

# **Classroom Activity Management System**

**N Wijegunasekara  
2021**



# **Classroom Activity Management System**

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

**N Wijegunasekara.  
University of Colombo School of Computing  
2021**



# Declaration

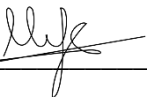
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To the best of my knowledge, it does not contain any material published or written by another person, except as acknowledged in the text.

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This is to certify that this thesis is based on the work of Ms. N Wijegunasekara under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

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# Abstract

Technical Education and Training has become a leading sector in Sri Lanka's education. 36 Technical Colleges have been established around the country, under the Department of Technical Education and Training (DTET). Matara Technical College represents the Southern Province.

There is a total of 34 courses available under the Matara Technical College. It has 26 permanent lecturers and 60 external lecturers. Students between 17 to 28 years of age can obtain education in these technical colleges. Students may follow the courses they prefer. The rules and regulations are almost identical to the school system.

In addition to delivering lectures, a technical college teacher, have to prepare and submit lesson plans, reports and other related documents. These things cost a lot of time and effort. In Sri Lanka, teacher-centered system of education is practiced. The teacher puts the priority on teaching. The time taken for these additional activities may reduce the effectiveness of the learning and teaching process. May be this could lead teachers to be stressed or failure to perform duties. A 'Classroom Activity management system' is proposed in order to resolve these problems. The purpose of this system is to provide teachers a way to perform their tasks efficiently, accurately, and reliably.

This system provides number of useful features to the lectures:

- Using this system, lecturers can create term notes, year plans, assessment plans, term plans, subject plans etc. The lecturer presents the lesson according to the daily plan. If it is missed, the plan must be reorganized.
- The system sends email and SMS notifications to the lecturers to remind a particular lecture. Further, this method will also remind lectures about the essential issues in the classroom.
- The system facilitates lecturer evaluation, student evaluation, and report generation.
- User management functionalities
- Backup and restore functionalities.

Using this system, the technical collage can succeed the following benefits:

- The main benefit of this system is minimizing documents.
- Reducing operational costs
- Improving the efficiency of the daily work
- Improving productivity.
- It also reduces human error and saves the teacher's time.
- This system can be run on any modern-day browser
- Users may use different types of devices to access this system (laptops, tablets, etc)

This system was developed using open-source technologies. PHP language is used for coding. MySQL is used as the database management system. Bootstrap for designing interfaces, and Apache web server for hosting the web application.

To test the system, unit tests was used to test the smaller pieces of code. In addition to that, system testing, acceptance testing, and the combined test method was used to test this system.

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# List of Acronyms

CRAMS	-	Classroom Activity Management Systems
IT	-	Information Technology
SMS	-	Short Message Service
LMS	-	Learning Management System
UML	-	Unified Formatting Language
DFD	-	Data Flow Diagram
ER	-	Entity Relationship
PHP	-	Hypertext Pre-Processor
MySQL	-	My Structured Query Language
IE	-	Internet Explorer
HTML	-	Hypertext Markup Language
CSS	-	Cascading Style Sheets
IDE	-	Integrated Development Environment
SDLC	-	Software Development Life Cycle
DTET	-	Department of Technical Education and Training
TVEC	-	Tertiary and Vocational Education Commission

# Chapter 1 – Introduction

## 1.1 Introduction

According to the United Nations, Sri Lanka is one of the two countries in South Asia that has achieved “high human development” [1]. The Classroom Activity Management System is not a student-focused system. This is a system focused on lecturers. The information from CRAMS is based on classroom evidence. College managers make regular decisions about the operations of their college. To make good decisions, college managers need up-to-date and accurate information. It helps CRAMS to systematically collect, store, and analyze information about their Technical College so that Corporate Managers can easily access relevant and trusted information to support their decision making.

Responsible people who design education policies and education systems understand the institution based on evidence of the systematic maintenance and use of school records. This takes into account both the quantity and the quality of the data. Some of the main functions of a classroom are teaching, learning and writing. Sri Lanka is a country where the teacher prioritizes the classroom. Thus, the teacher pays more attention to teaching. But the documentation process, which is essential for management, can add extra stress to the teacher.

The most popular software among school management systems users is very effective in maintaining everything a school needs. Nevertheless, some of these software tools are capable of handling administrative and staffing and student related tasks [2][3]. Technical colleges are educational institutions that maintain a different administration from the university system and the general school system. Technical colleges are full government institutions. This is administered in accordance with the Central Government Circulars. The aim is to create a system that is unique to Sri Lankan technical education among the many different classroom management systems

## **1.2 Problem Domain**

At the beginning of the teaching-learning process in a classroom, the teacher should make the necessary basic plans (year plane, assessment plane, term notes, Lesson plane) according to the relevant curriculum document. The prepared plans should be implemented on the due date and time and the teacher should prepare the data and documents required to measure their effectiveness and efficiency. One teacher teaches several courses in one semester and also teaches a number of subjects. Making plans for each subject taught and preparing relevant records (daily teaching records, monthly delivery report) and documents (skill standard, curriculum, training guide, teaching guide) is a very tedious and time-consuming process. If the busy teacher in the teaching-learning process forgets or neglects this planning, writing and reporting, it will affect their performance.

In addition to reporting on the teaching process, the teacher must also manage student records in the classroom. Attendance reports and attendance summaries are basically some of the management data. These data are essential for students to enter the exam and their accuracy is very important. These data are also important for measuring a student's academic progress. It takes a lot of time and effort for the teacher to process manually and manage these on a daily basis.

When the teacher is the main responsibility, the evaluation of the students is also a part of this. At least six consecutive assessments should be made for each subject and their mark sheets and mark summaries should be prepared. These assessments are very important in determining the level of knowledge of the student and are the main documents of the institution. It is the responsibility of the teacher to provide these documents accurately and on time. All of these documents are manual, which can compromise their accuracy and reliability. And this process requires a lot of time and effort.

### **1.3 Motivation of the Project**

To overcome above difficulties, the suggested Classroom Activity Management System will be helpful. It automates a large part of the technical college education process, simplifies the teacher workflow, and saves their time and effort.

In addition, there are many online and affordable systems for managing classroom activities. However, most of the typical features of a technical college are not addressed in those systems. As a consequence, buying software that is already would not address college's requirements and it can be a waste of money for the college as well. Therefore, it is useful to create a college-based classroom activity management system from the scratch to overcome these problems. On the other hand, Computer usage is rapidly increasing in the country, [4] and IT and the Internet are growing rapidly [5]. Therefore So many people have access to this system.

### **1.4 Aims and Objectives of the proposed system**

Aim of this proposed classroom management system is to develop a web-based classroom activity management system for Matera Technical College. This system manages student attendance, student evaluation scores, scheduling and scheduling, and all of the facilities, such as reports required for the teacher to maintain the course, are held in one stage.

The main objective of this system is automating the class room activity management. Therefore, no waste of time, no paper waste and no mistakes encounter. Nevertheless, report generation for decision-making process is easier.

Objectives of developing an Activity Management System,

- Reminders of daily activities of the teacher via SMS
- List and display lessons that the teacher cannot complete.
- Facilitate scheduling of lessons that the teacher cannot complete
- Make it easy to mark students' attendance by using the bar code reader.
- Facilitate analysis of attendance rate and academic progress using attendance data
- Facilitate analysis of students' assessment marks and academic progress
- Facilitate sending reports prepared by the system to the given email address.

## **1.5 Scope of the project**

This system is designed to make the classroom teacher's work easier and more efficient. This consists of two modules: the administration module and the lecture module. Under the administrative module, lecturers and students are inserted, and the required data and information is inserted to the system to manage the system. The lecture module facilitates many activities related to the lecturer. These include creating term notes, automating lecture delivery reports, managing student attendance, and continuing student evaluation.

Administrator and lecturer's use of email and SMS. Also, the system can generate reports such as term notes, lecture delivery report etc. for the decision management process. As a security objective, this system also has a backup component. Using the proposed systems technical collage can become a much more efficient place. User must be able to understand English and the user must have basic computer literacy in order to use this system.

## **1.6 Implementation Environment**

A feasibility study has conducted to determine the suitability of a system before it can be developed. It covers the cost of installing and maintaining the system, human resources, hardware, software, quality of the system. What is the main hardware needed to develop and maintain the system? It also looks at whether the college can afford them. Details of these requirements are shown in Table 1.6.1 1. In addition, the best software for system development is listed in Table 1.6.1 2 according to the environment in which this system is used. There are many ways in which the system development life cycle continues. The proposed system uses the AGILE method. Development and testing of the AGILE system occur throughout the life cycle, with small groups developing into separate development blocks. The development and testing of each other will be different from the waterfall model. Agile methodology allows continuous changes in the requirements and initial stages. This model is very flexible and can easily adapt the project to the customers' needs and expectations. Software architecture supports the design, development, installation, and maintenance of a system. The 3-tire model is used to design the proposed system. The Classroom Activity Management System serves as the application layer between the user and the data management system. This is a fast and safe method. The distance between the user and the user is part of the security of the data.



## 1.6.1 Hardware and Software Requirements

Minimum hardware requirements are listed in Table 1.6.1-1

Hardware Module	Requirement
Resolution	Minimum 1024 × 768
Internet Connection	Broadband Connection
Hard Disk	20 Gb or More Disk space
RAM	512 MB/1GB or higher
Processor	Intel 2GHz or higher

*Table 1.6-1 : Minimum hardware requirements*

Minimum software requirements are listed in Table 1.6.1-2

Hardware Module	Requirement
Operating System	Windows
PHP	PHP 5 × version
Database	My SQL
Web Server	Apache webserver
Web Browser	IE, Mozilla Fire Fox, Google Chrome

*Table 1.6-2 : Minimum software requirements*

## 1.7 Dissertation Outline

Following is a brief description of the remaining chapters of the dissertation.

### Chapter 2 – Background

This chapter includes information on system Requirements Analysis, functional and non-functional requirements, and discusses other systems and similar systems.

### **Chapter 3 – Design**

This chapter discusses information gathering and system analysis. It analyzes information-gathering techniques and their operational level. The requirements identified are analyzed. This chapter contains UML entries drawn during the analysis process. It also discusses the language, tools, and techniques used. Also, it discusses the implementation details of the system

### **Chapter 4 – Implementation**

This chapter describes how the system works, including user interfaces, codes, and system-generated reports.

### **Chapter 5 – Testing and Evaluation**

This chapter discusses how to test the system at different stages, test plan, test steps, and methods used. The results of the testing have also been widely discussed.

### **Chapter 6 – Conclusion**

This chapter summarizes the full thesis and discusses the findings and contributions. It also expresses the limits of the project, the present and future of the project.

# **Chapter 2: Background**

## **2.1 Introduction**

The rules of education change in every country in the world. It maintains different learning styles from institution to institution. Against this backdrop, various software designed for The rules of education change in every country in the world. It maintains different learning styles from institution to institution. Against this backdrop, various software designed for classroom management can be purchased and available as open-source software. Some of the software that is currently in use are studied in this chapter. Find out if such software is suitable for use in a technical college. Find out whether the software can be used by the college or not. Discusses why the identified software cannot be used and if not, why it should not be used.

Data collection and data analysis are just the first steps of a system development life cycle. various methods are used to analyze the data collected. Also, system design can be done with a unified formatting language (UML). This chapter discusses system requirements, gathering facts, identifying functional and non-functional requirements, and discussing system requirements specifications. It also discusses system design, system development, and system setup requirements.

## **2.2 Requirement Gathering**

The first step in developing a system is identifying needs, gathering requirements, and analyzing them. There are many requirements in gathering methods. Interviews, observations, and document analysis are used in the development of this system. Information was collected from the staff of the Technical College (Principal, Deputy Principal, Lecturers, and Information Management Officers, Assessing Officers) and students for interviews. Analyzing the data collected through this methodology can identify the customer's needs and achieve a better outcome [6].

- Interviews

Interviews are the most common form of information gathering. The analytical skills of the questioner are important for gathering information from the interview. Asking open-ended questions is more effective. The interrogator must be a good listener. Information should be collected covering all sections and the interview questionnaire is attached in Appendix A. To create good software, it is important to understand the goals and expectations of the user and stakeholders.

- Observations

There is currently no computer-based system for managing the teacher's activities in the classroom. During the development of the proposed system, the existing manual can monitor the system and obtain information about the user's needs and problems. You can get feedback from a third party about the problem. In addition, ideas can be obtained by observing similar systems and demo systems on the Internet.

- Document Analysis

Reports and documents of an organization are very important in collecting data. For this purpose, the teacher may prepare documents (timetable, lesson plan, training plan, daily teaching report), format and plans (timing, assessment plan). It is also possible to study other sources of the organization (manuals, circulars, procedures manual, work instructions).

## **2.3 Requirement Analysis**

Analyses information gathered through interviews, observations, and document analysis and identifies functional and non-functional requirements. It identifies functional features that the system provides for ease of viewing, as well as non-functional features that the user assumes are system-wide. As functional elements Manage college information, manage lecture information, user information, and student information can be identified. Non-functional requirements include security, logging, storage, disaster recovery, access.

### **2.3.1 Functional Requirements**

The system describes what needs to be done as functional requirements. Or an active requirement is a set of user requirements that the system must meet. It takes into account the needs of the organization, the needs of the system administration, the needs of the user as well as the software and hardware needs. The functional requirements of the proposed system are described below.

#### **Functional requirement of an administrator**

- **Manage college information**

It manages to add and manage college information, sectional information, and course details.

- **Manage lecture information, user information, and student information**

The Lecturer is the main character of this system and adds lectures to the system, removing and resetting through this panel. And also admin and lecture are two users of this system, adding a new user can also remove the system and determine their accessibilities. And administrators have the privilege to add and delete student information

- **Maintaining the user's privacy**

The administrator is also responsible for adding a user to the system and ensuring that the password is entered into the system securely. The system also allows the user to set the password as a strong password.

- **Making student data search easier**

A large number of students' data is stored in an educational institute which facilitates easy access to them

- **Manage organizational information**

Enter information about the academic year, semester, and course details

- **Add time table**

Since this system is designed for streamlining classroom activities, the only consideration is to incorporate personal and class schedules into the system

- **Get backups and restore backups.**

Admin can get system backups as separate tables or as an entire database at once. Also, the admin can restore data into the database if required.

### **Functional requirement of a lecturer**

- **Facilitate the coursework, subject and lesson planning and scheduling**

To teaching in the classroom, the teacher must perform a number of activities. Annual lesson plans, daily lesson plans, daily teaching records, and so on. The system supports these functions and is less time-consuming.

- **View scheduled coursework, Subject, and lesson plan**

Displays the activities that need to be performed on a daily basis, in accordance with the relevant plans

- **Send SMS notification**

If the system does not record that the teacher has taught the lesson as scheduled, the system will send an SMS to the teacher's phone number to remind them. This makes the teacher aware of the lessons they are missing and makes it easier to re-plan.

- **Assessment planning and processing**

The evaluation of students in a technical college is done under two institutions. These institutions are the Department of Technical Education and Training(DTET) and The Tertiary and Vocational Education Commission (TVEC). Due to this, the system supports a slightly more complicated evaluation process.

- **Generate reports.**

The main facility provided to the teacher through this system is the ability to create all the relevant documents automatically. Those documents include the year plan, assessment plans, timetables, attendance, assessment schedules, and a number of other documents.

#### **Functional requirement of a Class Teacher**

- **Keeping track of daily teaching**

This will allow you to analyze whether the learning is done according to plan. Re-planning missed lessons. The teacher's progress can be measured.

- **Manage Students attendance and student progress**

The lecturer can generate various reports to the decision-making purpose such as applicant details, client details, number of vacancy details, etc.

- **Generate reports.**

The teacher in charge of the class should prepare written notes of the teaching activities, assessments, student attendance reports as well as the progress of the students in all the subjects of the course.

### **2.3.2 Non-Functional Requirements**

Being located in a non-functional requirements system can ensure the utility and efficiency of the entire system. Failure to meet non-functional requirements such as usability, performance, safety, reliability, and maintenance means that the quality and productivity of the system is low.

- **System Maintain**

From the design of the system to the completion of development of the system, it should be planned how it will be maintained. It is important to keep the system up to date.

- **Usability**

Developing the system to make it easy for even the least literate computer user to improve their usage. As a result, users prefer to use the system. As an added benefit, we can reduce costs by reducing the number of training opportunities available to users.

- **Performance**

The performance of a system should be taken into account from the data collection, which is the first step in system preparation, and plans should be made accordingly. Different factors affect performance, some of which are system workload, performance criteria, functional environment, resource requirements. Considering these factors, this should enable the system to fulfil the user's requirement in less time and faster. It increases user enthusiasm Here the use of system compatible hardware, interface design and the techniques used are very important.

- **User Friendship**

It is important to create user-friendly interfaces while maintaining the user's mental integrity. You can create a better interface by looking at colors, fonts, pictures and more. The interface it creates should allow the user to perform their tasks easily, quickly and accurately. The software should be designed in such a way that it can be easily understood even if the user's computer literacy is low.

- **Security**

The security of a computer system is different. The key is protecting data. It stores teachers, students, and corporate information. Students' assessment marks are very special. The proposed system uses various encryption schemes for database protection, such as setting a user password to log into the system.

- **Reliability**

A feasibility study is conducted before developing a software. There you will come to conclusions about the environmental conditions in which you can create a software. In these situations, the software is designed to be able to meet the user's needs more effectively in a given period of time.



## **2.4 Review of present well-known Online Classroom Management Systems**

The process of teaching and learning is more complex. Computerized systems are used to make this task easier. A number of online classroom management systems are available on internet. The end result of all these efforts is to provide better education for children. Few of similar systems are,

- **OpenEduCat**

This system covers many other areas besides class management. OpenEduCat [7] is mainly designed for universities. This open source school management software enables efficient management of students, faculty, curriculum and classes. It is best to keep all students' information in one place for easy access to decision making and when needed. Online cloud based education management system. This method is based on the student's activities in the classroom. You will have to pay to configure the latest version of this system. Recruitment / Admission, Facilities, Fees, Library, Exam, Results, All these are included for the convenience of the student.

The following are some of the features of configuration, recruitment / admission, student, faculty, parents, groups, course, activities, assignments, classrooms, schedules, attendance, exams and results. Our system is mainly focused on lecturers. The speaker would be embarrassed if we added too many administrative elements. However, some features are compatible with our system

### **Lesson Planning**

Lesson Plans are lesson plans designed for teaching during the course. The teacher should take extra care in preparing the lesson plans. This will take more time and effort. It takes a lot of time and effort to update the lesson plans being prepared. Openeducat supports this. According to the lesson plan, the teacher prepares teaching aids and learning materials.

The system is designed to be used by anyone in general. Therefore, the special format used in technical college system when preparing lesson plans cannot be taken.

## **Configure Class Room**

Configuring the classroom is an important process for an academic institution. This system helps you to provide classroom data at the beginning of the year.

## **Attendance Register**

OpenEduCat provides student attendance maintenance. The course will prepare the necessary documentation to sustain the students' participation in the course.

The bar code reader is not used here to mark students' attendance. The method we use in our system is easy and efficient. It is not possible to compile documents according to the format given to the Technical College.

- **OpenSIS**

They say OpenSIS [8] is best suited for Small and Middle schools with knowledgeable IT staff. OpenSIS is a free, open-source platform, While OpenSIS offers both free and paid versions of its software, it has significant features in its free version. Schools can use this OpenSIS software to maintain study transcripts, health reports, student attendance, demographic information, scheduling, class record books and custom reports.

OpenSIS integrates Moodle [9] LMS [10] with its latest software updates, making it easier for students, staff and teachers to manage distance learning. Learning management systems are useful for educational institutions. Before you begin the process of selecting an LMS, it is important to identify the organization that is appropriate for your organization, as the LMS is used by various customer like eCommerce groups.

- **TS School**

The TS School [11] system is a common system for managing all the functions of a complete school system. This system covers human resource management, student management, staff management, exam management and much more. However, the system focuses on human resource management. The TS School system contains many minor features that are not

required for the area covered by the proposed system. It does not meet the requirements of the proposed system.

Our system is primarily concerned with classroom activity management. The teacher's actions are given priority. Uses a high level of messaging for staff. In our system, this works at a very basic level. We hope to further improve this situation.

- **UniTime**

Unitime [12] is one of the best open-source web-based software for managing the Institute. The main objective is to manage the university schedule. But it supports curriculum management, classroom management, lecture management, student management, assessment management and exam management. The system is designed using the construction logical programming.

It tries to automate timetables as well as minimize the inconvenience of scheduling. There are many similar systems available today that can be purchased with or without payment. However, this same system is designed for educational institutions in general. Every country in the world has its own educational principles. Sri Lanka also conducts secondary and primary education with rules and regulations to suit the country. Therefore, each institution has to adopt its own unique methods. Technical College is an institution which follows a different approach to university education and school education. Therefore, systems designed for general use are not compatible with the technical college system, so it may be a waste of time and effort to install such a system.

This system is best suited for study and is important for the development of the proposed system. However, users with less computer knowledge may find it more difficult to train how to use this system. This is because the system consists of many functions and a number of more complex outputs

### 2.4.1 Critical Analysis of the Similar Systems

Section 2.4 describes some of the similarities among the currently proposed system and the system in market or the Internet and some aspects of it are further investigated. This section compares the suitable structures of the similar systems compared to the proposed classroom activity management system. A summary of the analysis of similar systems is given in the table 2.4.1 below.

	<b>OpenEd uCat</b>	<b>OpenS IS</b>	<b>TS School</b>	<b>UniTim e</b>	<b>Proposed System</b>
Student Information management	yes	yes	no	yes	yes
Student Attendance management	yes	yes	no	no	yes
Assignment	yes	no	yes	yes	yes
Subject management	no	no	no	no	yes
Timetable management	yes	yes	yes	yes	yes
Teachers' information management	yes	yes	no	yes	yes
Lecturer daily evaluation	no	no	no	no	yes
Report management	yes	yes	yes	yes	yes
Backup System	yes	yes	yes	yes	yes

*Table 2.4-1 : Critical Analysis of the Similar System*

## 2.5 Summery

The Computerized Classroom Activity Management System is a very effective method for the classroom activity management process. It automates classroom activity management. Section 2.2 provides the software information for analysing several systems similar to the proposed system and gathering the data needed to create workable software.

# Chapter 3: Design Architecture

## 3.1 Introduction

The rules of education change in every country in the world. It maintains different learning styles from institution to institution. Against this backdrop, various software designed for classroom management can be purchased and available as open-source software. Some of the software that is currently in use are studied in this chapter. In this it is aimed to find out if such software is suitable for use in technical college and to find out whether the software can be used by the college or not. Discusses why the identified software cannot be used and if not, why it should not be used.

Data collection and data analysis are just the first steps of a system development life cycle. Various methods are used to analyse the data collected. Also, system design can be done with a unified modelling language (UML). We build a model to better understand the building system to identify the structure of the proposed system. In addition, it is important to plan how the system should be implemented and whether it is working properly. Also, under this chapter, many of the activities performed by the system are described in detail, and the narrative used to illustrate the functionality of the system at that time is written down.

The main objectives of this study are to identify all the activities of the teacher in the classroom. Identify the various stakeholders involved in the system and their opportunities, improving functionality and quality, improving confidence in the system and so on.

## 3.2 System Architecture

Data collection and data analysis are just the first steps of a system development life cycle. Various methods are used to analyse the data collected. Also, system design can be done with a unified modelling language (UML). Use case diagram, entity relationship diagram are used to accomplish these tasks successfully.

The proposed system uses the AGILE method. Development and testing of the AGILE system occur throughout the life cycle, with small groups developing into separate development blocks. Agile methodology allows continuous changes in the requirements and initial stages. This model is very flexible and can easily adapt the project to the customers' needs and expectations.

Due to the use of the AGILE methodology, it is possible to have regular contact with the project client, Matara Technical College. This is very advantageous in system development. Another advantage of this method is the transparency and predictability that the system can maintain with the stakeholder at every step of the development life cycle. One of the major advantages of using AGILE is the ability for system developers to keep abreast of changes in functional requirements that may occur as a result of urgent decisions made by the organization.

The tools and technologies that contribute to system development are WAMP, Bootstrap, Adobe Photoshop, PHP and HTML Figure 3.2-1 below shows the first Level DFD.

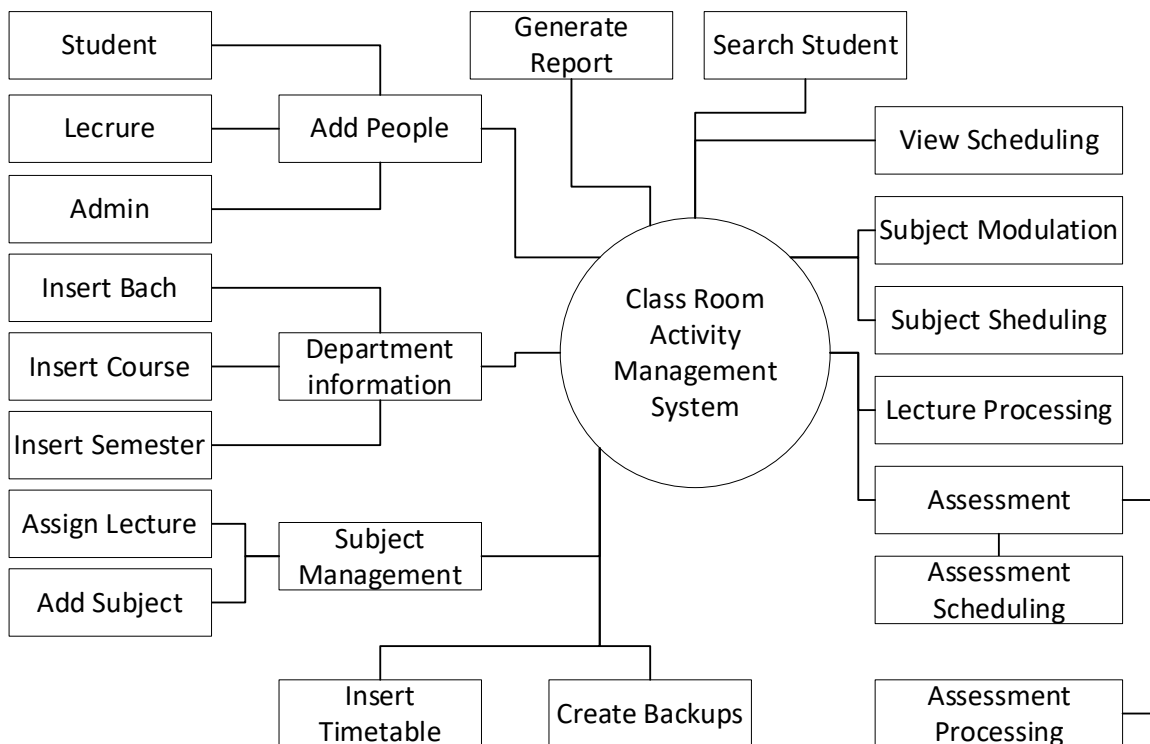


Figure 3.2-1 : First Level DFD

### 3.3 Design Techniques

The problem is first identified when creating a software. Second, it is designed to provide a computer solution to that problem. Uses Unified Formatting Language (UML) to create the design. Figure 3.3.1 below shows the UML diagram hierarchy. The main objective is to identify the components, data structures and algorithms that need to be developed, how to create interfaces, and the software layout. This section covers the software requirements, hardware requirements, in addition to the use case diagram, entity relationship diagram, and serial diagram.

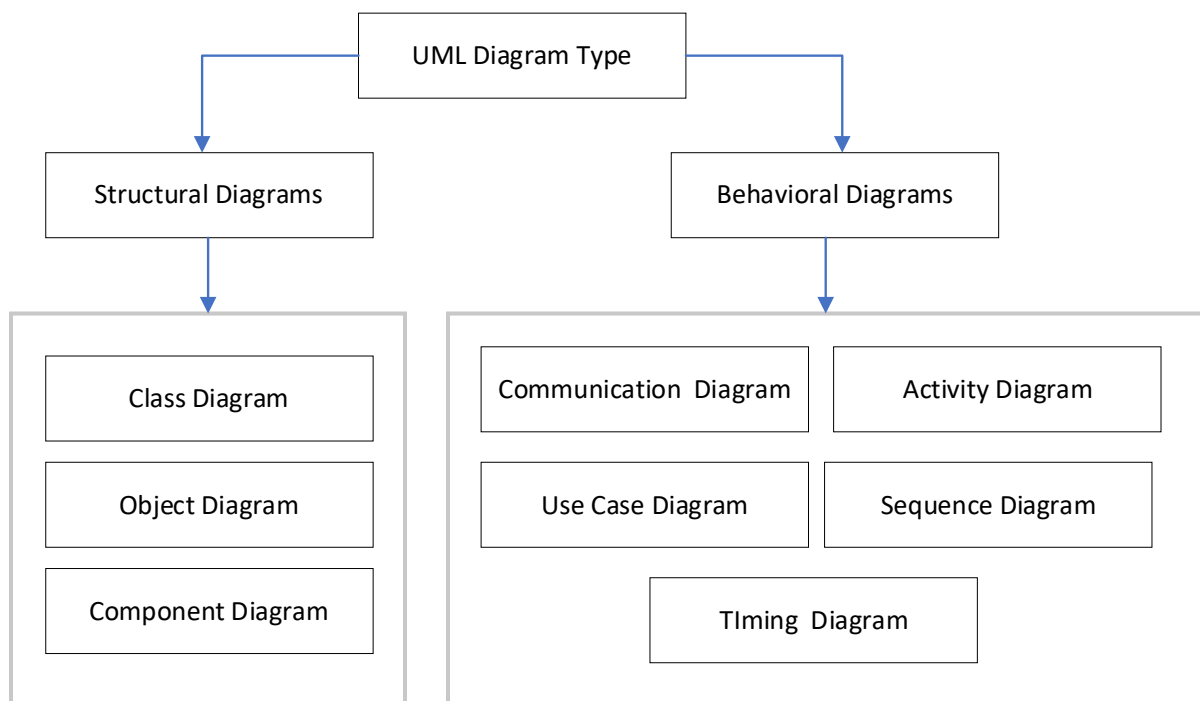


Figure 3.3-1: UML Diagram Hierarchy

### 3.4 Entity Relationship Diagram

Organizational Relationship Diagram is the representation of the interconnections between the components of a system. It provides a framework for analyzing the collected data and developing a data management system that can be managed more efficiently. According to this system, the following diagram depicts 15 entities and their attributes. An entity is denoted by a rectangle and an attribute by an ellipse. [13]. The ER diagram for the proposed system is shown in Figure 3.4.1

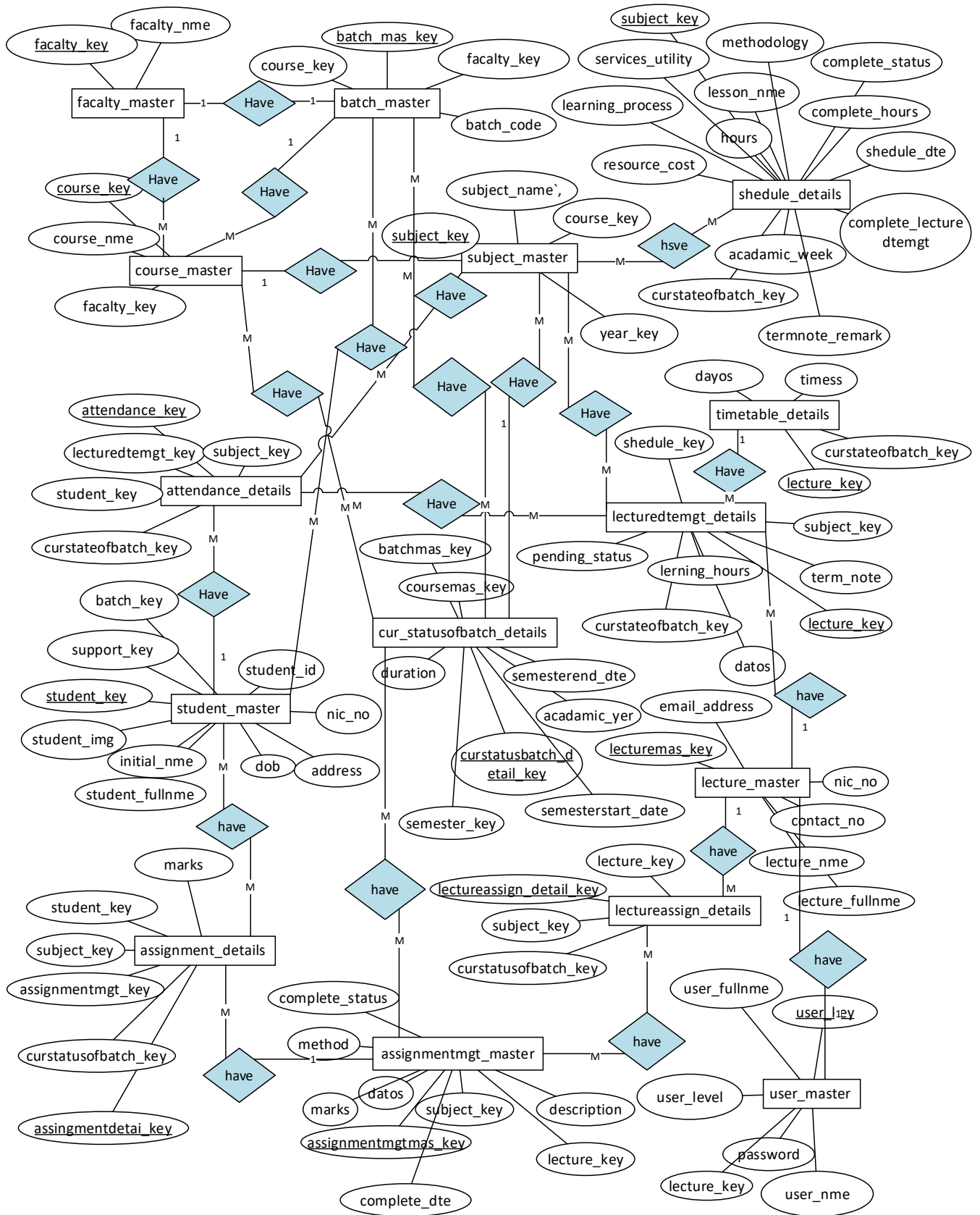


Figure 3.4-1 : Entity Relationship Diagram



### 3.5 Use Case Diagram

The use case diagram is one of the UML diagrams. This is important to understand the simple functioning of the system. Users who use the system are called actors. There are three actors in this system, the lecture, Class teacher and the administrator. This diagram illustrates the relationship between users and actors. A use case diagram for this system is shown in Figure 3.5.1.

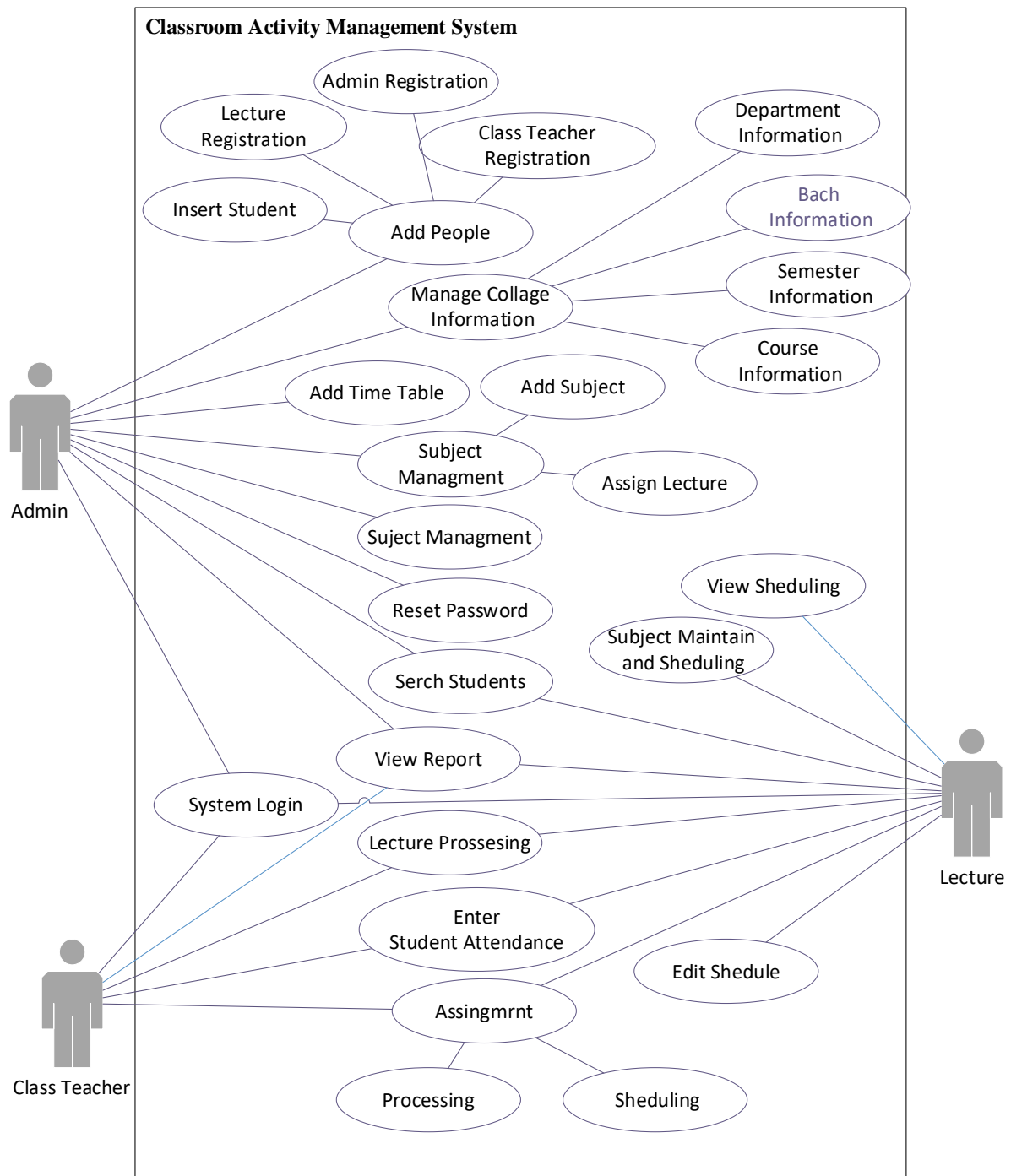


Figure 3.5-1 : Use Case Diagram

### 3.5.1 Use Case Narratives

Use Case narrative is the method by which actors write how they interact with the system. Here will simply describe the use cases identified in the use-case diagram. It clearly describes the previous stage of a process used by the user in the system and how that process flows and its aftermath. By reading this description you can clearly understand the work done by the system and it is a great help for requirements analysis. By reading these narratives can clearly understand the work done by the system and it is a great help for requirements analysis. Use case narratives for the developed system is shown in Table 3.5-1 to Table 3.5 – 10. Amendment D contains further Narratives

<b>Use Case</b>	view scheduling
<b>Description</b>	lecturer can view what are the postponed lesson, complete lesson and assessment states
<b>Primary Actor</b>	Lecture, Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1)	The system administrator “must include information such as the department, course, Bach semester, lecturer etc. before the system.”
2)	The lecturer "must include information such as the term note, assessment plan before the system."
<b>Flow of Event</b>	
1)	The lecture logging to the system
2)	Select view scheduling and
3)	Select the desired subject from the information shown
4)	Click view info button and find information
<b>Post Condition</b>	
If you want to add notes, click the button in front of the title	

*Table 3.5-1 : Narratives for View Scheduling*

<b>Use Case</b>	Subject modulation and scheduling
<b>Description</b>	Planning lessons for the teacher to teach day by day
<b>Primary Actor</b>	Lecture, Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1)	The system administrator “must include information such as the department, course, Bach semester, lecturer etc. before the system.”
<b>Flow of Event</b>	
1)	The lecture logging to the system
2)	Select Subject modulation and scheduling
3)	Find the right subject
4)	Click modulation and scheduling button and add lesson information
5)	Make sure the information is correct
<b>Post Condition</b>	
If the information is not correct, it can be update or deleted.	

*Table 3.5-2 : Narratives for Subject Modulation and Scheduling*

<b>Use Case</b>	Lecturer registration
<b>Description</b>	For collection of lecturer information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The Admin log in to the system	
<b>Flow of Event</b>	
1) The admin logging to the system 2) Select Master menu 3) Select lecturer management Sub menu 4) Fill the information required 5) Click lecturer registration button	
<b>Post Condition</b>	
If you need to change department information click change button	

*Table 3.5-3 : Narratives for Lecturer Registration*

<b>Use Case</b>	Login
<b>Description</b>	To allow authorized users to enter the system
<b>Primary Actor</b>	Lecture, Admin, Class Teacher
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1) The user must be registered to the system.	
<b>Flow of Event</b>	
2) The user enters valid username and password 3) System check username and password are match with user table. 4) User name and password are correct users are logon to the system	
<b>Post Condition</b>	
The facilities provided to them vary according to the type of user.	

*Table 3.5-4 : Narratives for Login*

<b>Use Case</b>	Create New User
<b>Description</b>	Add new administrator to the system
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1) The Admin log in to the system	
<b>Flow of Event</b>	
2) The Admin logging to the system 3) Select People menu 4) Select Admin Registration Sub menu 5) Fill the information required 6) Click lecturer registration button	
<b>Post Condition</b>	
The system automatically sends the generated email to the email address provided with the first login password	

*Table 3.5-5 : Narratives for Create New User*

<b>Use Case</b>	Assignment process
<b>Description</b>	The lecturer can include the student's marks in the assessment given.
<b>Primary Actor</b>	Lecture, Class Teacher
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The lecturer must schedule the assessment	
<b>Flow of Event</b>	
1) The lecture logging to the system 2) Select Assessment – Assessment Scheduling 3) Fill the information required 4) Click schedule assessment button	
<b>Post Condition</b>	
1) After the allotted time, the lecturer can enter the student score 2) The class teacher calculates the total and percentage values of the assessment marks relevant to the subject	

*Table 3.5-6 : Narratives for Assignment process*

<b>Use Case</b>	Assignment scheduling
<b>Description</b>	Planning assignment by lecturer
<b>Primary Actor</b>	Lecture
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1) The administrator must assign subject for lecturer	
<b>Flow of Event</b>	
1) The lecture logging to the system 2) Select Assessment – Assessment Scheduling 3) Fill the information required 4) Click schedule assessment button	
<b>Post Condition</b>	
After the allotted time, the lecturer can enter the student score	

*Table 3.5-7 : Narratives for Assignment scheduling*

<b>Use Case</b>	Insert Student Information
<b>Description</b>	For collection of student information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The admin login to the system	
<b>Flow of Event</b>	
2) The admin logging to the system 3) Select People menu 4) Select student registration Sub menu 5) Select course and batch 6) Fill the information required 7) Click Student Registration button	
<b>Post Condition</b>	
If you need to change Student information, click change button	

*Table 3.5-8 : Narratives Insert Student Information*

<b>Use Case</b>	Reset Password
<b>Description</b>	An administrator can reset the password at the request of the user or in case of a system emergency
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The Admin must login to the system	
<b>Flow of Event</b>	
2) The Admin login to the system 3) Select People menu 4) Select reset password Sub menu 5) Select correct user name 6) Click reset password button	
<b>Post Condition</b>	
1) ends a temporary password set by the system to the email address provided when entering user information. 2) The user can use the password provided by the email and change it to the password of their choice when they first log in to the system.	

*Table 3.5-9 : Narratives Reset Password*

<b>Use Case</b>	Lecture Processing
<b>Description</b>	Organizing the lecture process of the lecturer
<b>Primary Actor</b>	Lecture, Class Teacher, Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1) The teacher must include the timeline 2) The administrator must include students in the system	
<b>Flow of Event</b>	
1) The lecture logging to the system 2) Select Lecture Delivery Menu 3) Find the right subject 4) Click process button 5) Find the Today Lesson 6) Enter the number of hours taught that day 7) Click Complete button 8) On the left panel, note the attendance of the students who arrived that day	
<b>Post Condition</b>	
1) Below you will find a list of completed lessons, time, and participating students 2) From the information obtained from the system, the class teacher prepares daily teaching records	

*Table 3.5-10 : Narratives Lecture Processing*

### 3.6 Sequence Diagrams for the entire process

The sequence diagram is one of two types of diagrams used to describe interactions between different components of a system [14]. The sequence diagram shows how messages are exchanged between objects in the system. It can give an idea of the order in which those messages are exchanged. A sequence diagram is shown in Figure 3.6.1

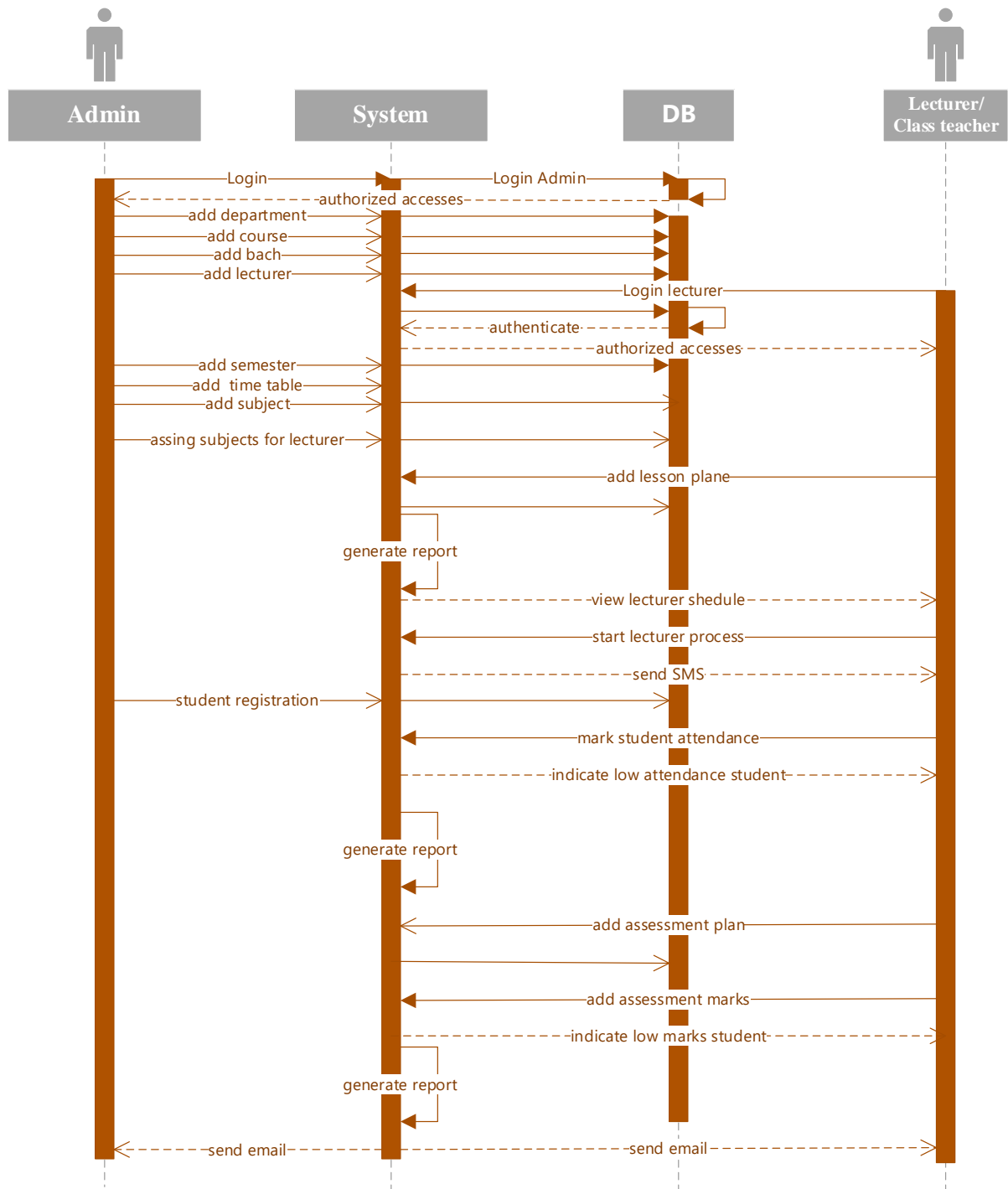


Table 3.6-1 : Sequence diagrams

### **3.7 Development tools and techniques**

The tools and technologies that contribute to system development are described below.

#### **WAMP**

WampServer is a local web server application that can install apache, php, mysql and phpmyadmin for Windows 10 for free. The letters WAMP represent. "W" means Windows, "A" means Apache. "M" stands for MySQL. "P" is PHP. This is free open-source software. Works with all operating systems including Windows, Mac and Linux. The software is designed to be easy to use and quickly understand. [15].

#### **Bootstrap**

A tool used to create websites, web applications and mobile applications. It is advantageous for developers to download the software free of charge. The interface provides a lot of features. Contributes to creating highly interactive web interfaces based on HTML and CSS. [16]. This software is easy to use and does not require much knowledge about web design Today, different tools are used to display a website, and the faces of these devices vary in size. The bootstrap software is primarily designed with mobile-first in mind. The layout is designed to fit any screen with 12 identical columns. Using a simple design template in Bootstrap allows us to customize the CSS file to create a more creative layout where we can customize it as we wish. Bootstrap supports working with all modern browsers without interruption.

#### **Adobe Photoshop**

The user interface uses custom colors, images and photos to make it user-friendly [17]. There are many software applications on the market, but Adobe is the most popular. This is not free software but you can create quality images. The software was used to create interface backgrounds and images used to decorate the interface. Adobe Photoshop CC was also used to complete the design

## **PHP**

Hypertext Preprocessor (PHP) is one of the best, open-source development languages for web page development [18]. The most flexible scripting language that can be embedded into HTML. This language can be quickly learned and understood even by a developer with a general knowledge of web development. This language is very flexible and can be easily run on different platforms. It can also be easily integrated with other languages such as java.

## **HTML**

Developed in 1990 by Tim Berners-Lee. Hyper Text Markup Language, a markup language used for web page creation. This language is compatible for any browser. HTML collaborates with other languages such as JavaScript, CSS, and PHP to modify the behavior and content of a web page.

## **CSS**

CSS is extended as "Cascading Style Sheets". Used for formatting all elements of web pages. This type of scripting language is used because it is difficult to create user-friendly interfaces using HTML alone.

## **PhpStorm**

PhpStorm is a piece of software, or IDE, that helps you accomplish any aspect of PHP development. [19].

## **Notepad ++**

Software for supporting coding in any language. This is a free software available for windows operating system.



## **3.8 Summary**

This chapter describes system design, which is a basic step in setting up a computer system. This chapter depicts the first level of DFD diagrams, depicting the entire system in a single diagram, and using case diagrams to identify system users individually and their functionality within the system. This chapter also includes ER diagrams describing how information is stored in the system and the interrelationships between them. Sequential diagrams describing how messages are exchanged between each activity are included here, and UML diagrams describe the system in this chapter.

# Chapter 04: Implementation

## 4.1 Implementation Environment

A feasibility study is conducted to determine the suitability of a system before it can be developed. It covers the cost of installing and maintaining the system, human resources, hardware, software, quality of the system. What is the main hardware needed to develop and maintain the system? It also looks at whether the agency can afford them. Details of these requirements are shown in Table 3.8.1. In addition, the best software for system development is listed in Table 3.8.2 according to the environment in which this system is used.

There are many ways in which the system development life cycle continues. The proposed system uses the AGILE method. Development and testing of the AGILE system occur throughout the life cycle, with small groups developing into separate development blocks. The development and testing of each other will be different from the waterfall model. Agile methodology allows continuous changes in the requirements and initial stages. This model is very flexible and can easily adapt the project to the customers' needs and expectations.

Software architecture supports the design, development, installation, and maintenance of a system. The 3-tire model used to design the proposed system. The Classroom Activity Management System serves as the application layer between the user and the data management system. This is a fast and safe method. The distance between the user and the user is part of the security of the data.

## 4.2 System Overview

Here is a brief description of the complete system. This system is designed to facilitate the work of the lecturers in Technical College. The goal is to reduce time spent on other things besides learning in the classroom. When day-to-day teaching cannot be done as planned, lesson plans are constantly updated, future plans should also be modified accordingly. This system is used to facilitate such activities. In addition, there are other activities such as attendance analysis, evaluation of marks, preparation of reports etc. The following describes some of the user interfaces.

## 4.3 User Interface and Coding

The system was developed using PHP, CSS, JS and used bootstrap to create the front end. Using Bootstrap reduces the time it takes to create interfaces. During the testing phase of system development, it supports a compatible design for every browser. This system uses the same general structure as Bootstrap which consists of two main parts. These are: *bootstrap.css* and *bootstrap.js*

The highlighted code used by Bootstrap is as follows.

```
<html class="bootstrap-admin-vertical-centered">
  <head>
    <title>Student Registration</title>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <!-- Bootstrap -->
    <link rel="stylesheet" media="screen" href="css/bootstrap.min.css">
    <link rel="stylesheet" media="screen" href="css/bootstrap-theme.min.css">

    <!-- Bootstrap Admin Theme -->
    <link rel="stylesheet" media="screen" href="css/bootstrap-admin-theme.css">

    <!-- Custom styles -->
    <link rel="stylesheet" media="screen" href="css/common.css">
  </head>
  <body class="bc" style="background-image: url('images/a2.jpg')">
```

### 4.3.1 Login Interface

The first page in this system is the login page. It has two text fields for entering a login name and entering a password. It also contains a command button that starts the process and is named as Login. If one text field is empty, a pop-up message appears. If the username or password is incorrect, an error message appears. For the first time, users entering through this interface will be given a 9900 password. Gives them the ability to change their password in the future. For system security, each password entered is stored in the database after encryption. The system encrypts the password using the PHP MD5() function. Below are some of the important codes in the login window.



## Department of Technical Education and Training TECHNICAL COLLEGE - MATARA

### Welcome To The Classroom Activity Management System

If you are a registered teacher, enter your username and password to access the system.

If you are not already registered, enter the temporary password provided by the system activator and log in to the system to change your password.

Login

Figure 4.3-1: Login Interface

```
if(isset($_POST['btn_login'])){
    if (!empty($_POST['txt_username']) && !empty($_POST['txt_password'])) {

        $username=$_POST['txt_username'];
        $password=MD5($_POST['txt_password']);

        $username=stripslashes ($username);
        $password=stripslashes ($password);

        $username = mysqli_real_escape_string($link,$username);
        $password = mysqli_real_escape_string($link,$password);

        $sql = "SELECT * FROM user_master WHERE user_nme = '$username' and status=0";
        $result = mysqli_query($link,$sql);
        while($row=mysqli_fetch_array($result)){

            $userlevel=$row['user_level'];
            $unme=$row['user_nme'];
            $pass=$row['password'];
            $userkey=$row['user_key'];
            $lec_key=$row['lec_key'];
        }

        if($unme==$username){
            if($pass==$password){
                if($userlevel=="admin"){

                    if($password=="8af95fe2abla54b488ef8efb3f3b0797"){ //9900
                        $flag="true";
                        $_SESSION['login_user'] = $username;
                        $_SESSION['userlevel'] = $userlevel;
                        $_SESSION['user_key'] = $userkey;
                        header("location:admin/newpassword.php");
                        session_register("username","userlevel","ukey");
                    }
                    else{
                        $_SESSION['login_user'] = $username;
                        $_SESSION['userlevel'] = $userlevel;
                        $_SESSION['user_key'] = $userkey;
                        header("location:admin/dashboard.php");
                        session_register("username","userlevel","ukey");
                    }
                }
            }
        }
    }
}
```

### 4.3.2 Amin Panel

Provides a quick and easy interface for administrators to manage the system through the Admin Dashboard. The main menu screen is also located at the top. Below that are the details of the courses offered at the college during this year and the courses of the previous years.

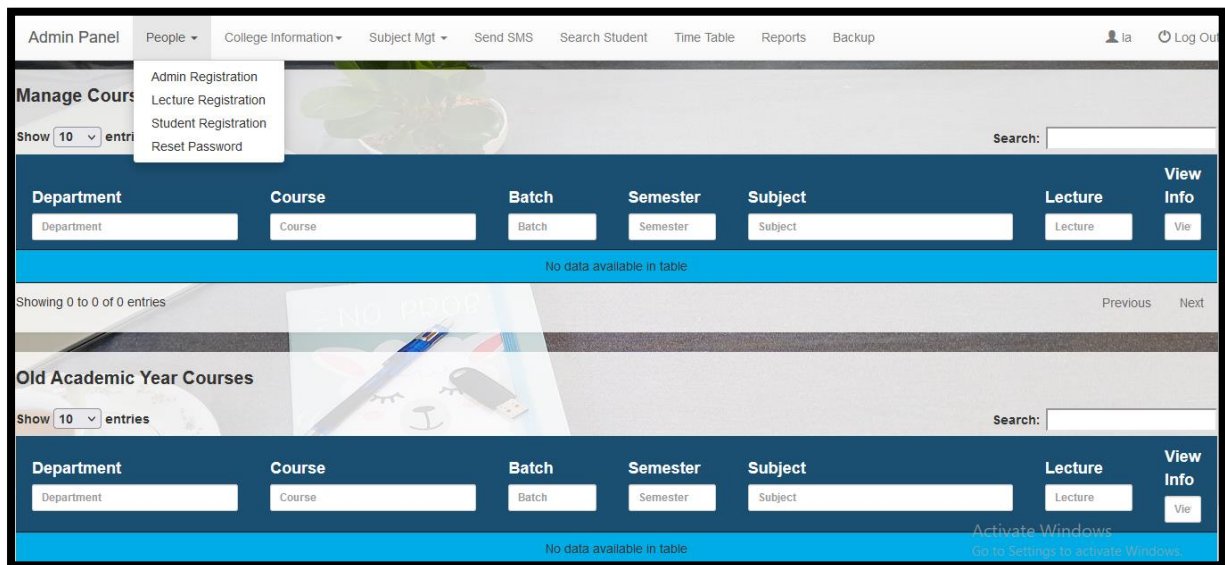


Figure 4.3-2 : Admin Dashboard

### 4.3.3 Admin Registration

The main users of the system are identified as administrator, lecturer, and Class Teacher. For example, the interface that a system administrator adds to the system is shown in the figure 4.3.3 below .It provides the facility to enter the employee’s name, email address, and username provided for the user to log into the system. After clicking the add new button, the system sends an email to the given email address, which contains a password set by the system to access the system. The system allows you to set a new password after entering the system for the first time using the password provided via the email address.

The screenshot shows a form titled 'Administrator Registration'. It contains three input fields: 'Employee Name' with the placeholder text 'Please Enter Employee Name', 'E-mail Address' with the placeholder text 'Please Enter your currant E-Mail Address.', and 'User Name' with the placeholder text 'Please Enter User Name it should be simple enough to remember but hard to guess.'. Below the input fields is a blue button labeled 'Add New Admin'.

Figure 4.3-3 : Admin Registration

### 4.3.4 Lecture Registration

Through this interface, we can add a Lecturer's information to our system. here we can enter full name, name with initials, system name, ID, phone number, and the lecturer's email address. The lecturer must have a unique identification number. If the ID numbers, phone numbers and email addresses are entered incorrectly, the system will send an error message.

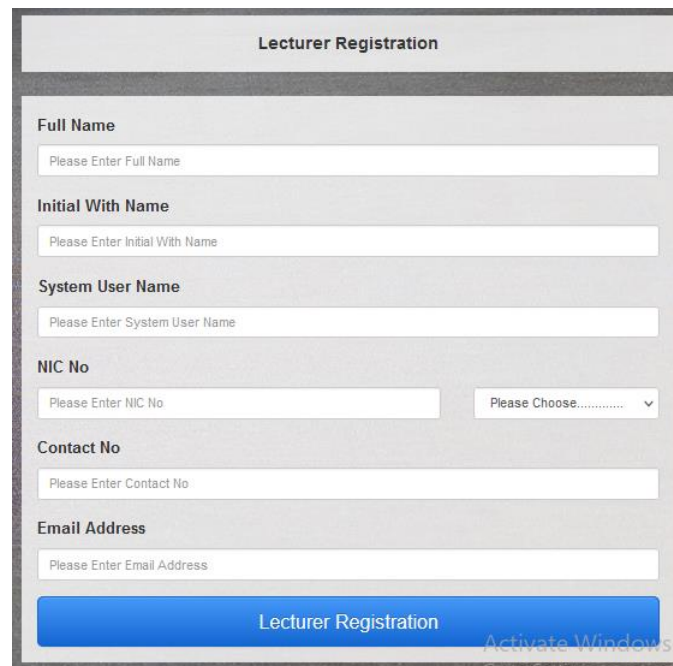


Figure 4.3-4 : Lecture Registration

```
<?php
$cur_dte=date("Y-m-d");
$message1="";

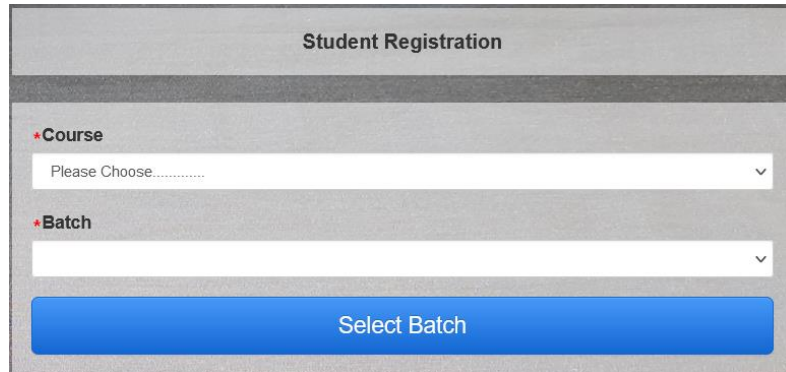
if(isset($_POST['btn_addlecinfo'])){

    $n1=$_POST['txt_fullnme'];
    $n2=$_POST['txt_initialnme'];
    $n3=$_POST['txt_nicno'];
    $n4=$_POST['txt_contactno'];
    $n5=$_POST['txt_email'];
    $n6=$_POST['txt_usernme'];
    $n7=$_POST['sele_nicletter'];

    if($n1==" || $n2==" || $n3==" || $n4==" || $n5==" || $n6==" || $n7==" ){
        $message1="Please Enter the All Field";
    }
    else if(!preg_match('/^[0-9]{10}+$/',$n4)){
        $message1="Invalid Mobile No";
    }
    else if($n7=='X' && !preg_match('/^[0-9]{9}+$/',$n3)){
        $message1="Invalid National Identitiy Card No";
    }
    else if($n7=='V' && !preg_match('/^[0-9]{9}+$/',$n3)){
        $message1="Invalid National Identitiy Card No";
    }
    else if($n7=='Other' && !preg_match('/^[0-9]{12}+$/',$n3)){
        $message1="Invalid National Identitiy Card No";
    }
}
```

### 4.3.5 Student Registration

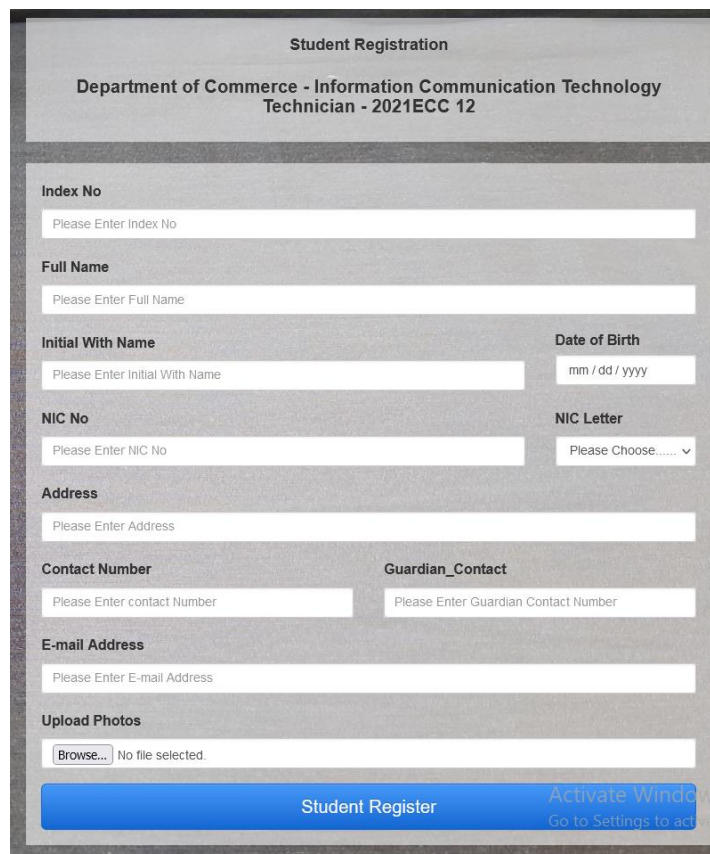
Through this interface, a student can be added to the system. First, the course and team must be selected.



The screenshot shows a web interface titled "Student Registration". It features two dropdown menus: one for "Course" with the placeholder text "Please Choose....." and another for "Batch". Below these menus is a prominent blue button labeled "Select Batch".

Figure 4.3-5 : Student Registration

This interface is used to add to the system the list of students who have registered for the semester in the course. There the facility is provided to enter the name of the student, name with initials, date of birth, National Identity Card number, address, student's phone number, guardian's phone number as well as email address and photo of the student.



The screenshot displays a comprehensive "Student Registration" form. At the top, it identifies the "Department of Commerce - Information Communication Technology Technician - 2021ECC 12". The form includes the following fields and sections:

- Index No:** A text input field with the placeholder "Please Enter Index No".
- Full Name:** A text input field with the placeholder "Please Enter Full Name".
- Initial With Name:** A text input field with the placeholder "Please Enter Initial With Name".
- Date of Birth:** A date picker field with the format "mm / dd / yyyy".
- NIC No:** A text input field with the placeholder "Please Enter NIC No".
- NIC Letter:** A dropdown menu with the placeholder "Please Choose.....".
- Address:** A text input field with the placeholder "Please Enter Address".
- Contact Number:** A text input field with the placeholder "Please Enter contact Number".
- Guardian Contact:** A text input field with the placeholder "Please Enter Guardian Contact Number".
- E-mail Address:** A text input field with the placeholder "Please Enter E-mail Address".
- Upload Photos:** A section with a "Browse..." button and the text "No file selected."

At the bottom of the form is a large blue button labeled "Student Register".

Figure 4.3-6 : Student Registration

The list of registered students is displayed as follows: Some information can be changed through the interface provided by pressing the change button. Only the student's National Identity Card number, date of birth, address, and picture, are allowed to be updated. If there is a need to update other information about the student, will have to be completely removed student information from the system and re-entered. can use the delete student infor button for this.

Student ID	Full Name	Initial Name	Address	NIC No	Date of Birth	Action
21MTIT001	Amarasingha Kadawathachchi Kankanamge Sandaruwan	A K K Sandaruwan	Bibulahena, bathigama, dikwella	992360445V	1999-02-03	<a href="#">Change</a>
21MTIT002	Ashini Nuwandi Vitharana	A N Vitharana	No 76 Kumarathunga Mw Matara	986062114V	1998-05-04	<a href="#">Change</a>
21MTIT003	Darumuru Hetti Arachchige Thanuji Maneesha	D H T Maneesha	21 Old Market Rd Kotuwegoda Matara	997931696V	1997-04-29	<a href="#">Change</a>
21MTIT004	Dinelka Tharusha Vidanapathirana	D T Vidanapathirana	No 10 E M W Jayasuriya Mawatha Nupe Matara	972781304V	1997-07-27	<a href="#">Change</a>
21MTIT005	Heengoda Rathnaweeralage Ushani Sewwandi	H R U Sewwandi	No 543 B Galle Road Walgama South Matara	995101831V	1999-01-10	<a href="#">Change</a>

Figure 4.3-7 : Student List

Student ID : 21MTIT005

Faculty Name : Department of Commerce

Course Name : Information Communication Technology Technician

Batch : 2021ECC 12

Full Name : Heengoda Rathnaweeralage Ushani Sewwandi

Initial Name : H R U Sewwandi

**NIC No**

**Date of Birth**

**Address**

**Upload Photos**

 No file selected.

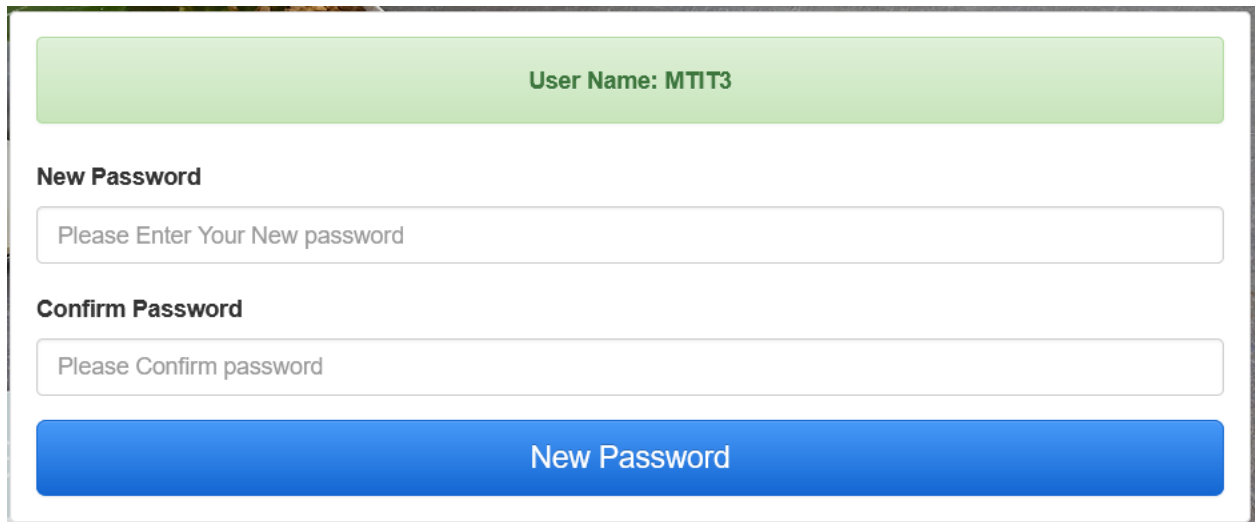
Figure 4.3-8 : Student Information Update

### 4.3.6 Reset Password

After registering a user, the system will send an email with a temporary password from the email address given. Allows the user to change the password as soon as they log in to the system using this temporary password. The password to be changed must be at least eight



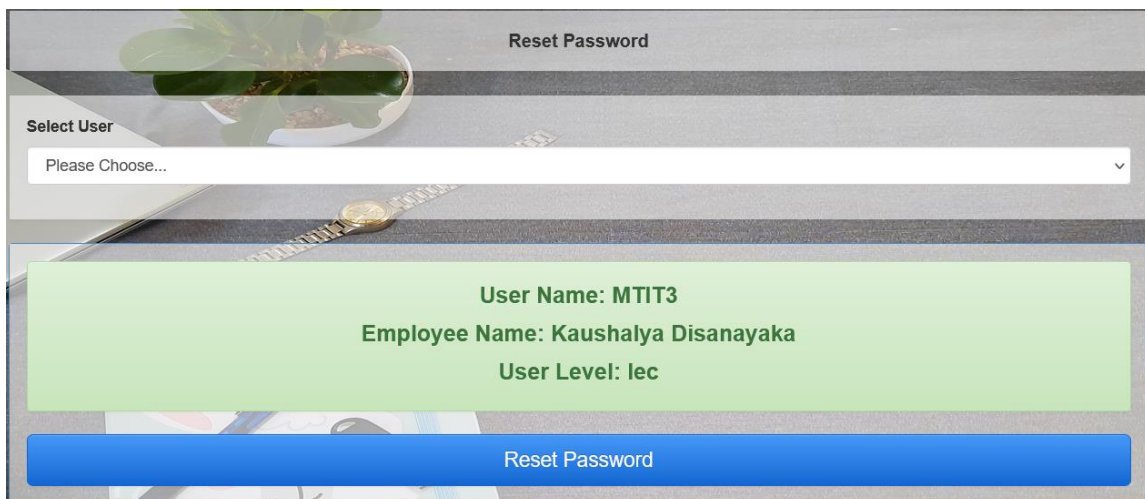
characters long. it should contain capital letters, simple letters, and numbers. To set the password correctly, it is mandatory to confirm the new password.



The screenshot shows a web form for resetting a password. At the top, a green box displays "User Name: MTIT3". Below this, there are two input fields: "New Password" with the placeholder text "Please Enter Your New password" and "Confirm Password" with the placeholder text "Please Confirm password". At the bottom of the form is a large blue button labeled "New Password".

*Figure 4.3-9 : Reset Password*

If you need to change your password due to a forgotten password or for security reasons, you must request an administrator. Only the administrator can take steps to reset the password that a user enters into the system. As soon as the administrator presses the reset password button, the system will send an email with a temporary password to the user.



The screenshot shows a web form for resetting a password. At the top, the title "Reset Password" is visible. Below the title is a "Select User" dropdown menu with the placeholder text "Please Choose...". Below the dropdown menu is a green box displaying the user information: "User Name: MTIT3", "Employee Name: Kaushalya Disanayaka", and "User Level: lec". At the bottom of the form is a large blue button labeled "Reset Password".

*Figure 4.3-10 : Reset Password*

### 4.3.7 View Scheduling

Details of subjects to be taught this year and subjects taught in previous years are listed in this interface. The teacher should make lesson plans according to the syllabus. The teacher makes the inclusion in this planning system under the lecturer possessing menu.

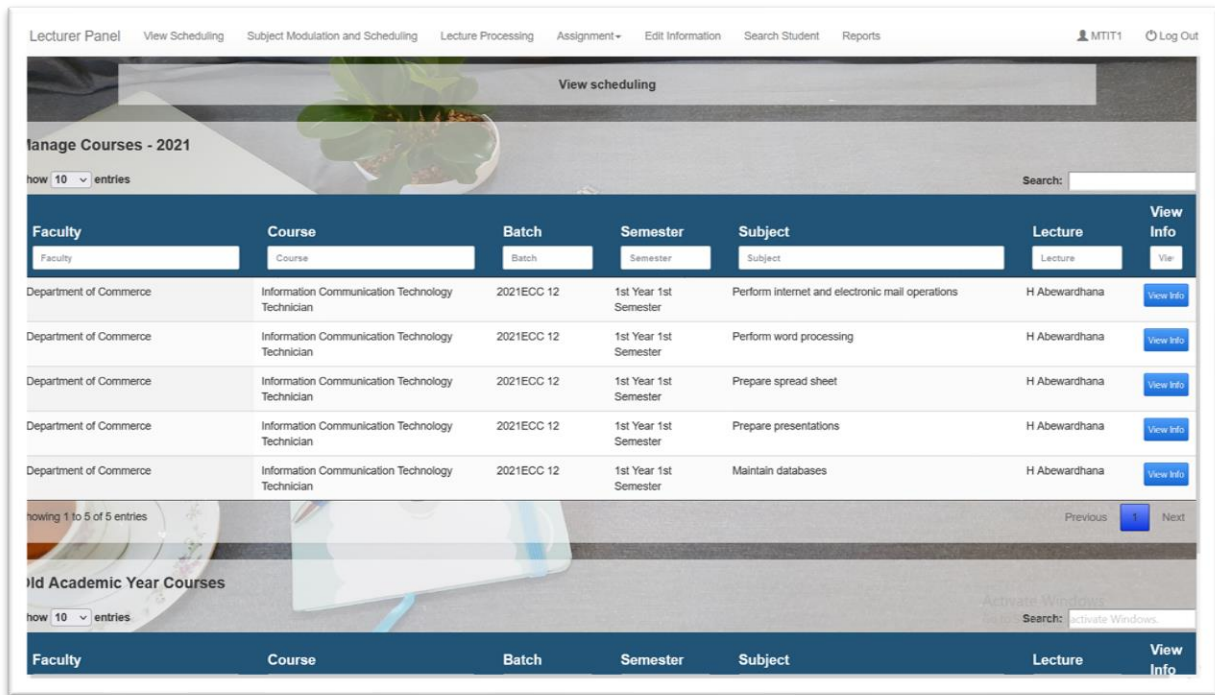


Figure 4.3-11 : View Schedule

By clicking on the view info button, the interface shows whether the lessons were taught according to the lesson plan or not. Here are the details under three panels they are Pending Modules, Complete Module and Assignment of Subject first panel is the pending module. In this panel, Lessons to be taught in the future according to the lesson plan and lessons missed due to omissions Includes details about.

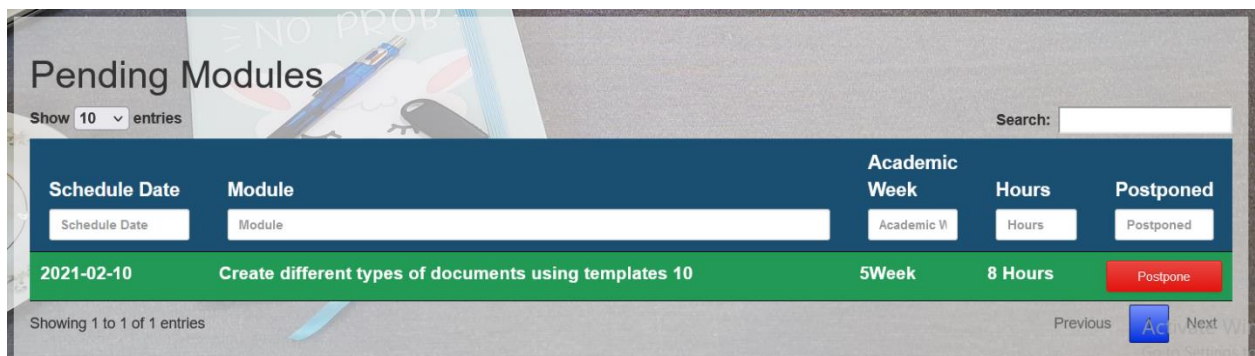


Figure 4.3-12 : View Schedule - Pending Lesson

Details of completed lessons are displayed on the complete Module panel.

Schedule Date	Module	Academic Week	Hours	Complete Date	Complete Hours	View Infos
2021-01-25	Perform Browser operations	3Week	4 Hours	2021-09-06	4 Hours	<a href="#">View Info</a>
2021-01-26	Use Search engines	3Week	4 Hours	2021-09-06	4 Hours	<a href="#">View Info</a>
2021-01-27	Download and upload file	3Week	5 Hours	2021-09-06	5 Hours	<a href="#">View Info</a>
2021-02-01	Perform e mail operations	4Week	13 Hours	2021-09-06	10 Hours	<a href="#">View Info</a>
2021-02-02	Print e mails / web pages	5Week	4 Hours	2021-09-06	4 Hours	<a href="#">View Info</a>

Figure 4.3-13 : View Schedule - Complete Lessons

In the interface, get a complete description of the lesson by using the display button in front of each lesson.

Course : Information Communication Technology Technician  
 Faculty : Department of Commerce  
 Batch : 2021ECC 12  
 Semester : 2021-1st Year 1st Semester  
 Subject : Perform internet and electronic mail operations  
 Lecturer : H Abewardhana

Module : Perform e mail operations  
 Schedule Date : 2021-02-01  
 Academic Week : 4Week  
 Target Hours : 13 Hours

Complete Date : 2021-09-06  
 Complete Hours : 10 Hours  
 Term Note : Complete

Attendance of Module : 5

Student ID	Student Name
21MTIT001	A K K Sandaruwan
21MTIT003	D H T Maneesha
21MTIT002	A N Vitharana
21MTIT004	D T Vidanapathirana
21MTIT005	H R U Sewwandi

Figure 4.3-14 : View Schedule - Complete Lessons Details

Details of the assignments related to that lesson can be found in the Assignment panel. In the interface, get a complete description of the lesson by using the display button in front of each lesson.



Figure 4.3-15 : View Schedule - Assessment of Lesson

Course	: Information Communication Technology Technician
Faculty	: Department of Commerce
Batch	: 2021ECC 12
Semester	: 2021-1st Year 1st Semester
Subject	: Perform internet and electronic mail operations
Lecturer	: H Abewardhana
Assignment Date	: 2021-02-03
Assignment Description	: Assingment 01
Total Marks	: 100

Student ID	Student Name	Marks
21MTIT003	D H T Maneesha	98
21MTIT001	A K K Sandaruwan	85
21MTIT004	D T Vidanapathirana	80
21MTIT002	A N Vitharana	70
21MTIT005	H R U Sewwardi	40

Figure 4.3-16 : : View Schedule - Assessment of Lesson Details

### 4.3.8 Subject Modulation and scheduling

Using this interface, you will be able to enter the required information into the schema of training, lesson plan, and team note.

Faculty	Course	Batch	Semester	Subject	Lecture	View Info
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Perform internet and electronic mail operations	H Abewardhana	Modeling And Scheduling
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Perform word processing	H Abewardhana	Modeling And Scheduling
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Prepare spread sheet	H Abewardhana	Modeling And Scheduling

Figure 4.3-17 : Subject Modulation and scheduling

Pressing the Modulling and schedule button provides an interface for entering course information. Through this interface, information such as the name of the lesson, the date of teaching and the academic week, facilities available in the classroom for teaching, resources, service teaching methods, and evaluation methods are entered into the system.

**Department of Commerce - Information Communication Technology Technician - 2021ECC 12**

**2021 - 1st Year 1st Semester**

**Perform internet and electronic mail operations**

**H Abewardhana**

• **Lesson :**  
Please Enter Lesson

• **Schedule Date :**  
mm / dd / yyyy

• **Academic week :**  
Please Choose.....

• **Hours :**  
Please Enter Hours

• **Resource and Cost :**  
Please Enter Resource and Cost

• **Services and Utility :**  
Please Enter Services and Utility

• **Learning Process :**  
Please Enter Learning Process

• **Methodology :**  
Please Enter Methodology

• **Term Note Remark :**

**Add**

Figure 4.3-18 : Add Lesson

### 4.3.9 Lecture Processing

The institute will assign subjects to the teacher with a schedule for this. It is the responsibility of the teacher to plan the course on time according to the syllabus. You can access the lectures through the Process button in the Lecture Editor interface to manage the lesson. The Start Process button in the window that opens will only work if the lesson is planned for the future today.

Faculty	Course	Batch	Semester	Subject	Lecture	View Info
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Perform internet and electronic mail operations	H Abewardhana	Process
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Perform word processing	H Abewardhana	Process
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Prepare spread sheet	H Abewardhana	Process
Department of Commerce	Information Communication Technology Technician	2021ECC 12	1st Year 1st Semester	Prepare presentations	H Abewardhana	Process

Figure 4.3-19 : Lecture Processing

Department of Commerce - Information Communication Technology Technician - 2021ECC 12  
 2021 - 1st Year 1st Semester  
 Perform word processing  
 H Abewardhana  
 2021-09-11

**Start Process**

Figure 4.3-20 : Lecture Processing - Start

Here are the lessons, dates and hours that the teacher should teach. After completing the required number of hours, you can press the full button. If those times are not completed by the due date, enter the remaining hours and reason and click the Update button. It will be noted as a waiting lesson. The teacher can then take the time to re-teach it.

```

if(isset($_POST['btn_start'])){

    $sql2="SELECT * FROM lecturedtemgt_details WHERE datos='$_cur_dte' AND subject_key='$_GET[suk]'
    AND curstateofbatch_key='$_GET[cury]' AND lecture_key='$_lec_key' AND status=0";
    $result2 = mysqli_query($link,$sql2);
    if(mysqli_num_rows($result2)==0){

        $sql30="SELECT MIN(shedule_dte)AS minsheduledte FROM shedule_details WHERE curstausofbatch_key='$_GET[cury]'
        AND subject_key='$_GET[suk]' AND complete_status IS NULL AND shedule_dte<='$_cur_dte' AND status=0";
        $result30 = mysqli_query($link,$sql30);
        while($row30=mysqli_fetch_array($result30)){
            $minsdl=$row30['minsheduledte'];
        }

        $sql31="SELECT * FROM shedule_details WHERE curstausofbatch_key='$_GET[cury]' AND subject_key='$_GET[suk]'
        AND complete_status IS NULL AND shedule_dte='$_minsdl' AND status=0";
        $result31 = mysqli_query($link,$sql31);
        while($row31=mysqli_fetch_array($result31)){
            $modulekeybeforel=$row31['sheduledetail_key'];
        }

        $sql3="INSERT INTO lecturedtemgt_details(status,lecturedtemgtdetail_key,datos,subject_key,curstateofbatch_key,
        lecture_key,pending_status,shedule_key,act_person)
        VALUES (0,NULL,'$_cur_dte','$_GET[suk]','$_GET[cury]','$_lec_key',1,'$_modulekeybeforel','$_suk')";
        if(mysqli_query($link,$sql3)){

            $sql7="SELECT * FROM lecturedtemgt_details WHERE datos='$_cur_dte' AND subject_key='$_GET[suk]'
            AND curstateofbatch_key='$_GET[cury]' AND lecture_key='$_lec_key' AND status=0";
            $result7 = mysqli_query($link,$sql7);
            while($row7=mysqli_fetch_array($result7)){
                $lm=$row7['lecturedtemgtdetail_key'];
            }

            echo "<script>
            alert('Successfully Started Process');
            window.location.href='lecture_processing.php?suk=$_GET[suk]&cury=$_GET[cury]&lm=$lm';
            </script>";
        }
    }
    else{
        echo "<script>
        alert('Already Added this Information');
        </script>";
    }
}

```

Lecturer Panel View Scheduling Subject Modulation and Scheduling Lecture Processing Assignment Edit Information Search Student Reports MTIT1 Log Out

**Learning Hours**

**Remark**

Update Info

Schedule Date	Module	Academic Week	Hours	Complete Hours	Complete
2021-02-01	Perform e mail operations	4Week	13 Hours	<input type="text" value=""/>	<a href="#" style="background-color: #007bff; color: white; padding: 2px 5px;">Complete</a>

**Complete Schedule**

Schedule Date	Module	Academic Week	Hours	Complete Hours	Cancel
2021-01-25	Perform Browser operations	3Week	4 Hours	4 Hours	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
2021-01-26	Use Search engines	3Week	4 Hours	4 Hours	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
2021-01-27	Download and upload file	3Week	5 Hours	5 Hours	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
2021-02-02	Print e mails / web pages	5Week	4 Hours	4 Hours	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>

**Bar-code**

Attend

Student ID	Student Name	Attend
21MTIT001	A K K Sandaruwan	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
21MTIT002	A N Vitharana	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
21MTIT003	D H T Maneesha	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>

**Subject Attend Students**

Student ID	Student Name	Cancel
21MTIT001	A K K Sandaruwan	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
21MTIT002	A N Vitharana	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>
21MTIT003	D H T Maneesha	<a href="#" style="background-color: #dc3545; color: white; padding: 2px 5px;">Cancel</a>

Figure 4.3-21: Lecture Processing - Details

## 4.4 System Records

In the Records menu to the right of the menu bar, all records are included. These reports include personal timetable, class timetables, year plan, term note, scheme of training, teaching record's, assessment plane, summary sheet and many more.

A window will open when you click on the Record menu. A list of records can be seen there. You can proceed by clicking the button corresponding to the selected report. When the information is entered through the popup menu in the window that appears, the report containing the relevant information is displayed.

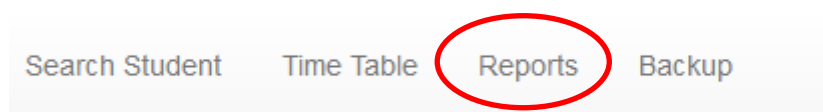


Figure 4.4-1: Main Menu



Figure 4.4-2 : List Of records

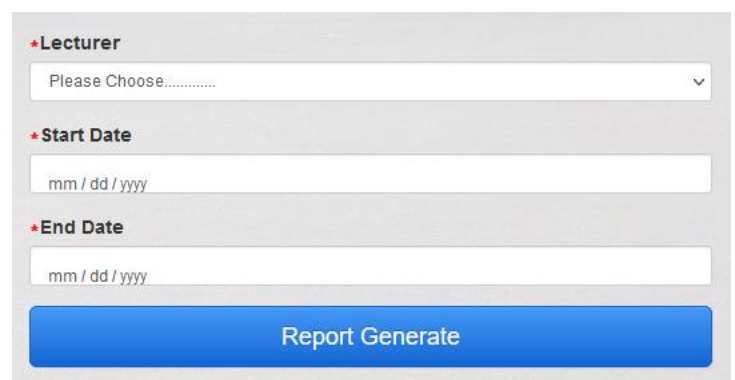
A form titled 'Record Generate Window'. It contains a dropdown menu for 'Lecturer' with the text 'Please Choose.....', two date input fields for 'Start Date' and 'End Date' with the placeholder 'mm / dd / yyyy', and a blue 'Report Generate' button at the bottom.

Figure 4.4-3: Record Generate Window

### 4.4.1 Sample Reports

Sample copies of system reports are provided below, and a brief description is provided with each report.

```
<div class="col-md-3">
<section class="panel panel-transparent">
  <div class="panel-body panel-transparent">
    <a href="report_termnote.php" target="_blank"><button class="btn btn-md btn-primary btn-block">Term Note </button></a>
    <br>
    <a href="report_yearplane.php" target="_blank"><button class="btn btn-md btn-info btn-block">Year Plan </button></a>
    <br>
    <a href="report_schmeoftraning.php" target="_blank"><button class="btn btn-md btn-primary btn-block">Scheme of Training </button></a>
    <br>
    <a href="report_lessonplan.php" target="_blank"><button class="btn btn-md btn-info btn-block">Lesson Plan </button></a>
    <br>
    <a href="report_dailyteachrecord.php" target="_blank"><button class="btn btn-md btn-primary btn-block">Daily Teaching Record </button></a>
    <br>
    <a href="report_monthlyteachprogress.php" target="_blank"><button class="btn btn-md btn-info btn-block">Monthly Teaching Progress </button></a>
    <br>
    <a href="report_assignmentplan.php" target="_blank"><button class="btn btn-md btn-primary btn-block">Assignment Plan </button></a>
    <br>
    <a href="report_assignmentsummary.php" target="_blank"><button class="btn btn-md btn-info btn-block">Contuses Assessment Summery Sheet </button></a>
  </div>
</section>
</div>
```



#### 4.4.1.1 Year Plan

The teacher should prepare this plan at the beginning of the term. They plan the time it will take to teach each subject according to the curriculum. A curriculum explains the underpinning knowledge that the student should acquire through that course. It explains what is the subject, what are the modules in the subject, what are the units in the module. And also it explains how much time is needed to teach. Therefore, before planning the course, the teacher should consider the subject, the module, the unit, and the time taken for it.

<b>Technical Collage - Matara</b> <b>Year Plan</b> <b>Information Communication Technology Technician - Department of Trade - 2020ECC 12_II Batch</b> <b>Maintain files &amp; folders</b> <b>2020 - 1st Year 2nd Semester</b> <b>N Wijegunasekara</b>																																																							
Module	January			February			March			April			May			June			July			August			September			October			November			December																					
Start up and Turn up the computer	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Create files and folders																																																							
Perform folders/file operations																																																							
Set attributes of files and folders																																																							
Customize computer and desktop settings																																																							
Instructor Signature .....																HOD Signature .....																																							
Instructor Name .....																HOD Name .....																																							
Date .....																Date .....																																							

Figure 4.4-4 : Record of Year Plane

#### 4.4.1.2 Term Note

According to the year plan, this report should be prepared by the teacher at the beginning of each academic term. The teacher prepares the term note based on the curriculum, academic calendar, and personal timetable

<b>Technical Collage - Matara</b> <b>Term Note</b> <b>Information Communication Technology Technician - Department of Trade - 2020ECC 12_II Batch</b> <b>Maintain files &amp; folders</b> <b>2020 - 1st Year 2nd Semester</b> <b>N Wijegunasekara</b>					
Week No	Module	Date	Remark		
5Week	Start up and Turn up the computer	2020-06-03	0		
5Week	Create files and folders	2020-06-03	10		
5Week	Create files and folders	2020-06-04	4		
5Week	Create files and folders	2020-06-05	0		
5Week	Perform folders/file operations	2020-06-08	3		
5Week	Perform folders/file operations	2020-06-09	0		
5Week	Customize computer and desktop settings	2020-06-12	0		
5Week	Set attributes of files and folders	2020-06-16	0		
5Week	Customize computer and desktop settings	2020-06-18	4		
Instructor Signature .....				HOD Signature .....	
Instructor Name .....				HOD Name .....	
Date .....				Date .....	

Figure 4.4-5: Term Note

#### 4.4.1.3 Scheme of Training

The Scheme of Training document describes the resources, costs, services and utility required to teach a unit in a subject.

<b>Technical Collage - Matara</b> <b>Scheme of Training</b> <b>Information Communication Technology Technician - Department of Trade - 2020ECC 12_II Batch</b> <b>Maintain files &amp; folders</b> <b>2020 - 1st Year 2nd Semester</b> <b>N Wijegunasekara</b>					
Months	Week No	Module and Task Expected to cover	Resource and Cost	Services and Utility	Assessment Guidance
6	5Week	Start up and Turn up the computer	A computer for each student, multimedia projector and Teacher Computer	A computer for each student, multimedia projector and Teacher Compute	
		Create files and folders	A computer for each student, multimedia projector and Teacher Computer	A computer for each student, multimedia projector and Teacher Compute	
		Perform folders/file operations	A computer for each student, multimedia projector and Teacher Computer	A computer for each student, multimedia projector and Teacher Compute	
		Set attributes of files and folders	A computer for each student, multimedia projector and Teacher Computer	A computer for each student, multimedia projector and Teacher Compute	

Figure 4.4-6 : Scheme of Training

#### 4.4.1.4 Lesson Plan

The lesson plan document describes how the student should contribute to the learning process, the teaching methodology and the time frame required teaching a unit in a subject.

<b>Technical Collage - Matara</b> <b>Lesson Plan</b> <b>Information Communication Technology Technician - Department of Trade - 2020ECC 12_II Batch</b> <b>Maintain files &amp; folders</b> <b>2020 - 1st Year 2nd Semester</b> <b>N Wijegunasekara</b>					
Serial No	Teaching process- Teacher Activities	Learning Process-Student Activities	Methodology	Media required	Time Frame
1	Start up and Turn up the computer	Listening, discussing, Observing and practising	Practical test , Written test , Aural test	A computer for each student, multimedia projector and Teacher Compute	2 hrs
2	Create files and folders	Listening, discussing, Observing and practising	Practical test , Written test , Aural test	A computer for each student, multimedia projector and Teacher Compute	12 hrs
3	Perform folders/file operations	Listening, discussing, Observing and practising	Practical test , Written test , Aural test	A computer for each student, multimedia projector and Teacher Compute	8 hrs
4	Set attributes of files and folders	Listening, discussing, Observing and practising	Practical test , Written test , Aural test	A computer for each student, multimedia projector and Teacher Compute	2 hrs
5	Customize computer and desktop settings	Listening, discussing, Observing and practising	Practical test , Written test , Aural test	A computer for each student, multimedia projector and Teacher Compute	10 hrs

Figure 4.4-7 : Lesson plan

# Chapter 05: Testing and Evaluation

## 5.1 Introduction

Software is just one component of a computer-based system. More software, liveware and hardware must work together to make it work as a computer system. Software testing is the testing of software's ability to work properly with every aspect of a computer system and fulfil the requirements of users. In this chapter we describe how to test the proposed software

Testing is performed at various stages when using the AGILE methodology for system development. Various strategies are used to overcome these bottlenecks. The purpose of each test is to create a system that meets the requirements of the user. And software quality assessment.

## 5.2 Software Testing

Software testing [20] is the method of checking whether the desired result is obtained. As Agile methodology is used to develop this system, system testing is extended throughout the life cycle. Software testing is a step-by-step process that examines different features at each step. These steps continue until the entire system is tested. Software testing is done in four main steps. These are Unit Tests, Integration Tests, System Tests and Acceptant Tests. Unit and integration tests are performed during the system verification phase, while system and acceptance tests are performed during the validation phase.

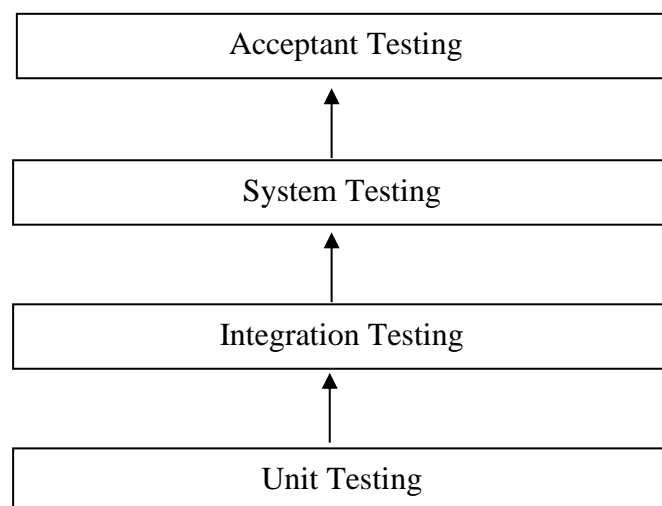


Figure 5.2-1 : Level of Testing

- **Unit Testing**

Unit testing is the first level of software testing. One of the smallest things that can be checked in any software is checked one by one to ensure that the desired result is obtained. A small unit can be considered a small part of a program, a complete program, a part of a system that is completed with input and output. A small unit can be considered a small part of a program, a complete program, a part of a system that is completed with input and output. Robert V. Head writes in his book Real Time Business System that "unit testing is often considered part of the programming phase, with the person who wrote the program testing the unit".[32]. Unit testing reduces the complexity of a system and makes it easier and faster to identify problems with smaller units. This can save time and money. Unit testing is very useful for sudden changes in the system when using the AGILE method. However, it is not advisable to use this method alone to detect all errors in a system.

- **Integration Testing**

This examines the accuracy of interactions between large assemblies assembled into several smaller pieces of software. This integration testing method is especially important when each module is developed by a separate programmer. But since these projects are developed by one person, the need for these tests is somewhat reduced. This method is ideal for detecting problems that may occur when the system is connected to the database and for special cases such as sending SMS. Continuous testing of the Agile rules allowed for a more accurate system.

- **System Testing**

This is the third test level. It also publishes the entire system and checks whether the classroom activity management system meets the requirements. This test method is very important to increase the confidence of the user. This is the first test from the beginning to the end of a system. Therefore, there is an opportunity to identify unrecognized errors in unit testing and integration testing. Testers do not need knowledge of coding to contribute to the test. This is called a black box test

- **User Acceptance Testing**

Checks whether the prepared system can be released. User acceptance testing is the predominant test method used in the development of this system. The system has been tested on three occasions as small units, as large modules connected to each other, and as a complete system. At present it is at usable level. But does this system accept technical college lecturers, can they use and understand it, and is it effective to use this system during their office hours? The purpose here is to find answers to such questions. The client, user and developer contribute to this test. Here the client and the user provide feedback. That feedback is very important for the development of the system.

### **5.3 Main objective of the Test process**

The main purpose of this process is to check whether the classroom activity management system meets the lecture requirements. In addition, software testing helps the identify system errors, detect incomplete parts, and identify missing parts. In addition, development costs can be reduced, which can reduce developers 'stamina and time. Software testing is very important for maintaining the quality of software. There must be a proper plan for this. The higher the number of test cases detected in the early stages, the lower the number of test opportunities that can be identified when testing the entire software. The tester must have a good understanding of how the customer uses this software to produce high-quality software. In order to keep the testing process in good condition, you need to check not only the software development errors but also whether the software interacts well with the operating system, hardware, and different types of browsers.

### **5.4 Aims and Objectives of the proposed system**

The aim of this proposed classroom management system is to develop a web-based classroom activity management system for Matera Technical College. This system manages student attendance, student evaluation scores, scheduling and scheduling, and all of the facilities, such as reports required for the teacher to maintain the course, are held in one stage. The main objective of this system is automating the class room activity management. Therefore, no waste of time, no paper waste and no mistakes encounter. Nevertheless, report generation for decision-making process is easier.

## 5.5 Cross-browser Testing

There are many popular browsers in society. Users may use any of these browsers when using web-based software. Therefore, the proposed system should be running on any browser that is popular.

Tested Page – Lecturer Panel	Status		
	Firefox	Chrome	IE
View Scheduling	Pass	Pass	Pass
Subject Modulation and Scheduling	Pass	Pass	Pass
Lecture Processing	Pass	Pass	Pass
Assessment	Pass	Pass	Pass
Edit Information	Pass	Pass	Pass
Search Student	Pass	Pass	Pass
Report	Pass	Pass	Pass

*Table 5.5-1 : Result of cross-browser testing:*

Tested Page – Admin Panel	Status		
	Firefox	Chrome	IE
Department Info management	Pass	Pass	Pass
Course Management	Pass	Pass	Pass
Bach Management	Pass	Pass	Pass
Lecture Registration	Pass	Pass	Pass
Admin Registration	Pass	Pass	Pass
Reset Password	Pass	Pass	Pass
Subject Management	Pass	Pass	Pass
Send SMS	Pass	Pass	Pass
Start New Semester	Pass	Pass	Pass
Student registration	Pass	Pass	Pass
Search Student	Pass	Pass	Pass
Time Table	Pass	Pass	Pass
Report	Pass	Pass	Pass
Backup	Pass	Pass	Pass

*Table 5.5-2 : Result of cross-browser testing*

## 5.6 Test Cases

It checks whether the input of a softkey is correctly received and if it meets the system requirements. It helps you to identify the errors in the interfaces and create user friendly software. Test cases are shown in Table 5.6.1 and Table 5.6.5

### 5.6.1 User login

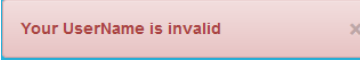
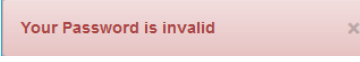
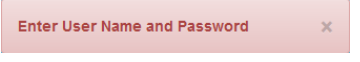

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check Admin Login with valid Data	<ul style="list-style-type: none"> <li>• Enter Correct User Id</li> <li>• Enter Correct Password</li> <li>• Click Submit</li> </ul>	Login into the system	Login into the system	Pass
TU02	Check Admin Login with invalid Data	<ul style="list-style-type: none"> <li>• Enter incorrect User Id</li> <li>• Enter Correct Password</li> <li>• Click Submit</li> </ul>	Login fails into the system 	Login fail into the system	Pass
TU03	Check Admin Login with invalid Data	<ul style="list-style-type: none"> <li>• Enter correct User Id</li> <li>• Enter incorrect Password</li> <li>• Click Submit</li> </ul>	Login fails into the system 	Login fail into the system	Pass
TU04	Check Admin Login with invalid Data	<ul style="list-style-type: none"> <li>• Without username or password</li> <li>• Click Submit</li> </ul>	Login fails into the system 	Login fail into the system	Pass

Table 5.6-1 : Test cases for login interface

### 5.6.2 Administrator registration interface

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check Admin registration with valid Data	<ul style="list-style-type: none"> <li>• Enter Correct data in to the text fields</li> <li>• Click Add New Admin</li> </ul>	Show message “User Registration Successfully ” 	Registration successful	Pass

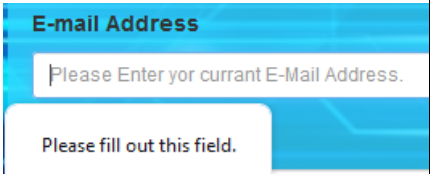

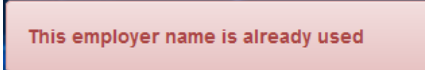

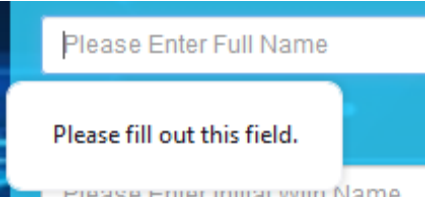
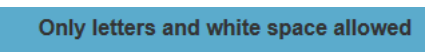
TU02	Check Admin registration with No Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Add New Admin</li> </ul>	<p>Show popup message “Please fill out this field ”</p> 	Registration fails.	Pass
TU03	Check Admin registration with invalid Data	<ul style="list-style-type: none"> <li>If email address format is incorrect</li> <li>Click Add New Admin</li> </ul>	<p>Show error message “Invalid e-mail format ”</p> 	Registration fails.	Pass
TU04	Check Admin registration with Duplicate Data	<ul style="list-style-type: none"> <li>If Employee Number Already exists</li> <li>Click Add New Admin</li> </ul>	<p>Show error message “This Employer name is already used”</p> 	Registration fails.	Pass

Table 5.6-2 : Administrator registration interface

### 5.6.3 Lecturer registration interface

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/ Fail
TU01	Check Lecturer registration with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Student registration</li> </ul>	<p>Show message “User Registration Successfully”</p> 	Lecturer registration successful	Pass
TU02	Check Lecturer registration with no Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Student registration</li> </ul>	<p>Show popup message “Please fill out this field ”</p> 	Lecturer registration fails.	Pass
TU03	Check Lecturer registration with invalid Data	<ul style="list-style-type: none"> <li>If enter numbers in the full name field</li> <li>Click lecture registration</li> </ul>	<p>Show error message “Only letter and white space allowed”</p> 	Lecturer registration fails.	Pass



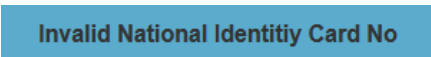

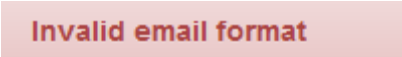
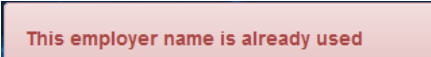

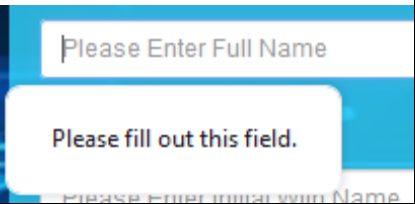
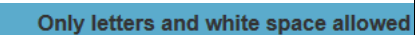
TU04	Check Lecturer registration with invalid Data	<ul style="list-style-type: none"> <li>If NIC number format is incorrect</li> <li>Click lecture registration</li> </ul>	Show error message “Invalid NIC No” 	Lecturer registration fails.	Pass
TU05	Check Lecturer registration with invalid Data	<ul style="list-style-type: none"> <li>If telephone number format is incorrect</li> <li>Click lecture registration</li> </ul>	Show error message “Invalid Mobile No” 	Lecturer registration fails.	Pass
TU06	Check Lecturer registration with invalid Data	<ul style="list-style-type: none"> <li>If email address format is incorrect</li> <li>Click lecture registration</li> </ul>	Show error message “Invalid e-mail format” 	Lecturer registration fails.	Pass
TU04	Check Lecturer registration with Duplicate Data	<ul style="list-style-type: none"> <li>If NIC Number Already exists</li> <li>Click lecture registration</li> </ul>	Show error message “This NIC Number is already used” 	Registration fails.	Pass

Table 5.6-3 : Lecturer registration interface

### 5.6.4 Student registration interface

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check Student registration with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Student registration</li> </ul>	Show message “User Registration Successfully” 	Student registration successful	Pass
TU02	Check Student registration with no Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Student registration</li> </ul>	Show popup message “Please fill out this field” 	Student registration fails.	Pass
TU03	Check Student registration with invalid Data	<ul style="list-style-type: none"> <li>If enter numbers in the full name field</li> <li>Click Student registration</li> </ul>	Show error message “Only letter and white space allowed” 	Student registration fails.	Pass

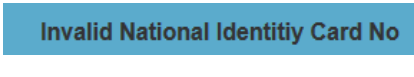
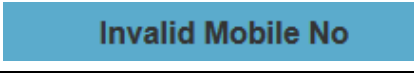
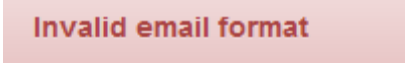
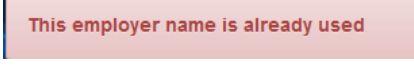

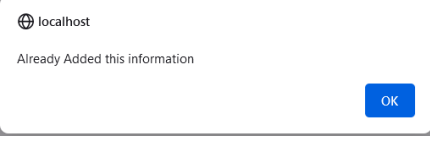
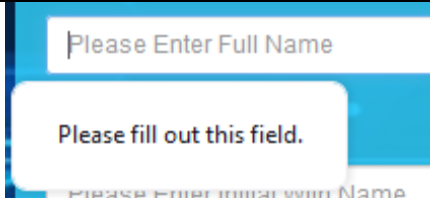
TU04	Check Student registration with invalid Data	<ul style="list-style-type: none"> <li>If email NIC number format is incorrect</li> <li>Click Student registration</li> </ul>	Show error message “Invalid NIC No ” 	Student registration fails.	Pass
TU05	Check Student registration with invalid Data	<ul style="list-style-type: none"> <li>If telephone number format is incorrect</li> <li>Click Student registration</li> </ul>	Show error message “Invalid Mobile No ” 	Student registration fails.	Pass
TU06	Check Student registration with invalid Data	<ul style="list-style-type: none"> <li>If email address format is incorrect</li> <li>Click Student registration</li> </ul>	Show error message “Invalid e-mail format ” 	Student registration fails.	Pass
TU04	Check Student registration with Duplicate Data	<ul style="list-style-type: none"> <li>If NIC Number Already exists</li> <li>Click Student registration</li> </ul>	Show error message “This NIC Number is already used” 	Registration fails.	Pass


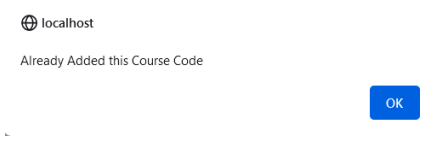
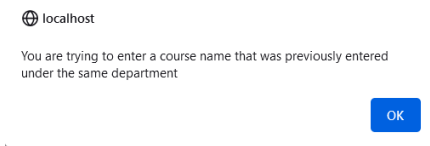
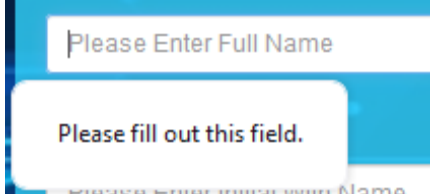
Table 5.6-4 : Student registration interface

### 5.6.5 Collage Information menu selection

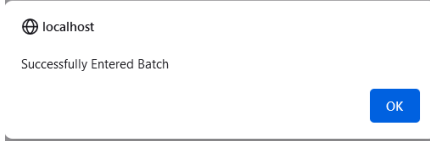
Add Department					
Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check Department Information with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Add Button</li> </ul>	Show message “Successfully Enter Department ” 	Insert Department Successfully	Pass
TU02	Check Department Information with Duplicate Data	<ul style="list-style-type: none"> <li>If any text entered already exists</li> <li>Click Add Button</li> </ul>	Show Error Message “ Already Added this information” 	Department insertion fails	Pass
TU03	Check department	<ul style="list-style-type: none"> <li>If any text field is empty</li> </ul>	Show popup message “Please fill out this field ”	Department	Pass

	information with no Data	<ul style="list-style-type: none"> <li>Click Add Button</li> </ul>		insertion fails	
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### Add Course Information

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check course Information with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Add Button</li> </ul>	Show message “Successfully Enter Department ” 	Insert Course Successfully	Pass
TU02	Check Department Information with Duplicate Data	<ul style="list-style-type: none"> <li>If entered already exists course cord</li> <li>Click Add Button</li> </ul>	Show Error Message “Already Added this information” 	Course insertion fails.	Pass
TU02	Check Department Information with Duplicate Data	<ul style="list-style-type: none"> <li>If entered already exists course name</li> <li>Click Add Button</li> </ul>	Show Error Message “You are trying to enter a course name that was previously entered under the same department” 	Course insertion fails.	Pass
TU03	Check Course information with no Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Add Button</li> </ul>	Show popup message “Please fill out this field ” 	Course insertion fails.	Pass

### Add Batch Information

Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check Batch Information with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Add Button</li> </ul>	Show message “Successfully Enter Batch ” 	Insert Batch Successfully	Pass

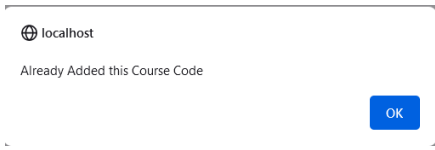
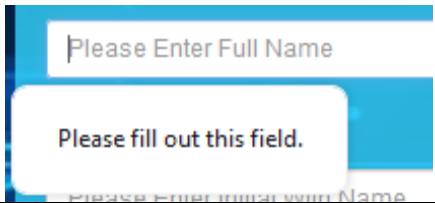
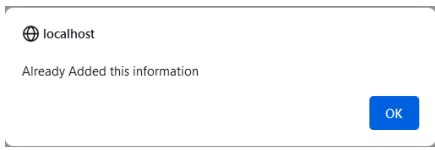
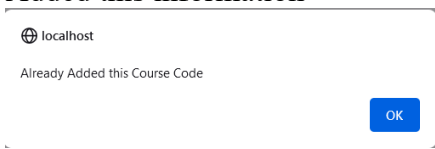
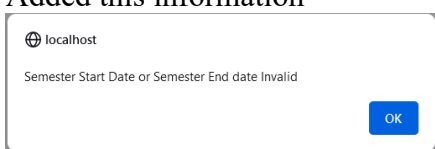
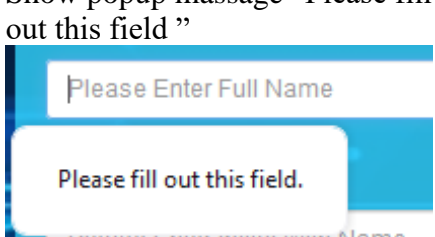
TU02	Check Batch Information with Duplicate Data	<ul style="list-style-type: none"> <li>If entered already exists Batch cord</li> <li>Click Add Button</li> </ul>	<p>Show Error Message “Already Added this information”</p> 	Batch insertion fails.	Pass
TU03	Check Batch information with no Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Student registration</li> </ul>	<p>Show popup message “Please fill out this field”</p> 	Batch insertion fails.	Pass
<b>Add Semester Information</b>					
Test Case ID	Test Scenario	Test Steps	Expected Results	Actual Results	Pass/Fail
TU01	Check semester Information with valid Data	<ul style="list-style-type: none"> <li>Enter Correct data in to the text fields</li> <li>Click Add Button</li> </ul>	<p>Show message “Successfully Enter semester”</p> 	Insert semester Successfully	Pass
TU02	Check semester Information with Duplicate Data	<ul style="list-style-type: none"> <li>If entered already exists semester</li> <li>Click Add Button</li> </ul>	<p>Show Error Message “Already Added this information”</p> 	semester insertion fails.	Pass
TU03	Enter a wrong date and check	<ul style="list-style-type: none"> <li>enter stating data</li> <li>enter end date before starting date</li> <li>Click add button</li> </ul>	<p>Show Error Message “Already Added this information”</p> 	semester insertion fails.	Pass
TU04	Check semester information with no Data	<ul style="list-style-type: none"> <li>If any text field is empty</li> <li>Click Student registration</li> </ul>	<p>Show popup message “Please fill out this field”</p> 	Batch insertion fails.	Pass

Table 5.6-5 : Collage Information menu selection

## 5.7 User Acceptance Test

This test is performed by the user. Pays attention to the user's needs and checks whether the system is available. The interface should not contain any errors, nor should there be any system errors. There should not be any design errors or interfaces in the interface before this step. Also, there should be no running errors or compiling errors in the system. This means that unit tests, integration tests, and system tests must be performed before the acceptance test is performed. seventy-one members of the academic staff were contacted for the user acceptance test in Galle, Matara, and Belliatha Technical Collages. Twenty members of the academic staff of the Matara Technical College were contacted for the user acceptance test. The details of these officers are given below. Of this group, 16 are graduates, three are postgraduates and four officers is a Diploma holder in Advanced Technology. In College of Technology, Galle staff members are 15 are graduates, five are postgraduates and seven officers is a Diploma holder in Advanced Technology. In Beliatta of Technology College staff members are 10 are graduates, 3 are postgraduates and 8 officers is a Diploma holder in Advanced Technology. The computer literacy of most officers is high.

## 5.8 User Evaluation

Officers who participated in the User Acceptance Test were given the Feedback Questionnaire in Appendix B. Analyze the answers provided and come to a conclusion on user feedback. This will give you an idea of how much feedback is good and how many are not satisfied with the system. The results of the analysis are graphically shown in the figure. 5.8-1.

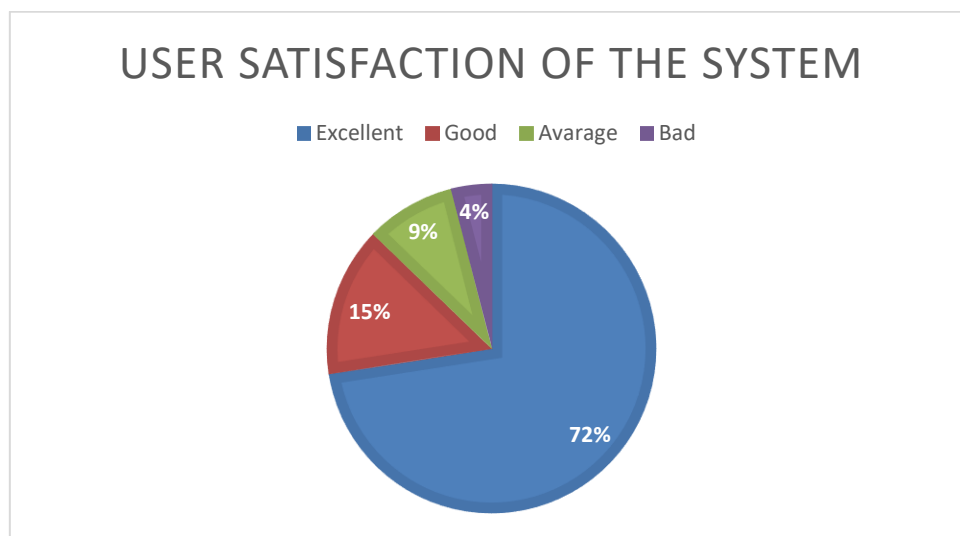


Figure 5.8-1 : User Satisfaction of the System

Twenty-seven lecturers from the Galle College of Technology, twenty-three lecturers from the Matara Technical College and twenty-one lecturers from the Beliatta Technical College participated in this event. The details of the feedback obtained from them are given in the table below.

<b>Analysis of feedback</b>					
<b>no</b>	<b>Question</b>	<b>Total participant's = 71</b>			
		Totally Agree	Agree	Partially agree	Disagree
01	Do you reach the agreement that the developed system is user-friendly?	53	13	3	2
02	Do you agree that the developed system would helpful to your classroom management process?	52	9	8	2
03	Do you think this system is better than the current manual system?	59	8	3	1
		Yes	Some of	No	Not really
04	Are you satisfied with the offered features of the system?	54	9	5	3
05	Are you satisfied with the show deficiency (error message) display in the system	48	13	9	1
		Not really	No	Some of	Yes
06	Did you experience any difficulty in using the system?	49	10	9	3
		Excellent	Good	Average	Poor
07	What was the first impression you created on the system?	52	9	7	3
	<b>Percentage</b>	<b>72%</b>	<b>15%</b>	<b>9%</b>	<b>4%</b>

*Table 5.8-1 : Analysis of Feedback*

The following results will be given after the information is round up to the nearest decimal place. 72% of the users said that the developed system is good for the Classroom Activity Management process and it makes smooth their process. 15% of the users said that system is excellent and 9% of the users said that the system is average. As a total, 96% of users are satisfied with the system. Although, 4% of the users are not satisfied with the new system. Because most of them were not well versed in IT and preferred the manual method. According to the questionnaire. The letter from the customer satisfaction obtained from the Matara Technical College is attached in Amendment C.

## **5.9 Summery**

This chapter mainly focuses on the testing part of the developed software. Initially, units are tested and it is called unit testing. Subsequently, units of the system are integrated and tested. Consequently, the whole system is tested against the user requirements gathered at the beginning. Finally, the user acceptance test is done by the selected users. The chapter also includes test cases, user evaluation form's and their analyzed result.

# Chapter 06: Conclusion

## 6.1 Introduction

This last chapter discussed on concludes the lesson learned, problems encountered, limitations and suggestions for any future enhancements.

## 6.2 Lesson Learned

Lecturers work in a variety of fields in a technical college. Their academic field and level of knowledge vary. especially in computer knowledge. As a result, special attention had to be paid to this team in gathering information as well as implementing the proposed methodology. When looking for systems similar to this one, I often came across a system that is compatible with a school or university. Thus, a clear understanding of how the format of a technical college varies from school or university was required. This system used AGILE methodology and UML diagrams. Further study of AGEL and UML was required to successfully analyze the need. PHP, Bootstrap, HTML experience was not enough and I had to study them in depth. I also spent time studying project report writing. In the midst of all this, the guidelines and timelines for the subject had to be followed.

## 6.3 Problems encountered

During the system development process following dominant problems encountered.

- Requirement gathering difficulties and sometimes gathered requirements was change. Clients would not be able to clearly represent the requirements what they need.
- Sometime mismatch the gathered requirements due to the misunderstanding and miscommunication.
- Lack of knowledge and experience regarding developing languages are another major issue. Online tutorials were helped to gain the required knowledge
- It was really difficult to deliver the final product within the given time frame.



## 6.4 Outcome

The developed Classroom Activity Management System is very user-friendly and easy to use. Without a high level of IT literacy, anyone can access this system. This system has the scope of all the main functions required for a lecturer to manage classroom activity,

<b>Admin</b>	<b>Lecturer</b>	<b>Class Teacher</b>
Admin Registration	View Schedule	Attendance Processing
Lecture Registration	Subject Scheduling and Modulation	Daly Teaching Record
Student Registration	Lecture Processing	Assessment Summary
Insert Department Information	Assignment Scheduling	
Insert Bach	Assignment Scheduling	
Insert Course	Insert Attendance	
Insert Semester	Search Student	
Insert Time Table	Generate Report	
Generate Report		
Search Student		
Backup system		

*Table 6.4-1 : Main functions of System*

## 6.5 Future Work

However, there are some improvement and future ideas that can be applied to make fully functional CAMS. One of these is the development of a mobile app for ease of handling. The teacher plans the date and time to teach each lesson at the beginning of the year. The system has provided some facilities for resetting if this plan is missed. System upgrades can be made in the future using construction logic programs to automate the teacher's year plans.

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## **Amendment A: Questionnaire**

Designation: .....  
Interview Questionnaire on Classroom Activity Management System for Technical Collage  
(The data gathered through this interview would be used exclusively for the purpose of  
academic research only.)

1. What is the subject area you are teaching?  
.....
2. How many courses do you teach?  
.....
3. How many subjects are taught in the above subject area?  
.....  
.....
4. How many hours per week are you teaching?  
.....
5. What are the other activities to be done in the classroom besides the teaching process?  
.....  
.....
6. What is the procedure for performing the above activities?  
.....  
.....
7. What are the difficulty's you find in performing the above activities?  
.....
8. Do you have enough time to do other activities in the classroom besides teaching?  
.....
9. How do you overcome the above difficulty?  
.....  
.....
10. Do you currently use a computer-based system?  
.....
11. Do you have basic computer literacy? .....
12. If you are introduced a computer-based system, what do you need to include in the  
system?  
.....  
.....  
.....

## Amendment B: User Evaluation form

Designation: .....  
 (Instruction: for separate statement, please check whether Excellent = 4, Good = 3, Average = 2 or Poor +1 )

1. Do you reach the agreement that the developed system is user-friendly?

Totally agree		Agree		Partially agree		Disagree	
---------------	--	-------	--	-----------------	--	----------	--

2. Do you agree that the developed system would helpful to your classroom management process?

Totally agree		Agree		Partially agree		Disagree	
---------------	--	-------	--	-----------------	--	----------	--

3. Do you think this system is better than the current manual system?

Totally agree		Agree		Partially agree		Disagree	
---------------	--	-------	--	-----------------	--	----------	--

4. Are you satisfied with the offered features of the system?

Yes		Some of		No		Not Really	
-----	--	---------	--	----	--	------------	--

5. Are you satisfied with the show deficiency (error message) display in the system?

Not Really		No		Some of		Yes	
------------	--	----	--	---------	--	-----	--

6. What was the first impression you created on the system?

Excellent		Good		Average		Poor	
-----------	--	------	--	---------	--	------	--




7. Did you experience any difficulty in using the system?

Yes		Some of		No		Not Really	
-----	--	---------	--	----	--	------------	--

8. Any improvement

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# Amendment C: Certifying Letter by Client

	<p><b>අධ්‍යාපන අමාත්‍යාංශය</b> கல்வி அமைச்சு <b>Ministry of Education</b></p> <p>සිසුසහ සංවර්ධන විකේතය අධ්‍යාපන පර්යේෂණ හා නව ක්‍ෂේත්‍රී රාජ්‍ය අමාත්‍යාංශය நிறுவன அபிவிருத்தித் தொழில் கல்வித் துறையும் புத்தாக்கல் இராஜாங்க அமைச்சு State Ministry of Skills Development, Vocational Education, Research &amp; Innovation</p> <p><b>කාර්මික අධ්‍යාපන හා පුහුණු කිරීමේ දෙපාර්තමේන්තුව</b> தொழில்நுட்பக் கல்வி மற்றும் பயிற்சித் திணைக்களம் Department of Technical Education &amp; Training</p> <p><b>කාර්මික විද්‍යාලය - මාතර</b> தொழில்நுட்பக் கல்லூரி - மாத்தறை <b>TECHNICAL COLLEGE - MATARA</b></p>	   Meddawatta Matara Tel :041-2222565 Fax: 041-2229988 Email: tcmatara@dtet.gov.lk	
බැඳිදෙන මාංග දුර: 041-2222565 ෆැක්ස්: 041-2229988 විද්‍යුත්: tcmatara@dtet.gov.lk	මගේ අංකය உமது இல My no } MTC/ADM	මගේ අංකය உமது இல Your No }	දිනය திகதி Date } 2021.09.06


**To whom It May concern**

I hereby, written this to certify the project work prepared by Miss. N.Wijegunasekara for the Matara Technical College.

The system was handed over to college teachers and tested. They proved that this system is very effective and efficient. We look forward to working with the Department of Technical Education and Training in the future and liaising with the Department's information system.

This letter is issued at the request of Miss. N. Wijegunasekara to fulfill any legal purpose or to ensure the status of this project. If you have any questions about this, we are happy to submit your request.

Thank you

  
A.K.Hettiarachchi  
Principal  
Technical College  
Matara



## Amendment D: Use Case Narration

<b>Use Case</b>	Student Search
<b>Description</b>	To easily find a student who is enrolled in the system.
<b>Primary Actor</b>	Lecture, Class Teacher, Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The student's information must be entered into the system.	
<b>Flow of Event</b>	
2) The user logging to the system	
3) Select Search Student menu	
4) If the user knows the student's bar code, enter the required data and click the Barcode search button.	
5) Alternatively, you can enter the required information in the course and batch columns and click the Search Batch button	
<b>Post Condition</b>	
The student can get information and information about his / her subjects by clicking the find button in the list	

*Table 0-1 : D 1 Use Case Narration Student Search*

<b>Use Case</b>	Add Time Table
<b>Description</b>	To set a time slot for the lecturer to do the lectures
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The admin login to the system	
<b>Flow of Event</b>	
2) The admin logging to the system	
3) Select Time Table menu and Select course and semester and click select button	
4) Select the teacher for the given period, complete the schedule and click the confirm button	
<b>Post Condition</b>	
Subject organization and planning should be done in accordance with the given timetable.	

*Table 0-2 D: Use Case Narration Add Time Table*

<b>Use Case</b>	Lecture Assign
<b>Description</b>	This is where the assignment of teachers for each subject takes place.
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
<ol style="list-style-type: none"> <li>1) The admin login to the system</li> <li>2) Lecture should be registered in the system</li> <li>3) Subject information should be included in the system</li> </ol>	
<b>Flow of Event</b>	
<ol style="list-style-type: none"> <li>1) The admin logging to the system</li> <li>2) Select Subject Management menu</li> <li>3) Select Lecture Assign Sub menu and Select the lecture name</li> <li>4) Click Assign Button</li> </ol>	
<b>Post Condition</b>	
Once the lecturers have entered the system, the subjects to which they are assigned are displayed.	

*Table 0-3 D: Use Case Narration Lecture Assign*

<b>Use Case</b>	Insert Course
<b>Description</b>	For collection of course information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
<ol style="list-style-type: none"> <li>1) The admin login to the system</li> </ol>	
<b>Flow of Event</b>	
<ol style="list-style-type: none"> <li>2) The admin logging to the system</li> <li>3) Select Collage information menu</li> <li>4) Select Course information Sub menu</li> <li>5) Fill the information required</li> </ol>	
<b>Post Condition</b>	
<ol style="list-style-type: none"> <li>1) If you need to update course information, click the change button</li> <li>2) If you need to delete course information, click the Delete button</li> </ol>	

*Table 0-4 D: Use Case Narratives of Insert Course*

<b>Use Case</b>	Add Department
<b>Description</b>	For collection of departmental information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
1) The admin login to the system	
<b>Flow of Event</b>	
2) The admin logging to the system 3) Select Collage information menu 4) Select Department information Sub menu 5) Fill the information required	
<b>Post Condition</b>	
1) If you need to update department information, click the change button 2) If you need to delete department information, click the Delete button	

*Table 0-5 D: Use Case Narratives of Add Department*

<b>Use Case</b>	Add Semester
<b>Description</b>	For collection of Semester information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The admin login to the system	
<b>Flow of Event</b>	
2) The admin logging to the system 3) Select Collage information menu 4) Select semester information Sub menu 5) Fill the information required	
<b>Post Condition</b>	
1) If you need to delete semester information, click the Delete button 2) Only the start date, end date, and course duration of the course can be changed. If necessary, update and press the change button	

*Table 0-6 D: Use Case Narratives of Add Semester*

<b>Use Case</b>	Insert Subject
<b>Description</b>	Inclusion of subjects relevant to the syllabus in each course
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
1) The admin login to the system	
<b>Flow of Event</b>	
1) The admin logging to the system 2) Select subject management menu 3) Select add subject Sub menu 4) Fill in the information about the given course and semester 5) Enter the subject name in the incoming interface and click the Add Subject button.	
<b>Post Condition</b>	
1) If you need to update course information, click the change button 2) If you need to delete course information, click the Delete button	

*Table 0-7 D: Use Case Narratives of Insert Subject*

<b>Use Case</b>	Add Bach
<b>Description</b>	For collection of batch information
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	Non
<b>Pre- Condition</b>	
6) The admin login to the system	
<b>Flow of Event</b>	
7) The admin logging to the system 8) Select Collage information menu 9) Select Batch information Sub menu 10) Fill the information required 11) The system generates the batch code automatically	
<b>Post Condition</b>	
3) If you need to delete department information, click the Delete button 4) This system provides the facility to search for the name or code of an included courses.	

*Table 0-8 D: Use Case Narratives of Add Bach*

<b>Use Case</b>	Add Time Table
<b>Description</b>	To set a time slot for the lecturer to do the lectures
<b>Primary Actor</b>	Admin
<b>Secondary Actor</b>	None
<b>Pre- Condition</b>	
5) The admin login to the system	
<b>Flow of Event</b>	
6) The admin logging to the system 7) Select Time Table menu 8) Select course and semester and click select button 9) Select the teacher for the given period, complete the schedule and click the confirm button	
<b>Post Condition</b>	
Subject organization and planning should be done in accordance with the given timetable.	

*Table 0-9 D: Use Case Narratives of Add Time Table*

## Amendment E: Database Table Structure



Figure 0-1 E: Database Table Structure