4.1 Primary data**

The primary data are those data, which are collected by researcher afresh from first-hand source, using methods like surveys, interviews or experiments. It is collected with the research project in mind directly from primary sources (Driscoll & Brizee, on June 24 2017).

Therefore, primary data was collected through observation and interviews. Participants under investigation had been found in Gisenyi/Rubavu/western province in Rwanda.

### **3.4.2. Secondary data**

The secondary data are those which have already been collected by someone else and which have already been passed through the statistical process (Driscoll & Breeze, on June 24 2017). During the study, the researcher collected secondary data from external sources such as official website of the company in study, reports done by local and international investigators and electronic books.

### **3.5 variety and reliability**

Reliability refers to the consistency of a measure. Psychologists consider three types of consistency: over time (test-retest reliability), across items (internal consistency), and across different researchers (inter-rater reliability). The results presented in this book are valid and reliable because the sources of the information in this book are worthy the trust. The information was obtained from population in the city of Gisenyi, the workers of the company, surrounding (instead of these persons I am also a witness of the information according to what I saw).

### **3.6 Ethical considerations**

To avoid harm to participants, the researcher assured the confidentiality and accurate protection of the information provided by the respondents by getting consent before administering the questionnaires.

He informed them that the data that were collected from them would be used for the academic purpose or research rather than any other ways enabling them to respond confidentially all the necessary given questions for this research and their contribution was appreciated in this research. Lastly, no personal data was collected to protect the respondents.

### **3.7 Summary**

The chapter deal with the method and techniques that have been used to conducting the study, it provided a deep definition and description of research design, different participants, sampling; data collection, and how data are presented. It also represented the technique employed to ensure the validity of research and reliability of research instrument and ethical issues in the study.

## **CHAPTER FOUR:**

### **SYSTEM ANALYSIS AND DESIGN**

#### **4.1 Introduction**

This chapter describes the methods and techniques used to gather and analyze information. It describes different approaches and procedures used for information gathering, data analysis and result interpretation. The chapter will introduce also the new system proposed and how it will solve the problems and limitations of current system used by job seekers in the City of Gisenyi and design model used by the researcher when designing software application.

#### **4.2 description of existing/old system**

The existing system don't match the criteria of ICT, as the job seekers and the companies of the City where the researcher has did the research, people required a system that can get information and booking some services read profile and that must be available online and 24hours/7 also without complications. Below, the researcher describes a list of some weaknesses and limitations of the existing system that is manual.

#### **4.3 interpretation of findings/Results**

The main objectives of using the interview was to find out how the job seekers doing to find a job in the City, to know their expose themselves as the intellectual product of the District to the exist companies in the District, and to collect the suggestion from them to help the researcher to concept a new system.

##### **4.3.1 Findings from respondent's views**

###### **4.3.1.1 The answers on how the job seekers doing to find a job**

According to the interviews, some job seekers said that when they need to found an opportunity or a vacation somewhere it is a chance for them sometimes it happens someone call him by phone line and give him this opportunity after that he/she can now collect the documents required CV, motivation letter and others documents required. Others said they found some descriptions in the walls of some companies bypassing, and sometimes there are announcement broadcasted on Radio. After that, they can manage themselves to apply, they found many to apply sometimes they

don't have the address of the office, and if they have the right address but it happen they don't know to whom it may concern. Therefore, these are the problem facing by Alumni Job seekers in the Rubavu district.

#### **4.3.1.2 The response on the problems that the recruiters and companies are facing when they are doing recruitment.**

Most times, the candidates we received are people recommended by staffs in the respective company or outside of the company. Although we found some good profiles candidates those applied from outside but more chance are in those recommended in the company. There are also many candidates applied in a vacation with very good profile, but lives in another district. Many graduates in the district don't know how to create a relationship that can give them an opportunity with the companies, they are focused unnecessary things even after study, there are even some candidates they don't know the well the district. If possible, the job seekers can do an association that the manager will have the task to collect the job descriptions or job vacations in the companies in the country and recommend the right person in the right vacation.

#### **4.4 summaries (expressing the needs of proposed system)**

Regarding to the answers from the interviews with all. it is clear that they need to have a system that will facilitate all of the above problems to get a good candidate faster and with a best quality profile. A system that can save time in recruitment information system. A system that can show clearly a full job seekers profiles and booking an appointment with the candidate and print report.

#### **4.5.1 Limitations of the existing system**

As the existing system is manual, features faced many problems:

1. The availability of job seekers around the companies must be in the existing system.
2. Candidates to recruit by the company chosen or recommended by the persons who knows the vacation.
3. There are bad preparation of the documents required by the company recruiter through pressure of the candidate applied.
4. Sometime there is not confidence between the applier and the staff of the company in charge to receive the documents of the candidates whose applying.

To avoid all those limitations, it needs to computerize all part of those services enumerate above in purpose of more speed of information and automatic work services between clients and servers, and management of that service.

#### **4.6 Description of proposed system**

The new proposed system will helps in solving the enumerated weaknesses of the existing system above. After a deep analysis of those aspects, the researcher has realized it is very important to establish a new system capable to link job seekers (Alumni graduate's students) with all recruit management in the district even in the country, with up-to-date information about the candidate profiles of the job seekers. This new system will provide a database to help in storing and retrieving data of the whole appointments processed.

This application will consist of:

- The interfaces, which will help recruit management to choose and read the profile of the candidates, according to figures table, display in the system with some comment above.
- The admin interface to receive all the appointment and the suggestion message send by the companies; the admin have to approved the appointment before to deliver the information in the manager of appointment or reject it if the appointment by phone line if the candidate is not available.
- The admin can print report easily when is needed by the service management for control.

##### **4.6.1 Advantage of proposed system**

The system is very simple to receive the appointment of the recruiters, it is also easy to implement. It require a low system resource and bring more benefits in recruitment sector like:

1. Security of data
2. Admin control the entire system
3. Minimum time required when interacting with the system
4. Direct information sharing between user who is the recruiter and application that represent job seekers management.
5. Permanent service and accessible everywhere also by everybody in purpose to help the job seekers and recruiters to find quickly a best services.

## 4.7 software / system development model

There are different software development approaches, which are followed by developers during the process of software development. These approaches are referred to as software development process models, each process model must follow a particular life cycle included in the process model. In this case, the one such approach used to develop the Online Alumni job seekers information System is the waterfall model.

The Waterfall Model is referred to as a **linear-sequential life cycle model**. In a waterfall model, each phase must be completed fully before the next phase can begin as enumerated below:

- Requirement gathering
- Software design
- Implementation
- Testing
- Maintenance

### 4.7.1 General overview of waterfall model

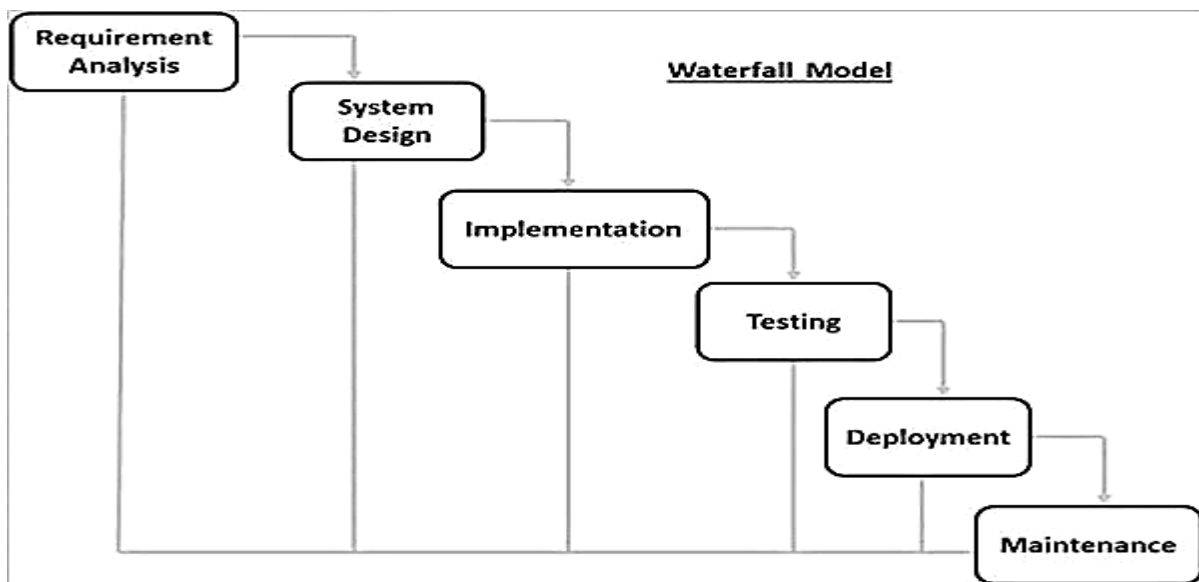


Figure 1: Waterfall Model

## **4.7.2 Stages of waterfall model**

### **4.7.2.1 Requirement gathering and analysis**

In this phase, the requirements are gathered from the end-user and the team developer to choose the validity and the possible requirements to incorporate in system analyzes them. Requirements are documented during this phase and clarifications can be sought. Going through the requirements and analyzing them has revealed that the project team needs answers to the following questions which were not covered in the requirements document

- Will the new system application be used in more than one country?
- Do we have to support multiple languages?
- How many users are expected to use the application?

Finally, a requirement specification document is written to serves as guideline for the next phase of the model.

### **4.7.2.2 Software design**

Here the whole knowledge of requirements and analysis is bring down on the desk for design the software product. The inputs from users and information gathered are the inputs of this phase. The output comes in two form; logical design and physical design. The system design specifications is prepared to serve for the next phase.

### **4.7.2.3 Implementation**

When receiving system design documents, the implementation of software design starts in terms of writing codes in the suitable programing language. Here the output must be an error-free executable program.

### **4.7.2.4 Testing**

The testing phase is necessary because application must be checked for identifies any defects in the application. These defects are fixed and checked again to ensure that the defects is fixed. Testers and the recruitment domain knowledge they could also test the application based on the domain perspective.



#### **4.7.2.5 Maintenance**

This phase is usually a never-ending phase. Some problem with the application developed come up after its practical usage, but during the maintenance phase the developer must ensure that the application is running smoothly on the servers without any downtime.

### **4.8 Illustration**

#### **4.8.1 Data flow diagram**

A data flow diagram (DFD) is a way of representing a flow of a data of a process or a system (usually an information system). The DFD also provides information about the outputs and inputs of each entity and the process itself. A data flow diagram has no control flow; there are no decision rules and no loops. Specific operations based on the data can be represented by a flowchart. The data flow diagram is part of the structured analysis modelling tools. Data Flow shows the transfer of information from one part of the system to another. The symbol of the flow is the arrow. The flow should have a name that determines what information is being moved. Flow should only transmit one type of information. The arrow shows the flow direction (it can also be bi-directional if the information to / from the entity is logically depended, for example question and answer). This diagram has been drawn in with Visual Paradigm Enterprise version 15.2; Visual Paradigm is a software tool designed for software development teams to model business information system and manages development processes.

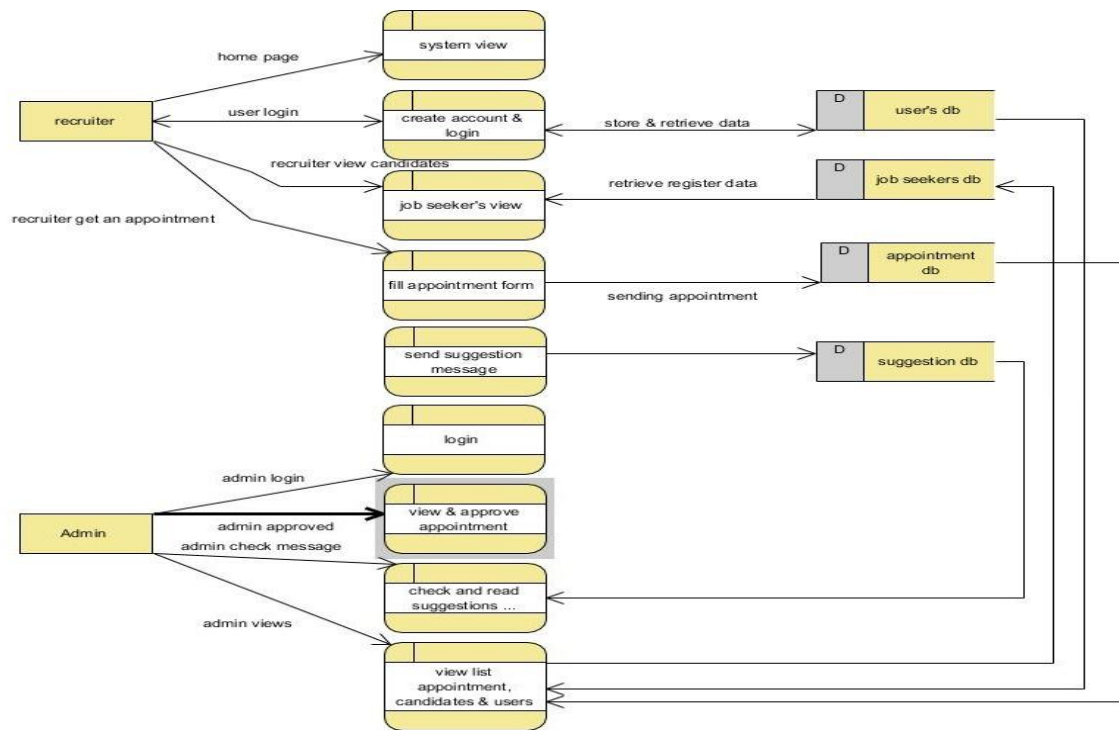


Figure 2: Data flow diagram Level 1 source (own draw 2019)

#### 4.8.2 Use case diagram

A use case diagram is the representation of the user's interaction with the system and depicting the specification of a use case. This diagram has been drawn in with Visual Paradigm Enterprise version 15.2

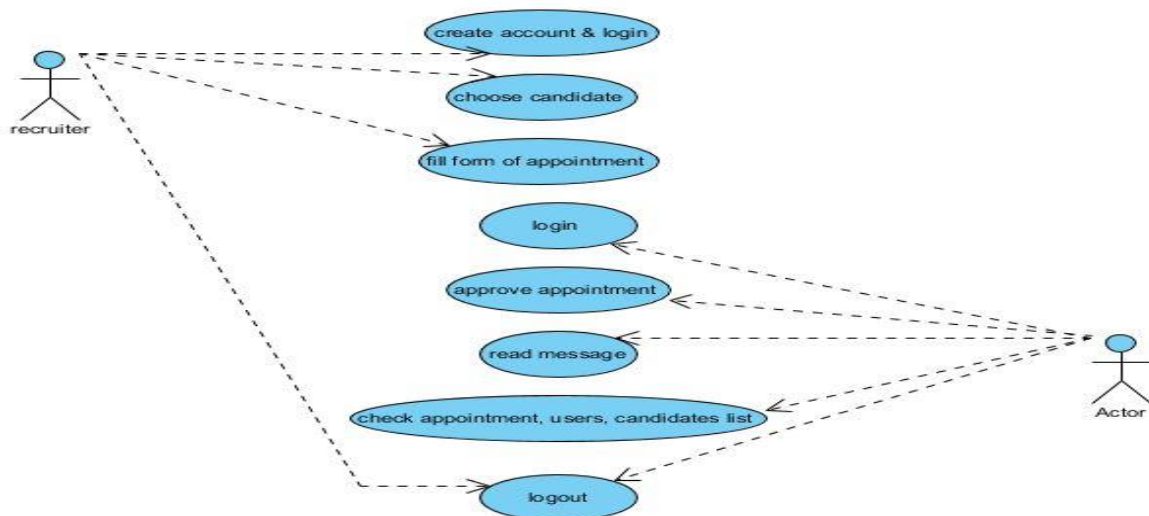


Figure 3: use case diagram source (own draw 2019)

### 4.8.3 Normalization

Database Normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eliminate data redundancy (repetition) and undesirable characteristics like Insertion, Update and Deletion Anomalies. It is a multi-step process that puts data into tabular form, removing duplicated data from the relation tables.

Normalization is used for mainly two purposes,

- Eliminating redundant (useless) data.
- Ensuring data dependencies make sense data is logically stored.

Normalization rules are divided into the following normal forms:

1. First Normal Form
2. Second Normal Form
3. Third Normal Form
4. Boyce-Codd Normal Form (BCNF)
5. Fourth Normal Form

#### 4.8.3.1 First Normal Form

The first Normal form expects you to design your table in such a way that it can easily be extended and it is easier for you to retrieve data from it whenever required. If tables in a database are not even in the first Normal Form, it is considered as bad database design.

There are a list of rules to follow for a table to be in first normal form:

1. Single Valued Attributes
2. Attribute Domain should not change
3. Unique name for Attributes/Columns
4. Order doesn't matters

ID	First name	Last name	company	contact	password	description
1	kambale	terry	BRALIRWA	kamterry@gmail.com	*****	HR staff
2	umwiza	nadia	BG-Tech	uminadia@gmail.com	*****	manager

**Table 1: first normal form**

ID	First name	Last name	company
1	kambale	terry	BRALIRWA
2	Umwiza	nadia	BG-Tech

ID	Contact	password	description
1	kamterry@gmail.com	*****	HR staff
2	imwinadia@gmail.com	*****	manager

**Table 2:-second normal form**

#### 4.8.3.3 Third Normal Form

For a table to be in the third normal form:

1. It should be in the Second Normal form.
2. In addition, it should not have Transitive Dependency.

The advantage of removing transitive dependency is,

- Amount of data duplication is reduced.
- Data integrity achieved.

ID	First name	Last name	company	Password
1	kambale	terry	BRALIRWA	*****
2	Umwiza	nadia	BG-Tech	*****

ID	description	Date & Time	contact
1	HR staff	27-06-2020 09:00	kamterry@gmail.com
2	manager	29-07-2020 08:00	imwinadia@gmail.com

**Table 3: third normal form**

#### 4.8.4 Data Dictionary

A data dictionary is a collection of descriptions of the data objects or items in a data model for the benefit of programmers and others who need to refer to them. A first step in analyzing a system of objects with which users interact is to identify each object and its relationship to other objects. This process is called data modeling and results in a picture of object relationships. After each data object or item is given a descriptive name, its relationship is described (or it becomes part of some structure that implicitly describes relationship), the type of data (such as text or image or binary value) is described, possible predefined values are listed, and a brief textual description is provided. This collection can be organized for reference into a book called a data dictionary. This diagram has been drawn with MySQL workbench 8.0 CE.

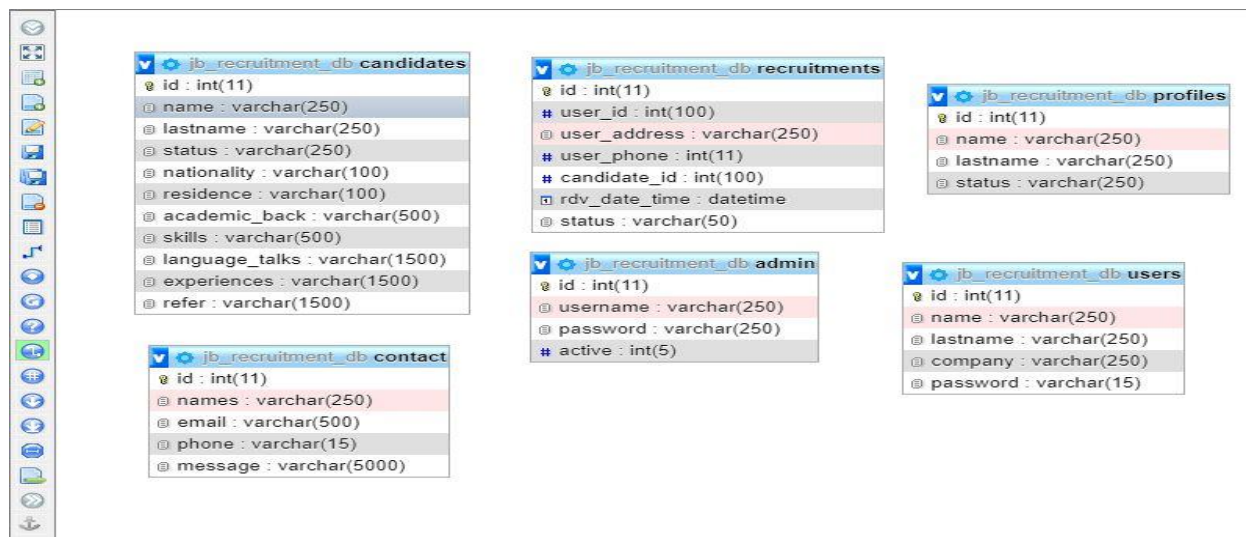


Figure 4: data dictionary diagram, source (own draw 2019)

#### 4.8.5 Entity Relationship Diagram

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties. By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases. ER diagrams are used to sketch out the design of a database. An ER diagram is a means of visualizing how the information a system produces is related. There are five main components of an ERD:

**Entities**, which are represented by rectangles. An entity is an object or concept about which you want to store information.

**Actions**, which are represented by diamond shapes, show how two entities share information in the database.

**Attributes**, which are represented by ovals. A key attribute is the unique, distinguishing characteristic of the entity.

**Connecting lines**, solid lines that connect attributes to show the relationships of entities in the diagram.

**Cardinality** specifies how many instances of an entity relate to one instance of another entity. Ordinarily is also closely linked to cardinality. While cardinality specifies the occurrences of a relationship, ordinarily describes the relationship as either mandatory or optional.

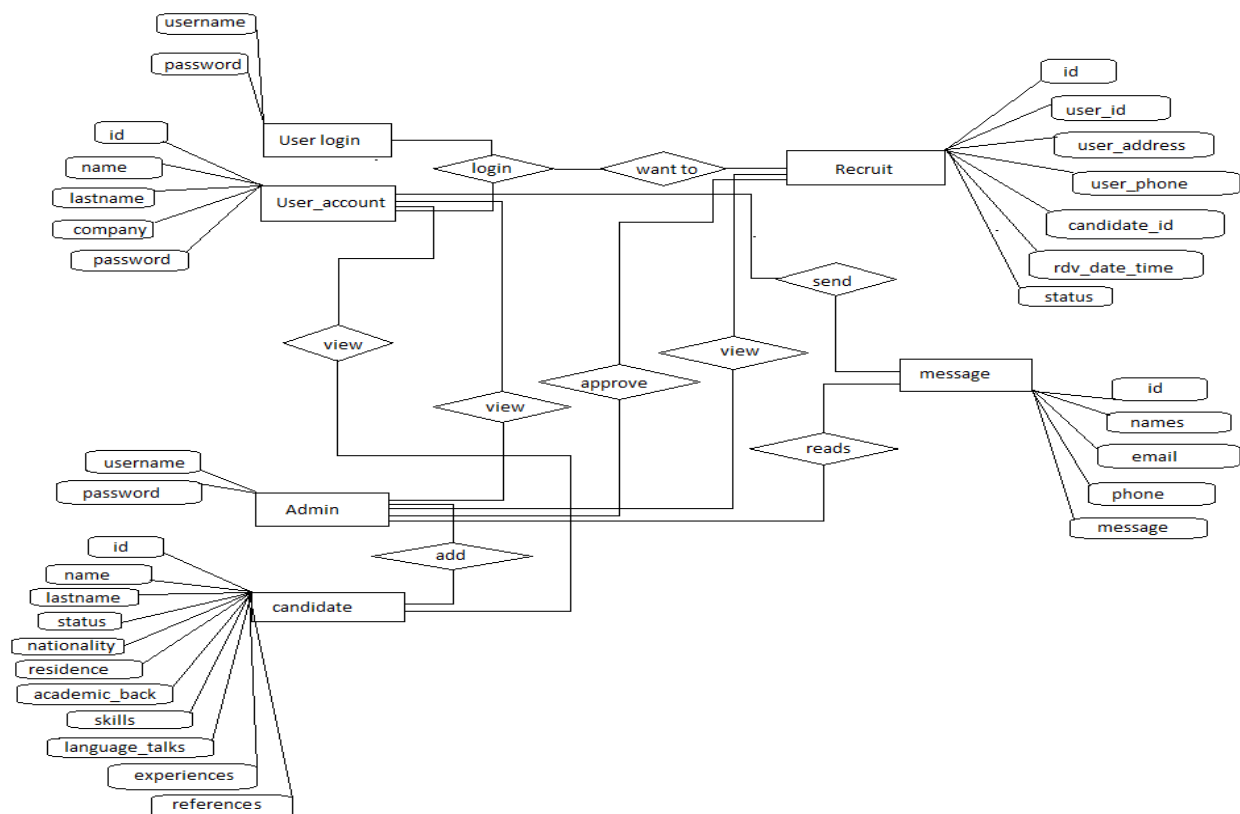


Figure 5: entity relationship diagram, source (own draw 2019)

## 4.9 Architecture design of the new system

A system architecture is the conceptual model that defines the structure, behavior, and more views of a system. The output of the architectural design process is an architectural model that describes how the system are organized as a set of communicating components. For this system, that system the architecture is three tiers applications, which means the system is composed of web browser, web server or application logic tier and a database server.

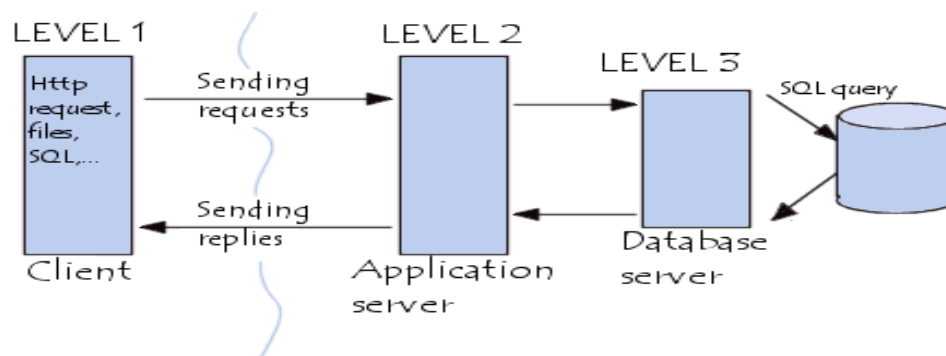


Figure 6: system architecture design.

## CHAPTER FIVE:

### IMPLEMENTATION AND CODING

#### 5.1 Implementation

##### 5.1.1 Introduction

Implementation is the carrying out, execution, or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen. Is a realization of a technical specification or algorithm as a program, software component, or other computer system through computer programming and deployment, Many implementations may exist for a given specification or standard. For example, web browsers contain implementations of World Wide Web Consortium-recommended specifications, and software development tools contain implementations of programming languages. This chapter will describe the tools used to develop

the new system and the technologies evolved in this new system, the testing results and showing some screenshots and source codes of the new system. Snow, Eric (26 January 2012).

## 5.1.2 Description of implementation Tools and technology

### 5.1.2.1 Visual studio code

Visual Studio Code is a source-code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded Git control, syntax highlighting, intelligent code completion, snippets, and code refactoring. The compiled binaries are freeware and free for private or commercial use. Download VS Code Insiders (Code.visualstudio.com 2019).

### 5.1.2.2 XAMPP

It is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, Maria DB 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 (“Apachefriends.org” 2019).

### 5.1.2.3 PHP

Hypertext Preprocessor (or simply **PHP**) is a general-purpose programming language originally designed for web development. It was originally created by Rasmus Lerdorf in 1994; the PHP reference implementation is now produced by The PHP Group. PHP originally stood for *Personal Home Page*, but it now stands for the recursive initials *PHP: Hypertext Preprocessor*. PHP code may be executed with a command line interface (CLI), embedded into HTML code, or it can be used in combination with various web template systems, web content management systems, and web frameworks. A PHP interpreter implemented as a module in a web server or as a Common Gateway Interface (CGI) executable usually processes PHP code. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. History of PHP and related projects (2018).



#### 5.1.2.4 HTML

Hypertext Markup Language is the standard markup language for creating web pages and web applications. With Cascading Style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. "HTML 5.3 Editor's Draft". (W3C. 2017-03-01).

#### 5.1.2.5 CSS

Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, and enable multiple web pages to share formatting by specifying the relevant CSS in a separate. CSS file, and reduce complexity and repetition in the structural content. ("What is CSS?" World Wide Web Consortium 2016)

#### 5.1.2.6 JavaScript

Often abbreviated as **JS**, is a high-level, interpreted programming language that conforms to the ECMA Script specification. It is a programming language that is characterized as dynamic, weakly typed, prototype-based and multi-paradigm. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it, and major web browsers have a dedicated JavaScript engine to execute it. As a multi-paradigm language, JavaScript supports event-driven, functional,

and imperative including object-oriented and prototype-based programming styles. It has APIs for working with text, arrays, dates, regular expressions, and the DOM, but the language itself does not include any I/O, such as networking, storage, or graphics facilities. It relies upon the host environment in which it is embedded to provide these features. O'Reilly Media.2004 ("The History of Programming Languages" 2016).

### 5.1.2.7 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. MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create Maria DB. *"MySQL 8.0 Release Notes"*. (*"Mysql.com"*. 2019)

### 4.1.3 Screen shots and codes

#### 4.1.3.1 Home page



## Codes

```
<?php

    session_start();

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="utf-8">

    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

    <meta name="description" content="">

    <meta name="author" content="">

    <title>www.recruitment_system.com</title>

    <!-- Bootstrap core CSS -->

    <link href="vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">

    <!-- Custom fonts for this template -->

    <link href="vendor/fontawesome-free/css/all.min.css" rel="stylesheet" type="text/css">

    <link          href='https://fonts.googleapis.com/css?family=Lora:400,700,400italic,700italic'
    rel='stylesheet' type='text/css'>

    <link
    href='https://fonts.googleapis.com/css?family=Open+Sans:300italic,400italic,600italic,700italic,
    800italic,400,300,600,700,800' rel='stylesheet' type='text/css'>

    <!-- Custom styles for this template -->

    <link href="css/clean-blog.min.css" rel="stylesheet">

</head>
```

```
<body>

<!-- Navigation -->

<?php include 'includes/navigation.php'; ?>

<!-- Page Header -->

<header class="masthead" style="background-image: url('img/h26.jpg')">

    <div class="overlay"></div>

    <div class="container">

        <div class="row">

            <div class="col-lg-8 col-md-10 mx-auto">

                <div class="site-heading">

                    <h1>Recruitment System</h1>

                    <span class="subheading">Online platform for Job Seekers Recruitments</span>

                </div>

            </div>

        </div>

    </div>

</header>

<!-- Main Content -->

<div class="container">

    <div class="row">

        <div class="col-lg-8 col-md-10 mx-auto">

            <div class="post-preview">

                <a href="">
```

<h2 class="post-title">

Today everything should be adapted in ever changing of technology to minimize some hard operations

</h2>

<h3 class="post-subtitle">



and exciting ICT skills in peoples.

</h3>

</a>

</div>

<hr>

<div class="post-preview">

<a href="">

<h2 class="post-title">

The concept of Online Job Seekers Information system has objective to reduce problem of bad service structure in the Recruitment job sector.

</h2>



</a>

</div>

<hr>

<div class="post-preview">

<a href="">

<h2 class="post-title">

The recruitment of the candidates depends on their qualification and their profiles levels.

</h2>



<h3 class="post-subtitle">

you will find men and women job seekers.

</h3>

</div>

<hr>

<!-- Pager -->

<div class="clearfix">

<a class="btn btn-primary float-right" href="#">go up &rarr;</a>

</div>

</div>

</div>

</div>

<hr>

<!-- Footer -->

<footer>

<div class="container">

<div class="row">

```
<div class="col-lg-8 col-md-10 mx-auto">

  <ul class="list-inline text-center">

    <li class="list-inline-item">

      <a href="#">

        <span class="fa-stack fa-lg">

          <i class="fas fa-circle fa-stack-2x"></i>

          <i class="fab fa-twitter fa-stack-1x fa-inverse"></i>

        </span>

      </a>

    </li>

    <li class="list-inline-item">

      <a href="#">

        <span class="fa-stack fa-lg">

          <i class="fas fa-circle fa-stack-2x"></i>

          <i class="fab fa-facebook-f fa-stack-1x fa-inverse"></i>

        </span>

      </a>

    </li>

    <li class="list-inline-item">

      <a href="#">

        <span class="fa-stack fa-lg">

          <i class="fas fa-circle fa-stack-2x"></i>

          <i class="fab fa-github fa-stack-1x fa-inverse"></i>
```

```
</span>

</a>

</li>

</ul>

<p class="copyright text-muted">Copyright &copy; BG-Tech 2020</p>

</div>

</div>

</div>

</footer>

<!-- Bootstrap core JavaScript -->

<script src="vendor/jquery/jquery.min.js"></script>

<script src="vendor/bootstrap/js/bootstrap.bundle.min.js"></script>

<!-- Custom scripts for this template -->

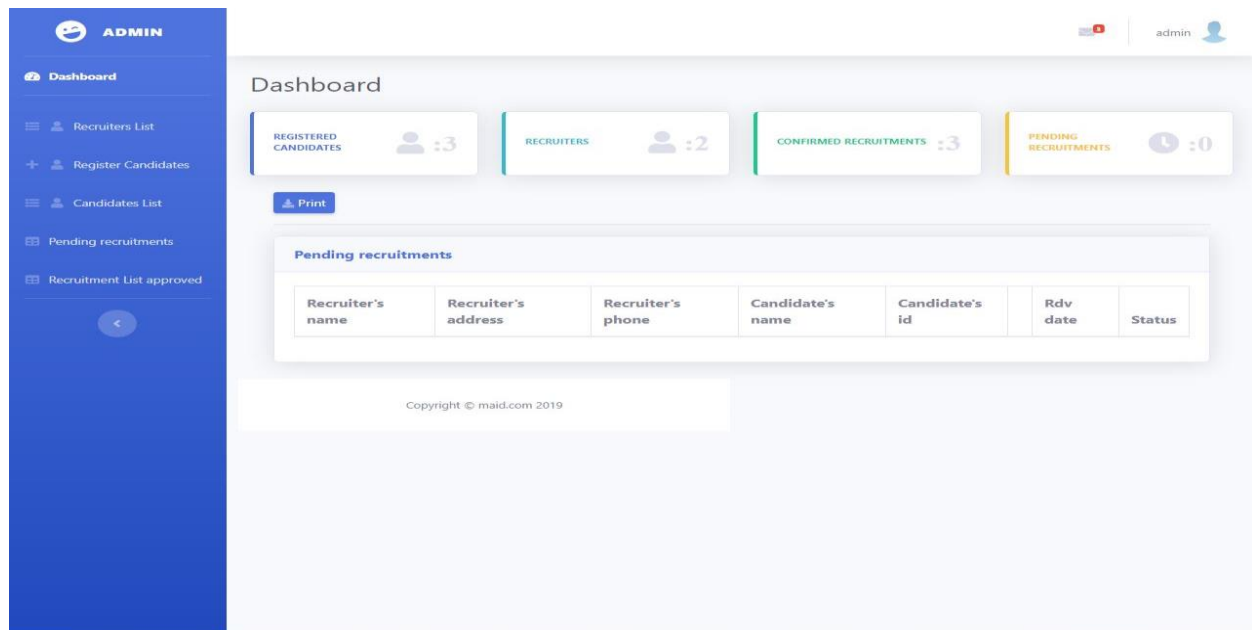
<script src="js/clean-blog.min.js"></script>

</body>

</html>
```



### 4.1.3.1 Admin page



### Codes

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <meta name="description" content="">
  <meta name="author" content="">
  <title>Admin - Dashboard</title>
  <!-- Custom fonts for this template-->
  <link href="vendor/fontawesome-free/css/all.min.css" rel="stylesheet" type="text/css">
  <link
href="https://fonts.googleapis.com/css?family=Nunito:200,200i,300,300i,400,400i,600,600i,700,700i,800,800i,900,900i"
rel="stylesheet">
  <!-- Custom styles for this template-->
  <link href="css/sb-admin-2.min.css" rel="stylesheet">
</head>
<body id="page-top">
  <!-- Page Wrapper -->
  <div id="wrapper">
    <!-- Sidebar -->
    <?php include('includes/sidebar.php'); ?>
    <!-- End of Sidebar -->
```

```

<!-- Content Wrapper -->
<div id="content-wrapper" class="d-flex flex-column">
  <!-- Main Content -->
  <div id="content">
    <!-- Topbar -->
    <?php include('includes/nav.php'); ?>
    <!-- End of Topbar -->
    <!-- Begin Page Content -->
    <div class="container-fluid">
      <!-- Page Heading -->
      <div class="d-sm-flex align-items-center justify-content-between mb-4">
        <h1 class="h3 mb-0 text-gray-800">Dashboard</h1>
      </div>
      <!-- Content Row -->
      <div class="row">
        <div class="col-xl-3 col-md-6 mb-4">
          <div class="card border-left-primary shadow h-100 py-2">
            <div class="card-body">
              <div class="row no-gutters align-items-center">
                <div class="col mr-2">
                  <div class="text-xs font-weight-bold text-primary text-uppercase mb-1">Registered
candidates</div>
                  <div class="h5 mb-0 font-weight-bold text-gray-800"></div>
                </div>
                <div class="col-auto">
                  <i class="fas fa-user fa-2x text-gray-300">
                    <?php
                      $candidates = $folder->query("SELECT count(id) AS candidates FROM
candidates")->fetch_assoc();
                      echo ':'.$candidates [candidates];
                    ?>
                  </i>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="col-xl-3 col-md-6 mb-4">
    <div class="card border-left-info shadow h-100 py-2">

```

```

<div class="card-body">

    <div class="row no-gutters align-items-center">

        <div class="col mr-2">

            <div class="text-xs font-weight-bold text-info text-uppercase mb-1">Recruiters</div>

            <div class="row no-gutters align-items-center">

                <div class="col-auto">

                    <div class="h5 mb-0 mr-3 font-weight-bold text-gray-800"></div>

                    </div>

                </div>

            </div>

            <div class="col-auto">

                <i class="fas fa-user fa-2x text-gray-300">

                    <?php

                        $recruiter = $folder->query("SELECT count(id) AS recruiter FROM recruiter")-
>fetch_assoc();

                        echo ':'.$recruiter[recruiter];

                    ?>

                </i>

            </div>

        </div>

    </div>

</div>

```

## 5.2 Testing

### 5.2.1 Introduction

Testing is a set of process of evaluating a system with its components to find whether if it satisfies the specified requirements or not. 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 (Kaolin J, 2017). Software testing involves the execution of a software component or system component to evaluate one or more properties of interest.

### 5.2.2 Objective of Testing

It is very important to have good test coverage in order to test the software application completely and make it sure that it is performing well and as per the specifications. The major objectives of Software testing are as follows:

- meets the requirements that guided its design and development,
- responds correctly to all kinds of inputs,
- performs its functions within an acceptable time,
- it is sufficiently usable,
- can be installed and run in its intended environments, and
- Achieves the general result its stakeholder's desire.

What are software testing objectives and purpose? (“Software Testing”, 2019)

### 5.2.3 Unit testing outputs

Unit testing is a level of software testing where individual units/ components of software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It usually has one or a few inputs and usually a single output. In procedural programming, a unit may be an individual program, function, procedure. (“Unit Testing”, 2019 STF).

#### 5.2.4 Validation testing outputs

The process of evaluating software during or at the end of the development process to determine whether it satisfies specified requirements. Validation during the software development process can be seen as a form of User Requirements Specification validation; and, that at the end of the development process is equivalent to Internal and/or External Software validation. Examples of artifact validation:

- User Requirements Specification validation: User requirements as stated in a document called User Requirements Specification are validated by checking if they indeed represent the will and goals of the stakeholders. This can be done by interviewing them and asking them directly (static testing) or even by releasing prototypes and having the users and stakeholders to assess them (dynamic testing).
- User input validation: User input (gathered by any peripheral such as keyboard, bio-metric sensor, etc.) is validated by checking if the input provided by the software operators or users meet the domain rules and constraints (such as data type, range, and format).

Wang, C.-W.; Ostroff, J.S.; Hudon, S. (2014).

#### 5.2.5 Integration testing outputs

Integration testing (sometimes called integration and testing, abbreviated I&T) is the phase in software testing in which individual software modules are combined and tested as a group. Integration testing is conducted to evaluate the compliance of a system or component with specified functional requirements. It occurs after unit testing and before validation testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing. Martyn A Ould & Charles Unwin (ed), Testing in Software Development, BCS (1986).

#### 5.2.6 Functional and system testing results

Functional testing is a quality assurance (QA) process and a type of black-box testing that bases its test cases on the specifications of the software component under test. Functions are tested by

feeding them input and examining the output, and internal program structure is rarely considered (unlike white-box testing). Functional testing tests a slice of functionality of the whole system. System testing is testing conducted on a complete integrated system to evaluate the system's compliance with its specified requirements. System testing takes, as its input, all of the integrated components that have passed integration testing. System testing seeks to detect defects both within the "inter-assemblages" and within the system as a whole. System testing is performed on the entire system in the context of either functional requirement specifications (FRS) or system requirement specification (SRS), or both (Kaner, Cem, 2006).

### **5.2.7 Acceptance Testing Report**

Formal testing with respect to user needs, requirements, and business processes conducted to determine whether a system satisfies the acceptance criteria and to enable the user, customers or other authorized entity to determine whether to accept the system. Acceptance testing is also known as user acceptance testing.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

The researcher concluded that the online alumni job seekers information system for enhancing online services recruitment System; it has been design with functionalities to resolving the problem within the current system in the recruitment service sector with the help of tools used to collected data like interview, document and observation; without to forget also the tools used in developing of this system visual studio code, HTML, PHP, MYSQL, JAVASCRIPT, CSS and XAMPP. As mentioned in the specific objectives this system offering to the users a web-based purchasing to facilitate the flow of information of the service without many effort, it give also the way of storing and retrieve all the information within its database. With this system, it is easy to generate report of reservation list of the service and comment (suggestion) from people. By looking to the features of this system, the researcher concluded that all the objectives have been achieved successfully.

### **Recommendations**

The researcher recommended that the system should be used at recruitment services to help the managers to recruit efficiently in an online platform activities using web browser and to help in keeping recorded data and sharing data.

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# APPENDICES

## **INTERVIEW GUIDE**

For Alumni graduates student:

- Which system do you use when needs to apply in a vacancy found somewhere?
- What are the problems do you face when you need to apply?
- How do you think the above-mentioned problems may be solved?

For the recruiters:

- What are the benefits of implementing an automated system on the Job seekers side?
- What are problems you faced while you need to recruit?
- What is the method use when you doing recruitment?
- Are you interested and prioritize the candidate's profiles of the district?