



# **Students' Uniform Voucher Management System**

**A dissertation submitted for the Degree of  
Master of Information Technology**

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## Declaration

The thesis is my original work and has not been submitted previously for a degree at this or any other university/institute.

To the best of my knowledge it does not contain any material published or written by another person, except as acknowledged in the text.

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This is to certify that this thesis is based on the work of Mr. M A M Anees Under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

Certified by:

Supervisor Name: Mr. G K A Dias

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Signature:

Date:

## **Abstract**

The students' uniform voucher delivery process in Sri Lanka is currently doing by a traditional method by filling of forms and kept the records by written documents instead of using a modern technology by an inefficient way. The records cannot to be re used in future.

The system facilitates to issue and redeem uniform vouchers. The voucher issue part will maintain voucher records and deliver vouchers to students redeem part redeem maintain shop records and redeem date. Tracking the voucher delivery provides who got the particular voucher and where the voucher redeemed. The location services facilitate to identify the shop location and plot the shop location on google map. The generation of reports are to generate report as users wanted.

The project was implemented using sublime text 3 and WAMP server. Coding done by using PHP as a server-side scripting language and MYSQL used for database to store records. In addition, [www.draw.io](http://www.draw.io) was used to draw the UML diagrams shown in this dissertation. Bootstrap is used for designing of interface in order to provide responsive interfaces for users.

Student can find the authorized shops easily. The developed system will solve some problems such as digitizing the delivery, consume time, reduce the works and reduce the paper works. The developed system will help for schools for voucher delivery process and reduce overhead works of our school teachers. The system will be benefited not only for school teachers but also for students in order to search the nearest and trusted shops.

## **Acknowledgement**

I would like to express my special thanks of gratitude to my supervisor Mr. G. K. A. Dias Senior Lecturer University of Colombo School of computing who guide me and provide valuable advices to complete my final year project successfully.

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## **List of Abbreviations**

API: Application Programming Interface

GPS: Global Positioning System

iOS: iPhone operating system

PC: Personal Computers

SUVMS: Students' Uniform Voucher Management System

# Chapter 1 Introduction

## 1.1 Introduction

The Ministry of Education of Sri Lanka has introduced to provide cash vouchers instead of uniform materials for school children from last year under many categories according to the consideration of present market values. Students can collect vouchers from their schools and submit to any registered shops they like and buy uniform materials.

Shop keeper provide invoice to student/parent and student/parent submit invoices from school. The principal has to submit all invoices, remaining vouchers, and reports to Zonal education office. Shop owners have to submit all vouchers and report to zonal education office in order to collect his money/cheque.

Through this method, it has been possible to save a lot of expenditure incurred for transport, storing, fuel, management and other costs during the past years. The monopoly of few traders also has been removed through this method. Further expressing his ideas, the minister stated that when nearly 4.3 million school children throughout the island go to the market with 2450 million rupees, the business of local textile merchants will also become successful. And also, there will be a good competition among the traders to provide good quality material to the students, the minister added. The minister also emphasized that the aim of the government is to save the funds of people without any corruption by providing vouchers instead of giving uniform material. [1]

Students' Uniform Vouchers Management System has detailed online delivery system and records are maintained unlike traditional method like filling forms and submit forms by hand. The process of the delivery is consuming more valuable time of teachers and student/parent and also repeating the form filling year by year from the beginning. The student/parent cannot easily find the nearest authorized shops to get uniform materials Further, it is difficult to track the delivery. The processes of the voucher delivery, uniform material delivery in the real world is illustrated in "Figure 1.1". The figure explains Zonal education office, shops schools and students are involved in voucher delivery.

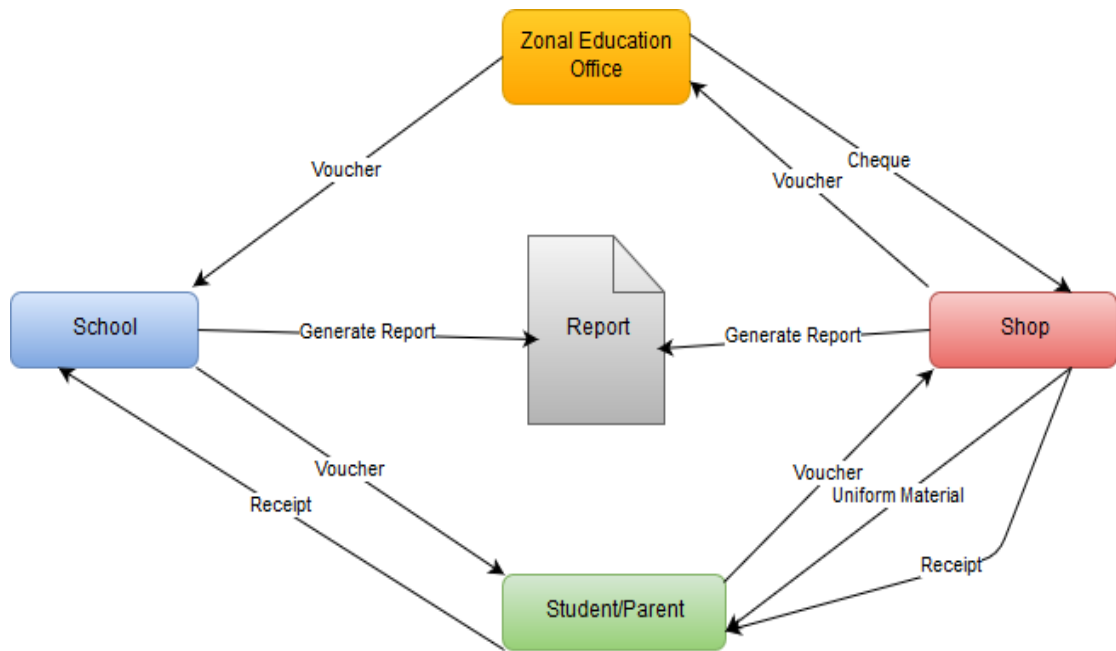


Figure 1.1 Voucher Delivery Process

## 1.2 Motivation

The motivation arises to develop the system because, there are so many form to fill among uniform delivery at schools by teachers and the process iterate every delivery of uniform but there are no any solutions implemented to minimize the workload.

The identification of authorized shops will be a difficult task for students and parents. The oral method like ask someone to find the place is still lasting now and usage of digital devices are not to find the correct location.

## 1.3 Aims and Objectives

- The main objective of the system is a provide detailed system to deliver uniforms to student that will facilitate to zonal level officers, school staffs, shop owners and students/parents to use easily and provide satisfactory to all users of the system.
- To reduces unwanted and repetitive form fillings and paper wastages. And reduce Wasting of time.

- To provide risk free of buying uniform materials to student/parent by recommended by zonal office.
- To track and monitor the voucher delivery and voucher redeems.
- To make calculation and summarization part easier and free from error.
- To reuse records for every year.

## **1.4 Scope**

A web based system need to be developed to deliver uniforms which has two major parts namely voucher delivery and uniform material delivery. The system interacts with zonal office users, school users, shop users and parent/student.

The users of the system such as zonal office users, school users, and shop users can sign up to the system. School user requests and shop user requests reviewed by zonal office user and provide login access by accept or not accept. Accepted shop users and school users can only login to the system. The zonal office users act as admin users.

The uses required to create their profile after login to the system. School users create their profile by selecting their school created by zonal office users. Shop users can create their profile by plotting their locations on Google map.

School users can manage student details by add, delete, and modify. School users select the student and enter voucher details and handover vouchers to student. The system mark whether voucher delivered to particular student or not. The system provides student detail report and voucher delivery status report.

Shopkeepers can enter the system and search voucher number and deliver particular uniform to student and marks the material delivery as delivered. Shopkeepers can update the details about their shop details. Shopkeeper can generate reports that he wants to submit to zonal education office.

The parent/student can search the nearest shop to get uniform material in order to find authorized shops. The system provides location text address and Google map location. Furthermore, parent/student do not want login privileges in order to access the system.

## **1.5 Structure of Dissertation**

The dissertation contains six main chapters and provides overall information of the Students' Uniform Voucher Management System. All the chapters are focused on the work carried during every stages of the system. Every chapters consists of required details in order to explain briefly about the system with the help of the relevant figures, reports and graphs. This document is prepared not only to facilitate technical users but also for non-technical users.

The chapter 1 introduce about the system in order to answer the questions such as why this system developed, to whom is the system developed, and what the benefits are by using the system.

The chapter 2 introduces and compare the system with similar projects done by different people and groups.

The chapter 3 consists of techniques used to gather requirements and functional and non-functional requirements which were used to develop and design the system. Furthermore, the chapter explains about the structured methodological approaches and tools and techniques used for the system design. Use case diagrams and Graphical user interfaces are included in this chapter.

The chapter 4 explains about implementation tools and techniques used to develop the system.

The chapter 5 explains about how the system was tested using simple data and the outcomes. Test plan, test cases and test results are included.

The chapter 6 consists of critical evaluation of the completed project. The future work consists how could expand the system in future and lesson learned part consist of what are the things learnt during the development of the system.

## Chapter 2 Background

### 2.1 Introduction

There is no any system found like Students' Uniform Vouchers Management System in and in Sri Lanka Students' Uniform Vouchers Management System is the pioneer system and the voucher system was introduced on last year in our country. The Ministry of Education in Guyana has the uniform voucher delivery but I did not find the proper system for uniform voucher management in that country. The sample voucher image is given in "Figure 2.1" [2]



*Figure 2.1 Uniform voucher in Guyana*

### 2.1 Review of similar systems

The myPOS software solutions company has developed a system is myPOS. myPOS is the point of sales solution, which gives you a convenient way of checking out customers and of recording sales whilst keeping record of the store inventory, order processing, printing out receipts, carrying out promotions, tracking customers, managing sales assistants' performances, etc. The system eases the flow at checkout terminals, while recording all the information that can help you make better business decisions.

The system has many modules but according to related my project this system has myVouchers module. The system generates gift vouchers that vouchers able to print, sell and redeem through their system. myPOS – myVouchers module validates gift voucher number, sold status, voucher expiry status, redeemed status and many more conditions at a single key press or a single scan. [3]

When compare to the above system with students' uniform vouchers management system is not generates vouchers but the printed vouchers arrive from zonal office. These vouchers are only for students and only for uniform materials but the above system generates vouchers for any product and for anyone can use but not only for particular person. The vouchers from myPos are redeemable from only from the particular shop but this system allows to redeem from any authorized shops. The above system has scanning facility but this system has no such facility. The scanning process identifies the voucher details.

NOLIMIT Gift Vouchers are the ideal gifts for any season or occasion for your family and friends. When you give NOLIMIT Gift Vouchers, the lucky recipients can choose whatever they want at our outlets! Further enjoy Discounts on Bulk Purchases of Gift Vouchers.

The NOLIMIT provides gift vouchers which can be buy with any printed vouchers or purchase vouchers via mobile or purchase vouchers via website. In this case NOLIMIT sell vouchers in printed format and e voucher format. The vouchers can be redeemable at any NOLIMIT branch to purchase dresses. [4]

According to the students' uniform voucher management system only deals with students and only for school uniforms but NOLIMIT voucher system for any humans. The location of NOLIMIT branch can be found in Google map like the students' uniform voucher management system.



## Chapter 3 Analysis and Design

### 3.1 Introduction

The most important part of the project is analysis and design to develop a system. This phase will ensure that the requirements are identified and may be subjected to change during the development time. The requirements are identified by using observations and interview methods. The end of this chapter it should be clear that, what the system must do.

### 3.2 Techniques used to gather requirements

Requirement gathering is an important of the system there are many techniques to identify requirements and in this project the interview method and the observation methods are used to gather the requirements.

The requirements are gathered by interviewing the particular persons such as the teacher who involving to deliver vouchers to students' and the person who supply vouchers to schools and the store keepers. The school teacher who is responsible for voucher delivery explained the process of the voucher delivery, what are the information to be filled to the form and why the parents' details to be included to the delivery process. The person who supply vouchers to schools who explained about the voucher delivery the record keeping and return voucher process. The store keeper explained about that, they deliver particular uniform materials to students according to the voucher value and how they handover vouchers and get money.

Participated at BT/PD/ Kovilporativu Vivekanantha Maha Vidyalaya voucher delivery event to observe to gather requirements by the observation method. In this method I learned how the vouchers delivered to the students and what the details are.

### **3.3 Functional Requirements**

Functional requirements of the system identified through the Analysis phrase are listed below

- Zonal office users able to allow or deny school user and shop user login.
- System should able to manage school details by zonal office users.
- Zonal office users able to manage profile.
- School users able to manage profile after approval.
- Shop users able to manage profile after approval.
- System should able to plot location on google map by shop users.
- System should able to find shop location by students.
- System should able to manage student details by school users
- System should able to insert uniform voucher details when deliver the uniform vouchers.
- System should able to search voucher number by shop users to provide uniform materials and add date of delivery and mark as uniform material taken by particular student.
- System should able to differentiate voucher delivered students and voucher undelivered students.
- System should able to generate reports by school users.
- System should able to generate reports by shop users.
- System should able to send students feedbacks.
- System should able to send school user feedbacks.
- System should able to show school user feedbacks and student feedbacks to zonal office users.

### **3.4 Non-Functional Requirements**

The Following Non-Functional Requirements of the proposed system were discovered.

- The system should be easy to use.
- The system should response at the time
- System should provide specific information to specific user.

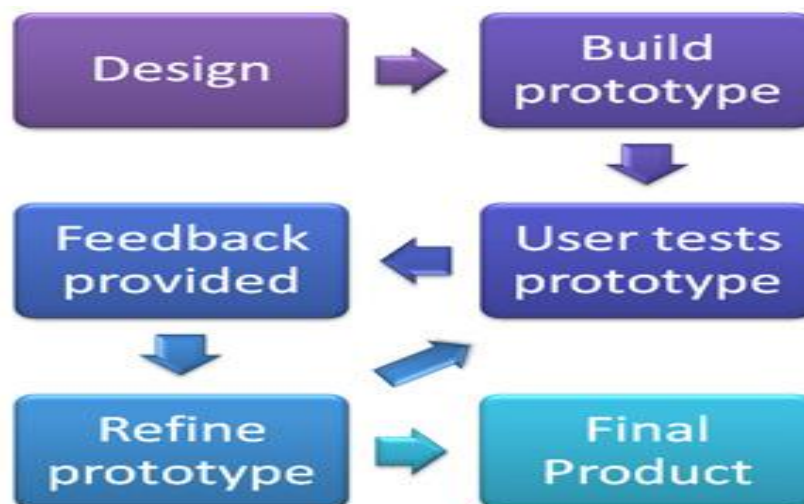
- The system should not fail.
- Right information is available to all users of the system
- The system should be reliable

### 3.5 Design

During this phase the detailed specification for the proposed software is created. The objects discovered during the analysis phase are refined, and the database is modeled. UML diagrams such as class diagrams, activity diagrams and sequence diagrams are used for this purpose. User interfaces are also designed.

#### 3.5.1 Adopted Methodology

The system has to be developed using evolutionary prototyping because, this system identified requirements but cannot say the all requirements are clearly fully captured and requirements may be increased so initially the system developed as a prototype an improving the prototype by adding new requirement is found until the system fulfills. The “figure 3.1” explains about evolutionary prototyping



*Figure 3.1 Evolutionary Prototyping*

On the other hand, the evolutionary not used because throw-away prototyping a small part of the system is developed and then given to the end user to try out and evaluate. The user provides feedback which can quickly be incorporated into the development of the main system. The prototype is then discarded or thrown away. This is very different to the evolutionary approach. The objective of throw-away prototyping is to ensure that the system requirements are validated and that they are clearly understood.

The throw-away prototype is NOT considered part of the final system. It is simply there to aid understanding and reduce the risk of poorly defined requirements. The full system is being developed alongside the prototypes and incorporates the changes needed.

The waterfall model is not used because, very less customer interaction is involved during the development of the product. Once the product is ready then only it can be demoed to the end users. Once the product is developed and if any failure occurs then the cost of fixing such issues are very high, because we need to update everywhere from document till the logic.

### **3.4.2 Use case Diagram**

Usually use case diagrams are referred to as behavior diagrams used to describe a set of actions (use cases) that some system or systems (subject) should or can perform in collaboration with one or more external users of the system (actors).

The actors and use cases are identified in this phase. The actors are administrator (Zonal office User), school admin, shopkeeper and student/parent. The use cases explain the relationships between the actors. The use cases are identified according to every actor wise. The Figure 3.2 Use Case Diagram illustrates use cases.



Figure 3.2 Use Case Diagram

### 3.4.3 Use Case Narratives

Following use case narratives explained how the use case, in essence, describes the interaction between an actor (and category of users) to achieve a goal of observable value. The following narratives provide more elements than a simple sequence of user to system interactions. The Table 3.1 explains Use Case Narrative for Signup and user login, The Table 3.2 explains Use case narrative for Manage profile and The Table 3.3 explains Maintain student details, Issue voucher, and Redeem voucher.

<b>Use Case:</b>	<b>Signup and User Login</b>
Iteration	1 last modification: 23 Feb 2018
Primary Actor	Admin users, School users, Shop users, Students
Goal in context	To access the functional of website when you enter URL
Precondition	System must be fully configured
Trigger	The user need to be a member of the uniform voucher management system.
Scenario	<ol style="list-style-type: none"> <li>1. The user enters website</li> <li>2. The user should click sign up button</li> <li>3. User fills in their username, password and in each box to run registration process.</li> <li>4. The process will run and display "Wait for Administrator Approval".</li> <li>5. After approve by administrator user login to the system.</li> <li>6. User can now to log-in the function and access by using registered account.</li> </ol>
Exception	<ol style="list-style-type: none"> <li>1. The shop user and school user cannot access this functional directly without admin approval</li> <li>2. Incorrect username and password, the system will prompt user to re-log in.</li> </ol>
Priority	Important priority, any user can be able to access.
When available	First increment.
Frequency of use	During voucher delivery period
Channel to actors	Web browser with internet connection
Secondary actors	
Channel to secondary actors	
Open Issues	

*Table 3.1 Use case Narrative for Signup and user login*

Use Case	Manage Profile
Iteration	1 last modification: 23 Feb 2018
Primary Actor	Admin users, School users, and Shop users
Goal in context	Every user should fill in all the profile fields completely for keeping benefit to users.
Precondition	Correct username and password Approved user by admin
Trigger	The user need to be a member of the uniform voucher management system.
Scenario	<ol style="list-style-type: none"> <li>1. The system will be displayed field to fill in their personal information. First name, Last Name, Role, School information for school users and shop information for shopkeepers</li> <li>2. Users fill in the fields</li> <li>3. Click Create profile</li> </ol>
Exception	<ol style="list-style-type: none"> <li>1. Incorrect username and password, the system will prompt user to re-log in.</li> <li>2. For school users can only add school information if the administrator adds school details</li> </ol>
Priority	
When available	
Frequency of use	Every uniform voucher delivery period
Channel to actors	Web browser with internet connection
Secondary actors	
Channel to secondary actors	
Open issues	School users can create profile for other schools

*Table 3.2 Use case narrative for Manage profile*

<b>Use Cases</b>	<b>Maintain student details, Issue voucher, Redeem voucher</b>
Iteration	1 last modification: 23 Feb 2018
Primary Actor	Students, School users, and Shop users
Goal in context	Issue voucher to student and redeem voucher from shops
Precondition	Correct username and password Approved user by admin
Trigger	The user need to be a member of the uniform voucher management system.
Scenario	<ol style="list-style-type: none"> <li>1. The system will be displayed field to add student details First name, Last Name, Grade, sex, student id</li> <li>2. Users fill all the fields</li> <li>3. Click add student</li> <li>4. Select particular student</li> <li>5. Click activate voucher</li> <li>6. Fill all voucher values such as voucher number and amount</li> <li>7. Click submit</li> <li>8. List all students. System differentiate whether voucher delivered or not.</li> <li>9. Shop user log in to the system</li> <li>10. Search voucher number</li> <li>11. And deliver uniform material with marked the system</li> <li>12. Click ok button</li> </ol>
Exception	<ol style="list-style-type: none"> <li>1. Incorrect username and password, the system will prompt user to re-log in.</li> <li>2. If work only student is added in the system</li> </ol>
Priority	
When available	
Frequency of use	Every uniform voucher delivery period
Channel to actors	Web browser with internet connection
Secondary actors	Students, Parents
Channel to secondary actors	Web browser with internet connection
Open issues	

*Table 3.3 Maintain student details, Issue voucher, and Redeem voucher*



### 3.4.4 Class Diagram

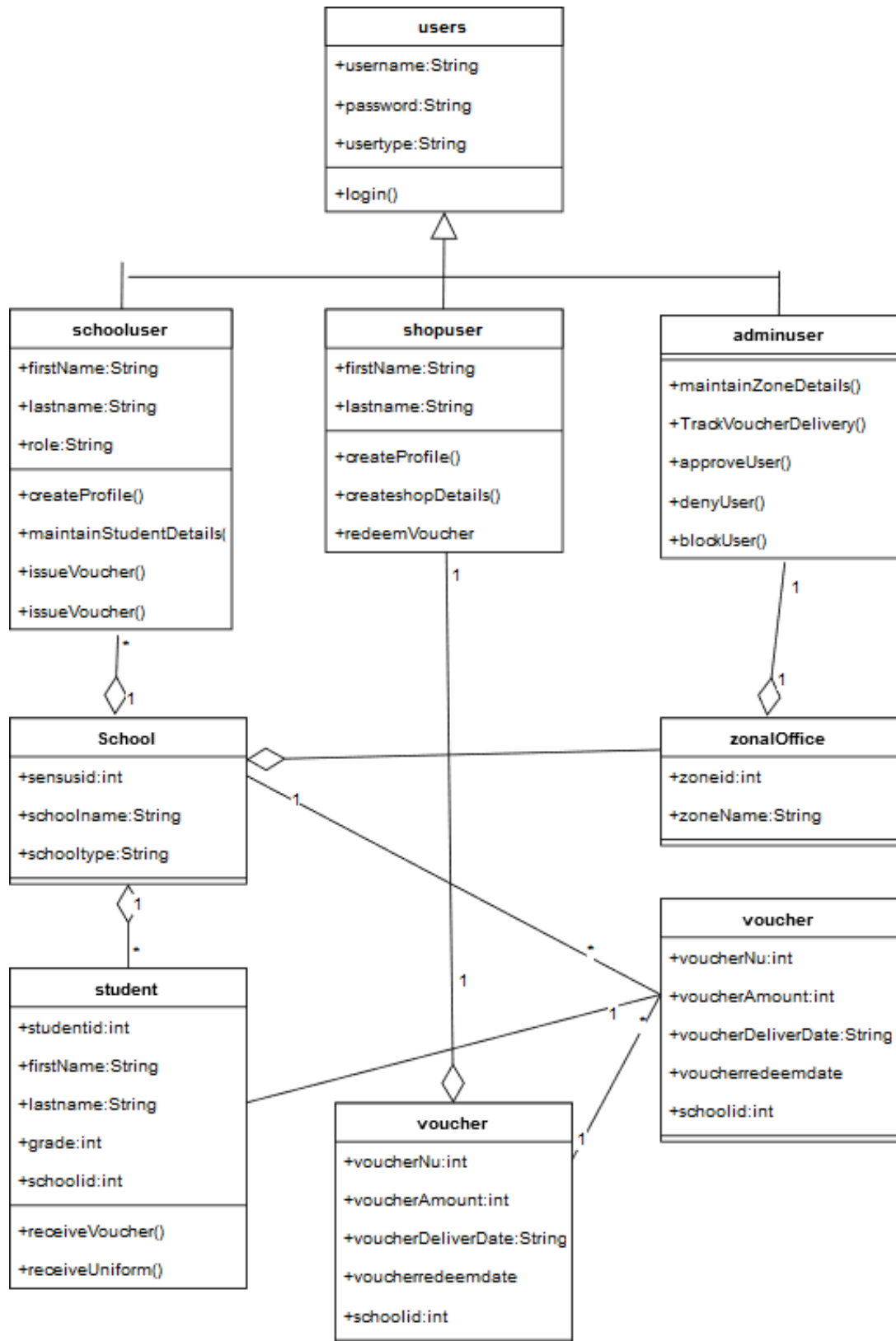


Figure 3.3 Class Diagram

### 3.4.5 ER Diagram

The Figure 3.4 illustrates the ER Diagram of the system and the Appendix- C contains sequence diagrams of the system.

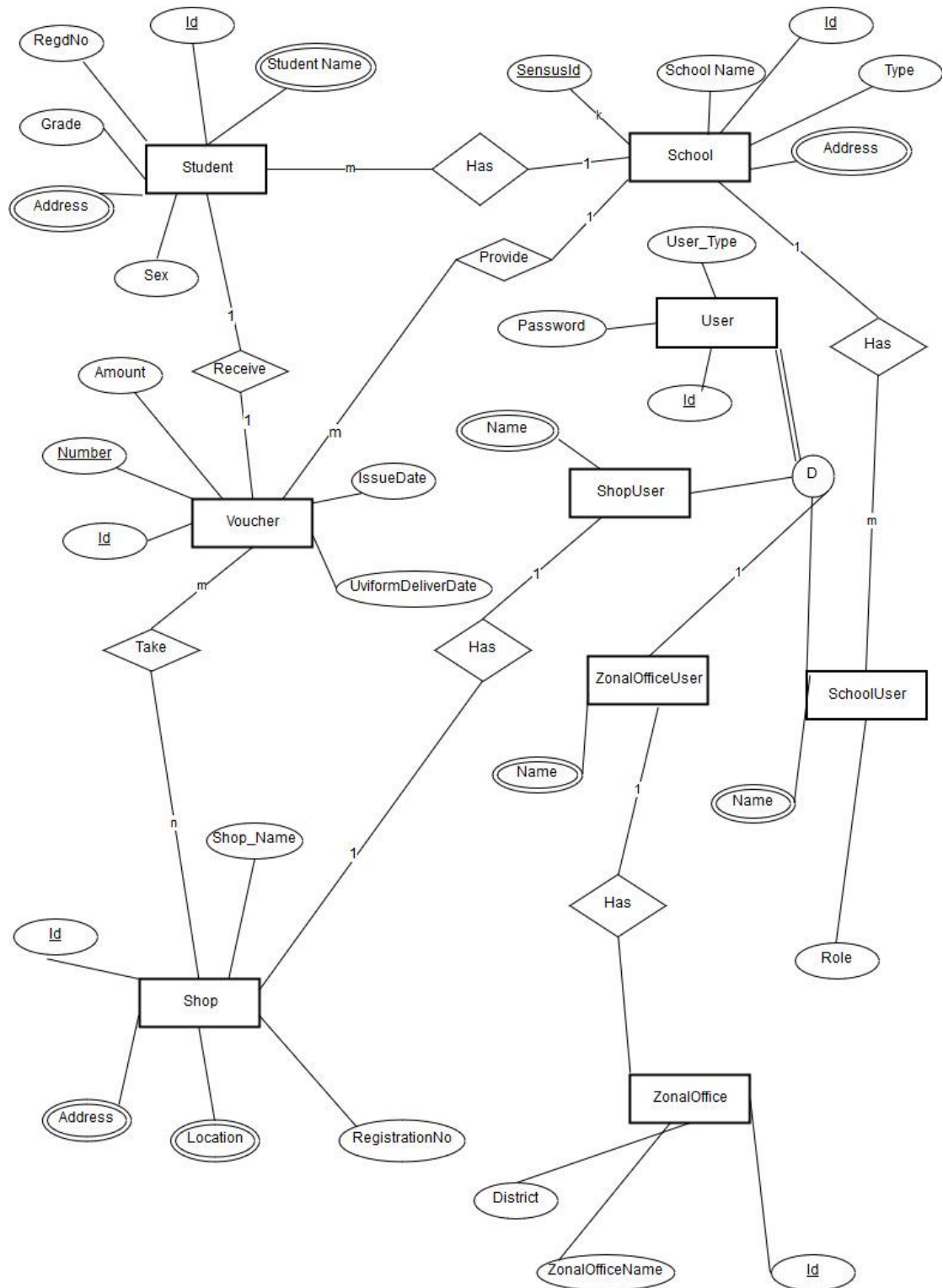


Figure 3.4 ER Diagram

### 3.4.5 ER Mapping

**Users** (Id, User Type, User Name, Password)

**ZonalOfficeUsers** (Id, ZoneId, FirstName, LastName)

**SchoolUsers** (Id, UserId, SchoolId, FirstName, LastName, Role)

**ShopUsers** (Id, UserId, ShopId, FirstName, LastName)

**Zones** (Id, ZoneName, District)

**Schools** (Id, ZoneId, Senses Id, School Name, School Type)

**Shops** (Id, RegistrationNumber, ShopName, Address, City, Telephone Number, Longitude, Latitude)

**Students** (Id, SchoolId, Registration Number, First Name, Last Name, Grade, Gender)

**Vouchers** (Id, StudentId, SchoolId, Voucher Number, Amount, VoucherIssueDate, MaterialDeliverDate)

### 3.4.5 Interface Design

This phase describes about that, how the system will appear to the user. The Bootstrap got many credits for interface design because the forms, tables, navigation bar, and etc. are designed using Bootstrap. The forms are designed to increase the usability of the user by using colors, placeholders colored buttons, colored texts, and validations. There are many interfaces to be design during the development of the system but some proposed interfaces for particular tasks are listed below. Furthermore, there would be changes in interface design during the development of the system.

The Figure 3.5 illustrates Signup User Interface and which interface designed using bootstrap. Furthermore, the interface subjected to change when development phase of the system.

- Signup form
- Login form
- Profile form

- School details maintain form
- Student details maintain form
- Voucher details form

### Sign Up

---

**First Name**

**Last Name**

**Email**

**Password**

**Confirm Password**

Select user type

Already Registered? [Login Here](#)

*Figure 3.5 Signup User Interface*

## Chapter 4 **Implementation**

### **4.1 Introduction**

This chapter includes the aspects such as selection of implementation technology such as languages, platforms frameworks, platforms etc. and the justification for the choices for each selection during the development of Students' Uniform Voucher Management System. During this phase the results of the design phase were taken and the system was built accordingly. Code modules, interfaces and database tables were created and successfully integrated.

### **4.2 Development Tools**

#### **WAMP Server**

The WAMP server has taken a major part of the development of Students' Uniform Voucher Management System. It is package and consists of Apache, MySQL, and PHP and it is an open source software. Apache HTTP Server is used run the web server within Windows. Web developer could be able to test webpages in a web browser without publishing them live on the Internet by running a local Apache web server on a windows computer.

Furthermore, WAMP Server includes MySQL and PHP. MySQL is used to handle database of the system because it is open source and high-speed database. PHP is used as a server-side scripting language that can be used to access data from the MySQL database. PHP and MySQL are used build and test a dynamic website before publishing it to a public web server.

Apache, PHP, and MySQL can be installed separately but it has more configuration process but installing WAMP server reduce configuration process and reduce errors while configuring [5].

## **Bootstrap**

The Bootstrap is used as an open source front-end framework and which contains library for designing websites and web applications. It has HTML and CSS based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions.

Bootstrap reduces and make easy for front end designs of the system by using its designing inbuilt libraries unlike design the web page by using pure HTML, CSS, and Java Script [6].

## **Google Map**

Google Map used to point, view locations in this system because It offers satellite imagery, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions (Google Traffic), and route planning for traveling by foot, car, bicycle (in beta), or public transportation. Google provides Google Maps API which, allow for the embedding of Google Maps onto web pages of outside developers, using a simple JavaScript interface or a Flash interface. And which designed to work on both mobile devices as well as desktop browser applications. The system consists of Google map to show locations to make easy for users [7].

## **4.3 Hardware and Software Requirements**

- Operating System Such as Windows, Linux, MAC OS, and etc.
- HTML 5 Supported web browser such as Opera, Firefox, Safari, and etc.
- Hardware requirement may be the above supported computer

## **4.4 Interface**

The interface consists of forms that the user interacts with the system. The inputs provided by the client are captured and sent to the base. The validation is an important thing in order to make sure the correct input was given by user validation was done on the input control in the interfaces. The validation done by using JavaScript and PHP.

Attractive interface of a software project is an important feature for users of the system. According to the above concept some screenshots of the system have been illustrated below. The registration form has labels, place holders and other attractive design under usability concepts.

There are so many interface in this system but few of the interfaces are illustrated. The “Figure 4.1 and Figure 4.2” illustrates the administrator’s user approval pages. In this page the administrator provides login access for users from schools and shops. If administrator approves the user, the user can login to the system and not approve the user could not login the system.

The “Figure 4.3” illustrates voucher delivery status report in this report we can identify whether voucher is delivered to particular student or not. Bootstrap tables and button colors used to identify the delivery.

The “Figure 4.4” illustrates voucher redeem status report in this report we can which identify that, which number of voucher is redeemed to the particular shop. Bootstrap tables used to create the report.

The “Figure 4.5” illustrates List of Shops and Locations. The location of a particular shop can be vied clearly (zoomed location) by clicking the shop name. in order to find the shops and location the user should have to login the system. This is for students and parents.

**Zonal Admin**

- Dashboard
- User Requests
- Accepted School User
- Accepted Shop User
- Create Schools
- List of Schools
- List of Shops
- Complaints
- Blocked School Users
- Blocked Shop Users

### List of Accepted School Users

#	Username	User Type	First Name	Last Name	Role	School Name	Deny User
1	mamanees@gmail.com	school	Selliah	Suthakaran	Teacher	BT / Kovilporativu Vivekanantha M V	Deny
2	school@gmail.com	school	sarath	cena	Teacher	BT / Kovilporativu Vivekanantha M V	Deny

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Figure 4.1 School user list of Admin Panel

**Zonal Admin**

- Dashboard
- User Requests
- Accepted School User
- Accepted Shop User
- Create Schools
- List of Schools
- List of Shops
- Complaints
- Blocked School Users
- Blocked Shop Users

### List of Accepted Shop Users

#	Username	User Type	First Name	Last Name	Shop Name	id	Deny User
1	myshop@gmail.com	shop	Roshan	Mahanama	Roshan Textiles	43	Reject
2	shop@gmail.com	shop	shop1	user	AAA tex	30	Reject
3	bilal@gmail.com	shop	Mohamed	Bilal	Bilal Tex	44	Reject

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Figure 4.2 Shop user list of admin panel



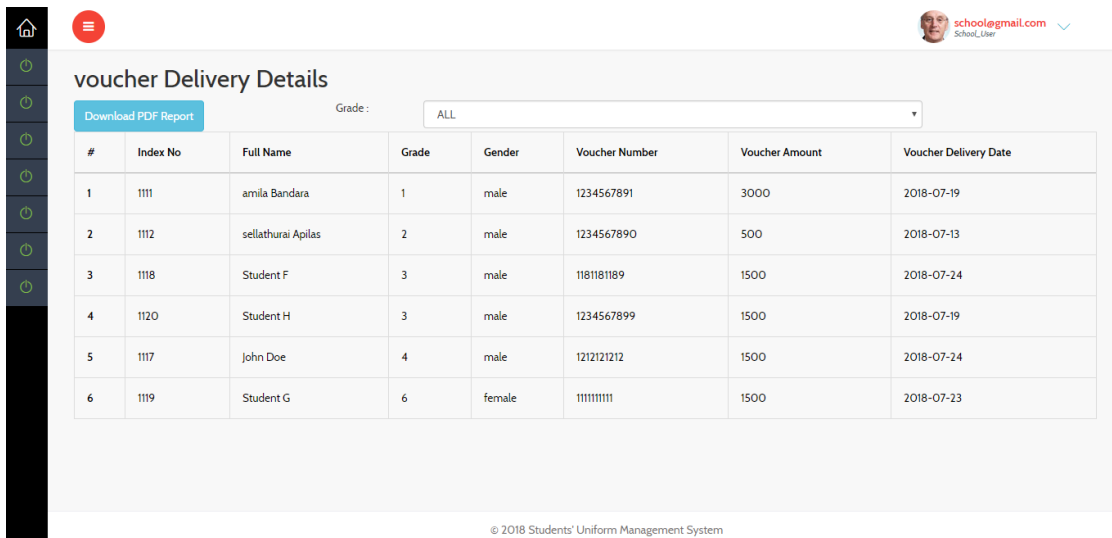


Figure 4.3 Voucher delivery status report

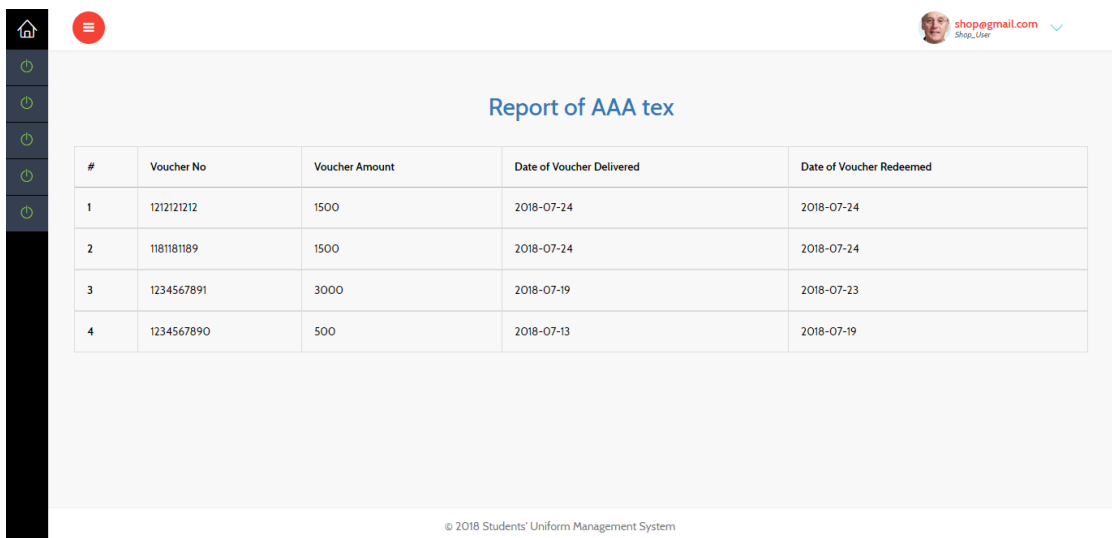


Figure 4.4 Redeemed vouchers of particular shop

Students' Uniform Voucher Management System **Home** Shop Details Complaints Sign Up Login

Map Satellite

Google

### List of Shops

#	Registration No	Shop Name	Address	City	Telephone
1	456666	Roshan Textiles	25, main st, Batticaloa	Batticaloa	7418526
2	4444	AAA tex	23, Main st	colombo	78662
3	8956	Bilal Tex	36, main st	Kaluwanchikudy	1134567893

*Figure 4.5 List of Shops and Locations*

## Chapter 5 User Evaluation and Testing

### 5.1 Introduction

Software testing is a process to find and correct any faults that the built system may. This is a vital part of the software development life cycle where the entire system is tested to make sure it accomplishes its goals. Testing is usually performed for the purposes of improving quality of the system. Validation refers to testing whether the system satisfies the requirements and verification refers to whether the system implements the specified functions properly.

### 5.2 Test Strategies

#### 5.2.1 Unit testing

The primary goal of unit testing is to take the smallest piece of testable software in the application, isolate it from the remainder of the code, and determine whether it behaves exactly as the goal of the system. Unit testing is done using either Black box testing or white box testing

#### 5.2.2 Black Box testing

The black-box testing is an approach is a testing method in which test data are derived from the specified functional requirements without regard to the final program structure. During black box testing the inner processing of the data is not tested, only the input and the output of data is tested to make sure that the output of the unit is what is expected by the input. It is also called Data Driven, Input/output driven or Requirements Based testing.

#### 5.2.3 White box testing

Contrary to black-box testing, software is viewed as a white-box, or glass-box in white-box testing, as the structure and flow of the software under test are visible to the tester.

#### **5.2.4 Integration testing**

Integration testing involves the integration of individual units and testing them to see if the specified requirement is met.

#### **5.2.5 System Testing**

After all the units of the system are put together the entire system is tested as a whole the prerequisites for System Testing are:

- All the components should have been successfully Unit Tested
- All the components should have been successfully integrated and Integration testing should be completed
- An Environment closely resembling the production environment should be created

#### **5.2.6 User acceptance Testing (Beta Testing)**

User acceptance testing is done by the intended users of the system to make sure that it meets their business needs and functions properly in the user environment. If errors are found corrections are made.

### **5.3 Test Plan**

The test plan is a document which contains objectives, test strategies, test cases and test schedules. It describes the scope, resources, approach, and schedule of test activities. It is a record of the test planning process. It identifies the following things [8].

- Others test items
- The features to be tested
- The testing tasks
- Who will do each task
- Degree of tester independence

- the test environment
- The test design techniques and entry and exit criteria to be used
- The rationale for their choice
- Any risks requiring contingency planning.
- It is a record of the test planning process.

Test Case Id	Functionality	Procedure	Expected Output	Priority
<b>Administrator (Zonal office user)</b>				
1	Signup	Provide user name and password	Successfully signup	High
2	Valid Login	Registered Username and password	Dashboard	High
3	Invalid Login	Invalid Username and password	Error Message	High
4	Create Profile	Click create profile button	Show Profile	High
5	Accept School users	Click accept button	List accepted users	High
6	Reject School users	Click reject button	List rejected users	High
7	Accept Shop users	Click accept button	List accepted users	High
8	Reject School users	Click reject button	List rejected users	High
9	Add new School	Create school button	Successfully School Created	High
10	Delete School	Delete button	Deleted message	Low
11	Update School	Update button	List of schools	Medium

*Table 5.1 Test Case for Administrator (Zonal Office Users)*

Test Case Id	Functionality	Procedure	Expected Output	Priority
<b>School Users</b>				
1	Signup	Provide user name and password	Successfully signup	High
2	Valid Login	Registered Username and password	Dashboard	High
3	Invalid Login	Invalid Username and password	Error Message	High
4	Create Profile	Click create profile button	Show Profile	High
5	Add new student	Add student button	Successfully Inserted	High
6	Delete student	Delete button	Deleted message	High
7	Update student	Update button	List of students	High
9	Issue Voucher	Click Activate voucher	Voucher Input details page	High
10	Check Voucher delivery status	Click deliver voucher button	Voucher details page	High

Table 5.2 Test Cases for School User

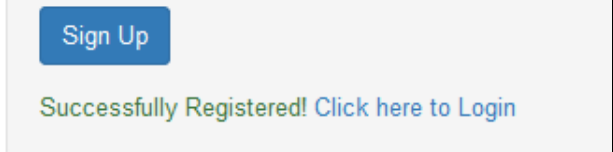
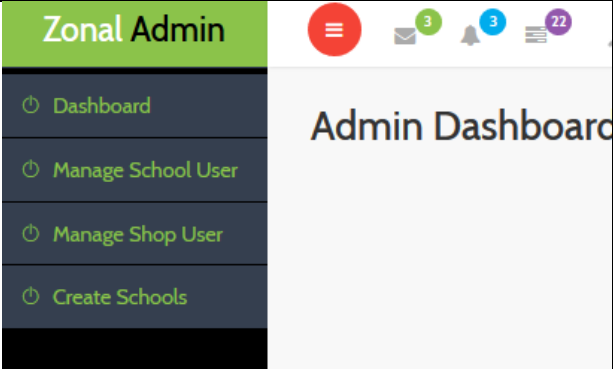
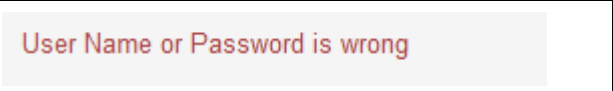
Test Case Id	Functionality	Procedure	Expected Output	Priority
<b>Shop Users</b>				
1	Signup	Provide user name and password	Successfully signup	High
2	Valid Login	Registered Username and password	Dashboard	High
3	Invalid Login	Invalid Username and password	Error Message	High
4	Create Profile	Click create profile button	Show Profile	High
5	search voucher with valid voucher number	Enter valid voucher number and	List voucher details	High

		click search button		
6	search voucher with invalid voucher number	Enter invalid voucher number and click search button	Show error message	High
7	List consumed vouchers	List	List of students	High

Table 5.3 Test Cases for Shop Users

## 5.4 Test Results

There are test results are in the following tables such as Table 5.3, Table 5.4 and Table 5.5. The important test results for important test cases are shown below.

Test Case Id	Functionality	Actual Output	Priority
<b>Administrator (Zonal office user)</b>			
1	Signup	 A screenshot showing a blue 'Sign Up' button at the top. Below it, a message reads 'Successfully Registered! Click here to Login' with a blue link.	High
2	Valid Login	 A screenshot of the 'Zonal Admin' dashboard. The header is green with 'Zonal Admin' in white. Below it is a dark sidebar with menu items: 'Dashboard', 'Manage School User', 'Manage Shop User', and 'Create Schools'. The main content area is titled 'Admin Dashboard'.	High
3	Invalid Login	 A screenshot showing a red error message: 'User Name or Password is wrong'.	High

4	Create Profile	<p>First Name : <input type="text" value="Theepan"/></p> <p>Last Name : <input type="text" value="Raza"/></p> <p>Role : <input type="text" value="Data Entry"/></p> <p><input type="button" value="Edit Records"/></p>	High
5	Reject School users	<p>school@gmail.com</p> <p>school1@gmail.com</p>	High
6	Accept School users	<p>school@gmail.com</p> <p>school1@gmail.com</p>	High
7	Reject Shop users	<p>shop@gmail.com</p> <p>abc@acc.com</p>	High
8	Accept School users	<p>shop@gmail.com</p> <p>abc@acc.com</p>	High
9	Add new School	<p>Successfully inserted</p>	High

Table 5.4 Test Results for Administrator



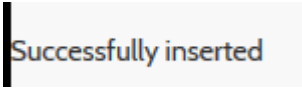
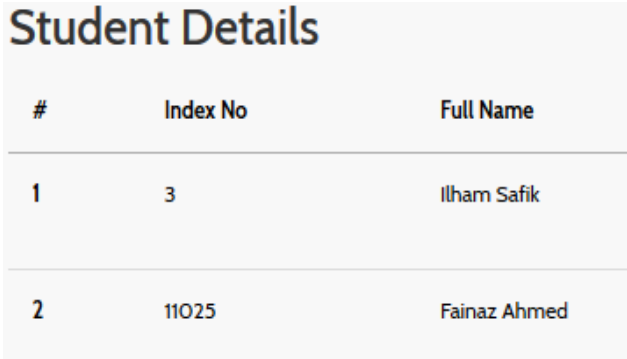
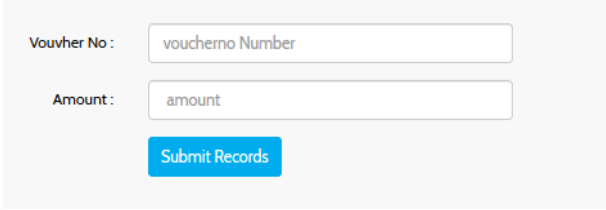
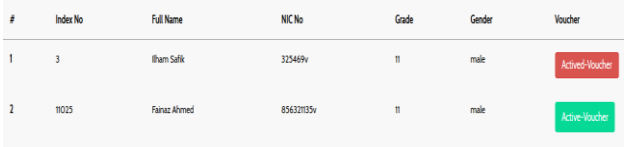
Test Case Id	Functionality	Expected Output	Priority																					
<b>School Users</b>																								
5	Add new student		High																					
6	Delete student	 <table border="1"> <thead> <tr> <th>#</th> <th>Index No</th> <th>Full Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>Ilham Safik</td> </tr> <tr> <td>2</td> <td>11025</td> <td>Fainaz Ahmed</td> </tr> </tbody> </table>	#	Index No	Full Name	1	3	Ilham Safik	2	11025	Fainaz Ahmed	High												
#	Index No		Full Name																					
1	3	Ilham Safik																						
2	11025	Fainaz Ahmed																						
7	Update student		High																					
9	Issue Voucher		High																					
10	Check Voucher delivery status	 <table border="1"> <thead> <tr> <th>#</th> <th>Index No</th> <th>Full Name</th> <th>NIC No</th> <th>Grade</th> <th>Gender</th> <th>Voucher</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>Ilham Safik</td> <td>325469v</td> <td>II</td> <td>male</td> <td>Active Voucher</td> </tr> <tr> <td>2</td> <td>11025</td> <td>Fainaz Ahmed</td> <td>85632195v</td> <td>II</td> <td>male</td> <td>Active Voucher</td> </tr> </tbody> </table>	#	Index No	Full Name	NIC No	Grade	Gender	Voucher	1	3	Ilham Safik	325469v	II	male	Active Voucher	2	11025	Fainaz Ahmed	85632195v	II	male	Active Voucher	High
#	Index No	Full Name	NIC No	Grade	Gender	Voucher																		
1	3	Ilham Safik	325469v	II	male	Active Voucher																		
2	11025	Fainaz Ahmed	85632195v	II	male	Active Voucher																		

Table 5.5 Test Results for School User

Test Case Id	Functionality	Expected Output	Priority
<b>Shop users</b>			
5	search voucher with valid voucher number		High
6	search voucher with invalid voucher number		High
7	List consumed vouchers		High

Table 5.6 Test Results for shop user

## 5.4 User Acceptance Testing

The system is tested in the client environment for acceptance testing. There are 20 users selected for this process. There are 15 teachers and 5 students were selected and some teachers are parents. The sample selected in my school environment (BT/PD/Kovilporativu Vivekanantha Maha Vidyalaya). The following graphs were produced for particular questions by user evaluation. The user evaluation form is attached in appendix E.

### 5.4.1 The interface designs are user friendly.

1 Strongly Disagree	2 Disagree	3 Average	4 Agree	5 Strongly Agree
1	2	5	10	2
5%	10%	25%	50%	10%

Table 5.7 Survey outcome for Q1

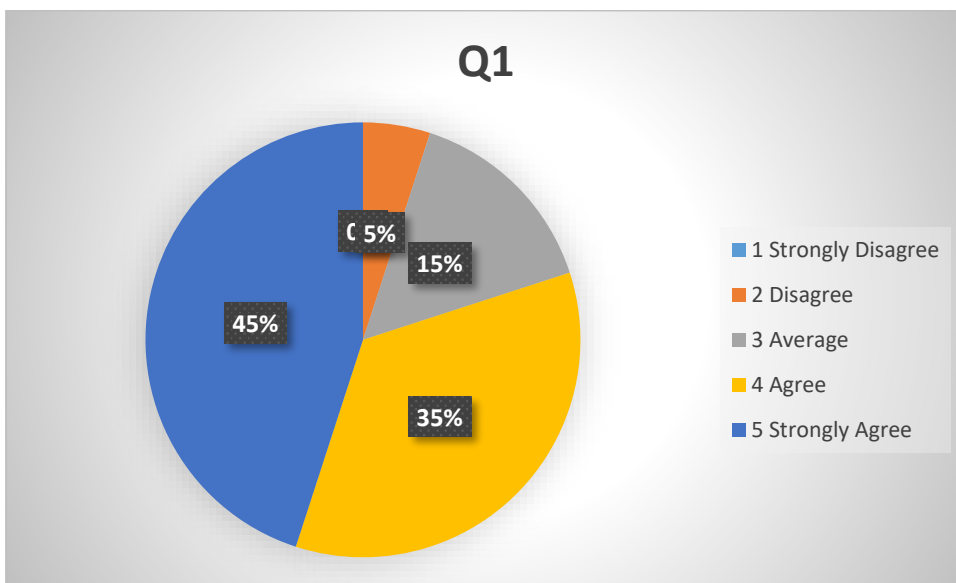


Figure 5.1 Pie Chart for Q1

The above pie chart produced for the question for the interface design is user friendly. 50% of users agreed and only 5% of users are strongly disagreed

#### 5.4.2 The system can use without the support of technician.

1 Strongly Disagree	2 Disagree	3 Average	4 Agree	5 Strongly Agree
0	1	12	7	9
%	5%	55%	35%	45%

Table 5.8 Survey outcome for Q2

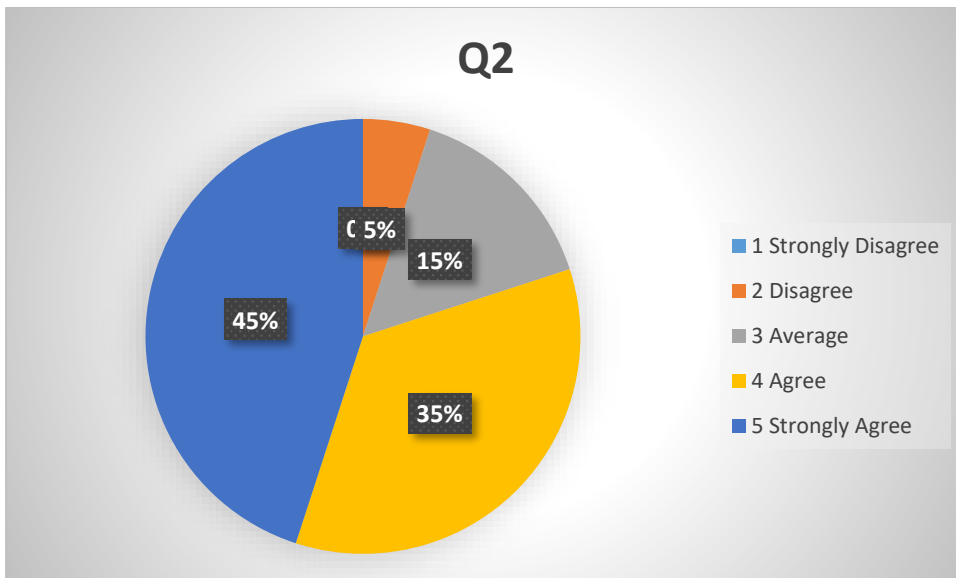


Figure 5.2 Pie Chart for Q2

According to the above graph 55% of users are agreed and no users are strongly disagreed for the question of the system can use without the support of technician.

### 5.4.3 System provides proper error messages

1 Strongly Disagree	2 Disagree	3 Average	4 Agree	5 Strongly Agree
0	2	3	11	4
0%	10%	15%	55%	20%

Table 5.9 Survey outcome for Q3

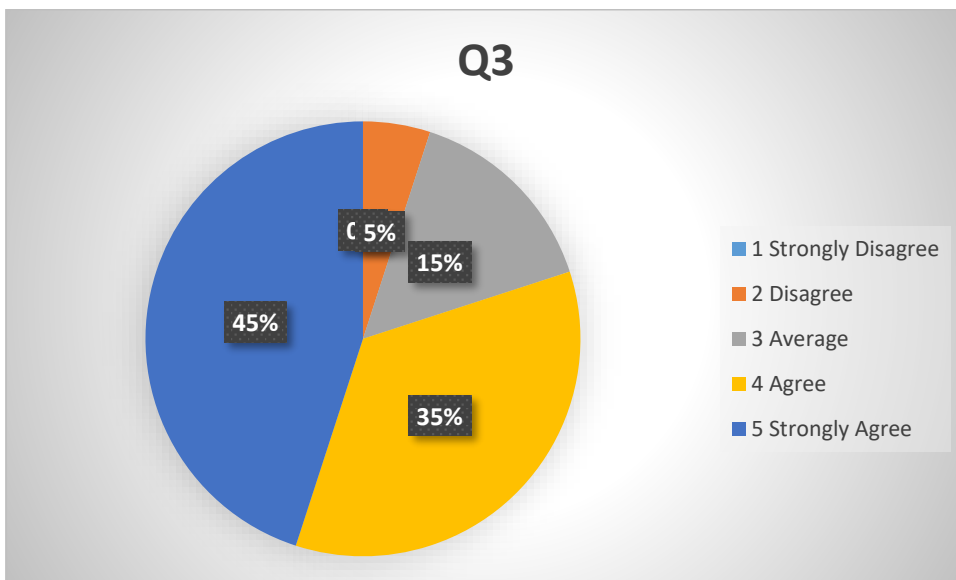


Figure 5.3 Pie Chart for Q3

According to the above graph 55% of users are agreed and 5% of users are strongly disagreed for the question of System provides proper error messages

#### 5.4.4 There are lot of consistency in this website

1 Strongly Disagree	2 Disagree	3 Average	4 Agree	5 Strongly Agree
0		13	5	2
0%	0%	65%	25%	10%

Table 5.10 Survey outcome for Q4

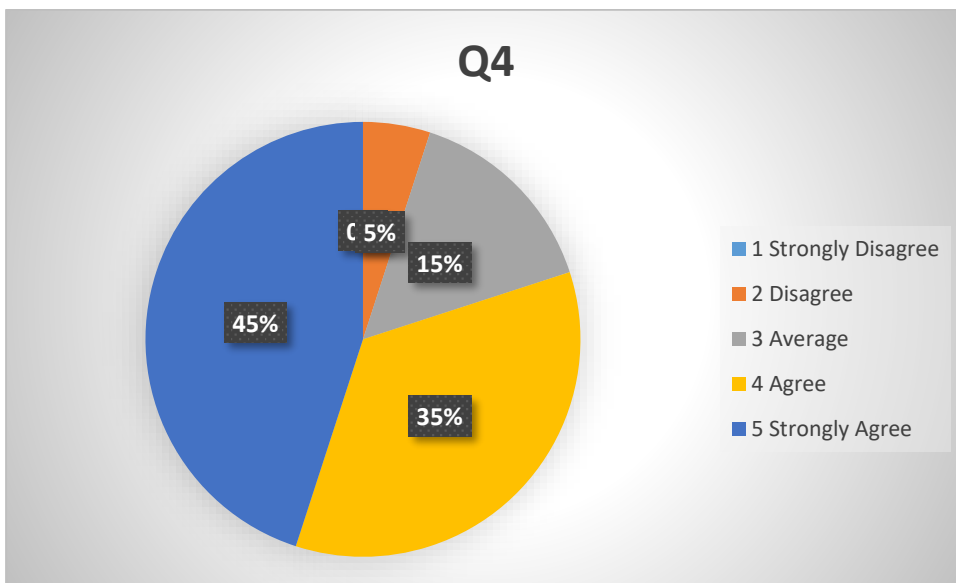


Figure 5.4 Pie Chart for Q4

According to the above graph 65% of users answered for average and no users disagreed and strongly disagreed for the question for there are lot of consistency in this website.

### 5.4.5 The system is very useful

1 Strongly Disagree	2 Disagree	3 Average	4 Agree	5 Strongly Agree
0	1	3	7	9
0%	5%	15%	35%	45%

Table 5.11 Survey outcome for Q5

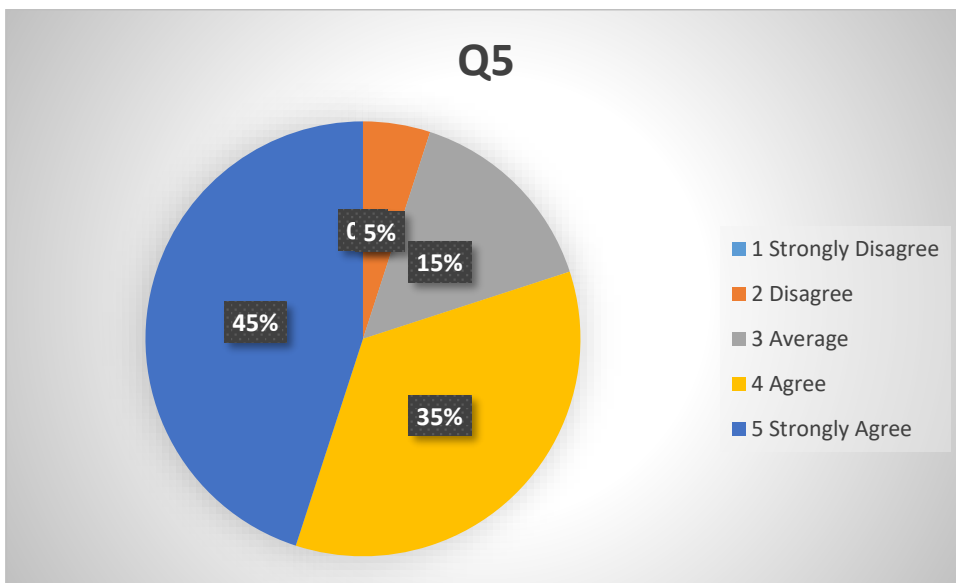


Figure 5.5 Pie Chart for Q5

According to the above graph 5% of users were strongly agreed and no users strongly disagreed for the question for there are lot of consistency in this website.

## Chapter 6 Conclusion

By reviewing the functional and nonfunctional requirements that were discovered during the analysis phase and checking back with the functionalities implemented in the developed system, it can be said that all the requirements of the user have been satisfied.

### 6.1 Problems Encountered

One of the major problems encountered during the development of the system was the lack of knowledge regarding the development tools, and languages. Websites, YouTube video tutorials forums and books were used to gain the required level of knowledge.

### 6.2 Lessons Learnt

The development of students' Uniform Management System taught me many lessons and improve many things. I learned how to develop websites using PHP as a server-side scripting language. How to create databases and maintain databases by using MySQL. I learned how Apache HTTP Server works as a local host and learned how to use Google Map in PHP web site.

Proper time management and planning that are the most important aspects of this project are the areas that were improved during and as a result of the project. Finally, I learned how to manage time for a project

### 6.3 Future Work

There are some limitations in this system such as not support all the schools in Sri Lanka but it is limited, for future work the system can be modified to support all over the schools in Sri Lanka. The distribution of vouchers could be the ministry of Sri Lanka to particular zonal educational offices and zonal offices will distribute vouchers for school they are in in the particular zones. The above voucher distribution should be delivered by the system electronically further more, vouchers may be auto generated vouchers.



The system is a web based one. In future develop a smart phone mobile app such as Android app, iOS app and other smart phone apps to do some work easily like point a location and more. This feature is easy for shopkeepers to point a location using GPS technology by a smart phone. The shopkeepers can do their work by a smart phone or a tablet PC to mark the uniform delivery also other than using a laptop or a PC in order to achieve the concept of portability.

## References

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## Appendix-A: System Documentation

This documentation provides guidelines to the setup of the Students' Uniform Management System. This documentation provides assistance for administrators and users to install the system in their computers, Servers or Workstations. The system documentation can be referred if there are any changes to be made in the system. In order to install the system, the Device chosen for installation should meet the following prerequisites of Hardware and Software.

### Hardware Requirements

<b>Processor</b>	Minimum Intel Pentium 4
<b>Memory</b>	Minimum 1 GB
<b>Hard disc</b>	Minimum 1GB free
<b>Internet</b>	512 kbps

### Software Requirements

<b>Operating System</b>	Windows XP or Higher
<b>Bundle Package</b>	WAMP server with PHP 5.7 or XAMPP 1.7.1
<b>Text Editor</b>	Notepad ++ sublime text any version
<b>Web browser</b>	512 kbps

### Setup

1. Create a folder named suvms in www folder of wamp server
2. Copy the System into the www folder in the following path C:\wamp\www\suvms

### Database Setup

1. Open phpMyAdmin by typing the following URL in the browser's address bar
2. <http://localhost/phpmyadmin/>
3. Login by giving the username and password.
4. Create a blank database named suvms.
5. Click the Import tab and browse through the supplementary CD's database folder (The path would be ../Database/suvms.sql) and select suvms.sql file.
6. Click the go button to import the folder into the newly created suvms database.

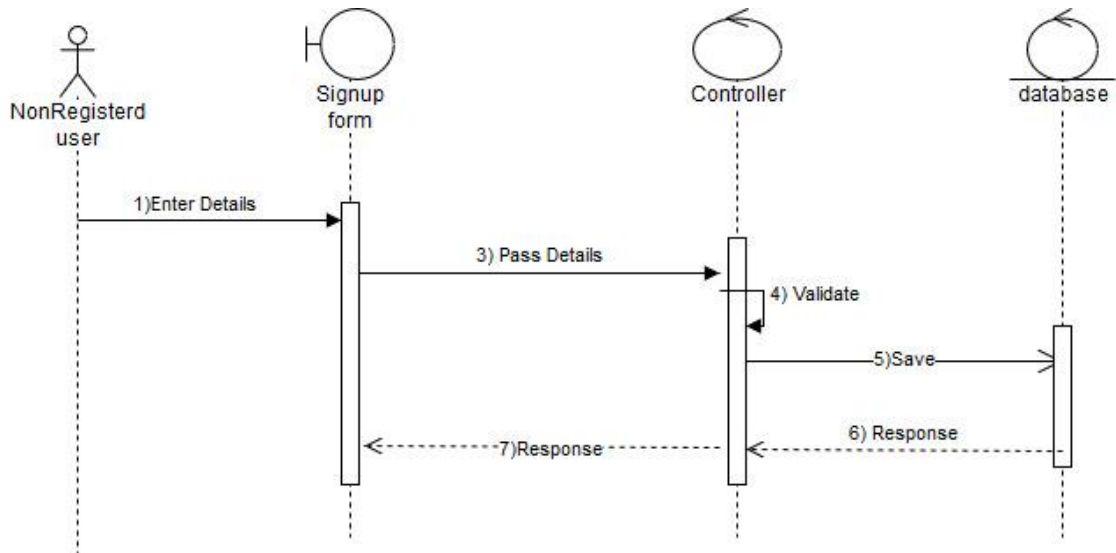
## **Appendix-B: User Documentation**

1. Open html 5 supported web browser and type the following URL in the address bar: <http://localhost/suvm> and Signup to initiate the system.
2. Login the system by providing username and password. School users and shop users wait for administrator approval to login.
3. After login to the system by selecting the proper user type create your profile.
4. Admin can manage school details.
5. School users can maintain student details.
6. School users can issue voucher by click “Activate voucher” button to proper student.
7. Fill voucher details and save.
8. School users can differentiate whether voucher is provided or not for particular student by auto generated report.
9. Shop users can maintain shop profile.
10. Shop users can search voucher number and provide uniform materials.
11. Shop users can create reports.

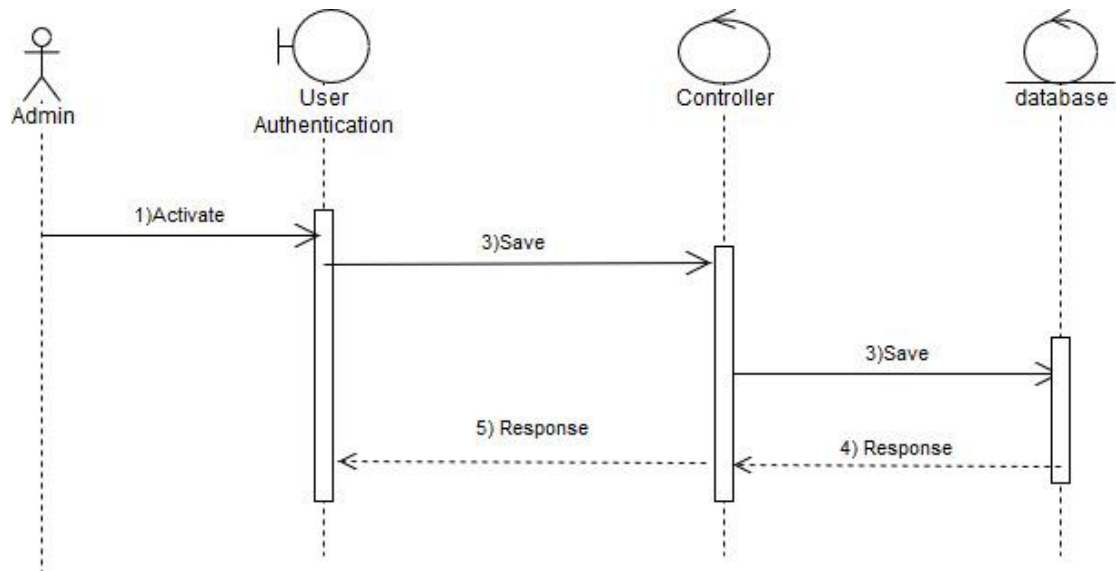
## Appendix-C: Design Documentation

There are some important sequence diagrams are provided below

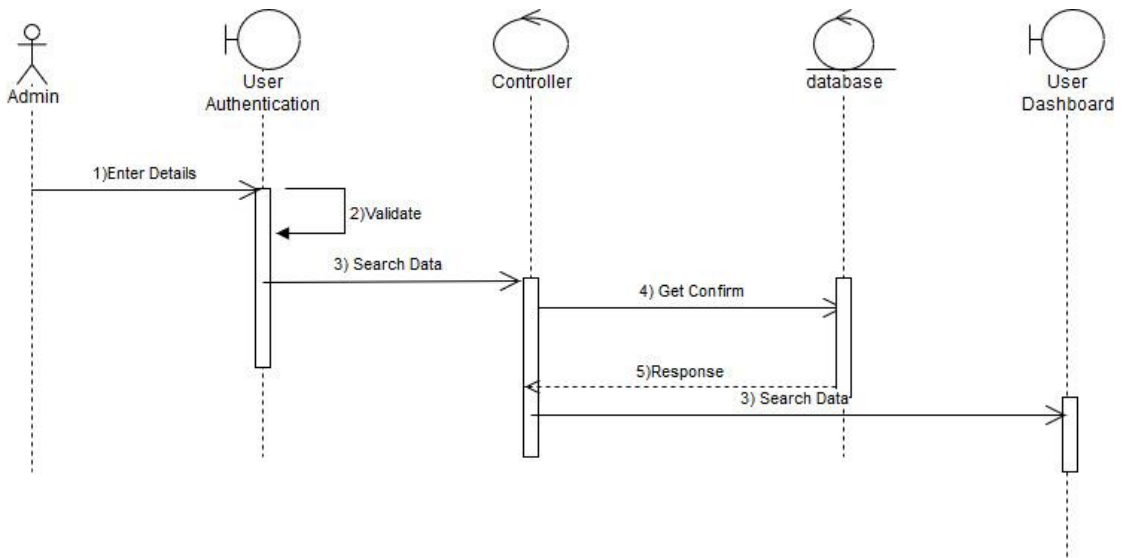
### 1) Sequence Diagram for User signup



### 2) Sequence Diagram for activate user



### 3) Sequence diagram for user login



## **Appendix-D: PACT analysis**

My individual project for Master of Information Technology is Students' Uniform Voucher Management System. I have done PACT analysis for my project.

An essential part of my approach to designing the Interactive Students' Uniform Voucher Management System is to make it as user-centered as possible. The PACT (People, Activities, Contexts, Technologies) as a useful framework for thinking about a design situation in relation to an interactive system. I feel that performing a PACT analysis would be useful for both my analysis and design activities. Future possible improvements can be made for future situations by understanding the current situations.

With the PACT analysis I will be able to bring together all my research on my target users and scope out the variety of different people, activities, contexts and technologies possible. From the analysis I could develop clear and concrete scenarios of how my target users would be interacting with my system.

### **1. People**

The peoples differ from one to another, from physical appearance to the attributes they have. Every people have different personalities and react to things in different ways. This depends largely on the five senses i.e. hear, sight, smell, taste, and touch, so it is important for my website to be friendly, usable, pleasurable for all kinds of people.

In my project, users of the system are Students/Parents, Teachers, Zonal educational officers. The above users differ in capability in English language, computer literacy/knowledge, and with the different physical abilities.

- Primary Stakeholders – Students/Parents, Teachers, Zonal educational officers.
- Secondary Stakeholders – Audit officers

#### **1.1. Computer Literacy/Knowledge**

The users accessing the system such as parents, students, and shopkeepers may be beginners, intermediate or experts, it is therefore, essential for the website to cater for

all its users. The school teachers and Zonal officers are the main users of the system so we assume that they are experts or intermediate in computer literacy.

### **1.2. Cognitive Abilities**

Because people are better at recognizing things than remembering them, my site will be primarily 'see and click'. This is so that users will be able to easily interact with the website.

### **1.3. Physical Abilities**

There are many types of visual impairment. The first is the difficulty of seeing small things so the contents in the site can be magnified of in large size for such users. I need to ensure that the quality of the site is undisturbed when the information is magnified as this may cause confusion for many users. The second difficulty is color blindness. Color blind people have great difficulty distinguishing between certain colors, such as, yellow and blue and red and green. In order to solve this, make sure that colors that can affect color blindness are not mixed. The third difficulty is moderate to fully blind users. The audio instructions or messages can be included.

## **2. Activities**

There are many characteristics of activities that developers need to be considered. These can be both simple and complex. Before considering the characteristics need to be looked at it is essential that throughout the project, the overall objectives are kept in mind and not forgotten about. The below main characteristics of activities that need to be considered:

- The regularity of activities- is the activity done every day, monthly, or annually?
- The textual information- what font, size is going to be used?

One of the main activities that users will have available to them is a navigation map of the place in order to find the place accurately and provide the address of the places. When deleting a record, the system should ask delete conformation message in order to



reduce the faultless. There will also be a search facility for users to use if the need to. The search facility will allow easy access of information.

### **3. Context**

The context type that affects my website is the physical environment. Physical environment is important. For example, the website should cater for people who may access the website in an area that has slow internet access; this will be a problem if they decide that the website is taking its time to respond. Users will access the website in different places such as the home, workplace, educational institutions or internet cafes; therefore, it is vital that the site is accessible for those visitors that use different resolutions, operating systems, color depths platforms and browsers.

### **4. Technologies**

This is a web based project so users use the system with different devices such as phone, tab and computer. They use different web browsers as they like such as opera, chrome, Firefox, safari, edge and etc. they use different operating systems such as mac, windows, iOS, Linux, android and etc.

## Appendix-E: User Evaluation Form

Name:.....

User Type:

Student	Teacher	Shopkeeper	student	Zonal office staff

		Strongly disagree 1	2	3	4	Strongly agree 5
1	<b>The interface designs are user friendly.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<b>The system can use without the support of technician.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<b>System provides proper error messages</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<b>There are lot of consistency in this website</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<b>The system is very useful</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments