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CONTACT INFORMATION MANAGER PROTOTYPE

Thesis

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ABSTRACT

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Name of Thesis CONTACT INFORMATION MANAGER PROTOTYPE		
Instructor KAI LUSA	Pages 45	
Supervisor KAI LUSA		
<p>In this project, since it is a work of an individual and for academic reasons, choosing this topic of contact information manager prototype is to enable the author to practice programming skills studied in an educational life cycle, creating a meaningful up and running demo version of an application to solve a problem, which can also be used as an example for others students in the study line of software engineering and information technology to improve their careers and life building skills. This thesis report is a web-based Contact Saving Application which enables users to save contact information on a secure location which can be accessed any time.</p> <p>The REST Application Programming Interface (API) with the POST and the GET methods of handling data were used in this project. The REST API is a technique in which the application uses to save data in the database and fetch data from the database. The demo version of the project is running on a xampp server installed on the local computer for saving the information from the application.</p>		

Key words

HTML, CSS, JavaScript, XAMPP, PHP, MySQL, API

CONCEPT DEFINITIONS

SQL: Structure Query Language

HTML: Hypertext Markup Language

PHP: Hypertext Processes Processing Script

Ajax: a combination of Javascript and XML

CSS: Cascaded Style Sheets

DBMS: Database Management Systems

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1 INTRODUCTION

In today's world, every organization being a school or business processes information from day to day transactions. Due to the rise of the modern communication methods, which the internet is the fastest and the most reliable method makes it easy to follow the flow of data in every organization. No matter how an organization is a medium or large, they need what is called a database to help them save information which can be retrieved later to improve organizational activities and to meet with the demands of the clients or customers. Due to this reason of large amounts of data being processed each day it is important for organizations to change from file systems to database system which is a more secure means of saving data for future use.

This project is based on the processes involved in creating a database for saving contact information of students and teachers in an institution. The project includes the procedures and methods used in creating the database, the tools used and the publishing, the results and the conclusion.

The second chapter of this project explains the purpose of the project, the goals of the project, the security measures taken in the project and the case study of the project. The third chapter will comprise of the tools used in the realization of the project, methods and procedures used in the project. In this chapter, is where the actual planning of the project is centered on, which will include the construction of the database, and the testing of the database project. The plan should be designed to suit the information needed. The interface design of the database, the testing and maintenance of the database that keeps it running.

The fourth chapter of the project includes the requirements, plan, and the design of the database which is the front end and back end of the database program. Then the fifth part is mainly the screenshots of the interface of the project to enable the reader to know the actual product by seeing a picture of how it looks.

2 THEORETICAL BACKGROUND

This section describes how the system functions and actors who trigger events to happen in the system. A relational DBMS is special system software that is used to manage the organization, storage, access, security and integrity of data. This specialized software allows application systems to focus on the user interface, data validation and screen navigation. When there is a need to add, modify, delete or display data, the application system simply makes a "call" to the RDBMS. All these events are being triggered by someone in the system. (Zandbergen 2015).

The purpose of this topic, with a demo version of the project is to combine together all the programming skills, abilities and studies to create a fully functioning application. This piece of work can be used as an example or as a learning material for the upcoming students in the fields of software engineering and information technology. (Zandbergen 2015).

The goal of this project is to enable users of the system to have a record of important contact information saved in a secure location. The system can be used by any institution, for example, Centria University of Applied Sciences to store contact information of the staff and the students and even the alumni. The goal of this project is to secure data for future use, and also to combine the expertise of database design into a common practice. (Zandbergen 2015).

This project comprises of the most fundamental programming languages used in web technologies today. Making use of coding information available on the webpage of the W3Schools (2017) in the realization of this project. In the following sections below, with the examining of the system functionalities and also looking at all the methods which are used in practice to realize this project.

2.1 System Functionality

This system is a contact saving application where users of the system will save contact information into the database of the system and can retrieve these contact details of individuals when needed. This system is divided into two parts. The front end and the backend. At the front ends, the users of the front end are call users which have to do a task by registering all the information into the system. At the back end, the system admin is responsible for the security of the information. The roles of individuals will be seen below in the sections 2.1.1, 2.1.2 and 2.1.3 where the details are well explained from different system users which are called (system actors). (Ali 2016).

2.1.1 System Users (Actors)

There are distinct types of people who engage with database management system and End Users are well known from their roles in the system are known as system actors. However, when referring to End Users, it referees to all the people working with the DBMS. The user of this system will play the role of an actor in the system that triggers events to happened within the system. This system contains two actors that are the user and the administrator. The actors of the system, or system users, will be able to do the following as explained in sections 2.1.2 (role of system user) and 2.1.3(role of system admin). (Priyankara 2015).

2.1.2 Roles of System Users (End-Users)

The system user will be able to add contact information to the system. This is the actual End user of the system who keys in data into the database system. The End user has no access to the back end of the program. This is another class of data modification where data is being populated into the database system due to new contact information of students or teachers. The End user can edit the data stored into the database system using the update interface. Editing data is classified under data modification where some fields of information of student and teachers contact details can change due to change of location or change of email address. The End user can also delete stored information from the database system. This deleted information can still be retrieved by the system admin if the data was deleted by an error. Deleting information from the system is also called data modification. The End user has the rights to search useful information from the system to make a report. This report can either be saved in some file format such as CSV, PDF, TET file format which can be saved in the computer or can also be printed using a printer. This information can also be exported to other system users for data analysis. End User submit error problems to the admin. When the system has an error performing its task, the End User inform the system admin. These errors happen when wrong information is inputted into the system or the system has redundant information. It generates errors with respect to the type of error encountered. (Priyankara 2015).

2.2 Role of System Admin

Some of the roles of the system admins are to add users to system. The system admin has the role and responsibilities to add and delete users of the system. He creates user information for login into the system. This role is the most important to the system. Only those who use the system are to be added as system users. These users must be the staff of the institution for which the application is being used. The system admins those Maintenance on the system. The system admin monitors the system on a daily basis. The system admin is responsible to find out if all the modules of the system are functioning correctly. He adds more data fields as the information of

the site grows. The maintenance of the system has to be scheduled by the system admin. Scheduling of system maintenance should be made within the less busy hours of the application to reduce conflicts of information or system errors. The system admin has the responsibilities of system reports on daily basis. The system administrator has the function to inform users about the system and also educate users about the system. The system admin also provides reporting with the statistics of system functionalities, and outputs of the system. The system admin turn off the system if there is some treats in the system, he automatically have to turn off the system for maintenance. Maintenance of the system is scheduled out of busy hours of the software. During this period, all the bugs of the system are fixed and corrected. (John 2006).

3 TECHNOLOGIES AND TOOLS USED FOR THIS PROJECT

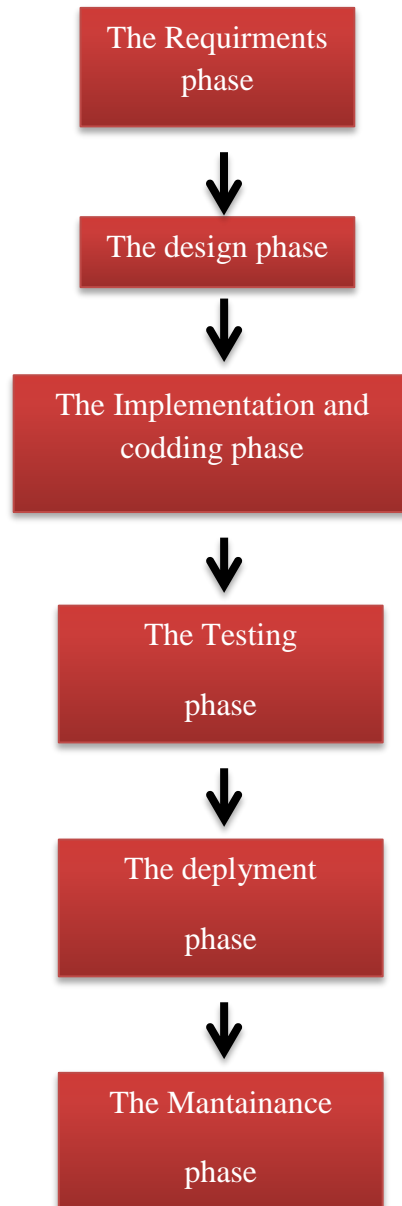
In the software world, there are many agile methodologies or methods in the development of software projects including dynamic systems development methods. Most agile methods attempt to minimize risk of development processes. This methods which have been used in realization of this system are programming methods learnt from object oriented modeling and object oriented programming. (Nirosh 2015).

3.1 Databases and Database Designs

This section provides the systems functional and nonfunctional information. Functional information is the useful information which the system needs to do its processes. This information depends on the type of fields you use. The nonfunctional is information which is not accepted to be entered into the fields of the system. The fields selected should be able to suit the purpose of the creation of the software. (felipe 2016).

3.2 Software Development Phases

This refers to a type of computer programming (software design) in which programmers define not only the data type of a data structure, but also the types of operations (functions) that can be applied to the data structure. The total work load of a project is divided into smaller components, thus making it easier to monitor. In this type of programming, it is easy to gain control of all the logics of the programs separately in modules according to its functions. This piece of software has been realized following the modular form of the demo software design. All the modules are designed separately and brought together to form the software. The object oriented programming method uses the programming technique called the UML (unified modeling language). This technique modules the different sections or modules of the system. (Nirosh 2015).



GRAPH 1 PHASES OF THE SOFTWARE DEVELOPMENT (Vasagiri. 2017)

Graph 1 shows various software development approaches defined and designed which are used/employed during the development process of software and databases, These approaches are also referred as “Software Development Process Models”, for example, the Waterfall model, incremental model, V-model, iterative model, RAD model, Agile model, Spiral model, and Prototype model to name a few. Each process model follows a particular life cycle in order to ensure success in the process of software development. In this project, the waterfall model has

been used to realize this process. The waterfall model explains the project and all the steps of realization from preliminary investigation to completion. (Vasagiri 2017).

3.2.1 Requirement gathering and analysis

The database system requirements are gathered in this phase. This phase is the main focus of the project. Meetings with stake holders and users are held in order to determine the requirements of the database system that will be used for the system. Here the purpose of the system is to be known, and the type of data that will be used in the system. What data should be output by the system. These are general inquiries that are derived during the requirement gathering phase. After requirement gathering these requirements are analyzed for their validity and the possibility of incorporating the requirements in the system to be development is also studied. (Vasagiri 2017).

3.2.2 Design

In this phase the system and software design is prepared from the requirement specifications which were studied in the first phase and the design prototype is created. System design helps in specifying system requirements and the design phase helps in defining overall system architecture. The system design specifications serve as input for the next phase of the model. (Vasagiri 2017).

3.2.3 Implementation / Coding

On receiving system design documentations, the work is divided in modules/units and actual coding is started. Since in this phase the code is produced. This is the main focus for the developer. This is the longest phase of the database development process. (Vasagiri. 2017).

3.2.4 Testing

After the code is developed it is tested against the requirements to be sure that the product is actually solving the needs addressed and gathered during the requirements phase. During this phase all types of functional testing like unit testing, integration testing, system testing, and acceptance testing are carried out as well as non-functional testing. (Vasagiri 2017).

3.2.5 Deployment

After successful testing the product is delivered / deployed to the organization for their use. As soon as the product is given to the organization they will first do the beta testing. If any changes are required or if any bugs are caught, then they will report it to the engineering team. Once those changes are made or the bugs are fixed then the final deployment will happen. (Vasagiri 2017).

3.2.6 Maintenance

Once when the customers start using the developed system then the actual problems comes up and needs to be solved from time to time. This process where care is taken for the developed product is known as maintenance. Maintenance can be scheduled periodically depending on the organizational work load and work time. (Vasagiri 2017).

4 DEVELOPMENT PROCESS OF THE PROJECT

The first step is familiarization with how a relational database works, after knowing the table relationship, the specifically look at the project at hand and determine how the database should be presented and its behavior. There are many ways to approach the development of a new database, but over the years, the waterfall model has six-step process that has led to the realization of this project. These steps are the typical steps used worldwide to realize projects of databases. (Nicholson 2014).

4.1.1 Step 1 Think

The first step in designing a database is to consider the project at hand and the features that users might want to have access to. Considering that at this level, it is extremely helpful to talk to both the management that is supervising the project and the end users who will work with the system on a daily basis to determine what they expect from the end-result and what issues they are trying to resolve. (Nicholson 2014).

4.1.2 Step 2 Anticipate

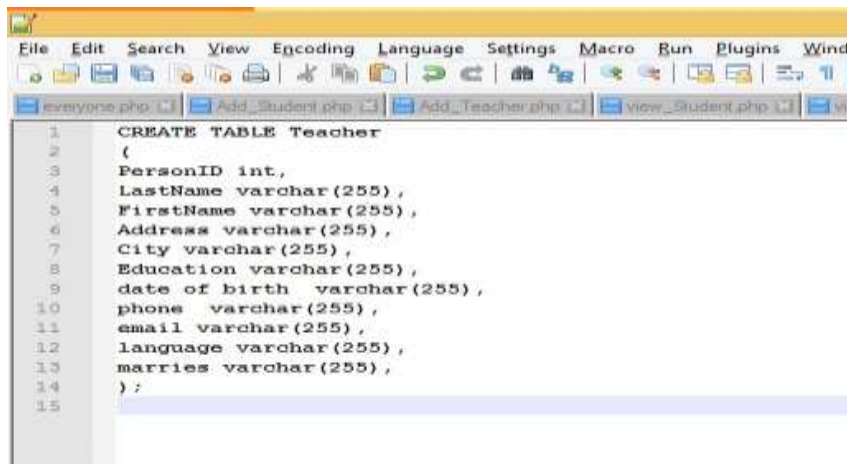
At the second level, what has been used in the designing a database is to be in the place of the end user and try to anticipate any functionality that might be needed that has not already been expressed. This process is often based on the conversations from the previous step and usually draws from experience developing similar applications for other organizations. Then from here, anticipates to the design the tables that stores the information should have a field that are needed for the project. After having the understanding of what the organization is seeking, and the expert knowledge of past experiences to anticipate additional functionality, after this level then the building process of the application starts. (Nicholson 2014).

4.1.3 Step 3 Analyze

After the database has been developed, it is a very good idea to do some testing to ensure that it performed the task it was designed for. Analyzing and Testing the application is the process in which all errors are seen and corrected. This step always in collaboration with the designing team and the team leader of the end users which will be using the system in every work day in the organization. (Nicholson 2014).

4.2 Choice of Fields Used For the Project

A database can contain many types of fields. Only the basic types of fields have been used for the realization of this project. These basic fields are needed for saving just the basic contact information about an object. A person is an object which will have the following basic entities such as name, place of birth, date of birth, address, phone number, and e-mails. This application can be built with any types of fields depending on the type of information which is needed in the system to process. jfelipe 2016.



```

1 CREATE TABLE Teacher
2 (
3   PersonID int,
4   LastName varchar(255),
5   FirstName varchar(255),
6   Address varchar(255),
7   City varchar(255),
8   Education varchar(255),
9   date of birth varchar(255),
10  phone varchar(255),
11  email varchar(255),
12  language varchar(255),
13  marries varchar(255),
14 ) ;
15

```

GRAPH 2 CODES FOR CREATING DATABASE TABLE (felipe 2016).

Graph 2 shows the two methods for creating databases and tables. MySQL database can be easily created; to create a database, clicking “Databases” options then the following steps will be guided during the creation process by a database creation wizard. It will require the user to enter

a database name and collation type. Then a new database is created. After creating the databases, there are two methods to create the new table: one is followed by its steps, requiring table name, number of columns and variable names. And the other is through SQL language. (felipe 2016).

4.3 Implementation of Project

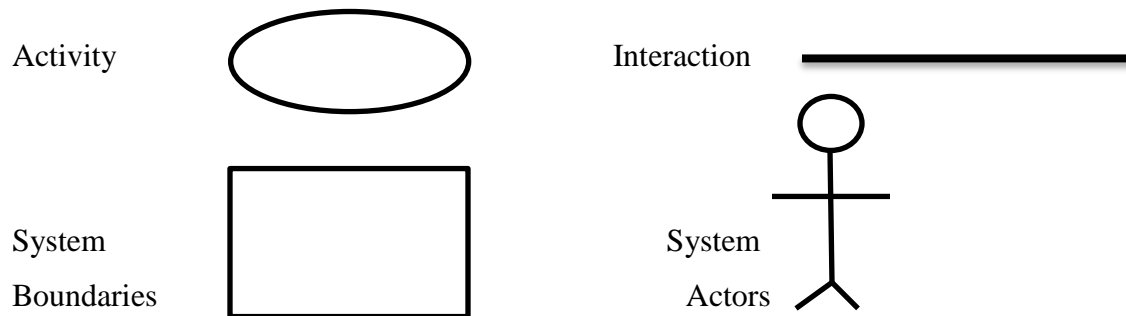
The implementation plan of this project is putting all the theoretical knowledge into practice. This implementation will base on two sections that are the backend and the front end implementation. The back end will consist of the installation process of the server, the creation of tables and databases in the MYPHP admin control panel. And the front end will explain the example of codes used to build the physical interface of the project and styling.

4.4 Requirements of the Project

Requirements gathering is an essential part of this project and any project and project management. Understanding fully what a project will deliver is critical to its success. Requirements gathering sounds like common sense, but surprisingly, this area is always given far too little attention. Many projects start with the barest headline list of requirements, only to find later the customer's needs have not been adequately understood. (jfelipe 2016). Below are some rules for successful requirements gathering to be successful in requirements gathering and to give your project an increased likelihood of success, follow these rules.

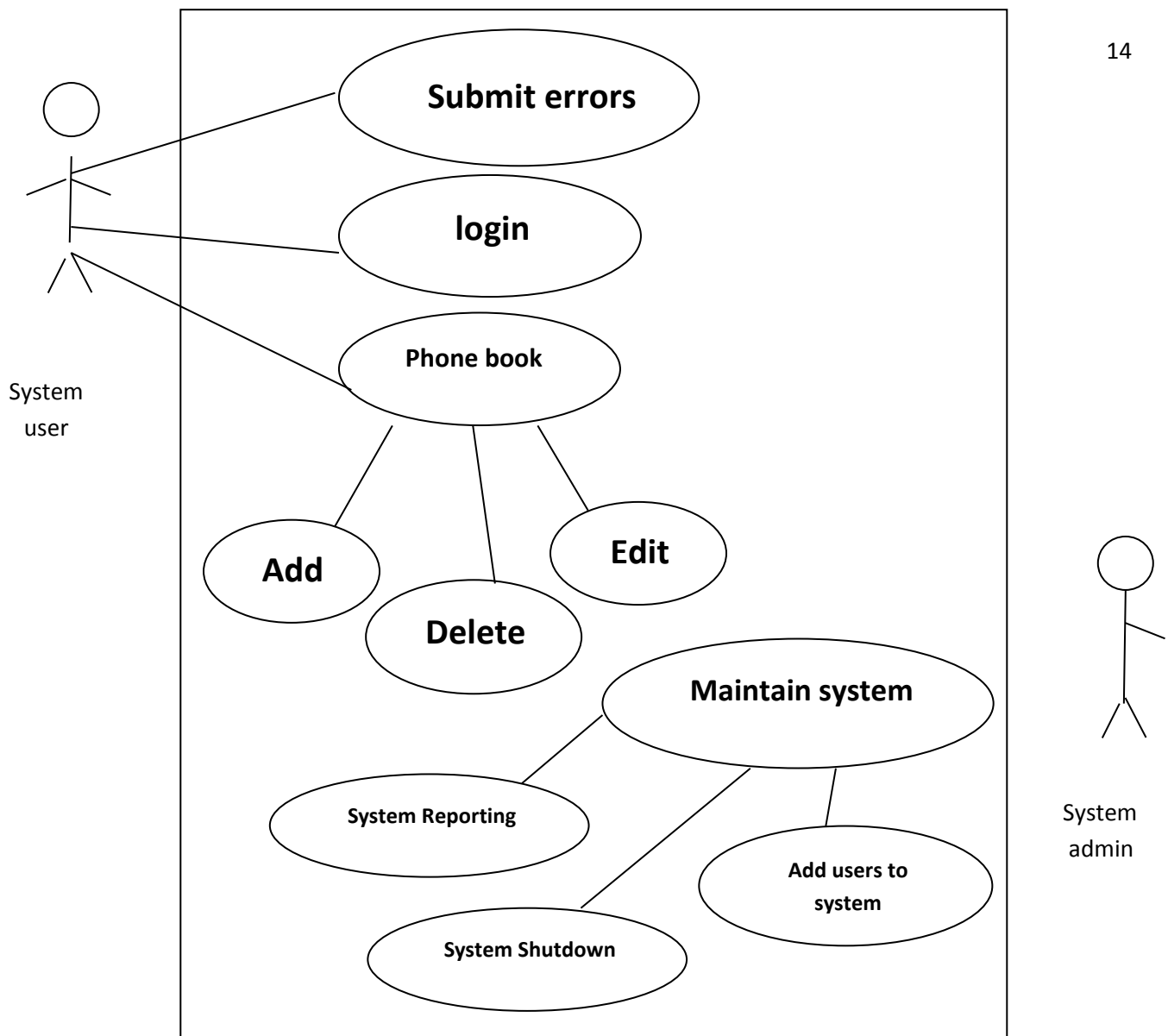
Firstly, do not assume that you already know what the customer wants - always ask for more information to be given. Secondly, all the users have to be involved from the start to have a reliable source of information. Thirdly, the definition and the scope of the project has to be agreed, and points in not that all requirements are SMART - specific, measurable, agreed upon, realistic and time-based. Gain clarity if there is any doubt. Fourthly, creating a clearer view, concise and thorough requirements document and share it with the customer. Confirm the teams understanding of the requirements alongside the customer (play them back), and avoid talking

technology or solutions until the requirements are fully understood. Lastly, get the requirements agreed with the stakeholders before the project starts. Create a prototype, if necessary, to confirm or redefine the customer's requirements. (Haughey 2014).



GRAPH 3 USE CASE OBJECTS (Nirosh 2015).

Graph 3 is the objects used to model the system. This object represents different operation which takes place during the processing of information from one object to the other in the system. The straight line is the interactions of the different objects of the system, the ellipse is the activities or the modules of events, the rectangle is the system boundaries and the actor is the one who triggers the events of the system to functions. (Nirosh 2015).

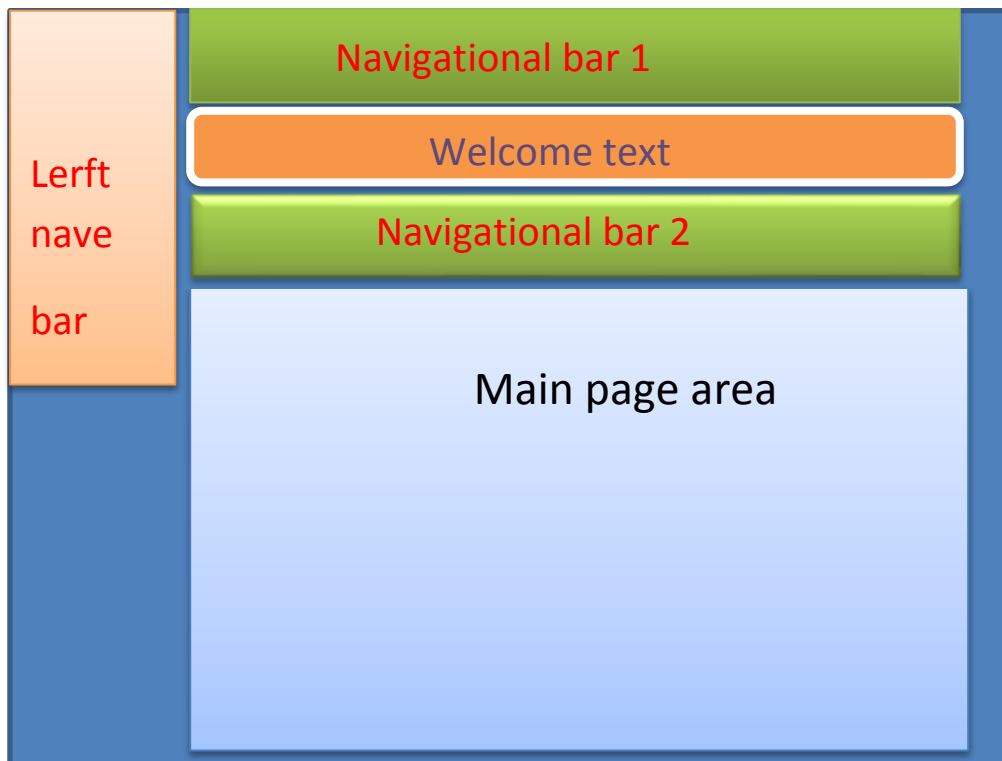


GRAPH 4 USE CASE DIAGRAM (Nirosh 2015).

Graph 4 (use case diagram) explains graphically the modules of the system and its collaborations. The straight lines represent the activities which can be operated by different actors. The ellipse shaped represents the modules or activities to be performed by different actors of the system. The square shape in Graph 4 represents the system boundaries where all the modules of the system functions within the database. Any object outside the square shape in Graph 4 boundaries is a system trigger who starts or ends a task into the system. (Nirosh 2015).

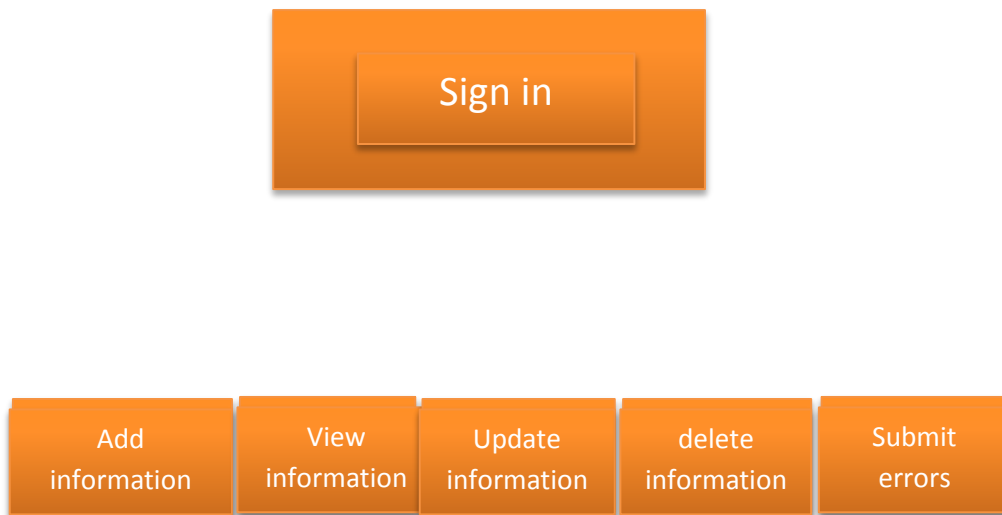
The platform on which this database is being hosted on is the xampp local server. This is a local server installed on a computer. Xampp has different versions for Windows computer system and for linux computer system. This local server functions just as a live server. It can contain many databases which can be used by organizations on a network topology. The tools chosen for the hosting is filezilla which is a tool used for the transfer of files to the public.html folder on the xampp server. The xampp servers of this project is installed and Running on a Microsoft Window 8.1Operation system.

The limitation of this database lies in the variable quality of the information available. This project has been limited to the following modules. The database activities which can be created by the database admin and those which can be created by the end user. The limitation modules are add information, edit information, delete information, check database functionalities, shutdown system, add users to the system, login, and submit errors and system reporting. (Lakey 2011).



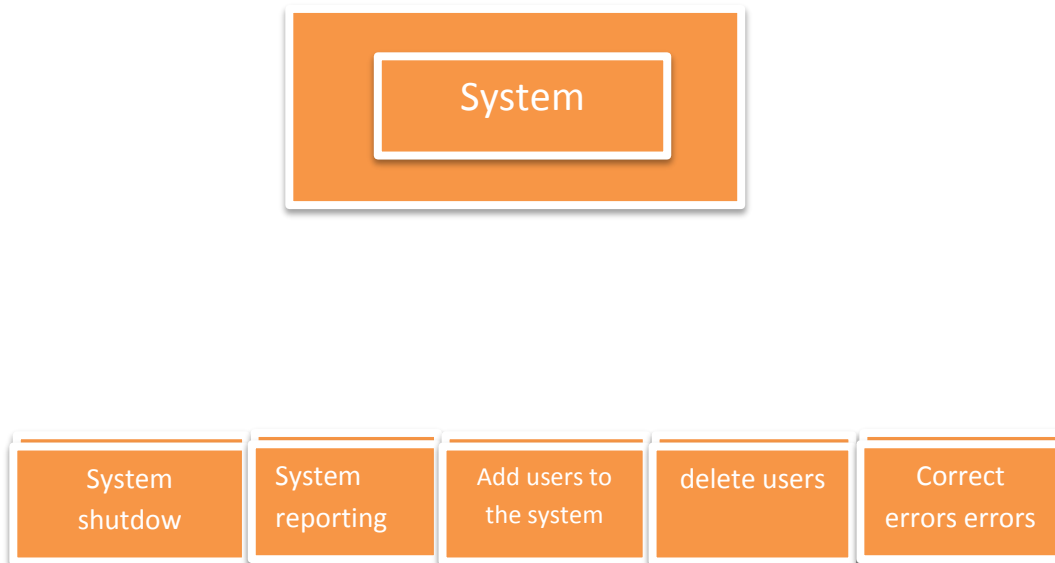
GRAPH 5 PROTOTYPE OF INTERFACE

Graph 5 is the prototype of the presentation face of the database. The navigation bar 1 is the navigation bar which has the logging, and out button futures of the database, and also the change language priorities button where the page language can be changed from one language to the other. The left navigation bar is a quick access bar where user can quickly click to access information in the database. The welcome text is a marquee text which welcomes everyone to the database project. The navigation bar 2 is the bar which all the activities of the database are located where the End User can use for the purpose of the database. The main page area is where all activities are displayed on a clicking of a mouse to perform a task.



GRAPH 6 MODULES OF END-USER

Graph 6 is a figure of the modules of the end user. These modules are building blocks of the database which are being programed separately but they are interacting with each other to archive the common goal of the project. The modules are called activities which are performed by the end user by signing into the system, adding information, view information, update information, delete information, and submit system errors.

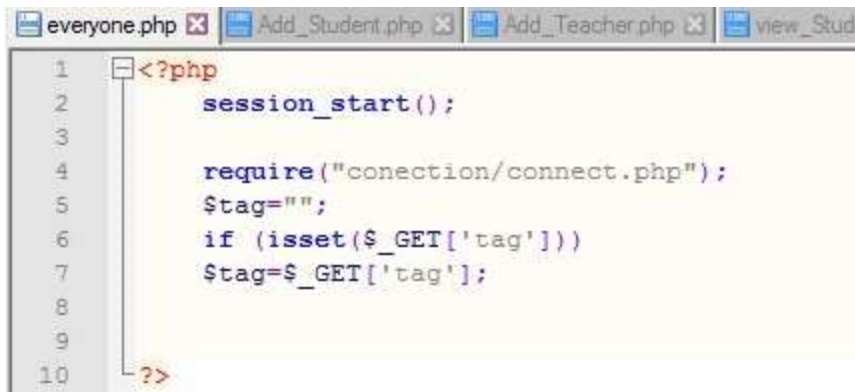


GRAPH 7 MODULES OF SYSTEM ADMIN

Graph 7 is a figure of the modules of the admin. These modules are the activities which are being programed separately but they are interacting with each other to archive the common goal of the project. The modules are called activities which are performed by the admin of the system maintenance, system shutdown, system reporting, add users to system, delete users, correct system errors.

4.4.1 Front End Development

A front end development of the visual front end elements of a database application. At this level, the creation of computing components/features that is directly viewable and accessible by the end user or client. A front-end developer is also known as a client end developer, who create such visual programing languages such as HTML and other front-end codes are used. During the process of coding, the front-end developer is responsible for ensuring that a database visual front end is free of errors and looks exactly as designed in the prototype of Graph 4. The front-end developer also ensures that a database has the same visibility across different computing and mobile Web browsers. (Lerdorf 1994).

A screenshot of a Notepad++ window with four tabs: everyone.php, Add_Student.php, Add_Teacher.php, and view_Stud. The active tab is everyone.php, which contains the following PHP code:

```
1 <?php
2     session_start();
3
4     require("conection/connect.php");
5     $tag="";
6     if (isset($_GET['tag']))
7         $tag=$_GET['tag'];
8
9
10 ?>
```

GRAPH 8 START SESSION CODE

Graph 8 above is a piece of code which is coded by the use of notepad ++ tool. This piece of code is coded in php scripting language which is a basic connection code to the server. All pages of this project have the codes which they use to communicate with each other and also connect to the Xampp sever.

4.4.2 Backend Development

The backend development is a type of database programming where the creation of the logical backend and core computational logic of a database, software or information system. The developer creates components and features that are indirectly accessed by a user through a front-end application or system. The key role of a backend development is to ensure that the data or services requested by the frontend system or software are delivered through programmatic means. Backend developers also create and maintain the entire backend of a system, which consists of the core application logic, databases, data and application integration, API and other back-end processes. Moreover, a backend developer performs the testing and debugging of any back-end application or system. (Lerdorf 1994).

4.5.2.1 SQL

Structure Query Language which is used for the performance querying of the data being processed by PHP. This is a database scripting language that is being used at the back end of the database to create tables in the database, and they are also used for the querying of information from the database. Database technologies such as MySQL, PostgreSQL and Microsoft SQL Server power large and small businesses, hospitals, banks, and universities. Every computer and person with access to technology eventually touches something in database technologies called SQL. For instance, all Android phones and iPhones have access to a SQL database called SQLite and many mobile apps developed by Google, Skype and DropBox use databases. (Lerdorf 2016).

4.5.2.2 PHP

(Hypertext Pre-Processor) is a programming language used for the form processing's. This code where written in English like statements with special characters to encode its functionalities to perform a particular task. PHP (Hypertext Pre-Processor) is a scripting language, running on the server, which can be used to create web pages written in HTML. PHP is one of the most popular web programming language since it can be used easily by programmers, but also offers many advanced features for more experienced programmers. (Lerdorf 1994).

4.5.2.3 XAMPP SERVERS

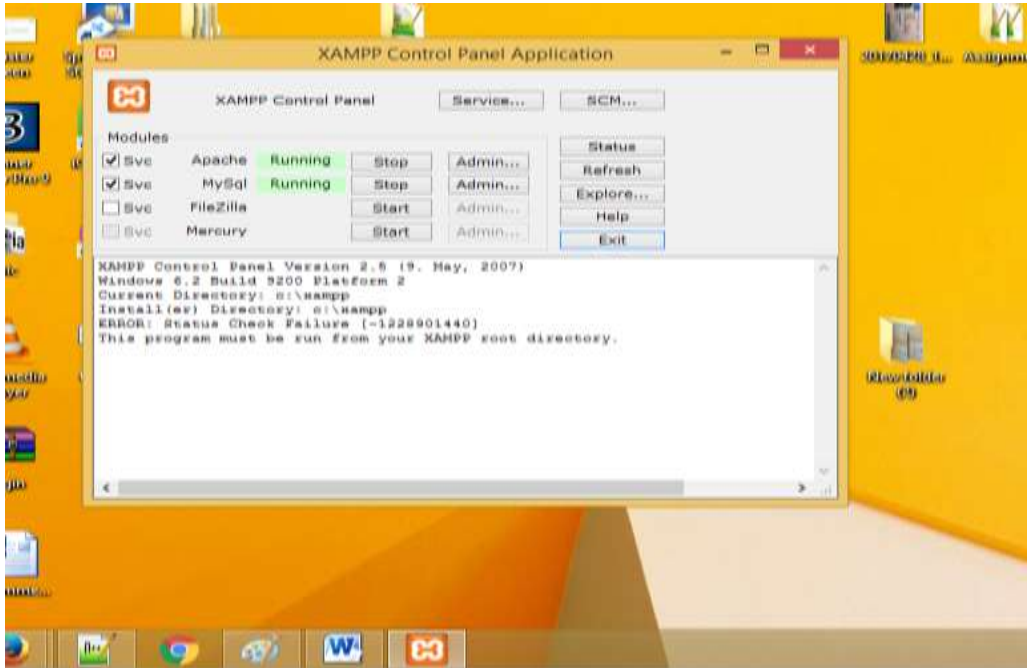
Everything needed is to set up a web server – server application (Apache), database (MySQL), and scripting language (PHP) – is included in a simple extractable file. XAMPP is also cross-platform, which means it works equally well on Linux, Mac and Windows. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server deploying is easy. This server can contain multiple databases and it runs Apache scripts, and the PHP Myadmin control panel. (Mikoluk 2013).



GRAPH 10 XAMPP SOFTWARE

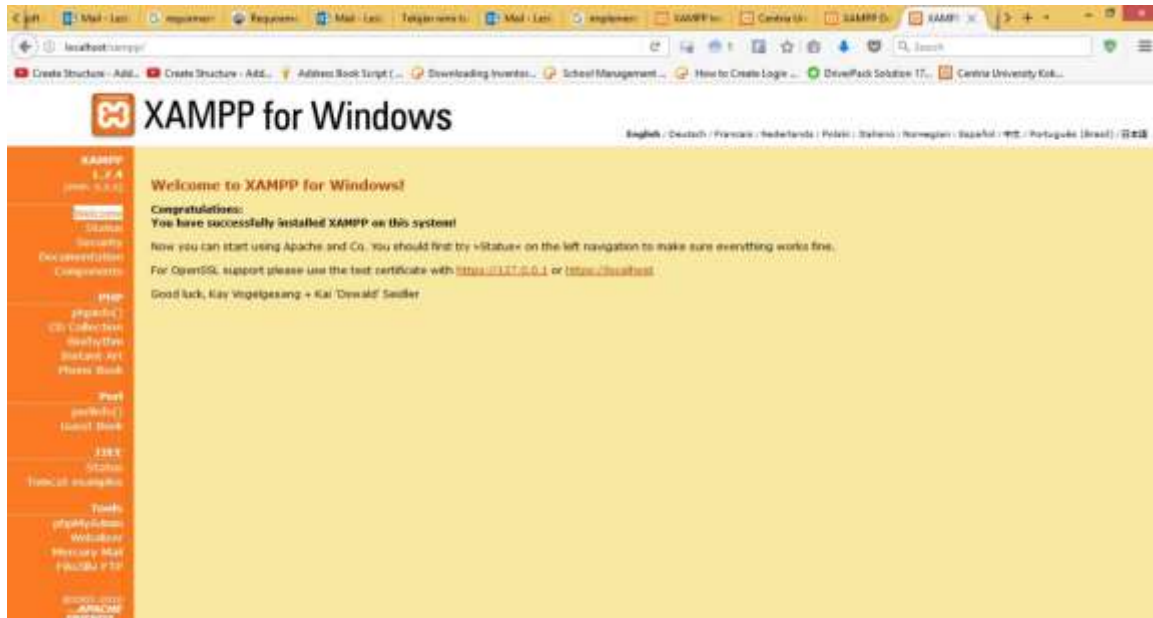
Graph 10 is the XAMPP software official website. XAMPP is free, so it can be downloaded from their official website. When opening the XAMPP official website, it will redirect to the welcome page which includes the introduction of XAMPP, the different platform versions of XAMPP, add-ons can also be used on XAMPP. The release of several different versions of XAMPP, the author chooses the versions which will be used in the project. XAMPP for Windows was used

for this database project. After the downloading and the installing of the software, the author should start to configure the XAMPP. (Mikoluk 2013).



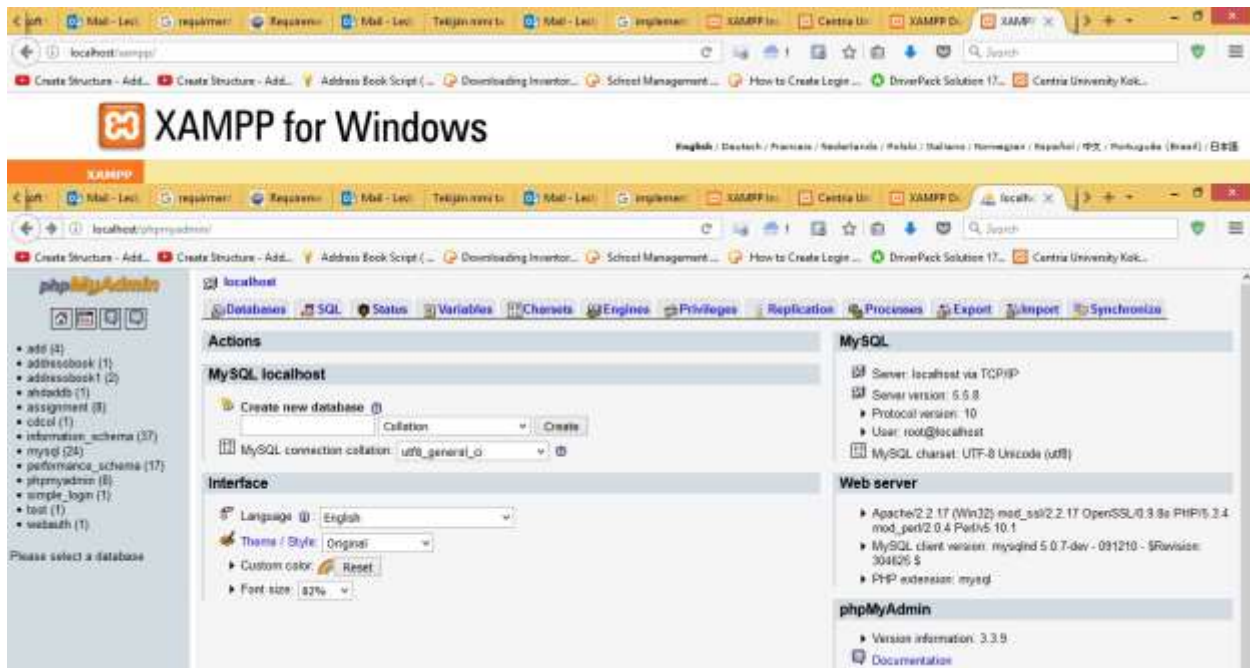
GRAPH 11 XAMPP SERVERS

Graph 11 is the interface of the XAMPP server where the start button has to be pushed to active the running of the system. On this interface, the server can turn on or off the Apache and the Mysql Scripts. Turning them on is creatin an activation link to oppend gateways for communicating with each other using the post and the get methods of communication using the PHP Scripts programing language and the SQL scripts programing language. Mikoluk 2013. Then press the “Config” button, and the configure file will be immediately pup up on the screen



GRAPH 12 IS XAMPP LOCALHOST INTERFACE

Graph 12 is XAMPP localhost interface, After the start of services, the author opens the browser at the address bar, typing in “www.localhost” or “127.0.0.1” on the address bar, the welcome screen pops up and displays XAMPP configure interface. On the left side, there are several links as grouped by categories. On the welcome page the XAMPP users guides information. This information helps the new user get to know to use it quickly and easily. (Mikoluk 2013).

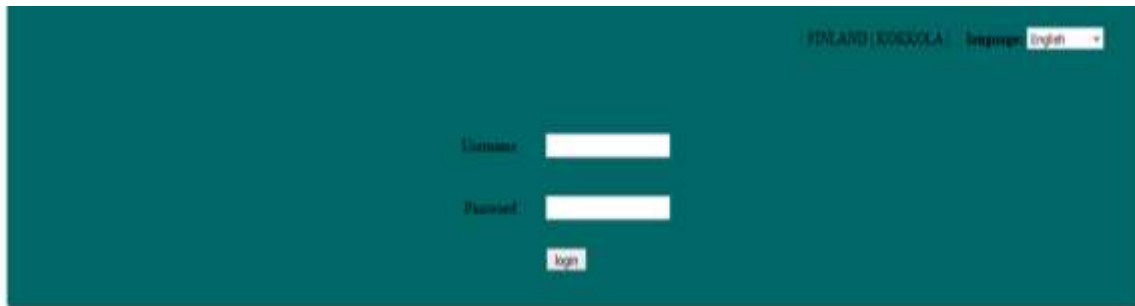


GRAPH 13 SHOWS THE PHPMYADMIN MAIN PAGE

Graph 13 is the phpMyAdmin main page. To enter on this page, there are two different ways: one is by click the “phpMyAdmin” on the XAMPP localhost interface, the other is to by typing “localhost/ phpMyAdmin” on the address bar. Once the web developer enters PHPMYAdmin application, there are several areas. The upper part is server address: localhost or “127.0.0.1”. The following part is SQL charset which defines MySQL connection collation. At this interface, databases tables can be created and normalise to fit the purpose of the project. Database projects are dynamic systems developed with recent technologies. Most agile system technologies now our days are designed to minimize risk of the development processes. The technologies used in realization of this database system are programming technologies and techniques from object oriented modeling and object oriented programming. (Nirosh 2015).

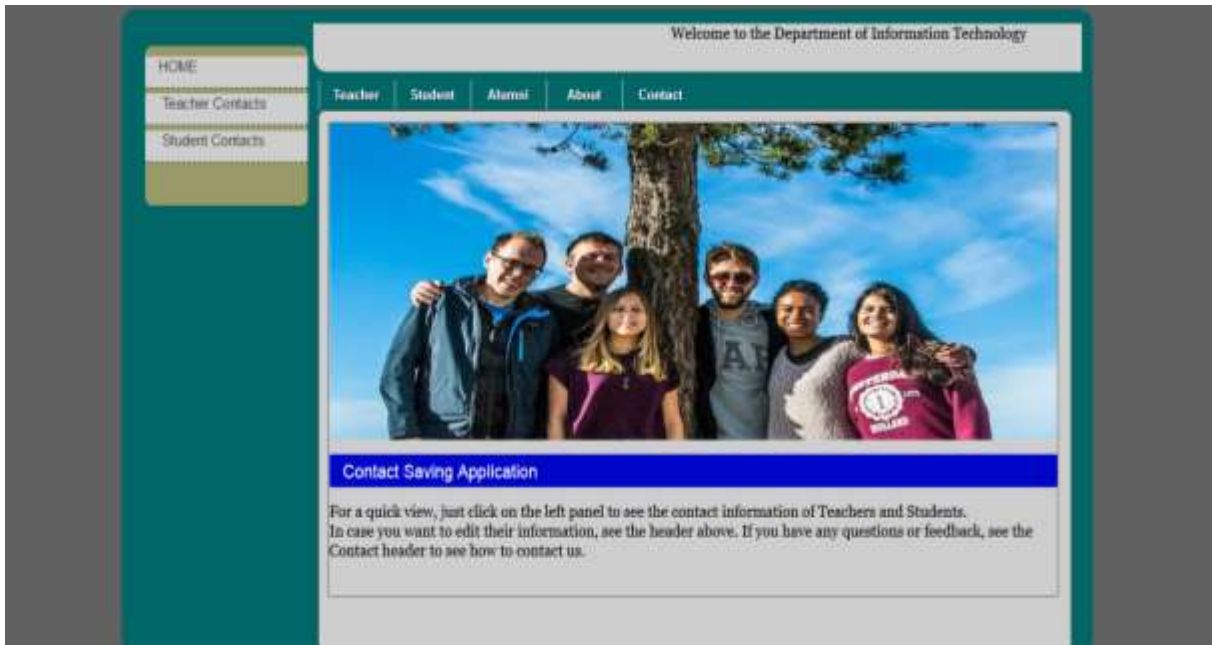
5 RESULTS

The following are screen shots of the project at different screens. This screen shots are based on the application designed from this literature. These screens shots represent different views of several modules of the system. The database, from the backend and the frontend of the project, Xampp Server the interface has been used in hosting the project and running the database of the project.



GRAPH 14. WELCOME SCREEN

The image graph 14 above is the welcome screen after typing the address of the database <http://localhost/thesisdd/index.php> which on this page which requires the user of the system to login with credentials given by the database administrator. After typing the address for example www.example.com it brings the user to this page where end users will login before access can be granted to the database welcome interface where the user can start adding information into the system or modifying system information.



GRAPH 15. LANDING PAGE

Graph 15 is the landing page of the database. This page opens to the end-user after using the login credentials given to the EndUser by the system administrator. At the login screen, authentication is required before having access to the activities of the database. In this work environment end users are able to add contact information, edit them and also update the information saved in the database for both teachers and students.

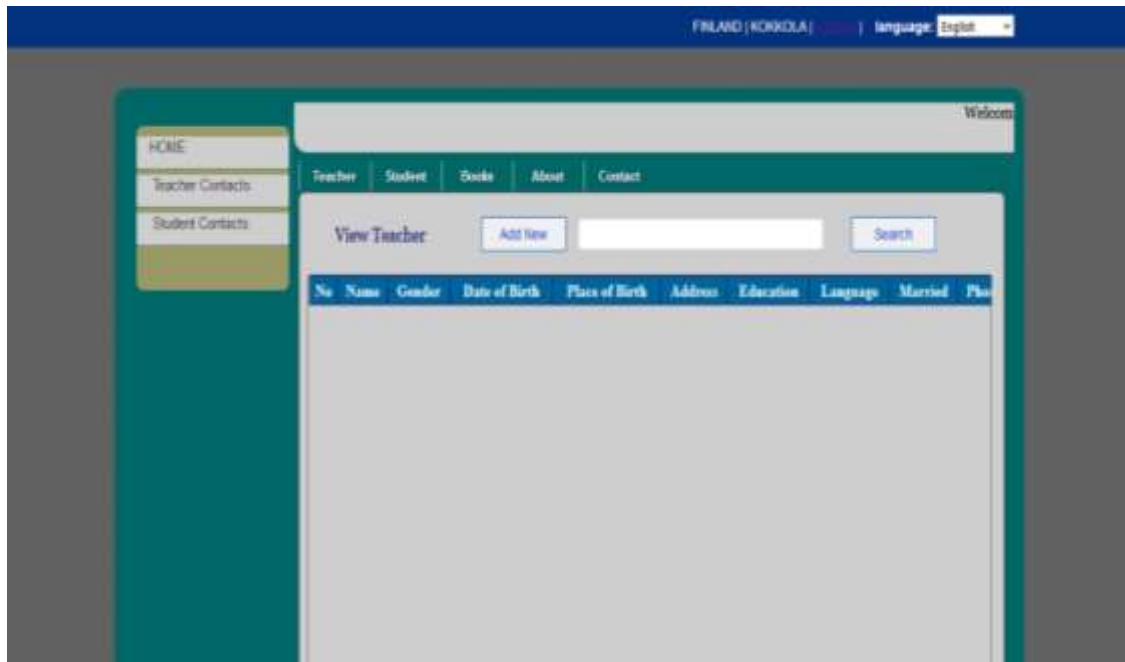
The screenshot displays a web application interface for adding a teacher. At the top, a blue header bar contains the text 'FINLAND | ROKKOLA' and a language dropdown menu set to 'English'. Below the header, a navigation bar includes links for 'Teacher', 'Student', 'Books', 'About', and 'Contact'. A sidebar on the left side of the page lists 'HOME', 'Teacher Contacts', and 'Student Contacts'. The main content area features a 'Welcome to The Department of' message and a central 'Add Teacher' form. The form is titled 'Add Teacher' and includes a 'View Teacher' button in the top right corner. The form fields are organized into two columns:

- Left Column:**
 - First Name: Text input field
 - Last Name: Text input field
 - Gender: Radio buttons for * Male and Female
 - Date Of Birth: Three dropdown menus for Year, Month, and Date
 - Place Of Birth: Text input field
 - Address: Text input field
- Right Column:**
 - Education: Dropdown menu with '--- Select Education ---' as the placeholder
 - Language: Text input field
 - Married: Radio buttons for * Yes and No
 - Phone: Text input field
 - E-mail: Text input field
 - Note: Text input field

At the bottom of the form, there are two buttons: 'Add' and 'Cancel'.

GRAPH 16 ADD TEACHERS CONTACT

Graph 16 is the add teachers contact page. This page contains the fields which system users have to fill the information about the Teacher and add them to the database by clicking on the add button. This page also included with the view contact button. These fields are common fields and the basic fields which all Teachers must have them initially.



GRAPH 17 VIEW TEACHERS CONTACT

Graph 17 is the page after the Teacher contact information has been registered into the system. The system user can see all Teacher information which has been saved into the database. These pages also have the search field where teachers information can be used to find from a large database. The search term can be any name of the teacher, either first or last names.

The screenshot shows a web application interface for adding a student contact. The page has a dark blue header with the text "FINLAND | KOKKOLA" and a language dropdown menu set to "English". A "Welcome" message is visible in the top right corner. The main content area is divided into a left sidebar and a central form. The sidebar contains links for "HOME", "Teacher Contacts", and "Student Contacts". The central form is titled "Add Student" and includes a "View_Student" button. The form fields are: First Name, Last Name, Phone, E-mail, Gender (with radio buttons for Male and Female), Date Of Birth (with dropdowns for Year, Month, and Day), Student Number, and Address. There are "Add" and "Cancel" buttons at the bottom of the form.

GRAPH 18 ADD STUDENT CONTACT

Graph 18 above is the page that has the fields where system users have to fill the information about the student. These fields are common fields and the basic fields which all students must have them initially. After filling them the add button is clicked to save them into the database. This page contains the view contact button which is a quick link to the view contact page.

No	Name	Gender	Date of Birth	Student Number	Address	Phone	E-mail
1	lesly shu	Male	1983-01-01	bofit	raavelentie 34 445	125456223	aggdf@gmail.com
2	lesly jdbhw	Male	2002-01-19	loggd	lkcskdhck4	366477364	aghdg@jdbhgd.com
3	ljsdas adasd	Male	0000-00-00	345677	cxzxcdfsdf	14578888	hdjkad@gmail.com

GRAPH 19 VIEW STUDENT CONTACT

Graph 19 is the page after the student contact information has been inserted into the database system, the system user can see all student information which has been saved into the database. This page also contains the search field where information can be searched using the search criteria using the students first or last name.

5.1 Testing the Database

Once the design of the database is complete, the database administrator has to test to know the functional requirements of the database will analyses system to know if the codes of the project are correct. Testing is always carried out with two parties involved during the process. The team which designed the database and the enduser of the system. The roles are different at the testing level. The designing team gives the system to the end-user and they test it if they encounter any bugs or errors from the system. The following are tested from the system.

TABLE 1 DATABASE TASK TESTING (Arshad. 2016)

Code test	This test is carried out to make sure all HTML, CSS, javascripts, PHP, SQL codes were coded correctly.
Design test	This test is to ensure that all pages and links to other pages are working correctly.
Page weight test	This test is to determine the capacity of each page.
Performance test	This test is to determine the running time of query results.
Security test	This test is to ensure that the system is well secured from hackers.
Browser test	This test is to test the smooth running on any type of browser.

Table 1 shows the test category of testing the database system. The left side is the name of test names, and the right side is the importance of the test to be carried out. From the table the author can understand all the entire test is carried out, if there is no problem on all database web programming languages used, all of the modular functions are working correctly.

5.2 Improvement of Future Development

For further studies, the author of the database should use different methods and technique in the to construction of future database projects to learn more about databases since this project has been limited to some basic web programing languages but not all used. The method the author has used for this project is the most common and simple basic languages of web base projects. There are also new tools and software which can be used for the building of more dynamic systems. Depending on different situations, the database admin should choose the most suitable methods for future projects.

6 CONCLUSION

In conclusion, databases are far more efficient mechanisms to store and organize data than spreadsheets. It allows for a centralized facility that can easily be modified and quickly shared among multiple users. Having a web based front end removes the requirement of users having to understand and use a database directly, and allows users to connect from anywhere with an internet connection and a basic web browser. It also allows the possibility of queries to obtain information for various surveys. Due to the number of users reading and modifying students and teacher's data in the school, it is an ideal use for such a system.

This database application has been designed with the latest programming methods and techniques and hosted on a Xampp server which runs PHP and MYSQL database server that are used in the organizations and hosting and use their databases on it. This Xampp server has no limitations of numbers of databases or tables it can hold. Databases use the combination of the most common web-technology programming languages such as PHP, HTML5, CSS, SQL, and java script to build and style this project. This project has been realized with most fundamental web programming languages of building applications which uses the web interface. The databases of this system collect data from several tables to a central point of storage, which are easily queried and modified to suit the purpose of the database. The queried data can be shared among members of the organization which need the information through emails, links, and also reports can be printed. Creating this software a browser-based technology makes it easy for users to use it anywhere they can find internet and also meets the demands of the technology of today.

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