UNIVERSITY OF DAR ES SALAAM

COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGY (CoICT)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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FIRST SEMESTER REPORT

PROJECT TITLE: TEACHING VOLUNTEERING MANAGEMENT SYSTEM

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DECLARATION

I Marica Neston Justo of registration number 2016-04-07574, declare that this first semester report is my own work and has not been presented and will not be presented to any other institution for a similar or other purpose.

Marica, Neston Justo

Signature: ……………………………………….

Date: ………………….…………………………….

ACKNOWLEDGEMENT

This product is not a work of an individual, but rather a combination of efforts from I myself, Teachers, Expertise, Stakeholders and the community. I really appreciate the support from them, special thanks to Dr. Jimmy mbelwa, Dr. Hellen maziku and Mr, Cosmas for their comments, support, encouragements and suggestions which lead to the success of this project approval. Above all I present my thanks to the almighty God.

ABSTRACT

This report presents the implementation of a Teaching volunteering management system which is a web based platform that will enable unemployed teachers, students (undergraduates pursuing teaching profession) volunteer after seeing how the distribution of teachers is (from a visualized data like graphs) in Tanzania.

This system consists of sections like, applications where volunteers can apply, status where after application desired information will be shared on what to do next (like transport, hospitality) also an internship section where undergraduates can apply for internship and be able to get a certificate as well as recognition.

The main part of the system will be the real-time visualize data/statistics that will show how teachers are distributed in different primary schools (government) in Tanzania. This will help them decide on where to go depending on the distribution.

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LIST OF ABBREVIATION

PTR = Pupil to Teacher Ratio

TIE= Tanzania Institute of Education

ICT= Information Communication Technology

CV= Curriculum Vitae

SDLC= System Design Life Cycle

ERD = Entity Relationship Diagram

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

In developing countries and developed countries shortage of teachers have ever been ongoing problem. Tanzania as one of developing countries face the same problem especially in primary schools compared to secondary schools as from data of 2016/2017 from (link) https://edutztz.wordpress.com/2017/08/02/takwimu-muhimu-za-elimu-ya-msingi-na-sekondari-kwa-mwaka-2016-2017/, there was a total of 9,317,410 pupils in all primary schools and there was a total of 197,545 teachers in primary schools while in secondary schools total of 1,909,017 students in secondary schools and there was a total of 110,098 teachers in all secondary schools

This clearly show the unbalanced (unequal distribution of resource i.e. teachers in the country) ratio between teachers and students.

1.2 STATEMENT OF THE PROBLEM

Pupils should have enough resources and infrastructures to help them acquire quality education as is their basic right, however most of the primary schools in our country face the problem of shortage of teachers which make the pupils not to acquire the good education and make pupils incompetent when they finish their schools.

According to recent data, there have been an increase in the number of students due to the policy from the government "Free education", this has led to unbalanced workforce to the employed teacher (as they are unable to handle many students). Due to this, the ideal solution is to simply employ more teacher which is more of a policy (government) issue, thus a more ICT (Information Communication Technology) is needed to reduce unbalanced pupil to teachers' ratio.

1.3 OBJECTIVES

The Objectives of this project are grouped into two, main objective and specific objective. Which are explained as follows;

1.3.1 MAIN OBJECTIVE

The main or general objective is to develop a management system that will enable unemployed teachers, under graduates (pursuing education) to select desired places to go and volunteer to teach from the visualized (like graphs) data showing how teachers are distributed in different primary schools in Tanzania.

1.3.2 SPECIFIC OBJECTIVE

The specific objectives of the project are as follows;

- To collect raw data that is normally collected yearly.
- To analyzing the raw data obtained from the Government (TAMISEMI).
- To designing a database that will store the system information.
- To visualize data after being analyzed i.e. the number of teachers in different region of Tanzania together with the number of schools available, which will enable people see how the need of teacher is in those places.

1.4 SIGNIFICANCE OF THE PROJECT

In all projects, each one has a significance to the desired society similar to this project, the following are the significance of the project to the society;

- Will reduce unequal distribution of teachers

This means that the gap or the number between teachers and students show be reduced (meaning the PTR). The greater the number of teachers in various subject helps to smoothen the learning activity.

- Will increase pupil's performance

When a school has many teachers it reduces then PTR as a teacher will be able to confront (handle) a fewer number of students leading to better performance.

- Gaining experience to undergraduates

These graduates are those mainly from the teaching colleges or have undertaken teaching as a profession. Normally, when they graduate it's not easy to get a job remotely thus volunteering to gain more experience in different parts of Tanzania.

- Will reduce the rate of unemployed in the streets

A society that has fewer number of unemployed people the safer it becomes, because no one will think of any bad thought (like stealing). Volunteering (like in our case, teaching) will help unemployed graduate, teacher keep themselves busy at the same time sharing knowledge to students.

- The volunteer gets recognition certificate which increase his/her CV

In a World where certificate matters, rewarding a volunteer with one is important and plays a greater role in his/her CVs. As it shows one was able to give what he/she has to the society

1.5 SCOPE AND LIMITATIONS
SCOPE

Scope means that the extent of the project or subject matter that something deals with or to which it is relevant.

The scope of this project are primary school students (Government), unemployed teachers and graduates that have undertaken teaching as profession. Apart from those, other institution that will be directly relevant to this project is Tanzania Institute of Education (TIE), as well as TAMISEMI.

LIMITATION

Many projects have limitations, similar to this project. Some of the constraints or limitation that this project will face are as follows;

- Government policy on education

This means that, the policy like "Free education" imposed in our country Tanzania, makes parents and other personnel (involved in education) assume the government will do everything while it's not true. Thus, us as a society should bring an impact ourselves.

- Teaching environment

Meaning that, in places like rural areas, there are unconducive teaching environment (for example classes, no desks, staff sleeping areas). This is a barrier as not many people will be able to volunteer to teach in those places.

1.6 ORGANIZATION REPORT

The report has three chapters; Chapter one is the introduction, which is made up of problem statement and definition together with the main and specific objectives. Also it states clearly the significance of the project accompanied by scope and limitations.

The second chapter talks about literature review, that consists of a clear description of the problem together with the findings (desk research) conducted. Also in this chapter describes the existing solutions and their disadvantages so as to enable one exploit them to make better system.

Chapter three is all about the methodology, where by all the methods undertaken to obtain specific information that will be crucial to the project are explained.

Chapter four is all system analysis and design, whereby I have explained the system architecture start with requirements, use cases, process flow diagram and the Entity relationship diagram.

The last section is the references to the sources of information present in the report, together with the appendices.

CHAPTER 2

LITERATURE REVIEW

Introduction

A literature review is simply an evaluation of the available literature in a given subject or chosen topic area. Literature review also documents the state with respect to the subject or topic you are writing about.

Background Information

According to the survey (desk research) I conducted I found some information that has helped me have a grasp of the project am conducting.

From the data from 2016 that showed the number of teachers as well as students in both primary school showed that, there was a total of 9,317,410 pupils in all primary schools and there was a total of 197,545 teachers in primary schools.

Also apart from the PTR of 2016 (Pupil to Teacher Ratio) the standard PTR is 40:1, but in Tanzania the PTR is about 257:1, this is obtained by taking the average ratio of the highest, the lowest PTR in the country as well as the standard PTR.

For example, according PTR report obtained back in 2016 it showed that in Kigoma, sokoine primary school had a PTR of 720:1 while in Ruvuma, Lunyere-asili primary school had a PTR of 3:1. This clearly show the unbalanced (unequal distribution of resource i.e. teachers in the country) ratio between teachers and students.

Existing System

According to this information, it shows that there is a gap of high demand of teachers in primary schools. In order to solve this an ICT solution must be implemented.

From a similar system (volunteering) that have been there in Tanzania like http://www.tanzaniavolunteers.com/ is more centered in foreign volunteers also they have not visualized (like graphs) on how the need (for example those volunteering to teach) is in different places in Tanzania.

Disadvantage of the existing solution

- More centered in foreigners (volunteers)
- Does not show data on how resources (like teachers) are distributed.

CHAPTER 3

METHODOLOGY

3.1 Introduction

A methodology is a model, which an individual employ for the designing, planning, implementation and achievement of the project objectives.

The methodology that will be used in this project is Extreme programming methodology. Extreme Programming is a software development methodology designed to improve the quality of software and its ability to properly adapt to the changing needs of the customer or client.
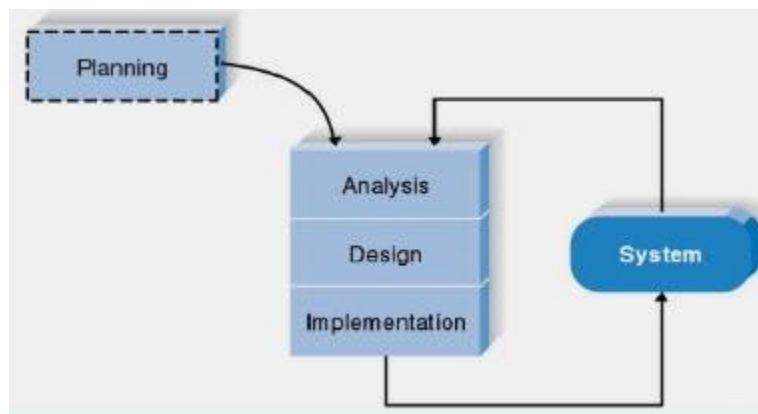
Source; Denis, wixom & Roth Systems Analysis and Design , 3rd Edition

Figure 1;Extreme programming

This (Extreme Programming) aims to provide iterative and frequent small releases throughout the project, allowing me to examine and review the project's progress throughout the entire SDLC. As after every small release I will be able to analyze and refactor the system.

CHAPTER 4

SYSTEM ANALYSIS AND DESIGN

4.1 Introduction

System analysis is a process of collecting and interpreting facts, identifying the problems, and decomposing of a system into its components. This is conducted for the purpose of studying a system or its parts in order to identify its objectives and also ensures that all the components of the system work efficiently to accomplish their purpose.

System design is a process of planning a new system or replacing an existing system by defining its components or modules to satisfy the specific requirements. This focuses on how to accomplish the objective of the system.

After a short brief meaning of system analysis and design, I will analyze the system that I am implementing in this project.

4.2 Requirement analysis

Refers to the process of defining the expectations of the users for an application that is to be built or modified. After conducting a research/survey, analyzing it then it showed that people were willing to volunteer. This led to the identification of functional and non-functional requirement.

4.2.1 Functional requirement

This simply describes what the system does or what it must do within normal parameters so as to meet user expectation.

- Getting started
    - The system will visualize data for user to see
    - The system will allow user to login, register (for new user)

- Application (on applying)
  - The system will enable user to upload his/her CV.
  - The system will enable the user to select the location to apply for.
  - The system will enable user view their status after application.

4.2.2 Non-functional requirement

This means that it essentially specifies how the system should behave and that it is a constraint upon the systems behaviour, or simply how the system behaves.

Some of these non-functional requirement of teaching volunteering management system are as follows;

- The system will run on computers via web browser.
- The system will require internet connection.
- The system will be online 24/7 i.e. daily.
- The usability of the system will be good.
- The system response to data change will be imminently.
- The system will be secured to any user information.

4.3 Use case and Scenario Description

This section defines the use cases that the system is developed around as well as the scenario description or a story line on which a user possesses.

4.3.1 Scenario Description

A Scenario refers to the giving of a plot, film or description of what is to happen or simply refers to a user story on how he or she interacts with the system. In my case, the scenario present is described below;

A user visits the system page (teaching volunteering management system), he/she sees the visualized data as the homepage. He/she finds out Kigoma has poor distribution of resources (i.e. teachers'). He tries to apply but the system requires him to login or register (for new users). After successful login or register, he navigates to the application tab where he uploads his CVs then submit it and waits for approval.

The admin on the other hand, requests to see all the applicants and tries to validate them according to the TAMISEMI qualifications then notifies the applicant via email as well as the system.

4.3.2 Use case

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. A use case contains all system activities that have significance to the users as well as models the goals of system/actor (user) interactions.

In this project, the actors involved are;

-User (i.e. volunteer)

-Administrator

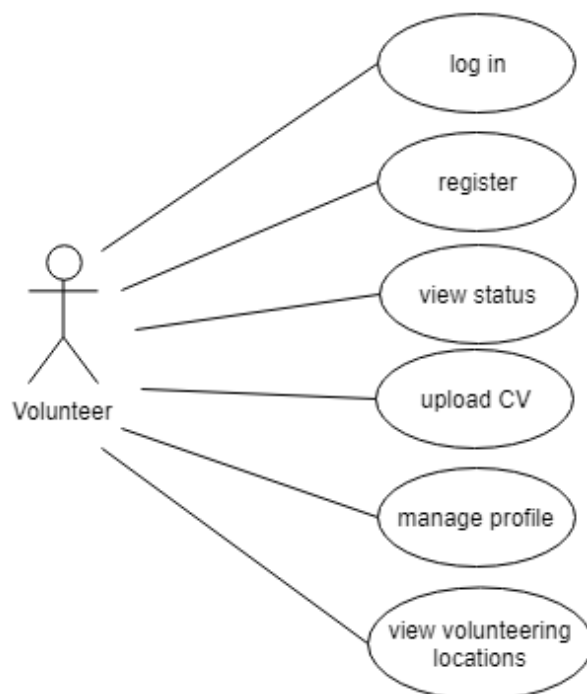Teaching volunteering management system
Use Case Diagram

Teaching volunteering management system
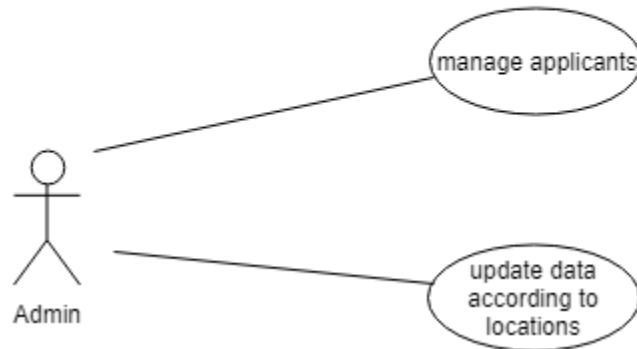Use Case Diagram

Figure 3;use case diagram for teaching volunteering management system (admin)

4.4 Use case Description

- Register; the registering field applies for the user i.e. volunteer

Use case No	1
Use case name	Register
Actors	User (i.e. volunteer)
Description	The user who wants to volunteer is registered to the system
Pre-condition	The user must be unregistered
Post-condition	Log in the user thereafter
Priority	High

Normal course Event	1. User clicks the register button
	2. Enters/fill required fields
	3. Press the submit button to store the user in the database
Alternative courses	

Table 1;Register description

- Log In: entering the website through logging in to the system

Use case No	2
Use case name	Login
Actors	User (i.e. volunteer)
Description	Logging in of a user to the website to view more contents
Pre-condition	The user must be registered to the system
Post-condition	Log in the user to the system
Priority	High
Normal course Event	1. User clicks login button
	2. Enters/fill required fields
	3. Press the submit button
	4. Homepage displayed
Alternative courses	The system must be able to retrieve user required information like username and password

Table 2;Login description

- View status; this is where the volunteering user checks if there are any update on whether he has been approved on not. Also, to see any additional info

Use case No	3
Use case name	View status
Actors	Volunteer
Description	This is where the volunteering user checks if there are any update on whether he has been approved on not. Also, to see any additional info.
Pre-condition	The user must be logged in to the system
Post-condition	Sees the current status (if approved or not)
Priority	Middle
Normal course Event	1. Navigates to status tab 2. Views status
Alternative courses	

Table 3;View status description

- Upload CV; the user who wants to volunteer uploads his/her CVs

Use case No	4
Use case name	Upload CV
Actors	Volunteer
Description	This is where the user who wants to volunteer upload his/her CVs for application.

Pre-condition	The user must be logged in to the system
Post-condition	Success notification after submission
Priority	High
Normal course Event	1. Navigates to apply tab 2. Clicks upload button 3. Upload file appears and selects the appropriate one 4. Submits/uploads 5. Success message appears
Alternative courses	

Table 4;Upload CV description

- Manage profile; where user changes his/her information.

Use case No	5
Use case name	Manage profile
Actors	Volunteer
Description	This is where the volunteer or user can change his/her information or update it.
Pre-condition	The user must be logged in to the system
Post-condition	Success notification after change
Priority	Middle
Normal course Event	1. Navigates to profile tab 2. Change required fields 3. Save changes.

Alternative courses	

Table 5;Manage profile description

- View locations

Use case No	6
Use case name	View location
Actors	Volunteer
Description	Is where the visualised data is to be displayed and viewed so that one can be able to decide where to go.
Pre-condition	It is not necessarily the user must be logged in
Post-condition	Visualised data
Priority	Low
Normal course Event	1. Accesses the website via browser.
Alternative courses	

Table 6;View location description

- Manage applicant

Use case No	7
Use case name	Manage applicant
Actors	Administrator

Description	This is where the approval and denial of the applicant is done.
Pre-condition	The user must be logged in to the system
Post-condition	Applicants data
Priority	High
Normal course Event	1. Navigates to manage tab 2. Sees all applicant data like CVs
Alternative courses	

Table 7;Manage applicants

- Update data

Use case No	8
Use case name	Update data
Actors	Administrator
Description	The admin uploads data if there are any changes that may occur from the collected data.
Pre-condition	The user must be logged in to the system
Post-condition	Uploading pages
Priority	High
Normal course Event	1. Navigate to data tab

Table 8;Update data

4.5 Process Flow Diagram

This involves the interaction (like information) of various components of a system as they go step by step to attain a particular goal. The following is the systems process/data flow diagram;
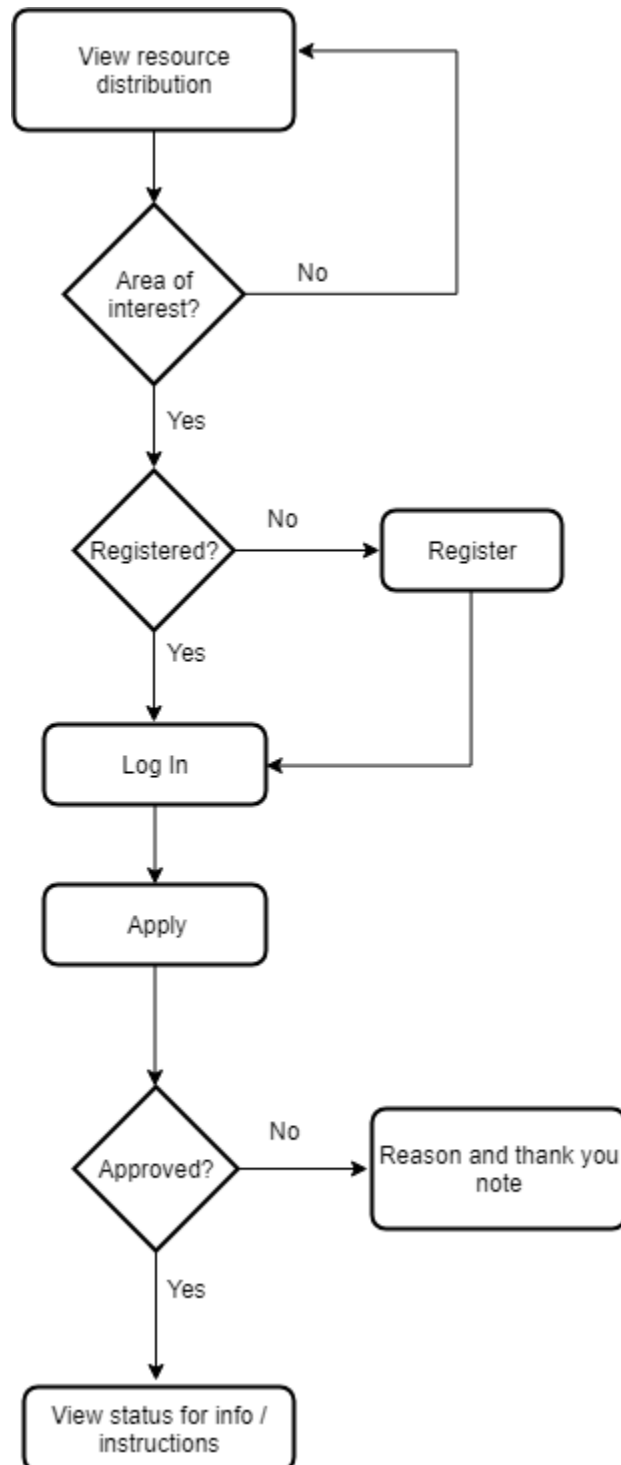

Figure 4;Process flow chart

4.6 Sequence Diagram

This shows object interactions arranged in time sequence. It shows the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario.
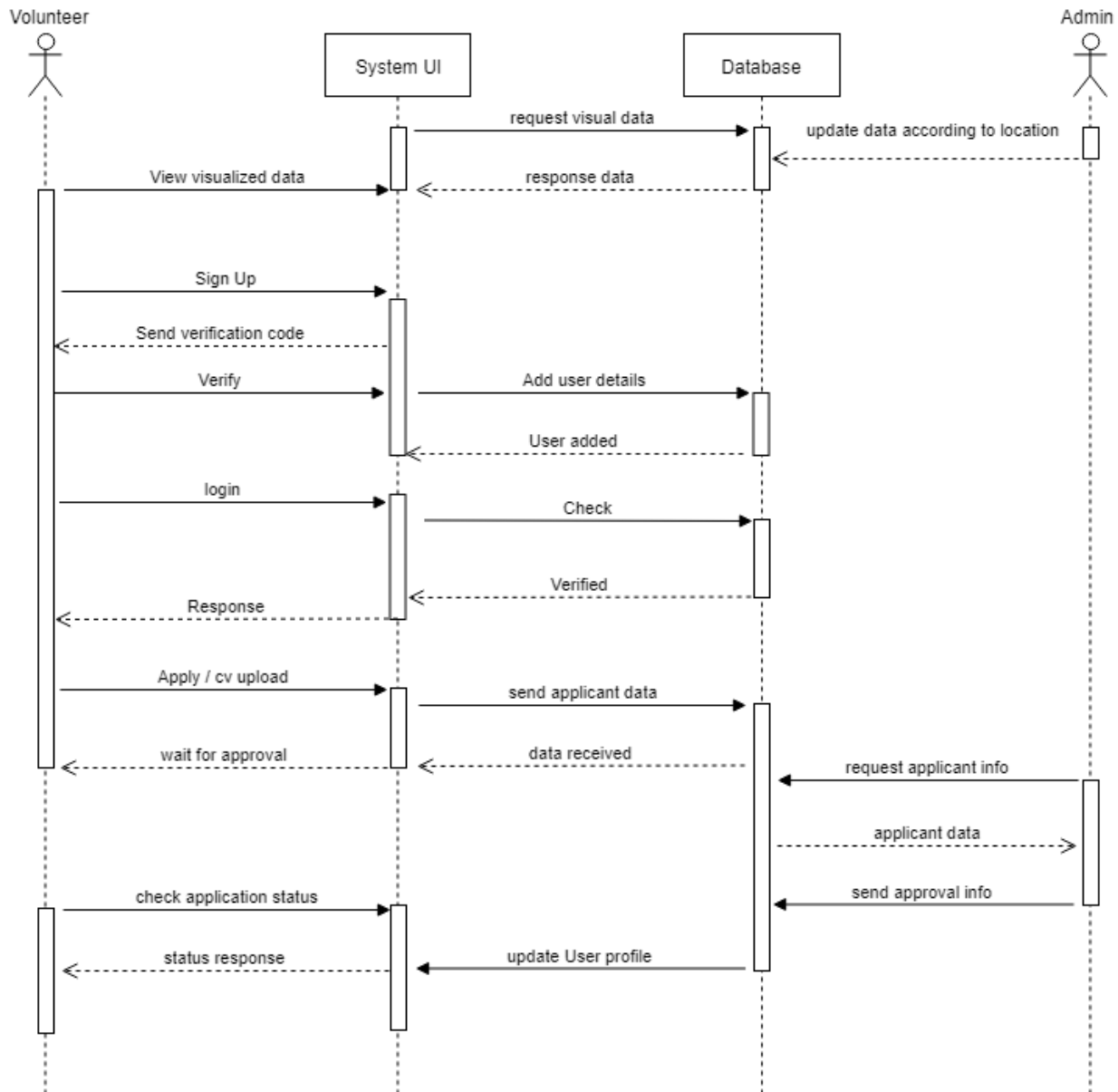

Figure 5;web based system sequence diagram

4.7 Entity Relationship Diagram (ERD)

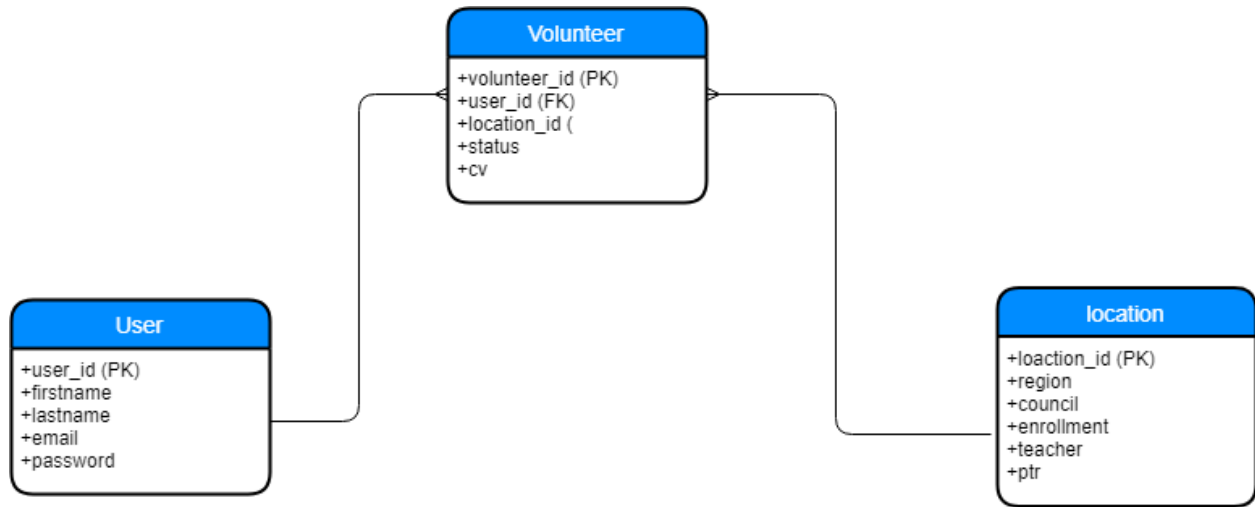This shows the relationships of entity sets stored in a database. An entity in this context is an object.

Figure 6;ERD for teaching volunteering system

4.8 System architecture

System architecture refers to the conceptual model that defines the structure, behavior, and more views of a system. The overall high level architecture of the system involves the general model of the system.
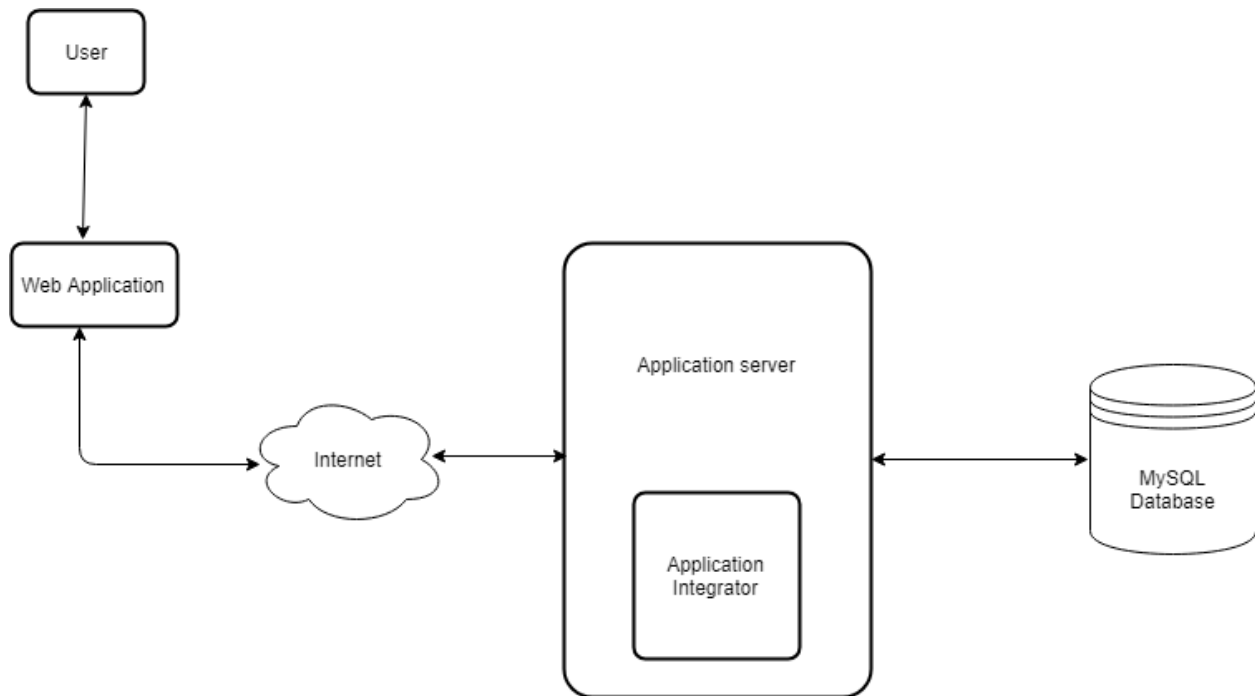
The following is the system architecture;

Figure 7;High level architectural design of the system

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