Masters Project Final Report

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Project Title	Web Based Office Management System (WBOMS) for Vocational Training Authority of Sri Lanka (VTA)
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	MIT	**MCS**	**Research**	**Implementation**

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WEB BASED

OFFICE MANAGEMENT SYSTEM

FOR

VOCATIONAL TRAINING

AUTHORITY OF SRI LANKA

A dissertation submitted for the Degree of Master of Information Technology

Miss. T.Sivaranjei
University of Colombo School of Computing
2017

Declaration

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

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

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Signature: Date:

This is to certify that this thesis is based on the work of

Prof. N.D.Kodikara

Under my supervision, the thesis has been prepared according to the format stipulated and is of acceptable standard.

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Signature: Date:

ABSTRACT

"Vocational Training Authority" (VTA), Jaffna District is one of the leading government's service organization in north of Sri Lanka. It provides educational, job and services through many centres in Jaffna District. As this organization runs in manual system, it faces so many problems to serve quality services to people on time.

Administrative, Planning and financial activities are carried out manually. Staff of VTA has struggle over work-load to monitor tasks Such as Student management, Staff management, Stock management, Payment management and Creation management. They also have to maintain case registers for each subject. They have to spend more valuable time to search records and get information. These records are also kept at the officer's working centre. Paper source is wasted for copying documents and forms. They need more storing facilities to keep files and records. In some cases a document is maintained under different subject files. As the system manual, it is caused for human errors in calculating data. Reaching information from head office to all staff and centre's is getting delay or missing through manual activities. They have to spend their more working hours for it.

The proposed system has a centralized database to handle anywhere and anytime. Different user level of VTA can access this system by creating a user account. Others can view some information of VTA. The system has been designed to fulfill the functional and non-functional requirements.

This web based solution was developed using PHP server side scripting language and Apache as the web server. MySQL was used as the database management system. This developed system was thoroughly tested to guarantee a validated system.

The Web Based Office Management System provides to VTA Jaffna District to run their routine processes easily and efficiently. It raises their service quality in order to manage staff details, monitoring various tasks of staff and institutions and generate various reports. Furthermore, the automated system is flexible and cost effective to carry out their work on time.

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Finally, most importantly, I give all my gratitude to the respective God.

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LIST OF ABBREVIATIONS

1NF	First Normal Form
2NF	Second Normal Form
3NF	Third Normal Form
CSS	Cascading Style Sheet
CD ROM	Compact Disc Read Only Memory
DBMS	Database Management Systems
GUI	Graphical User Interface
HTML	Hypertext Mark Up Language
OMS	Office Management System
PHP	Hypertext Pre-processor
RAM	Random Access Memory
RAD	Rapid Application Development
RUP	Rational unified process model
SDLC	System Development Life Cycle
SRS	System Requirement and Specification
SQL	Structured Query language
UML	Unified Modeling Language
URL	Uniform Resource Locator
V & V	Verification & Validation
VTA	Vocational training Authority
WBOMS	Web Based Office Management System
WWW	World Wide Web

CHAPTER 01 – INTRODUCTION

"Vocational Training Authority", Jaffna District is one of the leading government's service organization in north of Sri Lanka. It provides educational, job and services through many centres in Jaffna District.

The VTA was established with the intent skill of you for employment Manpower Division the training arm of Labor Department that was running Technical and Vocational Education and training programs in many parts in north of Sri Lanka, Was converted to the newly constitute Vocational Training Authority making vocational training more accessible to rural youth and depressed segments of the country.

World Wide Web is the most popular and powerful networked information system composed of internet host computers that provide online information in a specific hypertext format. The web can be consider to be a very large semi structured data base that holds vast amount of useful information.

Previously, organizations used file processing information system, which stores records in separate files. Unfortunately, file processing system have some limitations such as data duplication, data isolation and application program dependency. In order to overcome these limitations, database technology was developed. It is crucial to understand that the web based management system could be used and manipulated in producing a systematic, up to date and easy access to data and information.

Due to the above advantages, it was decided to change the manual Office Management System to Web Based Office Management System for the VTA to gathering information, generating reports and preparing summary details effective and efficiency. Web Based Office Management System (WBOMS-VTA) consists of tasks such as Personal details of users, student & staff management, stock management, payment management, creation management, Inform management, message notification and producing various reports.

1.1 MOTIVATION FOR THE PROJECT

This describes the project of a web based Office Management System for VTA. It is implemented as WBOMS-VTA to maintain the online Office Management System. The objective of this project is to build a system through the analysis and design phases for maintaining Office management system. This web based Office Management System includes the Personal details of users, student & staff management, stock management, payment management, creation management, Inform management, message notification and producing various reports.

A web component will also become a part of this project that will enable those who need the web based office management system of VTA to interact with the VTA Department online. Our world is ever changing and technologically very advanced. It is becoming more and more high-tech each second. In spite Sri Lanka being a developing country, it is also experiencing rapid technological advancement. Therefore to move forward with the world and to gain recognition in the international it is very advisable and a wise step to computerize the manual processes in a suitable and productive way.

1.2 PROJECT SIGNIFICANCE

The aim of this project is to provide an efficient and effective system for VTA to evaluate better management and generating an error free report. This Web Based Office Management System the Personal details of users, student & staff management, stock management, payment management, creation management, Inform management, message notification and producing various reports etc. The proposed system is user-friendly. Furthermore keep the records into the database, which is maintained fast and efficiently to storing and retrieval data. The solution will support the data management in the database such as add new data, delete, modify and view existing data. Additionally this system will be implemented as a web system with user login to access into the database. Furthermore the graphical user interface is provided in the proposed system, which provides user to deal with the system very easily. Reports can be easily generated in the proposed system. All the data is feted into the computer immediately and reports can be generated through computers. In additionally works become very easy because there is no need to keep data on papers. There are no chances of errors as staff controls the proposed system. Furthermore storing and retrieving of information is easy. As a result, efficient work can be done on time.

1.3 OBJECTIVES OF DEVELOPMENT FOR SYSTEM

- ❖ Providing user-friendly system to handle easily
- ❖ Reducing human effort and man-made errors
- ❖ Using it at different locations simultaneously
- ❖ Developing as a cost effective and quality work efficient system
- ❖ Accessing data quickly and generating various reports. Such as viewing details of all staff within less time
- ❖ Maintaining data accuracy such as calculating course, repair & stock payment
- ❖ Performing various activities such as add new data, edit, delete and update existing data
- ❖ Using with minimum requirements of sources. E.g: a computer
- ❖ Providing a graphical user interface (GUI) system
- ❖ Avoiding data redundancy

1.4 SCOPE OF THE SYSTEM

The main purpose of proposed project is to reduce the manual operation required to maintain the records of staff and student data. Moreover, to build up a quality work effective system for this department to enhance their services through the web based computer system. It provides quick access and performs the task of book keeping easily.

The following 8 modules tasks are carried out by the proposed system:

1. **User Management Module**
   - ❖ Giving log-in panel for ten system users who are Administrator (AD), Finance Officer (FO), Program officer (PO), Development officer (DO), Instructor, Trainee officer (TO), Management Assistant (MA), Instructor-Office In charge (OIC), Driver & Student
   - ❖ User registration and managing user information

2. **Student Management Module**
   - ❖ Managing Course registration, Class and Students Attendance details
   - ❖ Managing OJT (On the Job Trainee) details and OJT attendance for students
   - ❖ Managing Exam, Result and Job Placement details

3. **Staff Management Module**
   - ❖ Managing Staffs & Meeting Attendance information and send to Head office

- ❖ Managing the leave and send to Head office & Career guidance details

4. **Stock Management Module**
- ❖ Preparing Quotation and managing details
- ❖ managing Purchase Order (PO) and Good Receive Note (GRN)
- ❖ managing Good Receive Order (GRO) and Good Issue Order (GIO)

5. **Payment Management Module**
- ❖ Managing the Petty cash details
- ❖ Managing the Stock Payment for GRN & Repair Payment for Quotations
- ❖ Managing the Course Payment details

6. **Inform Management Module**
- ❖ Communicating with other staff (Internal Communication)
- ❖ Managing announcements & user comments details (Public Communication)

7. **Creation Management Module**
- ❖ Managing courses, batches and tutorials/study materials details of the courses
- ❖ Allocating Equipments for batch and managing details
- ❖ Managing Supplier (Stock) and organization (OJT) details
- ❖ Managing the Vehicle & Centre details

8. **Report Management Module**
- ❖ Generate administration reports

1.5 STRUCTURE OF THE DISSERTATION

Chapters of this dissertation are focused on the work that carried out during the various stages of the project. Each chapter will consist of required details in order to understand the project with the help of appropriate figures, table and reports.

This chapter is aiming to provide basic idea and the nature and the scope of this project to the reader. This document prearranged into seven chapters and five appendices.

Chapter 2- Background/Literature Review

Second chapter will provide background materials in order to proceed with rest of the documentation. It discusses all the subject areas that is related to the project and will furnish information about other equivalent systems. Also it described the literature review that is related to the project.

Chapter 3- Analysis

The analysis of the system is included in this chapter. The scope of the proposed system is described in detail by identifying detailed and specific requirements. It contains fact gathering techniques that have been used to identify the requirements and introduce all the system requirements in details.

Chapter 4 – Design

The specification or construction of a technical, computer based solution for the business requirements are identified in the system design. It contains techniques and tools that are used for system design will be introduced. All leveled diagrams are included. All significant design decision will be discussed. It will provide main user interfaces with appropriate screen shots.

Chapter 5 – Implementation

Some of the important codes are listed and explained. Also implementation environment, other related issues are summarized.

Chapter 6 – Evaluation and Testing

The evaluation of the final system, its outcomes and results are discussed and reviewed here. It provides testing approaches and methods which were used in the project with all the major test cases and test results.

Chapter 7 – Conclusion and Future work

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

Reference

All referred materials are properly listed in the Reference section.

Appendices

In appendices, System Documentation, User Documentation, Code Listing, Management Reports and Client certificate will be provided.

CHAPTER 02
BACKGROUND/LITERATURE REVIEW

2.1 BACKGROUND OF THE PROJECT

This section provides necessary background knowledge, in order to understand the rest of the documentation easily. Since VTA used a manual system to Office Management System (OMS), that system was studied carefully to get better understanding. Major consideration has been given here to recognize each function in detail manner.

All these procedures are presently carried out manually and it is really difficult, error probing, cost and time consuming. High degree of paper work was involved for these activities. Because of this reason VTA has the necessity to build up a system which will help to overcome this problem and move forward with the help of technology.

After understanding the whole subject area of the system, it was decided to split the module of the system into eight Modules in logical manner, with respect to the main functionalities. This was helped to reduce the complexity of the system and hence for better and more clear understanding. The modules are as follows,

1. User management Module
2. Student management Module
3. Staff management Module
4. Stock management Module
5. Payment management Module
6. Inform management Module
7. Creation management Module
8. Reports management Module

2.1.1 User Management Module

The department also needs to store the User Management information. Authorized staffs who are working under VTA, Jaffna district can manage user management module the system. Furthermore can Add/Upload/Edit/Delete/View/Search user details. And also User can view and update their details.

Furthermore It contains 10 types of reports are generated.

Student (5 Reports) – all students, Block students, Course-wise, Batch-wise and Centre-wise

Staff (5 Reports) – Individual user's details, All Staff, Block Staff, All Instructor and Centre-wise

User registration and managing user information:

User can register in online or offline into the WBOMS-VTA. If online/offline registration, Applicant fills out the relevant registration form and submit. Then system automatically creates user login account and sends username as his/her "id" and password as his/her "NIC number" to user's email when new user registration was approved by Administrator (AD). The system automatically changes profile picture file name when student/staff upload the profile picture. Furthermore she/he does not upload picture, then system display default profile picture.

Furthermore user status displayed as "Active or block". System display "Active" the user and he/she has been access the system. System display "Block" the user and he/she has not access system if AD click "Action" button on user management interface.

Furthermore issued id and uniform status displayed as "Issued or not". System display "Issued or not" when click related button on user management interface. When click "more" button on user management interface then displayed more user details on new window.

User Login and managing user information:

Login menu gives an interface to enter the system. It also ensures the security of the system by providing user authentication. There are ten categories of user who have different access power.

1. Asst. Director (**AD**) - has as full authority to handle the system, can perform all tasks as a System Administrator.
2. Finance Officer (**FO**) - has a high power, can perform all tasks of the system, can grant recommendation for staff. Furthermore can perform accounting tasks.
3. Program Officer (**PO**) - Manage some tasks, Maintain system up-to-date
4. Development Officer (**DO**) - Manage some tasks, Maintain system up-to-date
5. Management Assistance (**MA**) - Manage some tasks, Maintain system up-to-date
6. Instructor - Manage some of the Student Management module tasks
7. Instructor - OIC (Office In Charge) - Manage some of the Student Management module tasks
8. Trainee Officer (**TO**) - Manage some tasks, Maintain system up-to-date
9. Student - create user profile, update profile, and view his /her information.

10. Driver - create user profile, update profile, view his information and apply for leave.

This function also allows users to change their own password and try to recover their own password. This system automatically sends username and password through email when click forgot password link, enter email and submit.

2.1.2 Student Management Module

The department also needs to store the Student Management information. Authorized staffs can manage student management module of the system. Furthermore can add/ Upload /Edit/ Delete/View /Search details.

Furthermore It contains 29 types of reports are generated.

Course Registration (7 Reports) – Course-wise, Batch-wise, Centre-wise, Month-wise (Centre-wise), Year-wise (Centre-wise), Completed and Not Completed

Class Schedule & Student Attendance (5 Reports) – Course-wise Class, Centre-wise Class, Completed Class, Not Completed Class and Month-wise Individual Attendance

OJT & Attendance (6 Reports) – Individual, Batch-wise OJT, Centre-wise OJT, Month-wise Individual Attendance, Completed OJT and Following OJT

Exam & Result (6 Reports) – Course-wise Exam, Centre-wise Exam, All Exam, Cancelled Exam, Individual Result and Batch-wise Result

Job Placement (5 Reports) – Individual, Batch-wise Job, Centre-wise Job, Not Followed Job and Following Job

Managing Course registration details:

Student fills out the relevant course registration form and handover to authorized staff. Thereafter he/she is entering the data into system.

Furthermore Status displayed as "Completed or Not". System display "successfully completed" to relevant his/her course in his/her account when he/she has been passed the exam. System display "Currently Following" to relevant his/her course in his/her account when he/she is following course. System display "Not successfully completed" to relevant his/she course in his/her account when he/she has been failed or repeated the exam.

Furthermore Payment Status displayed as "Paid or Not". System display "Paid" when he/she fully paid relevant course fee.

When click next button, it will redirect to Payment insert form with his/her "course registration id" and their paid amount details. Furthermore the system automatically calculate the total payment and due payment of the course registration. Furthermore system

automatically calculate total course registration fee and displayed amount on course registration interface by using function.

Allocating Class and Exam schedules and managing details:

Allocate exam schedule for batch and manage exam schedule details. Furthermore send email to students and displayed Active/cancel status when the exam was cancelled or changed by the AD.

Allocate class schedule for batch and manage class schedule details. The completed class was closed by the AD and displayed completed/not status on the interface.

Students Attendance and managing student Attendance details:

Managing Students Attendance details

Managing OJT (On the Job Trainee) details and OJT attendance for students:

When the student can apply OJT on their course by VTA staff then recommendation or not by the FO and approval or disapproval by AD is granted to their efficiently Thereafter student can follow the OJT training by relevant VTA staff.

Furthermore Status displayed as "Completed or Not" on the interface when completed OJT was closed by the AD. When click "more" button on OJT management interface then displayed more OJT details on new window.

When click "Go Attendance" button, it will redirect to OJT Attendance insert form with his/her "OJT id" and their attendance details. Furthermore the system automatically calculates total attendance days and displayed days on OJT interface by using function.

Managing student Result details:

When the result was released then system will appear status as Pass/ Repeat/ Fail.

System display "Pass" to get his/her course registration NVQ Level.

System display "Repeat" to get his/her course registration different NVQ Level.

System display "Fail" to get his/her course registration NVQ Level equal 0.

System change into "successfully completed" status of course registration when student has been passed his/her course exam

Managing Job Placement details for students:

If the student can apply Job on their course by VTA staff, then recommendation or not by the FO and approval or disapproval by AD is granted to their efficiently Thereafter student can go to the work by relevant VTA staff.

Furthermore Status displayed as "Following or Not" on the interface when left Job was closed by the AD.

2.1.3 Staff Management Module

The department also needs to store the Staff Management information. Authorized staffs can manage staff management module of the system. Furthermore can Add/Edit/Delete/View /Search details.

It contains 8 types of reports are generated.

Individual Month-wise Attendance, Meet-wise Attendance, Approved Career, Not Approved Career, Individual Month-wise Leave, Individual Year-wise Leave, All Month-wise Leave, All Year-wise Leave.

Managing Staffs Attendance information and send to Head office:

Managing Staff Attendance details and sends details to head office (Colombo) by relevant staff.

Managing Staffs Attendance information for Staff meeting:

Managing Staff Attendance details for Jaffna district staff meeting and send details head office (Colombo) by relevant staff.

Managing the leave details and sends to Head office:

If the staff apply to the own leave, system checks the possibility of taking leave. Recommendation or not by the FO and approval or disapproval by AD is granted to staff efficiently. Staff can view their available leave details and the status of approval. When click "more" button on leave management interface then displayed more leave details on new window.

Managing Career guidance details:

If the VTA Staff can apply to own/not participate career guidance for course, then Recommendation or not by the FO and approval or disapproval by AD is granted to staff efficiently. Staff can view their Career guidance details and the status of approval. There after VTA Staff can participation career guidance for course to expand about VTA courses.

2.1.4 Stock Management Module

The department also needs to store the Stock Management information. Authorized staffs can manage stock management module of the system. Furthermore can add/Edit/Delete/View /Search stock details.

Furthermore It contains 15 types of reports are generated.

Quotation - Individual, Year-wise (Centre-wise), Approved Repair, Approved New, Canceled

Purchase Order - Individual, Year-wise (Centre-wise), Cancelled

Receive (GRN) - Individual, Year-wise (Centre-wise)

Issue (GIO - Individual, Year-wise (Centre-wise), Cancelled

Receive (GRO) - Individual, Year-wise (Centre-wise)

Preparing Quotation and managing details:

If the relevant staff can prepare the quotation for purchase stocks, then recommendation or not by the FO and approval or disapproval by AD is granted to the efficiently Thereafter staff can view quotation details of approval status then prepare purchase order for that approved quotation as stock type was "New".

Furthermore Status displayed as "Approved/Not" on the interface when click Approval/cancel button on quotation by the AD. When click "more" button on quotation management interface then displayed quotation details with quotation sub details on new window.

When click "Go Add" button, it will redirect to quotation sub insert form with relevant "qut_id" and quotation sub details. Furthermore the system automatically calculates values with displayed amount on quotation sub interface and calculates total sub quotation amount with displayed total amount on quotation interface by using function.

If stock type was "Repair" then active "Go repair pay" button when click button, it will redirect to repair payment insert form with relevant "qut_id". Furthermore the system automatically updates the "paid status" as paid on quotation interface.

Preparing Purchase Order (PO) and managing details:

If the Quotation was approved by AD with as stock type was "New" then staff can prepare the Purchase Order (PO). There after recommendation or not by the FO and approval or disapproval by AD is granted to the efficiently. Staff can view Purchase Order details of approval status.

Furthermore Status displayed as "Approved/Not" on the interface when click Approval/cancel button on Purchase order by the AD. When click "more" button on Purchase order

management interface then displayed Purchase order details with Purchase order sub details on new window.

When click "Go Add" button, it will redirect to Purchase order sub insert form with relevant "po_id" and Purchase order sub details. Furthermore the system automatically calculates values with displayed amount on Purchase order sub interface and calculates total sub Purchase order amount with displayed total amount on Purchase order interface by using function.

Preparing Good Receive Note (GRN) and managing details:
The relevant staff can prepare GRN for received stocks in VTA office. When click "Go Add" button, it will redirect to GRN sub insert form with relevant "grn_id" and GRN sub details. Furthermore the system automatically calculates values with displayed amount on GRN sub interface and calculates total sub GRN amount with displayed total amount on GRN interface by using function.

When click "Go Pay" button, it will redirect to Stock payment insert form with relevant "grn_id. Furthermore the system automatically updates the "paid status" as paid on GRN interface. When click "more" button on GRN management interface then displayed GRN details with GRN sub details on new window.

Preparing Good Issue Order (GIO) and managing details:
Staff can prepare the GIO for Issue order to send the centre in Jaffna District. There after recommendation or not by the FO and approval or disapproval by AD is granted to the efficiently. Staff can view GIO details and the status of approval. There after staff can issue relevant stocks to centre.

Furthermore Status displayed as "Approved/Not" on the interface when click Approval/cancel button on GIO by the AD. When click "more" button on GIO management interface then displayed GIO details with GIO sub details on new window.

When click "Go Add" button, it will redirect to GIO sub insert form with relevant "gio_id" and GIO sub details. Furthermore the system automatically calculates values with displayed amount on GIO sub interface and calculates total sub GIO amount with displayed total amount on GIO interface by using function.

Preparing Good Receive Order (GRO) and managing details:

The relevant staff can prepare the GRO for received order to arrived stocks from head office in Colombo. When click "Go Add" button, it will redirect to GRO sub insert form with relevant "gro_id" and GRO sub details. Furthermore when click "more" button on GRO management interface then displayed GRO details with GRO sub details on new window.

2.1.5 Payment Management Module

The department also needs to store the Payment Management information. Authorized staffs can manage payment management module of the system. Furthermore can add/Edit/ Delete/ View /Search details.

Furthermore It contains 14 types of reports are generated.

Course Registration - Individual, Batch-wise, Centre-wise, Month-wise (Centre-wise), Year-wise (Centre-wise), Due Payment

Stock Payment – Month-wise (Centre-wise), Year-wise (Centre-wise), Due Payment

Repair Payment – Month-wise (Centre-wise), Year-wise (Centre-wise), Due Payment

Petty Cash – Month-wise (Centre-wise), Year-wise (Centre-wise),

Managing the Course payment details:

The student can make payment as a part or full payment for course registration. If they paid as part payment, the system automatically calculate the total registration payment with due payment of the course and display in course payment interface.

Managing the Stock Payment details:

Staff can prepare the Stock Payment for GRN. There after recommendation or not by the PO, Payment approval or disapproval by FO and Voucher approval or disapproval by AD is granted to the efficiently. Staff can view Stock Payment status of approval. There after staff can send Voucher approved payment to relevant supplier.

Furthermore Status displayed as "Approved/Not" on the interface when click Voucher Approval/cancel button on Stock Payment by the AD. The system automatically displayed the total Stock payment for relevant GRN of the stock and display in interface.

Managing the Repair Payment details:

Staff can prepare the Repair Payment for approved quotation as stock type was "Repair". There after recommendation or not by the PO, Payment approval or disapproval by FO and Voucher approval or disapproval by AD is granted to the efficiently. Staff can view Repair Payment status of approval. There after staff can send Voucher approved payment to relevant supplier.

Furthermore Status displayed as "Approved/Not" on the interface when click Voucher Approval/cancel button on Repair Payment by the AD. The system automatically displayed the total Repair payment for relevant quotation of the stock and display in interface.

Managing the Petty cash details:

The relevant staff can prepare the Petty cash details for buy relevant things.

2.1.6 Inform Management Module

The department also needs to store the Inform Management information. Authorized staffs can manage inform management module of the system. Furthermore can add/Upload/Edit/ Delete/ View /Search user details.

Furthermore It contains 6 types of reports are generated.

All Announcement, All Meeting, All Events, Month-wise Events, Month-wise Meeting, All Contact/public comments

Managing announcements of VTA in Jaffna district:

VTA needs to publish much information for staffs who are working at centre in all Jaffna districts. Information can be accessed quickly without any delay Such as meeting announcement, attending meeting and events, etc.

Communicating with other staff (Internal Communication):

VTA Staff can send the message to other VTA staff through entering relevant information by Communication interface. If the relevant staff has got alert as new message, then he can reply to them.

Managing the user comments (public Communication):

Public can be send the comment about VTA through entering relevant information by public comment interface. If the Admin has got alert as new comment, then he can reply to them by their email.

2.1.7 Creation Management Module

The department also needs to store the Creation Management information. Authorized staffs can manage creation management module of the system. Furthermore can add/ Upload/Edit/ Delete/ View /Search user details.

Furthermore It contains 15 types of reports are generated.

All Courses, All Centres, All Vehicles, All Suppliers, All Organization

Study Material - All Material, Instructor Material, Course-wise Material

Equipments - All Equipments, Centre-wise, Batch-wise

Batch - All Batch Details, Completed Batch, Centre-wise Batch, Course-wise Batch

Creating courses & managing details: manage the VTA courses

Creating batches and managing details:

AD closed the batch when the batch has been completed. Furthermore Status displayed as "Completed or Not" relevant batch.

Managing tutorials/study materials details of the courses:

Staff can upload the study material for course then student can download their related course's study material. Study material has various types of books and tutorial. Books are issued as hard copy and tutorial are issued as soft copy or hard copy for relevant students.

Allocating Equipments for batch and managing details:

When click "Go Add" button, it will redirect to Equipment sub insert form with relevant "equip_id" and Equipment sub details. Furthermore the system automatically calculates values with displayed amount on Equipment sub interface and calculates total sub Equipment amount with displayed total amount on Equipment interface by using function.

Furthermore when click "more" button on Equipment management interface then displayed Equipment details with Equipment sub details on new window.

Managing Supplier (Stock) and organization (OJT & Job) details: manage the VTA Supplier for stock and organization for OJT & Job Placement.

Managing the Vehicle details: manage the VTA vehicles

Managing the Centre details: manage the VTA centre in Jaffna district

2.1.8 Report Management Module

VTA needs to generate various reports for routine works. The system should allow the staff to generate and view the reports related to user, student, staff, stock, payment, creation and inform Module. Furthermore the system should allow the users to print the reports and documents.

2.2 OTHER EQUIVALENT SYSTEMS STUDIED

Considerable amount of effort and time was put in to find out other equivalent systems and approaches to study their plus and negative aspects, in order to implement the system in an effective and efficient manner. In Sri Lanka VTA-OMS (Office Management System) and all the other OMS conduct the manually.

VTA has got the work done manually and knowledge was gained by studying that existing manual system. In order to implement the system, the procedures that were followed in the manual system were always compared. Before conduct OMS VTA informed it by posting letters to user (Student/Staff) and other relevant parties. Then applications were collected for the user registration and checked the details against the registration. Then registration was numbered by referring the registration file lists which were maintained manually. After that user was prepared manually and record of each user was documented. VTA was documented all that information and found when needed. Data were updated by referring registration details and user details. In order to calculate updated Total payment, the authorities get the assistance of scientific calculator or Microsoft Office Excel. Afterwards total were assigned according to the updated payment. This was really difficult, error probing and cost, time and resource consuming. To implement the system, above mentioned manual system and all the relevant VTA documents were thoroughly studied.

VTA current system was the primary classification to understand the background which we have to work with. As mentioned before, the fact that the some of the Office has gone through any automation in office activities led to analyze systems which perform similar tasks. The following similar systems were used for a detailed study.

Neusoft:

Neusoft UniOffice is universal office software featuring robustness, easy-to-use, efficiency, flexibility, standard compliance, and high security, designed to help users finish their tasks over the Internet at the lowest cost, make fast inquiries, and use information in a secured way. The benefits include reduced costs of managing, delivering, and using their documents, information, and materials as well as improved efficiency. Neusoft UniOffice helps governments and enterprises improve office management efficiency. **[1]**

Office Management System:

OMS is an integrated accountancy practice management suite designed specifically for the needs of small/micro UK accountancy firms. **[2]**

TOMMIE:

Living with TOMMIE is a joy! It provides everyone in an office or workgroup with the information and control they need to manage his or her working life better. From a PC, Mac, PDA or smart mobile phone, in the office or out, TOMMIE is always ready to help. In addition, when you consider just how customizable TOMMIE's interface and functionality are, you realize how easy working life can be. **[3]**

WaypointHR:

WaypointHR is Open Source human resource software, providing organizations with a immediate and flexible Human Resource Management System (HRMS). With WaypointHR can record and store all important employee information including: Personal details and emergency contact information, Holiday, sickness and absence history, Employment, contract, job and salary details, Discipline and grievance records, Performance appraisal records, Exit interviews and employment termination, Current and historical data. WaypointHR is a robust and scalable HRM platform used to electronically store staff information, doing away with the need for paper-based personnel files. **[4]**

Further, to implement the online system quite a lot of similar above web sites were referred. Web site of the Neusoft was provided much relevant information. Also the web site of the OMS and WaypointHR was offered some important information. These web sites were analyzed and studied well, in order to get better ideas to implement the online system.

In addition, some common application software (such as Microsoft Office Word, Microsoft Office Excel, etc.) was studied to get some ideas about the user interface designing.

2.3 RELATED SUBJECT AREAS

In order to analysis and design the system UML was employed. The diagrams such as use case diagrams, class diagrams and database diagram were used and MS Visio was used as a development tool. So it was essential to study and have a thorough knowledge to apply UML concepts. Learning UML, Visual Modeling with MS Visio 2010 and UML, The unified

modeling language Reference Manual and Designing Object-Oriented Software was list of books which I have referred with respect to this subject area. To design and implement the database following texts were referred: Fundamentals of Database Systems Concepts, Database Management Systems and MySQL Server Database Design and Implementation. Supported Browsers and Development Tools:

- ❖ Adobe Dreamweaver CS6- used in designing the website as well as scripting.
- ❖ Microsoft Visio 2010 – used to create diagrams.
- ❖ Adobe Photoshop CS3 – for image retouching.
- ❖ Mozilla Firefox- used to run WBOMS - VTA program.

PHP is the language which was used to implement the system. Here I was came access many situations where I was needed some assistance. I was referred MIT-RAD and gain needed knowledge. Furthermore, some of the web sites I have visited are *http://www.w3c.com/*

The WBOMS can be stated as a Database Management System (DBMS), because it has collection of interrelated data and a set of programs to access that data. These programs were developed using the following languages and technologies;

- ❖ PHP (Hypertext preprocessor)
- ❖ JavaScript – used for client side validation
- ❖ CSS (Cascading Style Sheets)
- ❖ HTML (Hyper Text Markup language)
- ❖ MySQL – used to handle all the development related to the database.

Since this is a web based system, WBOMS could be installed in a web server in operating system. XAMPP server is solid and stable high-performance platform for windows. The advantage of the Apache, PHP and MySQL combination which is open source is unified with commercial operating system windows. The XAMPP software is free open source software which is downloadable through the internet. The system is made accessible to the managing user of the VTA through the Internet.

The XAMPP software was used to achieve platform independence, because the user environment is running on windows. Therefore the developed system website will not have any problems while deploying and its portability will be high.

As a guide line to develop the system and to write this dissertation MIT project guidelines were referred. The URL is *http://www.pgvle.ucsc/cmb.lk.* The complete set of references is listed in the References section of the dissertation.

CHAPTER 03 - ANALYSIS

"System Analysis **[5]** is that relates closely to requirements analysis or to operations research. It is also an explicit formal inquiry carried out to help a decision maker identify a better course of action and make a better decision than she might otherwise have made." Analysis involved a detailed study of the current system leading to specifications of a new system as well as the facts gathering techniques that have been used to identify the requirements and introduces all the system requirements in detail. In additionally collected functional, non-functional requirements.

3.1   ANALYSING THE EXISTING MANUAL SYSTEM

As the VTA, DVTC is the Jaffna District Head Office, Managing all staff and monitoring centre is very difficult through the manual system. The documents are filed and records are written in case registers manually. It is hard to quick access and time consuming activity. These files and registers may be lost. Furthermore, this system is not secure at all times. Large storage facility is required for maintaining files.

Files and records are manually checked before the approval is granted. Information is maintained under the various subjects. More Paper source is wasted. Details of staff are not up-to-date. The all announcements are not received by all staff within proper time period.

3.1.1 Use case Diagram for Existing Manual System

The *Figure 3.1* shows the Use case diagram which describes the activities carried out in the existing manual Student Management System.

The following registers are used for manual entry:

- ❖ Personal file register: This register contains (user) personal files information as centre wise.
- ❖ Stock: This register is maintained for keeping records for stock details.
- ❖ Payment Receipt: This receipt book is maintained for providing receipt.
- ❖ (OJT) Training: This register has training details of student from VTA
- ❖ Leave : This register contains leave particulars and signature of authorized officer
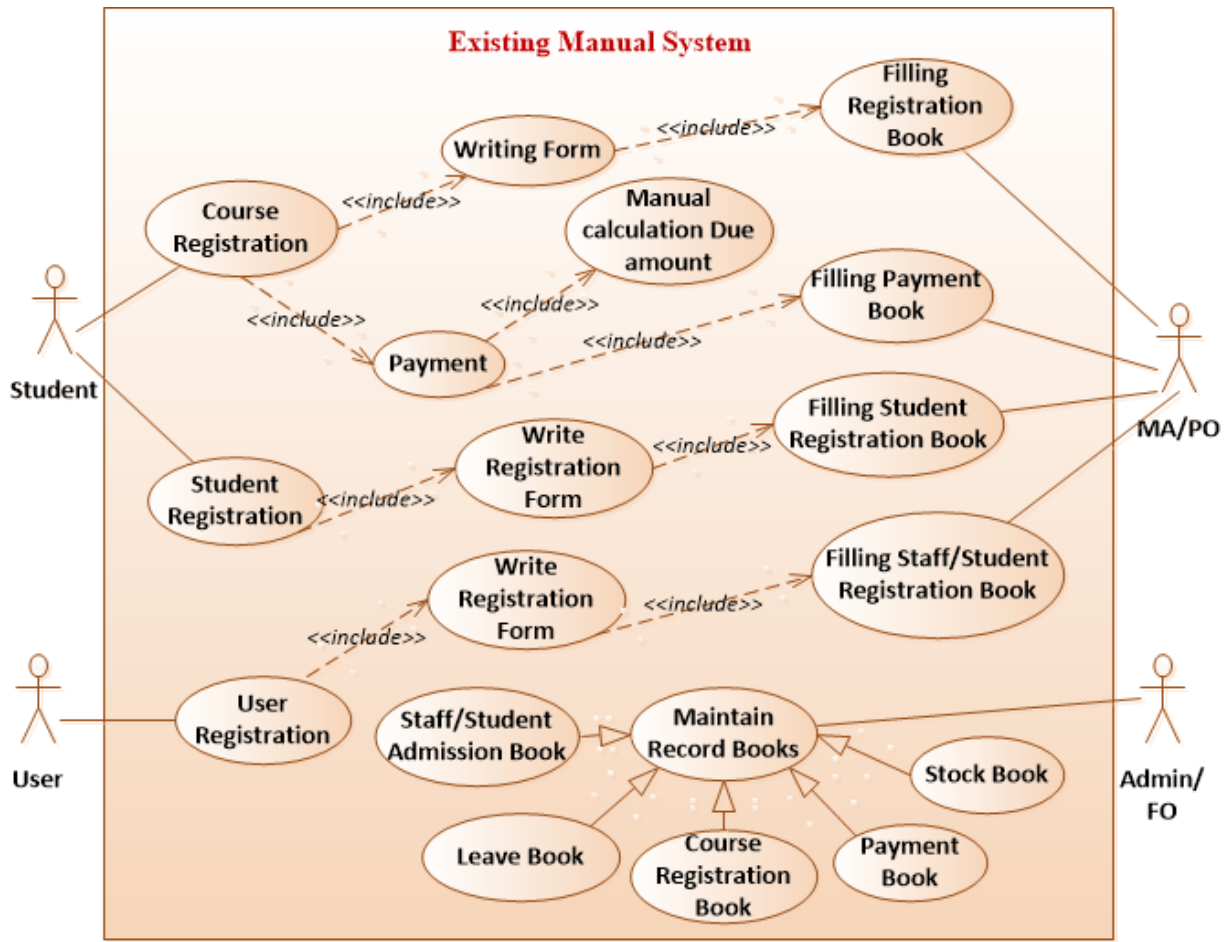
Figure 3.1: Use Case Diagram for the Existing Manual System

3.1.2 Drawbacks of the Existing Manual System

The following drawbacks are identified in the existing system:

- ❖ Existing Office Management System used the paper based manual offline system.
- ❖ The manual method is more time consuming and needs a considerable amount of human resources. Searching a data from files may take a lot of time and sometime it may be difficult to find some files.
- ❖ Report generation is most difficult in the manual system to preparing the final report.
- ❖ Manual Office management sometimes contains unexpected errors such as addition and subtractions errors.
- ❖ As the data is voluminous, more space is required to store it. Furthermore everything is stored on papers. This type of storage is more prone to damage with time and due to other accidental factors.
- ❖ Due to improper maintenance of data, inconsistency is here which leads to problem like duplication of data.

- It is very difficult to get information in the existing system if any information is required for any specific purpose.
- Problem of updating data in the existing system since everything is stored in registers and files. It is very difficult and time consuming to update data.

3.2 COMPARISON OF WBOMS WITH EXISTINGSYSTEM

The *Figure 3.2* shows the Comparison of WBOMS with the Existing Manual System

Figure 3.2: Comparison of WBOMS with the Existing Manual System

- When we compare the WBOMS with Manual Office Management Systems, we can clearly understand the differences. WBOMS has an advantage aspect of web-based.
- The WBOMS has a lot of user friendly.
- The WBOMS has login facility. It was design with text box, buttons and links. User can easily understand this interface structure. If the user submits wrong username or password, this system will depict the error throw the error message and it allowed to try again the login facility.
- User has a chance to forget/lost his/her password, in this situation he/she can get the password again by forgot password link, while he/she enter his/her email address he/she can get the password on his/her email.
- Form based interface is available in this system Student and Staff details are entered in the form.
- Windows base print box is in use to print reports in this system, Therefore Staff can get print easily.
- Online Student and Staff registration facilities also available in this system.
- Staff can easily add any record. If he/she wishes, he/she can edit that records detail. This is also ensuring the user friendly.
- New register Student and Staff alert facilities also available in this system.

3.3   FACT GATHERING TECHNIQUES

In the Requirement analysis phase, information gathering is an important and time consuming activity. But it should be carried out accurately. Otherwise the system cannot be fully understood and documented by the analyst. There are several ways to find the information in a system development project. Such as, Interviewing, Questionnaires, Observation of the environment, Sampling of existing documents and Prototyping.

Multiple techniques were employed here to capture requirements from different stakeholder perspectives. The main methods used for fact finding process were interview, observation, document review and scenarios. Most appropriate stakeholders from the office's administration-end were selected to discover requirements related to the management and administrative procedures.

3.3.1 Interviewing

Interview is the best way of gathering data techniques. When we have interviews we can get to know each other well. None other than that it is the most suitable method. Because the interviews we can be able to get the needed details directly. By having interviews we can be able to identify the real problems. Not only that the short comings in the manual system also can be identified. We can know how they face problem their day to day life with data in the manual system.

Information of the intended system was gathered by interviewing the system users in the following way.

❖ Main functionality of system was argued by the Assist. Director.

❖ Most of information of day to day activities of the proposed system was obtained by interviewing with VTA Staffs

3.3.2 Observation of the Work Environment

Observation was carried out to collect implicit information which plays a critical in the system. Relevant documents and paperwork of the existing manual system were analyzed and studied through a sampling process.

Observation is an effective data collection technique. Data gathered by observation is highly reliable. Information is gathered when various staffs (Asst. Director (**AD**), Finance Officer (**FO**), Program Officer (**PO**), Development Officer (**DO**), Management Assistance (**MA**), Instructor, Instructor - OIC (Office in Charge), Trainee Officer (**TO**) and Driver) perform

their activities in this system. It prevents unclear understanding about the system. It allows to do work measurements. It is to find out the objectives of each individual work and try to make them cohesive. Watching several times ensures real information in the system. At last, finalized real information is gathered.

The captured facts were represented as scenarios and Use-Case diagrams to give a clear picture on basic requirements and interaction sessions of the system, which can be understood by both technical and non-technical personnel.

3.4 SPECIFICATION OF USERS AND TASKS

Since the system is going to be used by number of users. The system users are Asst. Director (**AD**), Finance Officer (**FO**), Program Officer (**PO**), Development Officer (**DO**), Management Assistance (**MA**), Instructor, Instructor - OIC (Office in Charge), Trainee Officer (**TO**), Driver and Student.

The system will be used all 24 hours a day. The peak time of usage may be the office hours, which is from 8.30 am to 4.30 pm.

3.4.1 Tasks of Admin - Asst. Director (AD)

Add/Edit/ Delete/View User, Student, Staff and Creation Management Module

Add/Edit/Delete/View Inform, Stock and Payment Management Module

Approve/Cancel new user registration and new entries (OJT, Job placement, staff leave, career guidance, Quotation, Purchase order, GIO)

Approve/Disapprove Voucher for payment (Stock and Repair Payment)

Upload study material, user profile picture and events picture

Block/unblock user and closed left Job placement & old public comments

Change/Cancel Exam Schedule details and Closed completed class schedule, OJT & Batch

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.2 Tasks of Finance officer (FO)

Add/Edit/ Delete/View User, Student, Staff and Creation Management Module

Add/Edit/Delete/View Stock and Payment Management Module

Recommend/Cancel new entries (OJT, Job placement, staff leave, career guidance, Quotation, Purchase order, GIO)

Approve/Disapprove for payment (Stock and Repair Payment)

Upload study material, user profile picture

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.3 Tasks of Program officer (PO)

Add/Edit/ Delete/View User, Student, Staff, Payment and Creation Management Module

Recommend/Cancel for payment (Stock and Repair Payment)

Upload study material, user profile picture

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.4 Tasks of Development officer (DO)

Add/Edit/ Delete/View User, Student, Staff, Stock and Creation Management Module

Upload study material, user profile picture

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.5 Tasks of Management officer (MA)

Add/Edit/ Delete/View User, Student, Staff, Stock and Creation Management Module

Upload study material, user profile picture

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.6 Tasks of Instructor & Instructor- OIC (Office in Charge)

Add/Edit/ Delete/View Student, Staff and Creation Management Module

Upload study material, user profile picture

Apply own leave, study material, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.7 Tasks of Trainee Officer (TO)

Add/Edit/ Delete/View User, Student, Staff, Stock and Creation Management Module

Upload study material, user profile picture

Apply own leave, OJT & Career and Edit/View his/her Profile details

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.8 Tasks of Driver

Apply own leave and Edit/View his/her Profile details & Upload user profile picture

Send/Reply/Delete/View/Draft message to staff by Internal Communication

View/Print Reports

3.4.9 Tasks of Student

Upload his/her profile picture and Download the his/her study materials

Edit/View his/her Profile details and change password

View his/her course registration, OJT, result and Job placement

3.5   REQUIRMENT ANALYSIS

A Requirement is seen as a high level, abstract statement of a service that the system should provide on the system. The requirement elicitation and analysis is an iterative process with continuous feedback from each activity to other activities which involves domain understanding, requirement collection, structuring, prioritization and validation. System behavior is documented in a use case model. Use case provides major inputs when finding and specifying subsystem, interfaces and test cases.

3.5.1 Functional Requirements

Under this topic details and specific requirements of the project are discussed. The functional requirements expected by the users, the specification which describes all functionalities of the system and non-functional requirements will be elaborated.

The web based office management system contains eight modules.

User Functional Requirements
   ❖ Username and password should be given to Login to the system
   ❖ Change passwords.
   ❖ Add/Edit/Delete/View user, student, staff, stock, payment, inform and creation management module details.

- ❖ Apply for leave, OJT, Job and career.
- ❖ Close the completed batch, class schedule, OJT and old comments for public
- ❖ Close the inactive Job placement
- ❖ Cancel or change exam schedule.
- ❖ Communicate with others and Get comments from public
- ❖ Upload & download the study materials
- ❖ Upload the profile picture & officially events picture
- ❖ Approve/Disapprove the new user registration.
- ❖ Recommendation/not and Approve/Disapprove the new entries OJT, Job, leave, career, quotation, order, GIO, stock payment and repair payment
- ❖ Necessary details are as possible as up-to-dated.
- ❖ View and Print reports.

System Functional Requirements

- ❖ First, the system sends alert to AD automatically after the registration of new user
- ❖ If the AD approved the registration, system sends acknowledgement to the User's email address and system automatically creates user login account. At the same time it also sends acknowledgement for disapproved registration.
- ❖ When using the system, the user has to consider that other than certain pages, he/she has to Login to the system to go into other pages.
- ❖ The system should allow the responsible users to add, edit and delete the user details. At the same time, the stored details should be able to be retrieved and shown when necessary.
- ❖ The system automatically sends alert for registration of new user, new message, new comment, request of leave, new career, new OJT, new Job, new quotation, new purchase order, new GIO, stock payment and repair payment
- ❖ The system automatically sends and receives messages among the staff.
- ❖ The system automatically sends email to students when their exam schedule was cancelled or changed.
- ❖ The system automatically close course registration when student has been completed his/her course.
- ❖ The system automatically displayed status as Paid in quotation when repair payment was approved and displayed status as Paid in GRN when stock payment was approved
- ❖ The system automatically calculates the course registration payment with paid amount

- The system automatically calculates total amount for quotation, purchase order, GRN, GIO and equipment required for batch
- The system automatically calculates result status as Pass/Repeat/Fail
- The system automatically calculates days of OJT attendance for OJT
- The system automatically checks the available leave when staff request for it.
- The system automatically sends password through email when click forgot password link, enter email and submit.
- The system automatically changes file name of profile picture when staff uploads the profile picture. Furthermore if she/he does not upload picture, system display the default profile picture.
- The system automatically creates report when authorized staff request. Then they will be able to print the report.
- The authorized staff is able to search and view all the necessary data.

3.5.2 Non Functional Requirements

Non functional requirements will be considered throughout the software development life cycle such as reliability, security, accuracy, consistency and user friendliness, efficiency and maintainability, etc.

Security: The security mechanism protects sensitive information. Furthermore Security requirements are important factors in this system as classified data will be stored in the database. User validation will be done during login to insure that the user is valid and that the user only has access to his or her permission data.

Accuracy: Accuracy of transmission of the sensitive information from data entry to saving it into the database

Efficiency: The system must provide easy and fast access without consuming more cost.

Reliability: System should be reliable in any environment. User should never be surprised by the behavior of the system and it should provide meaningful feedback when errors occur therefore user can be recovered from the errors.

Maintainability: The system will be easily maintained by the developer or other authorized trained person. Furthermore it shall respond as fast as possible in generating report and producing the schedule.

Consistency and User friendliness: The system will have consistent interface formats and button sets for all forms in the application, will have a form based interface for all data entry and viewing formats, and will generate reports that are formatted in a table furthermore that should look like the existing manual report formats for user friendliness.

Simplicity: overall understanding of the program.

Navigation: Ease of navigation inside the web site

Operability: the ease of operation of the system.

Portability: the system should be portability to user

Response & processing time: should be less than manual system

3.5.3 USER REQUIRMENTS

User experience requirements

- ❖ Fundamental knowledge in handling Windows XP operating system.
- ❖ Users must have considerable typing speed to use the system for data entry.
- ❖ Users must have basic knowledge in database management system.
- ❖ Users should know basics knowledge to Network (Web).
- ❖ Users must have initial knowledge to operate printers.

3.6 FEASIBILITY STUDY OF THE WBOMS

The aim of the feasibility study activity is to determine whether it would be financially and technically feasible to develop the system or not. A feasibility study is carried out from following different aspects:

2.6.1 Operational Feasibility

The system has been developed for any user who wants to use this system. We have given a demo of our project and the users found the system friendly and easy to use. The interoperability with the existing system is also checked after uploading the website. Therefore they may face certain problems in using the user interface. Therefore keeping this consideration in mind we have provided field for each and every field on the forms. The administrator also may be non-technical, so the user interface is designed in such a way that it gets comfortable for the non-technical person to operate easily.

In WBOMS User Requirements as, Functions of the manual systems of user were learnt. The following steps have been carried out in order to design this system.

- ❖ The user's working environment has been observed.
- ❖ Questions have been raised and a discussion was done about the task.

This system has been developed on the basis of paper base system functions. Understand their task and analysis with supervisor to take final design of the interface processing method, report format, details of reports and printing facilities.

3.6.2 Technical Feasibility

It was developed using XAMPP techniques. Furthermore it was using java-script prompt message. Reports generation are using MYSQL query Language, Staff are trained to process this software. Various types of reports have to be print available, no other hardware are required to process this system. This software can be handled on the offline or online.

3.6.3 Schedule Feasibility

Time has been scheduled from the start to end, and the project has been carried out gradually, Gathering requirement, Analyzing, Designing, Documentation, Testing and Maintenance of the system.

3.6.4 Economical Feasibility

The company being a well-to-do company didn't have any problem in buying any software that was required in developing the application. The software's we used were readily available. Therefore as such we didn't face any economical constrains. This WBOMS software is to cost effective. Benefit of this system is proof this software effective and efficiency.

3.6.5 Implementation Feasibility

This project can easily be made available online without much consideration of the hardware and software. The only required thing at the applicant's side is the Internet connection and a web browser, which are a no difficult issue these days. A database server and application server are required to set up at the admin side. After setting up the project online, even the administrator can access the system from anywhere.

CHAPTER 04 – DESIGN

System design **[6]** is "the process or art of defining the hardware and software architecture, components, modules, interfaces, and data for a computer system to satisfy specified requirements." System design deals with transforming the user requirements, into a form that is implement able using the programming language.

System design is the most important and time consuming part in a project. In this phase uses the information-collected earlier in order to accomplish the logical design of the information system. This consists of designing of user interfaces, Database and design outputs along with users, to meet their information needs. Information system design focused on the technical or implementation aspect of the system development project. System analysis phase of the system development project is implementation independently. System designer converts the requirements from the requirement analysis phase into technical solutions. System design considers the software architecture, database design and interfaces design.

4.1 DESIGN METHODOLOGY

The System design of Web based Office Management System the following object models were used for designing process of the system.

- ❖ Use Case diagrams with some narratives – shows what the system needs to do.
- ❖ Class diagrams – shows the needed objects and relationships between them.
- ❖ Sequence diagrams – shows how the objects interact overtime.
- ❖ Activity diagrams – shows object states at a specific timeline.
- ❖ Entity relationship diagram

4.2 PROCESS MODEL

There are several process models that can be used to guide the software development project. Waterfall model was chosen over the models like Prototyping model, Rapid Application Development (RAD). These process models are briefly described below.

4.2.1 Waterfall Model

The waterfall model derives its name due to the cascading effect from one phase to the other. In this model each phase well defined starting and ending point, with identifiable deliveries to the next phase. At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or discards the project. **[7]**

The waterfall cycle is a development process that centers on planned work and is best suited for projects where the requirements can be stable and clearly defined. The linear cycle groups development activities into a sequence of consecutive phases, as shown in ***Figure 4.1***, which depicts the major phases:

- ❖ Requirement analysis & specification
- ❖ Software design
- ❖ Coding
- ❖ Testing
- ❖ Maintenance
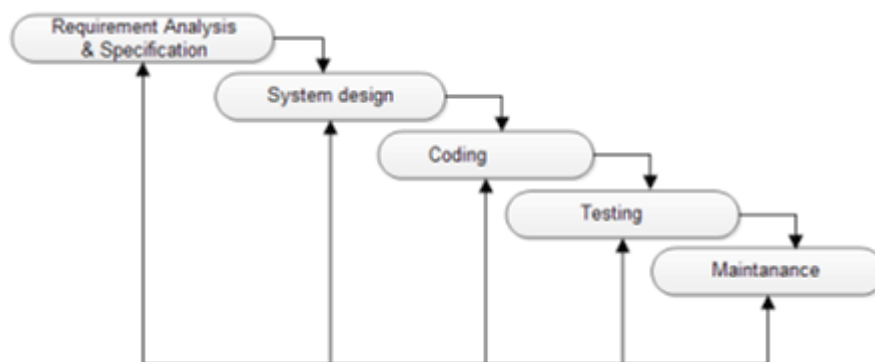
Figure 4.1: Waterfall Model

Requirement analysis & specification: Under this phase analysts refines project goals into defined functions and operation of the intended software application.

Software design: The design process translates requirements into a representation of the software that could be implemented using tools.

Coding: The design is translated into a machine readable form. During this phase the software design is realized as a set of programs or program units.

Testing: The testing process ensures that the system works correctly and satisfies the requirements specified. After testing, the software system is delivered to the customer.

Maintenance: Software will undoubtedly undergo changes after it is delivered to the customer. Errors in the system should be corrected and the system should be modified and updated to suit new user requirements. **[8]**

Methodology for the proposed system

- ❖ Waterfall model is simple to implement and also the amount of resources required for it are minimal.

- ❖ In this model, output is generated after each stage (as seen before), therefore it has high visibility. The client and project manager gets a feel that there is considerable progress. Here it is important to note that in any project psychological factors also play an important role.

- ❖ Project management, both at internal level and client's level, is easy again because of visible outputs after each phase. Deadlines can be set for the completion of each phase and evaluation can be done from time to time, to check if project is going as per milestones.

- ❖ This methodology is significantly better than the haphazard approach to develop software. It provides a template into which methods of analysis, design, coding, testing and maintenance can be placed.

- ❖ This methodology is preferred in projects where quality is more important as compared to schedule or cost.

Reasons to use the waterfall model
- ❖ Requirements are very well known, clear and fixed.
- ❖ Product definition is stable.
- ❖ Technology is understood.
- ❖ There are no ambiguous requirements
- ❖ Ample resources with required expertise are available freely

4.2.2 Prototyping Model

A prototype is a working model that is functionally equivalent to a component of the product. This model reflects an attempt to increase the flexibility of the development process by allowing the client to interact and experiment with a working representation of the product. The developmental process only continues once the client is satisfied with the functioning of the prototype. At that stage the developer determines the specifications of the client's real needs. **[9]**

4.2.3 Rapid Application Model (RAD)

This is an incremental software development process model that emphasizes a very short development cycle [typically 60-90 days]. The RAD model is a high-speed adaptation of the waterfall model, where the result of each cycles a fully functional system. **[10]**

4.2.4 Rational unified process model (RUP)

Rational unified process model (RUP) was chosen from the above explained models. RUP is an adaptable process framework, where the elements of the processes can be changed according to the user's needs. This mainly concentrates on risk reduction due to past failures of other projects. The RUP lifecycle comprises four main phases namely Inception, Elaboration, Construction and Transition. **[11]**

4.2.5 Agile Process Method

Agile software engineering combines a philosophy and a set of development guidelines. The philosophy encourages the customer satisfaction and early incremental delivery of software. Software increments must be delivered in short time periods so that the adaptation keeps pace with the change this iterative approach enables the customer to evaluate the software increment regularly and provide necessary feedback to the software team **[16].** Agile process is involving team work not individually.

4.3 DESIGN DECISIONS TAKEN FOR REQUIREMENTS OF WEBSITE

This system was design simple as possible. It was decided that there should not be unwanted menus, links and should not appear more than once within the content of software. There is classifying the user in the home page without any confusion occurs. There by users are guided to navigate the suitable path to access the system. Every page has the menu. Therefore the user can ease to move all area within their boundary. Content of the pages would have to be pleasant to the eye without much extravagant graphics without the use of too many dark colors. This system architected is client - server model. It will be reduce the loading time on the server.

4.4 ALTERNATIVE SOLUTIONS

Several alternative solutions were compared to find the most suitable method to solve the problem domain.

Implement a standalone system

Standalone system refers to a software program that does not require any software other than the operating system to run. Most of the standalone systems are platform dependent. Therefore setting up the particular operating environment could be very expensive. The

deployment, updating, maintenance processes are time consuming, as every terminal must be maintained individually. The standalone systems are confined to a physical location and hence have usability constraint. There will be no access to information sharing.

Purchase the available Software

There are many office management software products available on the web. User can purchase the software from the websites.

e.g: OMS Solutions, WaypointHR, Neusoft, TOMMIE, etc.

These systems are highly attractive, but contains many features which are not needed and do not satisfy all user needs, it might be expensive.

4.5   SELECTED SOLUTION JUSTIFICATION

Considering the implementing a Web Based Office Management System using Xampp server - MySQL, Apache and PHP was selected as the solution. The open source community support is also a plus point.

- ❖ The client particularly requested for a web based system.
- ❖ Cost effective.
- ❖ System would be platform independent.
- ❖ Maintenance is easy, because the database is centralized and everything is synchronized.
- ❖ Easy to monitor the organization processes and generate informative reports from any location.
- ❖ Can be implemented on client-server architecture and use a web-browser as the client interface.
- ❖ Loading time is lower than standalone, because the user is simply redirected to appropriate pages.
- ❖ Zero install - all PCs have a browser.

4.6   USECASE DIAGRAM FOR THE WBOMS

Use case representation is a well-established technique for requirement capturing, from the user (actor) viewpoint. A use case demonstrates a set of goal-oriented interaction between the system and actors under consideration. Actors may be users, roles of users, or other systems. The relationships such as Include, Extend and Generalization are depending on the situation. Here use case diagram describe system functionalities by module.

4.6.1 High Level Use Case Diagram for the Office Management System

The *Figure 4.2* shows the High Level Use case diagram which describes the all activities carried out in the WBOMS-VTA.
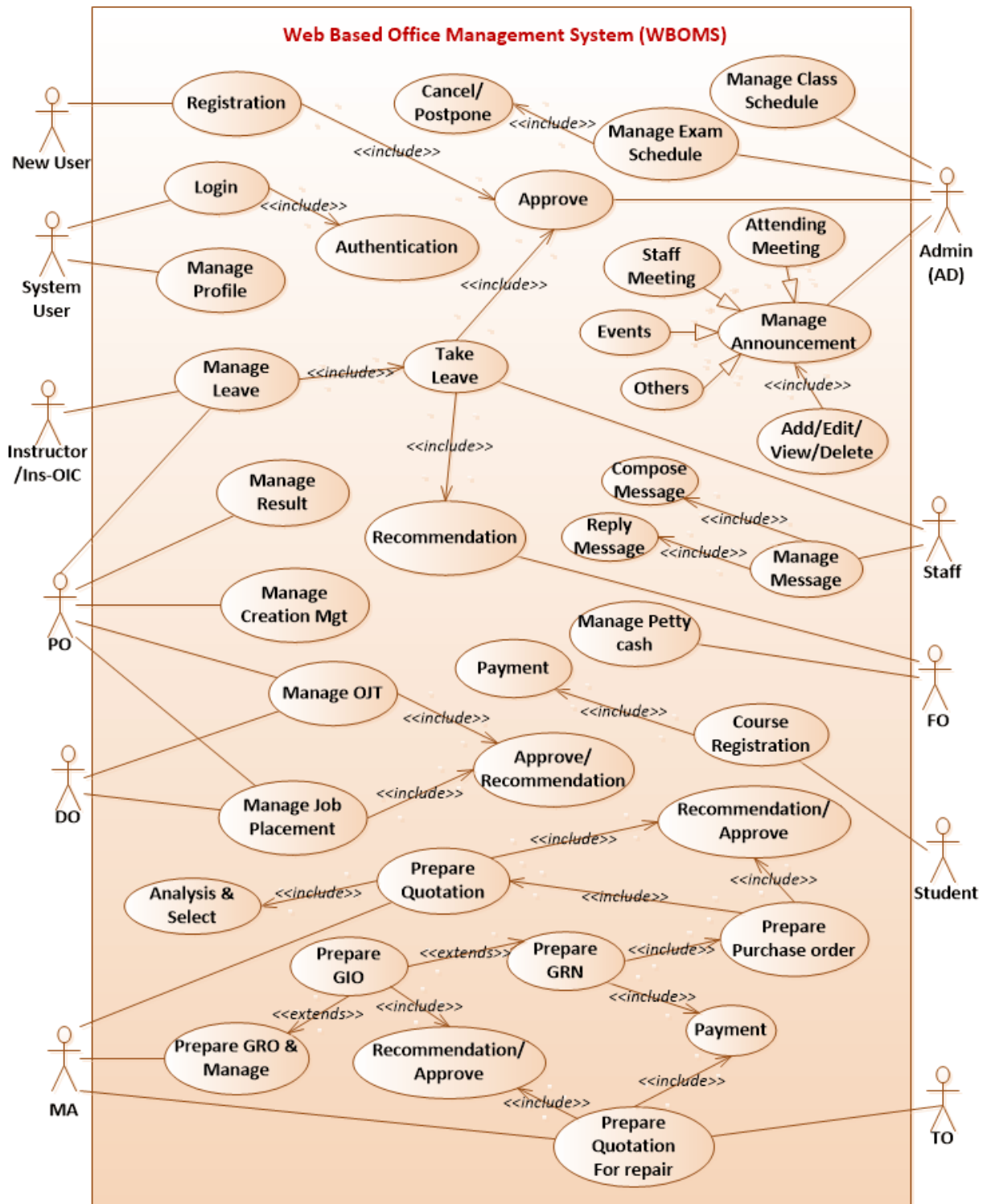
Figure 4.2: High Level Use Case Diagram for Web Based Office Management System

This system is introduced to assist the management of the VTA to make tasks easier in the office related work by reducing the clerical support needed to operate the processes, and to help in decision making and concentrate in core activities of the office. The suggested

solution has been divided into 8 modules in order to make the development and comprehension easier. The modules are User, Student, Staff, Stock, Payment, Inform, Creation and Reports management Module.

The modules are described below with main Use-Cases along with some diagrams. Refer Appendix B - Design Documentation for the rest of the Use-Case Modules with narratives and other diagrams.

4.6.2 Use Case Diagram for the User Management Module

The *Figure 4.3* shows the Use case diagram for User Management Module.
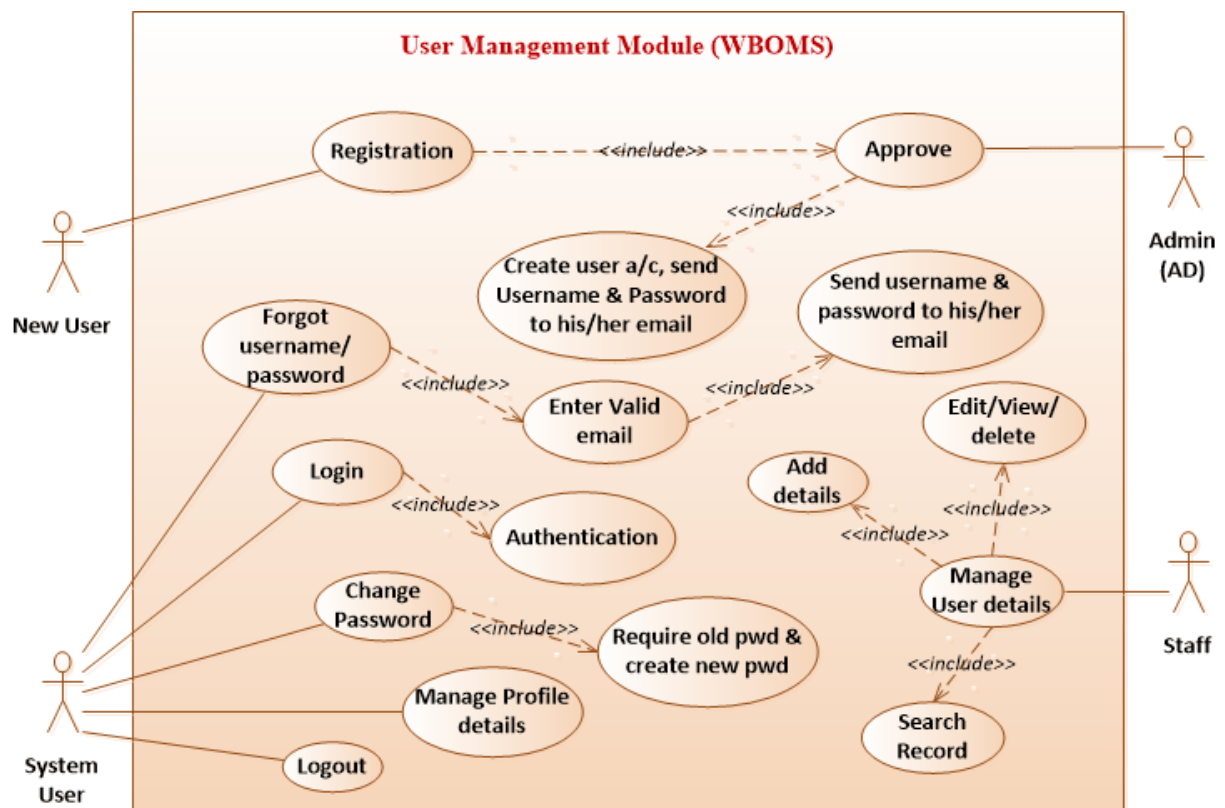
Figure 4.3: Use case Diagram for User Management Module

1. Use Case Description for User Management Module

The *Table 4.1* shows the Use Case Description for User Management Module.

Use case	User Registration, manage User & profile details, login, forgot password, change password
Actors	AD, FO, PO, DO, MA and Applicants
Descriptions	
User Registration: Applicants can register in online or offline into the WBOMS-VTA. In additionally Data is checked by the AD. If the data is satisfied, New applicants can approve by AD. Furthermore block/unblock the user by the AD. Login: All System users have unique user name and password. Therefore user must give the correct user name and password to login.	

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Forgot Password: user can recover password by entered email ID
Change Password: user can change password by old password with new password
Preconditions
User Registration: Applicant is not already registered as a System user of WBOMS - VTA.
Login: user should be registered into the WBOMS – VTA and should have a user account. Furthermore Staffs having privileges to enter to the system
Forgot Password: user have account in WBOMS-VTA
Change Password: user have account in WBOMS-VTA
Flow of events
User Registration: - The applicant fills form and provides necessary data.   - System verifies that all information is in the correct format.   - System checks if the applicant already exists.   - System notifies "available new registration" in admin home page.   - If the data is satisfied, new applicants can be approved by AD.   - System creates user account and sends username as "user id" and password as his/her "NIC number" to his/her email.   Login: - The user enters user name and password.   - If entry is invalid, the user is redirected to the login page with an error message. If valid entry, the user is redirected to his/her appropriated home page where access is restricted according to the user account privileges.   Forgot Password: - System send user name & password to their email ID with confirm message   Change Password: - System changed password with confirm message.
Post conditions
- Approved Students can register for course.   - Registered user have to use the system, others have no access.

Table 4.1: Use Case Description for User Management Module

4.6.3 Use Case Diagram for the Student Management Module

The *Figure 4.4* shows the Use case diagram for Student Management Module.
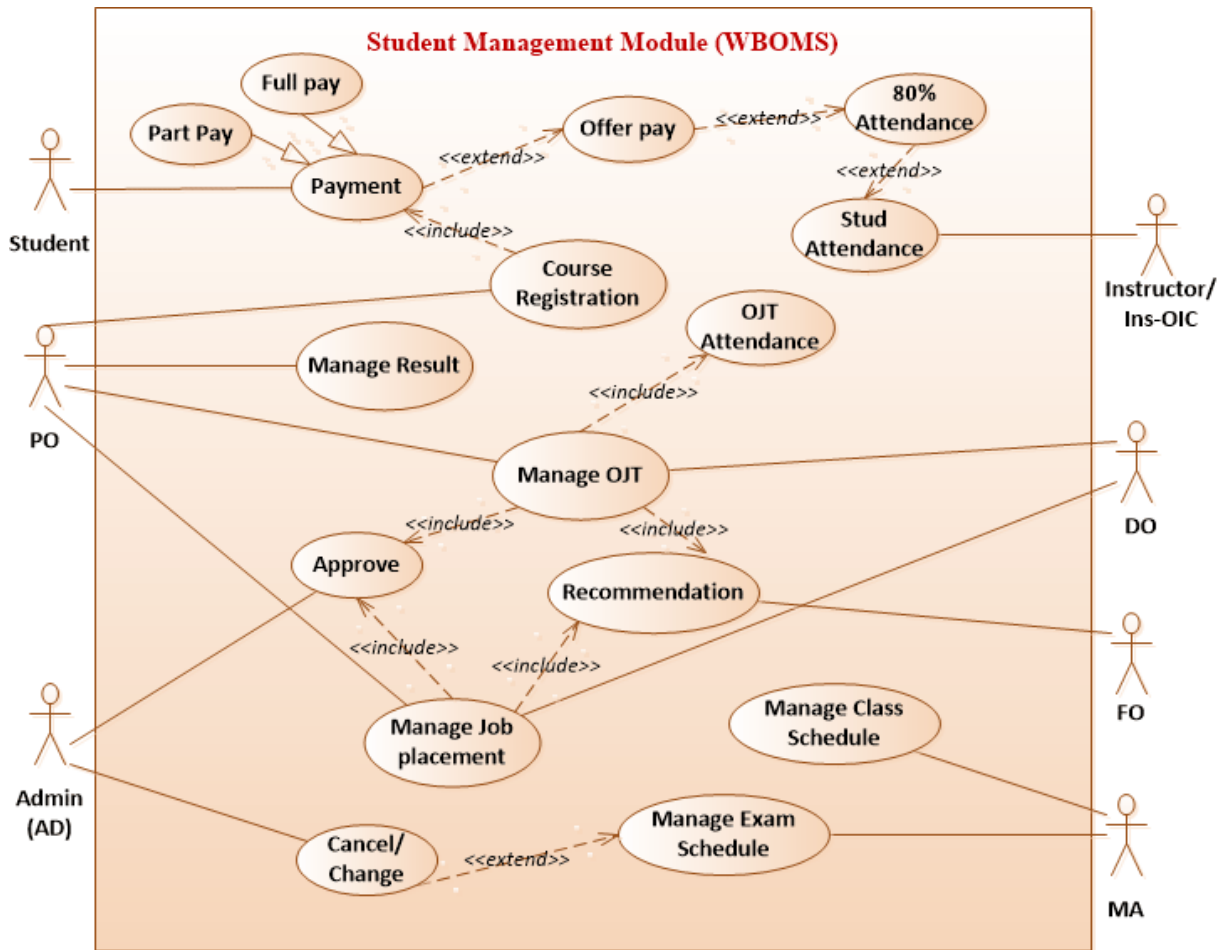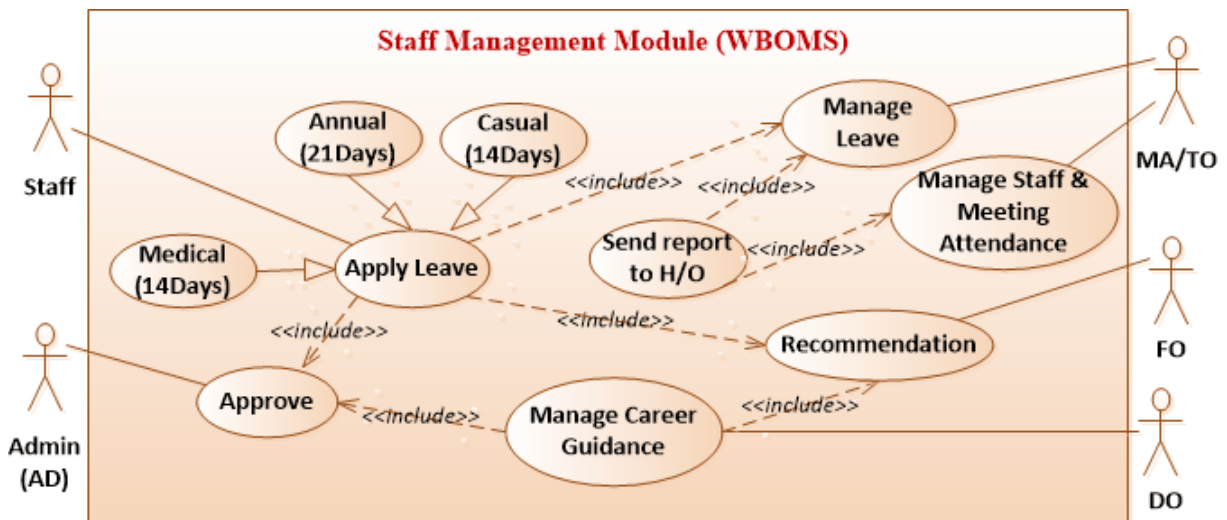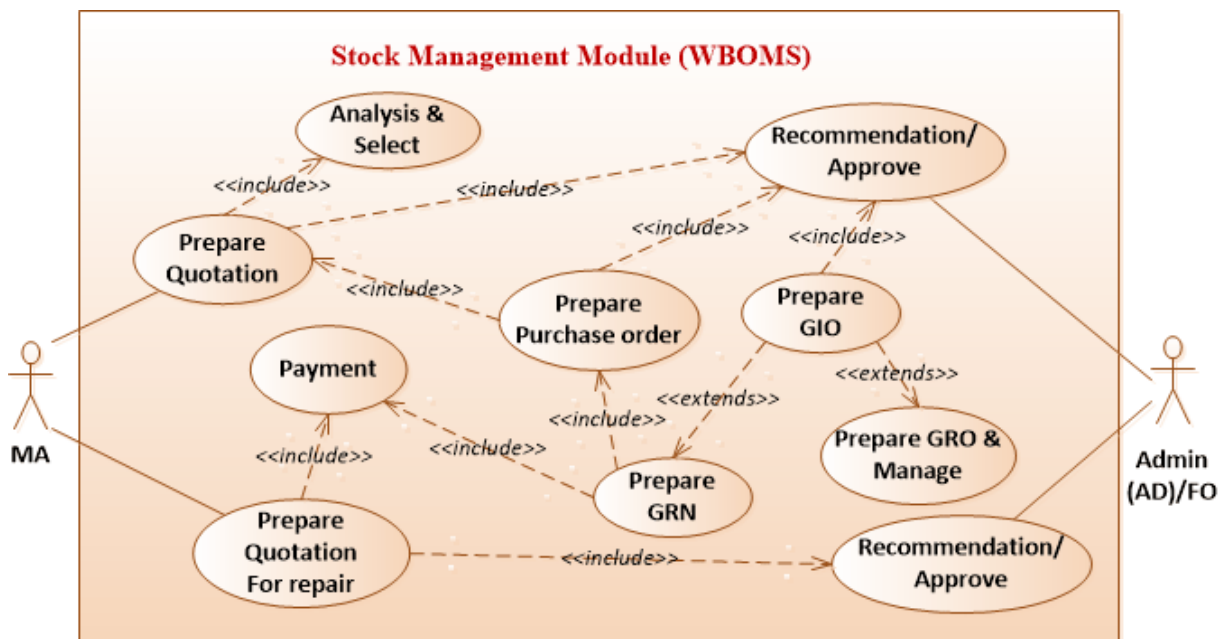
Figure 4.4: Use case Diagram for Student Management Module

2. Use Case Description for Student Management Module

The *Table 4.2* shows the Use Case Description for Student Management Module.

Use case	Managing Course Registration, class & exam Schedule, Student Attendance, OJT & Attendance, Result, Job placement
Actors	AD, FO, PO, DO, MA, TO, Lecturer, Lecturer OIC, student
Descriptions	

Descriptions
Course Registration: Student fills out the relevant course registration form and handover to relevant staff. Thereafter he/she is entering the data into system.
Class & exam Schedule: Managing by relevant staff. Furthermore cancel/change the exam schedule by AD and closed the completed class schedule by AD.
Student Attendance: Managing by relevant staff.
OJT & Attendance: Student can apply for OJT by VTA relevant staff. If the data is satisfied, new OJT can be approved by AD. Then student can follow OJT. Furthermore closed the completed OJT by AD.
Result: Managing by relevant staff.
Job placement: After completed course, Student can apply for Job by VTA relevant staff. If the data is satisfied, new Job can be approved by AD. Then student can follow Job. Furthermore closed the left Job by AD.

Preconditions
User should login into the WBOMS - VTA.
<u>OJT & Attendance</u>: Student should follow course in VTA
<u>Result</u>: Student did relevant exam in VTA
<u>Job placement</u>: Student should completed relevant course in VTA
Flow of events
<u>Course Registration:</u> ❖ System can be displayed "following/completed" course status. ❖ System can be displayed "Full paid/not" Payment status ❖ System can be calculate and displayed total fee ❖ When click "Go Pay" button, it will redirect to Course Payment insert form <u>Class & exam Schedule:</u> ❖ System can be displayed "following/completed" class status. ❖ System can be displayed "cancel/not" exam status. <u>OJT & Attendance:</u> ❖ System can be displayed "Approve/ disapprove" status when approved/not by AD ❖ System can be displayed "following/completed" OJT status. ❖ System can be calculate and displayed total attendance days ❖ When click "Go Attendance" button, it will redirect to OJT Attendance insert form <u>Result:</u> ❖ System can be displayed "Pass/ Repeat/Fail" status of Result. <u>Job placement:</u> ❖ System can be displayed "Approve/ disapprove" status when approved/not by AD ❖ System can be displayed "following/not" Job status.
Post conditions
Further process Student management module is managed and maintained.

Table 4.2: Use Case Description for Student Management Module

4.6.4 Use Case Diagram for the Staff Management Module

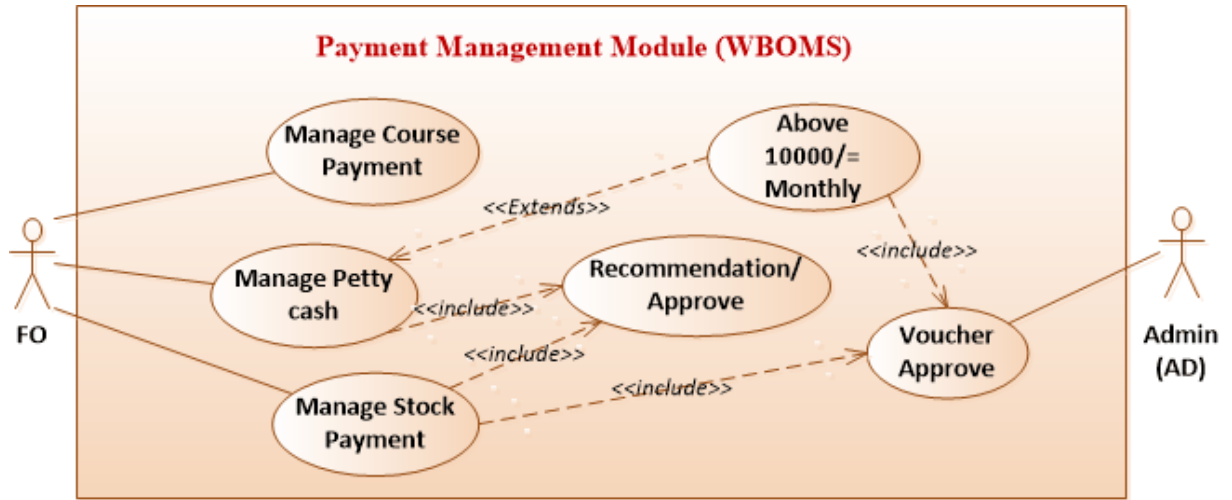The *Figure 4.5* shows the Use case diagram for Staff Management Module.

Figure 4.5: Use case Diagram for Staff Management Module

3. Use Case Description for Staff Management Module

The *Table 4.3* shows the Use Case Description for Staff Management Module.

Use case	Managing & apply Leave, Career guidance, Staff & meeting attendance
Actors	AD, FO, PO, DO, MA, TO, Lecturer, Lecturer OIC, Driver
Descriptions	
Leave: Staff can apply for own leave. If the leave is satisfied, leave can be approved by AD. Then staff can take leave. Career guidance: Staff can apply for career/own career. If the data is satisfied, new career can be approved by AD. Then staff can precede career. Staff & meeting attendance: Managing staff attendance and meeting attendance.	
Preconditions	
User should login into the WBOMS - VTA. Leave: Staff can have available leave with valuable reason Career guidance: staff can proceed about career valuable place.	
Flow of events	

Leave:
  ❖ System can be displayed Available leave for each type
  ❖ System can be displayed "Approve/disapprove" status when approved/not by AD
Career guidance:
  ❖ System can be displayed "Approve/disapprove" status when approved/not by AD.	

Post conditions	
Further process Staff management module is managed and maintained.	

Table 4.3: Use Case Description for Staff Management Module

4.6.5 Use Case Diagram for the Stock Management Module

The *Figure 4.6* shows the Use case diagram for Stock Management Module.

Figure 4.6: Use case Diagram for Stock Management Module

4. Use Case Description for Stock Management Module

The *Table 4.4* shows the Use Case Description for Stock Management Module.

Use case	Managing Quotation, Purchase Order, GRN, GRO, GIO
Actors	AD, FO, DO, MA, TO

Descriptions
Quotation: If the MA can prepare the Quotation for buying stocks, then recommendation/ not by the FO and approval/disapproval by AD is granted to the efficiently.

Purchase Order: If the Quotation was approved by AD, then MA can prepare the Purchase Order (PO). There after recommendation/ not by the FO and approval/ disapproval by AD is granted to the efficiently

GRN: The MA can prepare GRN for received stocks if a stock was arrived in VTA office.

GRO: MA can prepare the GRO for received order to arrived stocks from head office in Colombo.

GIO: MA can prepare the GIO for Issue order to send the centre in Jaffna District. There after recommendation/ not by the FO and approval/disapproval by AD is granted to the efficiently.

Preconditions

User should login into the WBOMS - VTA.

Quotation: VTA should buy stocks

Purchase Order: the Quotation should approved by AD

GRN: stock was arrived in VTA office.

GRO: stocks should arrived from head office in Colombo

GIO: staff should issue relevant stocks to centre.

Flow of events

Quotation:
   ❖ System can be displayed "Approve/ disapprove" status when approved by AD
   ❖ When click "Go Add" button, it will redirect to Quotation sub insert form
   ❖ When click "Go Pay" button, it will redirect to Repair Payment insert form
   ❖ System can be calculate and displayed total quotation amount

Purchase Order:
   ❖ System can be displayed "Approve/ disapprove" status when approved by AD
   ❖ When click "Go Add" button, it will redirect to Purchase Order sub insert form
   ❖ System can be calculate and displayed total order amount.

GRN:
   ❖ When click "Go Add" button, it will redirect to GRN sub insert form
   ❖ When click "Go Pay" button, it will redirect to Stock Payment insert form
   ❖ System can be calculate and displayed total GRN amount.

GRO:
   ❖ When click "Go Add" button, it will redirect to GRO sub insert form

GIO:
   ❖ When click "Go Add" button, it will redirect to GIO sub insert form
   ❖ System can be displayed "Approve/ disapprove" status when approved by AD
   ❖ System can be calculate and displayed total GIO amount.

Post conditions

Further process Stock management module is managed and maintained.

Table 4.4: Use Case Description for Stock Management Module

4.6.6 Use Case Diagram for the Payment Management Module

The *Figure 4.7* shows the Use case diagram for Payment Management Module.

Figure 4.7: Use case Diagram for Payment Management Module

5. Use Case Description for Payment Management Module

The *Table 4.5* shows the Use Case Description for Payment Management Module.

Use case	Managing Course payment, Stock payment, Repair payment and Petty cash
Actors	AD, FO, PO
Descriptions	
Managing the Course payment: The student can make payment as a part or full payment for course registration. Managing the Stock Payment: Staff can prepare the Stock Payment for GRN. There after recommendation/not by the PO, Payment approval/disapproval by FO and Voucher approval/ disapproval by AD is granted to the efficiently. Managing the Repair Payment: Staff can prepare the Repair Payment for quotation stock type as Repair. There after recommendation/not by the PO, Payment approval/disapproval by FO and Voucher approval/ disapproval by AD is granted to the efficiently. Managing the Petty cash: Staff can prepare the Petty cash for purchase things	
Preconditions	
User should login into the WBOMS - VTA. Managing the Course payment: The student should registered course in VTA Managing the Stock Payment: Stock should be arrived in VTA office Managing the Repair Payment: Stock should be repair for quotation Managing the Petty cash: Staff can prepare the Petty cash	
Flow of events	
Managing the Course payment: System can be displayed "Full/ due" Amount Managing the Stock Payment: ❖ System can be displayed "Approve/ disapprove" status when approved by AD Managing the Repair Payment: ❖ System can be displayed "Approve/ disapprove" status when approved by AD Managing the Petty cash: System can be displayed details	

Post conditions
Displayed due amount. Further process Payment management module is managed and maintained.

Table 4.5: Use Case Description for Payment Management Module

4.7   SEQUENCE DIAGRAM FOR THE WBOMS

1. Sequence Diagram for User Login

This sequence diagram shows user Login. (Refer *Figure 4.8*)
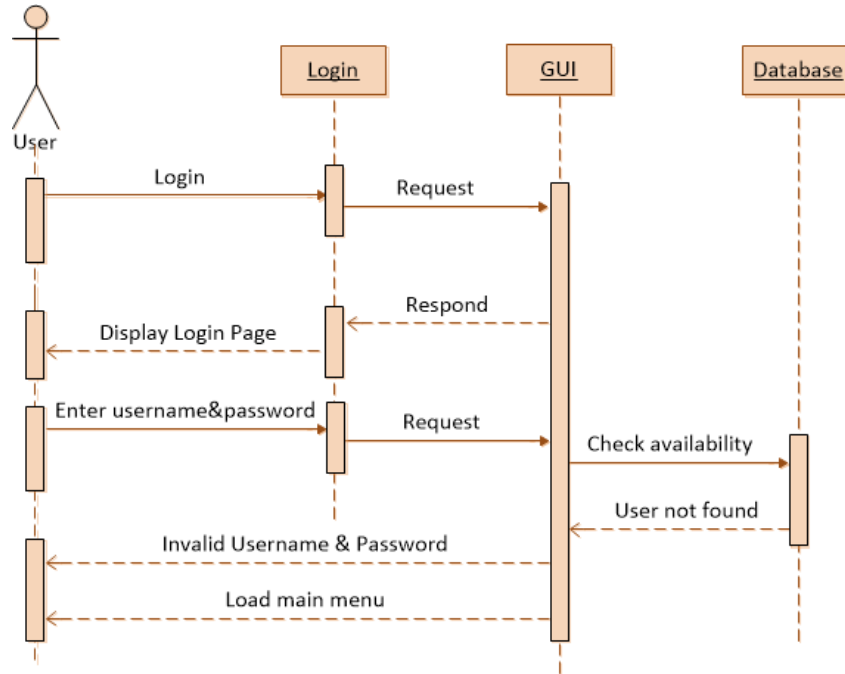
Figure 4.8: Sequence Diagram for User Login

2. Sequence Diagram for Searching Data

This sequence diagram shows searching the data. (Refer *Figure 4.9*)
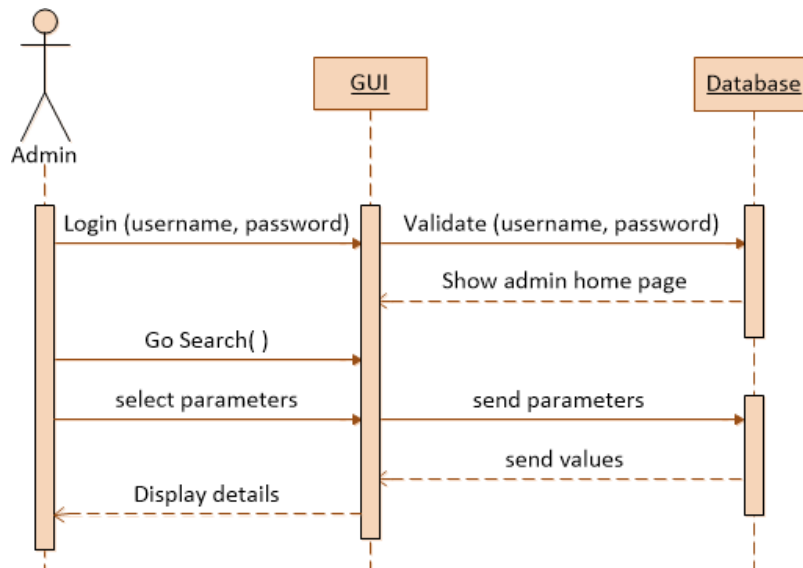
Figure 4.9: Sequence Diagram for searching the data

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4.8   ACTIVITY DIAGRAM FOR THE WBOMS

1. Activity Diagram for User Registration

This activity diagram shows activity of adding a new user details. (Refer *Figure 4.10*)
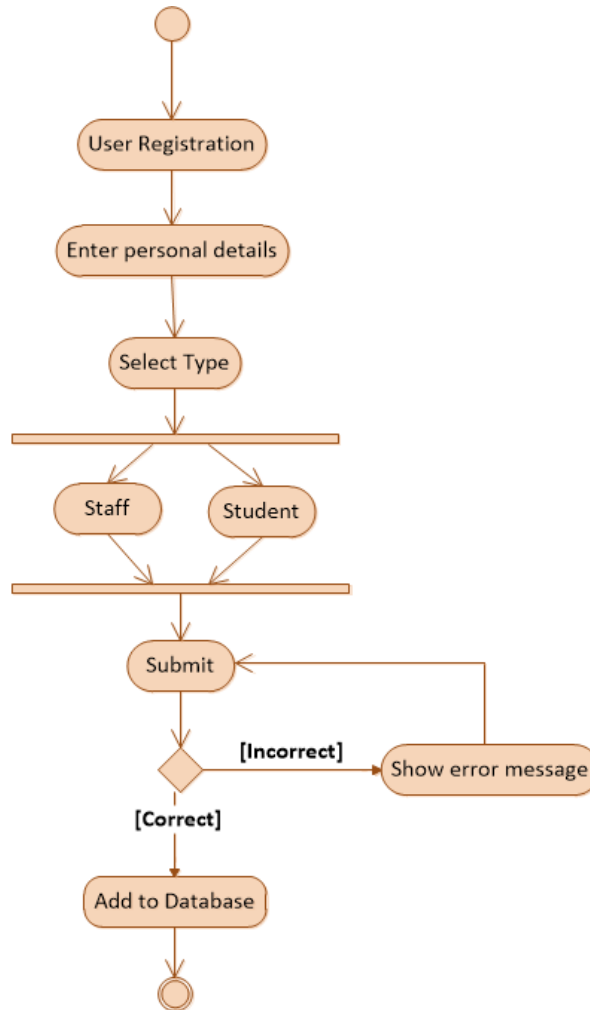
Figure 4.10: Activity Diagram for User Registration

4.9   CLASS DIAGRAM FOR THE WBOMS

Class Diagrams are used to described Classes and Objects, which is the mainly wide-ranging diagram in UML. Different relationships and different variations are applied in the representation of the class diagram. Most of the static structure and relationships would identify from class diagram. The class diagram for the Web Based Office Management System is illustrated in *Figure 4.11*.
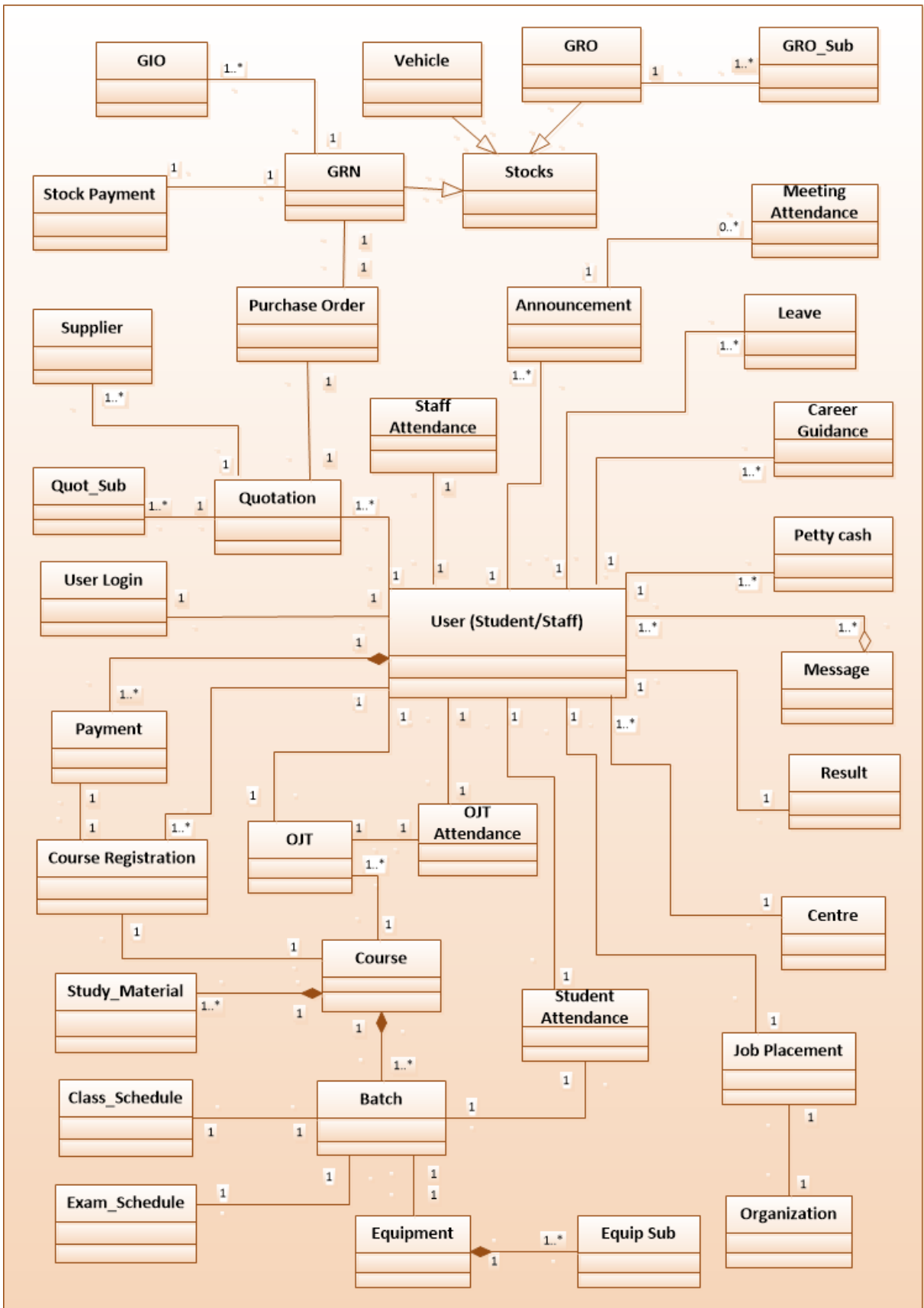
Figure 4.11: Class Diagram for the Web Based Office Management System

The other supported design models and details are mentioned in the Appendix B – Design documentation.

4.10 DATABASE DESIGN

A Database management system (DBMS) consists of a collection of interrelated data and a set of programs to access the data. The collection of data is usually referred to as the database. A Database system is designed to maintain large volumes of data. The database should be designed and maintain to provide the right information at the right time to authorized people. The database system provides centralized control of data.

- ❖ Redundancy can be controlled
- ❖ Inconsistency can be avoided
- ❖ The data can be shared
- ❖ Standards can be enforced
- ❖ Security restrictions can be applied
- ❖ Integrity can be maintained
- ❖ Data independence

4.10.1 Database Normalization

Database normalization **[12]** is "the process of organizing the columns (attributes) and tables of a relational database to minimize redundancy and dependency." There are three steps in normalization.

First Normal Form (1NF)
Repeating groups can be eliminated by adding the appropriate entry in at least the primary key column. All attributes are dependent on the primary key.

Second Normal Form (2NF)
Eliminates partial functional dependency, which eliminates any relationships in which data elements do not fully depend on the primary key of the record.

Third Normal Form (3NF)
Eliminates transitive functional dependencies which ensuring of all non-key attributes depending only on the primary key

4.10.2 Database Design for the Office Management System

The *Figure 4.12* shows the Database Design for the WBOMS
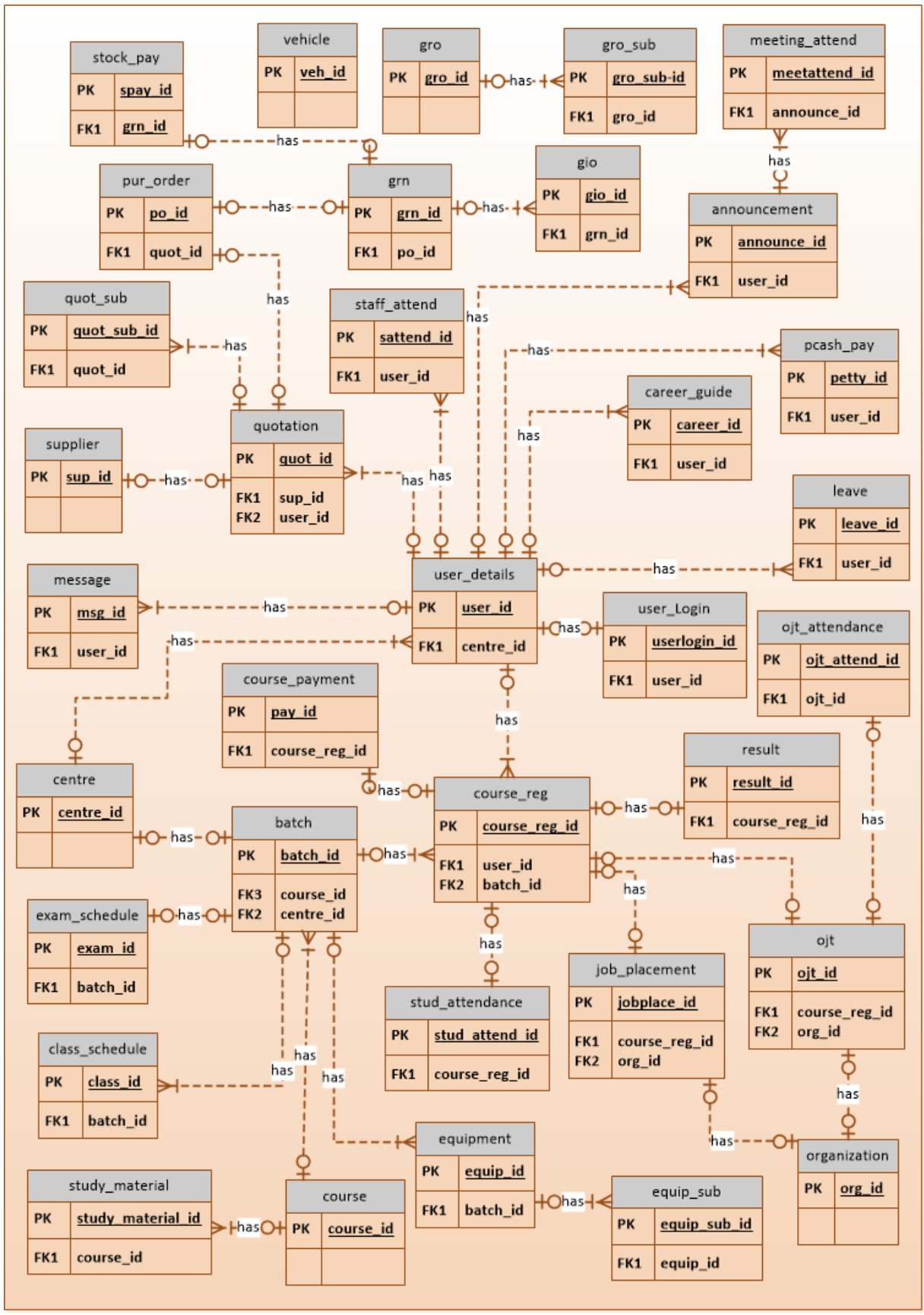
Figure 4.12: Database Design for the Web Based Office Management System

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4.11 USER INTERFACES DESIGNING

User interface design is a significant consideration that determines the accessibility of the system. Well-structured user interface designs may increase usability of the system by user and reduce training session cost and time. The system will be designed as user friendly interfaces to enable users with less technical knowledge, also it should be easy to learn the system features and use for their daily operations without any difficulties or knowledge.

Interface designing part is a critical part of the overall software designing process because many user errors can be occurred, if the interface designing is poor. Good interface designing should be match with the user expectation. That is the reason of criticalness of the user interface designing. When making user interface design decisions, you should take into asses the physical and mental capabilities of the people who use software. Following are the user interface design principles **[13]**

User Familiarity: The interface should use terms and concepts drawn from the experience of the people who use the system

Consistency: The interfaces should be consistent in that wherever possible, comparable operations should be activated in the same way

Minimal surprise: Users should never be surprised by the behavior of the system

Recoverability: The interfaces should include mechanisms to allow users to recover from errors

User guidance: The interface should provide meaningful feedback when errors occur and provide help facility

User Diversity: The interface should provide appropriate interaction facilities for different type of users. [**14**]

4.11.1 Screenshots of the WBOMS-VTA

1. Home page Interface

Home Page Interface *Figure 4.13* shows the overall main interface of the proposed system to let the user to navigate easily through the System. Any user can easily handle the system by its clear and understanding instructions. The interface is attractive and user friendly.

Figure 4.13: Home Page Interface

2. User Registration Interface

Figure 4.14: User Registration Interface

User Registration Interface *Figure 4.14* shows the registration of new user. A new user is able to fill the form and click "submit" button. Furthermore it should provide meaningful feedback when any errors occur. User will receive an acknowledgement to his/her email after AD approves/disapproves the new registration.

3. User Login Interface

The *Figure 4.15* shows the Login Interface. User validation will be done during login to ensure that the user is valid and that the user only has access data up to their authority. Furthermore it should provide meaningful feedback when any errors occur.

Figure 4.15: User Login Interface

4. User Forgot Password Interface

If the user forgets the password and he/she just enter email.id, the system verifies the user and sends the password to their email address and display the message for sending success. The *Figure 4.16* shows the Forgot Password interface.
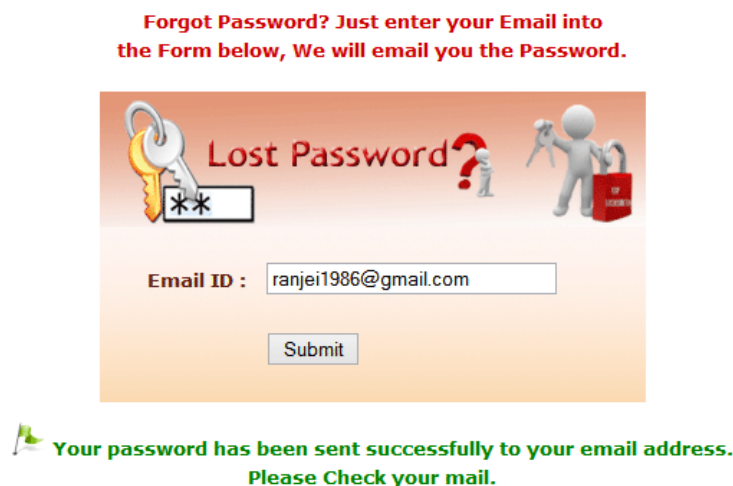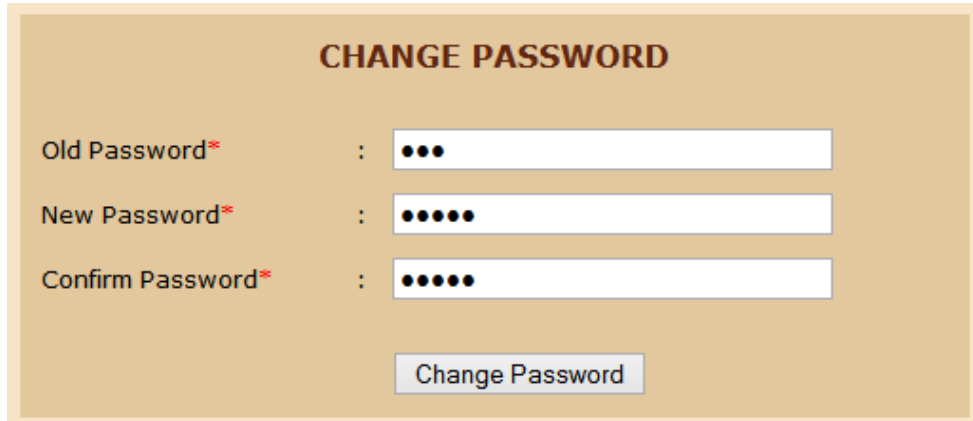
Figure 4.16: Forgot Password Interface

5. Change Password

The *Figure 4.17* shows the Change Password interface. User can change their password in their own. For changing the password, user has to enter their previous password and new password twice to validate the new password. If previous password is incorrect, system will give error message. Also if entering new password in second time differs from the first new password, error message will appear.

Figure 4.17: Change Password Interface

6. Compose Mail

The *Figure 4.18* shows the Compose Mail interface.

Figure 4.18: Compose Mail Interface

7. User Profile

The User Profile Details Interface as shown in *Figure 4.19*, when user clicks profile link, it will display his/her profile details in edit form with disable NIC, user type and some field.

Figure 4.19: User Profile Interface

8. Search Result Interface in Public home page

The Search Result Interface as shown in ***Figure 4.20***, Click on the "Result" link.

Please Enter your NIC No/ Student ID

NIC No / Student ID [_____]

STUDENT NAME : Rajee Thamesh

[Student ID : 1013, NIC NO : 907033851V]

Batch ID	Course Name	NVQ Level	Result	Status	Out Date
ICT_2015_Jan1	Information & Communication Technician	Level 4	Level 4	Pass	2015-12-03

Figure 4.20: Search Result Interface

CHAPTER 05 – IMPLEMETATION

This is the place where any system gets its real life practical behavior aligned with its design. The Web Based Office Management System for Vocational Training Authority has been implemented with the support of modern popular system implementation tools. The system has been implemented in order to fulfill the requirements identified so far in the system analysis phase and to satisfy all the main user of the system. The design patterns and technologies identified in the system designing phase were highly supported to implement the system timely and efficiently.

The implementation of the software is interacting with the database and most importantly offering a user friendly interface to do so. The communication between the database and the software includes:

- ❖ Storing data/information into the database
- ❖ Modifying data/information already stored in the database
- ❖ Retrieving and consulting data/information

5.1 IMPLEMENTATION ENVIRONMENT

The WBOMS system implementation is used some hard ware requirements and Software requirements.

5.1.1 Hardware Implementation

- ❖ Intel(R) Core™ i5-3317U processor 1.70 GHz
- ❖ 4 GB RAM
- ❖ 400 GB Hard disk
- ❖ Color Monitor, Printer (for report)
- ❖ Network Connection

5.1.2 Software Implementation

- ❖ Windows 8.1 professional operating system
- ❖ XAMPP version 1.7.4
  - ∗ Apache 2.2.17
  - ∗ MYSQL 5.5.8 - used to create database.
  - ∗ PHP 5.3.5
  - ∗ Phpmyadmin3.3.9 - used as the interface for interacting with MySQL

5.1.3 Supported Browsers and Development Tools

❖ Adobe Dreamweaver CS6

This software used for the coding of the system. It contains more supportive background when doing implementation like popup code hints.

❖ Microsoft Visio 2010

This is used to create diagrams.

❖ Adobe Photoshop CS3

Photo retouching, interface designing had done by using this software.

❖ Mozilla Firefox / Chrome / IE

This is used to run WBOMS - VTA program.

5.1.4 Programming language and the database

The WBOMS can be stated as a Database Management System (DBMS), because it has collection of interrelated data and a set of programs to access that data. These programs were developed using the following languages and technologies.

❖ PHP (Hypertext preprocessor)

This is a server side scripting language which used when developing the system.

❖ JavaScript

This is a Scripting language and this helps for client side validation and to dynamic the system components.

❖ CSS (Cascading Style Sheets)

This is used for the styling of the system.

❖ HTML (Hyper Text Markup language)

This is the basic web related language and it helps to keep the system structure clear and conscious.

❖ MySQL

This is the Database software which used to handle the database of the system.

5.1.5 XAMPP Server

Since this is a web based system, WBOMS could be installed in a web server in operating system. XAMPP server is solid and stable high-performance platform for windows. The advantage of the Apache, PHP and MySQL combination which is open source is unified with commercial operating system windows. The XAMPP software is free open source software which is downloadable through the internet. The system is made accessible to the managing staff and students of the VTA department through the Internet.

The XAMPP software was used to achieve platform independence, because the user environment is running on windows. Therefore the developed system website will not have any problems while deploying and its portability will be high.

5.2   SYSTEM MODULE STRUCTURE

The WBOMS Module Structure as shown in *Figure 5.1*
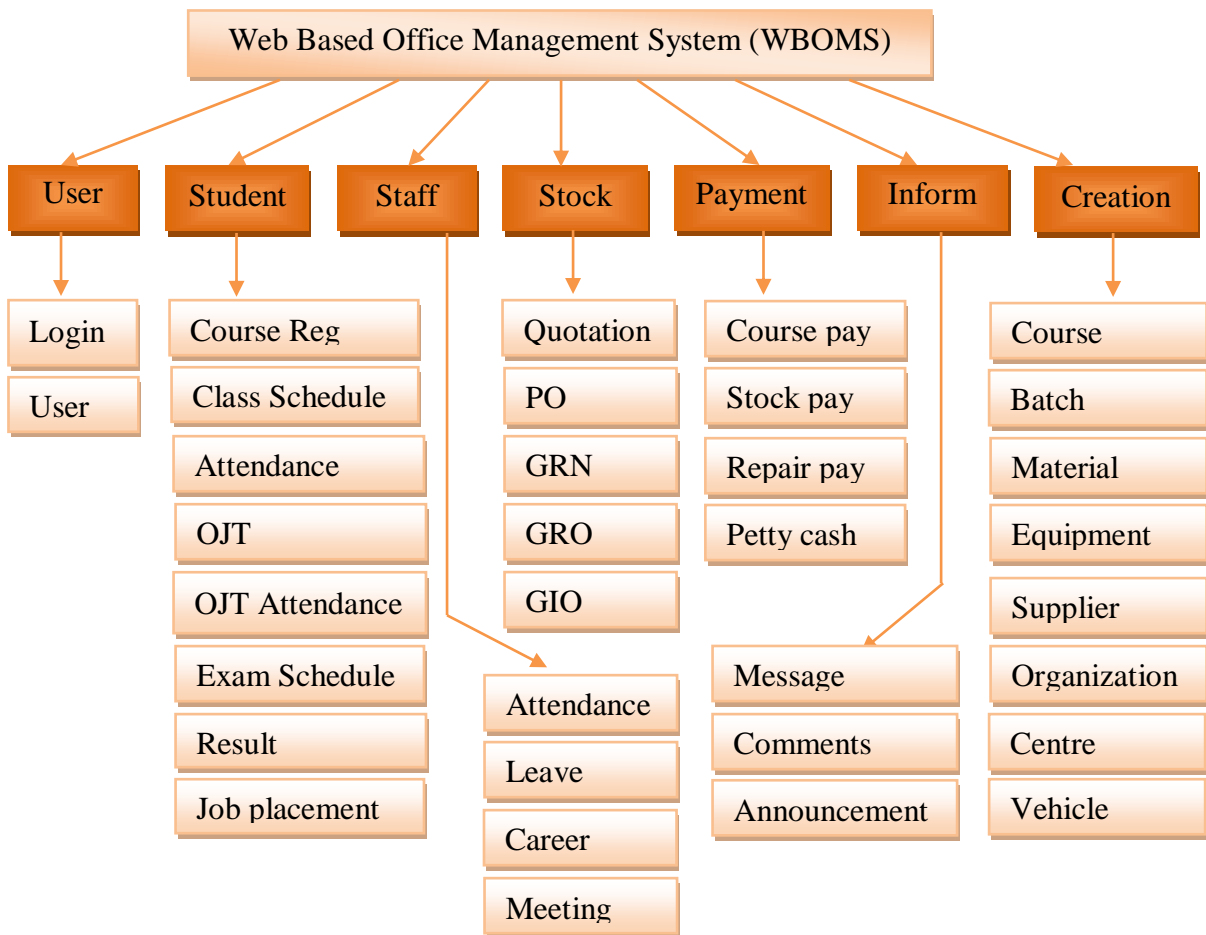
Figure 5.1: System Module Structure for WBOMS

5.3   MAJOR CODES OF THE WBOMS- VTA

The main code modules developed in the system have been mentioned below by briefly describing their functionality. Code modules consist with comments to identify the specific reason of a particular code line.

Database Access Module

Every web system as well as stand-alone system always deals with a database. If something is added, deleted or updated in the system, the system always connects with the related database. Code segment given below links the system to its database. Predefined MySQL function called "**mysql_connect**()" helps to manage the connection by passing three parameters in its hostname, user account, and the password. "**mysql_select_db**()" function used to connect the database by passing database name and the connection.

```php
This php Code Segment for making the database connection

$host="localhost"; //Host name
$un="root"; //Mysql username
$pw="";
$db=" oms_vta "; //Database name
$con=mysql_connect($host,$un,$pw); //connect to the server

if (!$con )
{
die(mysql_error()."Server Not Ready Please Check Your Connection Configuration") ;
}
else
{
mysql_select_db($db,$con);
}//select database
```

Other important code segments are given in the Appendix F.

CHAPTER 06 – EVALUATION AND TESTING

In this section the developer will attempt to summarize what the system can achieve and his further critical analysis that have not been covered earlier. The evaluation and project appraisal examines the processes used and the outcome of a software project. And what was learnt during its duration. It discusses whether the objective of the software project was achieved. What are the problems that may occur when the processes were being used? And Delivery of software on time and within budget. In turn, the process scope is limited to software processes, although a successful system depends on more than just software (e.g., hardware, workflow design, training, documentation).

6.1 BACKGROUND OF TESTING

It has been identified following as the objectives of the testing process.

- ❖ Main objective of the testing is to check and verify the basic functionality of the system.
- ❖ Identify bugs in the system.
- ❖ How the system reacts to erroneous situations and conditions that arise during its execution.

6.2 TESTING PLAN

Testing and validation are the most important steps after the implementation of the developed system. The system testing is performed to ensure that there are no errors in the implemented system. The software must be executed several times in order to find out the errors in the different modules of the system.

Validation refers to the process of using the new software for the developed system in a live environment i.e., new software inside the organization, in order to find out the errors. The validation phase reveals the failures and the bugs in the developed system. It will be come to know about the practical difficulties the system faces when operated in the true environment. By testing the code of the implemented software, the logic of the program can be examined. The Testing Steps as shown in *Figure 6.1*.

Unit testing

Sub-system testing

System testing

Acceptance testing

Individual components

collections of components (sub-systems)

The whole finished system - developers

The finished system - users
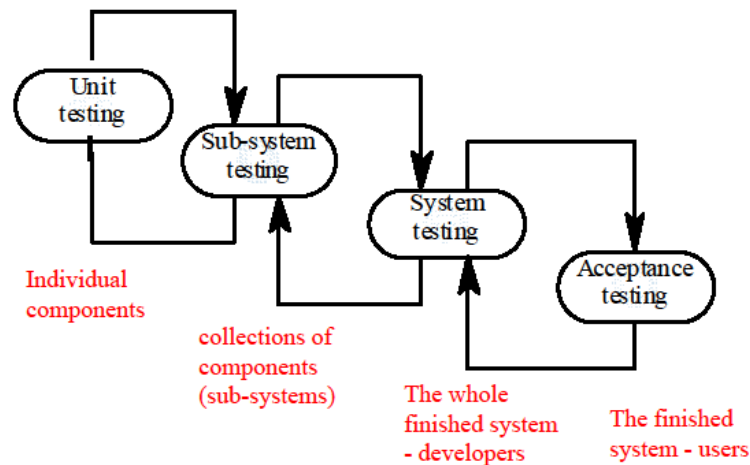
Figure 6.1: Testing Steps

6.2.1 Unit Testing

Unit testing focuses first on the modules in the proposed system to locate errors. This enables to detect errors in the coding and logic that are contained within that module alone. Those resulting from the interaction between modules are initially avoided. In unit testing step each module has to be checked separately.

6.2.2 Sub System / Integration Testing

After testing all the units or modules of the system, these are integrated in to subsystems and then to the entire system using Integration testing. Integration testing is done using several strategies.

6.2.3 System Testing

System testing does not test the software as a whole, but rather than integration of each module in the system. The primary concern is the compatibility of individual modules. One has to find areas where modules have been designed with different specifications of data lengths, type and data element name.

6.2.4 Acceptance Testing

Acceptance testing is carried out by the customer to see whether the system is satisfying the customer's requirements given in the specification. When it satisfies the user, he / she will accept the system and use it for the operational work in the business.

Furthermore the test plan includes two levels for implementing the **White Box** Testing and the **Black Box** testing methods. White box sometimes called "Glass box" testing is a test case focuses the internal structure and logics of the system. This is a code level testing method and any malfunctioning units can be easily detected. The Black box testing focuses on the

functions and behaviors of the system. This testing does not need any knowledge on the internal structure of the system. **[15]**

6.3 TEST CASES

The most important contents of any test plan are the test cases. Generally test cases include the test case title, inputs, expected results and the actual result. In order to minimize the complexity, the whole system has been divided in to several sub systems, and each sub system was tested separately.

The *Tables 6.1* to *6.12* show the test cases used to conduct testing.

6.3.1 Test Cases for User Management Module

Test Cases for User Login Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Enter correct user name & password Click the Login button	To test the authenticity to access to the application with correct username and password.	It should display Login success with session his/her name and profile picture in the welcome home page.	As expected
02	Enter wrong user name and password	To test the access to the application with the incorrect username.	It should display an error message.	As expected
03	Enter user name and wrong password	To test the access to the application with the incorrect password.	It should display the error message.	As expected
04	Enter email address in forgot password page	To test the access to the application with correct data.	It should send password through email.	As expected
05	Enter wrong email address in forgot password	To test the access to the application with the incorrect email.	It should display the error message.	As expected
06	Click Change Password link and change password	Allow to change password when correct old password is typed.	It should allow change the password.	As expected
07	Click Logout link	Logout user and direct to the login page.	It should logout user and direct to the login page.	As expected

Table 6.1: Test Cases for User Login Module

Test Cases for User Registration/Profile Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click approve in user menu.	To display the new registration details.	It should be display the new registration details.	As expected
02	Click the Approve button	To approve the user registration and display the	Registration is approved. System sends an	As expected

	in user approve details	message.	acknowledgement to the mail. Furthermore creates user account to them.	
03	Click the Cancel button in user approve details	Disapprove new registration and display confirmation message.	New registration should be deleted. Displays confirmation message.	As expected
04	Click action button in user details	To block the unblocked user. Vice versa to unblock the blocked user	It should do the action and display successful message.	As expected
05	Click Issued ID/Uniform button in user details	To issued or not ID/uniform for user. Vice versa to issued or not for user	It should do the action and display successful message.	As expected
06	Click delete button in form	To delete the details in database and display success message. Furthermore delete his/her login account.	It should be delete the details in database and display success message. Furthermore delete his/her login account.	As expected
07	Non numeric values are entered into Tel No field	To display an error message.	It should be display an error message.	As expected
08	Enter the value to validate NIC field	To display an error message.	It should be display an error message.	As expected
09	enter the value to validate email field	To display an error message.	It should be display an error message.	As expected
10	Upload profile picture	To display profile picture in user details and his/her session profile.	It should be display profile picture in user details and his/her session profile.	As expected
11	Not upload profile picture	Display default picture in user details and his/her session profile.	It should be default picture in user details and his/her session profile.	As expected

Table 6.2: Test Cases for User Registration/Profile Module

6.3.2 Test Cases for Student Management Module

Test Cases for Course Registration, Exam & Result Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Cancel button in Exam schedule details	To change status as "0" in database and status as "cancelled exam" in view exam schedule details. Furthermore send mail to students.	It should be changed status as "0" in database and status as "cancelled exam" in view exam schedule details. Furthermore send mail to students.	As expected
02	Click Change button in Exam schedule details	To update details in database and view exam schedule details. Furthermore send mail to students.	It should be update details in database and view exam schedule details. Furthermore send mail to students.	As expected
03	Enter NVQ level as "equal to level	To change course registration status as "0" in	It should be change course registration status as "0" in	As expected

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	with course registered NVQ level" and click insert button in insert Result form	database and display grade status in result details. Furthermore display status as "successfully completed course" in course registration details and session student's course menu with disable that course link.	database and display grade in result details. Furthermore display status as "successfully completed course" in course registration details and session student's course menu with disable that course link.	
04	Enter NVQ level as "less than to level with course registered NVQ level" and click insert button in insert Result form	To display grade in result details. Furthermore display status as "Repeat" in course registration details and session student's course menu with Access course link to download study material.	It should be display grade in result details. Furthermore display status as "Repeated" in course registration details and session student's course menu with Access course link to download study material.	As expected
05	Enter NVQ level as "0" and click insert button in insert Result form	To display grade in result details. Furthermore display status as "Fail" in course registration details and session student's course menu with Access course link to download study material.	It should be display grade in result details. Furthermore display status as "Fail" in course registration details and session student's course menu with Access course link to download study material.	As expected

Table 6.3: Test Cases for Course Registration, Exam & Result Module

Test Cases for Class, OJT, Attendance & Job Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Cancel button in class schedule details	To change status as "0" in database and status as "completed class" in view class schedule details.	It should be change status as "0" in database and status as "completed class" in view class schedule details	As expected
02	Click Close button in OJT	To change status as "0" in database and status as "completed OJT" in view OJT details.	It should be change status as "0" in database and status as "completed OJT" in view OJT details	As expected
03	Click go Attendance button in OJT	To display the insert OJT Attendance form with OJT id in OJT id field.	It should be display the insert OJT Attendance form with OJT id in OJT id field	As expected
04	Click insert button in OJT Attendance form.	To calculate the total Attendance days and display in OJT view details	It should be calculate the total Attendance days and display in OJT view details	As expected
05	Click Close button in Job	To change status as "0" in database and status as "Left Job" in view Job details.	It should be change status as "0" in database and status as "Left Job" in view Job details	As expected

Table 6.4: Test Cases for Class, OJT, Attendance & Job Module

6.3.3 Test Cases for Staff Management Module

Test Cases for Leave Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Apply link on leave page	To display application form with available leave details.	It should display application form with available leave details.	As expected
02	Click apply button in application form	To add details into the database. Furthermore display the available leave.	It should be add details in database. Furthermore display the available leave	As expected
03	Display alert message on AD home page	To display alert on home page	It should be display alert and go to approval page	As expected
04	Click approve button, if request is satisfied	To display confirmation message and status will change from new to approve	It should be display confirmation message and status will change from new to approve	As expected

Table 6.5: Test Cases for Leave Module

6.3.4 Test Cases for Stock Management Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Add button in Quotation view in stock menu.	To display the insert Sub Quotation form with Quotation id in Quotation id field.	It should be display the insert Sub Quotation form with Quotation id in Quotation id field.	As expected
02	Click insert button with data in Sub Quotation form.	To calculate the total sub Quotation cost and display in Sub Quotation form with details & Quotation form.	It should be calculate the total sub Quotation cost and display in Sub Quotation form with details & Quotation form.	As expected
03	Click Go Pay button in Quotation view in stock menu.	To display the insert repair payment form with Quotation id in Quotation id field. Furthermore Go Pay button is available in stock type as Repair in Quotation	It should be display the insert repair payment form with Quotation id in Quotation id field. Furthermore Go Pay button is available in stock type as Repair in Quotation	As expected
04	Click Add button in order in stock menu.	To display the insert Sub order form with order id in order id field.	It should be display the insert Sub order form with order id in order id field.	As expected
05	Click insert button with data in Sub order form.	To calculate the total sub order cost and display in Sub order form with details & order form.	It should be calculate the total sub order cost and display in Sub order form with details & order form	As expected
06	Click Add button in GRN in stock menu.	To display the insert Sub GRN form with GRN id in GRN id field.	It should be display the insert Sub GRN form with GRN id in GRN id field.	As expected
07	Click insert button with data in Sub GRN form.	To calculate the total sub GRN cost and display in Sub GRN form with details & GRN form.	It should be calculate the total sub GRN cost and display in Sub GRN form with details & GRN form.	As expected
08	Click Go Pay button in GRN view in stock	To display the insert stock payment form with GRN id in GRN id field.	It should be display the insert stock payment form with GRN id in GRN id	As expected

Test No	Test Case	Purpose	Expected Result	Actual Result
	menu.		field.	
09	Click Add button in GIO in stock menu.	To display the insert Sub GIO form with GIO id in GIO id field.	It should be display the insert Sub GIO form with GIO id in GIO id field.	As expected
10	Click insert button with data in Sub GIO form.	To calculate the total sub GIO cost and display in Sub GIO form with details & GIO form.	It should be calculate the total sub GIO cost and display in Sub GIO form with details & GIO form.	As expected
11	Click Add button in GRO in stock menu.	To display the insert Sub GRO form with GRO id in GRO id field.	It should be display the insert Sub GRO form with GRO id in GRO id field.	As expected

Table 6.6: Test Cases for Stock Management Module

6.3.5 Test Cases for Payment Management Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click insertion in Course Pay in Payment menu.	To display the enter course registration id with search in payment form.	It should be display the enter course registration id with search in payment form.	As expected
02	Enter course registration id and click search button in payment form.	To display the insert Payment form with payment details and shows due amount with course registration fee. Furthermore pay status will appear Paid/not in course Registration view	It should be display the insert Payment form with payment details and shows due amount with course registration fee. Furthermore pay status will appear Paid/not in course Registration view	As expected
03	Enter the data and click insert button in Stock Pay insert form	To display the view stock Payment details. Furthermore pay status will appear Paid/not in GRN View	It should be display the view stock Payment details. Furthermore pay status will appear Paid/not in GRN View	As expected
04	Enter the data and click insert button in Repair Pay insert form	To display the view Repair Payment details. Furthermore pay status will appear Paid/not in Quotation View	It should be display the view Repair Payment details. Furthermore pay status will appear Paid/not in Quotation View	As expected

Table 6.7: Test Cases for Payment Management Module

6.3.6 Test Cases for Inform Management Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Active Go button in announcement type as "Staff Meeting"	To display the insert staff meeting attendance form with announcement id in announcement id field.	It should be display the insert staff meeting attendance form with announcement id in announcement id field.	As expected
02	Click communication in Inform menu.	To display inbox message in Web Mail details as compose, inbox, sent &	It should be display inbox message in Web Mail details as compose, inbox,	As expected

		Draft in communication page.	sent & Draft in communication page	
03	Click close button to contact in Inform menu.	To change status as "0" in database and change status as "Read Comment" in contact details.	It should be change status as "0" in database and change status as "Read Comment" in contact details.	As expected

Table 6.8: Test Cases for Inform Management Module

6.3.7 Test Cases for Creation Management Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Empty value for attach or type as "Book" in Study Material form	To add the attach value as "None" in database and view the Study Material details with attach value as "None".	It should be add the attach value as "None" in database and view the Study Material details with attach value as "None"	As expected
02	Click insert in Study Material by session Instructor	To display the insert Study Material form with details and disable user id field.	It should be display the insert Study Material form with details and disable user id field.	As expected
03	Click Add button in Equipment in creation menu.	To display the insert Sub Equipment form with Equipment id in Equipment id field.	It should be display the insert Sub Equipment form with Equipment id in Equipment id field.	As expected
04	Click insert button in Sub Equipment form.	To calculate the total sub Equipment cost and display in Sub Equipment form with details & Equipment form.	It should be calculate the total sub Equipment cost and display in Sub Equipment form with details & Equipment form.	As expected
05	Click close button in Batch details	To change status as "0" in database and change status as "completed batch" in Batch details.	It should be change status as "0" in database and change status as "completed batch" in Batch details.	As expected

Table 6.9: Test Cases for Creation Management Module

6.3.8 Test Cases for Report Management Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	select parameters and click search button	To display details in screen with print button.	It should be display details in screen with print button.	As expected
02	Click Print button on screen	To display reports on new window	It should be display reports on new window.	As expected
03	Click Print button in popup window	To send print action to the printer and print reports.	It should be send print action to the printer and print reports.	As expected

Table 6.10: Test Cases for Report Module

6.3.9 Test Cases for Administration Module

Test No	Test Case	Purpose	Expected Result	Actual Result
01	New student/ staff registration notification in Admin home	To display count New registration and link to the User Approve page.	It should be display count New registration and link to the User Approve page.	As expected
02	New leave request notification in Admin home	To display count New request and link to the leave Approval page.	It should be display count New request and link to the Leave Approval page.	As expected
03	New career guidance request notification in Admin home	To display count New request and link to the career guidance Approval page.	It should be display count New request and link to the career guidance Approval page.	As expected
04	New Quotation, order and GIO request notification in Admin home	To display count New request and link to the Quotation, order and GIO Approval page.	It should be display count New request and link to the Quotation, order and GIO Approval page.	As expected
05	New stock & repair payment notification in Admin home	To display count New request and link to the stock & repair payment Approval page.	It should be display count New request and link to the stock & repair payment Approval page.	As expected
06	New OJT and Job placement notification in Admin home	To display count New request and link to the OJT and Job placement Approval page.	It should be display count New request and link to the OJT and Job placement Approval page.	As expected
07	New message notification in Admin home	To display count New messages and link to the web mail with highlighted new mail home page.	It should be display count New messages and link to the web mail with highlighted new mail home	As expected
08	New comment notification in Admin home	To display count New comments and link to the contact in Inform Menu.	It should be display count New comments and link to the contact in Inform Menu.	As expected

Table 6.11: Test Cases for Administration Module

6.3.10 some of Common Test Cases

Test No	Test Case	Purpose	Expected Result	Actual Result
01	Click Insert button in form	To add the details in database and view details	It should be add the details in database and view details	As expected
02	Click Edit button in form	To send the selected data to the editable form.	It should be send the selected data to the editable form.	As expected
03	Click Update button in form	To update the details in database and view the details.	It should be update the details in database and view the details.	As expected
04	Click Delete button in form	To delete the details in database and display confirmation message.	It should be delete the details in database and display confirmation message.	As expected
05	Click more button in records	To display more details of records.	It should display more details of records.	As expected

06	Enter the parameter and click Search button in form	To send the selected parameter with data to the editable form.	It should be send the selected parameter with data to the editable form.	As expected
07	Not filling all required fields	To check whether the form does not allow empty field to be submitted to the database.	It should display an error message.	As expected
07	All required fields are filled	To check whether allows to be submitted to the database and display success confirmation message.	It should be display success confirmation message.	As expected
08	When entered data already exists	To display error message	It should be display an error message.	As expected
09	Identify the user and display date & time	To display session name with profile picture and current date & time in their Home page.	It should be display session name with profile picture and current date & time in their Home page.	As expected
10	Test browser	To access & load system in different browsers (Internet explorer, Firefox, Chrome).	The system should act and display interfaces in similar way in all browsers.	As expected

Table 6.12: Some of common Test Cases

6.4   USER EVALUATION

This section briefs about the evaluation of system carried out, which details the approach adopted. Relevant feed-backs by the evaluators are given since directly points the success of the system. Importance in evaluation is Usability, Effectiveness of approach, Usefulness and Uniqueness.

The objectives of the system are met successfully as required within the schedule. All the functional requirements are implemented and tested by the client and the users. The implemented functions worked properly in busy and idle situations. The system didn't fail by incorrect input and incorrect usability during the implemented period. The non functional requirements were also tested and it has been seen that those are achieved satisfactorily. The intrusion attacks such as sql injection and accessing unauthorized pages without logging in are done on the system to check for its security and privacy of information. But the system didn't allow these hacking activities.

The user (Assistance Director) response showed that the all the expected system modules were implemented and that he was satisfied with the system that was built. The Assistance Director's response can be found the Test Results. The Test result for the WBOMS is illustrated in *Figure 6.2*.

The Test result for the WBOMS is illustrated in *Figure 6.2*

USER EVALUVATION FORM
Office Management System (WBOMS - VTA)

Tester Name: ....T·Seresh kumar.........................

Tester Role: ....Finance officer.........................

Please mark whether you are satisfied with the following Tasks that are implemented in the Web Based Office Management System.

No	Task	Satisfied? Yes	Satisfied? No
01	Data Insertion, Updating, Deletion and Searching/Views records	✓	
02	System automatically create user account and send username & Password to user by their email when Approved User Registration	✓	
03	New data Approval/disapproval & Recommendation/not	✓	
04	New User, OJT, Job, Leave, Career, Quotation, Order, GIO, stock payment, Repair payment, Message & Comment notification alert	✓	
05	Calculation of total and sub amount for Quotation, Order, GRN, GIO & required Equipment for Batch	✓	
06	Calculation of total available staff Leave for each leave type	✓	
07	Calculation of total Course Registration fee with due/paid payment, calculation of grade status & calculate total attendance days for OJT	✓	
08	Uploading & Downloading Study materials and Uploading images	✓	
09	Cancelled/changed exam and send mail to students	✓	
10	Closed completed class, completed OJT, Left Job, Old comments, completed batch and Block/unblock user	✓	
11	Authorized user only should access appropriate functions/ page	✓	
12	Potential benefits gained through the system	✓	
13	Ability to maintain data, to keep it up-to date.	✓	
14	Recognition for look and feel & understand error messages	✓	
15	Generating Reports/view records (97 Reports)	✓	

Signature: ....   Date: ....03 - 12 - 2016....

Figure 6.2: Test Result for WBOMS

The Finance Officer (FO) response showed that some the expected system modules were implemented and that he was satisfied with the system that was built. Those are included

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- ❖ Data Insertion, Updating, Deletion, Searching and Views records & Uploading images
- ❖ New OJT, Job, Leave, Career, Quotation, Order, GIO, stock payment, Repair payment, Message notification alert & New data Recommendation/not
- ❖ Calculation of total and sub amount for Quotation, Order, GRN, GIO & required Equipment for Batch
- ❖ Calculation of total available staff Leave for each leave type
- ❖ Calculation of total Course Registration fee with due/paid payment, calculation of grade status & calculate total attendance days for OJT
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Ability to maintain data, to keep it up-to date
- ❖ Recognition for look and feel & understand error messages
- ❖ Generating Reports/view records

The Program Officer (PO) response showed that some the expected system modules were implemented and that he was satisfied with the system that was built. Those are included

- ❖ Data Insertion, Updating, Deletion, Searching and Views records & Uploading images
- ❖ New stock payment, Repair payment, Message notification alert
- ❖ Calculation of total available his own Leave for each leave type
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Ability to maintain data, to keep it up-to date
- ❖ Recognition for look and feel & understand error messages
- ❖ Generating Reports/view records

The Development Officer (DO), Management Assistance (MA) and Trainee Officer (TO) response showed that some the expected system modules were implemented and that he was satisfied with the system that was built. Those are included

- ❖ Data Insertion, Updating, Deletion, Searching and Views records & Uploading images
- ❖ New Message notification alert
- ❖ Calculation of total available his own Leave for each leave type
- ❖ Calculation of total Course Registration fee with due/paid payment, calculation of grade status & calculate total attendance days for OJT
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Ability to maintain data, to keep it up-to date

- ❖ Recognition for look and feel & understand error messages
- ❖ Generating Reports/view records

The Instructor & Instructor-OIC (Office in Charge) response showed that some the expected system modules were implemented and that he was satisfied with the system that was built. Those are included

- ❖ Data Insertion, Updating, Deletion, Searching and Views records
- ❖ New Message notification alert
- ❖ Calculation of total available his own Leave for each leave type
- ❖ Uploading Study materials and Uploading images
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Ability to maintain data, to keep it up-to date
- ❖ Recognition for look and feel & understand error messages
- ❖ Generating Reports/view records

The Driver response showed that some the expected system modules were implemented and that he was satisfied with the system that was built. Those are included

- ❖ Data Insertion, Updating, Searching and Views records & Uploading images
- ❖ New Message notification alert
- ❖ Calculation of total available his own Leave for each leave type
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Recognition for look and feel & understand error messages
- ❖ View/Print Reports

The Students response showed that some the expected system modules were implemented and that they were satisfied with the system that was built. Those are included

- ❖ Data Updating, Searching and Views records & Uploading images & Download the study materials
- ❖ View his/her course registration, OJT, result and Job placement
- ❖ When cancelled/changed exam and got notification mail
- ❖ Authorized user only should access appropriate functions/ page
- ❖ Potential benefits gained through the system
- ❖ Recognition for look and feel & understand error messages

CHAPTER 7 – CONCLUSION AND FURTURE WORK

7.1 CRITICAL ASSESSMENT OF THE PROJECT

This chapter is reviewed the initial objectives and extend to which they were fulfilled. It is summarized the project's strengths and weakness. A final critical appraisal is detailed on the project as a whole, covering its management, the final implemented system, and the documentation, including this dissertation and the technical and user manuals. These are discussed below. There are various ways to achieve the effective office management and the most suitable one is the introduction of the concept of the integrated system.

The easiest way to achieve the above concept is the introduction of a computer-aided office management system. These were achieved in the WBOMS because, its ability to assess large amount of data. It reduces data redundancy and increases integrity, which leads to efficiency in managing data and information.

When logging of the WBOMS- VTA website was successfully implemented as required and every feature of the OMS has been given necessary security from intruders. The logout of the system also ensures that after a user logouts from the OMS he/she will have to verify their identity again in order to access the features of the website.

The document module was also a success, especially the custom report generation which was commented by most of the users as a very good feature. In this module too there were some problems while implementing the document handling feature which were later solved successfully.

- ❖ It's user-friendly.
- ❖ It's ability to access large amount of data
- ❖ It has variety of reports facilities.
- ❖ It makes information available when needed. (Retrieving information is easy.)
- ❖ It's easy, accurate, unambiguous, faster data access and search facilities
- ❖ Its suitable alert and message prompt facilities
- ❖ It reduces data redundancy and increases integrity, which leads to efficiency in managing data and information.

Not only it assists the decision making of the management but also speeds up the VTA's daily work (data collection and report generation). To fulfill, this development should have the features of student management system.

7.2 FUTURE ENHANCEMENTS

To enhance the efficiency of the system, in the following we have listed some recommendations and future works.

Office Management System is common to office activities of the organizations. But this dissertation describes the necessity, analysis and development of an Office Management System for VTA. With that, variety of reports was introduced by me for the VTA's decision making activities. This developed website and the OMS can be developed further with the permission of the VTA. One major improvement which can be done is the security of the system and removing loop holes. Thus, the completion of the project has provide a valuable considering and knowledge to the user in developing a better system in future, since a well-organized office management system could guarantee the sustainability and stability of organizations in the long run.

7.3 LESSONS LEARNT

The whole process of this project helped me to gain new knowledge and widen the scope of my existing knowledge immensely in so many aspects. When gathering the requirements it was a difficult task to handle different potential users and trying to get as much information as possible. Therefore what I learnt from this stage was that it is important to gather as much requirements as possible before starting the design phase, and when communicating with the potential users we have to go to their level and look through their frame of mind to get the most out of it.

The implementation phase was the toughest and most interesting phase of the project, as it allowed me to try out practically the academic knowledge that I have gained on programming languages such as PHP, Java Scripts, CSS and many more development tools and techniques.

I gained a lot about different techniques used to for design and coding. Writing the dissertation too has improved my English Language skills immeasurably. Most importantly I learnt the value of working with a schedule and timeline. Therefore it was a very fruitful and an invaluable experience to me.

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APPENDIX A – SYSTEM DOCUMENTATION

This system documentation provides guidelines prior to the setup of the WBOMS. The document comprises the necessary software and hardware requirements to run the system and the tools that will be helpful to do any amendments to the system in future. In order to install the system, the Device chosen for installation should meet the following prerequisites of Hardware and Software.

Hardware Requirements

- ❖ Intel(R) Core™ i5-3317U processor 1.70 GHz
- ❖ 4 GB RAM
- ❖ 400 GB Hard disk
- ❖ Mouse
- ❖ Color Printer (for Reports)
- ❖ CD-ROM drive
- ❖ Network connection

Software Requirements

- ❖ Windows 8.1 professional operating system
- ❖ XAMPP version 1.7.4
  - ∗ Apache 2.2.17
  - ∗ MYSQL 5.5.8 - used to create database.
  - ∗ PHP 5.3.5
  - ∗ Phpmyadmin 3.3.9 - used as the interface for interacting with MySQL.

Additional Software Requirements

These software tools will support to do any amendments or extensions to the system
- ❖ Adobe Dreamweaver CS6 - used in designing the website as well as scripting.
- ❖ Microsoft Office
- ❖ Microsoft Visio 2010 – used to create diagrams.
- ❖ Adobe Photoshop CS3 – for image retouching.
- ❖ Mozilla Firebox - used to run WBOMS – VTA program.

INSTALLING OFFICE MANAGEMENT SYSTEM

Software Installations

Download and install xampp windows version from www.apachefriends.org. Give installation path to C:\ of the computer. Please refer the installation guide provided in the above website before installing xampp on your computer.

Database installation

- ❖ Open your web browser and type http://localhost/ or http://127.0.0.1/ in the URL and press Enter. If you have installed Xampp properly, you could now see the Xampp home page on your browser window.

- ❖ Select phpMyAdmin tool from the left side panel of the Xampp home page

- ❖ In the phpMyAdmin window click in the text field named "Create new database" and type "oms_vta" and press "Create" button. A new database named "oms_vta" will be created.

- ❖ Now click on the "Import" tab from the tabs located in the top of the window and click on the "Chose file" button located next to the "Location of the text file" option in "File to import" section. It will give you a browsing window.

- ❖ Insert the "Web Based Office Management System" CD in to your CD-ROM. Locate and select the "oms_vta.sql" from the path: X:\Web Based Office Management System\WBOMS – VTA_Database\oms_vta.sql (Note: "X" is your CD-ROM Drive) and press "Open" button.

- ❖ Press "Go" button located in the bottom right hand corner.

System installation

- ❖ Browse the Office Management System CD, Locate the folder "OMS" from the path:X:\Web Based Office Management System\WBOMS – VTA_Software (Note: X is your CD-ROM drive).

- ❖ Copy the entire folder and paste it in the following location
C:\xampp\htdocs\OMS

LAUNCHING THE SYSTEM

- ❖ Before launching the system you must verify the Apache and MySQL are running in the system. To do that, go to start =>Programs => XAMPP for Windows.

- ❖ Click on XAMPP Control panel and see whether the Apache and MySQL are running in the background.

- ❖ Now type http://localhost/OMS/ in the URL and press enter to launch the Web Based Office Management System.

APPENDIX B - DESIGN DOCUMENTATION

Use case Diagram with Descriptions

Some of the main Use Case descriptions related to the high level Use Case diagrams are mentioned below.

B.1   Use Case Diagram for the Inform Management Module

This Use case diagram shows for Inform Management Module (Refer *Figure B.1*). This module includes Announcement, message for staff and comments for public.
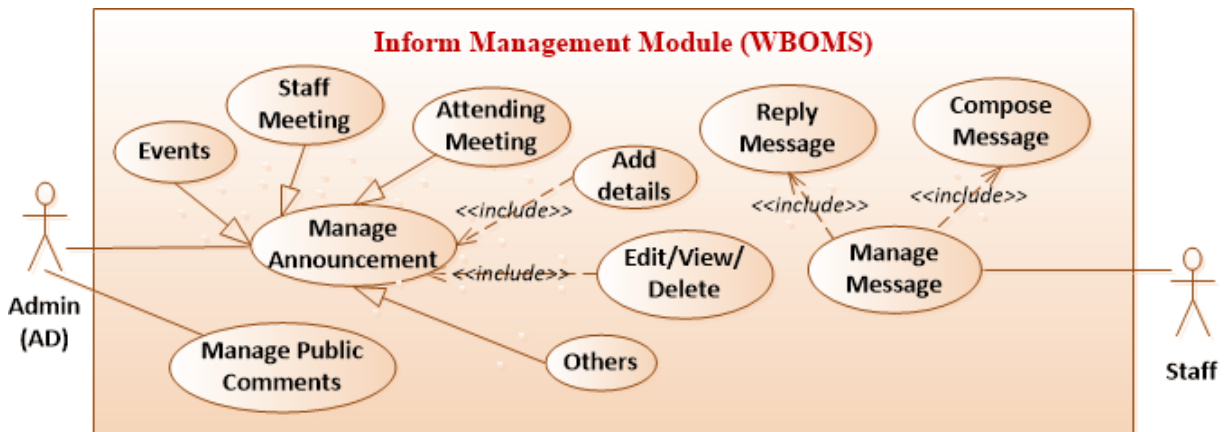
Figure B.1: Use case Diagram for Inform Management Module

1. Use Case Description for Inform Management Module

The *Table B.1* shows the Use Case Description for Inform Management Module.

Use case	Managing Announcement, public comments, message interaction
Actors	AD, FO, PO, DO, MA, TO, Lecturer, Lecturer OIC, Driver
Descriptions	
Managing Announcement: AD can announce any information (staff's meeting, Attending Meeting, Events of VTA and others) to office or public through WBOMS system. Manage public comments: Public can send the comments for any information about VTA. Further AD can get notification for that comments and reply for their comments. Message interaction: VTA's staffs can interact with other VTA's staffs through this WBOMS message. Further they can manage compose, inbox, sent and reply message.	
Preconditions	
Managing Announcement: AD should login into the WBOMS - VTA. Manage public comments: Public can enter relevant information to the comments form. Message interaction: VTA's Staffs should login into the WBOMS - VTA.	
Flow of events	
Managing Announcement: ❖ System can be displayed announcement information as events or staff meeting or others in VTA home page Manage public comments: ❖ System can be displayed notification as new comments in Admin Home interface.	

❖ Closed Old comment by AD	
Message interaction:	
❖ System can be displayed notification as new message in their interface.	
Post conditions	
Further process Inform management module is managed and maintained.	

Table B.1: Use Case Description for Inform Management Module

B.2   Use Case Diagram for the Creation Management Module

This Use case diagram shows for Creation Management Module (Refer *Figure B.2*). This module includes Managing courses, batches, equipments, centre, Suppliers, organizations and Vehicles.
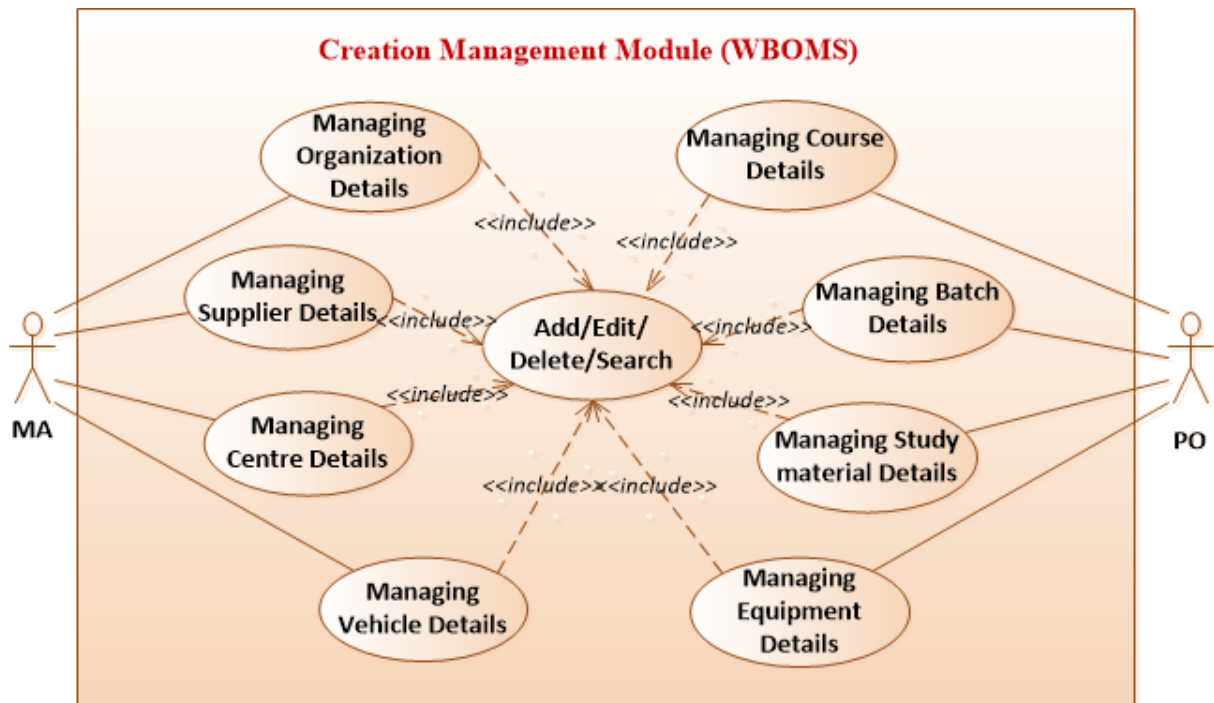
Figure B.2: Use case Diagram for Creation Management Module

1. Use Case Description for Creation Management Module

The *Table B.2* shows the Use Case Description for Creation Management Module

Use case	Managing courses, batches, equipments, centre, Suppliers, organizations and Vehicles
Actors	AD, FO, PO, DO, MA, TO
Descriptions	
Relevant VTA staffs can manage courses, batches, equipments, centers, Suppliers, organizations and vehicles of this creation module.	
Preconditions	
Staffs should login into the WBOMS - VTA.	
Flow of events	
System can be displayed and stored details of creation module. Closed completed batch by AD.	

Post conditions	
Further process Creation management module is managed and maintained.	

Table B.2: Use Case Description for Creation Management Module

3. Use Case Description for Add/edit/delete the records

The *Table B.3* shows the Use Case Description for Add/edit/delete the records.

Use case	Add/edit/delete the records.
Actors	Staffs
Descriptions	
AD can Add/Edit/Delete all the records. Authorized staff can Add/Edit/ Delete the records	
Preconditions	
❖ User should login the system.	
Flow of events	
❖ New data should be added. ❖ Existing details can be edited with new data. ❖ System checks if the data already exists. ❖ Delete the records if not need. ❖ System alert prompt confirm message "Are you sure you want delete?"	
Post conditions	
❖ Printable data will be displayed.	

Table B.3: Use-Case Description for Add/edit/delete the records

4. Use Case Description for View the records

The *Table B.4*shows the Use Case Description for View the records.

Use case	View records.
Actors	Staffs, Students
Descriptions	
Staff/Student can view the records.	
Preconditions	
❖ User should login the system.	
Flow of events	
❖ View the records.	
Post conditions	
❖ Records will be viewed.	

Table B.4: Use-Case Description for view the records

5. Use Case Description for Inquiries

The *Table B.5* shows the Use Case Description for Inquiries.

Use case	Inquiries
Actors	AD, Staff

Descriptions	
Can make inquiries about user, student, staff, stock, payment, inform and creation management records etc	
Preconditions	
❖ User should login the system. ❖ Should provide valid data for searching.	
Flow of events	
❖ Enter the valid key data for the search	
Post conditions	
❖ The relevant data that match the key will be displayed	

Table B.5: Use-Case Description for Inquiries the records

6. Use Case Description for Generate Reports

The *Table B.6* shows the Use Case Description for Generate Reports.

Use case	Generate reports
Actors	AD, relevant Staff
Descriptions	
Various Reports can be generated.	
Preconditions	
❖ The user should have an account. ❖ Staffs having privileges to view/print the reports.	
Flow of events	
Generate reports	
Post conditions	
Generated details will be displayed in a printable format.	

Table B.6: Use-Case Description for Reports

B.2   Sequence Diagram

1. Sequence Diagram for Inserting Data

This Sequence diagram shows adding data. (Refer *Figure B.3*)

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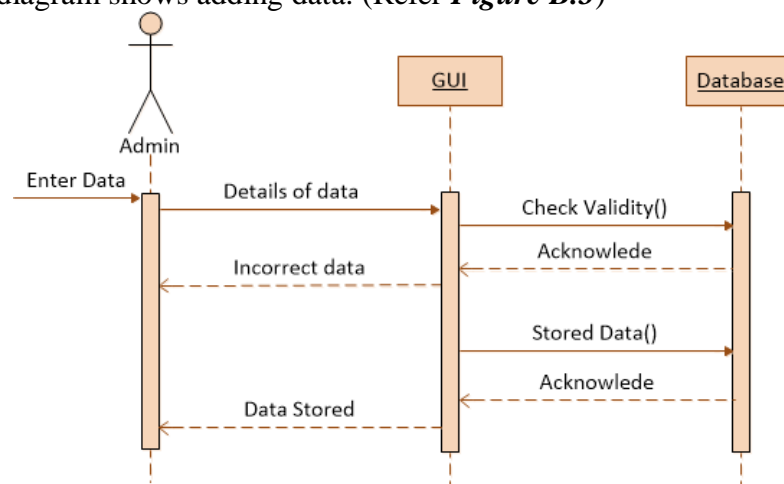
Figure B.3: Sequence Diagram for inserting the data

2. Sequence Diagram for Deleting Data

This Sequence diagram shows deleting a data. (Refer *Figure B.4*)
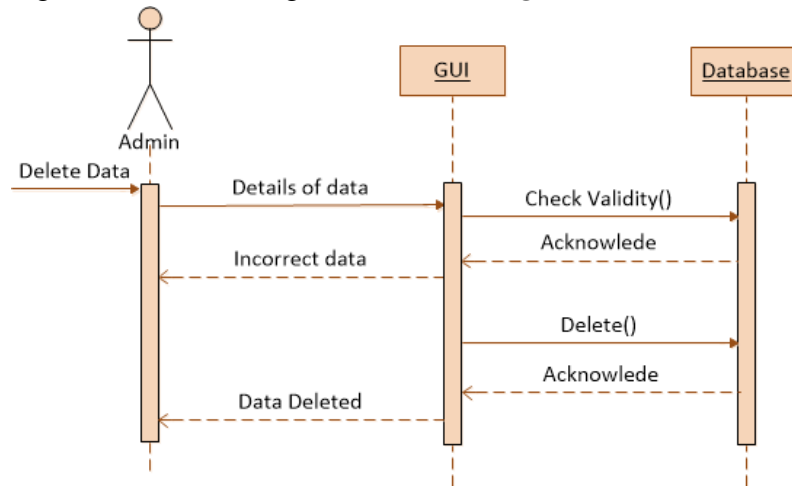
Figure B.4: Sequence Diagram for deleting the data

3. Sequence Diagram for Report generation

This Sequence diagram shows Report generation. (Refer *Figure B.5*)
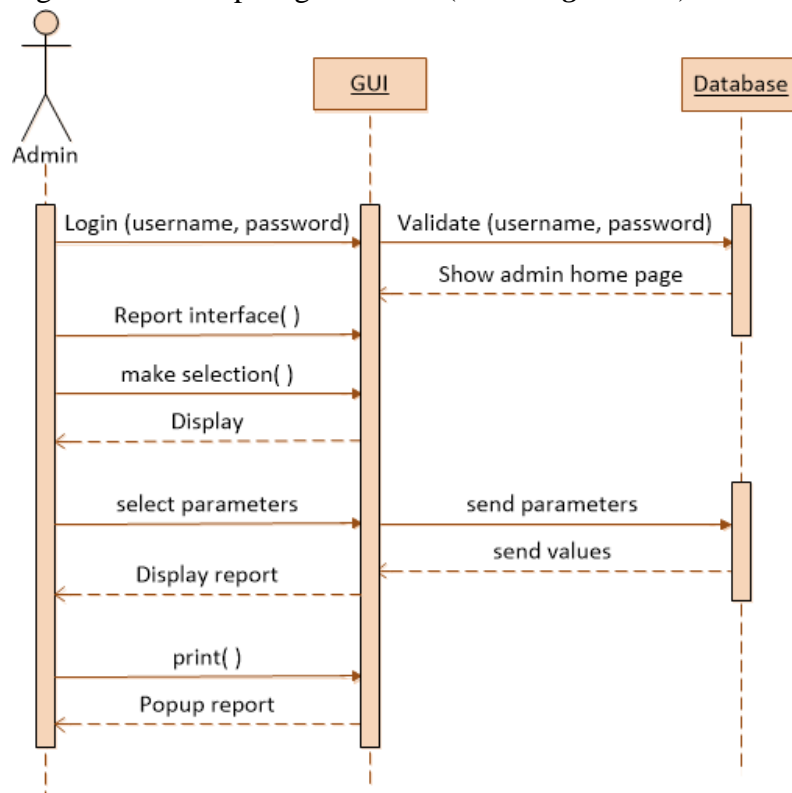
Figure B.5: Sequence Diagram for Report generation

B.3   Activity Diagram

1. Activity Diagram for Login

This activity diagram shows the activity of user login. (Refer *Figure B.6*)
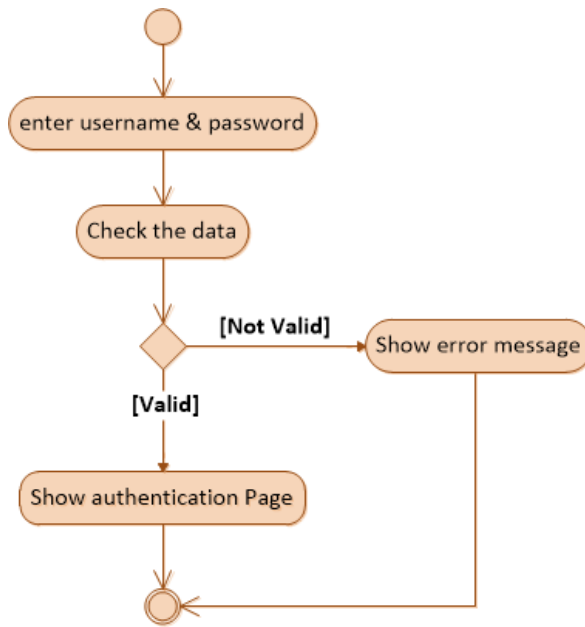
Figure B.6: Activity Diagram for Login

2. Activity Diagram for add and Update Module details

This activity diagram shows the activity of add the Module details. (Refer *Figure B.7*)
This activity diagram shows update the Module details. (Refer *Figure B.8*)
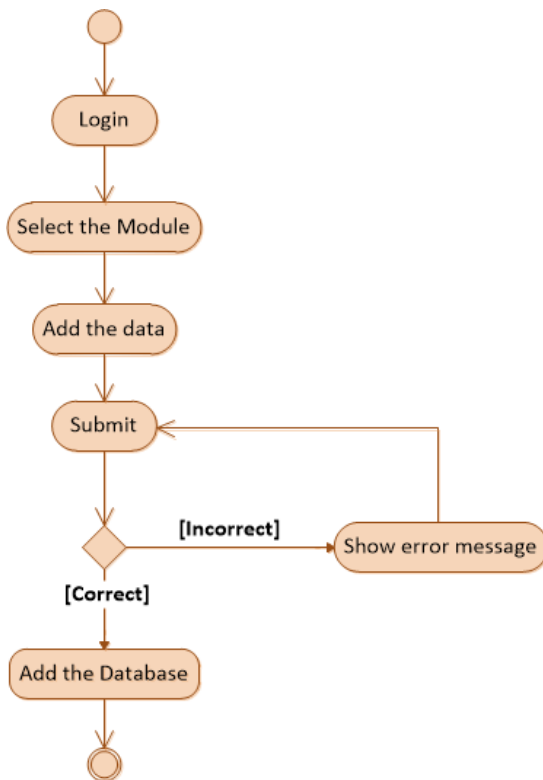
Figure B.7: Activity Diagram for add Module details
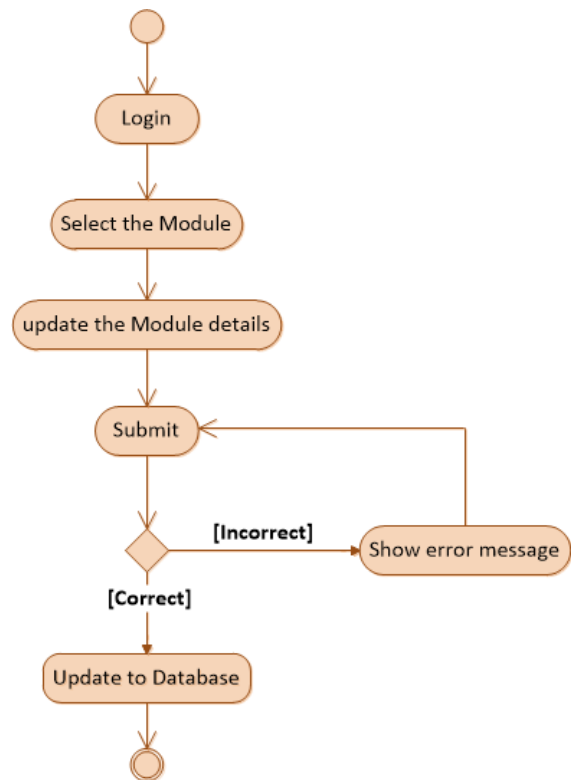
Figure B.8: Activity Diagram for update Module details

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APPENDIX C - USER DOCUMENTATION

C.1 Administrator (AD) Documentation

Administrator is the Authorized person who is responsible for monitoring all activities which is done through the system. Thus, he has the full control.

The Admin level user interface of the WBOMS–VTA system as shown in *Figure C.1,* Recognized WBOMS–VTA staff are welcome to Web Based Office Management System. It contains the main function Menu, display current date & time, session user name & his/her profile picture, change password link, new all notification of the WBOMS–VTA.

Figure C.1: Admin Home Interface

1. User Management Module

The User Management Module interface of the WBOMS as shown in *Figure C.2*, when click User Mgt on menu, it will appear top of the interface and click view module link.
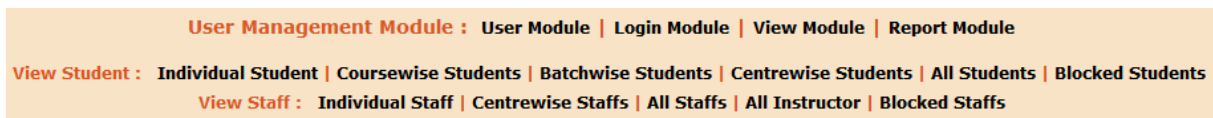
Figure C.2: User Management Module Interface

User Registration Approval

The User Registration Approval interface of the WBOMS as shown in *Figure C.3*, When AD checks the user details and click approve button, System will send username & password to his/her mail. Furthermore create login account and display in user details.

No	User ID	Profile Picture	Full Name	NIC No	EPF/ID No	Email	Telno	Joint Date	User Type	Approve	Cancel	More
1	1024		Kokulan Uthayakumar	943903866V		koku@gmail.com	0770011030	2016-07-01	Student	✓	✗	≡
2	1025		Saruja Baskar	857787810V		saru@gmail.com	0779911030	2016-10-01	Student	✓	✗	≡
3	1026		Sujeevan Seelan	920087010V		suj@gmail.com	0770771030	2016-12-03	Student	✓	✗	≡

Figure C.3: User Registration Approval Interface

User Login

The User Login interface of the WBOMS as shown in *Figure C.4*, When AD click approve button, System will create username as his/her "user id"& password as his/her "NIC No".

No	User ID	Full Name	Username	Password	User Type	Status	Edit
1	1023	Aththisha Kamalanathan	1023	953360616V	Trainee Officer	🔒	✎
2	1022	Roshanthy Puspathasan	1022	853380810V	Instructor(OIC)	🔒	✎
3	1021	Thevan Paramalingam	1021	953380810V	Student	🔒	✎
4	1020	Sujeeva Atputharaja	1020	958530951V	Student	🔓	✎

Figure C.4: User Login Interface

User Interface

The User Details interface as shown in *Figure C.5*, the AD and authorized staff only has all the rights to insert, update and delete the records.

No	User ID	Profile Picture	Full Name	NIC No	EPF/ID No	Telno	Joint Date	User Type	Centre ID	Remarks	Status	Edit	Delete	Action	Issued ID	Issued Uniform	More
21	1003		Sivathevii Tharman	885039594v	2134	0776553344	2015-01-05	Program Officer	DVTC_J		🔓	✎	✗	⚠	🟢	🟢	≡
22	1002		Sureskumar Thambirasa	733333881V	1854	0776023344	2015-01-03	Finance Officer	DVTC_J		🔓	✎	✗	⚠	🟢	🟢	≡
23	1001		Sivagangai Thamb	777033851V	35377	0776021178	2015-01-03	Instructor	DVTC_J	ministry staff (ICT)	🔓	✎	✗	⚠	🟢	🟢	≡
24	1000		Sivaranjei Thambipillai	865031564v	5386	0775387901	2015-01-03	Admin	DVTC_J	Permanant	🔓	✎	✗	⚠	🟢	🟢	≡

Page [2]

Figure C.5: User Interface

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'More' Link User Interface

There is '*more*' option link to see full User information. (Refer ***Figure C.6***)

Figure C.6: More Link Page User Interface

2. Student Management Module

The Student Management Module interface of the WBOMS as shown in ***Figure C.7***, when click Student Mgt on menu, it will appear top of the interface and click view module link.

Figure C.7: Student Management Module Interface

Course Registration Details

The Course Registration interface as shown in ***Figure C.8***, the AD and authorized staff only has all the rights to insert, update and delete the records. Furthermore system will displayed status as completed/not, paid status as Paid/not and calculate to display total course registration fee on the interface. When click Go Pay button, it will redirect to Course Payment form with his/her "course registration id".

Figure C.8: Course Registration Interface

OJT (On the Job Trainee) Interface

The OJT interface as shown in *Figure C.9*, the AD and authorized staff only has all the rights to insert, update and delete the records. Furthermore displayed status as completed/not, when AD click Close button and calculate to display total Attendance on the interface. When click Go Attend button, it will redirect to OJT Attendance form with his/her "OJT id".

Figure C.9: OJT Interface

Result Details

The Result interface as shown in *Figure C.10*, the AD and authorized staff only has all the rights to insert, update and delete the records. Furthermore displayed status as Pass/Repeat/Fail on the interface

Figure C.10: Result Interface

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Data updating Exam Details

The Update Exam Details interface of the WBOMS as shown in *Figure C.11,* Furthermore When AD click cancel button, displayed status as Cancel/Active on the interface

Figure C.11: Update Exam Details Interface

3. Staff Management Module

The Staff Management Module interface of the WBOMS as shown in *Figure C.12*, when click Staff Mgt on menu, it will appear top of the interface and click view module link.

Figure C.12: Staff Management Module Interface

Apply Own Staff Leave Details

Apply Leave interface of the WBOMS as shown in *Figure C.13,* Displayed available leave

Figure C.13: Apply Leave Interface

4. Stock Management Module

The Stock Management Module interface of the WBOMS as shown in *Figure C.14*, when click Stock Mgt on menu, it will appear top of the interface and click view module link.

Stock Management Module : Quotation: Sub | Purchase Order: Sub | Receive (GRN): Sub | Issue (GIO: Sub | Receive (GRO): Sub | View Module | Report Module

View Quotation : Individual Quotation | Yearwise Quotation | Approved Repair Quotation | Approved New Quotation | Cancelled Quotation
View Purchase Order : Individual Order | Yearwise Order | Cancelled Order   View Receive (GRN) : Individual GRN | Yearwise GRN
View Issue (GIO) : Individual GIO | Yearwise GIO | Cancelled GIO   View Receive (GRO) : Individual GRO | Yearwise GRO

Figure C.14: Stock Management Module Interface

Quotation Details

The Quotation interface of the WBOMS as shown in *Figure C.15,* Displayed status & amount

Stock Management Module : Quotation: Sub | Purchase Order: Sub | Receive (GRN): Sub | Issue (GIO: Sub | Receive (GRO): Sub | View Module | Report Module

√-Processing/Approve | ▲-Cancelled | ●-Not Paid | ✔-Approve/Recommend | ⚠-DisApprove/Recommend | ✚-Add | ◉-View | ☑-Approval

QUOTATION LIST (FOR STOCK)

Records : 12

No	Quot ID	Quot Date	Prepared BY	Supplier ID	Deliver Date	Description	Stock Type	Total Amt	Paid Status	Status	Recommend	Approved	Edit	Delete	More	Go Add	Go Pay
1	11	2016-11-03	1011	J_HW	2016-11-10	power machine	New	46500		√	✔	✔	✎	✖	≡	→	
2	9	2016-10-15	1011	J_ele	2016-10-15	power repair	Repair	1600	●	▲	✔	⚠	✎	✖	≡	→	→
3	8	2016-10-10	1011	J_SelvaHW	2016-10-15	power repair	Repair	4800	●	√	✔	✔	✎	✖	≡	→	→
4	12	2016-09-10	1005	PC_Park	2016-09-15	Projector	Repair	22000	●	√	✔	✔	✎	✖	≡	→	→
5	6	2016-07-03	1005	J_SelvaHW	2016-07-21	Codewire,HDD	New	54000		√	✔	✔	✎	✖	≡	→	
6	7	2016-07-03	1005	PC_Park	2016-07-21	codewire,HDD	New	64500		▲	⚠	⚠	✎	✖	≡	→	
7	10	2016-01-03	1005	J_SEle	2016-01-10	Electrical	New	90000		√	✔	✔	✎	✖	≡	→	

Figure C.15: Quotation Details Interface

'More' Link Quotation Interface

There is '*more*' option link to see full Quotation information. (Refer *Figure C.16*)

Mozilla Firefox

localhost/OMS/admin/quot_more.php?action=singleview&id=8

QUOTATION (FOR STOCK) DETAILS

Quotation ID	8
Supplier ID	J_SelvaHW
Prepared By (Staff)	Raneesan Siva[1011]
Quotation Date	2016-10-10
Deliver Date	2016-10-15
Description	power repair
Stock Type	Repair
Total Amount	4800
Repair Paid Status	Not Paid
Remarks	
Recommended	Recommended
Approved	Approved
Status	Processing/Approved

QUOTATION SUB LIST (FOR STOCK)

Records : 2

No	Description	Specification	Category	Unit	Unit Price	Value	Remarks
1	power clip	power clip	Consumable	10	300	3000	
2	power	power	Consumable	4	450	1800	

Figure C.16: More Link Quotation Interface

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Updating GRN (Good Receive Note) Details

The Updating GRN Details interface of the WBOMS as shown in *Figure C.17*, Display the total received stock amount and paid status.

Stock Management Module : Quotation: Sub | Purchase Order: Sub | Receive (GRN): Sub | Issue (GIO: Sub | Receive (GRO): Sub | View Module | Report Module

-Not Paid | -Not Active | +-Add | -View

GOOD RECEIVE NOTE (GRN) EDIT FORM

Prepared By (Staff)* :	Ahalya : Management Assistant [1005 - DVTC_J]
Order ID* :	5 : 2016/11/HW - Rs 44800.00 [2016-11-15]
Received Centre ID* :	DVTC_J
GRN Date * :	2016 11 16
Invoive No * :	5588
Invoice Date :	2016 11 15
Remarks :	

Update   Reset

GOOD RECEIVE NOTE (GRN) LIST

Records : 4

No	GRN ID	GRN Date	Order ID	Prepared By	Received(Centre)	Invoice No	Invoice Date	Total Amt	Paid Status	Edit	Delete	More	Go Add	Go Payment
1	4	2016-11-16	5	1005	DVTC_J	5588	2016-11-15	43600	⚠	✎	✖	≡	→	→
2	3	2016-07-27	3	1005	DVTC_J	5557	2016-07-25	56000	Fully Paid	✎	✖	≡	→	→
3	2	2015-12-26	2	1002	DVTC_J	5556	2015-12-25	284000	Fully Paid	✎	✖	≡	→	→
4	1	2015-03-30	1	1011	DVTC_J	5555	2015-03-28	28000	Fully Paid	✎	✖	≡	→	→

Figure C.17: Updating GRN Details Interface

GIO (Good Issue Order) Details

The GIO Details interface of the WBOMS as shown in *Figure C.18*, Display the total issued stock amount and approved status.

Stock Management Module : Quotation: Sub | Purchase Order: Sub | Receive (GRN): Sub | Issue (GIO): Sub | Receive (GRO): Sub | View Module | Report Module

✓-Processing/Approved | ▲-Cancelled | ☻-Approved/Recommend | ▲-DisApproved/Recommend | +-Add | -View | ☑-Approval

GOOD ISSUE ORDER (GIO) LIST

Records : 6

No	GRN ID	Prepared BY	Deliver(Centre)	Vehicle ID	GIO Date	Remarks	Total Amt	Status	Recommend	Approved	Edit	Delete	More	Go Add
1	3	1002	VTA_KAI	Bus 62/4815	2016-07-30		12000	✓	☻	☻	✎	✖	≡	→
2	3	1002	VTA_KARAI	Bus 62/4815	2016-07-29		27400	✓	☻	▲	✎	✖	≡	→
3	2	1011	VTA_KAI	WP LE 7345	2015-12-28		101000	✓	☻	☻	✎	✖	≡	→
4	2	1002	VTA_PP	Bus 62/4815	2015-12-28		61000	▲	☻	▲	✎	✖	≡	→

Figure C.18: GIO Details Interface

5. Payment Management Module

The Payment Management Module interface of the WBOMS as shown in *Figure C.19*, when click Payment Mgt on menu, it will appear top of the interface and click view module link.

Payment Management Module : Course Payment | Stock Payment | Repair Payment | Petty Cash | View Module | Report Module

View Course : Individual Course | Batchwise Course | Centrewise Course | Monthwise Course | Yearwise Course | Due Course Payment

View Stock : Monthwise Stock | Yearwise Stock | Due Stock Payment   **View Repair :** Monthwise Repair | Yearwise Repair | Due Repair Payment

View Petty Cash : Monthwise Petty Cash | Yearwise Petty Cash

Figure C.19: Payment Management Module Interface

Insert Course Payment Details

The Insert Course Payment Details interface of the WBOMS as shown in *Figure C.20*, Display the course registration total fee and due amount in insert form.

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Figure C.20: Insert Course Payment Details Interface

Update the Stock Payment

The Update Stock Payment interface of the WBOMS as shown in *Figure C.21,* Display the total stock amount and approved status.

Figure C.21: Update Stock Payment Interface

6. Inform Management Module

The Inform Management Module interface of the WBOMS as shown in *Figure C.22*, when click Inform Mgt on menu, it will appear top of the interface and click view module link.

Figure C.22: Inform Management Module Interface

Received Message

The Received Message interface of the WBOMS as shown in *Figure C.23*

Inform Management Module : Announcement | Communication | Contact Mgt | View Module | Report Module

Web Mail

◯ ✉ **2 Sivaranjei Thambipillai**

Compose

Inbox [2]

Sent

Draft [3]

Received Messages

No	From	Subject	Date	Reply	Delete
1	Sureskumar Thambirasa	check payment	2016-12-03	✏	✖
2	Sivagangai Thamb	check OJT 2016	2016-12-03	✏	✖
3	Sivagangai Thamb	check course payment	2016-11-21	✏	✖

Figure C.23: Received Message Interface

7. Creation Management Module

The Creation Management Module interface of the WBOMS as shown in *Figure C.24*, when click Creation Mgt on menu, it will appear top of the interface and click view module link.

Creation Management Module : Course | Study Material | Equipment: Sub | Batch | Centre | Vehicle | Organization | Supplier | View Module | Report Module

View Material : Instructor Material | Coursewise Material | All Material   **View Equipments :** Centrewise Equipments | Batchwise Equipments | All Equipments

View Batch : Centrewise Batch | Coursewise Batch | All Batch Details | Completed Batch   **View All :** All Course | All Centre | All Vehicle | All Supplier | All Organization

Figure C.24: Creation Management Module Interface

Update Study Material Details

The Update Study Material Details interface of the WBOMS as shown in *Figure C.25*

Creation Management Module : Course | Study Material | Equipment: Sub | Batch | Centre | Vehicle | Organization | Supplier | View Module | Report Module

➕-Add | ◉-View

STUDY MATERIAL EDIT FORM

Course ID*	:	CHW
User ID (Staff)*	:	1012
Material Name*	:	CHW [Part_1]
Type*	:	tute
Remarks	:	2015,2016 Jan
Attachment	:	Browse...

Update   Reset

STUDY MATERIAL LIST

Records : 8

No	Course ID	User ID (Staff)	Material Name	Material Type	Remarks	Attachment	Edit	Delete
1	CHW	1012	CHW [Part_2]	book	2015,2016	None	✏	✖
2	CHW	1012	CHW [Part_1]	tute	2015,2016 Jan	1477679558.pdf	✏	✖
3	Graphic	1008	Graphic [Part_2]	book	2015,2016 Jan	None	✏	✖
4	Graphic	1008	Graphic [Part_1]	tute	2015,2016 Jan	1477676899.pdf	✏	✖

Figure C.25: Update Study Material Details Interface

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Equipment Details for Batch

The Equipment Details for Batch interface of the WBOMS as shown in *Figure C.26.* Display the total Equipment amount.

+-Add | ◉-View

EQUIPMENT LIST (FOR BATCH)

Records : 5

No	Equipment ID	Batch ID	Centre ID (Deliver)	Total Cost	Remarks	Edit	Delete	More	Go Add
1	ICT2016_1	ICT_ 2016_July1	DVTC_J	577500	ICT Batch1	✏	✖	☰	➡
2	ICT2015_1	ICT_2015_Jan1	DVTC_J	532500	ICT Batch1	✏	✖	☰	➡
3	Graphic2015_1	Graphic_2015_Jan1	DVTC_J	459000	Graphic Batch1	✏	✖	☰	➡
4	CHW2016_1	CHW_2016_July1	DVTC_J	549500	CHW Batch1	✏	✖	☰	➡
5	CHW2015_1	CHW_2015_Jan2	VTA_KAI	373000	CHW Batch1	✏	✖	☰	➡

Figure C.26: Equipment Details for Batch Interface

'More' Link Equipment Details for Batch

There is '*more*' option link to see full Equipment Details for Batch. (Refer *Figure C.27*)

localhost/OMS/admin/equipment_more.php?action=singleview&id=CHW2015_1

EQUIPMENT DETAILS

Equipment ID	CHW2015_1
Batch ID	CHW_2015_Jan2
Deliver (Centre)	VTA_KAI
Total Amount	373000
Remarks	CHW Batch1

EQUIPMENT SUB LIST

Records : 5

No	Equip Name	Specification	Qty	Unit Cost	Value
1	Microsoft Office 2010	Licence Version	1	25000	25000
2	Computers	Latest (Desktop PC)	5	65000	325000
3	Netwok Cable tester	Digital	1	4500	4500
4	ADSL Router	4 port , Wireless	1	6500	6500
5	Network Switch	24 Port , Gigabit Ethenet	1	12000	12000

Figure C.27: More Link Equipment Details for **Batch** *Interface*

C.2 Finance Officer (FO) Documentation

OJT Approval Interface as shown in *Figure C.28,* Furthermore only recommended button is active. Approval & cancel buttons are disabled to FO Interface.

◉-Apply | +-Add | ◉-View | 🔍-Search | ☑-Approval

OJT (ON THE JOB TRAINEE) APPROVE

Records : 3

No	OJT ID	OJT Name	Cours Reg ID	VTA Supervisor	Org ID	Joint Date	Remarks	Recommend	Approve	Cancel	More
1	CHW_1016_HW	CHW OJT Trainning	1016_CHW	1007	hospital	2016-12-10		✅	✅	✖	☰
2	CHW_1017_HW	CHW OJT Trainning	1017_CHW	1007	Divineguma	2016-12-10		✅	✅	✖	☰
3	CHW_1019_HW	CHW OJT Trainning	1019_CHW	1007	Predeshiya	2016-12-10		✅	✅	✖	☰

Figure C.28: OJT Approval Interface

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C.3 Instructor/Instructor (OIC) Documentation

Instructor Home

The Instructor level user interface of the WBOMS–VTA system as shown in *Figure C.29*

Figure C.29: Instructor Home Interface

C.4 Student Documentation

Student Home

The Student interface of the WBOMS–VTA system as shown in *Figure C.30*

Figure C.30: Student Home Interface

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Student's Course menu

The Student's Course menu interface of the WBOMS as shown in *Figure C.31,* When click "Course Details" link, it will redirect to course menu page.

Registered Courses : 2

Computer hardware Technician [CHW - 2016-07-03] : **Currently Following**

Information & Communication Technician [ICT - 2015-01-10] : (Pass) Successfully Completed

Figure C.31: Student's Course menu Interface

Student's Course Details

The Student's Course details interface of the WBOMS as shown in *Figure C.32,* When click "Course" link in course menu page, it will redirect to course details page.

Course Details

Batch ID & Date	:	CHW_2016_July1 : 2016-07-03
Course ID	:	CHW
Course Name	:	Computer hardware Technician
Fee	:	27300.00 - [Reg Fee: 300, Total Course Fee: 27000]
Duration	:	1 Year
Description	:	Principle of Computer Hardware. System Configuration. Hardware Devices. Assembling. Repairing. Trouble Shooting. Software / Hardware Installation. Maintenance. Servicing. Operating Systems.
Study Material	:	CHW [Part_1] [CHW]
		CHW [Part_2] [CHW] : Book [Hard Copy]

Figure C.32: Student's Course Details Interface

Student's Result Details

The Student's Result Details interface of the WBOMS as shown in *Figure C.33,* When click "Result" link, it will redirect to his/her result page.

Course Result

Completed Course : 1

Batch ID	Course ID	Course Name	Reg NVQ Level	Result	Batch Date	Status
ICT_2015_Jan1	ICT	Information & Communication Technician	Level 4	Level 4	2015-01-10	Pass

Figure C.33: Student's Result Details Interface

Furthermore when click "OJT" link, it will redirect to his/her OJT page and when click "Job" link, it will redirect to his/her Job page.

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APPENDIX D - MANAGEMENT REPORTS

97 reports are available in the WBOMS–VTA. Some of reports' screen shot given below. (Refer *Figure D.1)*

Figure D.1: Report Interface

1. User Management Report of WBOMS–VTA

It contains 10 types of reports are generated of the WBOMS as shown in *Figure D.2*. Batch-wise Students (*Figure D.3)* and Individual user's details (*Figure D.4)*
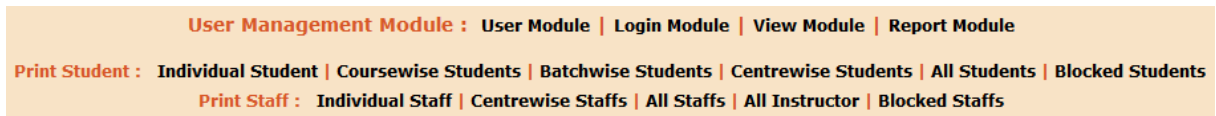
Figure D.2: Report for User Management module

Figure D.3: Report for Batch-wise Students Details
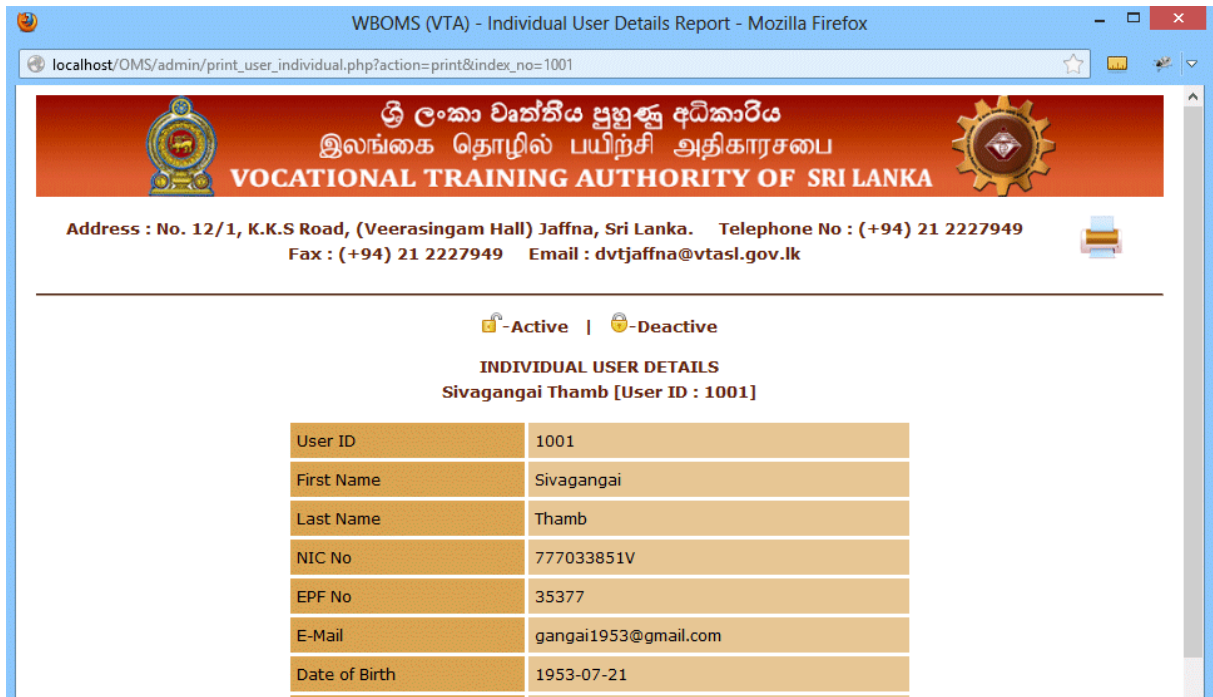
Figure D.4: Report for Individual User's Details

2. Student Management Report of WBOMS–VTA

It contains 29 types of reports are generated of the WBOMS as shown in *Figure D.5*.
Batch-wise Result (*Figure D.6*), Year-wise (Centre-wise) Course Registration (*Figure D.7*) and Centre-wise Exam (*Figure D.8*)

Figure D.5: Report for Student Management module
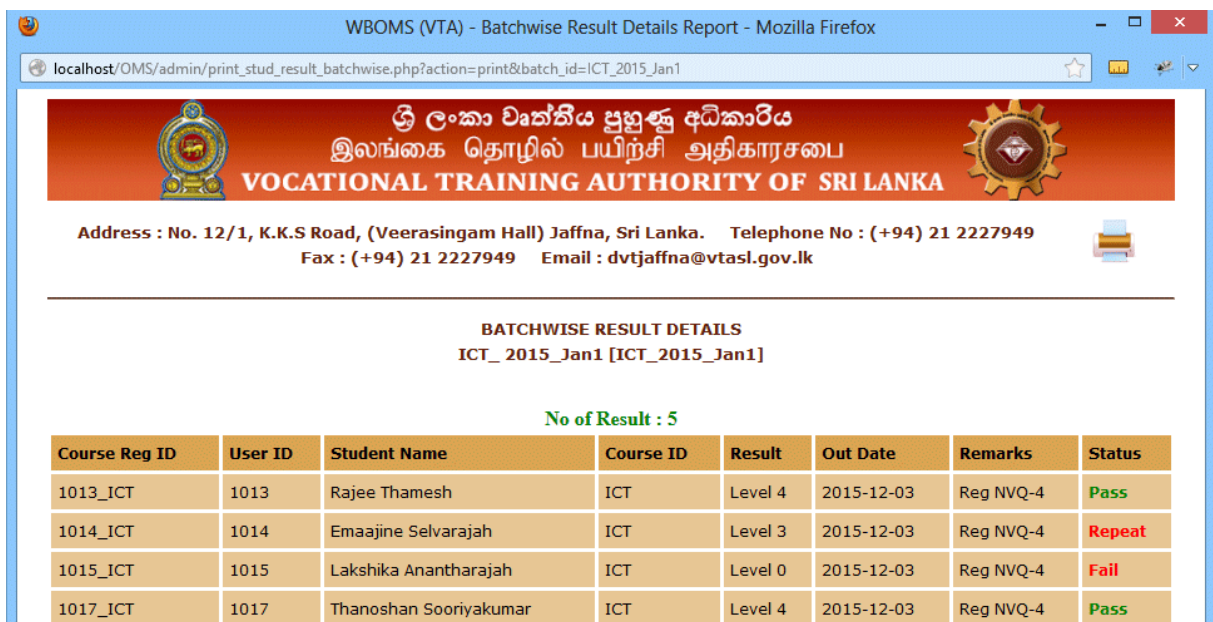
Figure D.6: Report for Batch-wise Result Details

Figure D.7: Report for Year-wise (Centre-wise) Course Registration

Figure D.8: Report for Centre-wise Exam Details

3. Staff Management Report of WBOMS–VTA

It contains 8 types of reports are generated of the WBOMS as shown in *Figure D.9*.
Approved Career (*Figure D.10)*, Individual Year-wise Leave (*Figure D.11)*, All Year-wise Leave (*Figure D.12)*

Figure D.9: Report for Staff Management module

Figure D.10: Report for Approved Career Details

Figure D.11: Report for Individual Year-wise Leave Details

Figure D.12: Report for All Year-wise Leave Details

4. Stock Management Report of WBOMS–VTA

It contains 15 types of reports are generated of the WBOMS as shown in *Figure D.13*.
Approved Repair Quotation (*Figure D.14*), Individual Purchase Order (*Figure D.15*), Year-wise Receive Note (GRN) (*Figure D.16*) and Year-wise Issue Order (GIO) (*Figure D.17*)

Figure D.13: Report for Stock Management module

Figure D.14: Report for Approved Repair Quotation Details

Figure D.15: Report for Individual Purchase Order Details

Figure D.16: Report for Year-wise Receive Note (GRN) Details

Figure D.17: Report for Year-wise Issue Order (GIO) Details

5. Payment Management Report of WBOMS–VTA

It contains 14 types of reports are generated of the WBOMS as shown in *Figure D.18*.
Month-wise Course payment (*Figure D.19)*, Due Course Payment (*Figure D.20),* Due Repair
Payment (*Figure D.21)* and Year-wise Stock Payment (*Figure D.22)*

Figure D.18: Report for Payment Management module

Figure D.19: Report for Month-wise Course payment Details

Figure D.20: Report for Year due Course Payment Details

Figure D.21: Report for Due Repair Payment Details

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Figure D.22: Report for Year-wise Stock Payment Details

6. Inform Management Report of WBOMS–VTA

It contains 6 types of reports are generated of the WBOMS as shown in *Figure D.23*.
Month-wise Events (*Figure D.24)*

Figure D.23: Report for Inform Management module

Figure D.24: Report for Month-wise Events Details

7. Creation Management Report of WBOMS–VTA

It contains 15 types of reports are generated of the WBOMS as shown in *Figure D.25*.
Centre-wise Batch (*Figure D.26),* All Centre's (*Figure D.27),* Batch-wise Equipments
(*Figure D.28),* Centre-wise Equipments (*Figure D.29)* and Course-wise Material (*Figure D.30)*

Figure D.25: Report for Creation Management module

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Figure D.26: Report for Centre-wise Batch Details

Figure D.27: Report for All Centres' Details

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Figure D.28: Report for Batch-wise Equipments Details

Figure D.29: Report for Centre-wise Equipments Details

Figure D.30: Report for Course-wise Material Details

APPENDIX E - TEST RESULTS

Test results for User Management Module

Test results for User Login

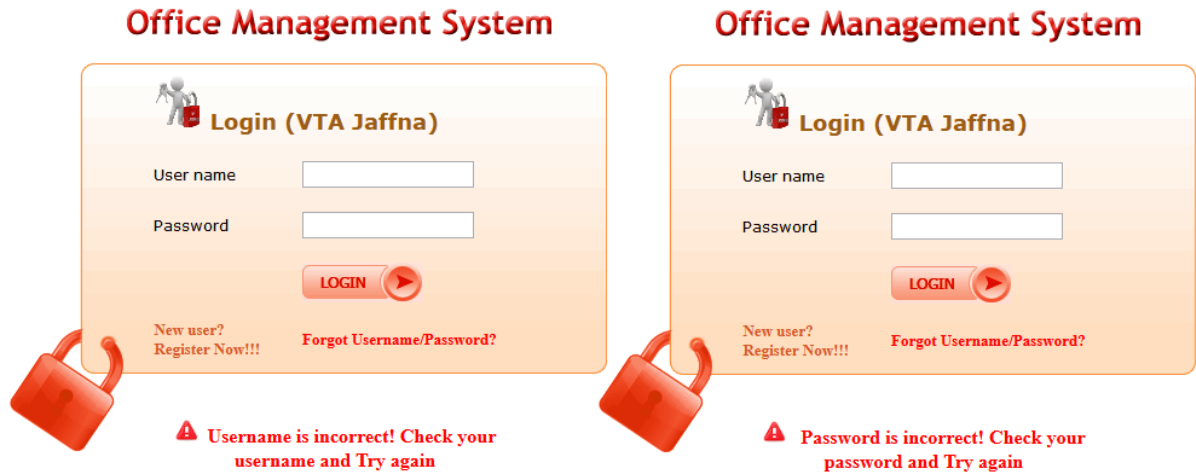E.1 Error message for wrong username or password entry

Figure E.1: Error message for wrong entry in User Login
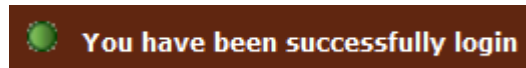
E.2 Confirmation message for successfully login

Figure E.2: Confirmation message for successfully User Login

Test results for Forgot Password

E.3 Error message for wrong email and Confirmation message for success sent to email
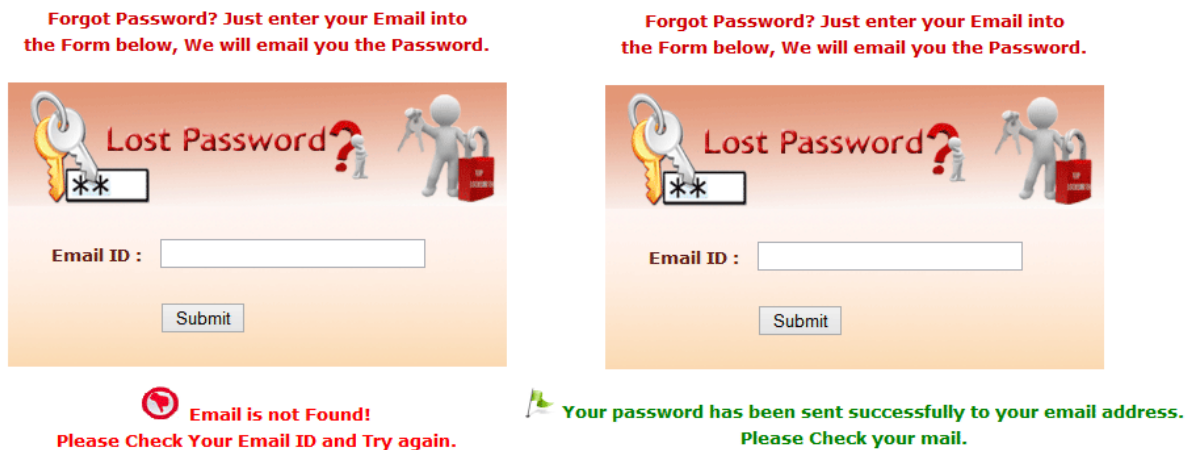

Figure E.3: Error message & Success message in forgot password

Test results for Change password

E.4 Error message for wrong old password entry & new password is not match for confirm new password from Change password link

Figure E.4: Error message for wrong entry in Change Password

Test results for Registration Module

E.5 Error message for empty value of name & unauthorized user access of restricted functions
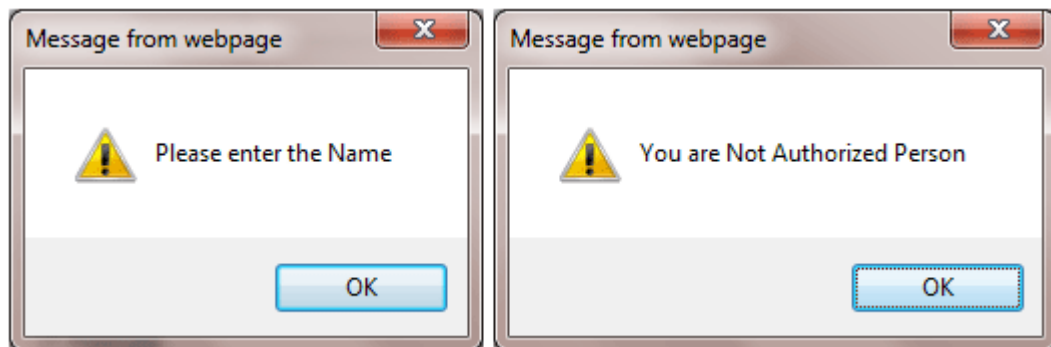

Figure E.5: Error message for empty value &unauthorized access

E.6 Error messages for invalid NIC Number
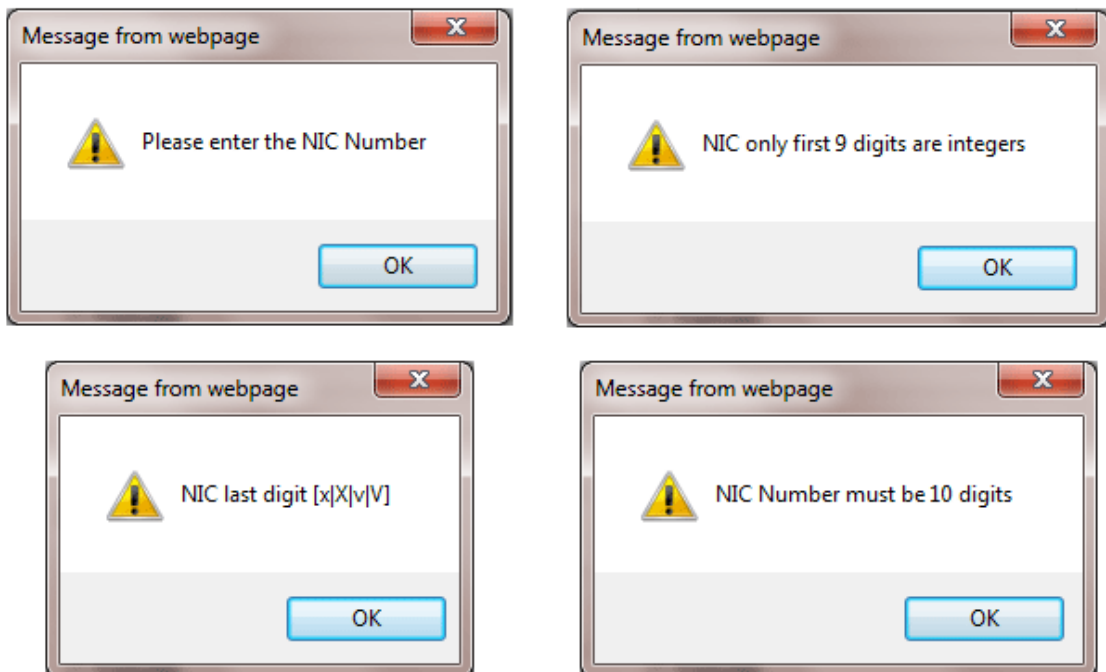
Figure E.6: Error messages for invalid NIC Number

E.7 Error messages for invalid Phone Number
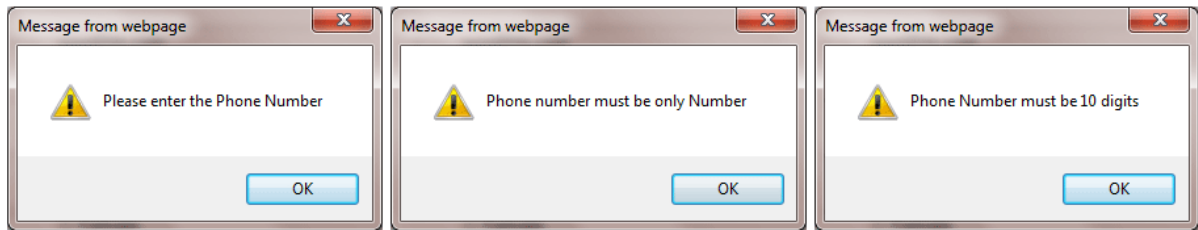
Figure E.7: Error messages for invalid Phone Number

E.8 Error message for invalid Email address
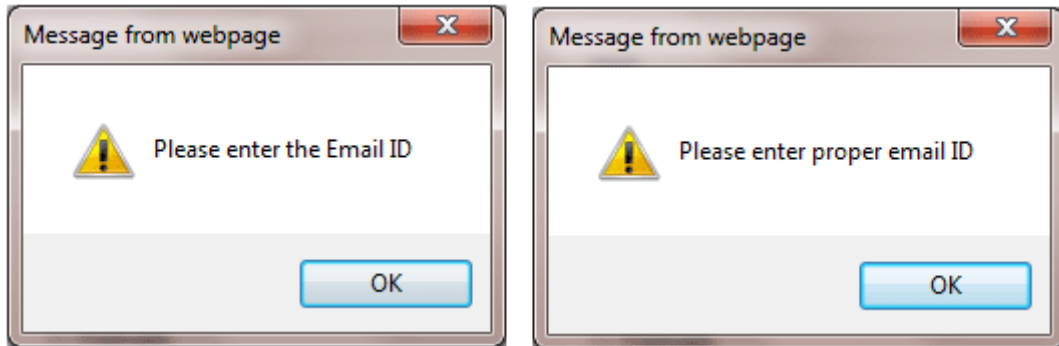
Figure E.8: Error messages for invalid email address

E.9 Confirmation message for successfully registered user
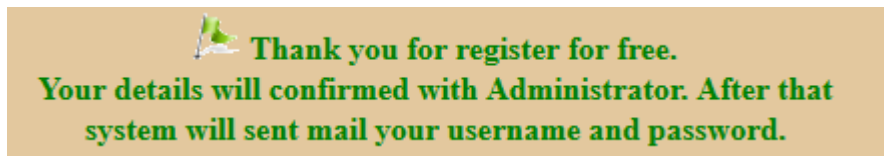
Figure E.9: Confirmation message for successfully registered

E.10 Confirmation message for successfully approved the new User
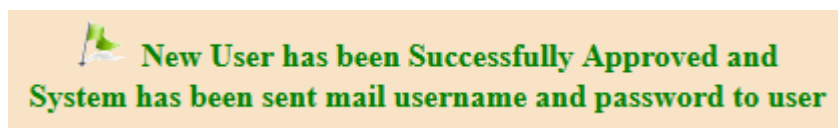
Figure E.10: Confirmation message for successfully approved User

E.11 Error message for cancelled new user

When Administrator cancels new registration, the dialog box will appear to confirm the cancellation. Data verification was done before deleting any usable record.

When click the ok button, message will appear.
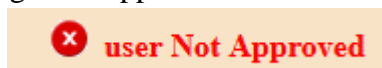
When click the cancel button, message will appear.
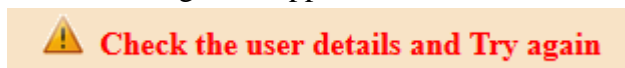
Figure E.11: Error messages for cancelled new registration

Test results for Student Management Module

Test results for cancellation or change the Exam Schedule

E.12 Confirmation message for cancelled the exam

Figure E.12: Confirmation message for cancelled the exam

E.13 Confirmation message for changed the exam schedule
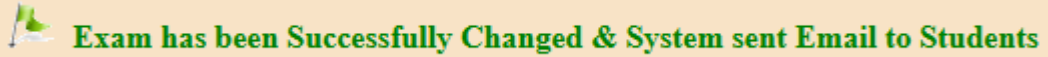
Figure E.13: Confirmation message for changed the exam schedule

Test results for search public result

Student can search result by his/her student id or NIC number. If he/she is not VTA student, error message will be displayed *(Figure E.14)*.
If VTA's student is currently following course or waiting for his/her result, error message will be displayed *(Figure E.15)*.

E.14 Error message for invalid student
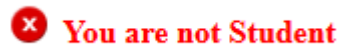
Figure E.14: Error messages for invalid student

E.15 Error message for not available result

Figure E.15: Error messages for not available result

Some Common Test results in WBOMS–VTA

E.16 Confirmation message for correctly inserted data
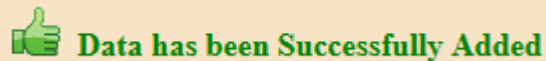
Figure E.16: Confirmation message for correctly inserted data

E.17 Confirmation message for correctly updated data

Figure E.17: Confirmation message for correctly updated data

E.18 Error message for not filling the required data
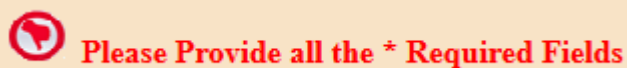
Figure E.18: Error message for not filling the required data

E.19 Confirmation message to delete the data
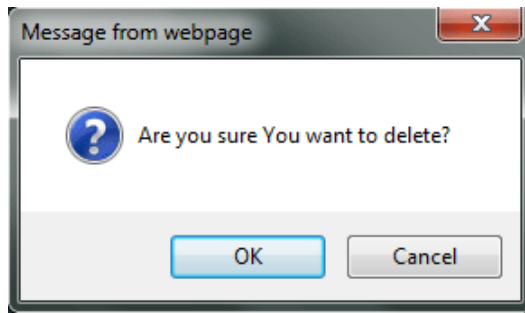
When click the ok button,

When click the cancel button,

Figure E.19: Confirming message to delete the data

E.20 Error messages for the existing data entry

Figure E.20: Error message for the existing data entry

E.21 Confirmation message for closed completed OJT
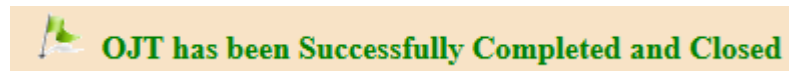
Figure E.21: Confirming message for the closed completed OJT

E.22 Confirmation message for closed old Comments

Figure E.22: Confirming message for the closed old comments

E.23 Confirmation message for blocked user

Figure E.23: Confirming message for the blocked user

E.24 Confirmation message for Reactivated user
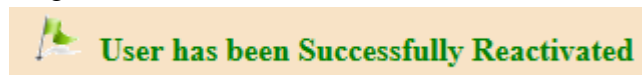
Figure E.24: Confirming message for the Reactivated user

E.25 Confirmation message for closed completed Batch
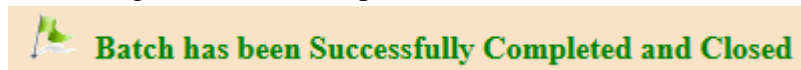
Figure E.25: Confirming message for the closed completed Batch

E.26 Confirmation message for recommended New Quotation
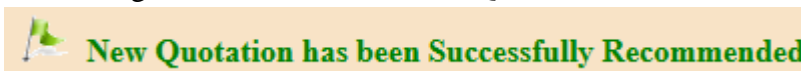
Figure E.26: Confirming message for the recommended

APPENDIX F - CODE LISTING

Login Module

Identify the user type and privileges and direct them to their home pages.

This php Code Segment for the User Login

```
if(isset($_GET['action']) && $_GET['action']=="login")
{
if(isset($_SESSION['username'])) // if user is already login, page gets automatically receives
user's name and password, it is not redirect to login page
        {$username=$_SESSION['username'];
        $query=mysql_query("select * from user_login where username='$username'");
        $row1=mysql_fetch_array($query);
        $password=$row1['password'];
        }
        else{ $username = $_POST['username'];
        $password = $_POST['password'];        }

$result1=mysql_query("SELECT * FROM user_login,user_details
where username='$username' and user_details.user_id=user_login.user_id and
user_details.status='0'") or die(mysql_error());
if(mysql_num_rows($result1)=="") // (if unblock status) check status block/ unblock in the db
{
$result=mysql_query("SELECT * FROM user_login where username='$username'");
if(mysql_num_rows($result)=="") //Check the session username available in db
{echo " <img src='images/button/cancel.gif' width='20' height='20'/>  ";
echo "<font size='3' color='red'><strong>Username is incorrect! Check your username and Try
again</strong></font>";}

else
{$row=mysql_fetch_array($result);
$dbpassword=$row['password']; //Check the session password match with db password
if($dbpassword==$password) //if session password match with db password
        {$user_id= $row['user_id'];
        $query=mysql_query("SELECT * FROM user_details where user_id='$user_id'") or
die(mysql_error());
        $row2=mysql_fetch_array($query);
        $dbtype=$row2['type'];
        $_SESSION['username'] = $username; //session username match with db name
        $_SESSION['usertype'] = $dbtype; //session user type match with db type
        echo " <img src='images/button/green_dot.gif' width='15' height='15'/>  ";
        echo "You have been Successfully VTA Login";
        header ("Location: admin/index.php"); //Redirected home page
        exit;
        }
else //if session password is not match with db password
        {echo " <img src='images/button/cancel.gif' width='20' height='20'/>  ";
        echo "<font size='3' color='red'><strong> Password is incorrect! Check your password
and Try again</strong></font>";
        }}}
else // status=0, block user
{echo " <img src='images/button/cancel.gif' width='20' height='20'/>  ";
echo "<font size='3' color='red'><strong> Your username is blocked by the Administrator. Please
contact the Admin.</strong></font>";    }}
```

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Logout Module: Destroying the session

```
session_start();  //Start session
$_SESSION['session_username'] = "";
session_destroy();
header ("Location: user_login.php?");//Redirected to login page
```

Including php files to another php files

```
ob_start();
session_start();
include("include/dbconnection.php"); //Connect to the database
include('include/validation.php'); //Call the Validation
include('include/header.php');
include('include/function.php'); //Call the function
```

User Management Module: add/delete user

Code Segment of adding new user details

```
if(isset($_GET['action']) && $_GET['action']=="send")
{
$fname=$_POST['first_name']; //send data to database
$lname=$_POST['last_name'];
$nicno=$_POST['nic_no'];
$epfno=$_POST['epf_no'];
$email=$_POST['email'];
$dob=$_POST['year']."-".$_POST['month']."-".$_POST['date'];
$title=$_POST['title'];
$gender=$_POST['gender'];
$telno=$_POST['telno'];
$address=$_POST['address'];
$joint_date=$_POST['joint_year']."-".$_POST['joint_month']."-".$_POST['joint_day'];
$qualification=$_POST['qualification'];
$type=$_POST['type'];
$ceid=$_POST['centre_id'];
$remarks=$_POST['remarks'];

//////////////////--upload profile picture--//////////////////////
$dir="../upload_picture/"; //folder directory
$newfile=$_FILES['picture']; //input picture
$filename=$newfile['name'];
$filename=time().".jpg"; //change picture name
$tmpfile=$newfile['tmp_name']; //upload picture as temporary
$filesize=$newfile['size']; //can allow size of the photo

if(trim($fname)!=null && trim($lname)!=null && trim($nicno)!=null && trim($email)!=null
&& trim($dob)!=null && trim($title)!=null && trim($gender)!=null && trim($telno)!=null &&
trim($address)!=null && trim($joint_date)!=null && trim($qualification)!=null &&
trim($type)!=null) // check the blank data
{//check matching data with db
$query=mysql_query("select * from user_details where nic_no='$nicno' or email='$email'");
$total=mysql_num_rows($query); // count the records from db

if($total==0) {
if(isset($tmpfile) && $tmpfile!="") { //if not empty file, then move to upload file
```

```php
if(move_uploaded_file($tmpfile,$dir.$filename)) //upload the file
{
$ins=mysql_query("insert into user_details (first_name,last_name,nic_no, email,dob,title, gender,
telno,address, joint_date,qualification,type,picture,epf_no,centre_id, remarks) values ('$fname',
'$lname', '$nicno','$email','$dob','$title','$gender', '$telno','$address','$joint_date', '$qualification',
'$type','$filename','$epfno','$ceid','$remarks')") or die(mysql_error()); //insert to db
        if($ins)
        {echo "<font size='3' color='green'><strong> <center><img
src='../images/button/right.png'>Thank you for register for free. <br/> Your details will confirmed
with Administrator. After that <br/>system will sent mail your username and password.
</center></strong></font>";        }
        else
        {echo "<center><font size='3' color='red'><strong><img src='../images/button/error.png'>
  Data Not Successfully Added</strong></font></center>";        }}
        else
        {echo "<font size='3' color='red'><strong><center> <img
src='../images/button/error.png'>   Data Not Successfully Uploaded</center>
</strong></font>";      }}
        else //if empty file, does not move to upload file
        { //insert to db
        $ins=mysql_query("insert into user_details(first_name,last_name,nic_no, email,
dob, title,gender,telno,address,joint_date,qualification,type,epf_no,centre_id, remarks)
values('$fname','$lname','$nicno','$email','$dob', '$title','$gender','$telno', '$address',
'$joint_date','$qualification','$type','$epfno','$ceid','$remarks')") or die(mysql_error());
        if($ins)
        { echo "<font size='3' color='green'><strong> <center><img
src='../images/button/right.png'>Thank you for register for free. <br/> Your details will
confirmed with Administrator. After that <br/>system will sent mail your username and
password.</center></strong></font>";        }
        else
        { echo "<center><font size='3' color='red'><strong><img
src='../images/button/error.png'>  Data Not Successfully Added</strong> </font>
</center>";            }}}
else
   { echo "<center><font size='3' color='red'><strong><img
src='../images/button/error.png'>   You are Already Registered as a VTA User
</strong></font> </center>";            }} //error message for exist data
else
{ echo "<center><font size='3' color='red'><strong><img
src='../images/button/error.png'>  Please Provide all the * Required Fields
</strong></font></center>";  }} //error message for blank data
```

Code Segment of deleting user details

```php
if(isset ($_GET['action']) && $_GET['action']=="delete"  ) // delete the user details
{
$id=$_GET['id'];
echo "<script language=javascript>
if(confirm('Are you sure You want to delete?'))
        {document.location.href='?action=ok&id=". $id ."';} //action ok
else{document.location.href='?action=exstart&id=1';}</script>"; } //action cancel
if(isset ($_GET['action']) && $_GET['action']=="ok") //delete the user
```

```
{ $id=$_GET['id'];
$query=mysql_query("SELECT * FROM user_details WHERE user_id='".$id."'")or die
(mysql_error());
$row=mysql_fetch_array($query);
$id=$row['user_id']; //get stud_id from user_details table

$result=mysql_query("DELETE FROM user_details WHERE user_id='$id'") or die
(mysql_error()); //delete record from user_details

$result=mysql_query("DELETE FROM user_login WHERE user_id='$id'") or die
(mysql_error()); //delete record from user_login

echo "<br /><br /><font size='3' color='green'><strong><img src='../images/button/add.png'>
  Data has been Successfully Deleted</strong></font>";     }
else if(isset ($_GET['action']) && $_GET['action']=="exstart") //cancel to delete
{echo "<br /><br /><font size='3' color='red'><strong><img
src='../images/button/error.png'> Data Not Successfully Deleted </strong>
</font>";}
```

Creation Management Module: edit & update course details

Code Segment of Retrieve course details from the database

```
if(isset ($_GET['action']) && $_GET['action']=="edit"  )
{$id=$_GET['id'];
$query=mysql_query("select * from course where course_id='$id'") or die(mysql_error());
$row=mysql_fetch_array($query);
$cid=$row['course_id']; // retrieve data from database
$cname=$row['course_name'];
$fee=$row['fee'];
$duration=$row['duration'];
$des=$row['descript'];
$remarks=$row['remarks'];
```

Code Segment of update course details to the database

```
if(isset ($_GET['action']) && $_GET['action']=="update")
{//$cid=$_POST['course_id'];//disable the course id in form -so not needed to update
$id=$_GET['id'];
$cname=$_POST['course_name'];  //send data to database
$fee=$_POST['fee'];
$duration=$_POST['duration'];
$des=$_POST['descript'];
$remarks=$_POST['remarks'];
if(trim($cname)!=null && trim($duration)!=null && trim($fee)!=null && trim($des)!=null)
// check the blank data of data fields
{$query=mysql_query("SELECT * FROM course where course_name='$cname' and course_id !=
'$id'") or die(mysql_error()); //check matching data with db
$total=mysql_num_rows($query);  // count the records from course table
if($total==0) //update the course details to database
{ $update=mysql_query("update course set
course_name='$cname', fee='$fee', duration='$duration', descript='$des', remarks='$remarks'
where course_id='$id'") or die(mysql_error());
```

```
if($update)
{echo "<font size='3' color='green'><strong><img src='../images/button/update.png'> 
Data has been Successfully Updated</strong></font>";   }
else{echo "<font size='3' color='red'><strong><img src='../images/button/error.png'> 
Data Not Successfully Updated</strong></font>";           }}
 else //error message for matching data
{echo "<font size='3' color='red'><strong><img src='../images/button/error.png'> 
Already Exist </strong></font>";           }}
else //error message for blank data
{echo "<font size='3' color='red'><strong><img src='../images/button/error.png'> 
Please Provide all the * Required Fields </strong></font>";           }}
```

Student Management Module: calculation of course registration, paid amount & result

Code Segment of calculation of total course registration fee

```
function getTotalcfee($x)
{$query=mysql_query("SELECT * FROM course_reg where course_reg_id='$x'");
$tamt=0;
while($row=mysql_fetch_array($query))
{$tamt=$row['unifee']+$row['ddfee']+$row['cbtfee']+$row['insfee']+$row['coursefee'];     }
return $tamt; //total course fee
}
```

Code Segment of calculation of paid course payment

```
function getDueamt($x)
{$query=mysql_query("SELECT * FROM course_pay where course_reg_id='$x'");
$pay=0;
while($row=mysql_fetch_array($query))
        {$pay=$pay+ $row['paid_amt']; }
return $pay; //total paid amt
}
```

Code Segment of calculation of result status

```
function getGrade($x)
{$query=mysql_query("SELECT * FROM result,course_reg
where result.course_reg_id=course_reg.course_reg_id and result.course_reg_id='$x'");
$row=mysql_fetch_array($query);
$cnvq=$row['cnvq_level'];
$nvq=$row['nvq_level'];

if($cnvq == $nvq){ //if $cnvq == $nvq
$grade="<font color='green'><strong>Pass</strong></font>";     }
else if($nvq < $cnvq && $nvq > 0 ){ //if $cnvq> $nvq
$grade="<font color='red'><strong> Repeat</strong></font>";    }
else{ //if $nvq==0
$grade="<font color='red'><strong>Fail</strong></font>";        }
return $grade;
}
```

Approve Staff Leave

Code Segment of Approve staff Leave

```
if(isset ($_GET['action']) && $_GET['action']=="approve"  )
{$id=$_GET['id'];
$query=mysql_query("select * from staff_leave where leave_id='$id' and approve=1") or
die(mysql_error());
$row=mysql_fetch_array($query);

$total=mysql_num_rows($query); // count the records from db
if($total!=0)
{$update=mysql_query("update staff_leave set approve='0' where leave_id='$id'") or
die(mysql_error()); // update status 0 as approved to DB
echo "  <font size='3' color='green'><strong><center><img
src='../images/button/right.png'>   New Leave has been Successfully Approved  </center>
</strong></font>";          }

else //already Approved
{ echo "  <font size='3' color='red'><strong><center><img
src='../images/button/error.png'>   Leave has been Already approved
</center></strong></font>";        }}
```

Forgot password

Code Segment of Forgot password

```
if(isset($_GET['action']) && $_GET['action']=="forget")
{
$email=$_POST['email'];
$result=mysql_query("SELECT * FROM user_details,user_login
WHERE user_details.email='$email' and user_login.user_id=user_details.user_id"); // check
email address available in db
$total=mysql_num_rows($result); //count the records from record set
 if($total==0)
{echo "<font color='red'><strong><img src='images/button/error.png'> 
Email is not Found!<br/> Please Check Your Email ID and Try again.</strong></font>"; }
else{ //send mail password & username
        $row=mysql_fetch_array($result);
        $mail=$row['email'];
        $password=$row['password']; //get password from db
        $username=$row['username']; //get username from db
        $sname=$row['first_name']." ".$row['last_name']; //get name from db

        $to=$row['email']; //receiver email address
        $subject='Got Password'; //email subject
        $msg='Dear '.$sname. '<br/> Your Username is '.$username. '<br/> Your Password is
'.$password; //email message

        @mail($to,$subject,$msg); //email function

echo "<center> <b><font color=green><img src='images/button/right.png'> Your
password has been sent successfully to your email address.<br>Please Check your
mail.</font></b></center>";        }}
```

JavaScript Validation of Registration form

NIC Number validation

```
functioncheckNic(i)
{
if (i.value == "") // check blank data in NIC field
        {alert("Please enter the NIC Number");}//display message in alert box
else if (isNaN(i.value.substring(0,9))) // check first 9 digit are integer
        {alert("NIC only first 9 digits are integers");}
else if (i.value.substring(9,10)!=("v" || "V" || "X" || "x"))// check last digit is V/v/X/x
        {alert("NIC last digit [x|X|v|V]");}
else if(i.value.length!=10)// check Nic must 10 digits
        {alert("NIC Number must be 10 digits");}}
```

Phone Number validation

```
functioncheckTelno(t)
{
if (t.value == "") // check blank data in phone field
{alert("Please enter the Phone Number");}//display message in alert box
elseif (isNaN(t.value.substring(0,10)))// check phone no must be only number
{alert("Phone number must be only Number");    }
else if(t.value.length!=10)
{alert("Phone Number must be 10 digits");}}// check phone no must be 10 digits
</script>
```

Email validation

```
functioncheckMail(e)
{if (e.value == "")
        {alert("Please enter the Email ID");
        }
else if (e.value.indexOf("@") == -1 || e.value.indexOf(".")== -1)// if wrong email
                {alert("Please enter proper email ID");    }}
```

Unauthorized user access some function of WBOMS

Code Segment of Alert message for unauthorized user access some function

```
if(isset ($_GET['action']) && $_GET['action']=="alert"  )
{$id=$_GET['id'];
echo "<script language=javascript>
alert('You are not Authorized person');
document.location.href='?action=start&id=1';  //alert prompt message
</script>"; }
```

Code Segment of unauthorized user access some page

```
if(isset($_SESSION['usertype']) && ($_SESSION['usertype']=='Admin') ||
($_SESSION['usertype']=='Finance Officer')) {   }
else {header ("Location: ../user_login.php?"); }  //redirect to user login page
```

Some of Function

Calculate Available Staff Leave

///////////--display total Casual leave (staff_leave table)--//////////////////////////
```
function getDuecasual($x)
{
$year=date('Y'); // $year - current year
$query=mysql_query("SELECT * FROM staff_leave where approve=0 and
year(start_date)='$year' and user_id='$x'");
$casual=0;
while($row=mysql_fetch_array($query))
        {if($row['leave_type']=='Casual')
        $casual=$casual + $row['noofdays'];}
return $casual; //total Casual leave
}
```
///////////--display total Annual leave (staff_leave table)--//////////////////////////
```
function getDueannual($x)
{
$year=date('Y'); // $year - current year
$query=mysql_query("SELECT * FROM staff_leave where approve=0 and
year(start_date)='$year' and user_id='$x'");
$annual=0;
while($row=mysql_fetch_array($query))
        {if($row['leave_type']=='Annual')
        $annual=$annual + $row['noofdays'];     }
return $annual; //total Annual leave
}
```

///////////--display total Medical leave (staff_leave table)--//////////////////////////////
```
function getDuemedical($x)
{
$year=date('Y'); // $year - current year
$query=mysql_query("SELECT * FROM staff_leave where approve=0 and
year(start_date)='$year' and user_id='$x'");
$medical=0;
while($row=mysql_fetch_array($query))
        {if($row['leave_type']=='Medical')
        $medical=$medical + $row['noofdays'];  }
return $medical; //total Medical leave
}
```

Calculate GRN total amount & GRN sub value on Stock management Module

///////////--display value Amount (grn_sub table)--///////////////////////////////////
```
function getValuegrnamt($x)
{
$query=mysql_query("SELECT * FROM grn_sub where grn_sub_id='$x'");
$row=mysql_fetch_array($query);
$value=$row['qty'] * $row['rate'];
return $value; //total GRN Sub value
}
```

```
///////////--display Total value Amount (grn_sub table)--//////////////////////////
function getTotValgrnamt($x)
{
$query=mysql_query("SELECT * FROM grn_sub where grn_id='$x'");
$tot=0;
while($row=mysql_fetch_array($query))
        {$value=$row['qty'] * $row['rate'];
        $tot=$tot+ $value; }
return $tot; //total GRN value
}
```

Closed Completed Batch

Code Segment of Closed Completed Batch

```
if(isset ($_GET['action']) && $_GET['action']=="close")
{
$id=$_GET['id'];
$update=mysql_query("update batch set status='0' where batch_id='$id'") or die(mysql_error());
//update status as "Completed batch" to db
echo "<br /><font size='3' color='green'><strong><img src='../images/button/right.png'> 
Batch has been Successfully Completed and Closed</strong></font>"; }
```

Exam Schedule: exam cancellation & send mail to Students

Code Segment of Cancellation of Exam Schedule

```
if(isset ($_GET['action']) && $_GET['action']=="cancel")
{
$id=$_GET['id'];
$update=mysql_query("update exam_schedule set status='0' where exam_id='$id'") or
die(mysql_error());//update status as "Cancelled Status" to database
//get cancelled exam batch student' email
$query=mysql_query("SELECT exam_schedule.date as edate,exam_schedule.batch_id,email
FROM user_details,exam_schedule,batch,course_reg
WHERE exam_schedule.exam_id='$id' and batch.batch_id=exam_schedule.batch_id and
course_reg.batch_id=batch.batch_id and user_details.user_id=course_reg.user_id") or
die(mysql_error());

echo "<font size='3' color='green'><strong><img src='../images/button/right.png'> 
Exam has been Successfully Canceled & System sent Email to Students </strong></font>";

$row=mysql_fetch_array($query); //fetch the data from db
$email=$row['email'];
$date=$row['edate'];
$bid=$row['batch_id'];

$to=$row['email']; //receiver email
$subject='Exam Cancellation'; //email subject
$msg='<br/><br/>Dear Student,
<br/> Your Exam [Batch ID : '.$bid.', Date : '.$date.'] was cancelled'; //email message

@mail($to,$subject,$msg); //email function
}
```

APPENDIX G - CLIENT CERTIFICATE

නිපුණතාසංවර්ධනහාවෘත්තීයපුහුණුඅමාත්‍යාංශය
Ministry of Skills Development and Vocational Training
திறன்கள் அபிவிருத்தி மற்றும் வாழ்க்கைத் தொழிற்பயிற்சி அமைச்சு
ශ්‍රී ලංකාවෘත්තීයපුහුණුඅධිකාරිය
VOCATIONAL TRAINING AUTHORITY OF SRI LANKA
இலங்கைதொழிற்பயிற்சிஅதிகாரசபை

දිස්ත්‍රික් කාර්යාලය	**District Office**	மாவட்ட காரியாலயம்
අංක12/1,කන්කසන්තුර පාරල යාපනය	No: 12/1, K.K.S. Road, Jaffna.	இல.12/1,காங்கேசன்துறைவீதி,யாழ்ப்பாணம்.
Tel:021- 222 7949 Fax: 021-2227949	Web site: www.vtasl.gov.lk	E-mail:vtajaffna@gmail.com

03 - 12 - 2016

Project Examination Board (Post Graduate),

University of Colombo School of Computing

UCSC Building Complex,

35, Reid Avenue, Colombo 7, Sri Lanka

Dear Sir,

Software Development Project Undertaken by Miss. T.Sivaranjei

This is to certify that Miss. Sivaranjei Thambipillai has successfully designed and developed a Web Based Office Management System (WBOMS) for Vocational Training Authority of Sri Lanka (VTA). The project was undertaken by her as a partial fulfillment of a requirement for the Master Degree of Information Technology (MIT) Program.

She has developed a Software program which meets the need of this organization and could be used to support the management and operation of Vocational Training Authority of Sri Lanka (VTA)

This Certification is issued on the request of Miss. Sivaranjei Thambipillai.

Yours Truly,

Mr. T.Sureskumar

Assistant Accountant of

Vocational Training Authority (VTA)

(Jaffna District)

Figure G.1: Client certificate

GLOSSARY

Attribute - Properties of the entities and relationship.

Candidate key - A candidate for a primary key

Cardinality - Number of records involve in a relationship.

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

Client side validation – The validating of data is done on the server browser.

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

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

Foreign key - A column in a table that is used as a link to matching columns in other tables

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

Hypertext markup language - The coded format language used for creating hypertext document on the World Wide Web and controlling how web pages appear

Internet - A network of computers which operates worldwide using a common set of communication protocols.

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

Local area network - A local area network is a computer network limited to the immediate area, usually the same building or floor of a building.

Normalization - The process of reducing a complex data structure into its simplest. Most stable structure.

Open source - Open source refers to any program whose source code is made available for use or modification as users or other developers see fit.

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

Primary key - A column in a table whose values uniquely identity the rows in the table and a primary key value can't be NULL

Random Access Memory - The volatile memory used to temporarily store information for processing.

Relationship - Meaningful interaction between objects.

Structured Query Language – SQL (Structured Query Language) is a standard interactive and programming language for getting information from and updating a database.

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

Verification – This is to find out whether the system is without errors.

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