Web-Based Training Center Monitoring and Human Resource Management System for Vocational Training Authority

A dissertation submitted for the Degree of Master of Information Technology

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Declaration

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

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

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

Certified by:

Supervisor Name: Dr. H. A. Caldera

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Signature: Date:

Abstract

This document is the project report for the project titled “Web-Based Training Center Monitoring and Human Resource Management System” for Vocational Training Authority Sri Lanka. This project provides an automated solution for the manual systems handled at training department of Vocational Training Authority. Due to the number of training centers functioning, it was really difficult for Vocational Training Authority to track and monitor performance of each and every training center manually. Human Resource management component was also difficult considering the number of employees currently working at Vocational Training Authority.

The project suggests an automated web-based system to handle monitoring component and HR component of Vocational Training Authority. This will provide monitoring facility from different levels of the organization and high-level report generation is also done. Human resource management component is also handled. This will cover promotions, qualifications, increments etc.

This project was developed as a web-based solution mainly using PHP. Laravel PHP framework is also used to provide MVC architecture to the solution. MySql database is used to handle database side.

At the end of the development the web-based training center monitoring and human resource management system was tested by the management of the training division of Vocational Training Authority at various levels. Test results were confirmed with client requirements. Finally, the system was handed over to training division to enhance and convert their current manual processes to an automated solution.

Acknowledgement

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List of Acronyms

VTA - Vocational Training Authority

MVC - Model View Controller

OOD - Object Oriented Design

RAD - Rapid Application Development

MOS - Monitoring System

EB - Efficiency Bar

EPF - Employees' Provident Fund

ETF - Employees' Trust Fund

TVEC - Tertiary and Vocational Education Commission

NVQ - National Vocational Qualification

VTC - Vocational Training Center

AD - Additional Director

DD - Deputy Director

NVTI - National Vocational Training Institute

Chapter 1: Introduction

1.1 About Vocational Training Authority

Vocational Training Authority (VTA) is a one of the largest vocational training organization in Sri Lanka, was established since 1995 under the provisions of the vocational training authority of Sri Lanka Act No.12. VTA was established with the intent of skilling youth for employment manpower Division the training arm of labour department that was running technical and vocational education & training programs in many parts of Sri Lanka, VTA was converted to the newly constitute Vocational Training Authority making vocational training more accessible to rural youth and depressed segments of the country.

The VTA is operating as the largest training center network of Vocational Training with 202 Vocational Training Centers, 22 District Vocational Training Centers and 7 National Vocational Training Institutes. Approximately, 35,000 youth get trained annually under 18 trade sectors by the VTA. After completing the training youth are directed for local and forcing employment and provided with financial assistance to start their own small business with entrepreneurship training and vocational self-employment in the respective fields.

1.2 Motivation

With the complexity of number of courses and their duration management of VTA cannot capture the completion and whether the VTA training delivery goals are achieved properly in each and every course conduct by the VTA training centers. There for they required to develop Online Monitoring system to monitor VTA centres and courses conduct by the training centers. This system must include facility to maintain annual training plan(Courses conducted as well as vocational training centres), Maintain VTA center list, Facility to plan monitoring plan for 6 month, Approve monitoring plan/reject with reason, Maintain monitoring form criteria and record monitoring form details for course monitoring and center monitoring result separately, After entering monitoring forms load final results with monitoring

criterias (print facility). Maintain and issue common time tables for all the courses with module and task.(have to mention module and task for specific date and time(Session no)) and generate various monitoring reports(report formats build according to the VTA requirement).

Other than the above case Currently they have more than 2500 employees participate to achieve VTA goals in many levels but still they do not have any software system to manage their human resources (All functions related to the employee's profile) So, they need to develop HRM system including Employee personal details with multiple NIC and EPF, promotion records with history, service category details according to the government circular, experience of employee with company name and the duration, maintain employee qualifications with qualification type, qualification category. Specially have to maintain EB qualification result with qualified dates(EB – special government exam and all permanent employee must face for these exam to get salary increments),Maintain annual increments and auto generate increment forms, manage employee personal file documents and employee profile which includes all the details related to the individual employee with search and print facilities for Vocational Training Authority with Monitoring system that will managed under Administration division of VTA.

In Addition to that VTA conduct more than 120 NVQ courses that are introduced by the Tertiary and Vocational Education Commission (TVEC). The Tertiary and Vocational Education Commission was established in 1991 as the apex body in the technical and vocational education and training sector under the provisions of the Tertiary and Vocational Education Act No 20 of 1990. Its primary responsibility is policy formulation, planning, quality assurance, coordination and development of tertiary and vocational education in the country.

The amendments introduced in December 1999 to the Tertiary and Vocational Education Act No. 20 of 1990, ensures that 10 out of 17 members of the TVEC including its Chairman, represent the employer associations and private sector entrepreneurs. This provides a forum at the highest level for the private sector to contribute towards developing policies and programs that would help achieve the vision of the Government of maintaining a demand-driven training system.

Each and every vocational training institutes must accredit their NVQ courses from TVEC for 3 years duration and have to renew accredit duration after completion of the last accredited duration by submitting accredit application & payments. Currently VTA doing these processes with the paper work and they face to huge problems when submit accreditation status report to the top-level management of the Institute. Therefore, they need to change these paperwork stuff to software system to improve their data quality and security.

1.3 Scope

Scope of the project is to develop following outlined functions through a web-based system.

- Course and Centre Monitoring Facility
- Course Accreditation
- Human Resource Management

These functions are described in detail under functional requirements of the system.

1.4 Objectives of the system

The main objective of this system is to provide an adequate mechanism for managing the daily activities of the training division of VTA which is done manually at the moment and to increase their productivity and efficiency through an automated solution. Here are the other objectives of the system.

- Implement an adequate monitoring and human resources management system.
- Increase quality of training delivery
- Streamlining training delivery of center network.
- Reduce unnecessary workload of the employees.
- Providing facility to optimize the utilization of available resources.

1.5 Structure of the thesis

Entire thesis divided into following main components.

Background

Essential background information and a review of existing similar systems are discussed.

Analysis and Design

This chapter contains the requirement gathering techniques, functional and nonfunctional requirements, Methodology for proposed system and use case diagrams of the proposed system.

Implementation

This chapter contains the hardware software requirements, current network setup, development tools which is used for system, designed user interfaces. In this chapter implementation of the project is discussed. Code features and technologies used are discussed in detail.

Evaluation and Testing

This chapter includes techniques of testing, types of software testing, test cases of the system and user evaluation.

Conclusion and Future Work

This chapter recaps the work done, discusses its findings and contributions, points out limitations of the current work, and also future enhancements.

Chapter 2: Background.

2.1 Introduction

Vocational training authority currently handles everything through a manual paper-based system. Letters, emails and fax messages are used as a mode of communication through the number of training centers. With the complexity of this system, there have been several bottlenecks appearing in the workflow. With the introduction of a new web-based system, those areas needed to be addressed.

2.1 Current Business Process.

Currently printed documents are used for entire course and center monitoring facility. Common timetable was not used and different centers used their own timetables. Time table was created manually calculating the holidays and course durations and that is a really complex process.

When considering course and center monitoring facility training officer has to manually enter everything in forms provided. Reviewing entire progress of several centers were not possible and collected forms were piled in the relevant district offices and those were not used after that. Below figure shows structure of the monitoring evaluation form.

1. ශික්ෂ ය කටයුතු පවත්වා ගැනීම	100% -80%	79% - 60%	59% -40%	39% - 0%
ලියාපදිංචි ආධුනික සංඛ්‍යාව	10	7	5	0
දැනට සිටින ආධුනික සංඛ්‍යාව	20	15	10	0
හඳුනාගෙන ඇති ආධුනික හැරයාම් කාර්යාලයට භාර දී තිබීම.	05	0	0	0
සමස්ථ ආධුනික දෛනික පැමිණීම ප්‍රශස්ථ මට්ටමක පවත්වාගෙන යාම	10	3	2	0
බඳවා ගත් ආධුනික තොරතුරු වා¾;d නිසි පරිදි පවත්වා ගැනීම	05	0	0	0
ආධුනිකයින් සඳහා පෞද්ගලික ලිපි ගොනු නඩත්තු කිරීම	10	0	0	0
ආධුනික තොරතුරු MIS පද්ධතියට ඇතුළත් කර තිබීම.	05	0	0	0
එකතුව	65			
2. පුහුණු පරිසරය්ෂ පවිත්‍ර රතාවය පවත්වා ගැනීම	100% -80%	79% - 60%	59% -40%	39% - 0%
පිරිසිදු කිරීමේ සැලැස්ම පැවතීම (වැඩ හල හා පන්ති කාමරය)	05	0	0	0
පිරිසිදු කිරීමට අවශ්‍ය උපකරණ ආවුද හා සනීපාරක්ෂක ද්‍රව්‍ය පැවතීම හා ගබඩාකිරීම	05	3	2	0
අඛණ්ඩව පිරිසිදු කර තහවුරු කර තිබීම	10	0	0	0
එකතුව	20			

Figure 1.1 – Monitoring Form

These monitoring forms are collected from different training officers throughout the country and head office departments were unable to capture and analyze those data collected. Collected data was idle and it was not used for future analysis.

2.2 Existing Similar Systems.

A number of software-based approaches are taken to reduce complexities encountered in paper based monitoring and human resource management systems.

Main components to be considered in the system are,

- Course and Centre Monitoring Facility
- Human Resource Management

In [1], authors have implemented a government-wide performance measurement system and scorecards mainly for the process of capturing performance of ministries and institutions using output and outcome indicators. They have proposed an electronic project monitoring system to track the implementation progress financially and physically. Authors have proposed a method to capture and highlight problem projects with their bottlenecks and

issues. So when developing the software, more attention was given in identifying problematic training programs and training delivery in centers.

In [1], the course accreditation application of Tertiary and Vocational Education Commission, payment details submit etc is already available. But reporting sector is not up to the standard in the existing system. Reviewing accreditation history was unavailable. Data search and data filtering is not user friendly. Downloading data in a printable format is not available. In the proposed system accreditation application process and accreditation payment process is adopted.

There are many off the shelf Human Resource Management Systems already available. Major example is UltiPro. UltiPro is a cloud based human resource management system which provides one system of record for HR, payroll, and talent management. According to UltiPro includes time and attendance, employee onboarding, performance management, compensation management, succession management, recruiting, and other features [2].

Trinet is another cloud based off the shelf software which provides payroll and health benefits and advises client, acting in some cases as an outsourced human resources department [3].

Major examples are UltiPro, Trinet etc. But considering the changing requirements of VTA, going forward with an off the shelf software is not possible.

VTA is already having a HR system developed under Management Information System Developed by Skills sector development project -Ministry of Vocational Training and Skills Development funded by Asian Development Bank. In that system, but users have informed that it is not practical to use in the situations like maintaining multiple EPF numbers due to requirement, collecting personal file information. Annual increment details could not be processed, employee profile maintenance, loan details, foreign and local training details etc. is not possible. Managing employee promotions, employee qualifications were possible. Have added those areas in an enhanced manner with modifications in the front end and the back end and according to customer requirements have included other facilities with reporting sections and the special documents with printable facilities.

Chapter 3: Analysis and Design

This chapter will cover the details explanation of methodology that is being used to make this project complete and working well. In this chapter structure of the system is explained. As discussed in the previous chapter, the Scope of the project is to develop following outlined functions through a web-based system.

3.1 Analysis

Requirement analysis is playing main role in software development life cycle. The analysis phase is the beginning of the life cycle of the project. The analysis phase consists in dividing the deliverable products in the charter of high-level project into more detailed business requirements. The analysis phase also is part of the project where we identify the general coordination which the project will take through the creation of the project strategy documents.

3.1.1 Fact gathering techniques

Fact gathering is the most precarious part of the analysis phase. There are some other activities also having in this phase. Those are to create a requirement management plan of the needs to define how the requirements will be documented, communicated, followed and modified throughout the life cycle of the project.

In this project particulars were collected by using following techniques.

1. Observation of the working environment

2. Interviews

3. Questionnaires

4. Sampling of existing documents, forms and databases Sampling of existing documents, forms and databases gives us a good idea about the current workflow and nature of the system.

3.2 Functional requirements

Functional requirements these are statements of services the system should provide, how the system should react to specific inputs, and how the system should behave in particular

situations. In some cases, the functional requirements may also explicitly state what the system should not do.

3.2.1 Monitoring and Accreditation Module

Following components are discussed under monitoring and accreditation module.

Model Time Table

- Each course is precociously described through the modules and perhaps tasks each of which has particular time in hours. Thus, by considering the time in five-day 40 working hours, it can be converted to weekly time table. It is called the model timetable. (create, edit, update, search, delete)

- Whenever a particular course in a center is started as in the training plan, it can be converted to the real time table of that particular course in the center. At any time, it is possible to obtain the status (which course and which module is to be going on) (view, search)

Course & Centre Monitoring Plan

- TO has to be in the field for maximum of 10 working days in the month. Accordingly, a center is to be visited once a month. Prior to the visit, a plan has to be approved by Assistant Director (AD) or Deputy Director (DD) and fed to the MOS. Plan can be created and be printed from the MOS for referencing purpose. (create, edit, update, search, delete and related actions)

Monitor the course/center

- Training Officer (TO)/AD/DD at the centre can browse the application through tab. Authentication of the MOS user is needed to be done.
- Upon the authorized access, the proposed centre/course for monitoring according to the plan has to be displayed((commissioning has to allowed) with the proposed criteria.
- All the possible options have to be tickable; simple questions only have to be asked. Response has to be saved.

- Edit/update/search/view and printing facility (PDF) are possible.

Question Bank

- Multiple choice type questions bank is to be maintained against each module and task. (add/edit/search/view change the answers/delete also needed to be done)
- During the monitoring, random questions paper has to be distributed and put a rank based upon the student's knowledge.
- Generate MCQ question papers with randomly selected questions and answers with printing facility

Ranking

- instructor ranking – according to the real time table and the status of the course at the TO monitoring is compared with AD/DD and head office officers monitoring marks and give percentage rank to the all districts.

  Report is needed to be prepared related to the ranking (with percentage)

  TO ranking – according to the monthly plan and actual visits; the ranks are given to TO/AD/DD

- District ranking - based on both instructor and TO ranking, overall rank is given to the district/NVTI

Course Accreditation

- Accreditation – Each and every NVQ course must accredit by TVEC for 3 years duration and have renew accreditation after completion of the accredit duration.
- Facilitate system to maintain accreditation details of courses with the accredit duration and accredit status (Yes/No/Recommended/Expired/Upgrade)

Course Accreditation Application and Payment

- Accreditation Application must submit to the system before accredit and after application submission VTA have to do payments to the TVEC

- Maintain Application and payment details related to the course accreditation

Monitoring Reports

- ranking report
- monitoring plan report
- monitoring status report
- monitoring adjustment report
- Time table reports
- District wise progress report
- Monitoring criteria wise progress report
- Monitoring sub criteria wise progress report
- Course wise Monitoring report etc.
- Accreditation Reports (district wise/Trade wise)

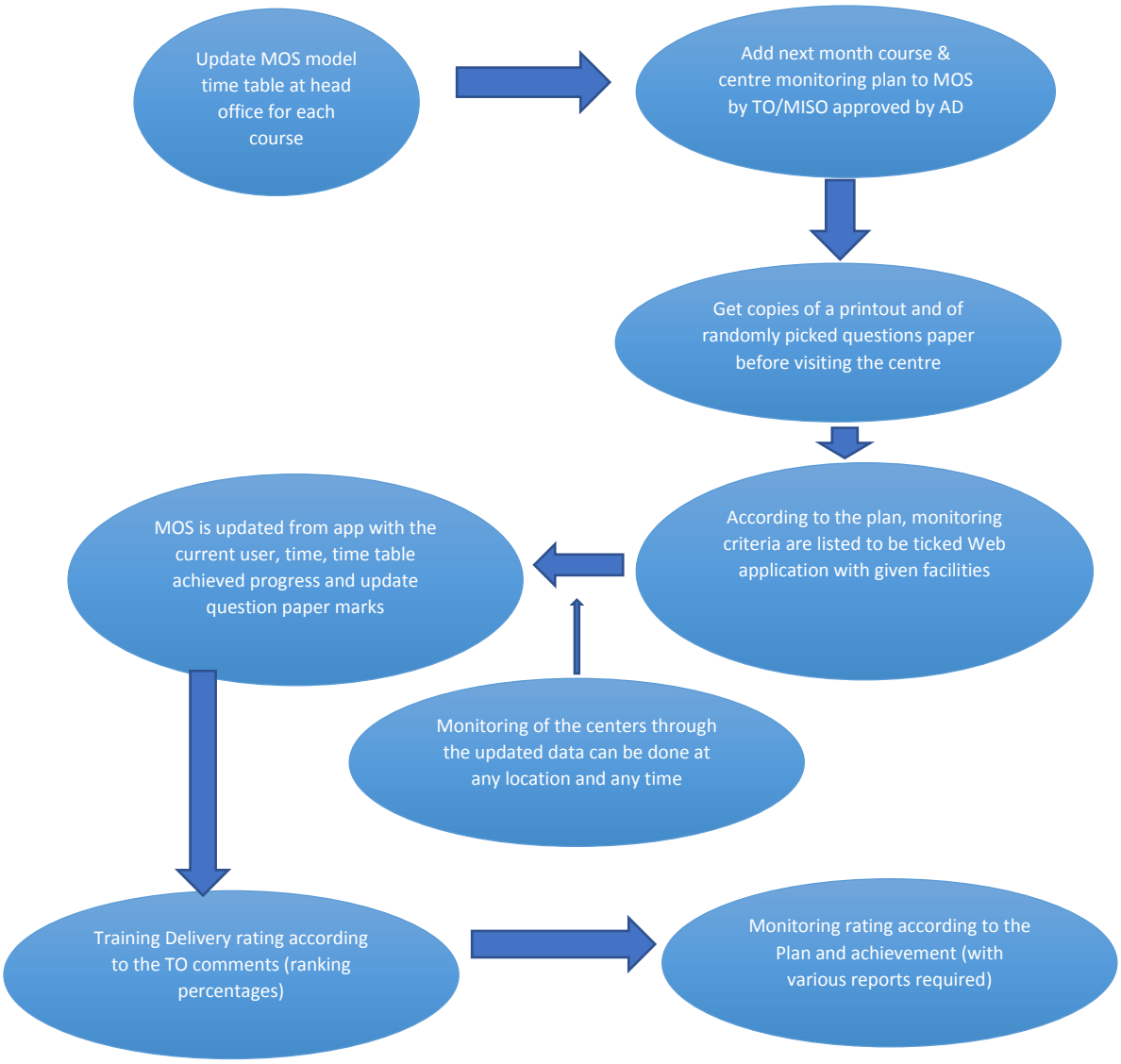


Figure 3.1 – MOS Model

Figure 3.1 displays the flowchart for the monitoring module.

First, common time table is created from head office department considering holidays, modules and task sequence. Course and center monitoring plan are created by training officers / MIS officer and Additional Director needs to approve. Random question papers can be taken from the monitoring system when a center/course is monitored. TO/ MIS officer assess the course/center and update the system according to the criteria. Ranking reports can be taken from the MOS according to the input.

3.2.2 Human Resource Management Module

Service Category

- Maintain Service category details with salary scale, salary code, salary step and grades available for category (This will renew after every 6 years)
- Maintain service category designations with create/edit/delete and view options.
- Maintain Employee Cadre details available in VTA with create/edit/delete and view options.
- Maintain Working hours details available in VTA with create/edit/delete and view options.

Employee

- Maintain all employee personal details required by the Organization with multiple NIC ,EPF & Photograph for each and every employee (create/edit/delete and view options with high authentications).

Promotion

- Maintain all employee's promotion details with history (create/edit/delete and view options with high authentications).
- Develop Other promotion related functions like transfer types, employee types, etc.…

Qualification

- Maintain all employee's Qualification details with history (create/edit/delete and view options with high authentications).
- Maintain university details, qualification types, qualification categories, qualification details, and history details about the employee qualification with qualification hierarchy (create/edit/delete and view options with high authentications).

EB Qualification (Special exams for government sector salary grades)

- Maintain all employee's EB Qualification details with history (create/edit/delete and view options with high authentications).
- Maintain Qualifications Grades (create/edit/delete and view options with high authentications).

Experience

- Maintain all employee's Experience details with history (create/edit/delete and view options with high authentications).
- Maintain company details, designation details (create/edit/delete and view options with high authentications).

Annual Increments

- Maintain all employee's Increment details based on the promotions and service categories and generate specific forms related to the process.

Loan Details

- Maintain all employee's Loan details with high authentications

Local and foreign training

- Maintain all employee's training details with high authentications

Employee Profile

- Maintain all employee's profile with all the details related to the individual employee in VTA.

Employee Personal file

- Maintain all employee's personal file documents available with CRUD facility in VTA.

3.3 Non-functional requirements

Non-functional requirements these are constraints on the services or functions offered by the system. They include timing constraints, constraints on the development process, and

constraints imposed by standards. Non-functional requirements often apply to the system as a whole, rather than individual system features or services [4].

3.3.1 Reliability

Reliability is the ability of a system to perform its required functions under stated conditions for a specific period of time. There are two things need to be considered. Availability - is the system available for service when requested by end-users. Failure rate - how often does the system fail to deliver the service as expected by end users.

3.3.2 Performance

Performance requirements concern the speed of operation of a system. Types of performance requirements: Response requirements - How quickly the system reacts to a user input Availability requirement -is the system available for service when requested by end-users

3.3.3 Security

Security requirements are included in a system to ensure: Unauthorized access to the system and its data is not allowed Ensure the integrity of the system from accidental or malicious damage

3.3.4 Usability

Usability is the easiness, with which a user can learn to operate, prepare inputs for, and interpret Outputs of system or component

3.4 System design

Software design is a process to transform user requirements into some suitable form, which helps the programmer in software coding and implementation. Software design is the first step in SDLC (Software Design Life Cycle), which moves the concentration from problem domain to solution domain. It tries to specify how to fulfill the requirements mentioned in SRS.

3.4.1 Methodology for the proposed system.

Spiral model of software development was used to create this project because of the complexity of the user requirements [5]. Overall spiral model is shown in figure 3.2.

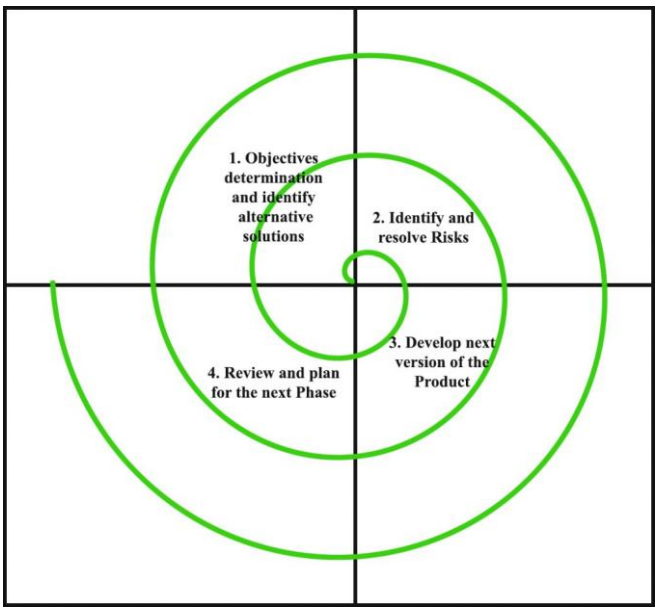


Figure 3.2 Spiral Model

Each phase of Spiral Model is divided into four quadrants as shown in the above figure. The functions of these four quadrants are discussed below-

Objectives determination and identify alternative solutions: Requirements are gathered from the customers and the objectives are identified, elaborated and analyzed at the start of every phase.

Identify and resolve Risks: During the second quadrant all the possible solutions are evaluated to select the best possible solution. Then the risks associated with that solution is identified and the risks are resolved using the best possible strategy. At the end of this quadrant, Prototype is built for the best possible solution.

Develop next version of the Product: During the third quadrant, the identified features are developed and verified through testing. At the end of the third quadrant, the next version of the software is available.

Review and plan for the next Phase: In the fourth quadrant, the Customers evaluate the so far developed version of the software. In the end, planning for the next phase is started.

The requirements were complex and changed time to time. Comparing a rigid model like waterfall model of software engineering was not suitable for the design of this system. Waterfall model is suitable for a system where the requirements are clear and the scope is small. Spiral model was used as the ideal model to because the project was developed in several iterations and constant feedback from the customer was needed in order to identify the ideal requirements. Prototypes were designed and displayed in customer presentations and needed changes were done in several iterations.

3.5 Use Case Diagram for the proposed system.

After the requirement analysis phase, a use case diagram has drawn to identify the actors and functionality of the system. These diagrams are useful in modeling the context of the system. Figure 3.2 shows the use case diagram for the system.

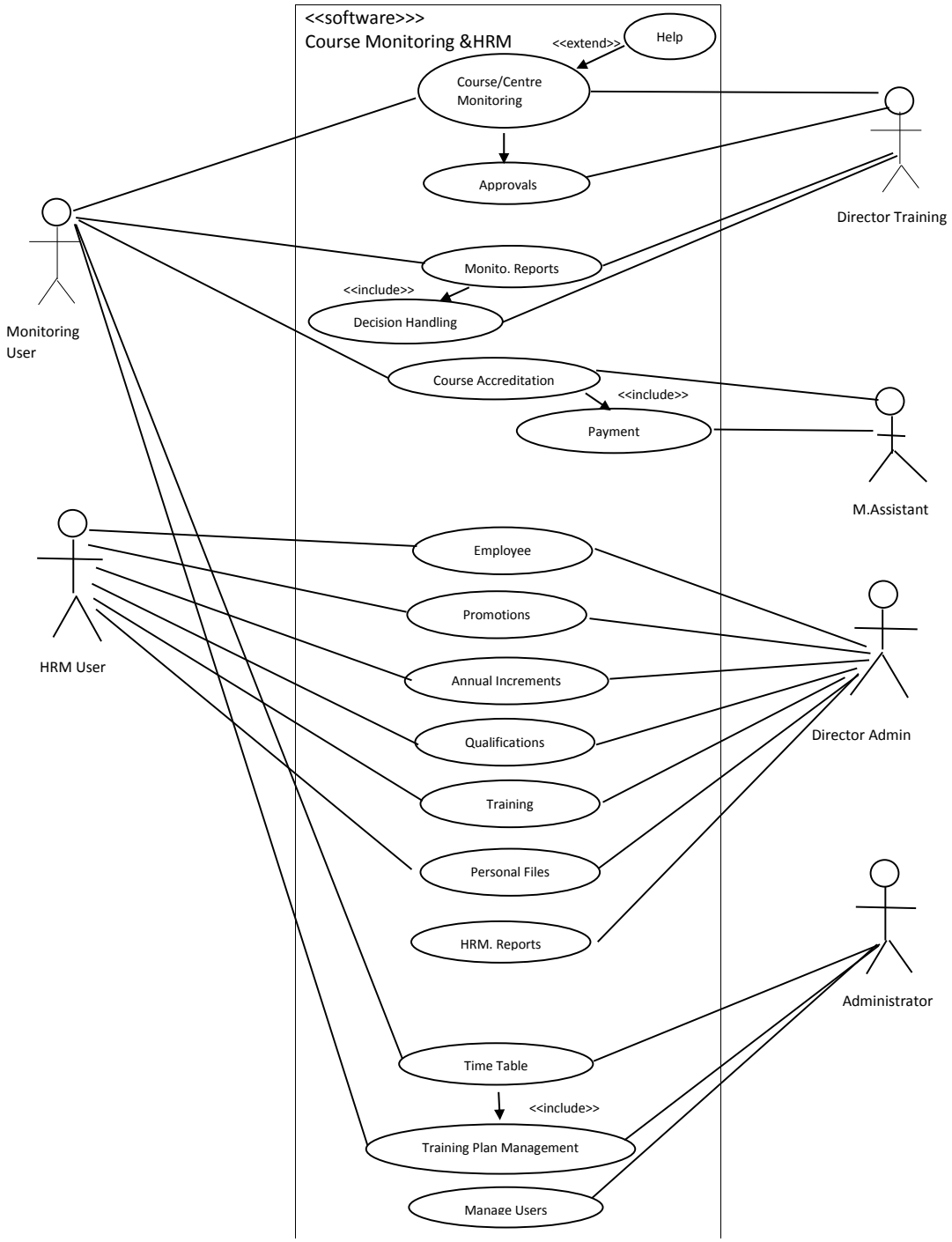


Figure 3.3 Use Case Diagram

3.6 Sequence Diagrams for the Proposed System.

Sequence diagram depicts the interactions between the objects in a sequential order. This will describe how and in what order the objects in the system function.

Figure 3.4 displays the sequence diagram for user login function.

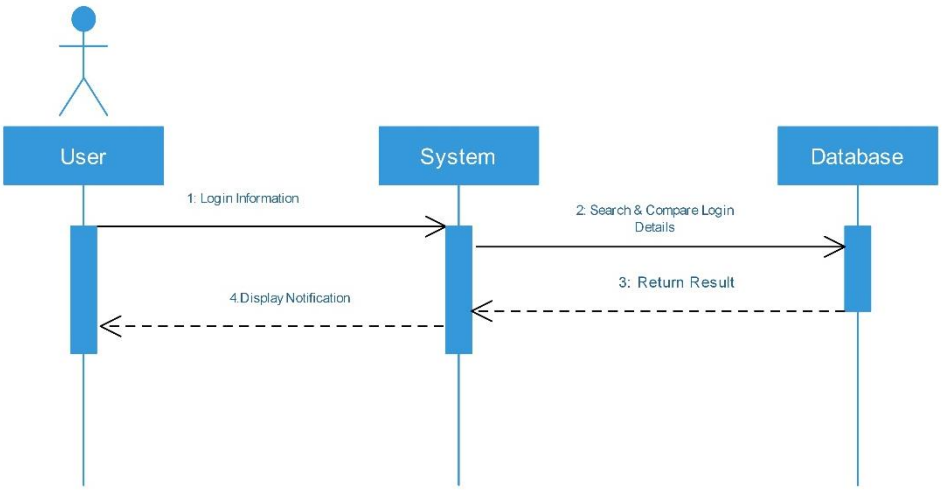


Figure 3.4 – Sequence diagram for login function

Figure 3.5 shows the sequence diagram for the time table creation function.

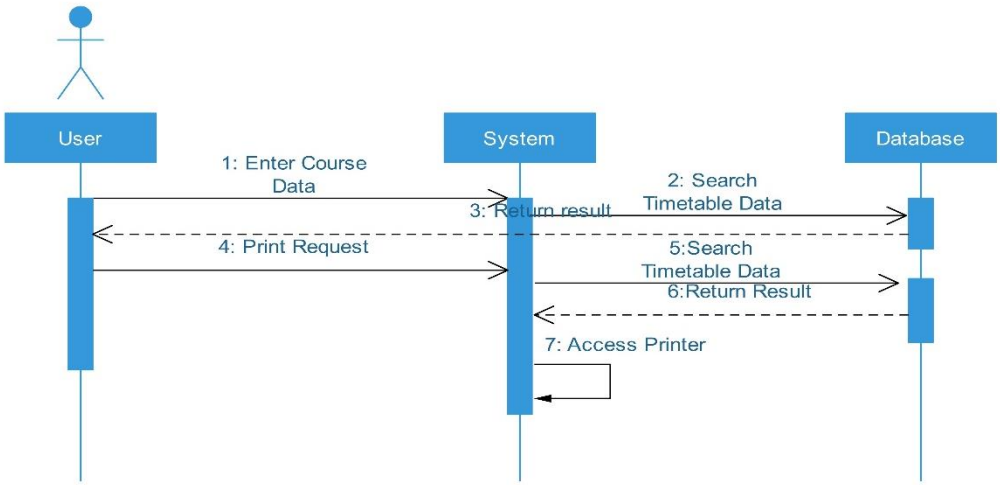


Figure 3.5 – Sequence diagram for time table function

Figure 3.6 shows the use case diagram monitoring plan function.

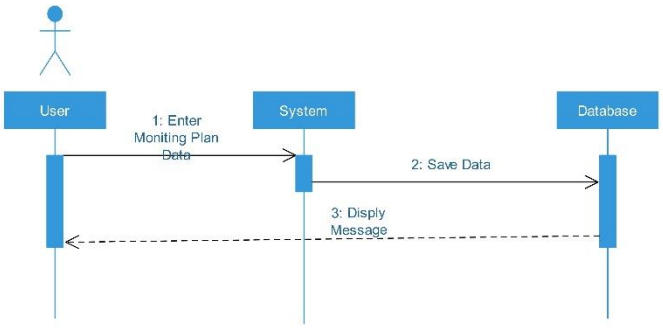
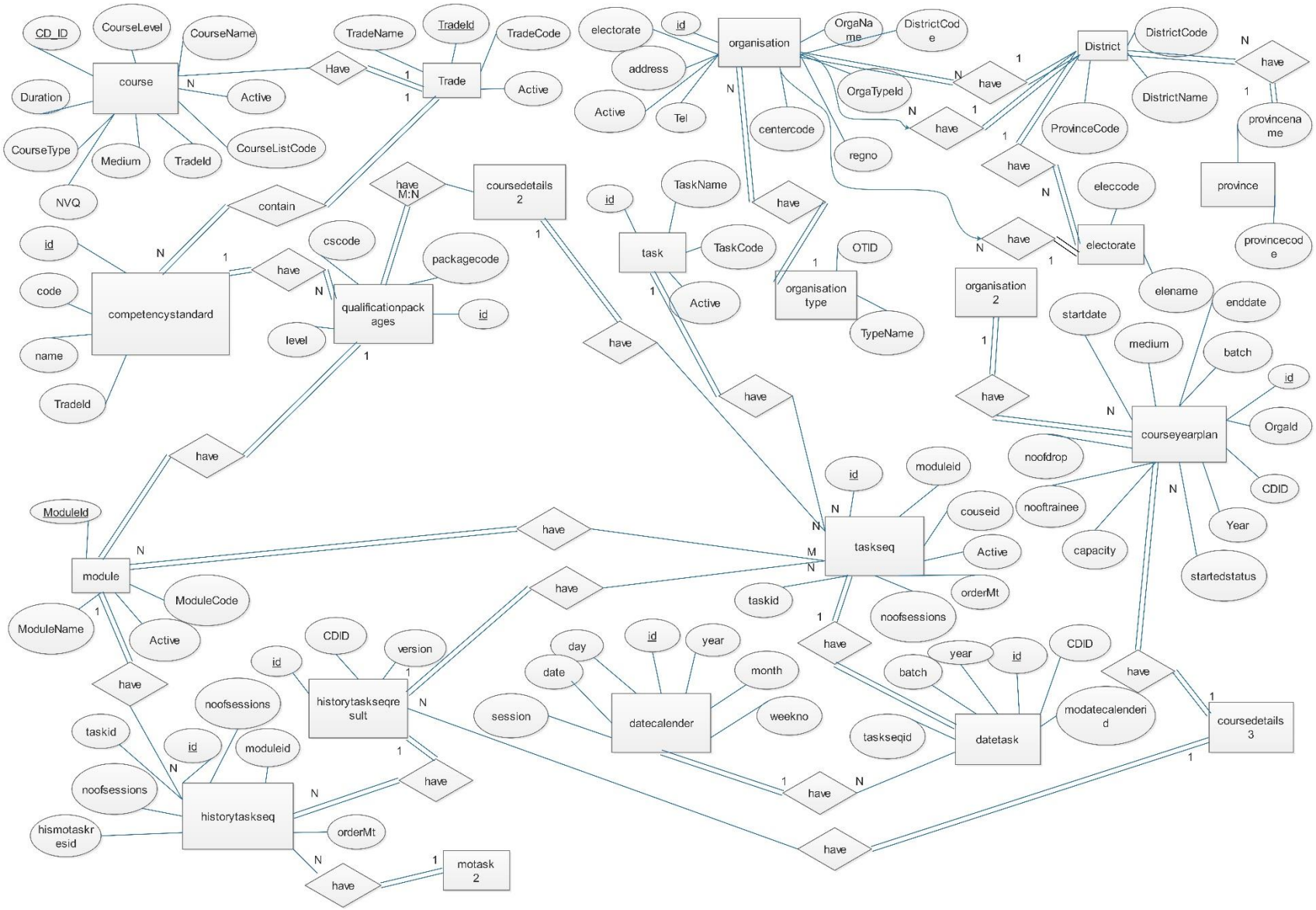


Figure 3.6 – Sequence diagram for monitoring function

3.7 ER Diagrams for the proposed system.

Entity relationship diagram is a structural diagram used in database design which visualize major entities in the system scope and the inter relationships among those entities. Figures 3.7-3.9 displays relevant ER diagrams for the proposed system.


CD_ID
CourseLevel
CourseName
course
Duration
Active
CourseType
Medium
TradeId
CourseListCode
NVQ
Have
TradeName
TradeId
TradeCode
Trade
Active
contain
have M:N
coursedetails 2
id
code
name
TradeId
competencystandard
have
cscode
packagecode
level
qualificationpack ages
id
have
have
have

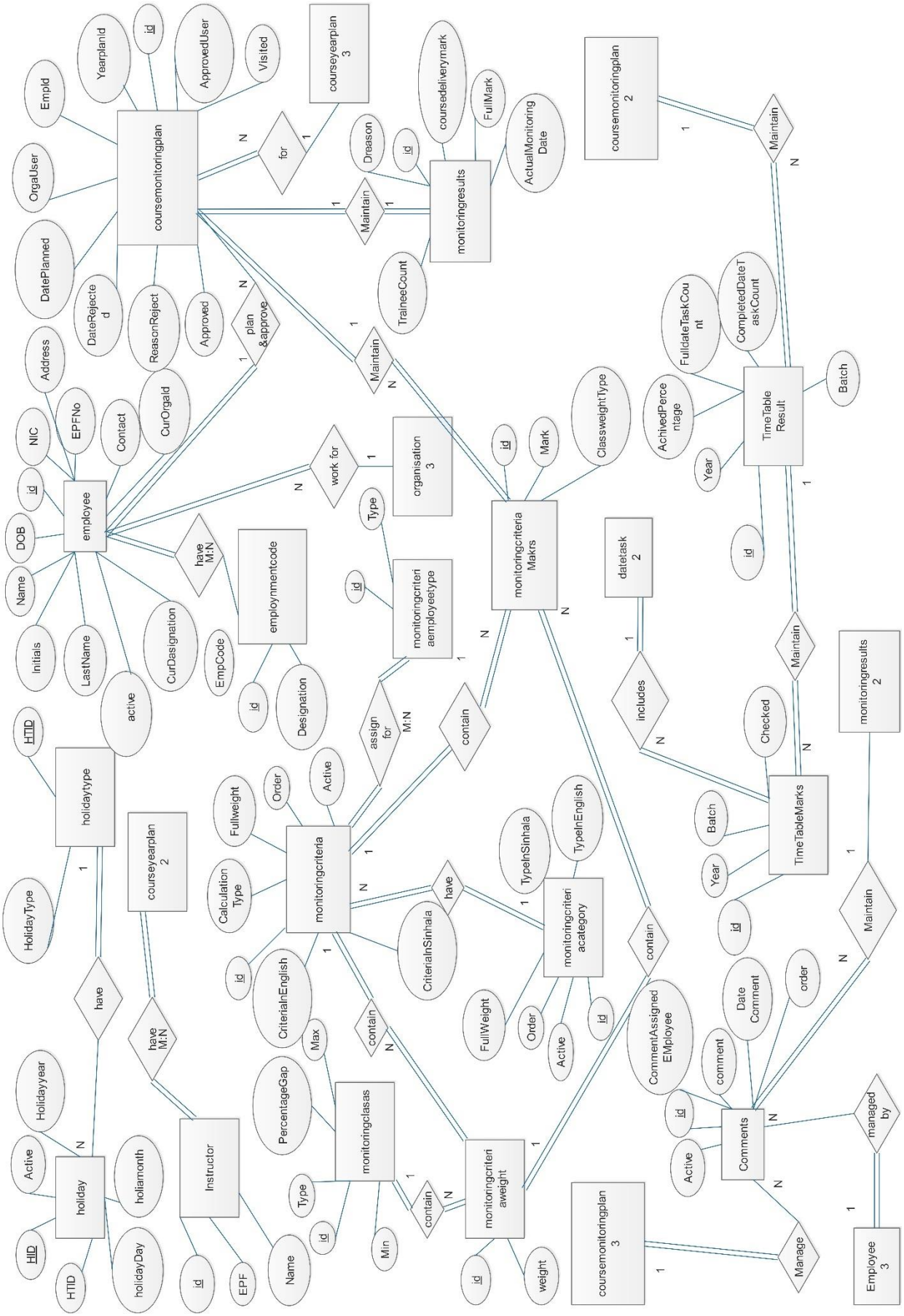


Figure 3.8 – ER Diagram 2

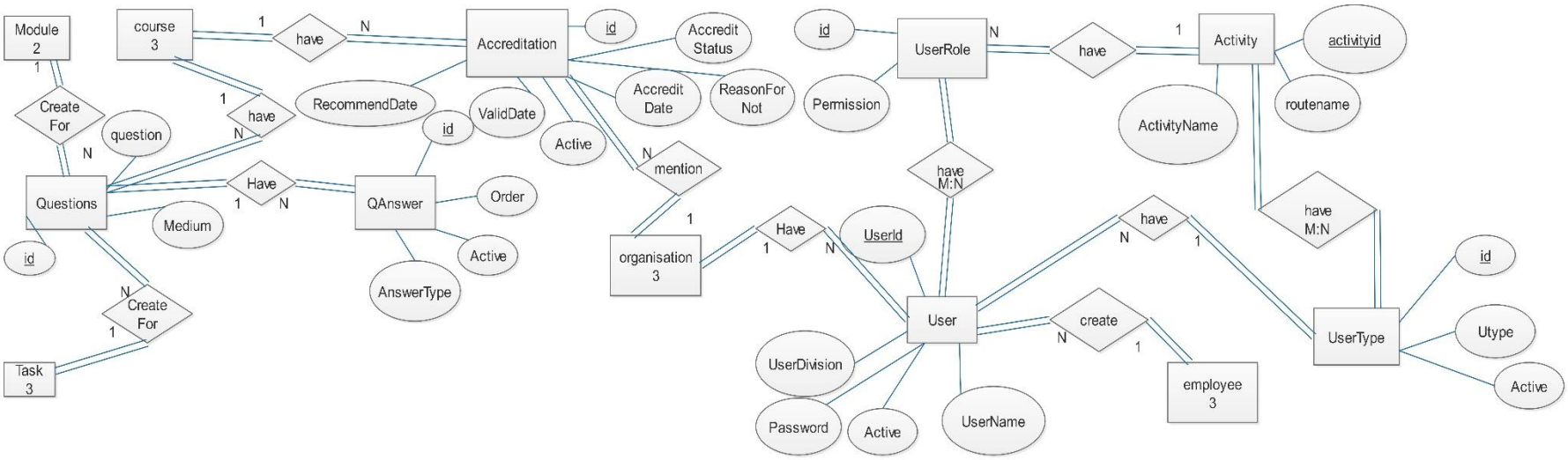


Figure 3.8 – ER Diagram 3

3.8 Interface Design

The interface design focus is on developing a graphical interface. UI requires to give services and outputs in a standard, flexible approach for end users. Following Figure 3.9 shows sample layout of the homepage. Other interfaces designed are available in the appendix section.

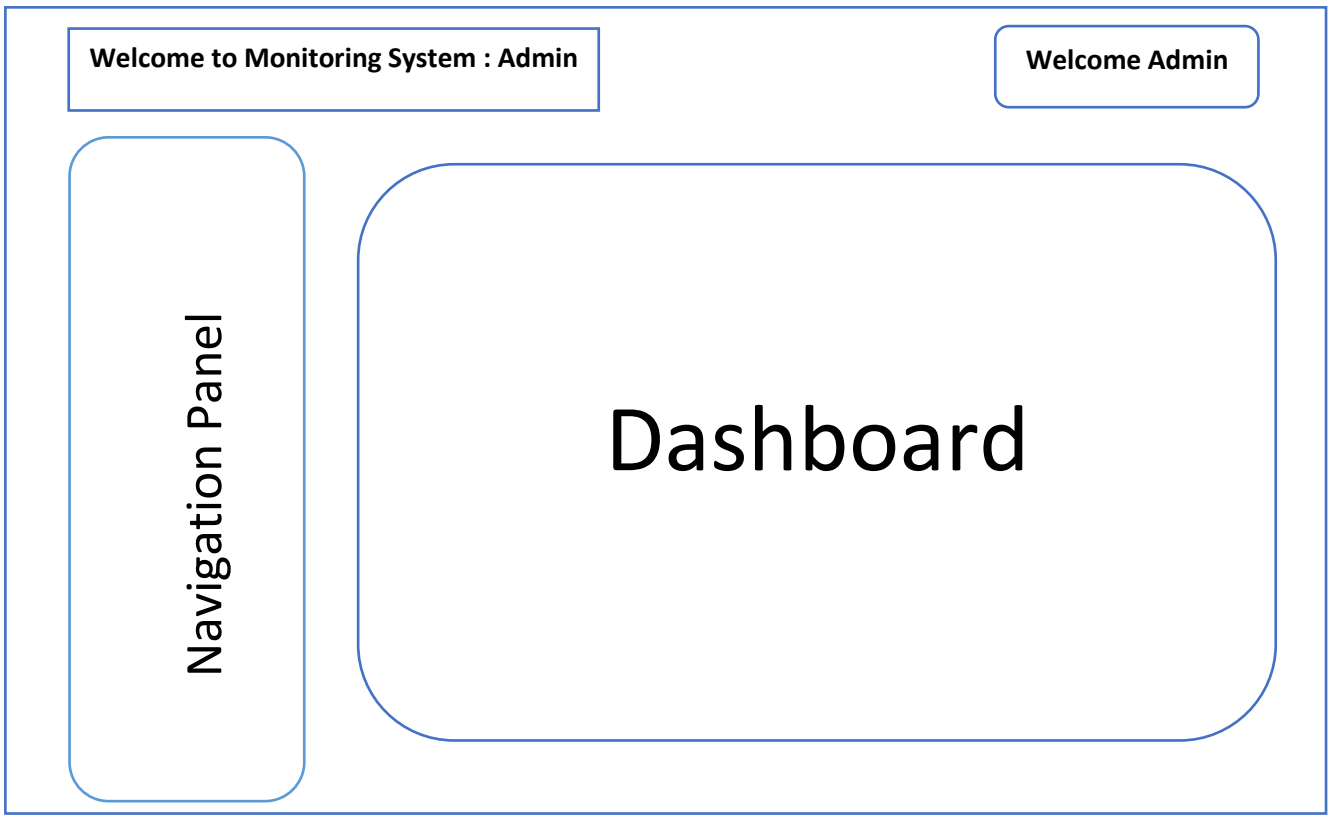


Figure 3.9 – Interface Design

3.9 Database Design

The organization of data in a proper data model is essential to information systems reliability, speed and accuracy. The database design should be optimized to save the data and retrieve data with a small amount of time. Figure 3.10 shows the database design for the monitoring module of the proposed system.

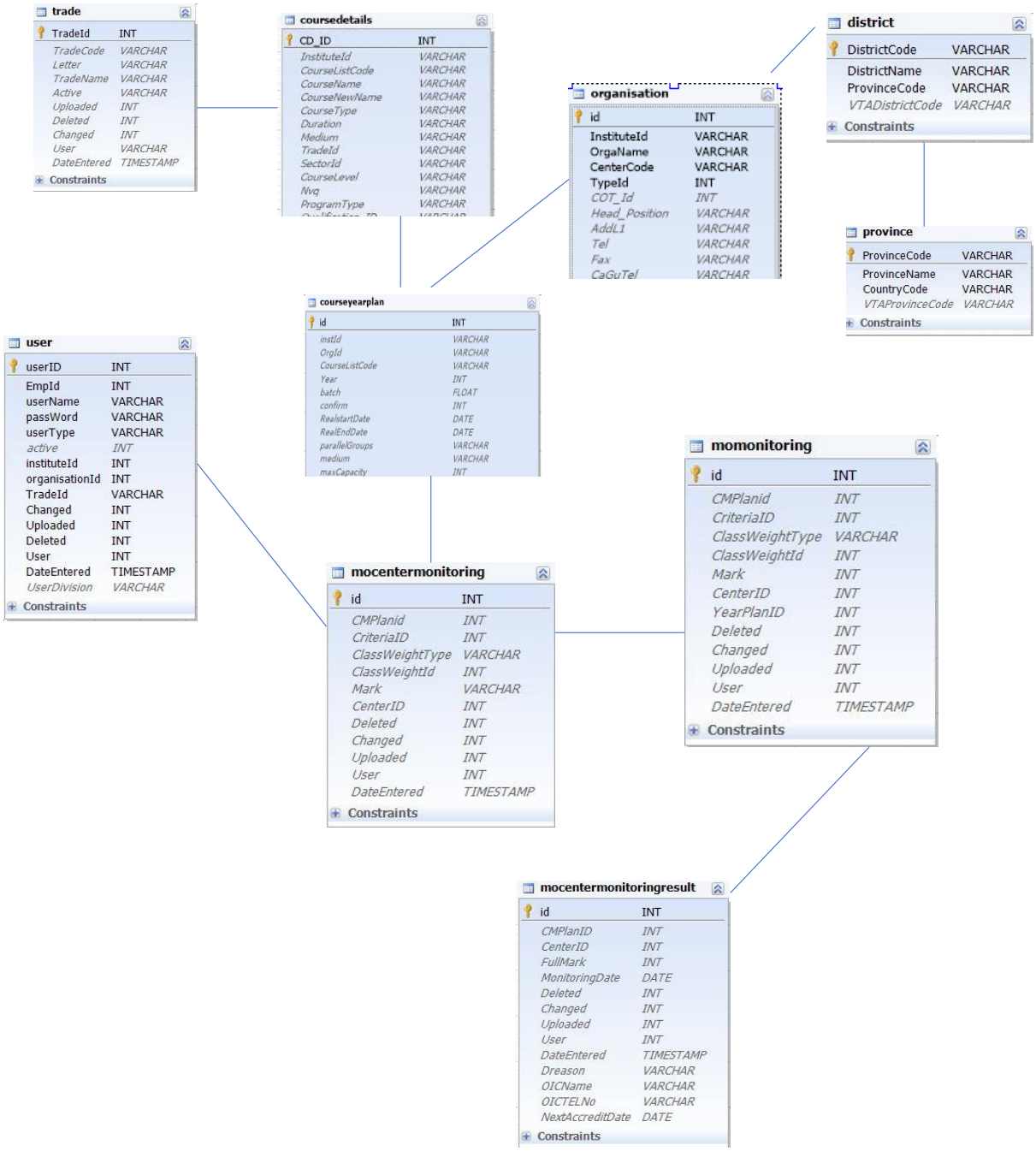


Figure 3.10 – Database Design

3.10 Class Diagram

Figure 3.11 shows the class diagram designed for human resource management component.

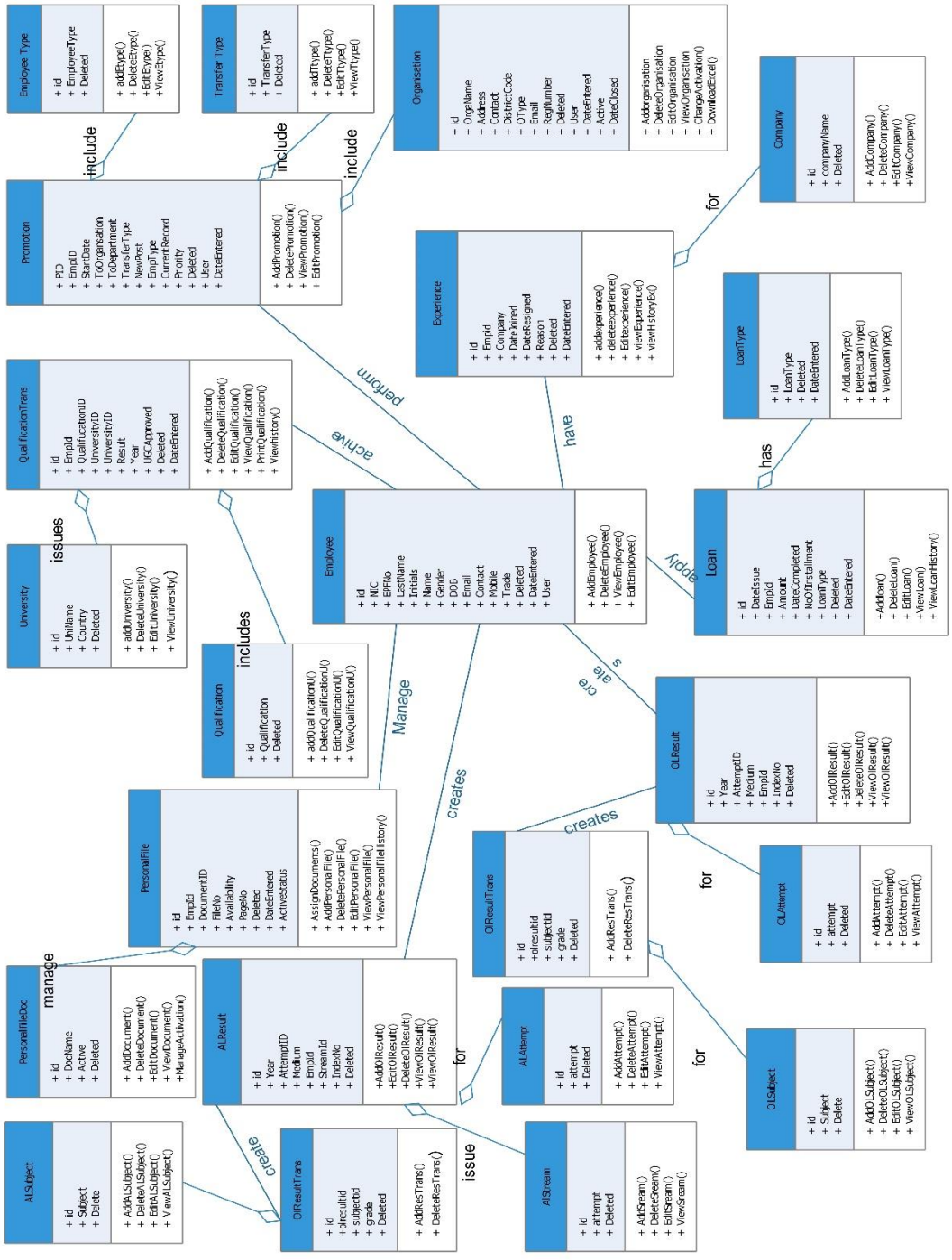


Figure 3.11 – Class Diagram for HR module

Chapter 4: Implementation

In this phase the software is developed permitting to the detailed design based on the client's requirements. Implementation phase is a very extended phase in the software development life cycle. The main goal of this phase is to turn the detailed design into an executable format effectively in a minimum time frame. PHP language has been selected as a programming language to develop this web-based system with the use of Laravel framework.

4.1 Hardware and software Requirements

4.1.1 Hardware Requirements

- 500 GB Hard Disk
- 4GB RAM
- Printer
- Intel Core i3 Processor 2.50 GHz 4.2.2

4.1.2 Software Requirements

- Windows 10
- Xampp web server 2.5
- PHP 5.6
- MySQL 5.7
- Notepad ++ / Sublime Text

4.2 Development Tools

Xampp server is a cross platform opensource web server solution package. In this project Xampp server 7.1.29 was used as a server solution [6].

Notepad++ and Sublime text was used as an editor to edit the codes of the system.

PHP Language PHP programming language is a server-side HTML embedded scripting language. The PHP language is executed on the server side. So the execution of the scripts is

done on the server where the web-site is hosted. Embedded HTML means that we can use PHP statements within an HTML code. PHP files are returned to the browser in HTML format [7].

Laravel was used as a framework to maintain and manage MVC architecture of the system. Laravel version 5.2 is used in this project [8].

MySql is used to manage the database. Mysql is an opensource database management system. DBForge is also used as an IDE for managing MySql database [9].

4.3 Code Features

Data validation is really important to make sure that accurate data in the correct format is entered to the system. Several front end and back end data validations are handled in this project.

4.3.1 NIC Number Validation

NIC validator is used from an Ajax code. Currently in Sri Lanka two types of NIC numbers are used, i.e 12 digit one and 10 digit one. In this system both NIC types are validated thereby age, gender and date of birth is automatically filled. This code is used mainly in human resource management module [10]. Figure 4.1 shows relevant code.

```
$("#load_nic_val").blur(function() {
        document.getElementById('DOB').value = "";
        document.getElementById('Sex').value = "";
        var s_nic = document.getElementById('load_nic_val').value;
        document.getElementById('load_nic_val').style.border = "";
        if (s_nic === " ") {
            document.getElementById('load_nic_val').style.border = "2px solid red";
        } else if (s_nic === "") {
            document.getElementById('load_nic_val').style.border = "";
        } else if (s_nic.length < 10) {
            if (isNaN(s_nic)) {
                document.getElementById('load_nic_val').style.border = "2px solid red";
            }
        } else if (s_nic.length === 10) {
            var nic = s_nic;
            var myarray = new Array();
            myarray = nic.split("");
            if (myarray[9] === "V" || myarray[9] === "X") {

                var y = myarray[0] + myarray[1];
                var d = myarray[2] + myarray[3] + myarray[4];
                dob_calculate(y, d);
            } else {
                document.getElementById('load_nic_val').style.border = "2px solid red";
            }
        }else if (s_nic.length < 12)
    {
        if (isNaN(s_nic))
        {
            document.getElementById('load_nic_val').style.border = "2px solid red";
        }
    }
```

Figure 4.1- NIC Validation

4.3.2 Date Validation

In this date validation, date entered should be within the start date and end date of the course. If that condition is true, then it is checked for a holiday. If only both the conditions are true, the user can enter the date. This code part is used in monitoring section. Figure 4.2 shows relevant code.

```
$('#DatePlanned').change(function(){


var DatePlanned = document.getElementById('DatePlanned').value;
var CenterID = document.getElementById('CenterID').value;
var CourseYearPlanID = document.getElementById('CourseYearPlanID').value;
$.ajax  ({
            url: "{{url::to('MOCMCheckPlanneddate')}}",
            data: {DatePlanned: DatePlanned,CenterID: CenterID,CourseYearPlanID: CourseYearPlanID},
            dataType: "json",
            success: function(result) {
                if(result.module == 1)
                {
                    document.getElementById('DatePlanned').value = "";
                    $('#table1').html(result.html);

                }
                else
                {
                    $("#table1").html('');
                }


                }
        });
});
```

Figure 4.2 - Date Validation

4.4 Reusing existing codes and libraries

4.4.1 SimpleExcel function

SimpleExcel function which is already available is used to download content in Microsoft Excel format [11]. Figure 4.3 shows relevant code.

```
namespace SimpleExcel;

use  SimpleExcel\Exception\SimpleExcelException;

if (!class_exists('Composer\\Autoload\\ClassLoader', false)){
    // autoload all interfaces & classes
    spl_autoload_register(function($class_name){
        if($class_name != 'SimpleExcel') require_once(dirname(__FILE__).DIRECTORY_SEPARATOR.str_replace('\\', DIRECTORY_SEPARATOR, substr($class_nam
    ));
}

class SimpleExcel
{

    public $parser;

    public $writer;

    protected $validParserTypes = array('XML', 'CSV', 'TSV', 'HTML', 'JSON');
    protected $validWriterTypes = array('XML', 'CSV', 'TSV', 'HTML', 'JSON');

    public function __construct($filetype = 'XML'){
        $this->constructParser($filetype);
        $this->constructWriter($filetype);
    }

    public function constructParser($filetype){
        $filetype = strtoupper($filetype);
        if(!in_array($filetype, $this->validParserTypes)){
            throw new \Exception('Filetype '.$filetype.' is not supported', SimpleExcelException::FILETYPE_NOT_SUPPORTED);
        }
        $parser_class = 'SimpleExcel\\Parser\\'.$filetype.'Parser';
        $this->parser = new $parser_class();
    }
```

Figure 4.3 SimpleExcel

4.4.2 Printspecial

Printspecial ajax function is used to download content in PDF Format [12]. Figure 4.4 shows relevant code.

```
$('#upload').click(function()
    {

       var CD_ID = $("#CD_IDP").val();
       var Year = $("#YearP").val();
       var Batch = $("#BatchP").val();
     //alert(CD_ID);

          $.ajax
                ({
                    beforeSend: function()
                    {

                        document.getElementById('img4').innerHTML = "<img src=\"{{Url('assets/images/abc.gif')}}\"/>";
                    },
                    type: "POST",
                    url: "{{Url('printActualTimeTablePDF')}}",
                    data: {CD_ID: CD_ID,Year: Year,Batch: Batch},
                    success:function response(responseText, statusText, xhr, $form)
                    {

                        var printWin = window.open("","printSpecial");
                         printWin.document.open();
                         printWin.document.write(responseText);
                         printWin.document.close();
                         printWin.print();
                    },
                    complete: function() {
                        document.getElementById('img4').innerHTML ="";

                    }
                });

    }
```

Figure 4.4 - PrintSpecial

Chapter 5. Evaluation and Testing

5.1 Introduction

In this chapter critical evaluation of the system is done to determine whether the objectives of the project were met in accordance with the initially stated objectives. Major objective of testing is to provide an error free system for the clients. Testing is an activity which is broadly deployed in every phase of the software development.

Each method was tested with white box testing and black box testing. Thereafter classes are tested in combination. Then group of classes are tested as cluster testing. Finally, the full system is checked for integration. User validation and verification with the document is done at the end [13].

System was installed in a client environment for testing. Mainly testing was done in three stages.

Component Testing – each individual interfaces and data tables were tested for functionality.

Integrated systems testing – Components were tested for interdependencies of the component.

Network Testing – Tested in local area network as well as over the internet

5.2 Objectives of Testing

- Identify the bugs or defects in the implementation so that they can be debugged and rectified.
- Check whether functional requirements are carried out.
- Identify how the system react to different scenarios.
- Based on the results of testing, system can be further improved in processing performance. After the testing phase is complete, system will ensure following characteristics.
- System becomes bug free.
- After user acceptance testing is completed, usability of the system will be improved.

5.3 Test model for the proposed system.

Each class is checked whether relevant methods and operations are captured, and further checked whether all attributes related to the objectives are identified. These attributes specify various stages of class can undergo, also whereas the operations provide the relevant interface to communicate with it. Message passing between objects lets them to communicate to perform the task successfully.

5.3.1 Unit Testing

As the system require higher degree of accuracy each method is tested using whitebox testing and blackbox testing. As an example model class functions are tested with mock data to in and out in the controller to identify functions are working at expected level [13].

Unit level test cases are written to verify blackbox testing. Example testcase is given below.

Test Case – Login to the system as User

Test Case No	**01**
Test Case Type	Unit Testing
Test Case Name	Login to the System as a User
Test Case Description	Registered customer logged into the system.
Test Data	
Valid	Invalid
Valid Username Valid Password	Invalid Username Invalid Password
Expected Output	
Valid	Invalid
User should navigate to the user portal of particular user	Inform login combination invalid message

Table 5.1 – Test Case 1

Test cases are attached in the appendix A section.

5.3.2 Integration Testing

After carrying out unit testing, next phase is the integration testing [13]. In this phase classes are tested as a whole. Main objective of this is to identify whether the classes contain all relevant methods and attributes.

Developed web interfaces were shown to the clients and the functionalities were explained. Interfaces were thoroughly examined by the client to ensure that it contains only the required information. All the front-end validations using javascript were tested by several input data. Further requirements were also highlighted by the client during this process. The development was undertaken using the spiral model, those new requirements were developed in further iterations.

5.3.3 System Testing

Complete set of accurate data is taken from users and fed into the system. The processed data and the output was recorded. Then the same set of data is processed manually and results were compared in order to identify any inconsistencies.

5.3.4 Acceptance Testing

Selected staff from the client were given some tasks to be performed on the system. The feedback was taken in the form of a questionnaire and the feedback was recorded. Level of user satisfaction was recorded.

5.3.5 Regression Testing

Finally the system scenarios are written and some of those static test cases are automated using PHPUnit.

5.3.6 Usability Testing

Usability testing is essential to reduce high risk of user acceptance. In early stages of the project UML diagrams and protype web interfaces are used to evaluate and get feedback on user experience to enhance the system functionality [13].

5.3.7 Performance Testing

Load testing and volume testing was carried out with multiple users. Tools like HTTP load was used to determine how the server handles multiple users and excessive workload. Some areas were identified in the HR component of the system which was too much heavy for the current infrastructure [13].

5.3.8 Test Results

Table 5.2 displays results of tests carried out considering all the test cases created. System has passed all the compiled testing scenarios.

Case Number	Type of Data	Result Obtained	Overall Result
Test Case 01	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 02	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 03	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 04	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 05	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 06	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 07	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 08	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 09	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok
Test Case 10	Valid Data	Work as expected.	Ok
	Invalid Data	Work as expected.	Ok

Table 5.2 – Evaluation Data

5.4 Evaluation of the System.

Evaluation can be considered as systematic acquisition and assessment of information used to provide feedback with regard to developed system. Therefore, the results of the system evaluation can be considered as key indicators in accessing the degree of success associated with the development process.

The evaluators were selected carefully to evaluate all the related operations of the system. Selected staff of the company and the supervisor were the people who were responsible to evaluate and provide the feedback. System was tested on dummy data on a local server.

These are the main criteria used for the evaluation process.

- Overall functionality of the system.
- Usability of the system
- Speed and Performance

- Context

At the end of the project all the required functional, non-functional requirements were completed while adhering to the constraints of the project. All the client requirements were completed and delivered.

5.5 User Evaluation

In software development end users will have different viewpoints of the system to complete their requirements from the system. User evaluation questionnaire and forms were distributed among the sample population covering head office, district office and training center staff members. Following Figure 5.1 shows the sample questionnaire and table 5.3 shows sample feedback results.

System Feedback – Training Center Monitoring and Human Resource Management System

Select Your Department

Head Office	
District Office	
Center	

How satisfied are you with the system?

Not Very	1	2	3	4	5	*Very Much*

How satisfied are you with the following features?

1 = Very Dissatisfied 3 = Normal 5 = Very Satisfied

	1	2	3	4	5
Dashboard					
Color Scheme					
Navigation					
Login Interface					
Easy of Learning					
Response Time					
Searching Facility					
Productivity Improvement					
Browser Compatibility					
Error Messages Helpful?					

Additional feedback on system improvement?

Figure 5.1 – Sample Evaluation Form

Department	1	1	2	3	3	3
Dashboard	5	5	4	5	4	5
Color Scheme	4	4	5	5	5	4
Navigation	4	4	4	5	4	3
Login Interface	4	4	4	5	5	5
Easy of Learning	4	3	5	5	4	4
Response Time	3	4	5	5	5	5
Searching Facility	5	4	4	5	4	4
Productivity Improvement	4	4	3	5	5	3
Browser Compatibility	4	4	4	5	4	5
Error Messages Helpful?	4	4	4	5	5	4
How Satisfied are You?	4	4	4	5	4	4

Table 5.3 – Test Results

Evaluation Summary

User evaluation feedback results gives the overall system acceptance from the sample population in the company. Figure 5.2 shows system features feedback summary, figure 5.3 shows overall system feedback and figure 5.4 shows department wise feedback summary.

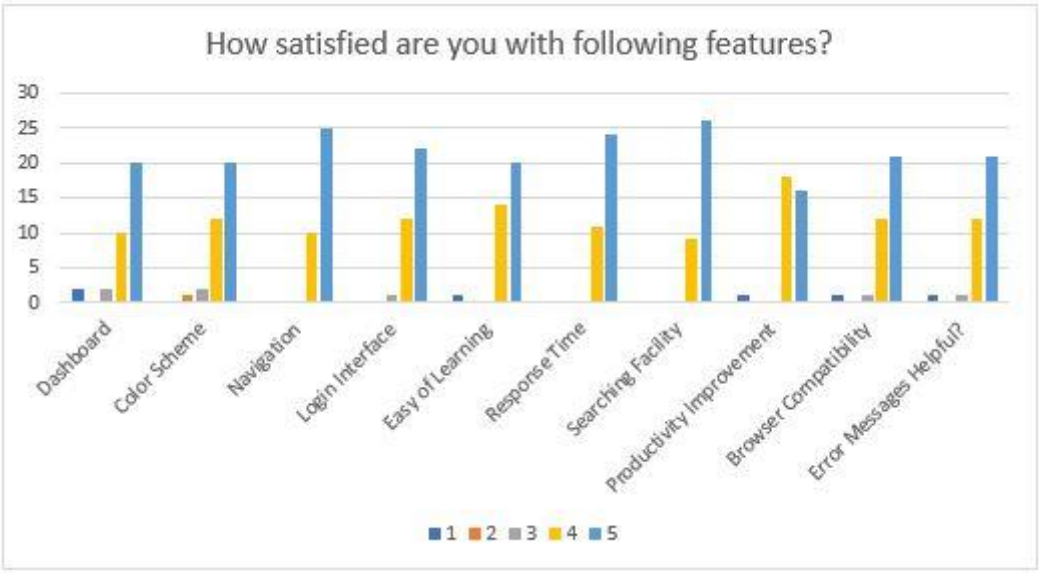


Figure 5.2 – Features Feedback Summary

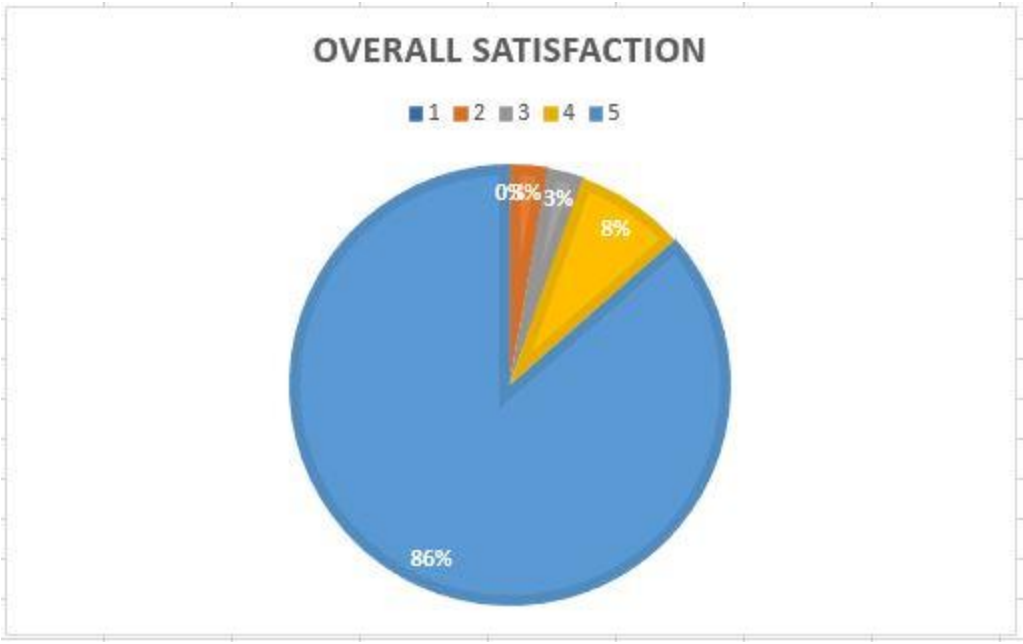


Figure 5.3 – Overall Satisfaction

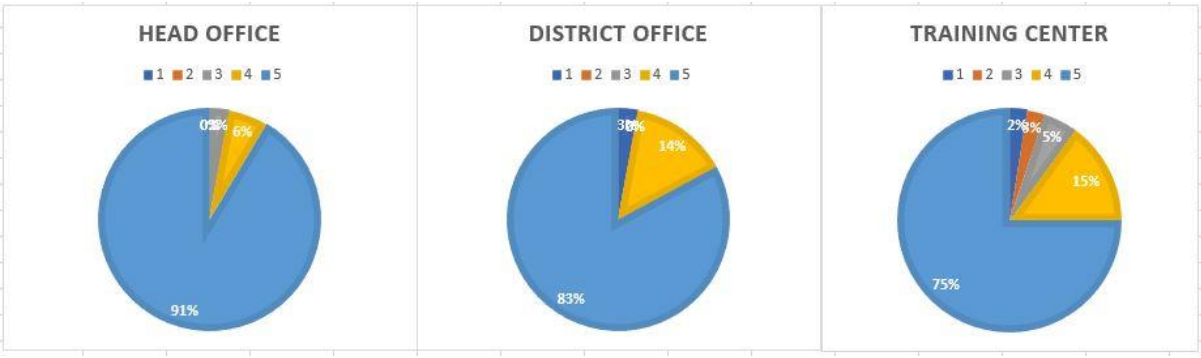


Figure 5.4 – Department wise summary

Feedback of the overall system, indicating that more than 90% of the population have rated the system satisfied and very satisfied. Few users gave normal rating (less than 3%) considering response time. Given the resulting outcome is that the system evaluation is very successful at the period of evaluation time.

Chapter 6: Conclusion

This chapter will elaborate reflection of author on this software project including a critical appraisal on the success.

6.1 Critical Evaluation of the system.

Existing system of Vocational training system was entirely handled by a manual system. So by using this computerized system their tasks were efficient and effective when considering the time taken to complete a particular task. So, when considering the time taken and productivity this system was really successful.

Language was a major issue when considering the potential users of the system. There are many users in rural areas who use languages like Tamil language and Sinhala language. Considering Vocational training center is a government institution entire manual system was handled in Sinhala and Tamil language. So it took some time for the users to adapt to the English language and technical terms of the users. So from our side when using user data collection forms we introduced both languages to give assistance and better understanding to the users.

When the question bank was introduced one major issue was the language. Users give questions in Sinhala language. Some courses were handled in Sinhala language and tamil language. We collect questions from expertise who teach particular course in particular language. In the system we have offered to input questions in all three languages.

In the beginning of the project some requirements and processes were bit more complex and accessibility to the business data should be according to each employee's task without blocking tasks he should perform, so one to one interview was held considering different users of the system and the final output was successful.

Centralized database was really a successful point because of the distributed training center network of Vocational Training Authority.

Network traffic was another major issue when working with multiple users.

Some of the complex reports took a long time to load depending on the internet speeds of the users. Employees of Vocational Training Authority are provided with Dongles with limited

data packages. Data bundles were not enough after completing some complex tasks in the system.

When considering human resource management component of the system, in the initial requirements scanned copies of certificates needed to be maintained as a personal file of the employee. System traffic was increased and it took an unmanageable time to upload the certificates. After discussing with the client that requirement had to be abandoned.

6.2 Future Work

There are many suggestions from Vocational Training Authority to be developed in future releases of this software. VTA is having award ceremonies to assess employee and center performance. Center grading and instructor grading was one major component in their requirements which will be developed in future.

Leave and attendance system is also needed to be joined with the Human Resource management system in the future.

Employee warning and penalizing component is needed to be installed to the system.

6.3 Conclusion.

After the completion of the overall project, all the functional and non-functional requirements identified in the initial requirements were successfully delivered by the system. New requirements identified as future enhancement which will be delivered in future.

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Appendix A: Important test cases for the system.

Test Case No	**02**
Test Case Type	Unit Testing
Test Case Name	Course Creation
Test Case Description	Entering new course record to the system.
Test Data	
Valid	Invalid
Valid course data	Invalid course data
Expected Output	
Display course added successfully message and redirect to the course view interface.	Display an error message in course creation form with invalid data.

Table 7.1 - Test Case No 2

Test Case No	**03**
Test Case Type	Unit Testing
Test Case Name	Holiday creation
Test Case Description	Enter new holiday record to the system.
Test Data	
Valid	Invalid
Valid holiday date with type	Invalid holiday date with type.
Expected Output	
Display holiday added successfully message.	Display error message with invalid data.

Table 7.2 - Test Case No 3

Test Case No	**04**
Test Case Type	Unit Testing
Test Case Name	Time table creation
Test Case Description	Entering actual course timetable.
Test Data	
Valid	Invalid
Valid data required for time table creation	Invalid data
Expected Output	
Load available task sequence to the interface and after pressing submit button display added successfully message	Display error message.

Table 7.3 - Test Case No 4

Test Case No	**05**
Test Case Type	Unit Testing
Test Case Name	Monitoring plan creation
Test Case Description	Entering course monitoring plan to the system.
Test Data	
Valid	Invalid
Select and enter valid data.	Select and enter invalid data.
Expected Output	
Display monitoring plan added successfully message.	Display error message on invalid data.

Table 7.4 - Test Case No 5

Test Case No	**06**
Test Case Type	Unit Testing
Test Case Name	Monitoring form entering
Test Case Description	Enter monitoring form content to the system
Test Data	
Valid	Invalid
Valid monitoring data	Invalid monitoring data
Expected Output	
Display monitoring form added successfully message edit and view permissions will be granted.	Display error message

Table 7.5 - Test Case No 6

Test Case No	**07**
Test Case Type	Unit Testing
Test Case Name	Downloading question paper.
Test Case Description	Download MCQ paper for courses.
Test Data	
Valid	Invalid
Valid question data	Invalid question data
Expected Output	
Load question paper in PDF format.	Display questions not available message.

Table 7.6 - Test Case No 7

Test Case No	**08**	
Test Case Type	Unit Testing	
Test Case Name	Loading monitoring report	
Test Case Description	Loading district wise monitoring progress summary report.	
Test Data		
Valid		Invalid
Select valid report filtering data.		Select invalid report filtering data.
Expected Output		
Display report with excel download facility.		Display error message.

Table 7.7 - Test Case No 8

Test Case No	**09**	
Test Case Type	Unit Testing	
Test Case Name	Employee profile.	
Test Case Description	Search employee profile.	
Test Data		
Valid		Invalid
Valid NIC/EPF numbers.		Invalid data
Expected Output		
Display employee profile with download facility.		Display not available message.

Table 7.8 - Test Case No 9

Test Case No	**10**	
Test Case Type	Unit Testing	
Test Case Name	Employee personal file document list.	
Test Case Description	Enter Employee personal file document list too the system.	
Test Data		
Valid		Invalid
Enter valid document list		Invalid data
Expected Output		
Display added succesfully message.		Display error message.

Table 7.9 - Test Case No 10

Appendix B: User Manual

Login to the system Open the web browser that recommended by the developer. Type the URL http://*******/VTAM/public and navigate. Then users navigate to the Login page that is under Figure B-1. To access the system, user have to login to the system with valid credentials. Then it directs user to the index page which is under figure 8.2

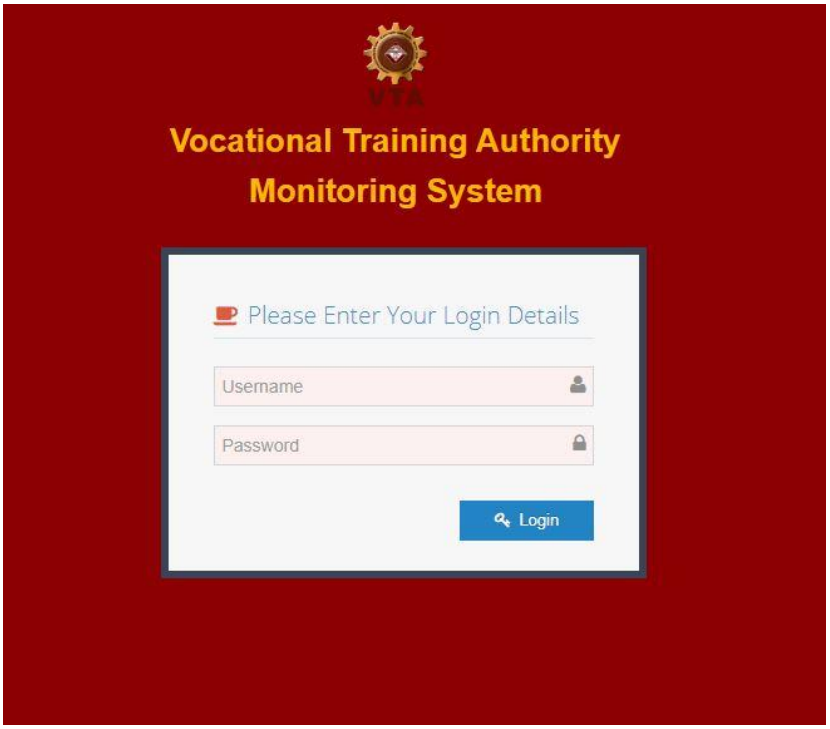


Figure B-1 Login Page

System Login Page

In index page (Figure B-2), dash board, navigation menu and relevant user information showed to the logged user. Navigation menu items different to the user type (Monitoring and HR).in this we are logged as monitoring admin so all menu items shown to the user.

Figure B-2 Dashboard Page

Change password

If user wants to change their password user can click Figure B-3 dropdown icon and select change password link. Then they will redirect to password change form page that is under Figure B-4.

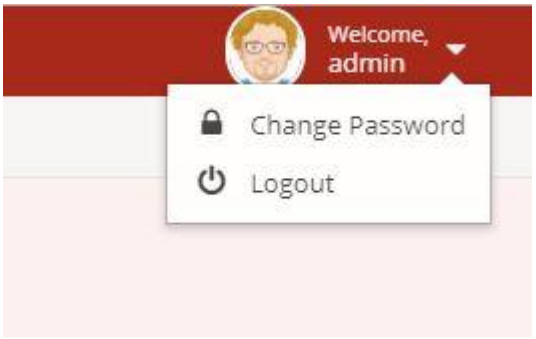


Figure B-3 password change drop down

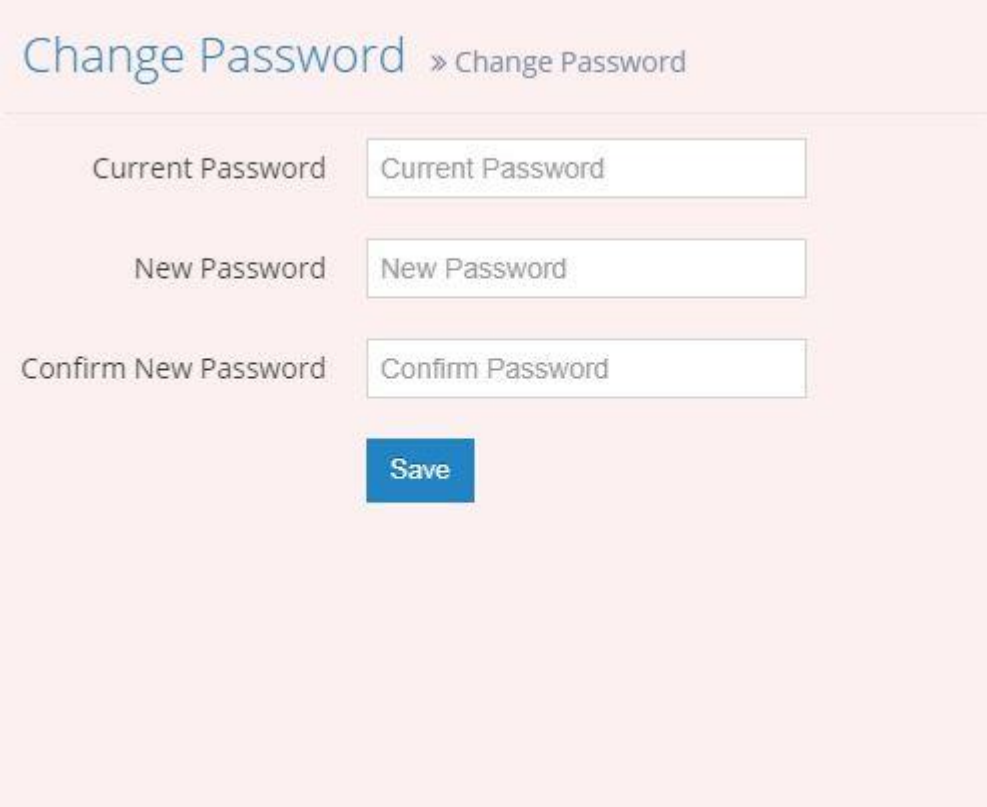


Figure B-4 password change form

Navigation Between pages after login to the system as monitoring admin, navigation menu used to navigate between pages which are mentioned under figure 8.5.

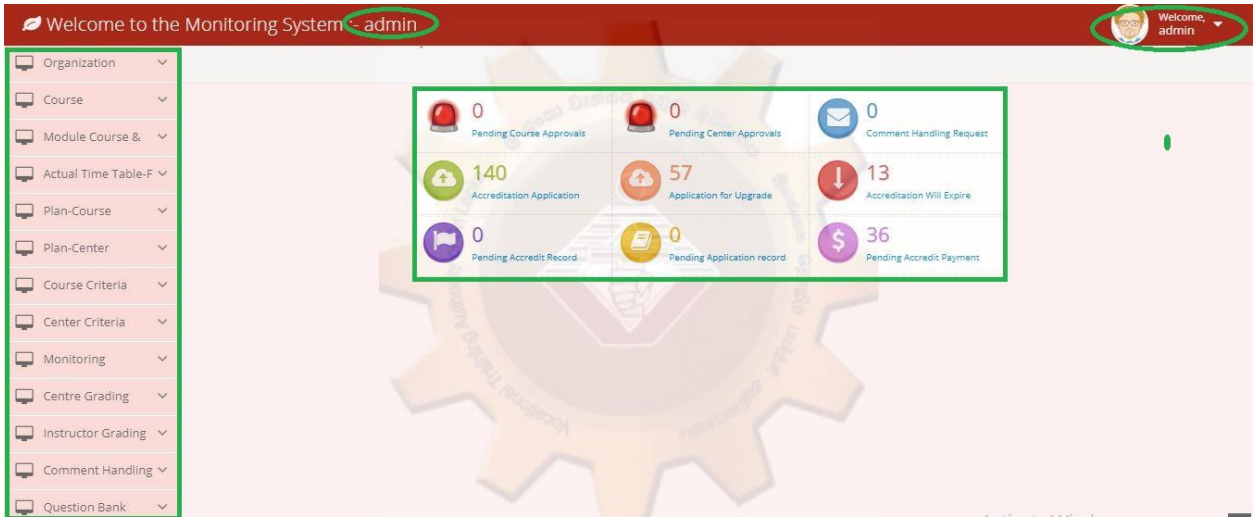


Figure B-5 Navigation menu and currently active page

Logout from the system

Logout link can be found on the top right hand corner of the figure 8.2. After clicking on the drop down menu it will display logout link showed in figure 8.6, user can successfully logout from the system and it will direct user back to the Login Page.

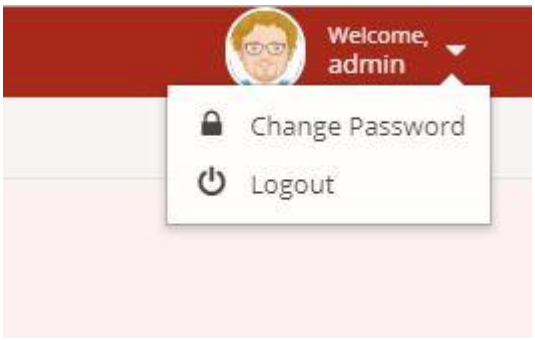


Figure B-6 logout form

New user registration

Use path Admin User->users

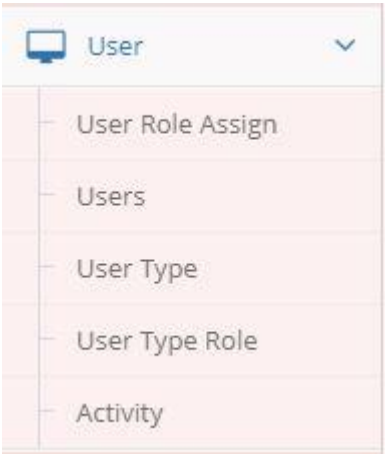


Figure B-7 Navigation to create user

User creation form is loaded as showed in Figure B-8. After clicking on create user button it will load user creation form and after filling all the required data and click create button, then new user will be created by the system.

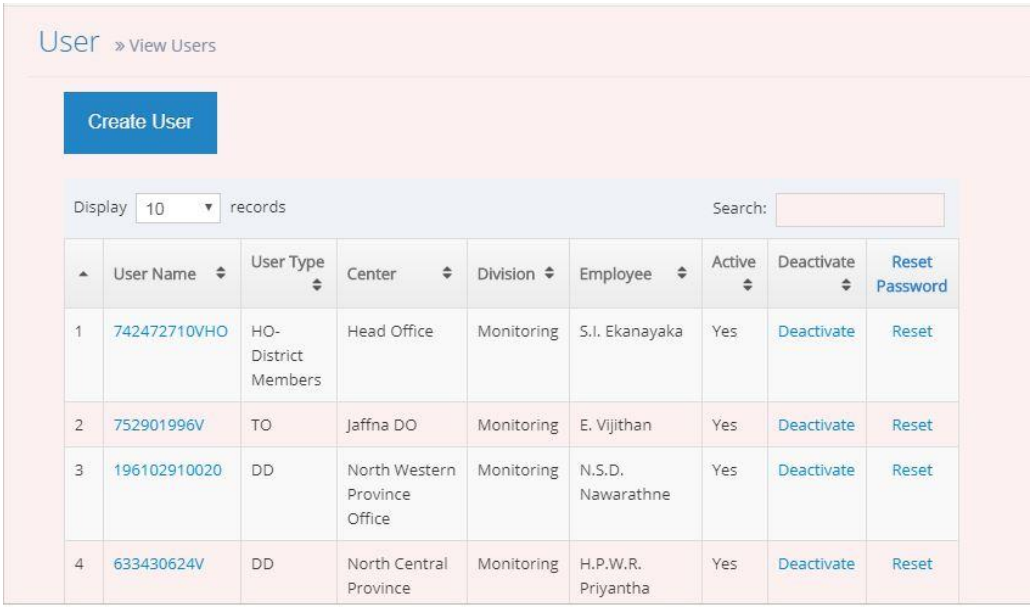


Figure B-8 – View User

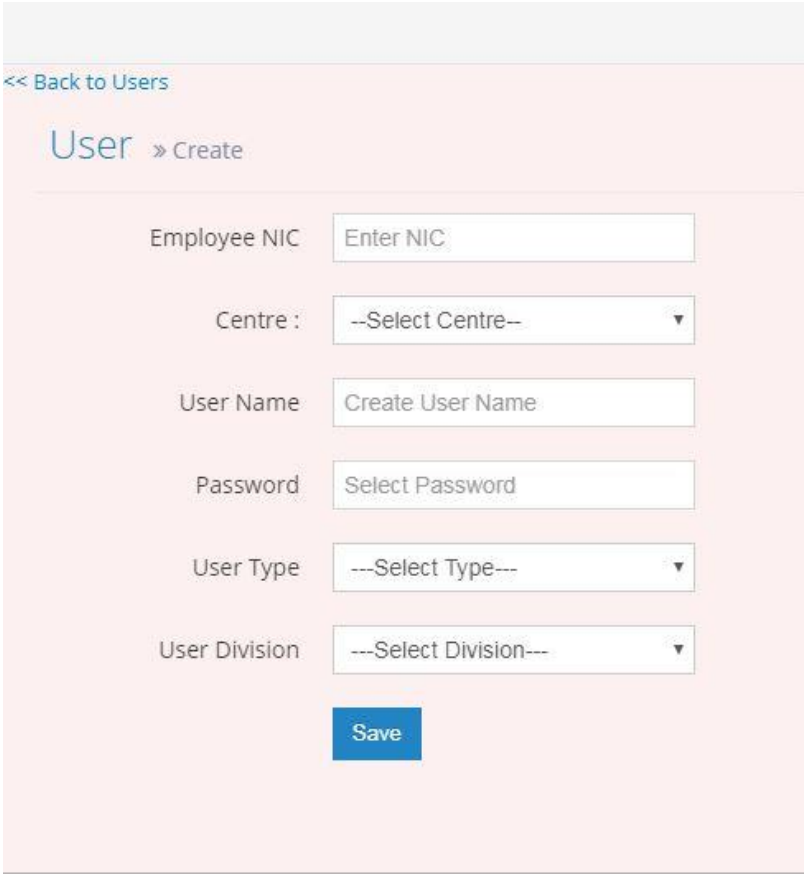


Figure B-9 New user registration form

Centre Creation

Use path organization->center

Center view form is loaded as showed in Figure B-10 This form provide new center creation Figure B-11, center delete figure B-2 and center editing figure B-3 facilities for the user.

After clicking on create center button it will load center creation form and after filling all the required data and click create button, then new center will created by the system.

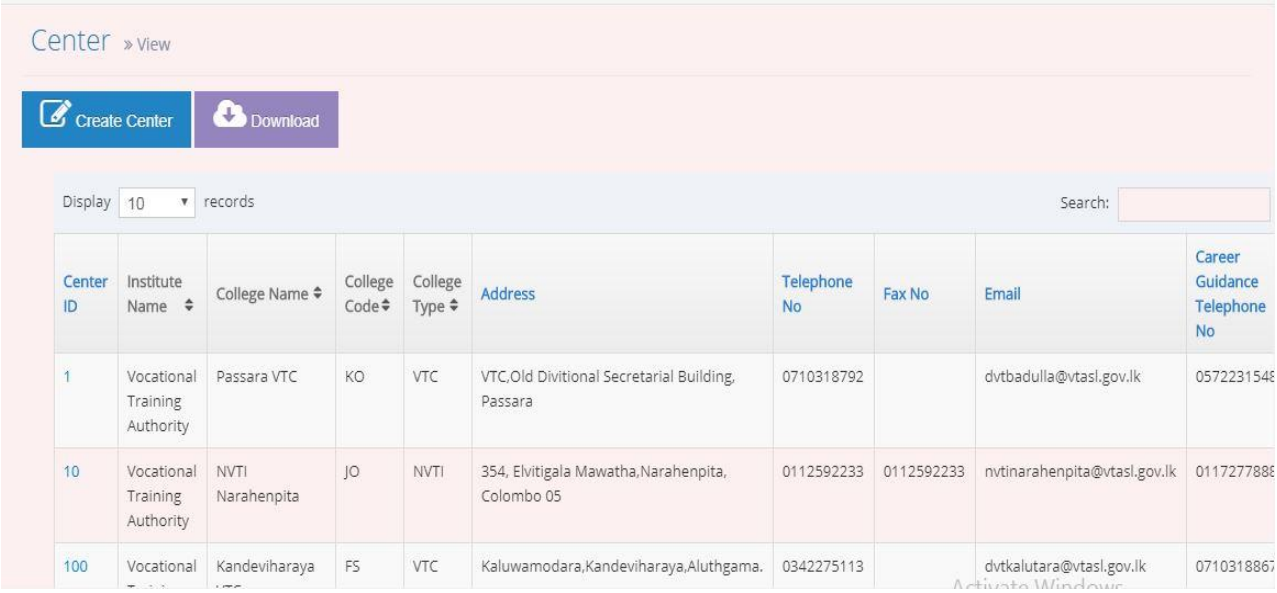


Figure B-10 Center view form

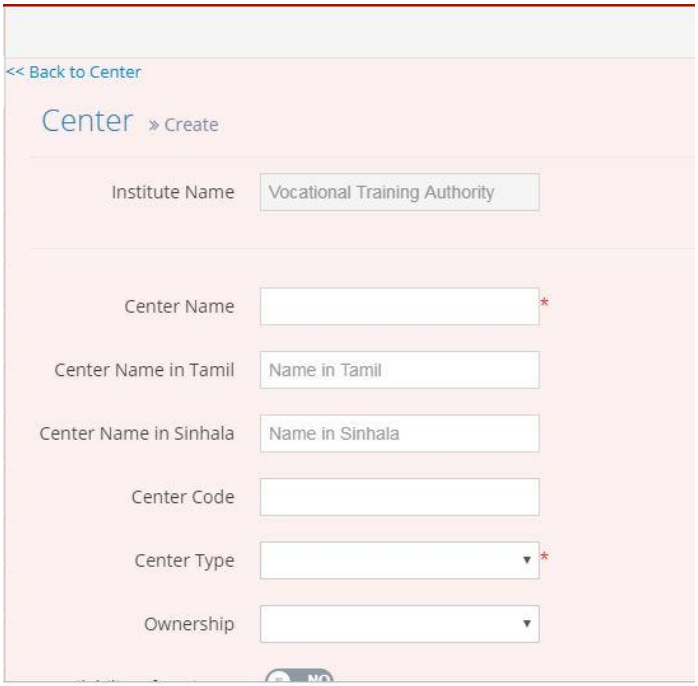
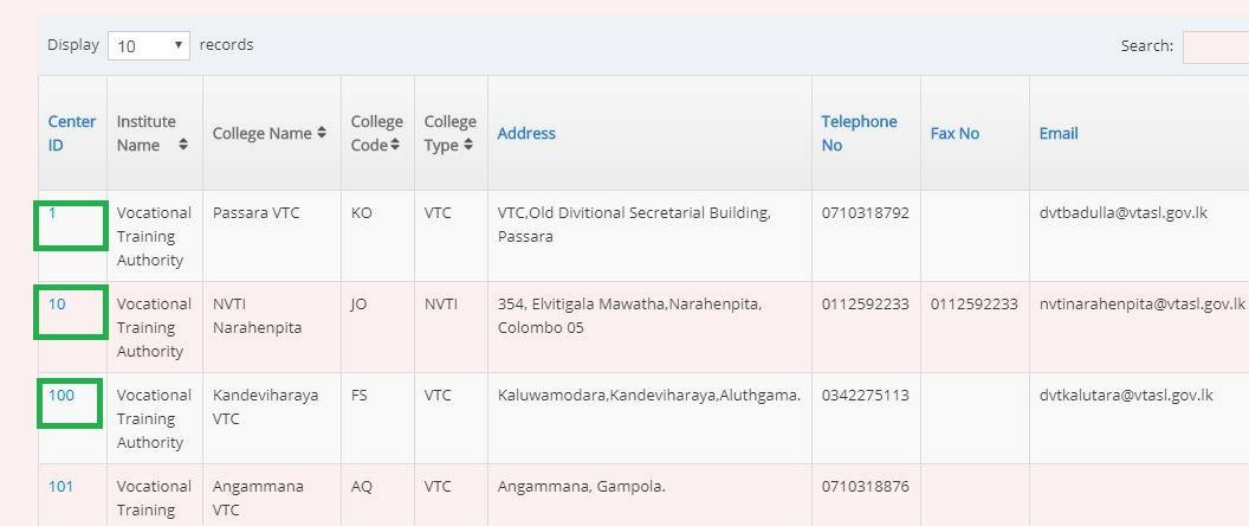


Figure B-11 Center creation form

After clicking on the editing link available in the center data table column Figure B-12, it will load center editing form for particular center and after filling/changing all the required data and click save button Figure B-13, then edited data will be saved in to the system and redirected to the center view from.



Display 10 records Search:

Center ID	Institute Name	College Name	College Code	College Type	Address	Telephone No	Fax No	Email
1	Vocational Training Authority	Passara VTC	KO	VTC	VTC,Old Divitional Secretarial Building, Passara	0710318792		dvtbadulla@vtasl.gov.lk
10	Vocational Training Authority	NVTI Narahenpita	JO	NVTI	354, Elvitigala Mawatha,Narahenpita, Colombo 05	0112592233	0112592233	nvtinarahenpita@vtasl.gov.lk
100	Vocational Training Authority	Kandeviharaya VTC	FS	VTC	Kaluwamodara,Kandeviharaya,Aluthgama.	0342275113		dvtkalutara@vtasl.gov.lk
101	Vocational Training	Angammana VTC	AQ	VTC	Angammana, Gampola.	0710318876		

Figure B-12 Center Editing Link

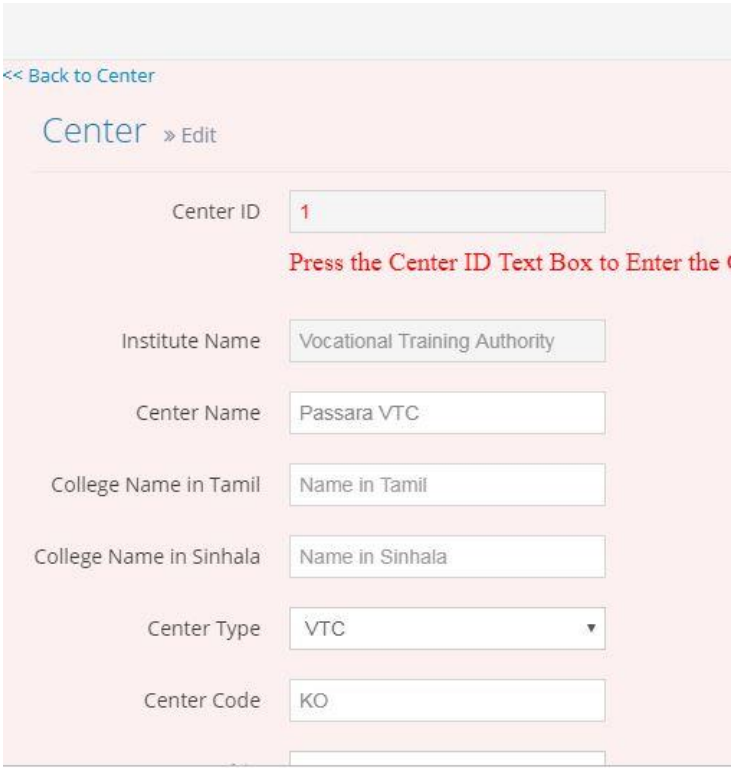


Figure B-13 Center Editing form

After clicking on the delete button available in the center data table column Figure B-14, it will popup center deleting confirmation dialog box for particular center and after clicking on confirm button Figure B-15, system will particular center from the system and redirected to the center view from.

Search:

Email	Career Guidance Telephone No	Registration No	Business Unit	Ownership	District	Electorate	Date Closed	Date Entered	OIC	Latitude	Longitude	Active	Remove
dvtbadulla@vtasl.gov.lk	0572231548	P14/0019	Affiliated		Badulla	Passara	2018-12-31	2015-12-25 14:55:42		6.93650	81.15137	Closed	
nvtinarahenpita@vtasl.gov.lk	0117277888	P01/0041	VTA Owned Land		Colombo	Thimbirigasyaya	2001-01-31	2015-12-25 14:55:43		6.8972°	79.8768°	Yes	
dvtkalutara@vtasl.gov.lk	0710318867	P03/0086	Affiliated		Kalutara	Beruwala		2015-12-25 14:55:55		6.449189	79.998024	Yes	
	0714964422	P09/0015	VTA Owned Land		Kandy	Udapalatha (Gampola)		2015-12-25 14:55:55		7.12678	80.56468	Yes	

Figure B-14 Center deleting button

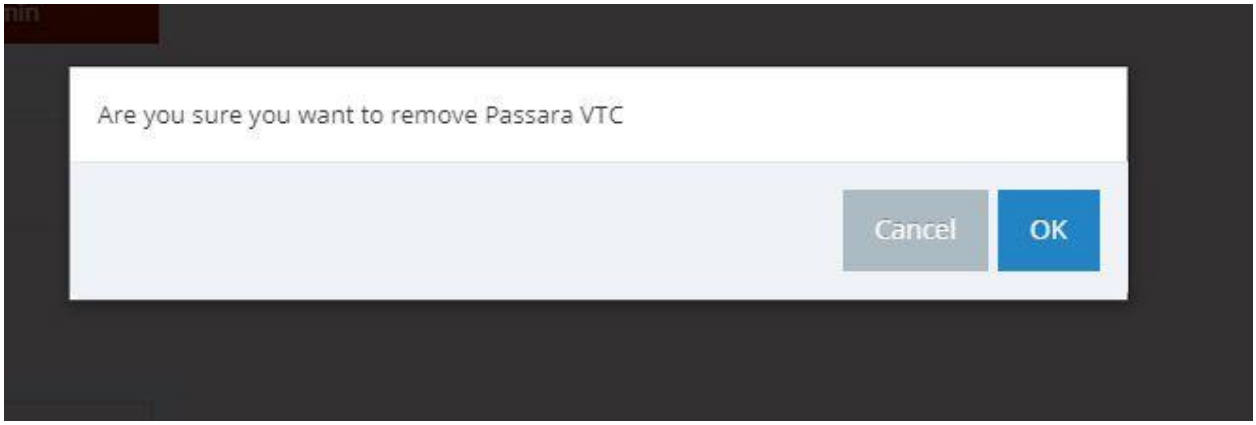


Figure B-15 Center deleting dialog box

Trade Creation

Use path course->trade

Trade view form is loaded as showed in Figure B-16. This form provide new trade creation Figure B-17, trade delete figure 8.18 and trade editing Figure B-19 facilities for the user

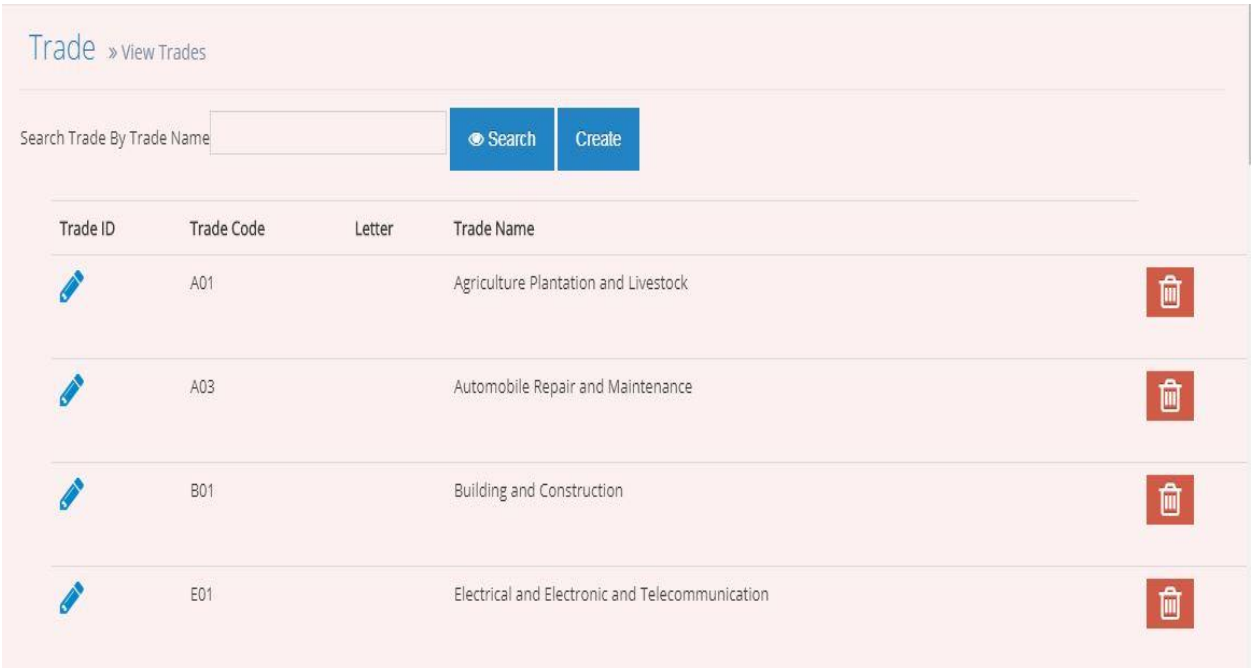


Figure B-16 trade view form

After clicking on create trade button it will load trade creation form and after filling all the required data and click create button, then new trade will created by the system.

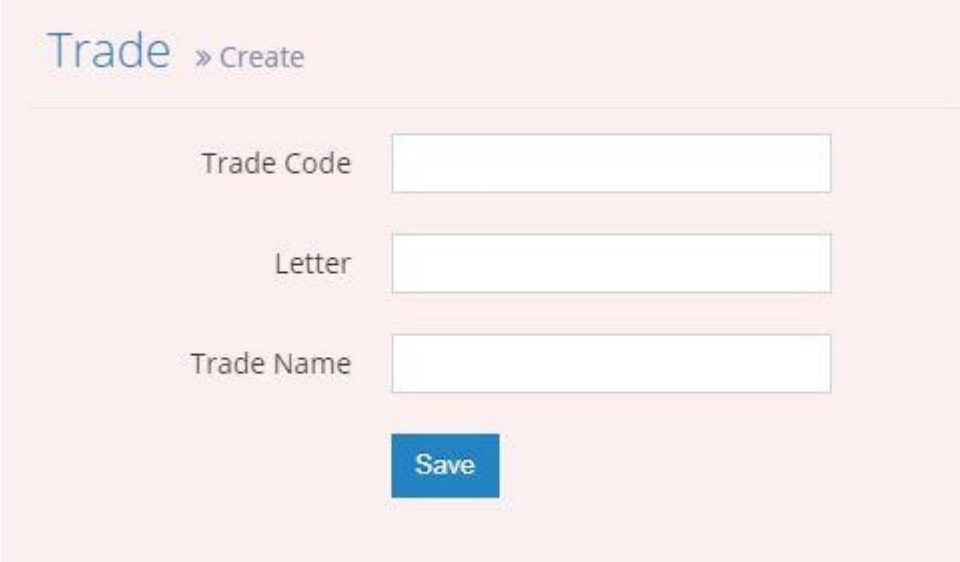


Figure B-17 trade creation form

After clicking on the delete button available in the trade data table column Figure 8.16, it will popup trade deleting confirmation dialog box for particular trade and after clicking on confirm button Figure B-18, system will particular trade from the system and redirected to the trade view from.

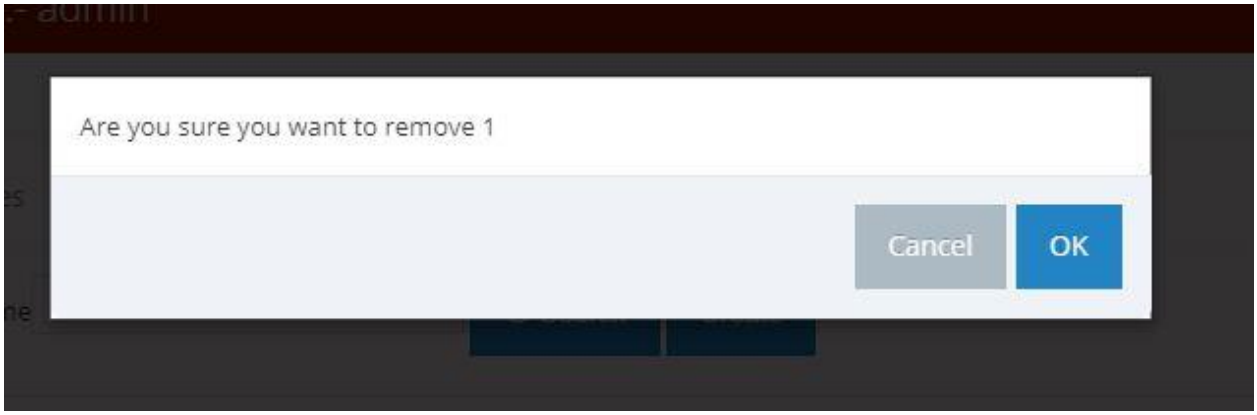


Figure B-18 trade deleting dialog box

After clicking on the editing link available in the trade data table column Figure B-16, it will load trade editing form for particular trade and after filling/changing all the required data and click update button Figure B-19, then edited data will be saved in to the system and redirected to the trade view from.

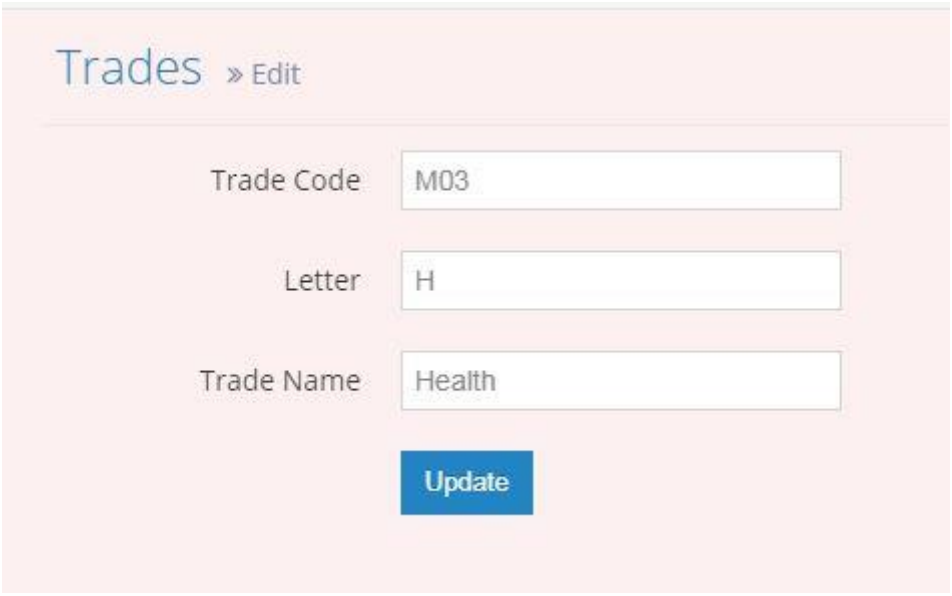


Figure B-19 trade editing form

Daily Time Table Completion

Use path course->Daily Time Table Completion

Daily Time Table Completion view form is loaded as showed in Figure B-20 This form provides facility to record course time table completion of each and every course for the user.

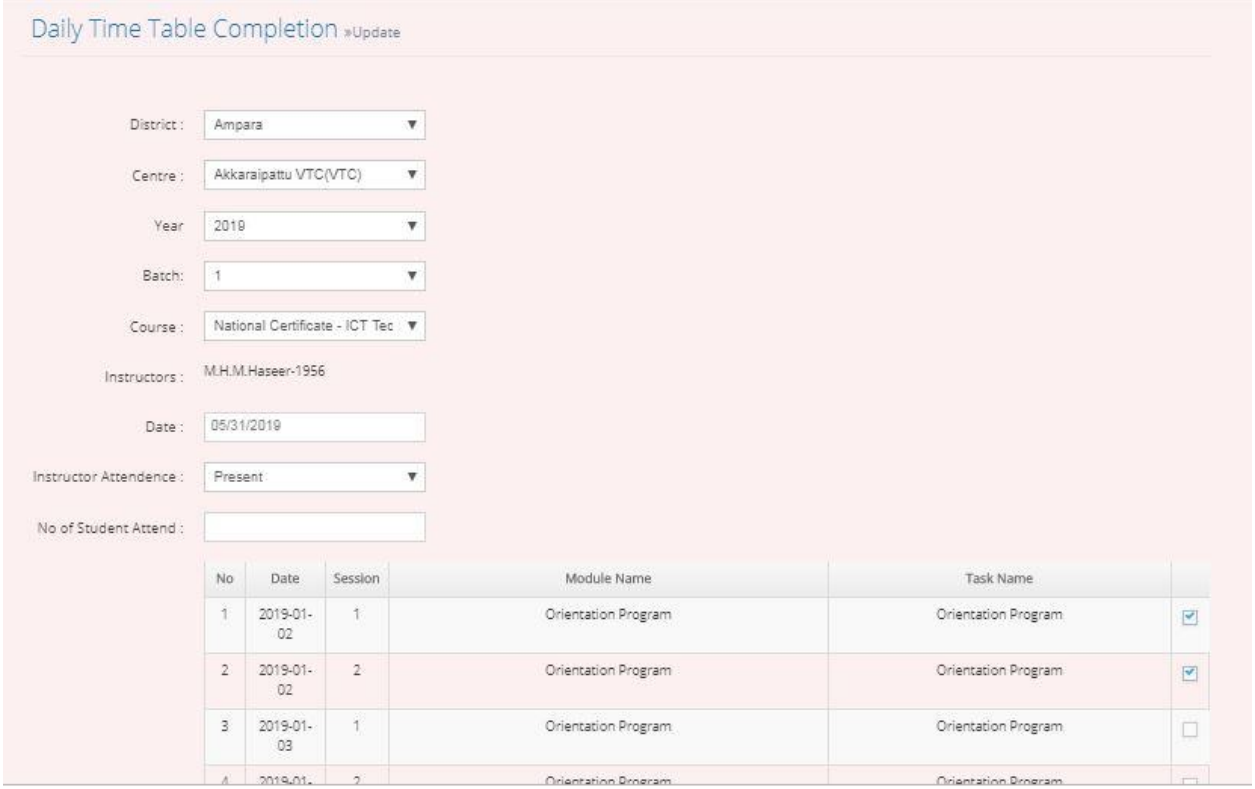


Figure B-20 daily time table completion form

Course Creation

Course view form is loaded as showed in Figure B-21. This form provide new course creation Figure B-22, course delete Figure B-21 and course editing Figure B-23 facilities for the user

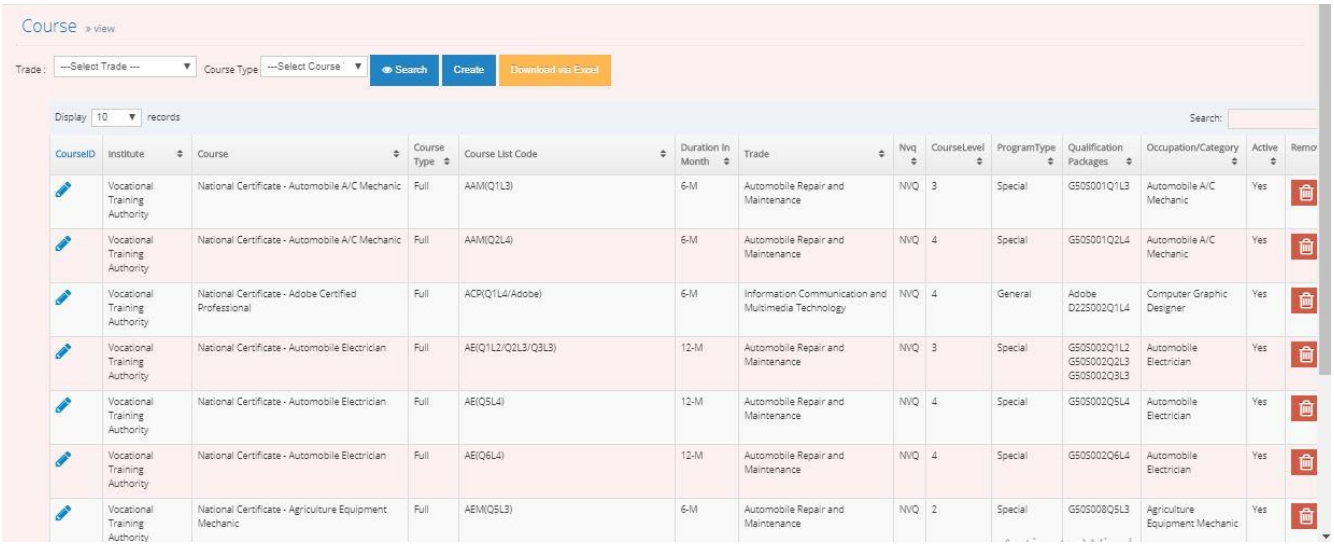


Figure B-21 course details view form

After clicking on create course button it will load course creation form and after filling all the required data and click create button, then new course will created by the system.

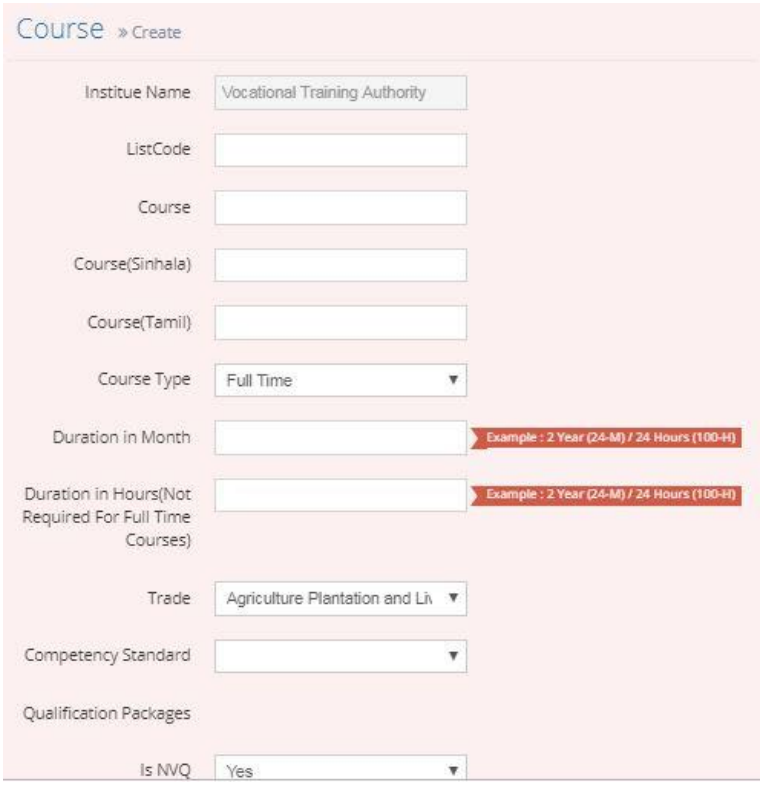


Figure B-22 course details creation form

After clicking on the delete button available in the course data table column Figure B-21, it will popup trade deleting confirmation dialog box for particular course and after clicking on confirm button Figure B-23, system will particular course from the system and redirected to the course details view from.

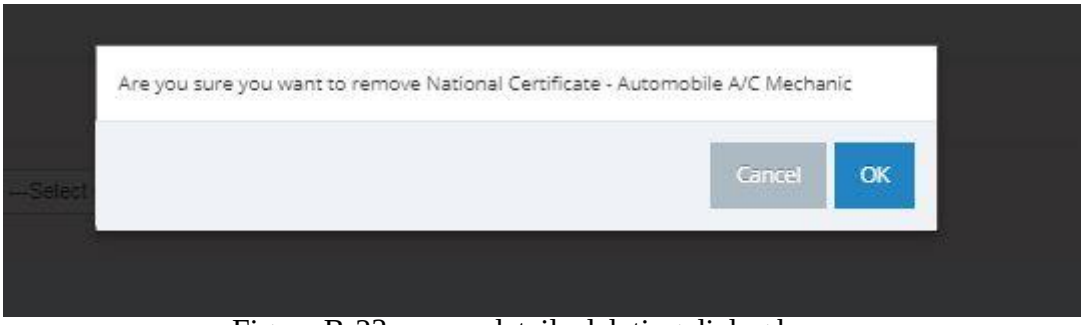


Figure B-23 course details deleting dialog box

After clicking on the editing link available in the course data table column Figure B-21, it will load course editing form for particular course and after filling/changing all the required data and click update button Figure B-24, then edited data will be saved in to the system and redirected to the course details view from.

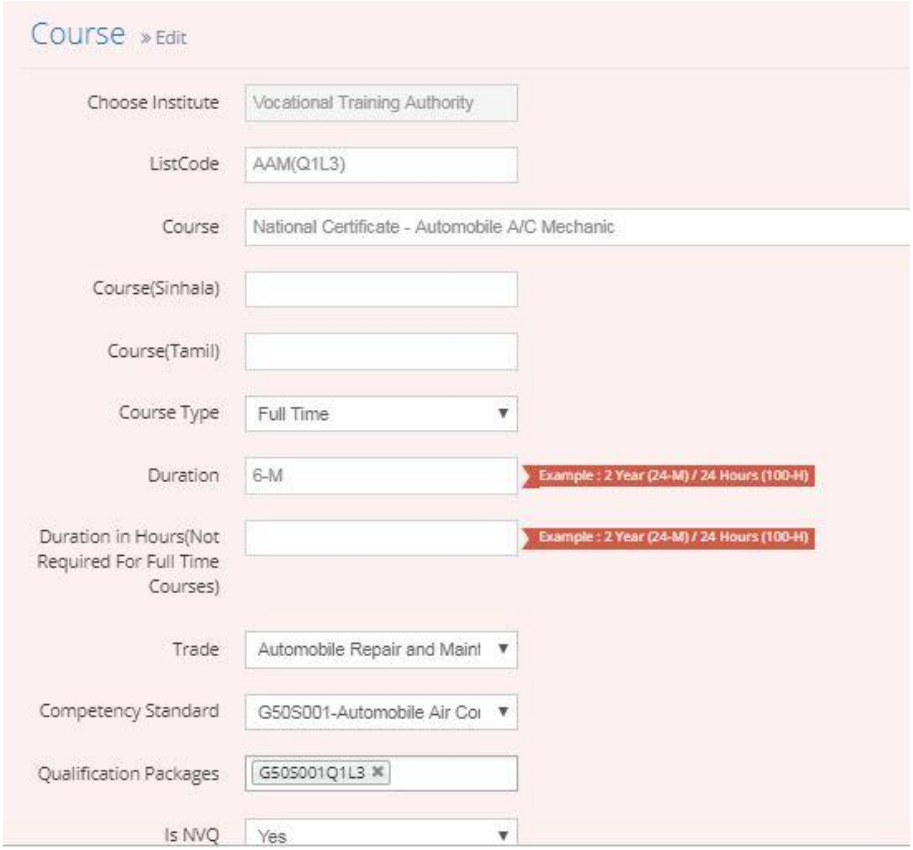


Figure B-24 course details editing form

Actual Time Table Creation

Use path Actual Time Table->Generate Actual Time Table

Actual time table creation form is loaded as showed in Figure B-25. This form provide time table loading facility for training courses Figure B-26, time table view with download figure 8.27, and weekly time table view and download facility.

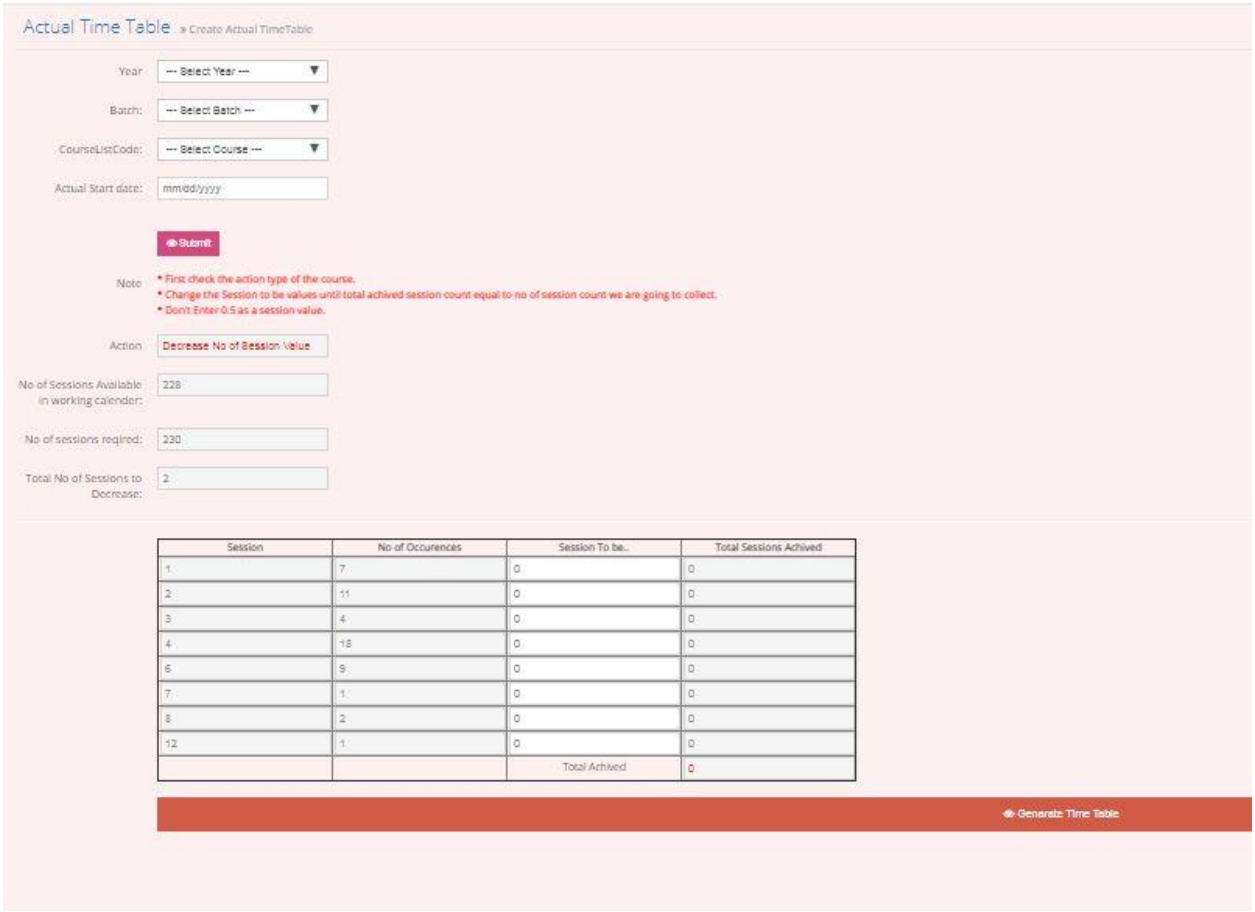


Figure B-25 actual time table creation form

Use path Actual Time Table->View Actual Time Table

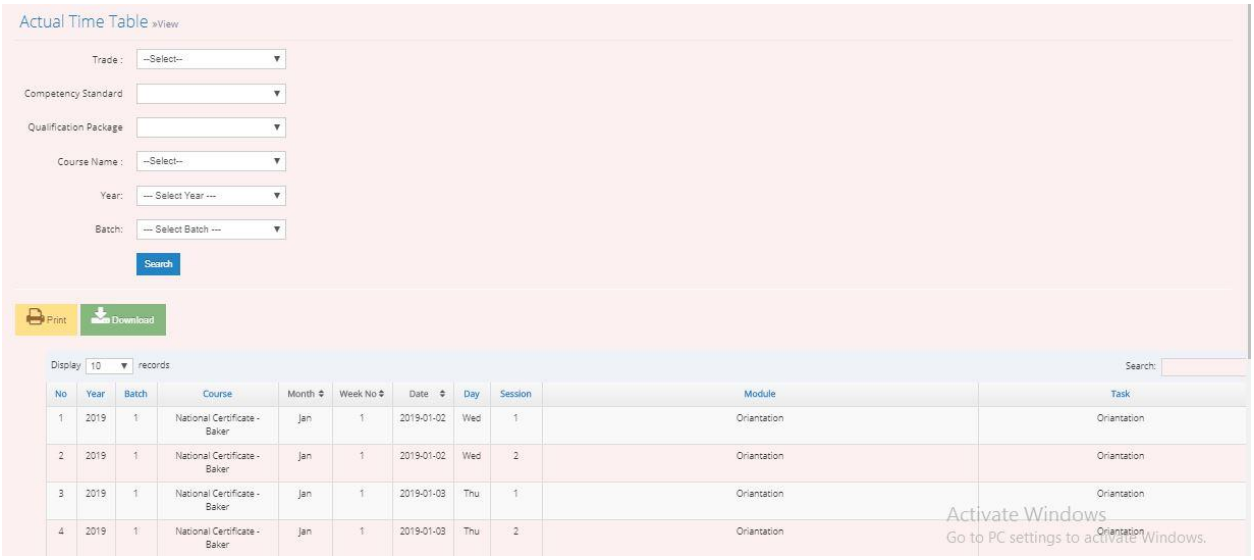


Figure B-26 actual time table view form

Use path Actual Time Table->View weekly Time Table

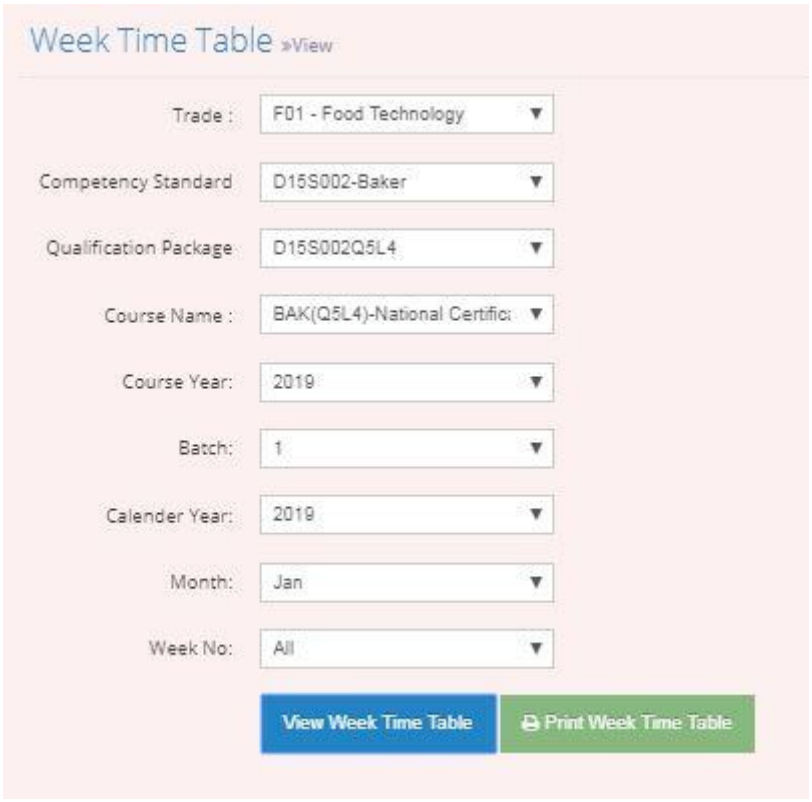


Figure B-27 actual time table view form 2

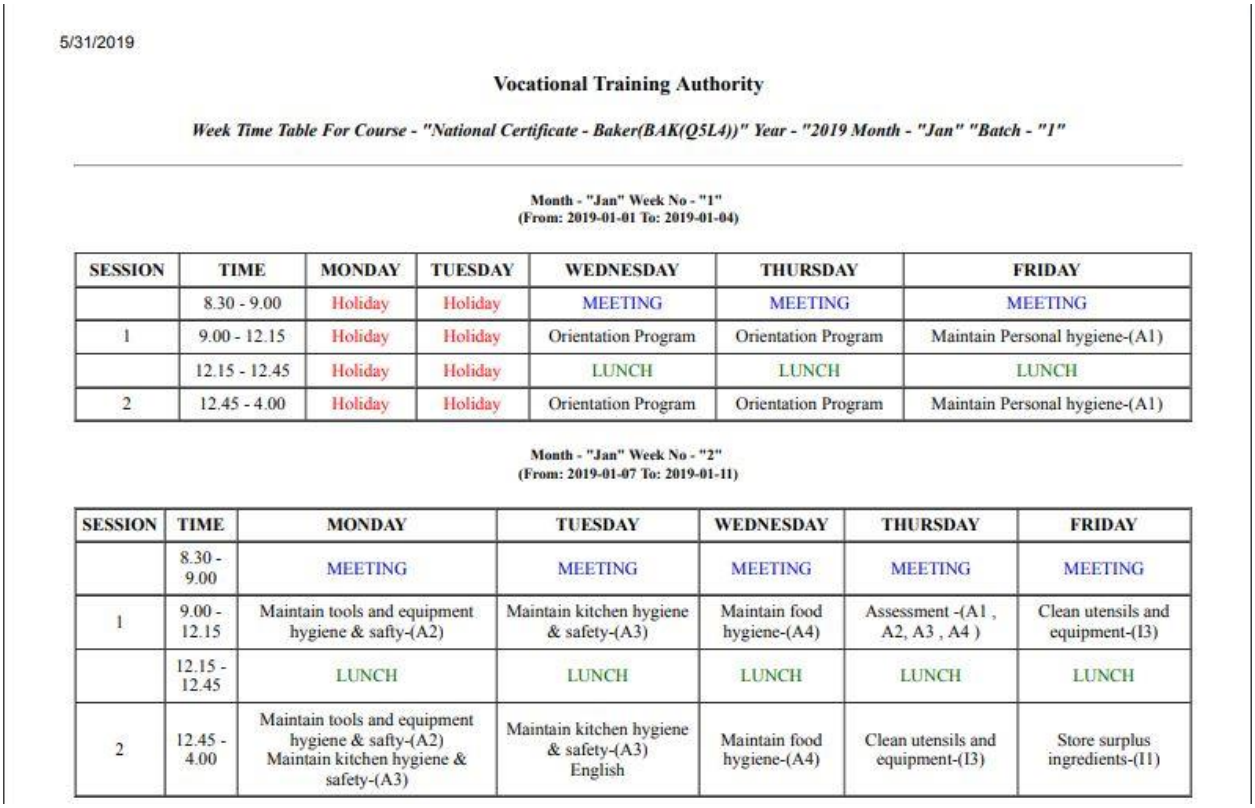
Week Time Table For Course - National Certificate - Baker Year -2019 Batch -1

Month - Jan Week No - 1
(From: 2019-01-01 To: 2019-01-04)

SESSION	TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	8.30 - 9.00	Holiday	Holiday	MEETING	MEETING	MEETING
1	9.00 - 12.15	Holiday	Holiday	Orientation Program	Orientation Program	Maintain Personal hygiene-(A1)
	12.15 - 12.45	Holiday	Holiday	LUNCH	LUNCH	LUNCH
2	12.45 - 4.00	Holiday	Holiday	Orientation Program	Orientation Program	Maintain Personal hygiene-(A1)

Figure B-28 actual time table view form

✓ Weekly time table pdf document



5/31/2019

Vocational Training Authority

Week Time Table For Course - "National Certificate - Baker(BAK(Q5L4))" Year - "2019 Month - "Jan" "Batch - "1"

Month - "Jan" Week No - "1"
(From: 2019-01-01 To: 2019-01-04)

SESSION	TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	8.30 - 9.00	Holiday	Holiday	MEETING	MEETING	MEETING
1	9.00 - 12.15	Holiday	Holiday	Orientation Program	Orientation Program	Maintain Personal hygiene-(A1)
	12.15 - 12.45	Holiday	Holiday	LUNCH	LUNCH	LUNCH
2	12.45 - 4.00	Holiday	Holiday	Orientation Program	Orientation Program	Maintain Personal hygiene-(A1)

Month - "Jan" Week No - "2"
(From: 2019-01-07 To: 2019-01-11)

SESSION	TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	8.30 - 9.00	MEETING	MEETING	MEETING	MEETING	MEETING
1	9.00 - 12.15	Maintain tools and equipment hygiene & safty-(A2)	Maintain kitchen hygiene & safety-(A3)	Maintain food hygiene-(A4)	Assessment -(A1 , A2, A3 , A4)	Clean utensils and equipment-(I3)
	12.15 - 12.45	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
2	12.45 - 4.00	Maintain tools and equipment hygiene & safty-(A2) Maintain kitchen hygiene & safety-(A3)	Maintain kitchen hygiene & safety-(A3) English	Maintain food hygiene-(A4)	Clean utensils and equipment-(I3)	Store surplus ingredients-(I1)

Figure B-29 Weekly time table pdf document

Course Monitoring Plan Creation

Monitoring plan creation form is loaded as showed in figure 8.30. These forms provide facility to create monitoring plans for the courses. Monitoring users have to enter their monitoring plans to the system before visit to the centers and have get approval from the immediate super officer.

Use path Plan-Course->Create Course Monitoring Plan(TO/AD/DD)

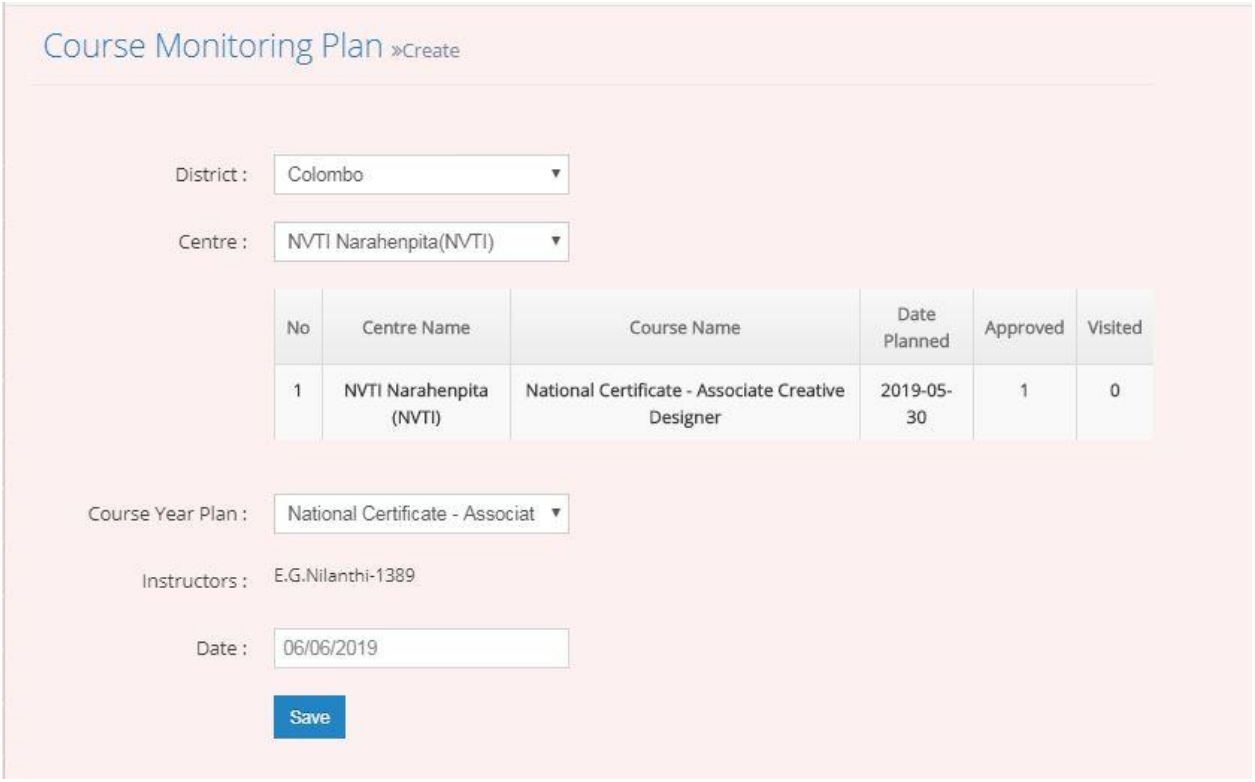


Figure B-30 Monitoring Plan Creation form

Course Monitoring Plan Approval/Rejections

Monitoring plan approval form is loaded as showed in Figure B-31. These forms provide facility to approve/reject monitoring plans planned by the monitoring officers. Super officer have to approve monitoring officers plans by clicking on the approve sign (Thumb-up icon) Figure B-32 and if particular plan can reject with the possible reason by clicking on sign (Thumb-down icon)

Use path Plan-Course->View and Approve Course Monitoring Plan (AD/DD)

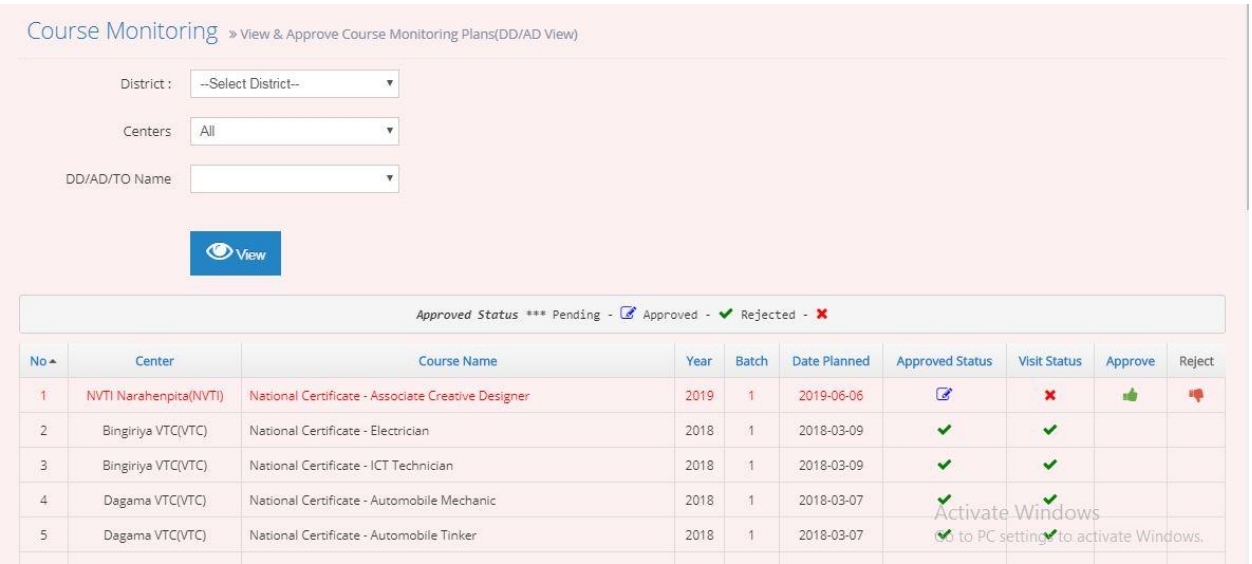


Figure B-31 monitoring plan approve/reject view form

To approve monitoring plan click on the green color Thumb-up icon

Figure B-32 monitoring plan approve/reject view form

To reject monitoring plan click on the red color Thumb-down icon

Figure B-33 monitoring plan approve/reject view form

After clicking on the red icon give reason to reject monitoring plan.

Figure B-34 monitoring plan approve/reject view form

Monitoring Form Creation

Monitoring form entering form is loaded as showed in figure 8.35. These forms provide facility to Create, Edit, View and Date Changed monitoring forms.

Use path Monitoring->Course Monitor

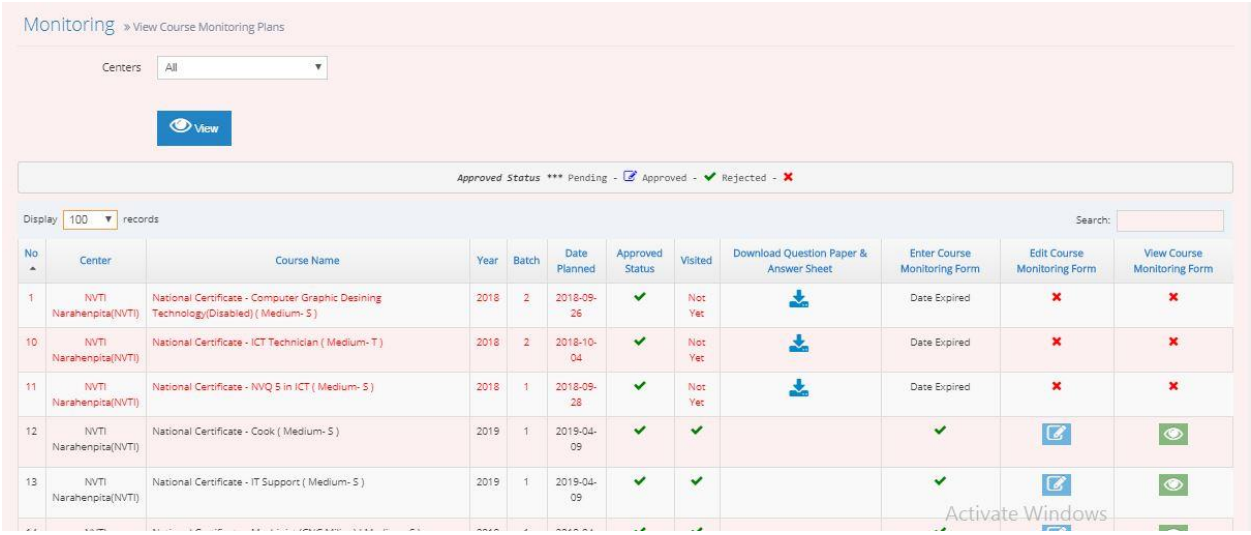


Figure B-35 monitoring form view

Edit Monitoring Form by clicking on editing button

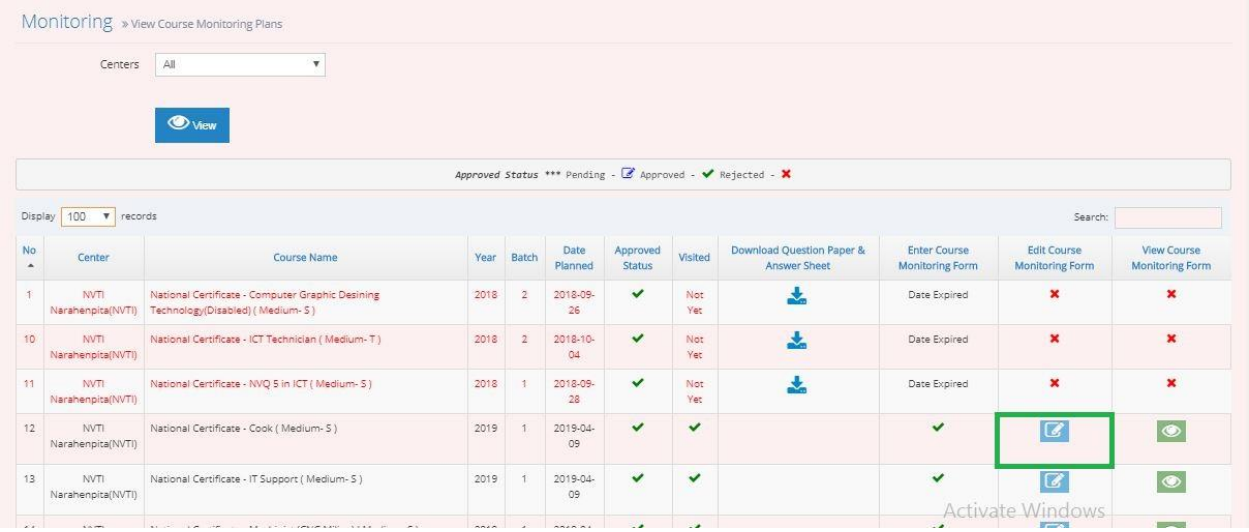


Figure B-36 monitoring form editing view

View entered monitoring Form by clicking on view button

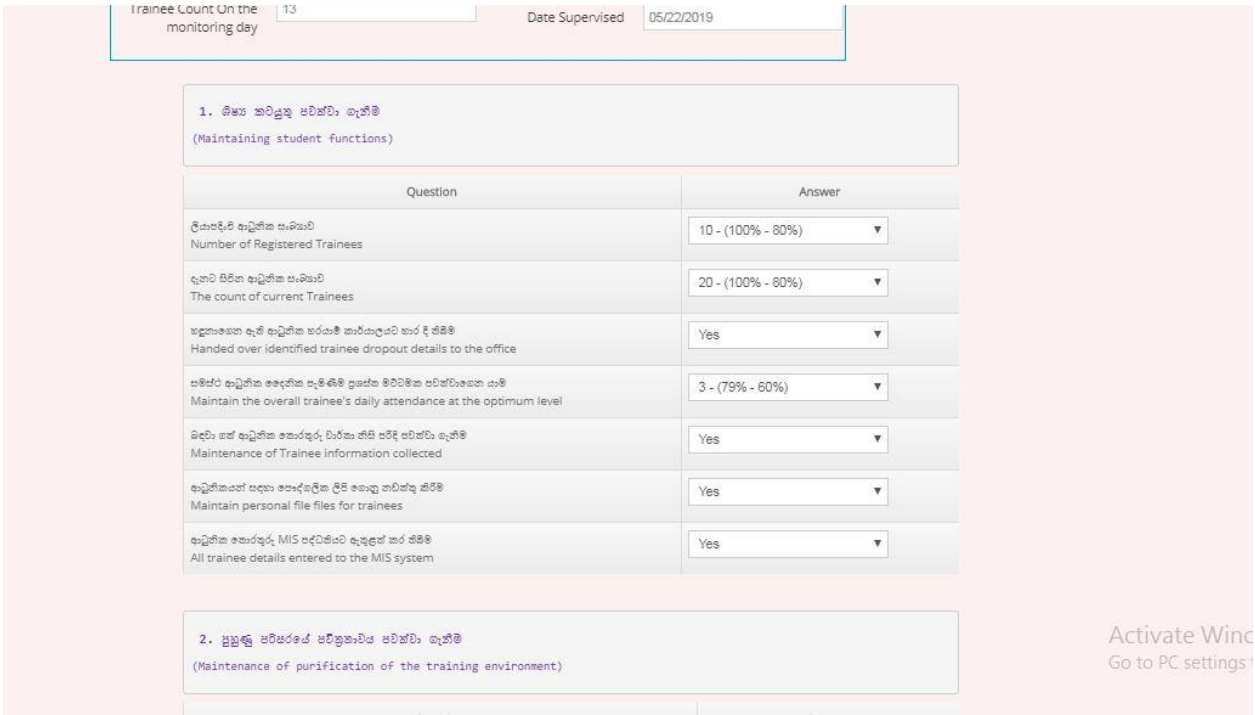


Figure B-37 monitoring form editing view

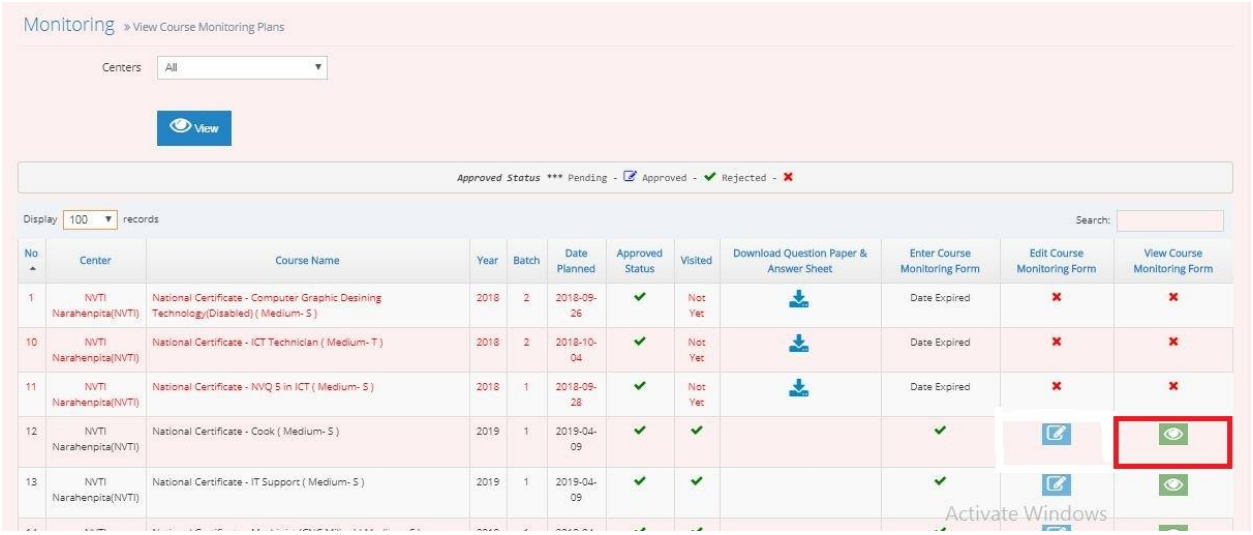


Figure B-38 monitoring form editing view