

Online Management System
For
Computer Resource Centers in Education Department,
Northern Province

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**ONLINE MANAGEMENT SYSTEM
FOR
COMPUTER RESOURCE CENTERS IN
EDUCATION DEPARTMENT,
NORTHERN PROVINCE**

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DECLARATION

I certify that this dissertation does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any university and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and abstract to be made available to outside organizations.

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ABSTRACT

Information technology plays a major role in the modern world. Various ideas are given by Information technology. With the introduction of information technology the world has changed forever. All the departments and the sectors use information technology to ensure that their works run smoothly and efficiently.

Computer Resource Centre (CRC) is the one of the ICT Center which was established to support ICT literacy in schools by the Ministry of Education. At present CRCs face lots of challenges to carry out their duties. Teachers, principals and administration staffs have to work hard to achieve their goals. The Provincial Education Department, ICT branch and administration sectors face lots of difficulties to manage their details of Students, Staff, Resources and etc, data organization and centralization of their data. In manually they spend lot of time to generate their reports and create certificates.

This Online Management System will give a solution to Computer Resource Centre (CRC) of Northern Province to solve their existing manual work problems. This system helps to manage and control the CRCs in different locations in Northern Province. Through this system they will receive a user friendly online system for their CRC's students and guests. The CRCs can manage their data through online from various centers. It guides the students to register through online and give facilities to search courses details and CRC's information. Through this system management can able to generate various categories of reports in fingertips. And also marks details can be verified for the official and personal concerns.

This system has been developed using open source server language PHP, Apache web server and MySQL Database Management System for back-end. MS Visio was used to design the diagrams and MySQL Workbench was used to create the ER diagram of this system. This system will help the Educational Department of Northern Province to achieve their goals.

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LIST OF ACRONYMS

CRC	Computer Resource Center
ICT	Information Communication Technology
1NF	First Normal Form
2NF	Second Normal Form
3NF	Third Normal Form
EMIS	Education Management Information System
GUI	Graphical User Interface
IT	Information Technology
ICT	Information Communication Technology
DVD	Digital Versatile Disk
UPS	Uninterruptable Power Supply
RAD	Rapid Application Development
JAD	Joint Application Development
SDLC	System Development Life Cycle
ER	Entity Relationship
RAM	Random Access Memory
IDE	Integrated Development Environment
LMS	Learning Management System

CHAPTER 1 - INTRODUCTION

1.1 INTRODUCTION

Now in every field and organization Information Technology plays a vital role and they find solutions with the help of Information Technology for their problems. Information Systems are used to reduce the work loads. Computer Resource Centre (CRC) is one of the ICT Center to establish the ICT literacy by Ministry of Education. At present CRCs face lot of challenges to carry out their duty

The client can save a lot of time and find required data through online using this system. Therefore it was decided to provide very user friendly system to all the CRCs in Northern Province. So that, any authorized person will be able to handle the proposed system easily. The system has been thoroughly validated in order to assure the accuracy of the data. It can be accessed from anywhere. Our Provincial Coordinator can manage and monitor CRCs easily from his office. It helps the students and parents to collect information regarding courses, which are conducted in CRCs. Parents also, can monitor their children's attendance and performance that are published in the website. Any other organizations or departments can find the information whether the CRCs are available for a specific work shop. This system provides various functions to maintain the routine activities of CRCs efficiently.

1.2 MOTIVATION OF THE PROJECT

Education Ministry plans to conduct computer courses in each zone. So they have established Computer Resource Center (CRC) in each zone. Computer Resource Center is an ICT institute which comes under the Zonal Education Department. Almost ever Zonal Education Department has its own CRC Center in Sri Lanka. This is an institute to guide and conduct computer courses for teachers, students, school leavers and the society at the cheapest rate or freely. The main courses are MS Office and Desk Top Publishing. At the end of the session a certificate will be issued to the participant with Provincial Director's signature in every CRC. Earlier CRCs were controlled by the Ministry of Education. Now they are being managed by the Provincial Education

Department. CRCs are situated in different parts of the Sri Lanka. The Northern Province consists of seven CRCs in different places. They plan to establish at least one CRC in each Zonal Education Department. CRC is the place where government institutions and as well as other organizations can easily conduct seminars. Mostly CRCs do the courses for students who have finished their O/L or A/L. NVQ level courses are also conducted by the CRCs. Mostly all the IT seminars conducted by of the Zonal Education Department or the Provincial Education Department are held at CRC. ICDL and IT literacy courses for teachers are also conducted by the CRC. CRCs help the schools to prepare the timetable, browsing internet and enter EMIS data.

Many student wish to increase their computer skill with the help of the CRC but they do not know the CRC activities. When a student comes to CRC, CRC's manager or Instructor has to explain the details of CRC conduct courses. CRC manager and instructor spend lot of time for the above process. Some time students and parents have to wait till the Instructor gives necessary information about the courses. Most of the CRCs' consist of two staff they find difficulty to manage their data. The instructor not only lectures the students but also manage the Finance of the CRC. The CRC manager manages the CRC and the Inventory. Each CRC faces the above difficulties.

There is no method to industries or public to verify the certificates of the CRCs' students. CRCs provide lots of services to educational field even though they face lot of difficulties to manage data in proper way and manage CRC in effective way. The data of all the CRCs in Northern Province is not centralized.

The above CRC's current manual system problems and the difficulties they face motivated me to develop the web based solution to them. So I decided to do this project and this project will help and over come from their current manual problems.

1.3 OBJECTIVES OF THE PROJECT

Objectives can be concerned as far as the "CRC management" and Students.

The CRC management can able to:

- Manage the CRCs, staff, students, courses and inventory details through this system. This system will help them to manage and maintain the basic details of

CRC, staff, courses, students and inventory; it will help them to easy access the data from anywhere.

- Manage the payment, enroll students, their study course and allocate the batch details and maintained them.
- Create and maintain the class timetables.
- Manage the students and staff's attendance and analysis the attendance details in various category such as how many students present today, who absent regularly and etc.
- Manage the student's marks and calculate the total marks and average marks for each student automatically.
- Maintain the day to day activities of CRC, CRC's staff and inventory.
- Generate the reports in various types such as yearly or monthly or daily report in various categories such as student or staff or attendance or marks or inventory or account wise.

Students can able to:

- Search information such as CRC's, Course, timetable, batch details and etc from anywhere.
- Register to the CRC's course for any branch of CRC from their places in online.
- View their details of own profile, study, timetable, attendance, marks and payment details.
- Get alert notifications regarding timetable, attendance, and marks and pending payment through system or SMS.

1.4 SCOPE

The Scope of this project Online Management System is solution for the CRCs to up-to-date their details of physical resources (inventory), events, course, day-to-day activities and students' details in an efficient manner. And also students can register the course through online from their places. This system helps them to manage their details and generate reports in finger tips, it will reduce administration burden of the staff so that they can focus on students' efficiency and running the CRCs in effectively.

1.5 REPORT ORGANIZATION

The rest of this report is organized as follows. The dissertation is predefined into six chapters [1] (chapter 1 to chapter 6) and four appendices. (Appendices A to D) Each chapters of this dissertation consist of the processes that carried out during the various steps of the project. Each chapter will consist of necessary details in order to understand the project.

Chapter 2 - Analysis

Analysis includes existing manual system, draw backs of the existing manual system, literature review and requirement analysis. Literature review is regarding the types of system is being developed and the methodologies which can be used for designing and developing the project.

Chapter 3 - Design

Design of the system is included in this chapter. The decisions are taken regarding the project and the techniques used will be justified and explained here. How the user interacts with system is also explained using sample screen shots. The acceptance and the quality of user interfaces are described.

Chapter 4 - Implementation

Implementation is the processes to develop the system. This Chapter is described how the system will be developed, the major code and module structures, the platform and tools are explained.

Chapter 5- Evaluation

Evaluation is the process to test how the system works. This is the main topic because we can know whether the project plan, methods used to implement, expectations of the project and the clients' expectation will be satisfied or not. Many testing methodologies will be used to evaluate this system.

Chapter 6 - Conclusion

The general conclusion of the project which includes outcomes of the project, a general appraisal of the work done and further possible developments are discussed in this chapter.

CHAPTER 2 - ANALYSIS

Systems analysis as a problem-solving technique that crumbles a system into its constituent pieces for the determination of the studying how well those component parts work and interact to accomplish their purpose.

2.1 EXISTING MANUAL SYSTEM

The management system in all CRCs in Northern Province is managed manually. This system contains human errors such as errors in calculation, errors in entering data. Some CRCs maintain their own data base manually to manage their data individually. But they do not link with other CRCs. So the students, guests and other organizations face difficulties to find data from the CRCs. So certificates are not unique because lots of CRC design the certificates using different patterns, format and sequence numbers. As the CRCs are located in different places, managing the data of CRCs is very difficult for Provincial Education Department of Northern Province. So for the uniformity of the function of the CRCs, there must be a common online management system.

2.2 DRAWBACKS OF THE EXISTING SYSTEM

These are drawbacks identified in the current manual system of CRC.

- Each CRC does their own manual system by themselves.
- Data and report sent to the Provincial Education Department of Northern Province manually takes too much time.
- Summarizing the data of all CRCs also takes too much time.
- Students and parents do not know which courses are available in which CRC
- Manage the CRCs' data manually is difficult because they are located in different places.

The existing manual system's use-case diagram is shown in the following Figure 2.1:

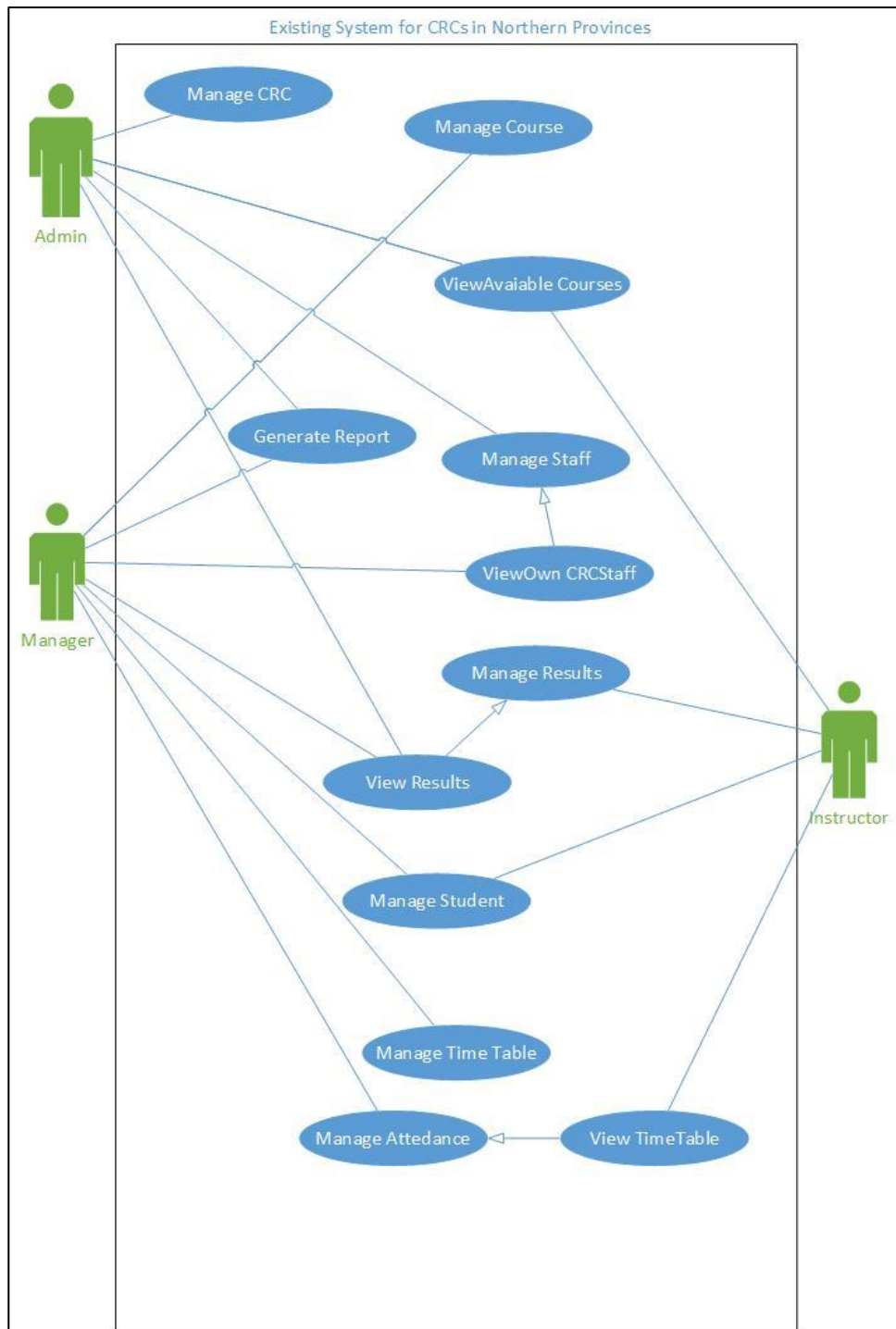


Figure 2.1 Use-Case Diagram for Existing System

2.3 SIMILAR SYSTEM

This section summarizes various techniques that have been employed closely related with this system. The following similar systems were used for detailed study in order to achieve the

2.3.1 ESOF METRO CAMPUS

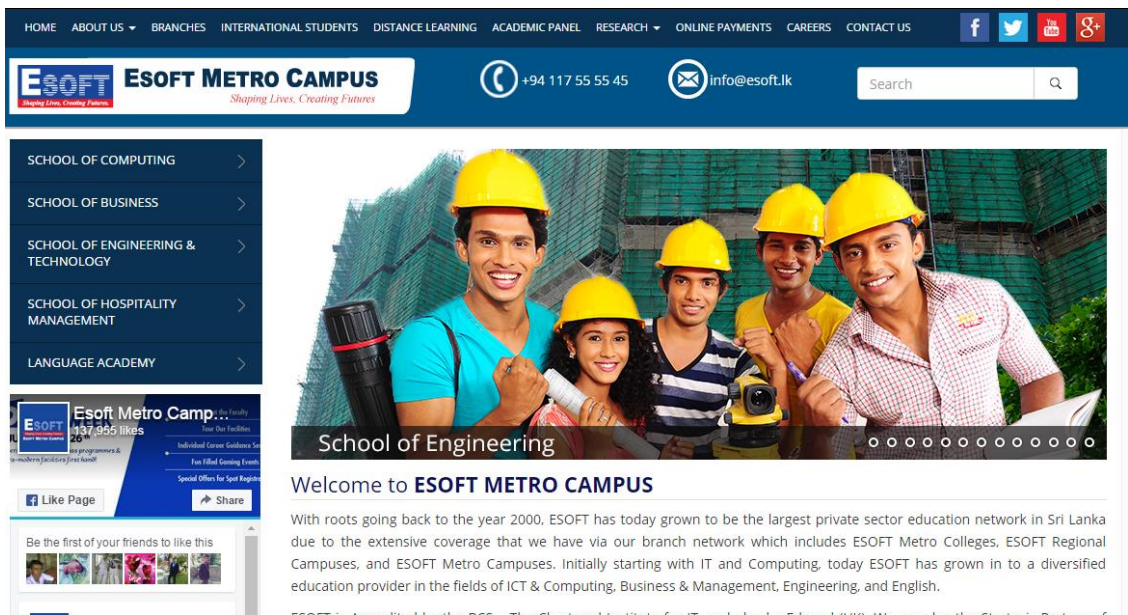


Figure 2.2 Esoft Metro Campus

Esoft Metro Campus [2] uses a web based system. From their web site we can get useful information regarding their institution. Facilities such as online registration, online payment and viewing details of their various branches are available in the site. They have also listed all of their staff and students' details. Home page is shown in Figure 2.2.

Since the system is private, no any reporting facility is provided. And also there is not certificate verification facility in the website.

2.3.2 EDUCATIONAL MANAGEMENT INFORMATION SYSTEM FOR NORTHERN PROVINCE



Figure 2.3 EMIS website for Northern Province

The EMIS [3] is education information management system for Northern Province managed and provides all the data related with schools. Every school in North province has been registered in this site, and all schools have to enter the data regarding their school, students and teachers in it, so that the admin can easily get summary reports related with schools. Home page is shown in Figure 2.3. CRCs and CRC staffs' and students' information are not managed by EMIS.

2.4 REQUIREMENTS ANALYSIS

Requirements analysis [4] phase is important to gather information from the client. It takes time to understand what the user wants definitely. This is very important to develop the system. If it fails, the whole system will be failed. So we must consider the drawbacks of the existing manual system. The proposed system for the online management system requirements can be categorized as functional requirements and non-functional requirements.

2.4.1 DATA GATHERING TECHNIQUES

There are several techniques to gather data in a system analysis phase. The following are the popular data gathering techniques used collect requirements from client such as,

1. Interviewing
2. Questionnaires
3. Observation.
4. Prototyping

Interviews: - This method is used to collect the information from groups or individuals. Analyst selects the people who are related with the system for the interview. In this method the analyst sits face to face with the CRC's managers.

Questionnaires: - This Questionnaire could be Open-ended or Close questionnaires. Open-ended questionnaires are used to learn feelings, opinions, general experiences on process detail or problem. In it, questions are answered in their own words. Where as in closed questionnaires a set of prearranged answers are used and specific response have to be selected. Analysts used Questionnaires to collect data from CRC's instructors and students.

Questionnaire

1. What are the main activities in your CRCs?

Courses and timetable

Student's register and study

Seminars

Inventory

2. How many CRCs are there in Northern Province?

Nine

3. Do you like to introduce online registration for students?

Yes

4. Do you want to monitor student's marks and attendances?

Yes

5. Do you want to have user log in facility with security like login with passwords in your system?

Yes

6. Do you want automatically generate student ID?

Yes.

7. Do you need summarized reports regarding students' attendance, marks?

Yes.

8. Do you want to print reports?

Yes

9. Do you want to monitor staff details?

Yes, only for manager

2.4.2 FUNCTIONAL REQUIREMENTS

The functional requirements specify what the system [5] must do. They relate to the actions that the system must carry out in order to satisfy the fundamental reasons for its existence. In system development, it is useful to distinguish between the baseline functionality necessary for any system to compete in that product domain, and features that differentiate the system from competitors.

Requirements of the ICT Branch in Education Department of Northern Province such as:

- Manage staffs details of CRCs
- Manage inventory details.
- Students can register themselves.
- Students can view their marks and attendance.
- CRCs' Managers can develop their center reports.
- Admin can create and view all kinds of reports.
- Guest or other organizations can book the CRCs for their seminars.
- Generate reports in yearly or monthly or daily.

2.4.3 NON-FUNCTIONAL REQUIREMENTS

Nonfunctional requirements are the properties that the system must have. Think of these properties as the characteristics or qualities that make the system attractive, or usable, or fast, or reliable. Although they are not directly concerned, it was found out that there are many non-functional areas which have to address in order to complete this system successfully.

- Reliability is main non-functional requirement which is required by the users. Although it does not specify directly. Maintaining database backup is important.
- Accuracy and consistency of the system is very important. In this project the exist quite a few functionalities which accuracy is very vital. Entering data should be validated by the system.
- Software Security of the system is a very important thing. Only the authorized persons should be allowed to operate the system with their own username and password only.
- User friendliness is very important for the success of the system. In this system most of the users related to know basic computer skill. Even though User interfaces should be designed as attractive.
- Portability of the system – This system will work on all the Windows based operating systems well, which are above Windows XP.
- Response time & Processing time –Although this was not specified by the users, in general it is needed that the system should give response to the user without much delay.
- Make friendly Graphical User Interface (GUI)

The following requirements were also nonfunctional requirements

- Increase the Uses of CRC
- Reduces transport cost.
- Alert message for the seminars and the news.
- Reduce the time to modify reports.
- Easy to access the system.

2.4.4 RESOURCE REQUIREMENTS

Hardware Requirements

- Pentium iv computer or more
- Basic Printer for report printing
- RAM 512 MB or Higher
- Internet facility

Software Requirements

➤ **For implementation purpose:**

- Operating system windows 7 or more
- Browsers

➤ **For development purpose:**

- Windows operating system
- WAMP Server Version 2.4 for Windows
- Apache Web Server Version 2.4.4
- PHP Script Language Version 5.4.16
- MySQL Database Version 5.6.12
- PHP My Admin Database Manager Version 4.0.4
- MySQL Workbench 6.0.8 CE
- Bootstrap
- Microsoft Visio 2013
- Adobe Dreamweaver Version 13.0
- Adobe Photoshop Version 14.0
- Internet Explore/Google Chrome/Mozilla Firefox

Other requirements

- Internet connection
- Webhosting Domain

CHAPTER 3 - DESIGN

System design is the most important and time consuming part in this project. In this phase, information-collected earlier to accomplish the logical design of the information system is used. This chapter consists of how to design user interfaces, databases and outputs along with users to meet their information [1] needs of CRCs. Information system design focused on the technical or implementation aspect of the system development. The designer converts the requirements from the requirement analysis phase into technical solutions. System design considers the software architecture, database design and interfaces design. There are several techniques exist to design a system, Such as:

1. Structured design techniques
2. Object oriented design techniques
3. Prototyping
4. Rapid application techniques
5. Joint application development

These techniques are used to achieve the scope and the goal of the project.

3.1 TECHNIQUES USED IN THE DESIGN

It was decided to follow the structured design techniques in the development of the proposed system. The structured design is the most commonly used technology in system designing. Hence guidance and ideas can be obtained easily. It should be understand easily by the developers and clients as well as a familiar one.

As this proposed system is an average complicated system, the techniques such as prototyping and object oriented design are irrelevant to this context.

Since there is no need to complete the project within a very short period, the Rapid Application Development (RAD) technique is also not suitable for this project.

Finally, it was decided to follow waterfall model technique which is a better and suitable technique for this project rather than other techniques. The waterfall model phases are shown in Figure 3.1.

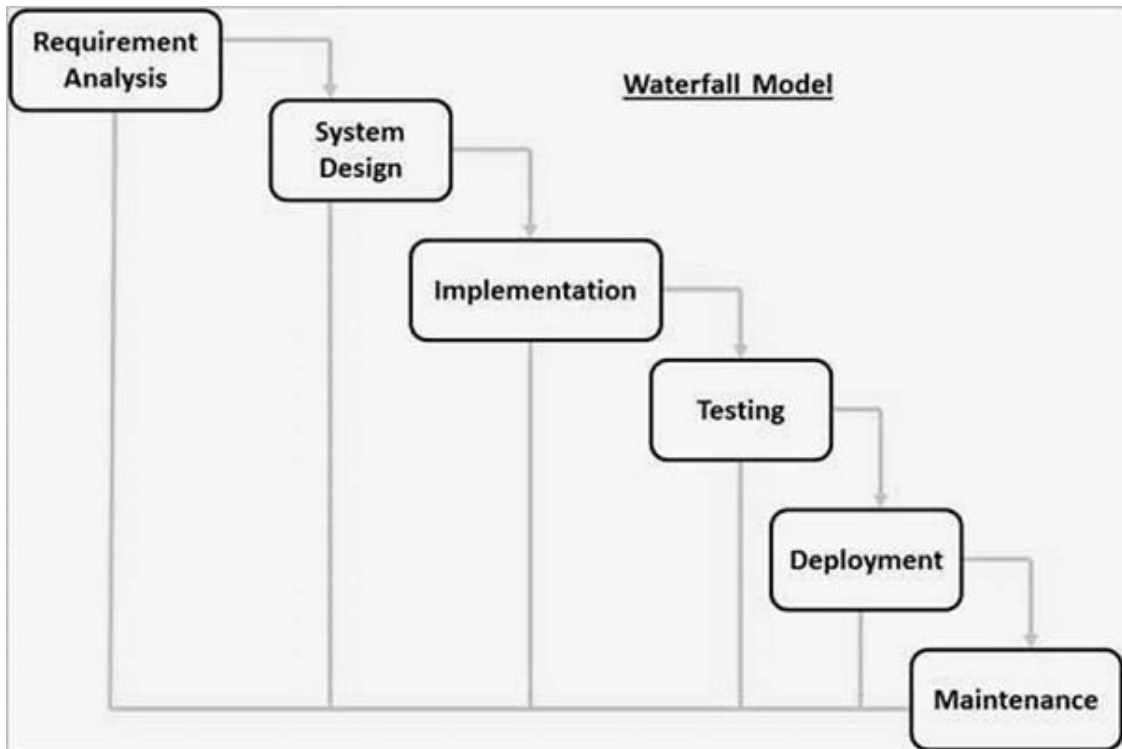


Figure 3.1 Water Fall Model

Requirement Analysis : Potential requirements of the proposed system are collected in this phase. Requirements are set of functionalities and constraints that the end-user look forward to from the final output of system. At the end of this phase a Requirement Specification document is formed. This document would be used as the guide for the next phase.

Software Design: This is the next step of Requirement Analysis. Before starting for actual coding, it is highly recommended to understand what we are going to create for that reason the major components and the overall development of the system have to be designed according to the requirements which were gathered in earlier phase. If there were any errors in the design phase it will radically affect the concluding output.

Implementation: Here the actual system will be developed according to the design specification of the earlier stage. On receiving system design documents, the work is divided in modules/units and actual coding is started. Each unit is developed and tested for its functionality.

Testing: In this phase, modules will be tested to confirm whether they function well then the system will be tested considering as single whole unit. This is called as system testing. The system will be tested again and again until the satisfactory results are received.

Deployment: This phase is the final phase of the waterfall module. After the project team tests the product is ready to publish.

Maintenance: During this phase errors which were not detected during the development or testing phase will be corrected. The system maintain properly throughout its lifetime.

It was decided to utilize this “waterfall” methodology for our development process.

3.2 ALTERNATE SOLUTIONS

There are many models to find the alternate solutions. Some models are standalone system, client server and web based solutions.

The standalone computer system stands on its own. Any tasks or data associated with that computer stay inside it and are not accessible from anywhere else. Any peripherals, such as printers, must be directly connected to it in order to work. Standalone computers have drawbacks. First of all, users are restricted to a single computer. On a network, users can access their files from any connected computer. Second, the same software cannot be installed simultaneously. While a network allows everything to be changed at once, a standalone requires that any new programs must be set up one-by-one, which is much more time-consuming. Third, it is much cheaper to connect every computer to one printer than to buy a printer for each standalone computer. Finally, standalones are harder to monitor. So it is not suitable for my project.

Client server model means the database and the main application will be presented on a server and a client application which is installed on the computer of each user who need to access the database on the server through a network. Here all clients will be connected to the same database. It is also not suitable for our proposed system because the expected users would be in different geographical locations.

Web-based model is also employed a client-server architecture model, in which the client is a web browser, and the server-based component is located on a computer connected to the internet.

In this system Web-based model is suitable because Assistant Director of Education (ADE) can manage their data of all CRCs from different places. CRCs also can maintain their data from their work station. So I decided to choose the web –based model to develop my system. It would be the model which can satisfy my client.

3.3 PROCESS DESIGN

Based on the requirement analysis; made **[6] design**. It has been designed in three stages as follows.

- Database Design
- Application & Architecture Design
- Interface Design

3.3.1 DATABASE DESIGN

ER Diagram

An entity-relationship (ER) diagram is a **[7] specialized** graphic that illustrates the interrelationships between entities in a database. This is an important phase in the design process, which helps to design the database and the system structure in a robust manner. Incorporating a transformation process is called normalization. Then it can be converted into physical database.

Normalization

In the field of relational database **[8] design**, normalization is a systematic way of ensuring that a database structure is suitable for general-purpose querying and free of certain undesirable characteristics such as insertion, update, and deletion anomalies. That could lead to a loss of data integrity.

First Normal Form (1NF)

First Normal Form sets the very basic rules for an organized database. These eliminate duplicative columns from the same table. This can create separate tables for each group of related data and identify each row with a unique column or set of columns (the primary key).

Second Normal Form (2NF)

A table that is in first normal form (1NF) must meet additional criteria if it qualifies for second normal form. Specifically a table is in 2NF if and only if it is in 1NF and no non-prime attribute is dependent on any proper subset of any candidate key of the table. A non-prime attribute of a table is an attribute that is not a part of any candidate key of the table

Third Normal Form (3NF)

The third normal form (3NF) is a normal form used in database normalization. 3NF was originally defined by E.F. Codd in 1971. Codd's definition states that a table is in 3NF if and only if both of the following conditions hold.

- The relation R (table) is in second normal form (2NF)
- Every non-prime attribute of R is non-transitively dependent on every super key of R.

After the normalization the collection of tables are drawn. Tables are shown on Table 3.1.

Normalize Table of the System

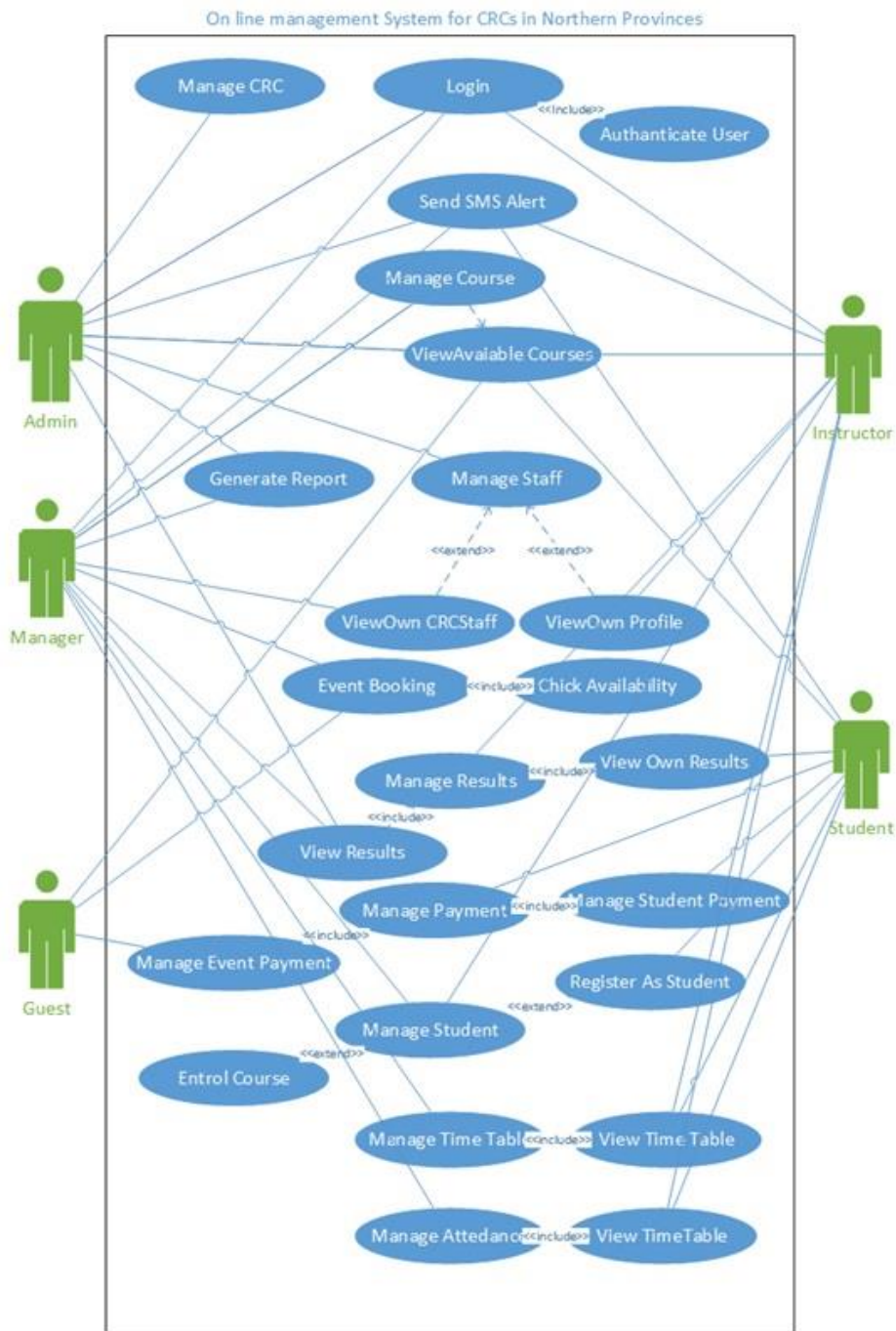
Table Name	Field Names
Crc	<u>Crcid</u> , crcname, address, telephonenumber, emailaddress, webaddress, googleembed
Staff	<u>staffid</u> , firstname, lastname, icnumber, telephonenumber, address, appointmentdate, crcid, designation
Subject	<u>Subid</u> , subjectname
Course	<u>courseid</u> , coursetitle, duration, coursefee
Coursemap	<u>courseid</u> , subid
Timetable	<u>Coursed</u> , <u>subid</u> , day, timefrom, timeto, staffid
Coursefallow	<u>Regno</u> , <u>courseid</u> , comdate, completdate, certificateno
coursepayment	<u>pavid</u> , paydate, regno, coursed, c100no, amount
centerpayment	<u>patid</u> , paydate, payfor, refno, amount, paymode, eventid
Event	<u>eventid</u> , eventname, reservedid, date, remark, participant, crcid, feeid
Results	<u>Regno</u> , <u>subid</u> , marks, courseid
Expenditure	<u>expid</u> , exdate, expfor, amount, crcid, g35no
Dispose	<u>disid</u> , itemno, noofitem, reson, crcid
Item	<u>itemno</u> , itemname, noofitem, reservedate, crcid
Reservation	<u>reservationid</u> , crcid, reservedate, reserveby, status
Computer	<u>computerid</u> , modelno, make, ram, hdd, processor, warrenty, crcid, reservedate, purchesfrom, noofitem, dvddrive
Warrentyiteam	<u>Witemid</u> , iteamname, description, warrenty, reserveddate, purchesfrom, noofiteam, crcid
Fee	<u>Feeid</u> , <u>feefor</u> , <u>amount</u>
Login	<u>Username</u> , password, usertype, attempt, status
Student	<u>Stno</u> , <u>regno</u>
Registration	<u>stno</u> , username, firstname, lastname, nmaewithinitial, icnumber, telephonenumber, address, school, email, crcid
Attendance	<u>Regno</u> , <u>courseid</u> , date, status

Table 3.1 Normal Table of the System

3.3.2 USE CASE DIAGRAM

Use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. The User Case diagram of the proposed System is shown in Figure 3.3

Figure 3.3 Use Case Diagram for online management system for CRCs



Use case for managing the staffs.

The following Table 3.2 shows the step by step process to manage the details of the staff.

Table 3.1 Use case Narrative Table for Manage Staff.

Use Case Name	Manage Staff	
Actors	1) Admin 2) Manager 3) Instructor	
Description	CRC staff and the manger are managed by the CRC	
Pre-condition	Confirm the staff information hasn't already entered.	
Flow of Events	Actor Action 1) Admin enters the details of the manager. 2) The manager enters the staff details 4) Give the condition to view reports.	System Response 3) System can check whether the staff information hasn't already entered or not. 5) The system displays the reports
Post Condition	The details of a staff must be entered at once. Don't enter again and again.	

User case Narrative Table for Manage Payment

The following Table 3.3 shows the step by step process to manage the details of the payment.

Use Case Name	Manage Payment	
Actors	Admin, Manager, Instructor, Guest, Student	
Description	There are two types of income to CRC. One is Students' payment, Other is CRC rent for conducting seminar at CRC.	
Pre-condition	Student must pay before the registration as a student officially.	
Flow of Events	<p>Actor Action</p> <p>1) Student enters his/her details and selects the course that he/she wants to study in the specific CRC.</p> <p>3) The manager or instructor of CRCs give the permission to the student to follow the Course</p> <p>4) Student do the payment for the course.</p> <p>5)The instructor inserts the details of the payment.</p>	<p>System Response</p> <p>2) System displays available courses in the specific CRC.</p> <p>6) The system gives a Auto Student ID for that student.</p>

Table 3.2 Use Case Narrative table for Manage Payment

3.3.3 ACTIVITY DIAGRAM

Activity diagram is another important diagram in UML to describe dynamic aspects of the system.

Activity diagram is basically a flow chart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.

So the control flow is drawn from one operation to another. This flow can be sequential, branched or concurrent. The activity diagram deals with all type of flow controls by using different elements like fork join etc. The Activity Diagram of login part is shown in Figure 3.4

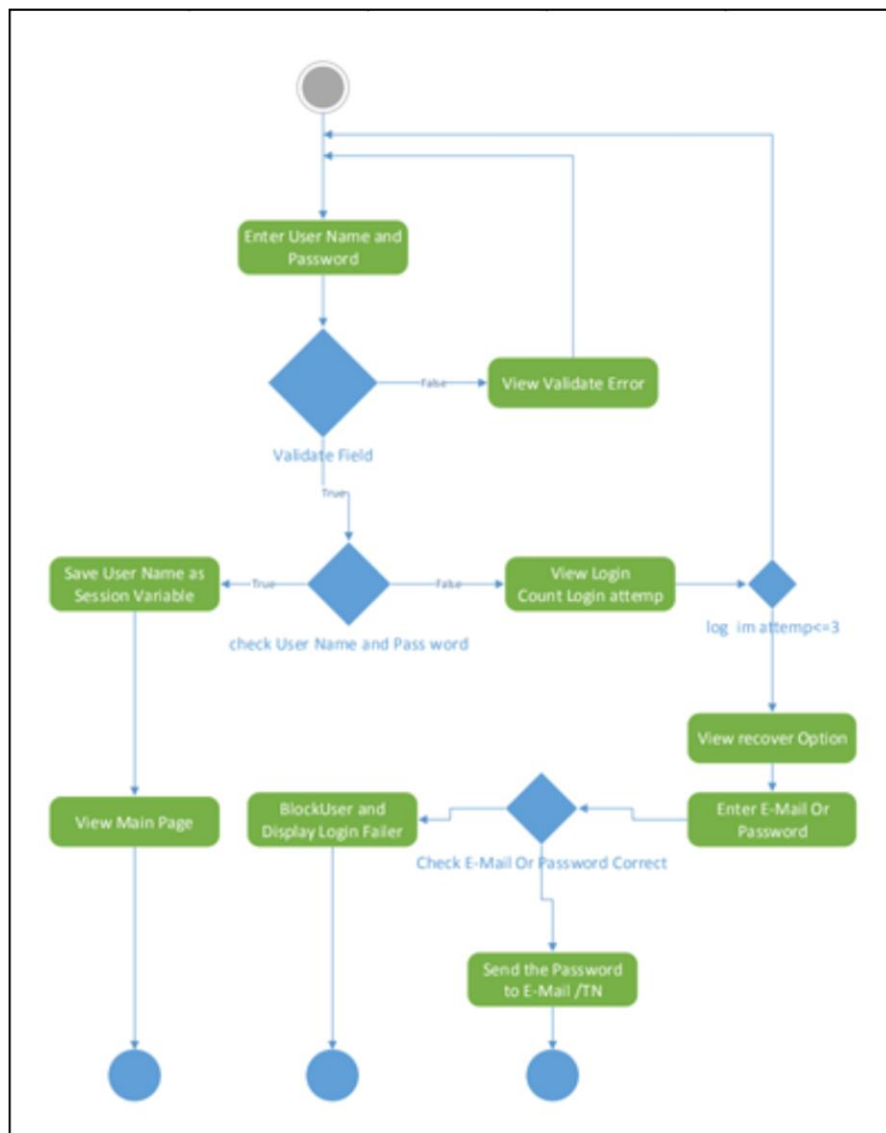


Figure 3.4 Activity Diagram

3.3.4 SEQUENCE DIAGRAM

The sequence diagram is used to show the connections among objects in the sequential order that how an activity done step by step. It shows the time sequence objects. Sequence diagram for login is shown on Figure 3.5.

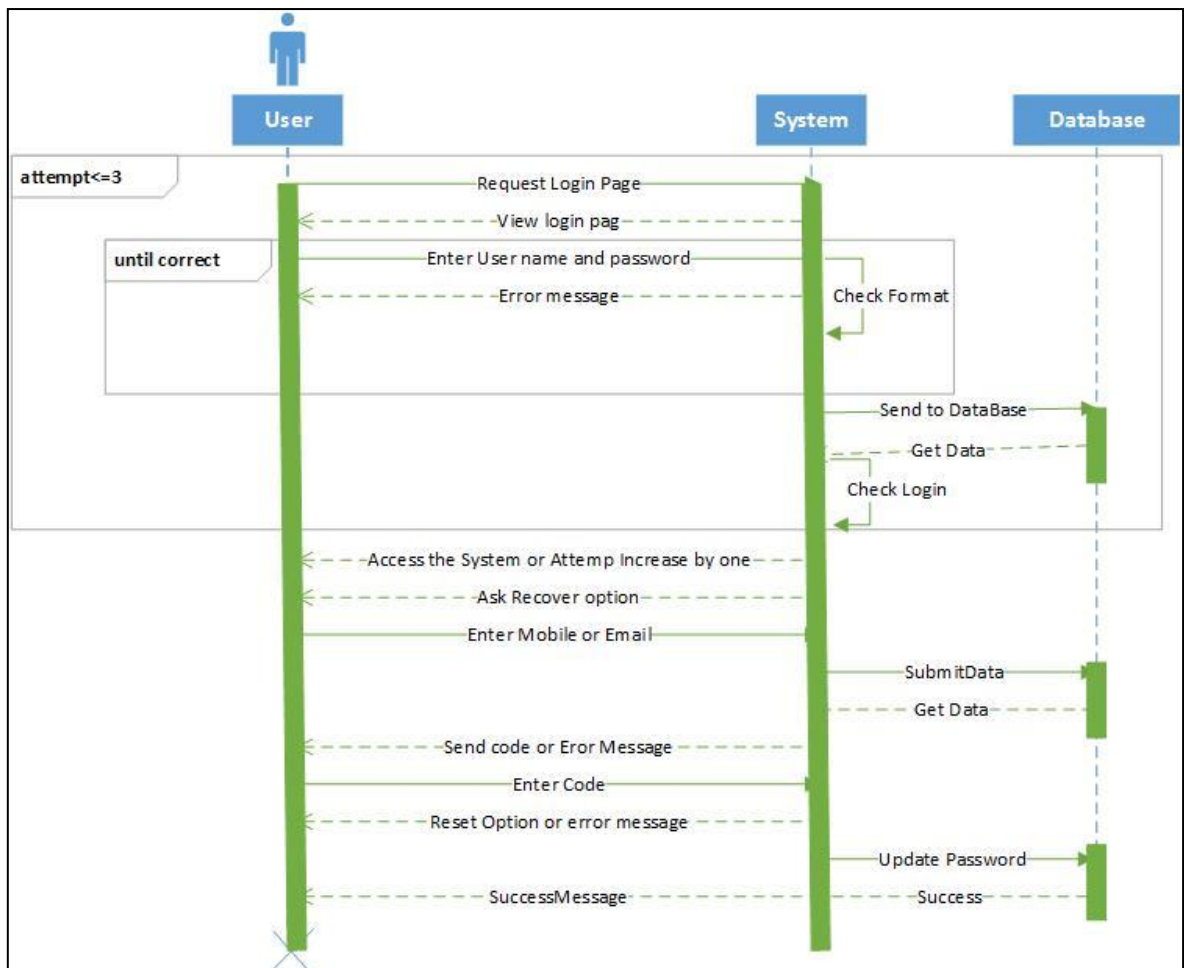


Figure 3.5 Sequence Diagram for login

3.3.5 INTERFACE DESIGN

Interface was designed according to the client wishes. User friendliness was considered as the key factor when designing the interface. It validates the entered data in the system to be more accurate and reliable. The system was designed to be used by four types of users such as admin, manager, instructor and student.

Home Page Inter face

Home page is the welcome page for the user. So it was designed simple and attractive, so that the user can get a clear idea about the system. The Home page includes login facility. System user can login to the system by giving correct password for selected user name. Four types of user can login to system. They are admin, manager, instructor, and student. The home page of the system is shown in Figure 3.6



Figure 3.6 Home Page of the System

Login User Inter face.

The system has four types of privileges to log in. They are admin, manager, instructor and student. The password box doesn't active when the wrong user name is entered. The log in page of the system is shown in the Figure 3.7.

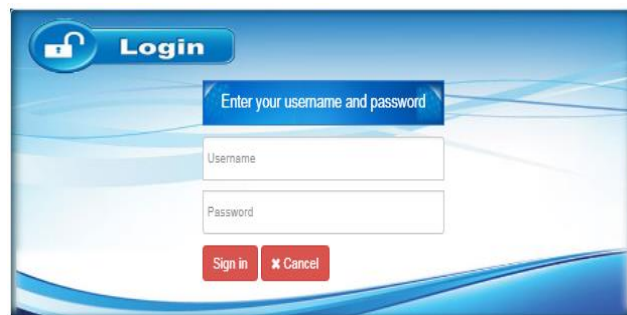


Figure 3.7 Login Interface

Home Page When Login as Admin

The Administrator's home page is accessible to the user who has Administrator privileges. Administrator is able to add new record, view detailed information, edit details, and delete details of all CRC in Northern Province details, staff details, Sponsors, Item details, Event details, Batch details, Payment schedule, Purchase details, Duty details, Student details, and expense details. User Admin home page is shown in Figure 3.8. Ribbon tab concept is applied to the user login system to manage the data easily and quickly.



Figure 3.8 Admin Login homepage

Home Page When Login as Manager

Home page of the manager type login is shown in Figure 3.9. CRC is administrated by the manager. It is similar to admin home page but the data can be modified only by their CRCs.

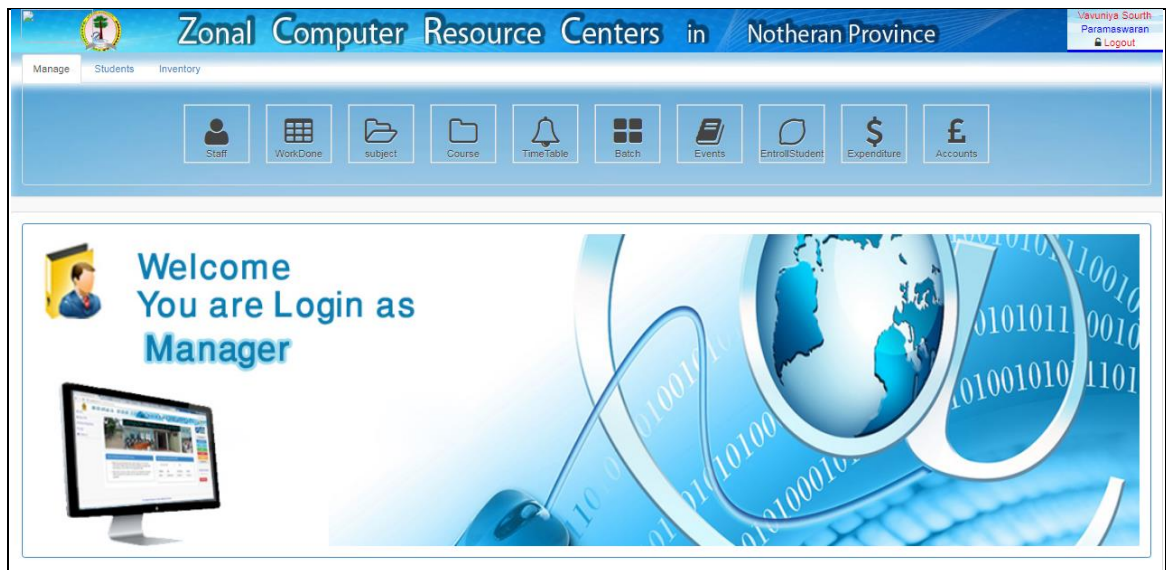


Figure 3.9 Manager Login Homepage

Interface when Login as student

Interface page of the student has less buttons than other logins. Student who logins the system can manage their data only. Interface page of the student is shown in Figure 3.10.



Figure 3.10 Student Login Home page

Home page for smart phones

The system is supported by HTML 5 so it can be re-arranged the view for the screen resolutions and type. The system home page in smart phone view is shown in Figure 3.11.

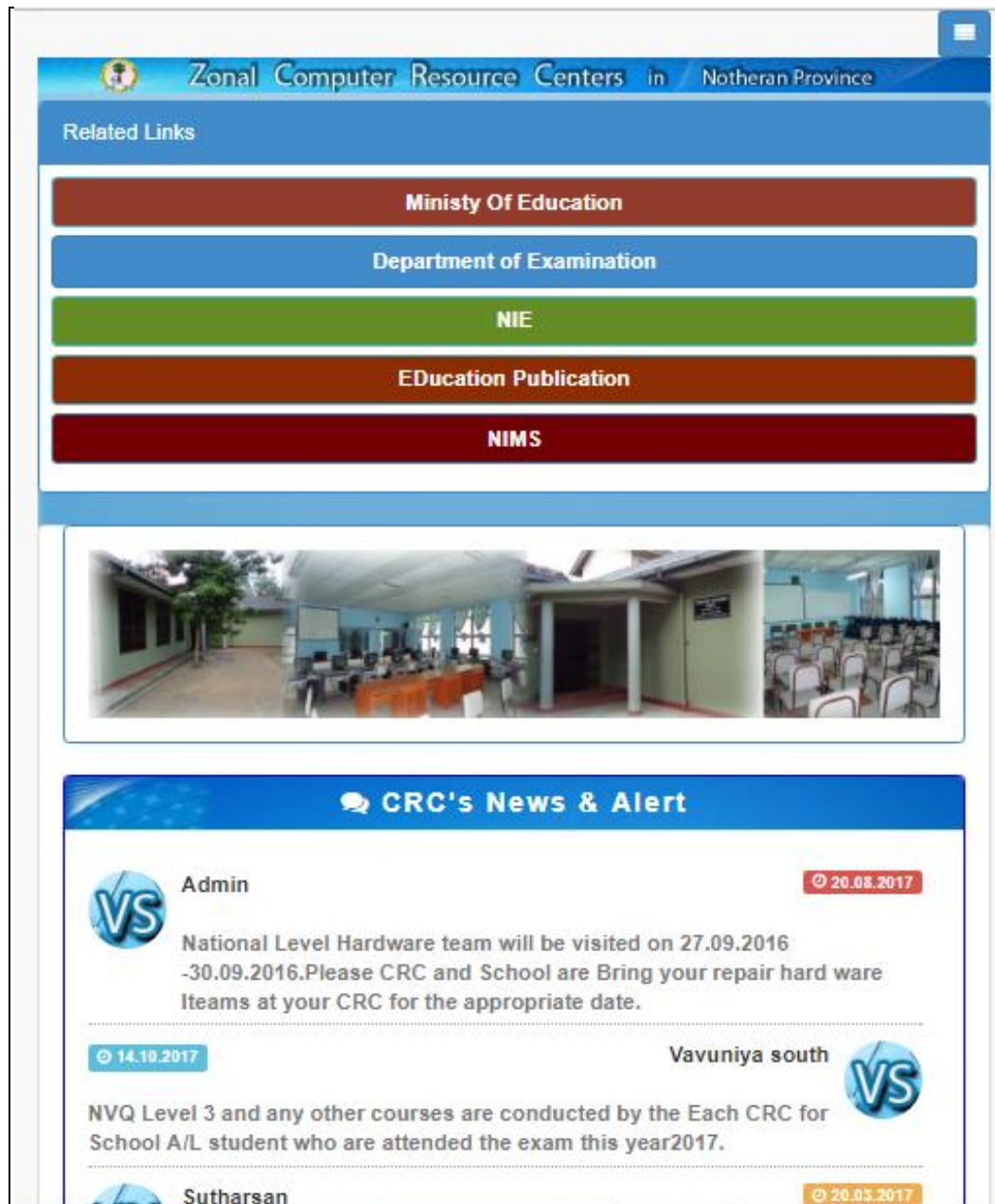


Figure 3.11 Home Page for Smart Phone

Student registration form

When the students click the student registration button on the menu, the registration form will be displayed. The registration form is shown in Figure 3.12.

Registration number of the student is generated by the system automatically. This registration form also has log in information to log in the system.

The screenshot shows a web-based form titled "Student Registration Form". At the top left, there is a red asterisk and the text "* required field.". The form contains the following fields, each with a red asterisk on the right side indicating it is required:

- Registration NO: A text box containing the value "R00037".
- First name: An empty text box.
- Last name: An empty text box.
- Name With Initial: An empty text box.
- Address: An empty text box.
- Telephone Number: An empty text box.
- School: An empty text box.
- E-Mail: An empty text box.
- User name / IC Number: An empty text box.
- PassWord: An empty text box.

At the bottom left of the form, there are two buttons: a blue "Save" button and an orange "Cancel" button.

Figure 3.12 Student Registration Form

Staff Information Form

Staff information is given by the admin or the manager but each staff can edit some of their details. Summary of the staff information is shown in Figure 3.13.

[Add New Staff](#)

Staff Information

10 records per page Search:

First Name	LastName	TP No	CRC	Designation	Action
Kajanthiran	Thajanthiran	0774553323	CRC001	Manager	View Edit Delete
Sanmukamoothi	Paramaswaran	0777394022	CRC002	Manager	View Edit Delete
Sivapalan	Sarveswaran	0773667712	CRC002	Manager	View Edit Delete
Sukanthan	Sutharsan	0776554423	CRC001	Instructor	View Edit Delete

Showing 1 to 4 of 4 entries [Previous](#) [1](#) [Next](#)

Figure 3.13 Staff Information Form

Staff Information View

Details of a specific staff details is shown in Figure 3.14.

[Staff Information for S004](#)

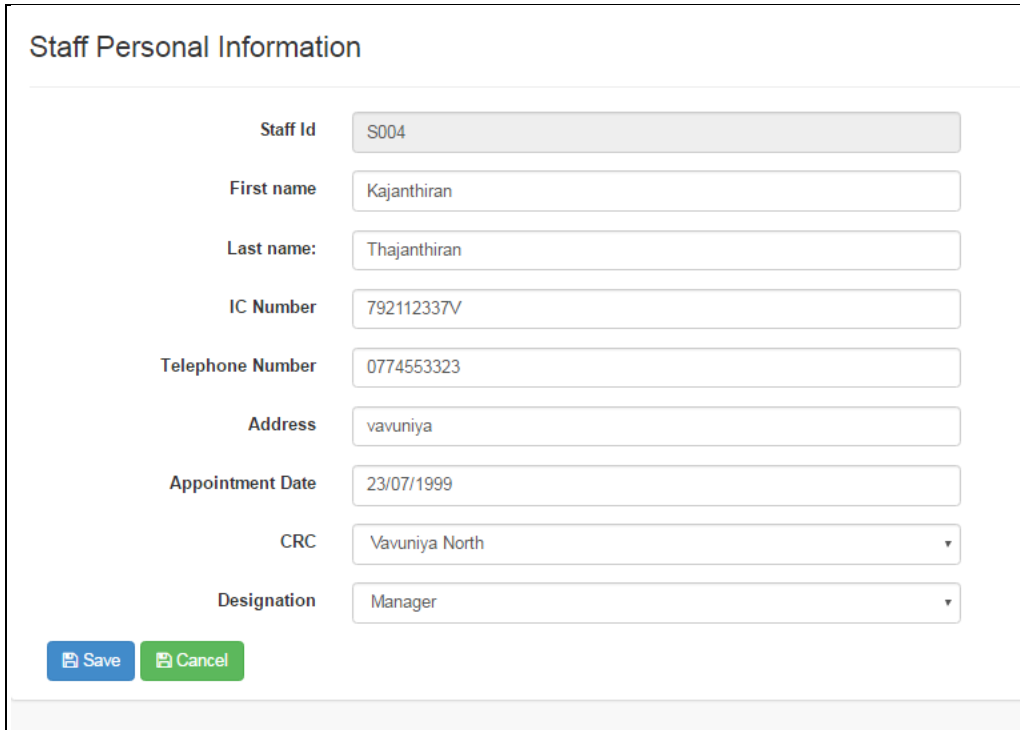
Staff ID	S004
UserName	abc4
First Name	Kajanthiran
Last Name	Thajanthiran
IC Number	792112337V
Telephone Number	0774553323
Address	vavuniya
Appointment	1999-07-23
CRC ID	CRC001
Designation	Manager

[Go Back](#) [Edit](#)

Figure 3.14 Staff View Interface

Staff Edit View

Some of the data can be edited by the staff themselves, but admin and manager can edit the full data. Staff edit view is shown in Figure 3.15.



The screenshot shows a web form titled "Staff Personal Information". The form contains several input fields and dropdown menus. At the bottom left, there are two buttons: "Save" (blue) and "Cancel" (green).

Field	Value
Staff Id	S004
First name	Kajanthiran
Last name	Thajanthiran
IC Number	792112337V
Telephone Number	0774553323
Address	vavuniya
Appointment Date	23/07/1999
CRC	Vavuniya North
Designation	Manager

Figure 3.15 Staff Edit View

Report Design

This system allows generating report. The reports are generated by users according to user type. Student are able to print their results. The attendance of the students and CRC Hardware resource summary are generated by their CRC managers for their documentation. All kinds of reports can be generated and printed by the admin. Figure 3.16 is an example of report for summary of CRC.



PROVINCIAL DEPARTMENT OF EDUCATION - NORTHERN
PROVINCIAL COUNCIL
Maruthanarmadam , Chunnakam

List of CRC in Northern Province

CRC ID ▲	CRC Name ◆	Telephone Number ◆
CRC001	Vavuniya North	0242222245
CRC002	Vavuniya Sourth	0242227505
CRC003	Vadamaradchi	0212220112
CRC004	Islands	0212222256
CRC005	Kilinochchi	0212222256
CRC006	Mannar	0242227505
CRC007	Madhu	0665543312

Figure 3.16 Report print out for CRC summary

CHAPTER 4 - IMPLEMENTATION

4.1 INTRODUCTION

System implementation is the main part for System Development Life [9] Cycle. It gives the main interface between user and our new system. The new system centralizes the information among the CRCs' in Northern Province. The client of the new system can get the information and instructions of the CRCs' activities. Wherever the student is, the CRCs' can also get their information. Students can register themselves through online. Guest can confirm the student who completed the course in the CRC. Implementation is the process to implement the system into the real environment. So the developed system can be satisfied by the client and other users.

The systems implementing process is construction and delivery phases of the life cycle. Systems implementation is the construction of the new system and the delivery of that system into production (that is, the day-to-day business or organization operation). The construction phase does two things: builds and tests a functional system that fulfils the client and the users.

4.2 IMPLEMENTATION ENVIRONMENT

Some hard ware requirements and software requirements are used in the OMIS_NCRC system implementation.

4.2.1 SOFTWARE ENVIRONMENT

The OMIS - NCRC is implemented by utilize WAMP Saver as the main development tool. It is an open source and it is a compound package that includes Apache, MySQL and PHP. So it is very easy to develop dynamic website in Dreamweaver, Notepad ++, Bootstraps which are used in developing interface of form and reports. CSS and AJAX are used to create Interface of OMIS_NCRC website.

My SQL was chosen as the Database Management System for the system.PHP was chosen for save site scripting Language. Java Script was chosen for Client site Scripting Language.

4.3 TOOLS USED FOR THE SYSTEM DEVELOPMENT

Software

- Windows operating system
- WAMP Server Version 2.4 for Windows
- Apache Web Server Version 2.4.4
- PHP Script Language Version 5.4.16
- MySQL Database Version 5.6.12
- PHP MyAdmin Database Manager Version 4.0.4
- MySQL Workbench 6.0.8 CE
- Bootstrap
- Adobe Dreamweaver Version 13.0
- Adobe Photoshop Version 14.0
- Internet Explore/Google Chrome/Mozilla Firefox

Hardware

- Pentium IV Processer
- 128MB or Higher RAM
- 101/102 Keyboard and Optical Mouse
- Colour LCD Monitor, Printer(for report)
- CD/DVD writer
- UPS
- Dot matrix printer or above
- Network Connection

4.4 DEVELOPMENT PROCESS

- PHP was the main server side Scripting language.
- MySQL was used to handle the database.
- HTML 5 was used to build the base Interfaces of the system.
- CSS was used to make the interfaces of the new system. It gives nice look and feel of the system. JavaScript was used to code all the client validation

4.5 MAJOR CODE AND MODULE STRUCTURE

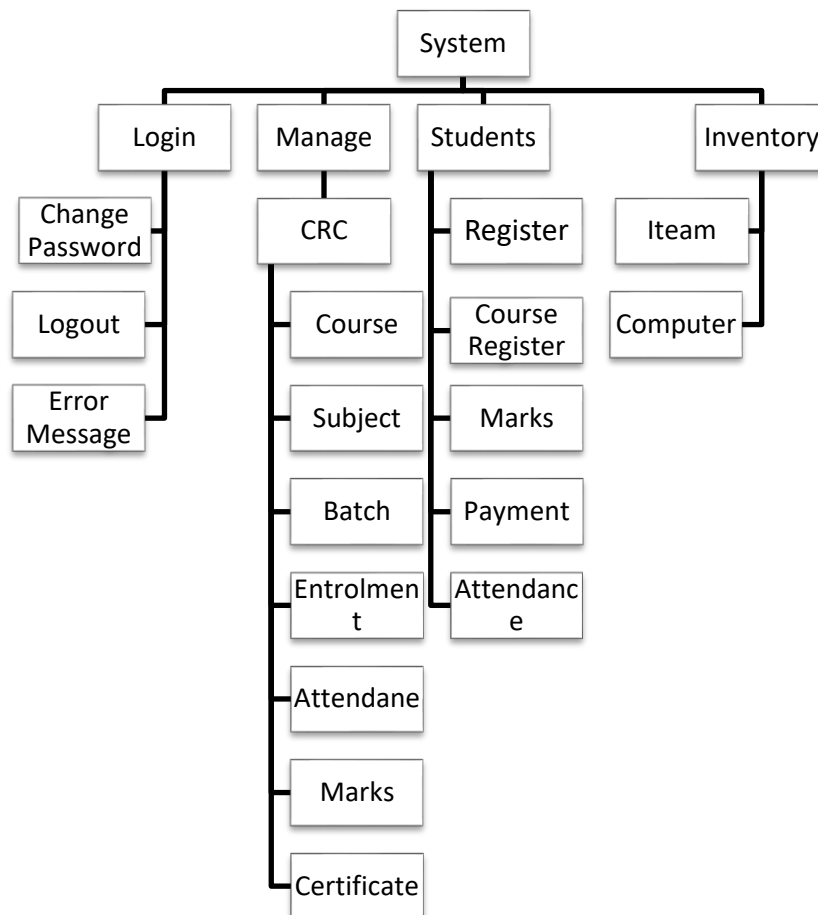
PHP, [10,11] MySQL and HTML, CSS, JavaScript are used to develop the system. They are used to develop and design the system. JavaScript is used to validate the data. Twitter bootstraps are used to design the forms and tables.

Code Files of the system are separated as CSS, JS, and image folders in CRC folder. Some of the important functions of the files code are described below.

Model Structure of the system

The system is divided by module. Model structure of the system is shown in Figure 4.1.

Data Base Connectivity



The New System has lots of PHP Pages. Every page has to be connected to the data

Figure 4.1 Model Structure

base. So the database connectivity PHP file is separated and called by each other PHP files.

```

<?php
$hostname="localhost";
$username="root";
$password="";
$dbname="creddb";
$con=mysql_connect($hostname,$username,$password);// Connect Server

if(!$con)
{
    echo"mysql could not connect";
}
$dbselect=mysql_select_db($dbname);// Connect Data Base

if(!$dbselect)
{
    echo"Data Base Not Connected";
}
?>

```

The Above Code is saved as config.php and called by other files.
include("config.php");// include server connection coding

Set Session

Each file activity and display depend on the user who login Types. So each file has set session as below.

```

IF(!isset($_SESSION))
{
    session_start();//session start coding
}
include("config.php");//

```

Set Session Value

```

if(isset($_SESSION['usertype']))
{
    $usertype=$_SESSION['usertype'];
    $username=$_SESSION['username'];
}

```

Login

```

<?php
if(!isset($_SESSION)) //check if session start or not start
{
    session_start(); //session start coding
}

```



```

    }
include("config.php");           // include server connection coding
if(isset($_POST["btnsubmit"])) //check the login submit button click or not
{
    $uname=$_POST["txtuname"];    //get the username that enter by the user
    $pwd=$_POST["txtpwd"];        //get the password that enter by the user
    // select the details for username
    $sql2="SELECT * FROM login WHERE username='$uname'";
    $result2=mysql_query($sql2)or die("error in sql login part:".mysql_error());
    $row2=mysql_fetch_assoc($result2);
    if(mysql_num_rows($result2)==1) // if correct username and password
    {
        // select the details for username and password
        $sql1="SELECT * FROM login WHERE username='$uname' AND password='$pwd'";
        //coding run the sql
        $result1=mysql_query($sql1)or die("error in sql login part:".mysql_error());
        $row1=mysql_fetch_assoc($result1); // save the data in array format
        if(mysql_num_rows($result1)==1) // if correct username and password
        {
            if($row1["status"]=="pending") // if status is pending (for new user)
            {
                echo"<script>alert('Your account is not activated');
                window.location.href='index.php';</script>";
            }
            elseif($row1["status"]=="deleted") // if status is band (for banded user)
            {
                echo"<script>alert('Your account is banded, please contact the administration');
                window.location.href='index.php';</script>";
            }
        }
        else/ // if status is active
        {
            $_SESSION['username']=$uname;//save the username in session
            $_SESSION['usertype']=$row1["usertype");//save the userType in session
            $sqlusername="select lastname,crcid from staff where username='$uname'";
            $resultusername=mysql_query($sqlusername)or die("Error in sql insert:".mysql_error());
            $row=mysql_fetch_assoc($resultusername);
            $_SESSION['crcid']=$row['crcid'];
        }
    }
}

```

```

header("location:login/index.php");// change index.php location
exit;//leave from this page
}
}
elseif($row2["attempt"]<3)//for incorrect password (attempt<3)
{
$sql3="UPDATE login SET attempt=attempt+1 WHERE username='$uname'";// increse the
attempt by 1
$result3=mysql_query($sql3)ordie("Error in login update part".mysql_error());
echo"<script>alert('Your username or password is incorrect');</script>";
}
else//for incorrect password (attempt>3), recover option
{
echo"<script>alert('You attempt more than three time, please give your register phone number
to recover your password');</script>";
}
}
else
{
echo"<script>alert('your user name not register in this');</script>";
}
}
}

```

Form Creation

The System Forms are created by div and CSS for HTML 5 View.

```

<divclass="row">
<divclass="col-lg-9"><!--All page 12 it is 6-->
<formname="frmstaff"method="post"action=""class="form-horizontal">
<?php
$sqlcorseid="select courseid from course order by courseid DESC";// Auto number for staff id
$resultcorseid=mysql_query($sqlcorseid)ordie("Auto CourseID:".mysql_error());
$row=mysql_fetch_assoc($resultcorseid);
$n=mysql_num_rows($resultcorseid);
if($n>0)
{

```

```

$courseid=$row["courseid"];
$courseid=++$courseid;
}
Else
{
$courseid="C001";
}
?>
<divclass="form-group"><!--This is 1 Row Start-->
<labelfor="text1"class="control-label col-lg-4">
    Course ID</label>
<divclass="col-lg-8">
<inputtype="text"class="form-
        control"name="txtcourseid" id="txtcourseid" value="<?php echo $courseid;?>"readonly>
<!--Data will be display from the DB -->
</div>
</div><!--1 Row End-->
<divclass="form-group"><!-- 2 row Start-->
<labelfor="text1"class="control-label col-lg-4">
    Course Title</label>
<divclass="col-lg-8">
<inputtype="text"class="form-control"name="txtcoursetitle" id="txtcoursetitle"
    required>
<!--This field must be enter data -->
</div>
</div><!--2 Row End-->
<divclass="form-group"><!--3 row Start-->
<labelfor="text1"class="control-label col-lg-4">Duration</label>
<divclass="col-lg-8">
<selectname="txtduration" id="txtduration" class="form-control">
<optionvalue="3Month">3Month</option>
<optionvalue="6Month">6Month</option>
<optionvalue="One Year">One Year</option>
</select>
</div>

```

```

</div>
<divclass="form-group"><!--This is 4 row Start-->
<labelfor="text1"class="control-label col-lg-4">Course Fee</label>
<divclass="col-lg-8">
<inputtype="text"class="form-control"name="txtcoursefee" id="txtcoursefee">
</div>
</div>
<divclass="col-lg-12"><!--This is forbutton-->
<buttonclass="btnbtn-info btn-grad"type="submit"name="btnsubmit"><iclass="icon-
save icon-white"></i> Save</button>
<a href="index.php?pg=course.php&option=view"><buttonclass="btnbtn-warning btn-
grad"type="button"name="btncancel">
<iclass="icon-remove icon-white"></i> Cancel</button></a>
</div>
</form>
</div>
</div>

```

Add Records

Get the data from the form and add it into the database .

```

if(isset($_POST['btnsubmit']))//When the submit button click do the following
{
$sqlinsert="insert into course(courseid,coursetitle,duration,coursefee)
values('".mysql_real_escape_string($_POST['txtcourseid'])."',
      '".mysql_real_escape_string($_POST['txtcoursetitle'])."',
      '".mysql_real_escape_string($_POST['txtduration'])."',
      '".mysql_real_escape_string($_POST['txtcoursefee'])."');";
$resultinsert=mysql_query($sqlinsert)or die("Error in sql insert:".mysql_error());//Sql
statement RUN or Give the Error

if($resultinsert)
{
echo'<script> alert("Data is successfully UpDated"); </script>';//if SQL Run Display the alert
}
header('location:index.php?pg=course.php&option=view');
}

```

Auto Field sequence number

The field is automatically filed by the system by sequence number.

```

<divclass="col-lg-8">
<?php
$sqlstaffid="select staffid from staff order by staffid DESC";// Auto number for staff id

```

```

$resultstaffid= mysql_query($sqlstaffid)ordie("Auto StaffID:".mysql_error());
$row=mysql_fetch_assoc($resultstaffid);$n=mysql_num_rows($resultstaffid);
if($n>0)
{
    $staffid=$row["staffid"];
    $staffid=++$staffid;
}
Else
{
    $staffid="S001";
}
?>
<inputtype="text" class="form-
control" name="txtstaffid" id="txtstaffid" value="<?php echo $staffid;?>" readonly>
<!--Data will display from the DB -->
</div>

```

Field Validation - IC Number

IC number is the standard form if it is not valuate. So when the user enters the IC number the system checks the format whether it is right or wrong. But the student who hasn't IC Number can omit the field and go on further.

```

varnic=document.getElementById("txticnumber").value; //Get the IC number in nic
if(nic.length==10)
{
    varnicformat=/^[0-9]{9}[a-zA-Z0-9]{1}$/;
    if(nic.match(nicformat))
    {
        var nicformat2=/^[0-9]{9}[VXx]{1}$/;
        if (nic.match(nicformat2))
            { document.getElementById("msgnic").innerHTML="";}
        else
            { document.getElementById("msgnic").innerHTML="Last Character
            must be X or V";
            document.getElementById("txticnumber").focus(); }
    }
else
    { document.getElementById("msgnic").innerHTML="First Nine Character
    Must be Number";
    document.getElementById("txticnumber").focus();}
}

else if(nic.length==12)
{
    var nicformat3=/^[0-9]{12}$/;
    if (nic.match(nicformat3))
    { }
else

```

```

        { document.getElementById("msgnic").innerHTML="All Character Must Be
        Number";
        document.getElementById("txticnumber").focus();}

    }
else if(nic.length==0)
{
    document.getElementById("msgnic").innerHTML="";
}
else
{document.getElementById("msgnic").innerHTML="NIC Must be 10 or 12";
    document.getElementById("txticnumber").focus();
}
}

```

Field Validation - Phone Number

```

varphonenumber=document.getElementById("txttelephonenumber").value;
varphonenumberformat=/^[0-9]{10}$/;
if(phonenumber.length>0)
{
    if ((phonenumber.match(phonenumberformat)) &&
    (phonenumber.length==10))
        { document.getElementById("msgpn").innerHTML="";}
    else
        { document.getElementById("msgpn").innerHTML="All Character
        Must Be Number";
        document.getElementById("txttelephonenumber").focus();
        }
}
else
{document.getElementById("msgpn").innerHTML=""; }

```

Set Option

Every form has Add , Update, Find, Delete Recorder Activity. So the system has more files. Option is used to reduce the file as one file for a specific table.

```

<?php
if(isset($_GET['option']))
{
if($_GET['option']=="new")
{
}
elseif($_GET['option']=="view")
{
}
elseif($_GET['option']=="find")
{
}
elseif($_GET['option']=="delete")

```

```
{
}
?>
```

Find & view on the Records

```
$staffid=$_GET['staffid'];
$sqlfind="select * from staff where staffid='$staffid'";
$resultfind=mysql_query($sqlfind) or die("Error in sql find:".mysql_error());
$row=mysql_fetch_assoc($resultfind);
    echo<div class="row"><div class="col-lg-6"><table class="table table-striped
table-bordered table-hover" id="dataTables-example">
<tr><td>Staff ID</td><td>'. $row['staffid']. '</td></tr>
<tr><td>UserName</td><td>'. $row['username']. '</td></tr>
<tr><td>Designation</td><td>'. $row['designation']. '</td></tr>
</table></div></div>;
```

Update Records

```
$staffid=$_POST['txtstaffid'];
    $sqledit="update staff set

    firstname='".mysql_real_escape_string($_POST['txtfirstname'])."',

    lastname='".mysql_real_escape_string($_POST['txtlastname'])."',

    icnumber='".mysql_real_escape_string($_POST['txticnumber'])."',

    designation='".mysql_real_escape_string($_POST['txtdesignation'])."'
wherestaffid='$staffid'";
$resultedit=mysql_query($sqledit) or die("Error in sql Edit:".mysql_error());
```

Delete Records permanently

The records that are not needed in future can be deleted permanently from the database.

```
$subid=$_GET['txtsubid'];

    $sqldelete="delete from subject where subid='$subid'";

    $resultsqldelete=mysql_query($sqldelete)or die("Error in sql
Delete:".mysql_error());
```

Delete Records

The records that are needed in future cannot be deleted but not shown on the system but they are in the database.

```
$staffid=$_GET['staffid'];

$sqldelete="update staff as s,login as l

setl.status='delete' where(s.username=l.username)and staffid='$staffid'";

$resulsqldelete=mysql_query($sqldelete)or die("Error in sql Delete:".mysql_error());
```

User name check whether it is already in database.

This java script code is written. The username is taken from text box and save in variable and send it to Ajax page.

Java Script Code

```
functionchickusername()
{
  var user=document.getElementById("txtusername").value;
  var x;
  varxhttp=newXMLHttpRequest();
  xhttp.onreadystatechange=function()
  {
    if(xhttp.readyState==4&&xhttp.status==200)
    {
      x=xhttp.responseText;
    }
    if(x=="1")
    {
      document.getElementById("msguser").innerHTML=
        "This user name already registered by another user";
      document.getElementById("txtusername").focus();
    }
    else
    {
      document.getElementById("msguser").innerHTML="";
    }
  };
  xhttp.open("GET","ajaxpage.php?option=checkusername&userid="+user,true);
  xhttp.send();
}
```


4.5.1 REUSED MODULE

In this system some components of the template BCORE Admin [12] is reused only for design the table, form, buttons and interface. This template is free of charge and available in web.

4.6 AUTHENTICATION & SECURITY

This system is accessed via web by public and students. So it must have a security and authentication techniques. Every user is redirected to the web pages, based on their user type on this system.

4.6.1 USERS

Public

They can view the information about CRCs, courses and the timetable. They can verify the certificate who studies or not in the CRCs.

Student

The student who wishes to study in the CRC, first he/she must register by himself / herself. With a registration the student can follow many courses. This is maintained by the IC number and age of a particular student. When he/she login by his/her username and password he/she looks only his/her information.

Manager or Instructor in a CRC

They can enroll their CRC student, insert and edit their CRC information only. They can find the student details and report of their CRC's.

Admin

Only the administrator has the full privilege to access the all pages of this system. He can view all the reports of the information.

Login

Members of the CRC have authorized to login and get more information. When they give wrong password more than three times then their login information will be sent to admin automatically. This is unauthorized access for others.

4.6.2 BACKUP DATA

Every week the data is backed up automatically. It uses to run the system continuously without crash.

CHAPTER 5 - EVALUATION

5.1 INTRODUCTION

CRC activities and the students' information are controlled and maintained by the system. This chapter helps to know how the system works with the all possible input. This is an activity to check whether the system works without errors. .The system may have some errors while working. So errors have to be omitted. Some errors break out the function of the whole system or software. These kinds of errors have to be check before implementation.

5.2 TESTING

System testing was initially done. The author has accessed all the relevant databases and user interfaces which leads the author to use live data. The major goal of software testing is to discover errors in the software with a secondary goal of building confidence in the proper operation of the software, when testing does not discover errors. Before implementing the new system into operations, a test of the system is done removing all the bugs. It is an important phase of a successful system. After codifying the whole programs of the system, a test plan should be developed and run on a given set of test data .The output of the test run should match the expected results. Sometimes, system testing is considered as a part of implementation process.

After the code is developed, it is tested against the requirements to make sure that the product is actually solving the needs addressed and gathered during the requirements phase. During this phase unit testing, integration testing, system testing, acceptance testing are done [8].

5.3 TEST PLAN

A Software test plan is a document, describing the testing scope and activities. It is the basis for formally testing any software/product in a project [9]. The use of a test plan is to outline the test strategy and overall test approach to evaluate the system. This includes test methodologies, traceability, and resources required and estimated schedule

Much of the time in the system development process was spent in the testing phase, since it is very crucial to the accuracy of the system. Unit test was carried out after coding each of the functionality to ensure that they behave as intended. After completing the coding phase each modules were thoroughly validated to make sure that they deliver the expected results. Finally Integration testing was carried to evaluate whether the system modules are working together with each other in perfect way [9].

5.4 TEST RESULTS

Testing of functional was carried out using test plans, test cases and test data. Well defined test plan was used to carry out successful testing procedure. It includes; a description of items to be tested, testing schedule, procedures for managing the testing process, the hardware and software requirements and other testing problems which are likely to arise.

Test cases are used to symbolize a specification of the inputs to the test and statement of what is being tested. Expected results from the system are also included. Tested items were provided separately as follows, in order to reduce the complexity of the system. In order to perform the testing in a systematic way, the test cases have been divided in to several sub modules, and each module was tested separately

Test Cases for the Login module

Login form is important to access in different privileges users. The login module test case is shown in Table 5.1.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	Enter user name and password correctly.	To test the access of the login interface.	The users' last name will be displayed in the home page at left hand side.	The users' last name was displayed	Pass
2	Enter user name and password wrongly.	To test whether the error	The following message will be displayed "Please Enter the	The alert box was displayed.	Pass

		message will be displayed	correct user name and password”		
3	If the password type more than three times for a specific user name	To stop to give wrong username and password more than 3 time.	User is blocked automatically and the following message will be displayed “Sorry your user name is blocked! Please contact your admin”	As expected	Pass
4	Login details will be shown on top left-hand side of the main window.	After login interface	It will be showed on right hand side.	User name was showed in right hand side of the window	Pass
5	Log in & Log out by any user.	To view the home page	When a user login, the home page for that user will be displayed.	The particular home page was viewed	Pass

Table 5.1 Test Case for Login form

Test Cases for the Common module

The system home page has basic and common data for public. Common module test cases are shown in Table 5.2.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	Login with different types of users.	To view the different interfaces	Three different types of menu and home pages are appeared for three different types of	View Different interfaces for different login privileges	Pass

			login. The default home page is different for these pages. Admin, Manager, Student .		
2	When login	To View different Interfaces	Different user interface are appeared for different types of user login.	Different Interfaces were viewed	Pass
3	When move on the button.	To view the active place	Button background will appear with lighter.	Active button colour was changed	Pass
4	Open in different browsers.	To support browsers	Support all browsers.	Most of the latest version browsers supported	Pass
5	Open with smart phone	To view the smart phone view	It is suitable for smart phone.	User interfaces were as expected	Pass

Table 5.2 Test Case for Home Page

Test Cases for the student Registration module

Any user can register as a student in any CRC. The student registration form is basis to interact with the system. Login information also includes. The student registration module's test cases are shown in Table 5.3.

ID	Test Case	Description	Expected Result	Actual Results	Status
----	-----------	-------------	-----------------	----------------	--------

1	When click the student registration on the menu.	The student application form will be appeared	The registration form will be appeared. Student number will be automatically created and displayed as the Student Id	Student application form was appeared.	Pass
2	Save the record	Data will be saved in database.	The following message will be displayed “Save successfully”	The saved data was in database after saving.	Pass
3	Update the record.	If any changes made in the saved data	The following message will be displayed “Update successfully”	The saved data was changed after updating.	Pass
4	Search the record. It is for the admin and their CRC only. Type a letter in the search box.	To check and find the specific record	When enter a character in search box, the data will be appeared from the start.	Specific record display.	Pass
5	When enter the Student number.	To view the student details	Specific Recorded Shown	Student details are viewed	Pass
6	Only the admin and manager can delete the record.	To check the delete button is appear when login as instructor as student	Confirmation message is displayed “Are you sure to Delete this record?” After deleting the record, it doesn't appear but not permanently delete from the database.	when login as admin or instructor the delete button was only viewed.	Pass

7	Search the deleted record which is available in the database	Save the deleted record in database	Not visible in the view table.	Deleted record were also in the database	Pass
---	--	-------------------------------------	--------------------------------	--	------

Table 5.3 Test Case for the Student Registration

Test Cases for the Staff Module

Staff of all CRCs can manage by admin. Staff details test cases are shown in Table 5.4.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	Click on 'Add New Staff'.	Staff application forms appear.	Staff ID is automatically created by the system.	Staff application form was appeared with auto staff ID	Pass
2	Select the User Type	Combo box has some data	Types of users are listed in combo box.	Four user types were shown	Pass
3	Enter the two types of IC numbers.	Data validation	When the wrong IC number is given, the error message will be displayed in div box.	Only the NIC format was accepted.	Pass
4	Enter the telephone number.	Telephone number Validation	When the wrong phone number is entered, the error message will be displayed in div box.	Only telephone number format was accepted.	Pass

Table 5.4 Test Case for the Staff Details

Test Cases for CRC Details

CRC details can manage by the admin. CRC details test cases are shown in Table 5.5.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	CRC details can be entered and edited only by admin.	Describes CRC details.	When click “new” button a new CRC is created automatically with crcid and the new CRC name will be added in other necessary form.	CRC Edit Button was appeared only login as Admin	Pass
2	Report view for the students details.	Only specific CRC students can view when login as the CRC	Each CRC can view their student details only.	Only Specific CRC students details were appear.	Pass

Table 5.5 Test Case for Details Form

Test Cases for report.

Report view is important for hard copy output. There are many types of report view is available for admin. The test case report view for admin is shown in Table 5.6.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	Log in with admin.	To view the all kinds of report	Report command is displayed on the menu.	All kinds of reports were viewed.	Pass
2	Select the staff details according to the CRC.	To view the staff in each CRC	List of staff details will be appeared in a table.	Staff details were sorted by CRC.	Pass

3	Select the students' details according to the CRC and courses for a specific year.	To view the students' details	List of student details will be appeared in a table.	Student details were sorted.	Pass
4	Select the work done report for month according to CRC staff for the selected year.	View the work done report.	Report of the work done for the CRC will be displayed.	Work done report was viewed.	Pass

Table 5.6 Test Case for Report for admin

Test Cases for the CRC courses Timetable

CRC courses time table is important for student to flow the courses in CRCs. Course time table Test Cases is shown in Table 5.7.

ID	Test Case	Description	Expected Result	Actual Results	Status
1	Select the CRC.	View the CRC time table	The available courses will be displayed in Combo box.	Selected CRC's Timetable was viewed.	Pass
2	Select the courses.	View the course timetable	Time table of the courses that are conducted by the CRCs will be displayed in table form.	Time table for the Selected course was viewed.	Pass

Table 5.7 Test Case for the CRC course Time Table

5.5 ACCEPTANCE TEST RESULT

It is a level of software testing where a system is tested for satisfactoriness. The reason of this test is to evaluate the system's fulfillment with the client requirements. The concluding production of the system should be satisfying the client. The following questionnaire was planned to evaluate the client's satisfaction. That is shown in Table 5.8.

Test Case Number	Test Case	Yes	No
01	Student Registration Module		
02	Administration Module		
03	Report Module		
04	Staff Management Module		
05	Course Registration Module		
06	Student Attendance Module		
07	Student Marks Module		
08	Student payment Module		
09	Validation Module		
10	Interface Module		

The AD of CRC education department, Northern Province acceptance result shown in the following Figure 5.1



மாகாணக் கல்வித் திணைக்களம், வடக்கு மாகாணம்
 පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව, උතුරු පළාත
 PROVINCIAL DEPARTMENT OF EDUCATION, NORTHERN PROVINCE



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மருதனார்மடம், சன்னாகம்
 මරුතනාර්මඩම පුනකම
 Maruthanarmadam, Chunnakam

Web:- www.odudept.np.gov.lk /
 www.np.edu.sch.lk

எனது இல.
 යන අංක
 My No


NP/20/SO/ICT/01/Gen

உமது இல.
 යන අංක
 Your No

Date: 2017/11/02

User Evaluation for Online Management System for Computer Resource Centers in Education
 Department, Northern Province.

Test Case Number	Test Case	Satisfied: Yes ? /No?
01	Students Registration Module	Yes
02	Administration Module	Yes
03	Reports Module	Yes
04	Staffs Management Module	Yes
05	Course Registration Module	Yes
06	Students Attendance Module	Yes
07	Students Marks Module	Yes
08	Students payment Module	Yes
09	Validation Module	Yes
10	Interfaces Module	Yes


 S. Tharmaseelan
 Assistant Director of Education
 Provincial Department of Education
 Northern Province

021-224 2800/ 0778759625 - PDE email :- educationnorthern@yahoo.com - Admin
 021-224 2801 - APDE Admin npdeplan@gmail.com - Planning
 021-224 2802 - APDE Dev npedufin@gmail.com - Finance
 021-224 2803 - APDE Gen Admin emisnp@gmail.com - EMIS
 021-224 2804 - Chief Accountant
 021-224 2805 - AO
 021-224 2806 - Planning
 021-224 2807/8/9 - General
 021-224 2810 - EMIS

Figure 5.1 User Evaluation Acceptance

This system was provided for 50 users and its usage was evaluated. The summary of the user evaluation from collecting of user's feedback is shown in the following Figure 5.2:

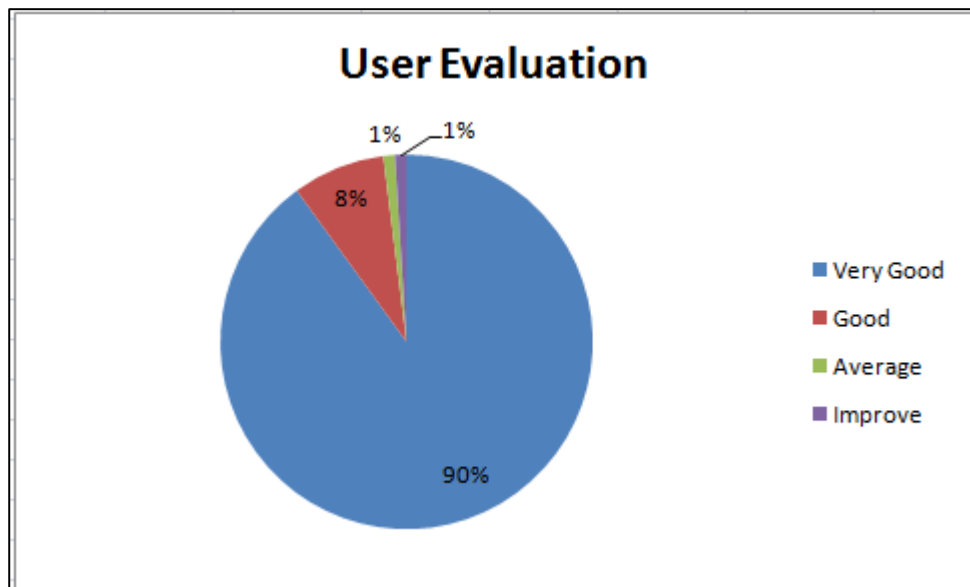


Figure 5.2 User Evaluation

CHAPTER 6 – CONCLUSION

6.1 OVERVIEW

CRCs management is controlled by the Department of Education. In the recent years the policy of the government emphasis that everyone should have basic IT literacy. CRCs help the students and the society to upgrade their IT literacy very well at the cheapest cost and impart the best quality of the IT knowledge. Many courses and programs are being conducted by the CRCs. Now there are eight CRCs which are functioning and two other CRCs which are being constructed in Northern Province. ICT Assistant Director of Education (ADE) in Northern Province supervises and manages the activities of the CRCs. CRCs are situated in different places so it is difficult to supervise them regularly. The System (OIMS-NCRC) assists the ICT ADE to supervise and manage the CRCs efficiently.

The system provides four types of user privileges such as admin, manager, instructor and student. The student who wishes to follow the courses in CRC can find the details from the web site and apply for the courses. Admin can get the details from every CRC that are situated in different places and manage it. Parents or any other institution can verify a student's certificates which are awarded by the CRC. Students can view details such as their enrollment details, attendance, results and certificate information through online. Parents can monitor their children's attendance and how their children are following the courses. CRC managers can monitor and manage their students data easily. CRC staffs can also update reports regarding their activities and works completed with less effort. In the past they were fully dependents on manual system for getting the data. Now they are capable to avoid the above mentioned irregularities through the new solution.

With the introduction of the new system, all the staffs can receive the required data very quickly. Admin (Assistant Director of Education, Northern Province) is able to get the right information on the right time without any delay. For example, admin can view all the information about each CRC rapidly.

CRCs are able to provide a better service to their students, teachers and the society through the introduction of new solution. And also it would definitely help them to get the parents attention and support.

The system is fully secured and validates the data when it is entered. All these stunning features have made this system as a valuable solution. It will fulfill all their objectives beyond their expectations.

6.2 CRITICAL ASSESSMENT

I had lots of difficulties in implementing this project. Initially I didn't have the confidence to commence the project. And also I had confusion in selecting a suitable topic, but after selecting the suitable topic with the help of supervisor I started to implement the project with confidence. By and by I involved enthusiastically doing the project. I also faced many practical difficulties such as time schedule and gaining the accurate information, since every CRC is located in different parts of the province.

6.3 FUTURE WORK

The system can be implemented in other provinces also, as the structure and function of CRCs are same in all the provinces. If all CRCs in Sri Lanka wish to implement the system it would be upgraded. There are CLCs in every school. Nearly one thousand Technical Laboratories with 60 computers were built for schools last year by the government of Sri Lanka. Our solution can be utilized to manage and monitor their progress.

- **Add LMS**

Learning Management System will be added for the students. Student can follow online courses through LMS. Online Payment method would be included in the system.

- **Finger print attendance for Staff and Student**

Academic and non-academic staffs' attendance will be entered in the system with the help of finger print scanner.

- **Inventory management System**

Inventory management will be added in near future to manage the warranty details of various technical devices of CRC.

- **Alerts through phone line.**

Course information such as student's attendance, marks and payment details will be sent to their mobile phones.

- **Accounts.**

The facility to manage the financial accounts of CRCs would be added to the system if required.

- **Online Booking System**

Certain CRC can be booked in advance by an external entity for conducting seminars and workshops through online with payment.

If all the above mentioned future enhancements are added to the system, All CRCs in Sri Lanka can be managed efficiently with less effort through the new system.

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APPENDIX

APPENDIX A: SYSTEM DOCUMENTATION

Hardware and software requirements are provided by this document. User computers should fulfill the requirement to use. This document has to give the idea for software developers in future.

Minimum Hardware Requirements

- Processor Pentium III 800MHz CPU
- Memory 256 MB RAM
- Hard Disk 80 GB Hard disk
- Display 1280 X 720, Color
- Printer Any A4 size printer
- Any Normal UPS, Keyboard, Mouse

Minimum Software Requirements

- Operating System Windows XP or Windows 7 or Linux
- Browsers Internet Explorer or Google Chrome or
 - any other HTML 5 Support Browsers

Additional Software Requirements

The following software tools will support to do any amendments or extensions to the system

- Image Editor Adobe Photoshop 7.0
- Code Editor Notepad ++
- Saver WAMP, XAMP, Saver , web folder in a host

OMIS_NCRC System Setup

Install the WAMP saver first then. Check the WAMP saver is running on your PC. The 'erc' folder is copied and past it in to the supplementary directory 'C:\wamp\www\'.

Install the software packages that above mention according to their user manual

APPENDIX B: DESIGN DOCUMENTATION

This section with their description will give a clear understanding of the designing part of the system. Work Bench and Microsoft Visio were used to create diagram and charts.

User Case Diagram.

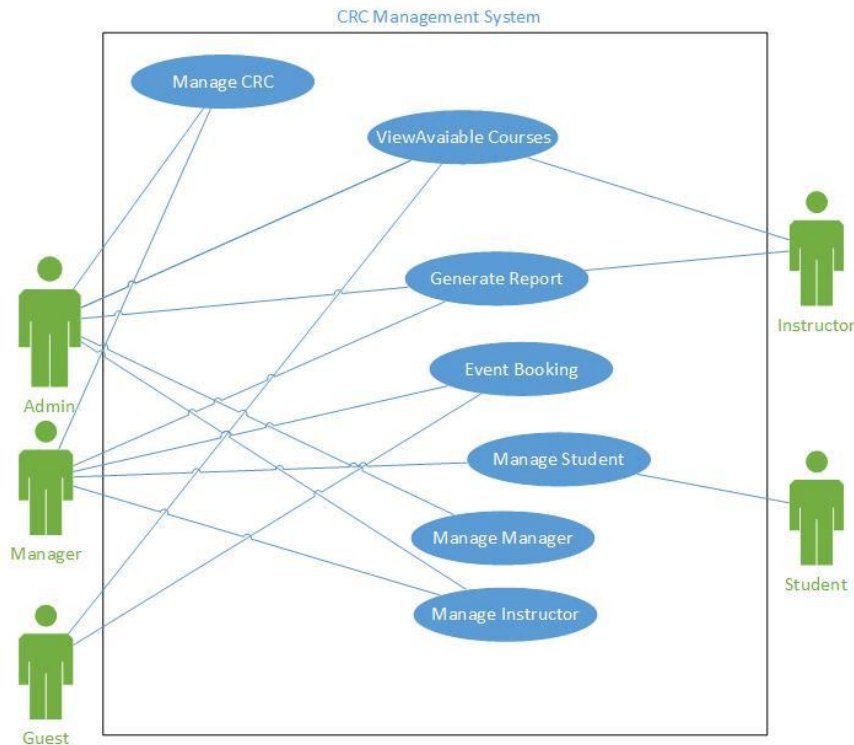


Figure B.1 User case Diagram

User case Narrative Table for admin Report

ID	Test case	Expected Result	Priority
1	Log in with admin.	Report command is display on the menu.	High
2	Select the staff Details according the CRC.	List of staff details is in table.	High
3	Select the student Details according the CRC and Courses and a specific year.	List of student details is in table.	High
4	Select the work done Repot for month according to CRC, Staff for the selected year.	Work done report for the CRC is display	High

Table B.1 User case Narrative Table for admin.

Activity diagram For Student Registration

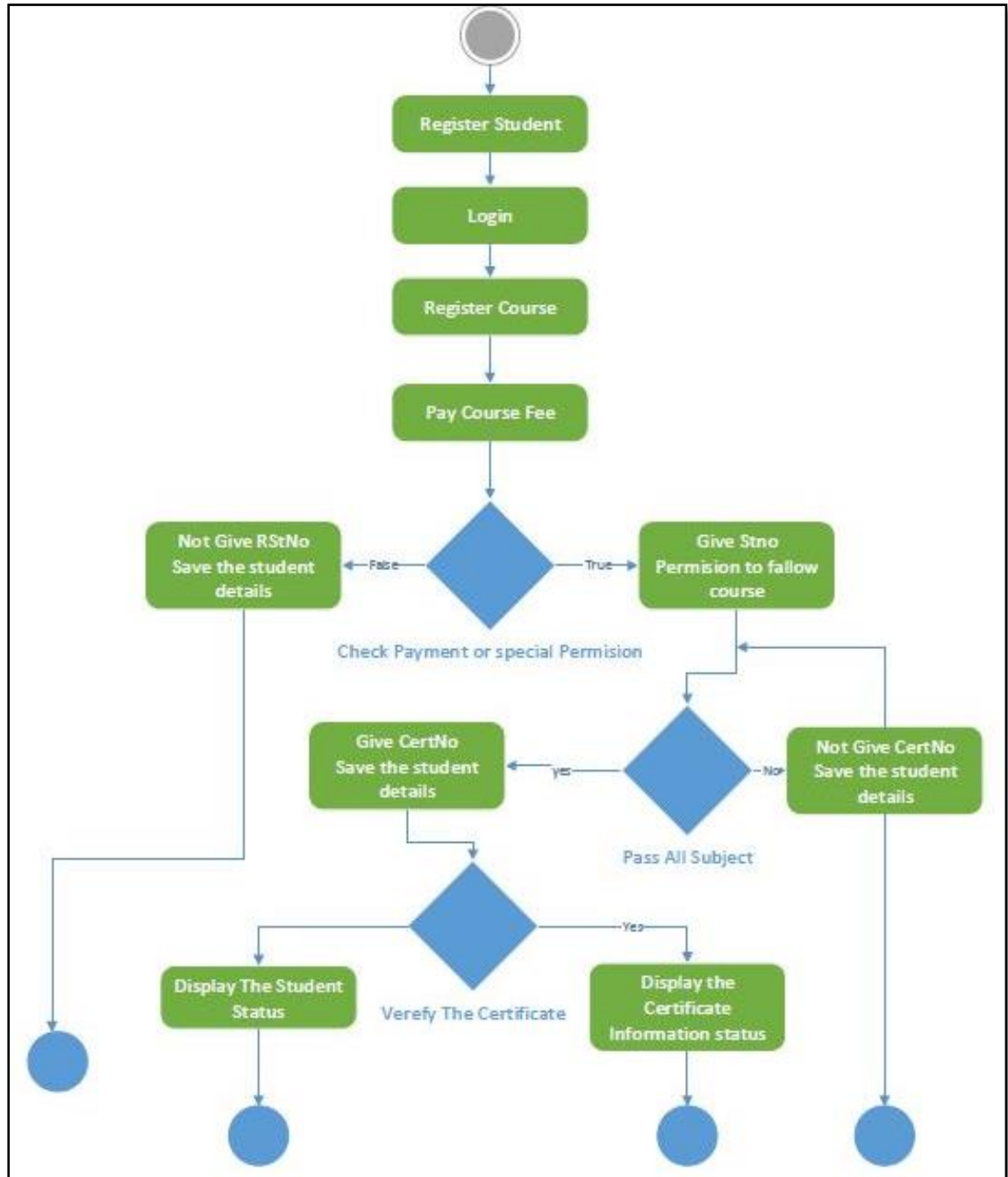


Figure B.2 Activity diagram for Student registration

APPENDIX C: USER DOCUMENTATION

○ How to initiate the system

This is the reference document to users who are going to use this system about CRC in Northern Province.

OMIS-NCRC system has four different types of users as follows such as Administrator, Manager for every CRC, Instructor for every CRC, Students.

Administrator has the full privilege to operate all reports and form. Managers of CRC can modify and view their reports only. Instructor can view their CRC reports and modify their CRCs students information, student marks, accounts details. Student can view their profile and results.

Home Page

When Type 'http://localhost:/crc/index.php' URL in the address bar (Figure C.1) Provide the home page (Figure C.2)

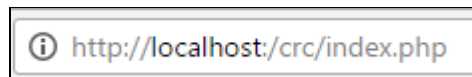


Figure C.1 Home Page URL



Figure C.2 Home Page

This Home Page has five parts.

- a. Menu parts
- b. Each CRC's Information
- c. Student Certificate Conformation.
- d. Related web side

e. Latest News Information

Login form

Click the login (Figure.C.3)menu then display Figure (Figure C.4). Then Enter the User Name and Password that are provided by the admin if you are going to study any CRC first Click Figure C-5 to get User Name and Password.

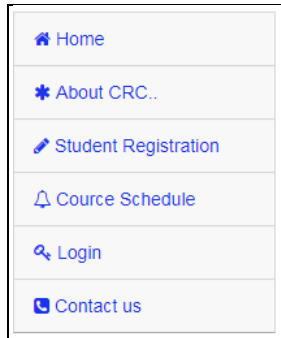


Figure C.3 Login Menu



Figure C.4 Login form

When give wrong pass word the error message will display in Figure C.5

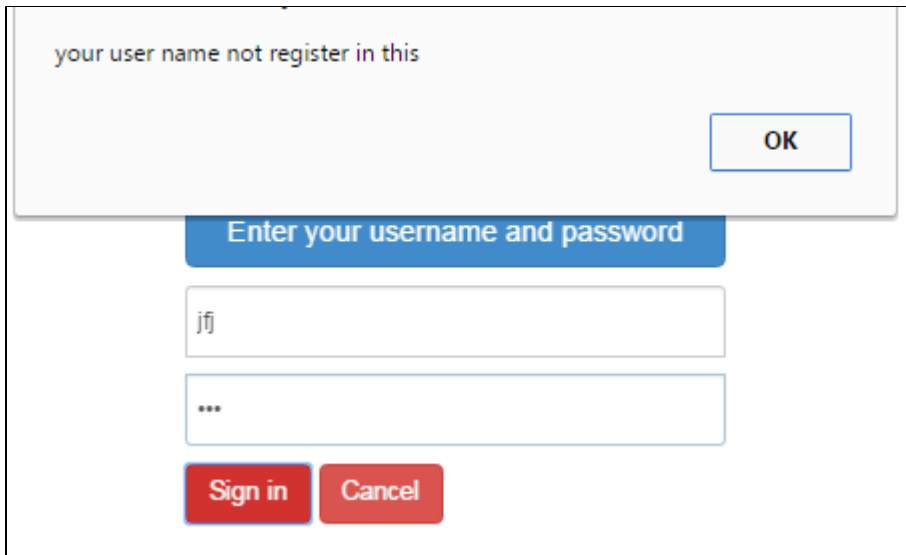


Figure C.5 Login For not register.

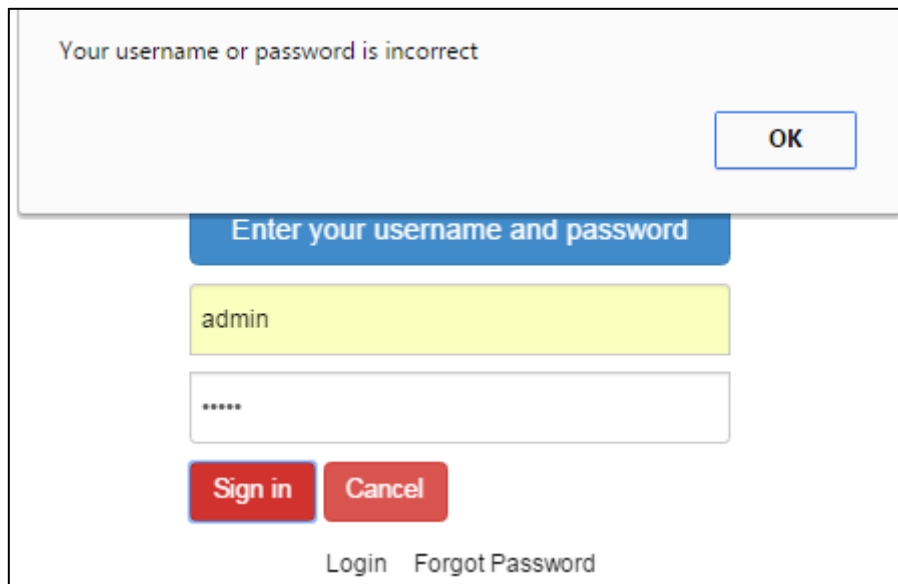


Figure C.6 User Name is right and password is wrong.

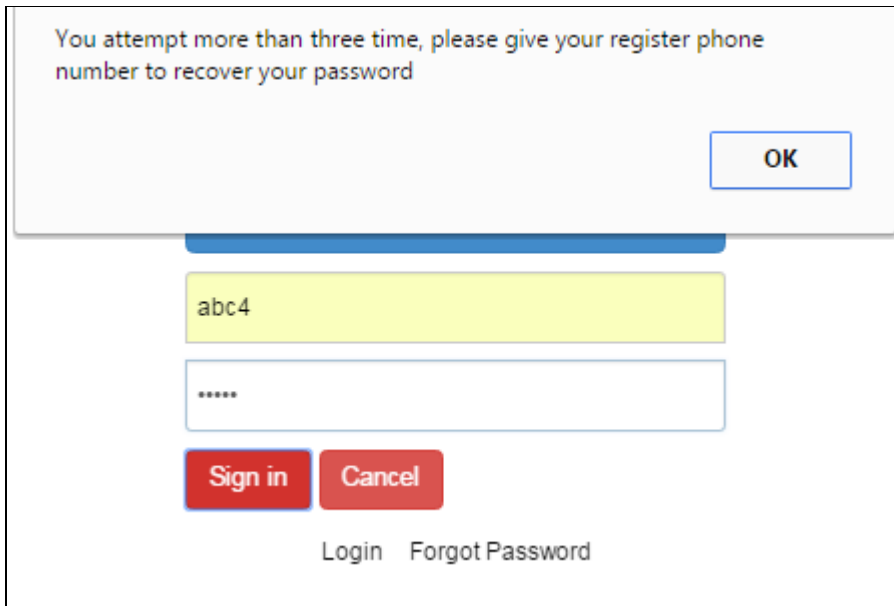


Figure C.7 Error Message for giving wrong password more than three time.

When Login as Admin

The selected menu is active for admin login. (Figure.C.8)



Figure C.8 Log in as Admin.

When Login as Manager

The selected menus is active for admin login. (Figure.C.9)

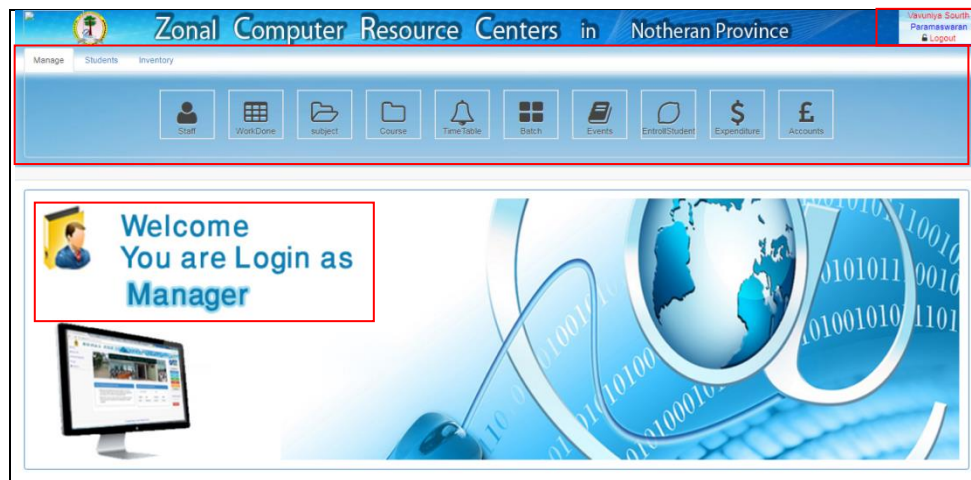


Figure C.9 Login as Manager

When Login as Student

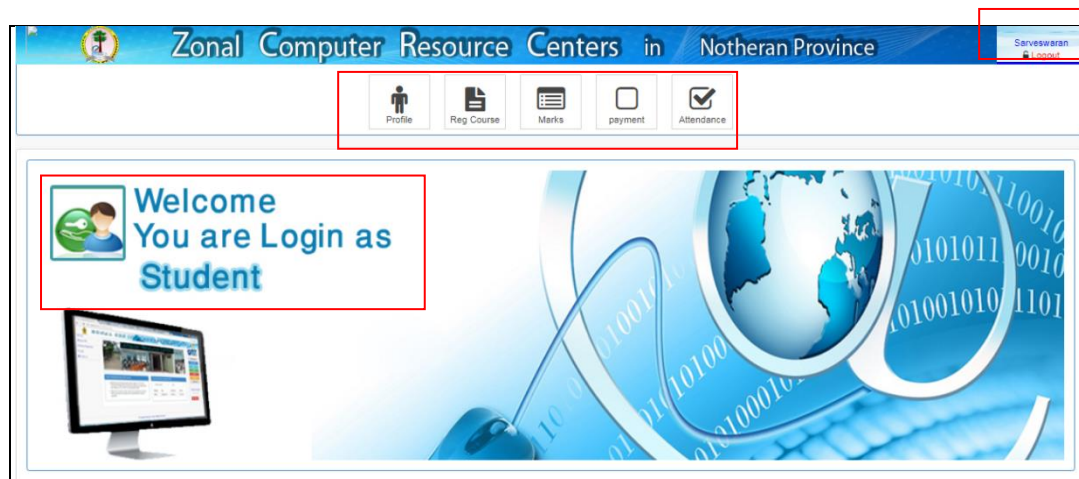


Figure C.10 Login as Student

Student Registration

When click student registration form will display (Figure C.11). The selected fields must be given.

Figure C.11 Student Registration Form

When the user gives a user name which is already in the system , the system displays error message and the user has to fill it again. (Figure C.12)

Figure C.12 User Name Error Message

When a user gives invalid IC number in IC number field, the system gives the following error message. (Figure C-13)

Figure C.13 Error Message for invalid IC number

When a user gives invalid contact number in Contact number field ,the system gives the following error message. (Figure C.14)

Telephone Number

All Character Must Be Number

Figure C.14 Error Message for invalid Phone Number

Such as all fields have the validation for their type and value. Student can be login after registration or already has username and password. Then the student can register the course in any CRC . The selected field are automatically displayed that are in this system (Figure C.15). All CRC and their courses for the academic year appear in a combo box (Figure C.16)

Student Course Registration

Registration Name

Academic Year

CRC

Course

Date

Figure C.15 Student Course registration

Student Course Registration

Registration Name

Academic Year

CRC

Course

Date

Figure C.16 CRC from combo box

Students who registered will enrolled by the CRC managers when the student make payment or special permission. The student enrollments form displayed(C.17). In the enrollment form the CRC name will be display in header. If the manager selects the course and academic year in form students who have applied for the CRC of the course in the selected year appears in table form. If manager gives enroll Pop up ask payment details if it Ok students have registered number /Certificate Number. Selected information and student number send to the students via contact number or e-mail. If the manager click 'Reject' button appear a pop up window. Select the reason about reject on the window the reject message sent by contact number or e-mail.

Student Entrolment for **CRC002**

Academic Year: 2015 Course: NVQ

Student Information

10 records per page Search:

Reg No	courseid	comdate	completedate	certificateno	Action
St 005	NVQ			VS1601	View Enrolle Reject
St 011	NVQ			VS1602	View Enrolle Reject
St 023					View Enrolle Reject

Showing 1 to 3 of 3 entries

Previous 1 Next

Figure C.17 Enrollment Form

Staff Information

Staff information when login admin display (Figure C.18). This is the view for admin type login. New staff is added by the button 'Add New Staff' (Figure C.19). Staff details edit by the button 'Edit' (Figure C.20) . Each staff Full details view by the 'View' button' (Figure C.21). Staff details hidden by the delete button.

[Add New Staff](#)

Staff Information

10 records per page Search:

First Name	LastName	TP No	CRC	Designation	Action
Kajanthiran	Thajanthiran	0774553323	CRC001	Manager	View Edit Delete
Sanmukamoothi	Paramaswaran	0777394022	CRC002	Manager	View Edit Delete
Sivapalan	Sarveswaran	0773667712	CRC002	Manager	View Edit Delete
Sukanthan	Sutharsan	0776554423	CRC001	Instructor	View Edit Delete

Showing 1 to 4 of 4 entries Previous **1** Next

Figure C.18 Staff Information

Staff Personal Information

Staff Id:

First name:

Last name:

IC Number:

Telephone Number:

Address:

Appointment Date:

CRC:

Designation:

Staff LoginInformation

User name:

Password:

User Type:

[Save](#) [Cancel](#)

Figure C.19 Add Staff details Interface

Staff Personal Information

Staff Id: S004

First name: Kajanthiran

Last name: Thajanthiran

IC Number: 792112337V

Telephone Number: 0774553323

Address: vavuniya

Appointment Date: 07/23/1999

CRC: Vavuniya North

Designation: Manager

[Save](#) [Cancel](#)

Figure C.20 Staff details Edit View

Staff Information for S004	
Staff ID	S004
UserName	abc4
First Name	Kajanthiran
Last Name	Thajanthiran
IC Number	792112337V
Telephone Number	0774553323
Address	vavuniya
Appointment	1999-07-23
CRC ID	CRC001
Designation	Manager

[Go Back](#) [Edit](#)

Figure C.21 Staff Information for view

When click Delete button the popup window ask to conform delete (Figure C.22).

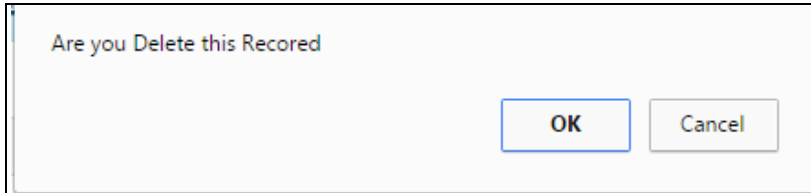
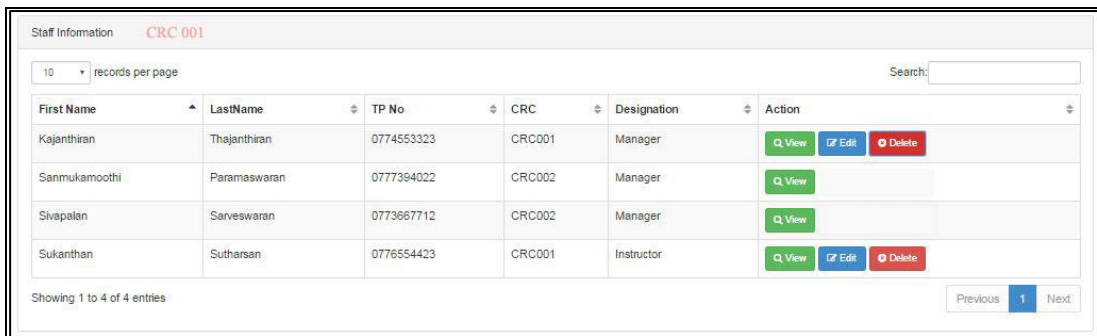


Figure C.22 Delete Confirmation Message.

When login as a manager of a CRC. Staff who are in the CRC can Edit and Delete by the Manager. (Figures C.23)



Staff Information **CRC 001**

10 records per page Search:

First Name	LastName	TP No	CRC	Designation	Action
Kajanthiran	Thajanthiran	0774553323	CRC001	Manager	View Edit Delete
Sanmukamoothi	Paramaswaran	0777394022	CRC002	Manager	View
Sivapalan	Sarveswaran	0773867712	CRC002	Manager	View
Sukanthan	Sutharsan	0778554423	CRC001	Instructor	View Edit Delete

Showing 1 to 4 of 4 entries Previous 1 Next

Figure C.23 Staff Information by login as CRC001

APPENDIX D: MANAGEMENT REPORT

Many Kids of reports are available in this system. All reports are able to generate by the administrator. Some of the reports are able to generate by the manager. Students can get the marks details. Guest can be able to develop for a course time table and student conformation details. The Following report s can be developed by the administrator.

- Staff details
- Student details
- Course details
- Event details
- CRC details
- Account details
- Inventory details
- Work done report by the staffs

The Following reports are able to develop by the CRC Managers.

- Student information of their CRC's
- Staff details of their CRCs'
- Account details of their CRCs'
- Inventory details of their CRCs'
- Work done report aboput their CRCs'

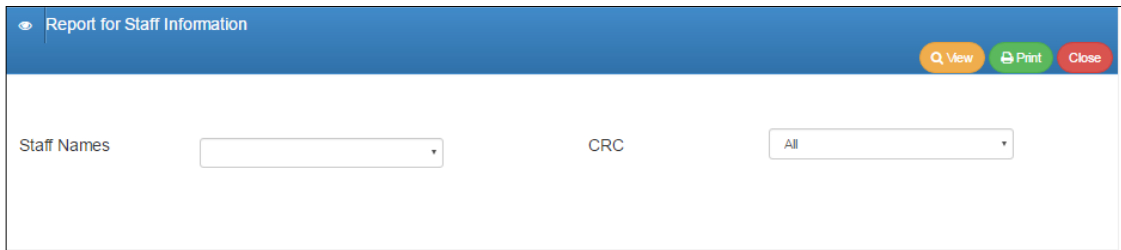
Click the repot menu in left handside . It will be listed number of reports.(Figure)



Figure D.1 Report in menu

Staff Details Report.

Select the Staff and CRC for view the report



Report for Staff Information

View Print Close

Staff Names CRC

Figure D.2 Report selection for Staff details

Click View to see the Display of the report, click print to take print out, click close to exit the report .Report is displayed as Figure D.3.



ZONAL COMPUTER RESOURCE CENTERS (ZCRC) IN NORTHERN PROVINCE

Print Report

Staff Information

10 records per page Search:

First Name	LastName	TP No	CRC	Designation
Kaliselvana	Sriharan	0242222256	CRC001	Manager
Lavakumar	Thajanthiran	0242222243	CRC001	Instructor
Mahinthana	balasinkam	0212220112	CRC003	Man
meera	kalavan	0776554456	CRC006	Instructor
ramnathan	ravi	0244444456	CRC006	Manager
Santhiramokan	kalivanan	0212222234	CRC005	Manager
Sivapalan	Sarveswarane	0773667712	CRC001	Manager
Sivapalan	Sutharsan	0776554423	CRC001	Manager
Sivapalana	Ravi	0212345432	CRC005	Instructor
Varathana	Sivalinkam	0213456521	CRC004	Manager

Showing 1 to 10 of 11 entries

Previous 1 2 Next

Figure D.3 Staff Summary Report for all CRCs

APPENDIX E: TEST RESULTS

This System was developed for many types of user. Appropriate error messages and success messages were displayed in this chapter. The following test cases and resulting screenshots given below. These are help full to enlighten user.


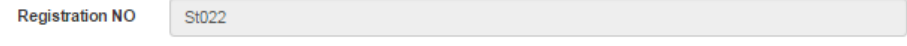
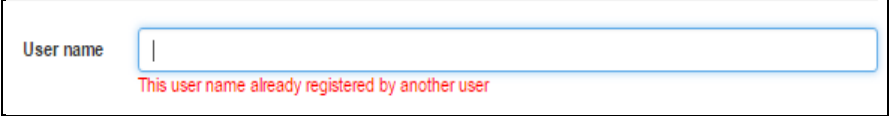
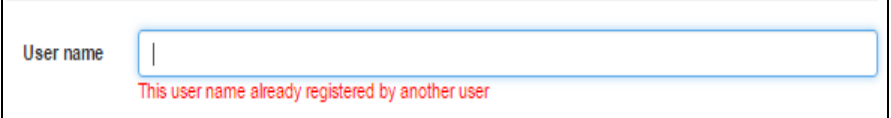

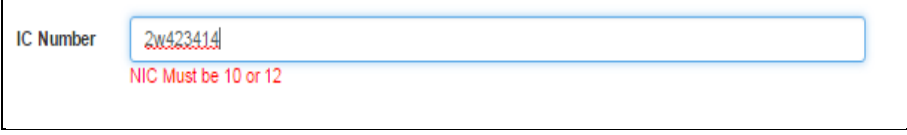
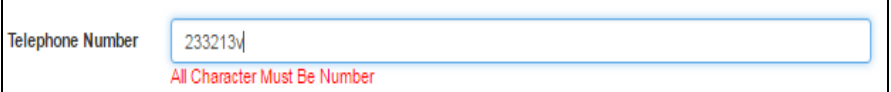
Test NO	Testing Cases	Status
1	Active Field Conformation 	√
2	Auto fill Field 	√
3	Fill the form with out user name 	√
4	Enter already registered user Name 	√
5	Enter Sign in or Save without fill the Essential field 	√
7	IC Number Validation 	√
8	Contact Number Validation 	√

Table E.1 Test results Table

APPENDIX F: CODE LISTINGS

Code Listing provides details about coding to the user. All code section is very lengthy, only important section of the coding are display bellow.

Data Base connection code .

```
<?php
$hostname="localhost";
$username="root";
$password="";
$dbname="crcdb";
$con=mysql_connect($hostname,$username,$password); // Connect Saver
if(!$con)
{
    echo"mysql could not connect";
}
$dbselect=mysql_select_db($dbname); // Connect Data Base
if(!$dbselect)
{
    echo "Data Base Not Connected";
}

?>
```

Ajax For online running

```
<?php
include("config.php");// include server connection coding
if(isset($_GET['option']))
{
    if($_GET['option']=="checkusername")
    {
        $userid=$_GET['userid'];
        $sqlcheckusername="select username from login where username='$userid'";

        $resultsqlcheckusername=mysql_query($sqlcheckusername) or die("Error in
check username:".mysql_error());
        $n=mysql_num_rows($resultsqlcheckusername);
        echo $n;
    }
    if($_GET['option']=="timetableview")
    {
        $crc=$_GET['crc'];
        $course=$_GET['course'];
        $sqlview="select * from timetable where crcid='$crc' and courseid='$course'";
        $resultview=mysql_query($sqlview) or die("Error in sql view:".mysql_error());

        echo '<div class="row">
<div class="col-lg-12">';
        echo ' <table class="table table-striped table-bordered table-hover"
><thead><tr>
<th>Subject</th>
```

```

                <th>day</th>
                <th>TimeFrom</th>
                <th>TimeTo</th>
            </tr></thead><tbody>;
while($row=mysql_fetch_assoc($resultview))
{
    echo '<tr>
        <td>'.$row['subid'].'</td>
        <td>'.$row['day'].'</td>
        <td>'.$row['timefrom'].'</td>
        <td>'.$row['timeto'].'</td>
    </tr>';
}
echo '</tbody></table></div></div>';
}
}

```

Staff Table Main Coding

```

<?php
    IF(!isset($_SESSION))
    {
        session_start();//session start coding
    }
    include("config.php");// include server connection coding
    if(isset($_POST['btnsubmit'])) //When the submit button click do the following
    {
        $sqlinsert="insert into
values('".mysql_real_escape_string($_POST['txtstaffid'])."',
        '".mysql_real_escape_string($_POST['txtusername'])."',
        '".mysql_real_escape_string($_POST['txtfirstname'])."',
        '".mysql_real_escape_string($_POST['txtdesignation'])."');

        $resultinsert=mysql_query($sqlinsert)or die("Error in sql insert:".mysql_error());

//Sql statement RUN or Give the Error
//Add the details in login form also

        $sqlinsertlogin="insert            into            login(username,password,usertype,attempt,status)
        values('".mysql_real_escape_string($_POST['txtusername'])."',

```

```

        ".mysql_real_escape_string($_POST['txtpassword'])."',
        ".mysql_real_escape_string($_POST['txtusertype'])."',
        ".mysql_real_escape_string(0)."',
        ".mysql_real_escape_string('Active').")";
$resultlogin=mysql_query($sqlinsertlogin)or die("Error in sql insert:".mysql_error());
//Sql statement RUN or Give the Error
//Message for Save Data and back the index page
if($resultinsert&& $resultlogin)
    {
        echo '<script> alert("Data is successfully updated"); </script>';
//if SQL Run Display the alert
        header('location:index.php?pg=staff.php&option=view');
    }
}

// Edit Coding
if(isset($_POST['btncedit'])) //When the submit button click do the following
{
    $sqlinsert="update staff set
firstname=".mysql_real_escape_string($_POST['txtfirstname'])."',
    values
('".mysql_real_escape_string($_POST['txtstaffid'])."',
    ".mysql_real_escape_string($_POST['txtusername'])."',
    ".mysql_real_escape_string($_POST['txtdesignation']).")";
    $resultinsert=mysql_query($sqlinsert)or die("Error in sql insert:".mysql_error());
//Sql statement RUN or Give the Error
?>
<html>
<head>
<!-- PAGE LEVEL STYLES -->
<link href="assets/plugins/dataTables/dataTables.bootstrap.css" rel="stylesheet" />
<!-- END PAGE LEVEL STYLES -->
<title>Staff</title>
<script>
functionvalidatenic() // validation IC Number
{
    varnic=document.getElementById("txticnumber").value;
    if(nic.length==10)
    {
        varnicformat=/^[0-9]{9}[a-zA-Z0-9]{1}$/;
        if(nic.match(nicformat))
        {

```

```

var nicformat2=/^[0-9]{9}[VvXx]{1}$/;
if (nic.match(nicformat2))
{
    document.getElementById("msgnic").innerHTML="";
}
else
{
    document.getElementById("msgnic").innerHTML="Last Character
must be X or V";
    document.getElementById("txticnumber").focus();
}
}
else
{
    document.getElementById("msgnic").innerHTML="First Nine Character
Must be Number";
    document.getElementById("txticnumber").focus();
}
}
else if(nic.length==12)
{
    var nicformat3=/^[0-9]{12}$/;
    if (nic.match(nicformat3))
    {
    }
    else
    {
        document.getElementById("msgnic").innerHTML="All Character Must Be Number";

        document.getElementById("txticnumber").focus();
    }
}
else if(nic.length==0)
{
    document.getElementById("msgnic").innerHTML="";
}
else
{
    //alert(nic);
}

```

```

        document.getElementById("msgnic").innerHTML="NIC Must be 10 or 12";
        document.getElementById("txticnumber").focus();
    }
}
// Validation Phone Number
function validatephonenumner(){
    var phonenumner=document.getElementById("txttelephonenumner").value;
    var phonenumnerformat=/^[0-9]{10}$/;
    //alert(phonenumner);
    if(phonenumner.length>0)
    {
        if ((phonenumner.match(phonenumnerformat))&& (phonenumner.length==10))
        {
            document.getElementById("msgpn").innerHTML="";
        }
        else
        {
            document.getElementById("msgpn").innerHTML="All Character Must Be Number";

            document.getElementById("txttelephonenumner").focus();
        }
    }
    else
    {
        document.getElementById("msgpn").innerHTML="";
    }
}
</script>
</head>
<body>
<?php
if(isset($_GET['option']))
{
Add New Data
    if($_GET['option']=="new")
    {
        ?>
<div class="row">
    <div class="col-lg-9">
        <!--All page 12 it is 6-->
        <form name="frmstaff" method="post" action="" class="form-horizontal">

```



```

// Auto number for staff id

<?php
    $sqlstaffid="select staffid from staff order by staffid DESC";
    $resultstaffid=mysql_query($sqlstaffid) or die ("Auto
StaffID:".mysql_error());
    $row=mysql_fetch_assoc($resultstaffid);
    $n=mysql_num_rows($resultstaffid);
    if($n>0)
        {
            $staffid=$row["staffid"];
            $staffid=++$staffid;
        }
    Else
        {
            $staffid="S001";
        }
?>
<h3>Staff Personal Information</h3>
<hr>
<!--This is 1 Row Start-->
<div class="form-group">
<label for="text1" class="control-label col-lg-4">Staff Id</label>
<div class="col-lg-8">
    <!--Data will be display from the DB -->
<input type="text" class="form-control" name="txtstaffid" id="txtstaffid" value="<?php echo
$staffid;?>" readonly>
</div>
</div>
<!--This is first Row End-->
<!--This is 2 row First Name Start-->
<div class="form-group">
<label for="text1" class="control-label col-lg-4">First name</label>
<div class="col-lg-8">
<input type="text" class="form-control" name="txtfirstname" id="txtfirstname">
</div>
</div>
<!--This is 5 row Start-->
<div class="form-group">
<label for="text1" class="control-label col-lg-4">IC Number</label>
<div class="col-lg-8">

```

```

        <input type="text" class="form-control" name="txticnumber" id="txticnumber"
onBlur="validatenic(">
        <font color="#ff0000"><div id="msgnic"></div></font>      <!--alert message for
validation-->
</div>
</div>

        <!--This is 6 row Start-->
        <div class="form-group">
<label for="text1" class="control-label col-lg-4">Telephone Number</label>

<div class="col-lg-8">
<input type="text" class="form-control" name="txttelephonenumber" id="txttelephonenumber"
onBlur="validatephonenumber(">
        <font color="#ff0000"><div id="msgpn"></div></font>      <!--alert message for
validation-->
</div>
</div>

        <!--This is 9 row Start-->
        <div class="form-group">
<label for="text1" class="control-label col-lg-4">CRC</label>
<div class="col-lg-8">
        <select class="form-control" name="txtercid" id="txtercid">
                <?php
                        $sqlcrc="select crcid,crcname from crc";
                        $resulterc=mysql_query($sqlcrc) or die("Error in
CRC:".mysql_error());

                        while($row=mysql_fetch_assoc($resulterc))
                        {
                                echo                                '<option
value="'. $row['crcid']. "'>'. $row['crcname']. '</option>';
                        }
                ?>
        </select>
</div>
</div>

        <!--This is 10 row Start-->
        <div class="form-group">

```

```

<label for="text1" class="control-label col-lg-4">Designation</label>
<div class="col-lg-8">
    <select name="txtdesignation" id="txtdesignation" class="form-control">
        <option value="Manager">Manager</option>
        <option value="Instructor">Instructor</option>
        <option value="Coordinator">CRC Coordinator</option>
        <option value="Coordinator">Provincial Coordinator</option>
        <option value="Labour">Labour</option>
    </select>
</div>
</div>

<h3>Staff LoginInformation</h3>
<hr>
<!--This is 2 row username Start-->
    <div class="form-group">
<label for="text1" class="control-label col-lg-4">User name</label>

<div class="col-lg-8">
<input type="text" class="form-control" name="txtusername" id="txtusername" required><!--This must
be enter data -->
</div>
</div>

    <div class="form-group"><!--This is 2 row username Start-->
<label for="text1" class="control-label col-lg-4">Password</label>

<div class="col-lg-8">
<input type="text" class="form-control" name="txtpassword" id="txtpassword" required><!--This must
be enter data -->
</div>
</div>

<!--This is 10 row Start-->
    <div class="form-group">
<label for="text1" class="control-label col-lg-4">User Type</label>

<div class="col-lg-8">
    <select name="txtusertype" id="txtusertype"
class="form-control">
    <option
value="Manager">Manager</option>

```

```

                                <option
value="Instructor">Instructor</option>
                                <option    value="Coordinator">CRC
Coordinator</option>
                                <option
value="Admin">Admin</option>
                                </select>
</div>
</div>
        <!--This is 11 for button-->
        <div class="col-lg-12">
            <button class="btn btn-primary" type="submit" name="btnsubmit"><i class="icon-save icon-
white"></i> Save</button>
            <button class="btn btn-primary" type="submit" name="btncedit"><i class="icon-edit icon-
white"></i> Edit</button>
        </div>
    </form>
</div>
</div>
<?php
    }
    elseif($_GET['option']=="view")
    {
        $sqlview="select * from staff";
        $resultview=mysql_query($sqlview) or die("Error in sql view:".mysql_error());
        echo '<div class="row">
<div class="col-lg-12">
                                <a href="index.php?pg=staff.php&option=new"><button
class="btn btn-success" type="submit" name="btnsubmit"><i class="icon-save icon-white"></i> Add
New Staff</button></a><br><br>
                                </div>
                                </div>;
        echo '<div class="row">
<div class="col-lg-12">
<div class="panel panel-default">
<div class="panel-heading">
                Staff Information
</div>
<div class="panel-body">;

```

```

        echo '<div class="table-responsive"><table class="table table-striped table-bordered
table-hover" id="dataTables-example"><thead><tr>
                <th>First Name</th>
                <th>LastName</th>
                <th>TP No</th>
                <th>CRC</th>
                <th>Designation</th>
                <th>Action</th></tr></thead><tbody>;
while($row=mysql_fetch_assoc($resultview))
{
        echo '<tr><td>'.$row['firstname'].'</td>
                <td>'.$row['lastname'].'</td>
                <td>'.$row['telephonenumber'].'</td>
                <td>'.$row['crid'].'</td>
                <td>'.$row['designation'].'</td>
                <td>;
                echo
                '<a
href="index.php?pg=staff.php&option=find&staffid='.$row['staffid'].'"><button class="btn
                btn-success" type="submit" name="btnsubmit"><i class="icon-save
icon-white"></i>
                View</button></a> ';
                echo
                '<a
href="index.php?pg=staff.php&option=edit&staffid='.$row['staffid'].'"><button class="btn
                btn-primary" type="submit" name="btnsubmit"><i class="icon-save
icon-white"></i>
                Edit</button> ';
                echo
                '<a
href="index.php?pg=staff.php&option=delete&staffid='.$row['staffid'].'"><button class="btn
                btn-danger" type="submit" name="btnsubmit"><i class="icon-save
icon-white"></i>
                Delete</button> ';

                echo'</td></tr>';
}
        echo '</tbody></table></div></div></div></div></div>';
}
elseif($_GET['option']=="find")
{
        $staffid=$_GET['staffid'];
        $sqlfind="select * from staff where staffid='$staffid'";
        $resultfind=mysql_query($sqlfind) or die("Error in sql find:".mysql_error());
        $row=mysql_fetch_assoc($resultfind);

```

```

        echo'<div class="row"><div class="col-lg-6">
        <table class="table table-striped table-bordered table-hover" id="dataTables-example">
        <tr><td>Staff ID</td><td>'.$row['staffid'].'</td></tr>
        <tr><td>UserName</td><td>'.$row['username'].'</td></tr>
        <tr><td>First Name</td><td>'.$row['firstname'].'</td></tr>
        <tr><td>Staff ID</td><td>'.$row['telephonenumber'].'</td></tr>
        <tr><td>Staff ID</td><td>'.$row['staffid'].'</td></tr></table></div></div>';

echo '<a href="index.php?pg=staff.php&option=view">
        <button class="btn btn-success" type="submit" name="btnsubmit">
        <i class="icon-save icon-white"></i> Go Back</button></a> ';
echo '<a href="index.php?pg=staff.php&option=edit&staffid='.$row['staffid'].'"><button class="btn btn-
primary" type="submit" name="btnsubmit"><i class="icon-save icon-white"></i> Edit</button> ';
    }
    elseif($_GET['option']=='edit')
    {
        $staffid=$_GET['staffid'];
        $sqledit="select * from staff where staffid='$staffid'";
        $resultedit=mysql_query($sqledit) or die("Error in sql find:".mysql_error());
        $row=mysql_fetch_assoc($resultedit);
        ?>
        <h3>Staff Personal Information</h3>
        <hr>
        <div class="row">
            <div class="col-lg-9">
                <!--All page 12 it is 6-->
                <form name="frmstaff" method="post" action="" class="form-horizontal">
                    <div class="form-group"><!--This is 1 Row Start-->
                        <label for="text1" class="control-label col-lg-4">Staff Id</label>
                        <div class="col-lg-8">
                            <input type="text" class="form-control" name="txtstaffid" id="txtstaffid" value="<?php echo
$staffid;?>" readonly> <!--Data will be display from the DB -->
                        </div>
                    </div> <!--This is first Row End-->
                </div>
            </div>
        </div>
    }
    elseif($_GET['option']=='delete')



```

```

    {
        $staffid=$_GET['staffid'];
        $sqldelete="update staff as s,login as l
        set l.status='delete'
        where(s.username=l.username)and staffid='$staffid'";
        $resultsqldelete=mysql_query($sqldelete)or die("Error in sql Delete:".mysql_error());
        header('location:index.php?pg=staff.php&option=view');    }
}
?>
<!-- GLOBAL SCRIPTS -->
<scriptsrc="assets/plugins/jquery-2.0.3.min.js"></script>
<scriptsrc="assets/plugins/bootstrap/js/bootstrap.min.js"></script>
<script src="assets/plugins/modernizr-2.6.2-respond-1.1.0.min.js"></script>
<!-- END GLOBAL SCRIPTS -->
<!-- PAGE LEVEL SCRIPTS -->
<scriptsrc="assets/plugins/dataTables/jquery.dataTables.js"></script>
<script src="assets/plugins/dataTables/dataTables.bootstrap.js"></script>
<script>
    $(document).ready(function () {
        $('#dataTables-example').dataTable();
    });
</script>
<!-- END PAGE LEVEL SCRIPTS -->
</body>
</html>

```

APPENDIX G: CLIENT CERTIFICATE

	<p>மாகாணக் கல்வித் திணைக்களம், வடக்கு மாகாணம் පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව, උතුරු පළාත PROVINCIAL DEPARTMENT OF EDUCATION, NORTHERN PROVINCE</p>	
Fax :- 021-224 1383 email :- npdeplan@gmail.com	மருதனார்மடம், சன்னாகம் මරුතනාර්මඩම පුනකමි Maruthanarmadam, Chunnakam	Web:- www.edu.np.gov.lk / www.npedu.sch.lk
எனது இல. } கனல் எண் } My No }	NP/20/SO/ICT/01/Gen	உமது இல. } உகல் எண் } Your No }
Date: 2017/11/02		


BIT Coordinator
University of Colombo School of computing
Colombo – 7
Dear sir/Madam

LETTER OF CERTIFICATION

This is to certify that Mr.Sivapalan Sarveswaran (R102843) has successfully designed and developed Online Management System for Computer Resource Centers in Education Department, Northern Province. The project was undertaken by his partial fulfillment of a requirement for the Bachelor of Information Technology Degree Program.

The system was fully satisfied with our requirements. This web based management system would be solution for us and our CRCs' staff. From this system students can easily register through online.

I'm pleased to certify that the system developed by Mr.Sivapalan Sarveswaran fulfill the requirements of the department


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S.Tharmaseelan
Assistant Director of Education
S. Tharmaseelan
Assistant Director of Education
Provincial Department of Education
Northern Province

021-224 2800/ 0778759625 - PDE	email :- educationnorthern@yahoo.com - Admin	021-224 2805 - AO
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021-224 2802 - APDE Dev	npedufin@gmail.com - Finance	021-224 2807/8/9 - General
021-224 2803 - APDE Gen Admin	emisnp@gmail.com - EMIS	021-224 2810 - EMIS
021-224 2804 - Chief Accountant		

GLOSSARY

Attributes – Properties of the entities and relationships.

Candidate Key – A candidate for a primary key.

Cardinality – Number of records involve in a relationship.

Client/Server architecture – A network architecture in which computers on a Network act as a server managing files and network services or as a client where users run applications and access servers. Clients rely on servers for resources like web pages, data, files, printing and OLAP.

Client side validation – User input validation take place on the Client Side browser.

Database server – A data storage and retrieval system. Database servers typically run on a dedicated computer and are accessed by client applications over a network.

Dedicated web server – A dedicated server shares its resources, and only uses the resources itself when performing administrative tasks for the network.

Entities – Distinct objects in the system.

Firewall – A firewall is a hardware or software solution that is used to enforce security policies.

Foreign Key – A field in one table that uniquely identifies a row of another table or the same table.

Human Computer Interaction – Is the study, planning, and design of what happens when you and a computer work together.

Hyperlink – A link in a document to information within that document or another document.

Hyper Text Mark-up Language – The coded format language used for creating

hypertext documents on the World Wide Web and controlling how Web pages appear.

Initial Assessment - This is the final assessment for grant of accreditation.

Internet – A network of computer networks which operates world-wide using a common set of communications protocols.

Java – Java is an object-oriented programming language developed initially by James Gosling and colleagues at Sun Microsystems.

JavaScript – JavaScript is a client side script language - a system of programming Codes, created by Netscape that can be embedded into the HTML of a web page to add Functionality.

Local Area Network – a computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1 km.

Normalization – The process of reducing a complex data structure into its simplest, most stable structure.

Open source – Open source is software with source code that anyone can inspect, modify, and enhance..

PHP Hyper-text Pre-processor – The PHP Hypertext Pre-processor is a server-side, cross-platform, HTML embedded scripting language that allows web developers to create dynamic content that interacts with databases.

Pre-assessment – This is the assessment that assess whether the Lab is ready for a formal audit. This also plans out the proper audit.

Presentation layer – It is used to present data to the application layer in an accurate, well-defined and standardized format.

Primary Key – A column in a table whose values uniquely identify the rows in the

table. A primary key value cannot be NULL.

Random Access Memory – The volatile memory used to temporarily store Information for processing.

Relationship – Meaningful interaction between objects.

Right System – A system that is without errors and satisfies all the user requirements.

Server side validation – The validating is done on the server.

Stakeholders – An individual or group with an interest in the success of an Organization in delivering intended results and maintaining the viability of the Organization's products and services.

Structured Query Language – Structured Query Language (SQL) is a standard computer language for relational database management and data manipulation. SQL is used to query, insert, update and modify data.

System Development Life Cycle – A methodology used to develop, maintain, and replace information systems.

Test drivers – A program or testing tool used to execute and control testing.

Verification – Verification is the act of reviewing, inspecting or testing, in order to establish and document that a system meets regulatory or technical standards.