

Event Management System for Conference & Workshop

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Event Management System for Conference & Workshop

**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

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

Certified by:

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Date:

Abstract

Academic conferences are consists of event handling such as publish conference details on the website, call for papers, submission of papers by authors, review process, the registration process of authors and participants. Many academic conferences are held annually and the organizing process is very time consuming and full of paperwork. When the number of participants is high, it is very hard to handle the conference without any proper system. Therefore, easy to use event management system is needed to cater to the need of organizers.

Event management system for conference and workshop is developed to help managing of professionals, academic and technical conferences and events. The aim of this system is to develop a reliable and accurate Event Management System for Conference and Workshop. Main objective of the developed system is to automate the manual event handling process. Unlikely manual handle conference, using a system provides lots of benefits. Benefits of the system reduce the cost for the advertising, minimize the paperwork, improve efficiency and effectiveness, less of human errors, and save time.

The implemented system consists of many features, which include publishing event details on the website, authors can submit abstracts and full papers through the system, assign reviewers to review the papers, send review papers to authors to do the modifications, send email notifications to reviewers and authors, scheduling the event, event registration can be done by online payments. This web-based application is easy to handle and automates the process of the events one after the other.

To evaluate the final system better evaluation techniques required. The automated system is tested by using several testing methods such as unit test, integration test, system test, and acceptance test. Questionnaire is also provided to get the feedback of the system users.

The system is having Apache web server as the server environment, CodeIgniter framework and MYSQL as the database management system to provide a low-cost effective solution for the client. The supporting system is developed with PHP, MYSQL, Ajax and Java script libraries.

The entire application could be run on any platform. Apart from the implementation, the development practice included a proper Quality Assurance process, user manuals and demonstration to improve the remunerations of the system.

Acknowledgment

It is my great pleasure to express my affectionate and deep gratitude to my supervisor Dr. Enosha Hettiarachchi Senior lecturer of UCSC, for supervising me and providing the useful advices, suggestions, and engagement throughout the learning and development of the system. This dissertation would not have been possible without her guidance, comments and constant inspiration.

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List of Abbreviations

DB	-	Database
CI	-	CodeIgniter
CSS	-	Cascading Style Sheet
EMSCW	-	Event Management System for Conference & Workshop
ER Diagram	-	Entity Relationship Diagram
HTML	-	Hyper Text Markup Language
IE	-	Internet Explorer
JS	-	JavaScript
MVC	-	Model View Controller
My SQL	-	My Structured Query Language
PHP	-	Hypertext Pre-Processor
RAM	-	Random Access Memory
SDLC	-	Software Development Life Cycle
UML	-	Unified Modeling Language
URL	-	Uniform Resource Locator
WWW	-	World Wide Web
XAMPP	-	Cross Platform, Apache, MariaDB, PHP, and Perl

Chapter 1 : Introduction

1.1 Introduction

In today's world lot of events are conducting, such as workshops, conferences and concerts. There's no doubt that most organizations are spending their valuable time and funds to find the right strategies. However, there are systems that focus on managing events; and also challenges in fulfilling the interaction between authors, reviewers, and organizers. Some systems are very expensive.

Many academic conferences are held annually and the organizing process is very time consuming and full of paperwork. When the number of participants is high, it is very hard to handle the conference without any proper system. To overcome this problem proper event management system is needed.

The developed system is a web-based Event Management System for Conferences and Workshops (EMSCW). Organizers, participants, authors and many more roles are involved in a conference. Features of the developed system are mentioned as follows: Event organizers can log in to the system and they can publish their event details. Authors can register to the system to submit their research papers, Editor select the registered reviewers according to their subject areas. Email send to reviewer asking are they willing to review this paper. If they say yes, editor send the paper without revealing authors' identification. If the reviewer is not willing to review the paper they can nominate another reviewer or editor assign new reviewer through the system. According to the reviewer's feedback of the paper, author can do the modifications. Author get updates of the submitted paper's status. Accepted authors will be informed to register for the conference via the system. Selected authors can register and make the payments for the conference. Payments can be done by the system via pay pal. After the registration, registered participants will get an email reminder about event dates, venue, location map and vehicle pass. Organizers can get various reports and data backups.

Advantages of the implemented system reduce the cost for the advertising, minimize the paperwork, improve efficiency and effectiveness, less of human errors, and less of human resource.

Using the system organizers can successfully complete the conference process from the initial scoping and planning phase through to the post-event analysis in a small time period. This system manages the event timeline and critical path to help ensure that no task is missed.

1.2 Problem Domain and Motivation

Event Management involves planning, organizing, and execution of live events. Among that handling conferences and workshops are crucial. Small mistake leads to entire event failure.

Manually managing a conference or workshop is a very time consuming, full of paperwork and complicated process. It requires human resources and paperwork to a great extent. Sometimes events' venues and schedules are overlapping. Advertising for the event, printing brochures, and printing posters also consume a lot of time and money. Most of the time, after the conference, printed materials are thrown away and this leads to wastage of papers.

Papers submitted by email might not reach the conference organizers before the deadline or organizer might miss viewing the received emails. The reviewer does not get the papers on time to review. Reviewed papers with comments might not be resent. Selected authors might not be informed properly on time. They might miss to do the modification and send the modified papers on time. There are no any notifications to register for the conference. Venue might not be able to accommodate all participants. Proceedings, bags, programme books, and abstract books not be printed on time.

Events could end up with a failure due to poor scheduling, planning, poor means of communication, and ineffective resource allocation. Deep diving into the problem, the most predominant factor which leads towards to all these problems is events being manually managed without a proper system.

Some organizations use word processing applications and spreadsheet applications to maintain author lists and schedules. These applications are not flexible enough to store all types of data. Most of the calendars and planner applications available today only display a schedule which a user would've manually planned. There are systems to manage events but available systems do not have all features as one system. In that case, the client should have to purchase some of the features separately. To overcome these problems, an Event Management System for Conference and Workshop will be of help.

1.3 Aims and Objectives

The aim of this proposed system is to develop a reliable and accurate Event Management System for Conference and Workshop by getting all the resources into a single place (event registration, event scheduling, notification, reporting, admin functionalities, and payments).

The most crucial objective of the system is to automate the manual event handling process. Using automated system authors can submit papers via the system and reviewers can give comments on time. Unlike manual process there is no any paper misplaced and paper wastage. Manage attendees (including online registrations), online paper submissions, send notifications about full event and schedule participant details on the simple web interface. Without using any word processing or spreadsheet applications, system deliver the information based on requirement using a web browser. The system helps to minimize the failure of miscommunication and information gaps. This System enhances the sense of collaboration towards an end goal, with everyone understanding what needs to be done for a successful event.

Sub objectives of the system are:

- Providing access to schedule anytime and anywhere by syncing the day's schedule with a central server.
- Providing a web interface accessible from anywhere.
- Providing easy to use and user friendly interactive web interfaces to event organizer & event participants.
- Providing a web interface accessible from anywhere, sharing documentation.
- Online paper submission.
- Generate various reports.
- No need to print brochures, posters, or any other paper related materials. Therefore system will help to conduct eco-friendly events.
- Providing security by adding a user account with different privilege and regular data backup.
- System help to make an event more productive, less paperwork, efficient & cost-effective by bringing together with one centralized, accurate information source updated in real time.

1.4 Scope

Event management system for conference and workshop consist of two major modules, conference management process and workshop management process.

In workshop management process organizer can insert, update and delete workshop details (venue, schedule, brochures, and registration fee), handle payments, and generate reports.

In conference management process organizer can create, update and edit conference details, authors can submit papers through the system, editors send an email notification to the reviewer to inform review new papers, reviewer submits comments of the reviewed paper. Author needs to register to the system before submit the research paper and the login details will be informed by email notification. Authors and participants can register and make the payments for the conference. Payments can be done by the system via pay pal. After the registration email notification sends to the participants with the event details and vehicle pass to avoid parking problems. Password recovery facility also available in this system. When the user forgot password of the user login, security code will send to the user's email address and they can reset the password. Organizers will be able to generate reports (weekly, monthly or annually), view reports and print reports. Reports can be facilitated as in pdf and excel. The system provides database backup facility. Handling a database helps to keep all the record easy accessible and centralized.

1.5 Dissertation Outline

This dissertation is arranged as follows.

Chapter 1-Introduction

This chapter discusses why the Event Management system is needed. The problem of the current system, scope, and objective of the system and how to overcome those problems with the new system.

Chapter 2-Background

This chapter studies background of the system, crucial review of available existing systems and technologies and related applications.

Chapter 3-Analysis

This chapter explains the requirement gathering techniques that have been used to identify the requirement of the system. Functional and nonfunctional requirements need to do this project.

Chapter 4-Design

Provide a description of ER diagram, UML diagrams and the methodological approach that are applied in the program designing.

Chapter 5-Implementation

During the Implementation phase, it describes the development are of the system. This deals with the coding and implementation tools and techniques to develop the entire system.

Chapter 6-Evaluation

The built system is tested by using sample data and its result will be discussed. Actual data from the client's environment is used. The chapter also includes aspects such as test plan, test cases, use of test automation tools and testing frameworks.

Chapter 7-Conclusion

This chapter summarizes the work; discusses its findings and contributions; points out limitations of the current work and further implementation.

Chapter 2 : Background

2.1 Introduction

The background analysis will primarily focus on various systems which are already available, followed by an evaluation of those solutions to find if there is already a suitable and applicable solution. Events could end up with a failure due to cost overruns, poor scheduling & planning, poor means of communication and ineffective resource allocation. Deep diving into the problem, the most predominant factor which leads towards to all these problems is events being manually managed without a proper system. There are some systems which help to manage events.

2.2 Requirement Analysis

Requirements analysis, also called requirements engineering, is the process of determining user expectations for a new or modified product. These features, called requirements, must be quantifiable, relevant and detailed. Analysis is primarily aimed at requirement gathering, fact finding and identifying the functional and non-functional requirements in the system. In addition analysis of available event management systems is discussed.

Frequent communication with system users to determine specific features is involved in requirements analysis. Therefore, conflict or ambiguity in requirements can be clarified. If failed in analyze the requirements carefully, the entire project will end up in failure, in theory it will contradict to the real requirements. Therefore, understanding what absolute requirement is vital. Requirement analysis is the most important stage in a Software Development Life Cycle. Upon completion of the analysis phase, the system can proceed to the design phase.

2.3 Review of present similar systems

- EasyChair [1]

EasyChair is a conference management system designed to help conference organizers to cope with the paper submission and review only. Some of the features of EasyChair are noted below. The organizer can be managing and monitoring the programme committee. Sophisticated and flexible management of the access of programme committee members and referees to papers and conflicts of interests. Authors can submit their papers online. Paper assignment based on the preferences of programme committee members. List of the latest events is published on the system. After the paper submitted by the author papers send to reviewers to review.

Sending information to programme committee members referees and authors done via emails. After getting comments by the reviewers, authors can respond to the reviews. EasyChair is mainly focused on conference paper submission to review process only. It does not cover up the managing the event. EasyChair is not open source and costly product for small organizations to use.

- Open Conference Systems [2]

Open Conference Systems (OCS) is a free Web publishing tool that will create a complete Web presence for the conference. This system allows to compose and send papers, call for papers, electronically accept paper and abstract submissions, allow paper submitters to edit their work, post conference proceedings and papers in a searchable format, according to user's willingness original data sets can post, register participants and integrate post-conference online discussions.

This system also focused on conference papers submission and review tasks only. They do not discuss how to manage the entire conference.

- Eventforce [3]

The Eventsforce abstract system is web-based software which addresses planning, marketing, and registration to post-event analysis and event data management. This system is not open source product this is a commercially available product. Features of the system: Custom websites and email templates, Request for abstracts/papers, Manage abstract submissions, Manage review processes, Build sessions and agendas, Export content for publishing and Manage registrations.

2.4 Summary

This section describes specific features of the above mentioned similar systems and comparison of those features in a tabular format. Also below table 2.1 shows what are the features introduced in the proposed system.

Features	EasyChair	Open Conference System	Event force	Proposed System
1. Provide event's location map	No	No	Yes	Yes
2. Select Food and beverage for the participants	No	No	Yes, but have to purchase this module.	Yes
3. Registration can be done via social media	No	No	No	Yes
4. Send greeting cards	No	No	No	Yes
5. Issue vehicle pass	No	No	No	Yes
6. Open source	No	Yes	No	Yes

Table 2.1: Comparison of Proposed System and Existing Systems

According to Table 2.1, existing systems do not offer the above mentioned features in their systems. There are no open source systems which provide all the requested features, therefore, proposed system should be developed to full fill the requirements. The proposed system combined all these features together to satisfy user requirements. Therefore, users can get maximum benefits.

Chapter 3 : Analysis

3.1 Introduction

The analysis is focused on requirement gathering, fact finding and identifying the functional and non-functional requirements and requirements specification of the system. After completing the analysis stage, the system can proceed to the design stage. In the design stage software architecture design and Entity Relationship diagrams, UML diagrams are drawn.

3.2 Requirements Gathering

Requirement gathering or requirement eliciting is a challenging task, it is the process of identifying the needs and conditions of any sort of system. To make requirement gathering phase successful it is very important to gather all type of data. The success of any project is depended upon the accuracy of available data. If failed to analyze the requirement, incorrectly analyzed requirements leads the entire project failure. Therefore, it is very important to identify and gather requirements correctly. There are many facts gathering techniques available for analysis, such as Sampling, Questioners, Interviews, Background Reading, and Observations.

3.2.1 Interviews

This is one of the best methods to collect accurate information from stakeholders and system users. Interviews can be used to collect the information from groups or individuals. This method also helps gap the areas of misunderstandings and help to discuss the future problems. Interviews can be carried out in two ways.

Structure interview is a formal interview with the fixed questions and unstructured interviews is more or less like a casual conversation wherein depths areas topics are covered and apart from the topic other information also discussed.

I used both structured and unstructured interview methods to gather information. Also interviewed the main stakeholders such as chairperson, secretary, authors, and editors of the previous conferences and get their feedback. (Interview questionnaire is attached in Appendix C.1)

3.2.2 Observations

Observed the reputed university which is manually handling the conference management process. They have published their event details on conference website and paper submissions are done via email. After paper submission, all processes are done by the conference committee. There are online event management systems on the internet. Observed the demo version of that system to understand the functionalities and behaviors of that system.

3.2.3 Questionnaires

Prepared the questionnaires according to the problems occurs when doing the sampling and observations. Also prepared general questions regarding the conference and event management process.

Provide questionnaires to the people who involved with event management and conference management in reputed institutes and university. Questionnaire design for several categories of users based on their contribution to the event management process. (Questionnaire is attached in Appendix C.2)

3.3 Requirement Analysis

Requirement analysis plays a significant role in a software development process. Analysis can be done by using functional and nonfunctional requirement. Gathered requirements need to be analyzed properly. Avoidance of scope creep, erroneous and ambiguous requirement can create chaos later, therefore, it is very important to have frequent communication with the system users.

The requirements can be defined clearly to ensure the design and implementation successful, system requirement should be analyzed and defined clearly. Different kinds of techniques are being used to do the analyzing to find a solution.

3.4 Requirements for the new system

Requirements for the new system was gathered using interviews, observations, and questionnaire. Based on that gathered and analyzed requirement can be divided into functional requirements and nonfunctional requirements.

3.4.1 Functional Requirements

Functional requirement of the organizer

- Create event
 - Organizer can add conference and workshop details to the system.
 - Organizer can update the event management system website.
- Edit and modify events.
 - Add schedules, venues and speaker's details to the system.
- Maintain authors and reviewers' user logins.
- Get reports
 - Organizer can generate various reports such as participant details, attendant details.
- Send email when a new participant signs up.
- Organiser can view the participant details, reviewer details and submitted papers.
- Give permission to log in to the system for registered reviewers.
- Forward conference papers to review and get the feedback from the reviewer.
- Send feedback to the authors for further modifications.
- Issue vehicle passes for the event participants.

Functional requirement of administrator

- Get system backups.
- Restore backups to check the reliability of the backup.
- Modify Event Management website.

Functional requirement of authors and reviewers

- Online paper submission.
Authors can submit papers online.
- Author can view the status of the paper.
- Author can view reviewer comments.
- Online registration
Authors and participants can register the system online as well as social media.
- Review the paper send by the organizer and give the comments.
- If reviewer not willing to review the paper, inform that via email.
- Author modify the paper according to the reviewer's feedback.

- Send modified paper to the organizer.
- If author forgot login details of the system, email notification will be send to the author's email address to recover the password.

3.4.2 Non-Functional Requirements

Non-functional requirement describes how a system should behave.

- **Availability**

System should be available and up to date. Availability can be measured by reliability if the reliability increases availability also increases. If the system is upgrading or maintaining it should be informed early to the users to minimize the inconvenience.

- **Usability**

Generally migrating from manual process to computer system are not easy to some users. Therefore the system should be easy to learn, use, arrange inputs, interpreting outputs, and understandable to every type of people. Especially people from a different background such as non IT related people should be easy to learn, easy to understand, and should be easy to use the developed system.

- **User Friendliness**

System should design graphically attractive and very clear. Generally, people prefer graphical beauty than to read the text. System contains images and buttons with very clear easy to understand language and avoid technical jargons. If the system is not user friendly users hesitate to use the system.

- **Performance**

Response time is very important part of the system. When a specific task has requested by the user, feedback of that request should appear in very fast. User cannot wait a long time for the system to respond. If the user had to wait a long time to get the responding user will not happy about the system and they will reject to use the system.

- **Security**

System should be ensuring that the user's personal information is confidential. As well as it should provide secure access to every user, the administrator can control the activities of users. When the user register to the system admin should give privileges and give access to the specific users.

- **Reliability**

Reliability describes how well the system consistently performs the system functions without failure. Details included in the system should be accurate and available. System users should acknowledge if the system failure or downtime occurs.

3.4.3 Hardware and Software Requirements

Minimum Hardware Requirement and software Requirement categories as follows.

1. Development side requirements can be deployed as in table 3.1
2. Implementation side requirements can be deployed as in table 3.2

- Development side requirement

Hardware Requirements	Software Requirements
Intel core i3 2.0GHz Processor	Apache Web server
4 GB RAM Memory	MySQL 5.1
10 GB Free space in Hard Disk	PHP
Broadband Internet Connection	
Gigabit Ethernet Interface	

Table 3.1: Development Side Requirements

- Implementation Side Requirement

Hardware Requirements	Software Requirements
Intel 2.0GHz Processor	Apache Web server
4 GB RAM Memory	MySQL 5.1
40 GB Free space in Hard Disk	IE 6+, Mozilla Fire Fox, Google Chrome Web browser
Broadband Internet Connection	
100/1000 Mbps Network interface	

Table 3.2 : Implementation Side Requirement

Chapter 4 : Design

4.1 Entity Relationship Diagram (ER Diagram)

ER diagram is a graphical representation of entities and their relationship to each other, typically used in computing regarding the organization of data within database or information systems. Entity is a piece of data, object or concept which described which data should store. Relationship is how data is shared between entities. The ER diagram for the system is shown in figure 4.1

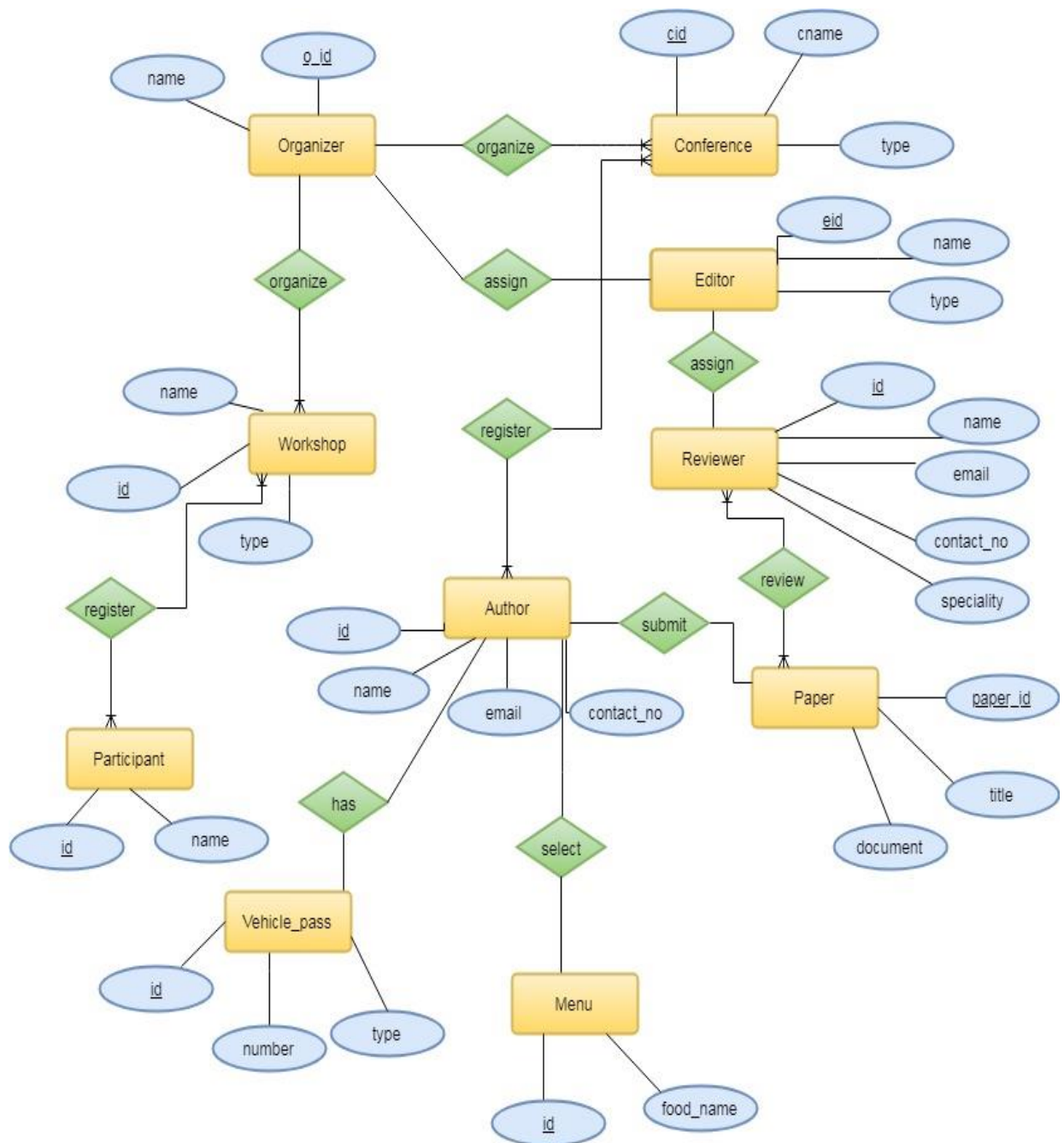


Figure 4.1:ER Diagram

4.2 Use Case Diagram

In this use case diagram provide brief description about six main actors in the system such as organizer, editor, reviewer, author, participant, and administrator. Use case diagram for the system is shown in figure 4.2.

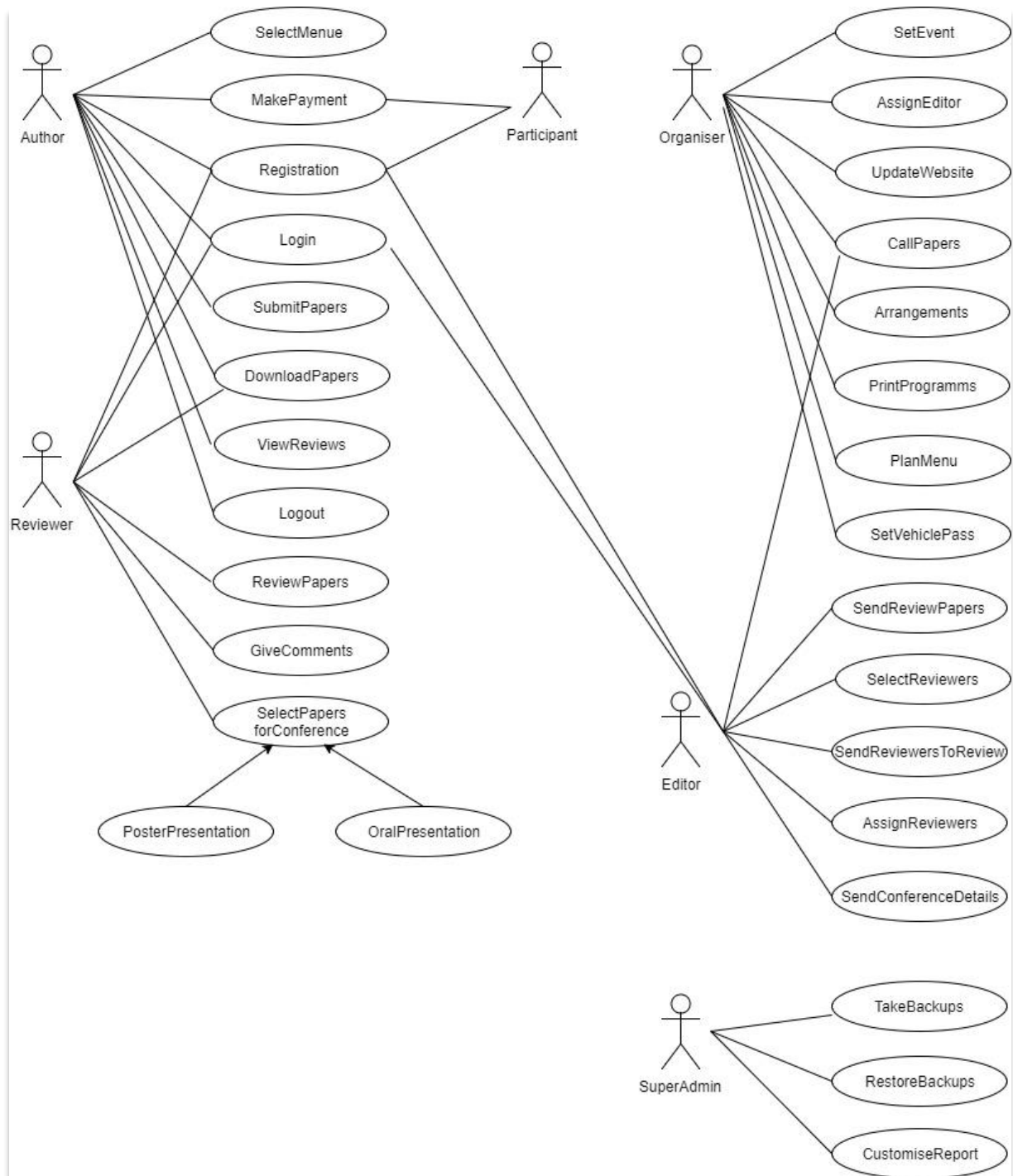


Figure 4.2: Use case Diagram

4.2.1 Use Case Narratives

Use case narrative is a textual description of the business event and how the user will interact with the system to accomplish the task. Use case diagrams for the developed system is shown in table 4.1, 4.2, 4.3, 4.4, 4.5.

Use Case	Set event
Description	Organizer set event details on the system
Primary Actor	Organizer
Secondary Actor	None
Preconditions	
1. Log in to the system	
Flow of events	
2. View calendar 3. Update the system. 4. Call papers for the conference.	
Postconditions	
None	

Table 4.1: Use case description for create event

Use Case	Submit paper
Description	Author submit paper to the conference
Primary Actor	Author
Secondary Actor	Editor, Reviewer
Preconditions	
1. Look the event website 2. Select the preferred conference	
Flow of events	
1. Author write the paper 2. Author upload the paper 3. Reviewer send the feedback with minor or major modifications. 4. Author submit the paper with the modification 5. Paper selected for the conference	
Postconditions	
1. Author register to the conference	

Table 4.2: Use case description for paper submission

Use Case	Registration
Description	Register to the event
Primary Actor	Author, participant
Secondary Actor	None
Preconditions	
<ol style="list-style-type: none"> 1. Log in to the system 2. Authors should get approval for their paper 	
Flow of events	
<ol style="list-style-type: none"> 1. Selected authors should register into the system 2. Make the registration payment 	
Postconditions	
<ol style="list-style-type: none"> 1. Get invitation, programme books and other materials 	

Table 4.3: Use case description for registration

Use Case	Paper Review
Description	Paper review by the reviewer or review panel
Primary Actor	Reviewer
Secondary Actor	Editor
Preconditions	
<ol style="list-style-type: none"> 1. Log to the system 	
Flow of events	
<ol style="list-style-type: none"> 1. Reviewer download the paper 2. Review the paper and accept with minor modification, major modification or reject the paper. 3. Reviewer sends the feedback with minor or major modifications by filling a form to editor. 4. Editor send the paper to author to do the modification 	
Postconditions	
<ol style="list-style-type: none"> 1. Paper selected to the conference 	

Table 4.4: Use case description for paper review process

4.3 Activity Diagram for Abstract Selection Process

Activity diagram for the abstract selection process is shown in figure 4.3

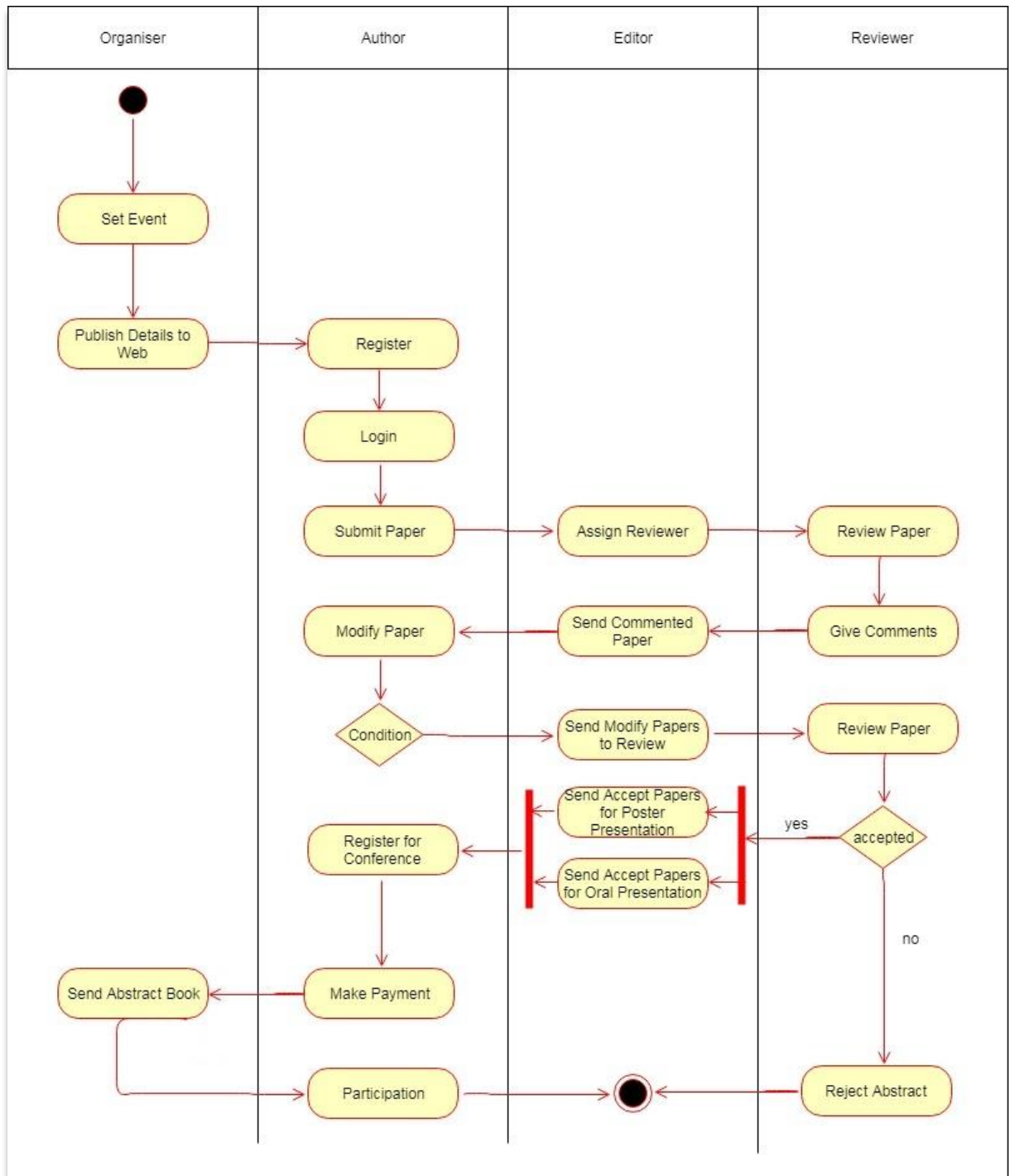


Figure 4.3: Activity Diagram

4.4 Sequence diagram for abstract submission and registration process

Sequence diagram for the abstract submission and registration process is shown in figure 4.4

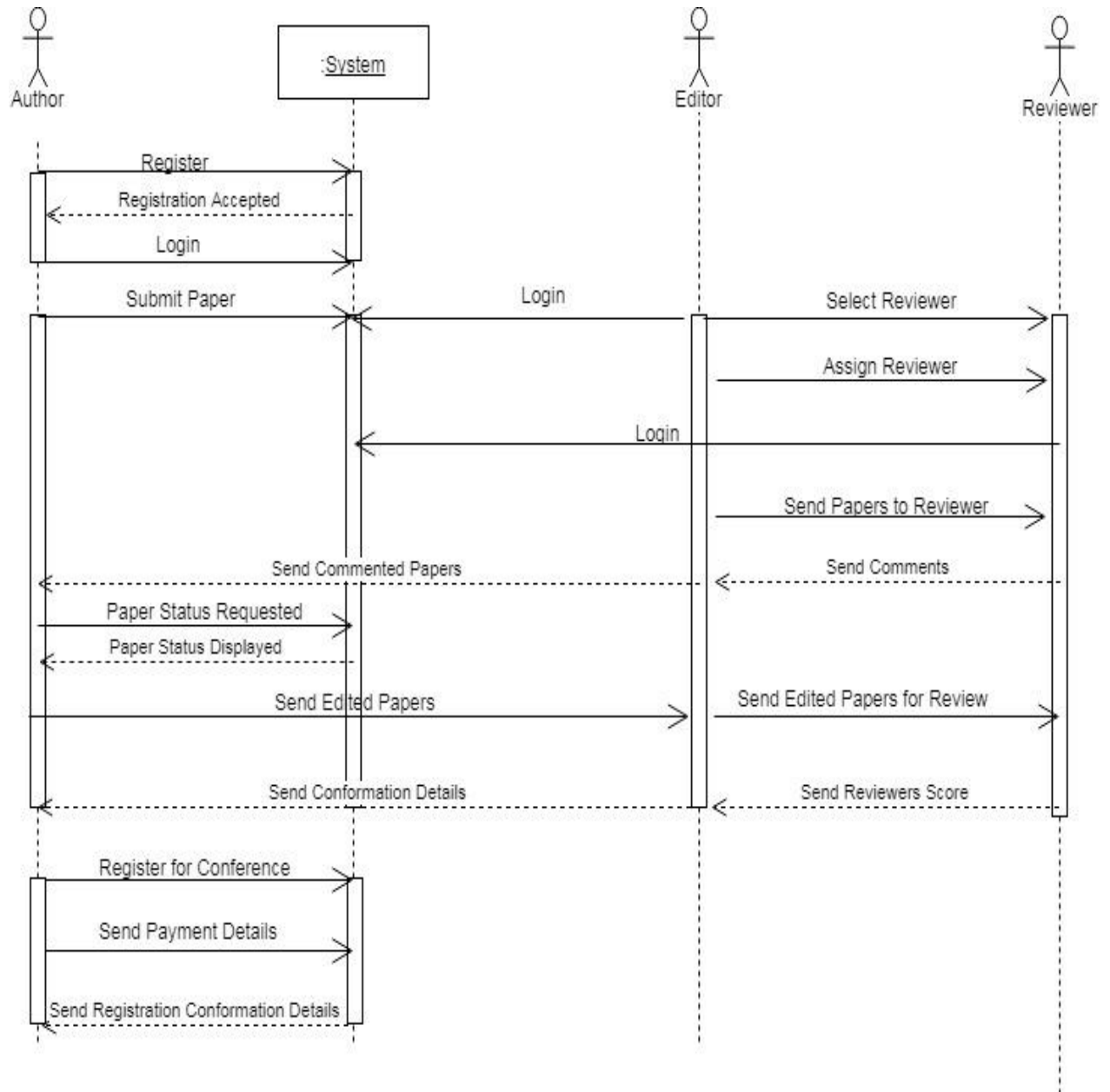


Figure 4.4: Sequence diagram for Conference

4.5 Sequence diagram for super admin's process

Sequence diagram for the super administrator's process is shown in figure 4.5

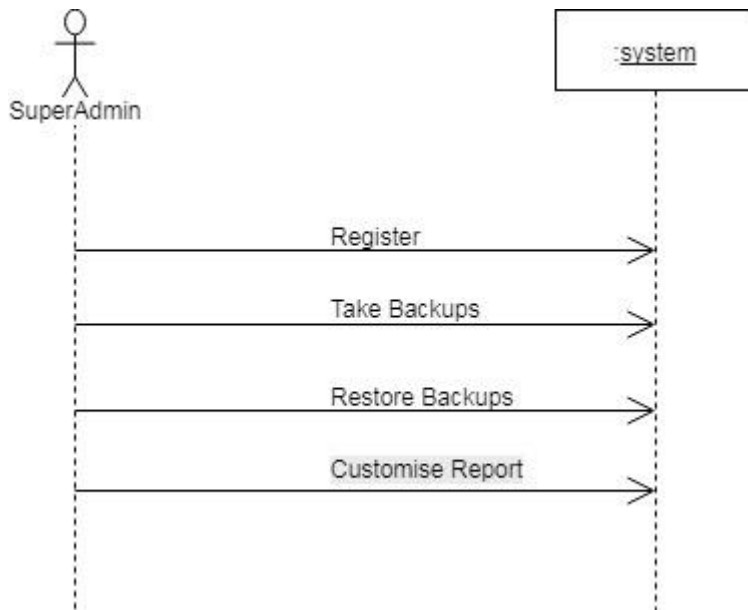


Figure 4.5: Sequence diagram for super admin

4.6 Sequence diagrams for event plan process

Sequence diagram for the event plan process is shown in figure 4.6

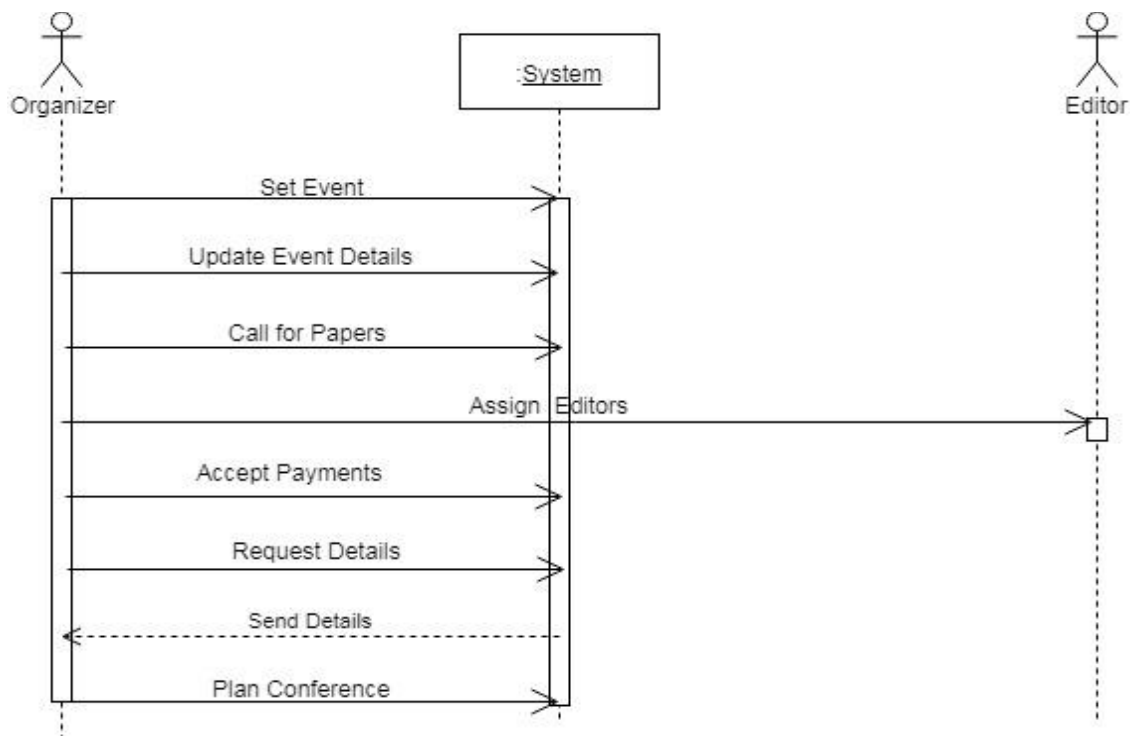


Figure 4.6 : Sequence Diagram for Event Plan Process

Chapter 5 : Implementation

5.1 Introduction

Event Management System for Conference and Workshop is implemented using CodeIgniter; server-side scripting PHP Framework with help of the XAMPP version 3.2.2, MySQL database and with many JavaScript libraries. The implemented system can deploy and run on any of windows or Unix operating systems. There is five main system user roles: Organizer, Editor, Reviewer, Author, Participant and Administrator. Co-authors and other people who are interested in this system

Organizer is responsible for creating, update and delete event details, assign editors and reviewers on to the system. Reviewer views the paper and send comments to the Editor. Editors send received abstract/full papers to the Reviewers to review and send the feedback to the author for further modifications. Authors of the selected research papers will call for the conference.

5.2 Technology Aspects

CodeIgniter [4]

CodeIgniter is an Application Development Framework which enables to develop projects. It provides set of libraries for the commonly needed task. CI based on Model-View-Controller development pattern.

Model handle database and session information, View handle the user interface (HTML, CSS style sheets) and Controller handles all the client side scripting.

XAMPP [5]

XAMPP is freely available open source cross-platform web solution package which was developed by Apache Friends. It contains Apache HTTP Server, MariaDB database, PHP, and Perl. XAMPP works equally well on Windows, Linux and Mac operating systems. To develop databases used MySQL which was built in XAMPP bundle.

Bootstrap [6]

System interfaces were developed by using Bootstrap. Bootstrap also is free and open source toolkit which contains HTML, CSS, and JS. Bootstrap is frontend development library for designing website and web application. Bootstrap contains HTML and CSS based design

templates for forms, buttons, navigation and data grids. This software helps to develop colorful and responsive graphical user interfaces.

PhpStorm [7]

PhpStorm is commercially available cross-platform IDE for PHP. PhpStorm is used as code editing software for PHP with syntax highlighting, error checking and code completion.

5.3 Hardware and Software Configurations

5.3.1 Development Environment

Hardware Configuration

- Intel Core i5 Processor
- 4GB RAM
- 64-Bit Operating System
- 250GB Hard Disk Drive
- Monitor 1366 X 768

Software Configuration

- CodeIgniter
- XAMPP (Apache, PHP, MySQL)
- Bootstrap
- PhpStorm, Notepad ++ Text editor
- Adobe Photoshop

5.3.2 Server Environment

Hardware Configuration

- 3.0GHz Intel Processor
- 4GB RAM
- 100GB Free Hard Disk Drive
- Monitor 1366 X 768

Software Configuration

- XAMPP (Apache, PHP, MySQL)

5.3.3 Client Environment

- JavaScript enable web browser
- Internet connected computer

5.4 System Overview

Event management system for conference and workshop consist of front end and back end user interfaces. Front end consists of Event Management website and back end consists of event management system. In all the event, conference and workshop details are published. The homepage of the Event Management Website shows the first look of all the newest events and conference details has posted by Organizers. The main menu lets users to access the main areas of the site and it also includes event banners, brochures which try to grab user's attention.

5.4.1 Login page

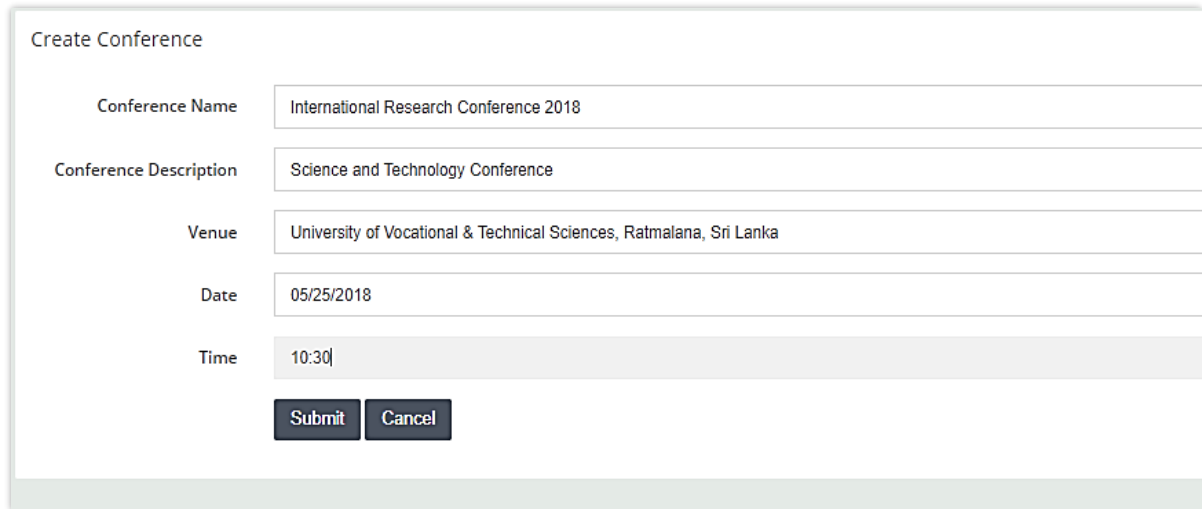
Organizers and Editors should register to the system before they log in to the system. Username should be the email address of the user. Through this interface organizers, editors, reviewers can log in to the system backend by pressing login button. After the login, they can edit and maintain their own profile in the system. Screenshot of the login page is shown in figure 5.1.



Figure 5.1 : User Login

5.4.2 Add new conference

From this window, organizer can add conference details to the system. Screenshot of insert new conference details are shown in figure 5.2



Create Conference

Conference Name: International Research Conference 2018

Conference Description: Science and Technology Conference

Venue: University of Vocational & Technical Sciences, Ratmalana, Sri Lanka

Date: 05/25/2018

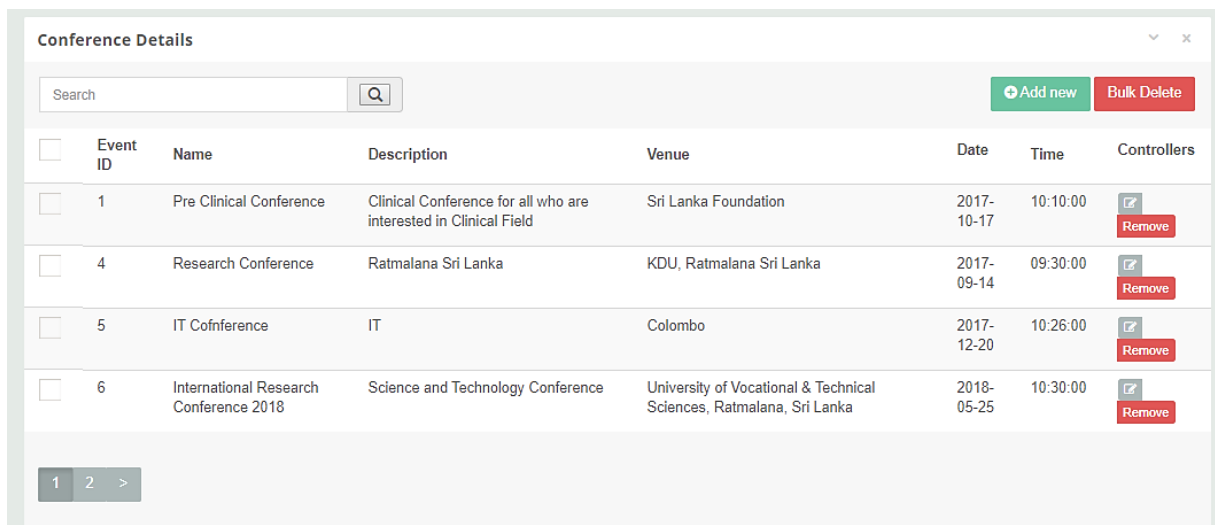
Time: 10:30

Submit Cancel

Figure 5.2: Create conference

5.4.3 View Conference Details

Organizer can edit, delete and update the conference details. Screenshot of View conference details is shown in figure 5.3



Conference Details

Search [Q] [Add new] [Bulk Delete]

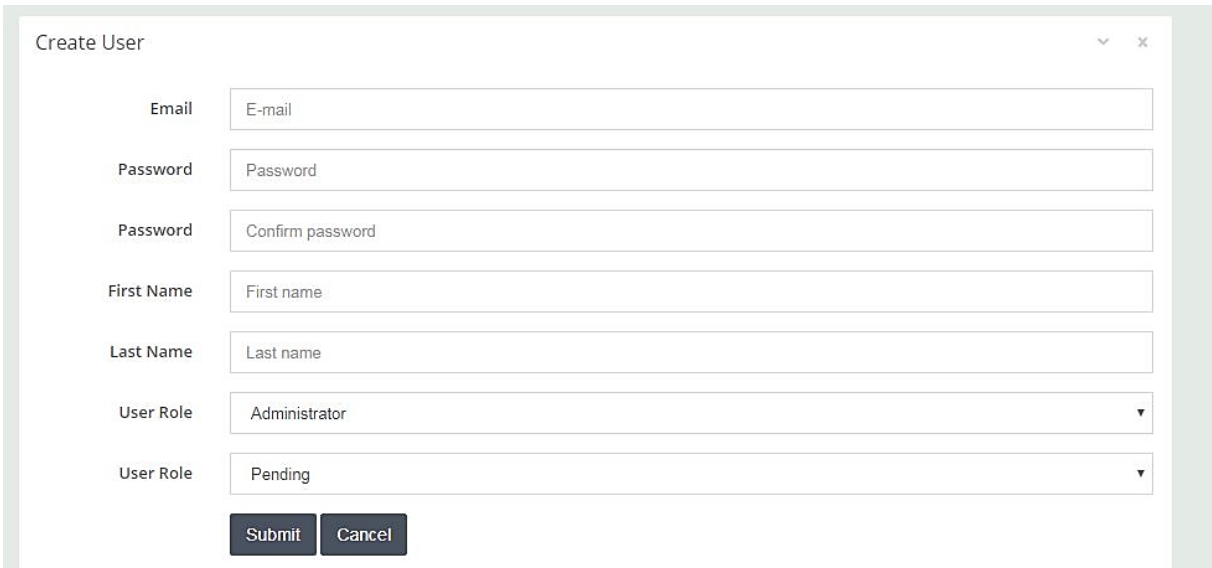
<input type="checkbox"/>	Event ID	Name	Description	Venue	Date	Time	Controllers
<input type="checkbox"/>	1	Pre Clinical Conference	Clinical Conference for all who are interested in Clinical Field	Sri Lanka Foundation	2017-10-17	10:10:00	<input type="checkbox"/> [Remove]
<input type="checkbox"/>	4	Research Conference	Ratmalana Sri Lanka	KDU, Ratmalana Sri Lanka	2017-09-14	09:30:00	<input type="checkbox"/> [Remove]
<input type="checkbox"/>	5	IT Cofference	IT	Colombo	2017-12-20	10:26:00	<input type="checkbox"/> [Remove]
<input type="checkbox"/>	6	International Research Conference 2018	Science and Technology Conference	University of Vocational & Technical Sciences, Ratmalana, Sri Lanka	2018-05-25	10:30:00	<input type="checkbox"/> [Remove]

1 2 >

Figure 5.3: View Conference Details

5.4.4 Add users to the system

Administrator can add and assign users to the system. Screenshot of user insertion page is shown in figure 5.4



Create User

Email: E-mail

Password: Password

Password: Confirm password

First Name: First name

Last Name: Last name

User Role: Administrator

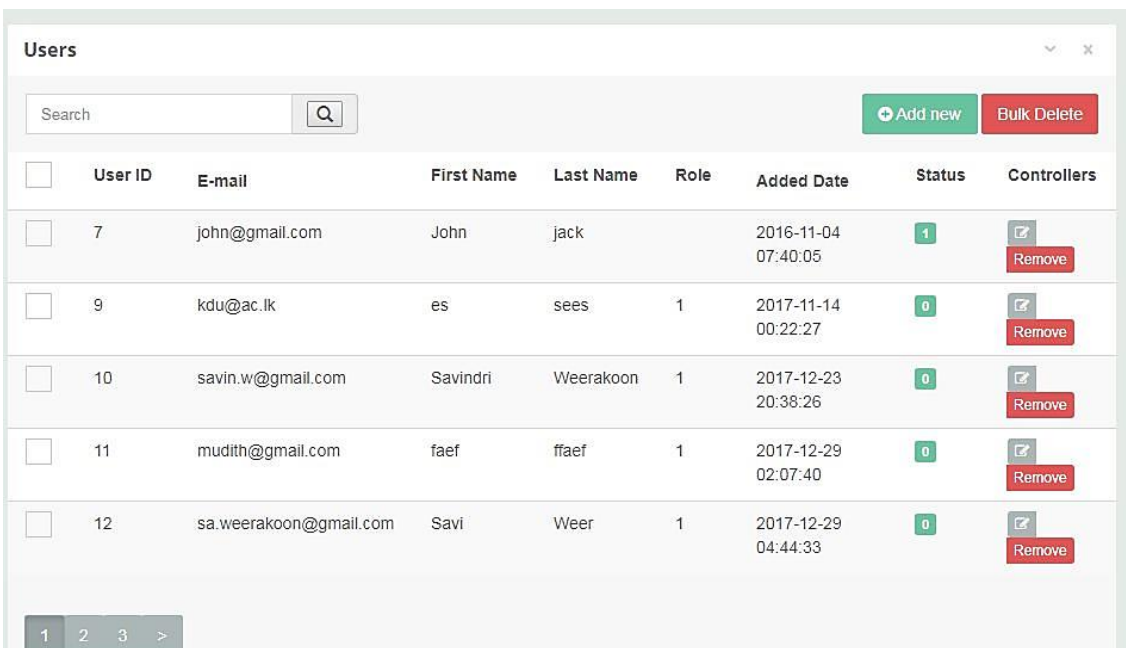
User Role: Pending

Submit Cancel

Figure 5.4: Insert user to the system

5.4.5 View users

From following, interface administrator can view who are the people registered to the system. Organizer can edit, delete user details. Deletion can be done as individually or bulk. Screenshot of view user page is shown in figure 5.5



<input type="checkbox"/>	User ID	E-mail	First Name	Last Name	Role	Added Date	Status	Controllers
<input type="checkbox"/>	7	john@gmail.com	John	jack		2016-11-04 07:40:05	1	<input type="checkbox"/> Remove
<input type="checkbox"/>	9	kdu@ac.lk	es	sees	1	2017-11-14 00:22:27	0	<input type="checkbox"/> Remove
<input type="checkbox"/>	10	savin.w@gmail.com	Savindri	Weerakoon	1	2017-12-23 20:38:26	0	<input type="checkbox"/> Remove
<input type="checkbox"/>	11	mudith@gmail.com	faef	ffaef	1	2017-12-29 02:07:40	0	<input type="checkbox"/> Remove
<input type="checkbox"/>	12	sa.weerakoon@gmail.com	Savi	Weer	1	2017-12-29 04:44:33	0	<input type="checkbox"/> Remove

1 2 3 >

Figure 5.5: View registered users

5.4.6 Abstract submission form

Abstract submission details will be published in Event Management Website. User can view abstract submission guideline and submit the abstract document. Screenshot of abstract submission form is shown in figure 5.6

Abstract submission

Co-Author Details

Conference	<input type="text" value="Annual Research Conference"/>
Title	<input type="text" value="Select"/>
First Name	<input type="text" value="First Name"/>
Last Name	<input type="text" value="Last Name"/>
Name for certificate (if you are an author)	<input type="text" value="Name for Certificate"/>
Passport No/NIC No:	<input type="text" value="Passport No/NIC No"/>
Date of Birth	<input type="text" value="Date of Birth"/>
Mobile/Tel	<input type="text" value="Mobile/Tel"/>
Full Text	<input type="text" value="Paste Full Text"/>
Keywords	<input type="text" value="business,IT,management"/>
Main Subject	<input type="text" value="IT"/>
Preferred Plenary Session	<input type="text" value="Choose a sub subject..."/>

Sub Author(s) Details

add

I agree to present as a poster if not selected for an oral presentation Yes No

I wish to publish a full text paper article in conference proceedings
(applicable only for Engineering, Medicine, Basic and Applied Sciences, and Allied Health Sciences) Yes No

Browse and select the word document to upload

Figure 5.6: Abstract submission form

Chapter 6 : User Evaluation and Testing Plan

6.1 Introduction

This chapter describes how the system was tested, user interface test, code tests, finding bugs, and the solution to fix the identified bugs. Further, this chapter describes the test plan and test process, also the expected output and behavior of the test plan.

To evaluate the final system throughout system development life-cycle, better evaluation techniques required. System testing used to check whether system functioning appropriately and to confirm requirements were satisfied or not.

Software testing is a process of executing a program or system for finding errors. It involves some activity that determining system meets its required results. Software bugs will almost always exist in any software application.

6.2 Unit Testing

Unit testing is a method by which the source code of the different units is tested to determine if they are fit for use. When each subsystem were completed, unit testing is done by the developer. After completion of each module of the system, unit testing was done to each module to identify the bugs before integrating it as a whole. Unit testing is done while implementing the system.

Eg: Test login module

- Username and password provided to log in to the system.
- Inserted username and password miss matched or wrong username and password provided error message displayed.

6.3 System Testing

Purpose of system testing is to prove that the software meets the specific user requirements and works in the target environment. This covers both functional and non-functional requirements.

6.4 Regression Testing

After fixed the previously occurred errors new errors can be occurring. Therefore, it is required to test the repeating a subset of previous tests to ensure that any change has not introduced any new errors.

6.5 Acceptance Testing

Acceptance testing is a process where system tested for acceptability. The purpose of this test is to evaluate the system's compliance with the business requirements and assess whether it is acceptable for delivery.

6.6 Test Automation Tools

Using automation tools are more important for many software projects. In order to automatically verify key functionalities, test for regression and provide a large number of test in a short amount of time. Using automation tools for testing web application is to ensure that the system doesn't introduce any bugs and regression. There are open source and commercially available automation tools. Used Selenium framework to test the system, it is a portable software testing framework for web applications.

6.7 Test Plan

6.7.1 User Registration and Login functions

User registration process is major processes in this system. All users should enter a valid email address and can register with the system. Administrators should activate the account using a token. Various test cases had been used to test the procedure and a generalized test plan is shown in below 6.1, 6.2, 6.3, 6.4 tables.

No	Test Case	Expected Results	Success
01	Click submit button without inserting any field.	Show error message “Username / password field cannot be empty!”	Yes
02	Insert password value and skip username value and click submit.	Show error message “Username / password field cannot be empty!”	Yes
03	Insert username value and skip password value and click submit.	Show error message “Username / password field cannot be empty!”	Yes
04	Insert correct username and incorrect password value and click submit.	Show error message “Invalid Username or password!”	Yes
05	Insert incorrect username and correct password value and click submit.	Show error message “Invalid Username or password!”	Yes
06	Try to access user account page without logged in.	Show error message “You are not logged in!”	Yes
07	Reviewer should register to the system	Show error message “To review the paper, you should register”	Yes

Table 6.1: User Registration and Login functions

6.7.2 Submit Abstract Paper

No	Test Case	Expected Results	Success
01	Press the submit button without filling data	Show error message “all the fields required”	Yes
02	Press the submit button without uploading the document	Show error message “Please upload the document”	Yes
03	Same person updates details one or more time	Show error message “you have already submitted your paper”	Yes

Table 6.2: Submit Abstract Form

6.7.3 Add Conference/Workshop Details

No	Test Case	Expected Results	Success
01	Add same conference/event details one or more time	Avoid duplicate entry	Yes
02	Search conference/ event details	Should list the matched conference/ event details	Yes
03	Saved conference/ event details	Should list the saved conference/ event details	Yes

Table 6.3: Add conference/event details

6.7.4 Add & Assign Reviewer

No	Test Case	Expected Results	Success
01	Add reviewer details one or more time	Avoid duplicate entry	Yes
02	Search reviewer details	Should list the matched reviewer details	Yes
03	Saved conference/ event details	Should list the saved reviewer details	Yes
04	Check assign papers to reviewer	Check how many papers assign to reviewer	Yes
05	Fill reviewer details correctly	Reviewer should enter all the required details	Yes
06	Assign reviewer	Assign reviewer according to their Research area	Yes
07	Check registered reviewer	Administrator should select and give permission to access the system to reviewer	Yes

Table 6.4: Add & Assign reviewer

6.8 User Evaluation

User acceptance testing (UAT) is the most essential to get right. If the system implemented correctly it reduces time and cost while increasing customer satisfaction. It is pointless if the developed system does not perform according to the end user expects.

To test the user acceptance provides facility to use the system for the conference manager, editor, authors, friends, and people who are interested in the event management system. Then provide following questionnaire (Figure 6.1) to get their feedback about the developed system.

Event Management System for Conference and Workshop

User Evaluation Form

Name : (Not compulsory)

Designation :

In the Scale of 1 – 5, Please tick the best option for the following questions (5 =Excellent, 4 = Good, 3=Average, 2=Poor, 1=Very Poor)

1. Do you agree that Developed System would beneficial your Conference/ Event Management process?
 Very Poor Poor Good Very Good Excellent
2. Do you agree that Developed System is user-friendly?
 Very Poor Poor Good Very Good Excellent
3. Is there consistency in the theme used on this system?
 Very Poor Poor Good Very Good Excellent
4. Has the system satisfied your requirements of office environment?
 Very Poor Poor Good Very Good Excellent
5. Do you think this system is better than existing manual approach?
 Very Poor Poor Good Very Good Excellent

6. Do you agree that system can help save cost of learning?
 Very Poor Poor Good Very Good Excellent

7. Did you encounter any difficulty while using the system?
 Very Poor Poor Good Very Good Excellent

8. Kindly recommend any improvement(s) for this system (if applicable).

Figure 6.1: User Evaluation Form

User evaluation shows an overview of how user is satisfied with the system. According to the above questionnaire each user provided their feedback. The questionnaire has provided to 20 people. From the statistic of the questionnaire following figure 6.2 was created.

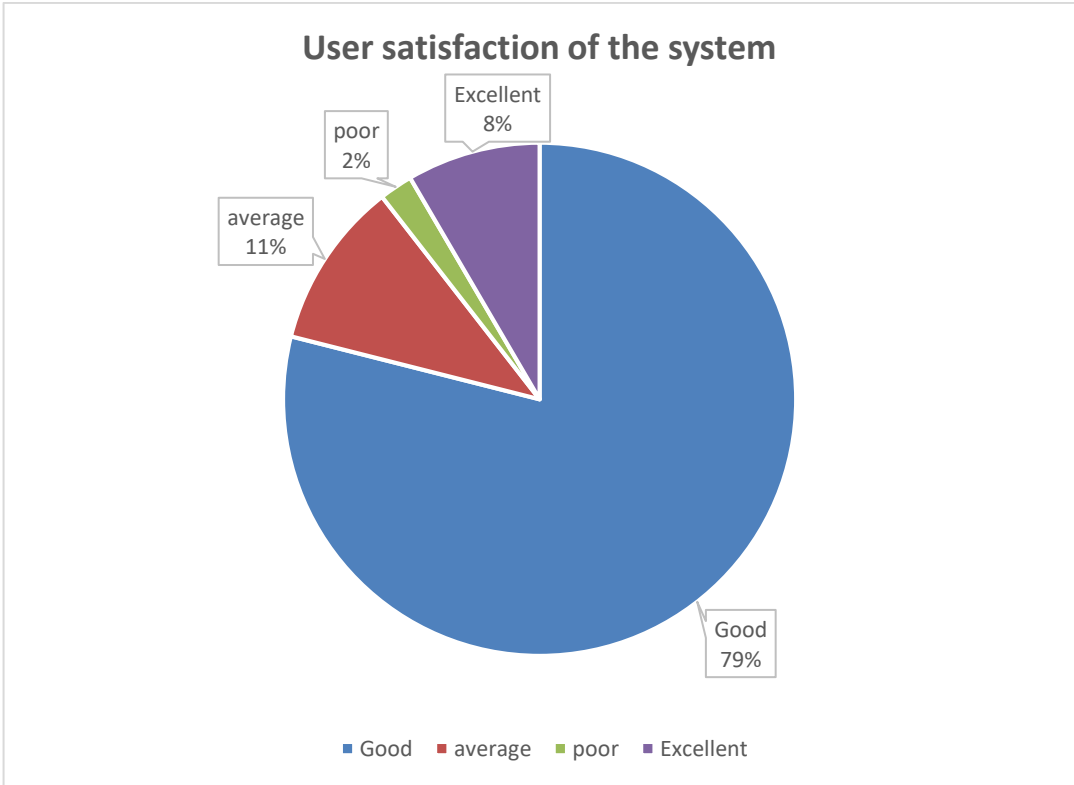


Figure 6.2: User satisfaction for the system

75% percent of the users said that the developed system is good, 10% of them said that the system is average and 8% of them said system is excellent. All though 98% of users satisfied with the developed system, 2% of them were not satisfied with the system. The behind reason was 2% of them do not like to go for the new system, they are preferred to work on the manual process.

Analysed answers for each question is attached in Appendix D

6.8.1 Conclusion

As per the user evaluation following strength and weaknesses of the system has identified.

Strengths of the system:

- Easy to access and easy to learn.
- User friendly and user interfaces are very simple.
- Ease of updating event management website.
- Ease of publishing, event and conference details.
- Email notifications.
- Have several filtering methods.
- Ability to bulk deletion.
- Ability to find previous event details.
- Event location can find via the google map.

Weakness of the system:

- Data backup and restore functionality is still not available.
- Social media plugins should be introduced to the system to get more publicity about for the events.
- Need more reports.

Chapter 7 : Conclusion and Future Work

7.1 Introduction

This chapter includes the critical evaluation of the system, description of a lesson learned and suggestions for the future enhancement.

7.2 Lesson Learned

Gained knowledge and good experience while developing the system. From the requirement gathering phase to end phase learned everything is helped to develop a successful system. Applying theory to practice is hard sometimes. Gained good knowledge about how to use new programming languages (PHP, HTML, CSS, and JavaScript), design patterns, how to use a new framework (CI), and bootstrap templates for developing user interfaces.

Learned how to write a documentation of the thesis also really important. Therefore, lots of self-learning was carried out throughout this process.

Managing time according to the project guidelines and given project schedule is really crucial. With the lack of programming knowledge had to learn new programming techniques within the given time frame. It was a challenge to complete the system development with this kind of situation. Therefore, author had to put extra effort into developed system successfully.

7.3 Conclusion

Developed EMSCW system is easy to use user friendly system which any new person can easily understand. Achieved objectives are:

- Website for publishing conference/event details - client side.
- Website for backend – admin side.
- Authors, reviewers can login using website.
- Authors can submit their research papers.
- Reviewers can submit their comments.
- Admin can generate reports, take backups and restore backups.
- Registered authors get map location for the conference.
- Email notifications.
- Admin can query the database.

7.4 Future Work

There are some functions can be introducing to the system to enrich the system functionalities, such as,

- Module to calculate the budget of the entire event.
- Allocate people to specific tasks via the system.
- Add social media plugins to the system to get more publicity for events.
- Maintain research paper repository for each conference.
- RFID or Barcode system to identify the registered participant.

References

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Appendix A : System Documentation

Title : Event Management System for Conference and Workshop

Date : 07.02.2018

Version : 1.0

System : Open source Web Application

This documentation contains technical information to configure the system and support system administrators, developers or any other person who involve in further system enhancement.

Hardware Configuration

- Intel Core i5 Processor
- 4GB RAM
- 64-Bit Operating System
- 250GB Hard Disk Drive
- Monitor 1366 X 768

Software Configuration

- XAMPP (Apache, PHP, MySQL)
- IE6+ or any other web browser

Configuration

XAMPP is open source freely available software bundle which contains Apache, MySQL, PHP. Using XAMPP can configure the system locally with web server and database. XAMPP can install on Windows, Linux or Mac Operating system.

Steps to configure the system

1. Download and install XAMPP software
2. Start the XAMPP server
3. Copy all the project files into XAMPP Server host folder located in C:/xampp/htdocs
4. Go to the web browser and type “localhost/phpmyadmin” and import the database file to restore database.

5. Go to the system folder and edit configuration file.

..ems\application\config\config.php

6. Edit the database connection for the system

..ems\application\config\database.php

'hostname' => 'localhost', —→ Host Name of the Server

'username' => 'root' —→ Database User Name

'password' => " —→ Database Password

'database' => 'emsdb', —→ Database Name

7. Type following URL on web browser to view the Event Management website

- a. <http://localhost/ems/index>

8. Type following URL on web browser to access the back end of the event management system

<http://localhost/ems/admin/>

Appendix B : User Documentation

Administrator can log in to the backend of the system and publish event/conference details on the website.

The image shows a user login interface for the EMS system. At the top center is the EMS logo, which consists of a green clock icon followed by the text 'ems'. Below the logo is a dark gray rectangular box containing the login form. The form has two input fields: the first is labeled 'E-mail' and the second is labeled 'Password'. Below these fields are two buttons: a green 'Login' button and a gray 'Register' button.

Figure B 1: User Login

If the username and password wrong error message will appear. If someone forgot their password they can reset the password using Forgot password button.

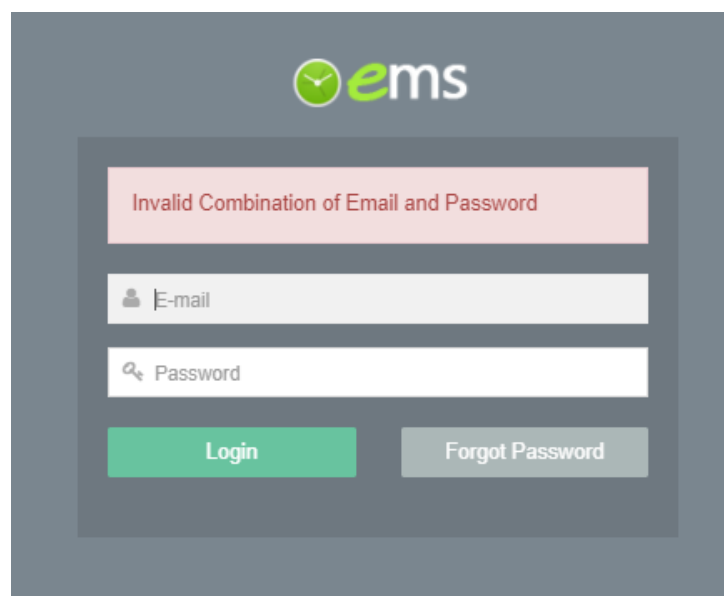
The image shows the same user login interface as in Figure B 1, but with an error message displayed. At the top center is the EMS logo. Below it is a dark gray rectangular box containing the login form. At the top of this box is a red error message: 'Invalid Combination of Email and Password'. Below the error message are two input fields: the first is labeled 'E-mail' and the second is labeled 'Password'. Below these fields are two buttons: a green 'Login' button and a gray 'Forgot Password' button.

Figure B 2: Error Message for incorrect password and username

Dashboard of the system. After insert username and password user directed to this page. From the left-hand side, navigation menu user can navigate the different pages.

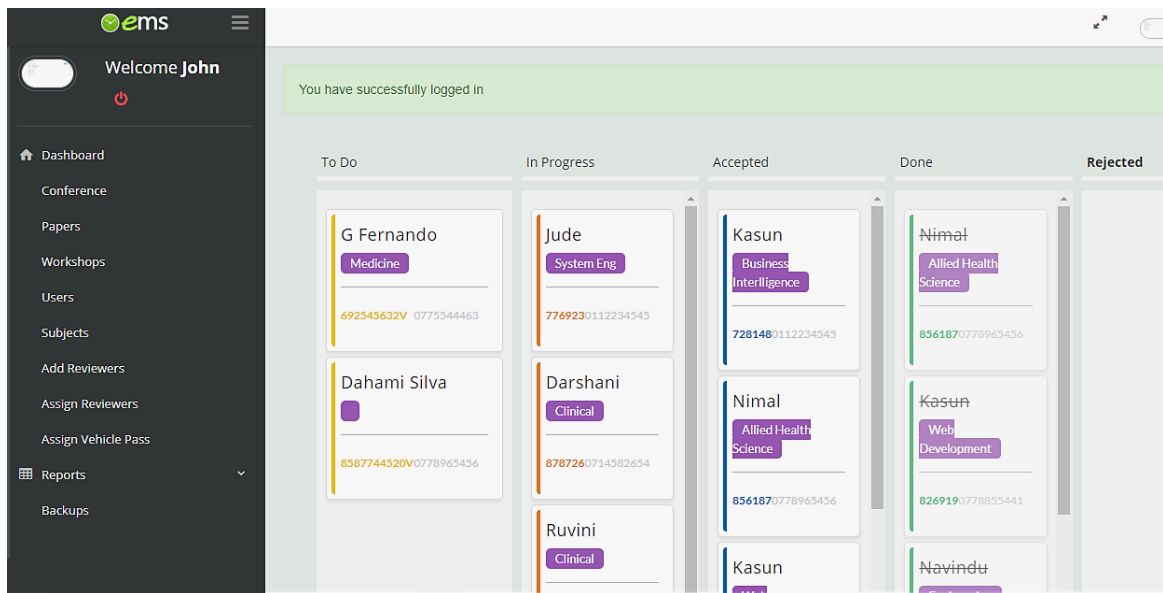


Figure B 3: Dashboard

User registration form

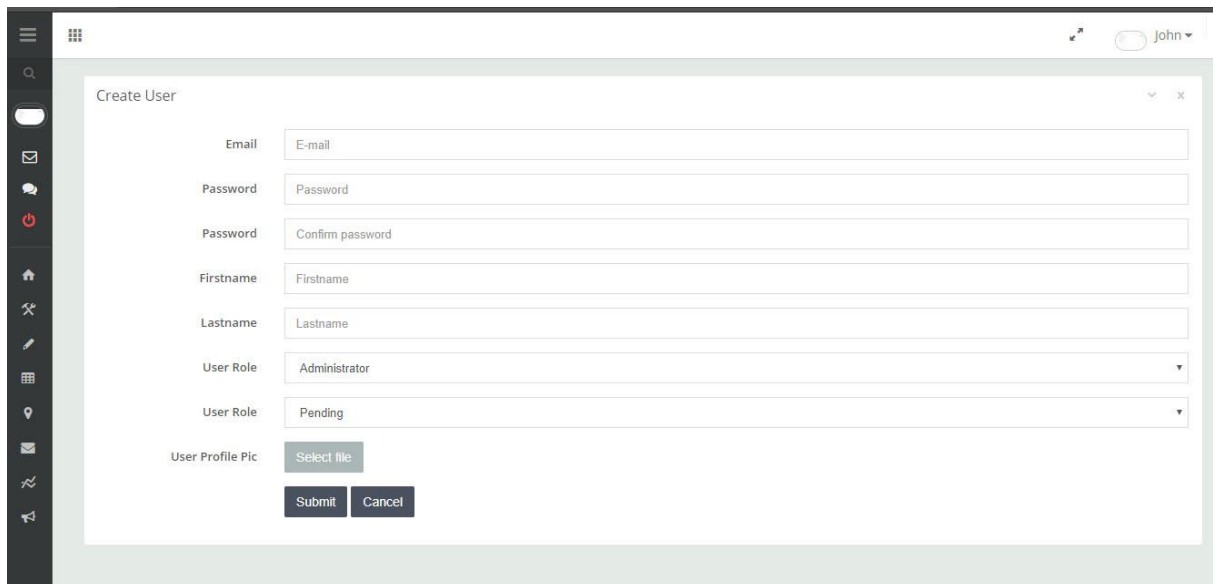


Figure B 4: User Registration

Organizer can insert conference details from Create Conference page.

Create Conference

Conference Name: International Research Conference 2018

Conference Description: Science and Technology Conference

Venue: General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

DateTime Start: 05/25/2018 11:44 AM

DateTime End: 05/26/2018 4:00 PM

Location:

Submit Cancel

Figure B 5: Create Conference

Authors can submit research papers after filling the following form

Co-Author Details

Conference	Annual Research Conference
Title	Select
First Name	First Name
Last Name	Last Name
Name for certificate (if you are an author)	Name for Certificate
Passport No/NIC No:	Passport No/NIC No
Date of Birth	Date of Birth
Mobile/Tel	Mobile/Tel
Full Text	Paste Full Text
Keywords	business,IT,management
Main Subject	IT
Preferred Plenary Session	Choose a sub subject...
Browse and select the word document to upload	Browse
<input type="submit" value="Submit"/>	

Figure B 6: Abstract submission

Reviewer registration form

Add Reviewer
⌵ ⌵

Title

First Name

Last Name

Email

NIC / Passport

Mobile/Tel

Subject Area that wish to review

Main Subject

Educational Qualification

Work Place

Designation

Number of Papers Reviewed*

Figure B 7: Reviewer registration form

Assign abstract to reviewers according to the reviewer's subject area

Assign Reviewer
↻ ⌵ ⌵

Main Subject

No	Title	Author Name	Preffered Session	Abstract	Actions
6	Mr	Kamal Sumanapala	Engineering		<input type="button" value="Assign"/>
9	Ms	Savi Weer	IT		<input type="button" value="Assign"/>
11	Ms	Sachi D	Medicine		<input type="button" value="Assign"/>
13	Ms	Savindri Weerakoon	Engineering		<input type="button" value="Assign"/>
14	Ms	Kasuni Wasana	Engineering		<input type="button" value="Assign"/>
15	Mr	Gihan Fernando	Medicine		<input type="button" value="Assign"/>
16	Mr	Kamal Nimal	Medicine		<input type="button" value="Assign"/>

Figure B 8: Assign Reviewer

Author can register for the conference after filling the following form.

REGISTER

Title	<input type="text" value="Select"/>
Fist Name	<input type="text" value="Fist Name"/>
Last Name	<input type="text" value="Last Name"/>
Name for certificate (if you are an author)	<input type="text" value="Name for certificate"/>
Passport No/NIC No:	<input type="text" value="Passport No/NIC No:"/>
Date of Birth	<input type="text" value="Date of Birth"/>
Mobil/Tel	<input type="text" value="Mobil/Tel"/>
E-mail	<input type="text" value="E-mail"/>
Country	<input type="text" value="Sri Lanka"/>
Preferred Plenary Session	<input type="text" value="Select"/>
Registration Category	<input type="text" value="Select"/>
Price	<input type="text" value="select"/>
Institute	<input type="text" value="Institute"/>
Faculty	<input type="text" value="Faculty"/>
Department	<input type="text" value="Department"/>
Address	<input type="text" value="Address"/>

Food preference

Non-Veg
 Vegetarian

Indicate your requirements

First day Morning Tea Lunch Evening Tea Cocktail

Second Day Morning Tea Lunch Evening Tea

Figure B 9: Conference registration form

Reports for the registered participant's details for each conference. The user can sort details of the participants according to the registered conference. The report can be taken as pdf, excel and print versions.

Registered Participants									
								Conference Name	
								All	
								Search: <input type="text"/>	
PDF		Excel		Print					
No	Name	NIC / Passport	Date of Birth	Mobile / Tel No	Email	Prefered Session	Registered Category	Workplace	
1	Ms.Dayani Perera	865775021V	1986-03-12	0717654444	savin.w@gmail.com	Engineering	Other	DFC	M
2	Ms.Nadee Kammalwaeera	4455555	1985-02-04	0778965456	yasasi@gmail.com	Management, Social Sciences and Humanities	Author	cits	R
3	Mr.Romein Silva	755555	1989-11-11	0778965412	yasasi08@gmail.com	Management, Social Sciences and Humanities	Student	KDU	M
4	Ms.Yasasi Pathinyaka	15455445	1986-07-19	0714852456	yakari@gmail.com	Computing	Author	dd	ra
5	Ms.Sachini Seelawardena	15455445	1986-07-19	0714852456	sa.weerakoon@gmail.com	Built Environment and Spatial Sciences	Other	dfdfd	dc

Figure B 10: Report of Registered Participants

Appendix C : Questionnaire

C.1 Interview Questionnaire on Event Management System for Conference and Workshop

(The data gathered through this interview would be used exclusively for the purpose of academic research only.)

1. Do you organize an annual conference or twice a year conference?
2. Can you briefly explain conference process of your university?
3. Who are the main roles involved in this process?
4. How long will it take to complete entire conference process?
5. How do you get publicity for the conference?
6. What is the method of collecting conference papers?
7. How do you assign reviewers to review the papers? Do you give payment for reviewers?
8. How do you get feedback from the reviewers?
9. How do you send feedback to the authors?
10. How do you select papers for the conference?
11. What is the payment method you are using?
12. What are the advantages of current process?
13. What are the drawbacks of current process?
14. Do you use any system for the conference? If yes what is the system?
15. Do you wish to use a new system for the conference?

C.2 Questionnaire on Event Management System for Conference and Workshop

(The data gathered through this questionnaire would be used exclusively for the purpose of academic research only.)

Please put a tick on the given boxes

1. What is your roll in conference/workshop?

Organizer/Chairperson	<input type="checkbox"/>
Secretary	<input type="checkbox"/>
Author	<input type="checkbox"/>
Reviewer	<input type="checkbox"/>
Participant	<input type="checkbox"/>

2. How do you advertise the conference/workshop?

Newspaper advertisement	<input type="checkbox"/>
TV advertisement	<input type="checkbox"/>
Website	<input type="checkbox"/>
Leaflets/ Brochures	<input type="checkbox"/>
Banners/Billboards	<input type="checkbox"/>

3. Do you use any system to handle the event process?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

4. How do you collect research papers?

Via the system	<input type="checkbox"/>
Via email	<input type="checkbox"/>
By hand	<input type="checkbox"/>
Register post	<input type="checkbox"/>
None	<input type="checkbox"/>

5. How do you send research papers to reviewers?

Via the system	<input type="checkbox"/>
Via email	<input type="checkbox"/>
By hand	<input type="checkbox"/>
Register post	<input type="checkbox"/>
None	<input type="checkbox"/>

6. How do you send notifications regarding research papers to author?

Via the system	<input type="checkbox"/>
Via email	<input type="checkbox"/>
By hand	<input type="checkbox"/>
Register post	<input type="checkbox"/>
None	<input type="checkbox"/>

7. What is the event registration method?

Register on the event date	<input type="checkbox"/>
Register via email	<input type="checkbox"/>
Register via system	<input type="checkbox"/>
Register by post	<input type="checkbox"/>
None	<input type="checkbox"/>

8. Do you use any payment method for the registration?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

9. What are the methods you are using to handle the entire event process?

Using system	<input type="checkbox"/>
Using email	<input type="checkbox"/>
Google documents	<input type="checkbox"/>
Store	<input type="checkbox"/>
None	<input type="checkbox"/>

10. How many are human resource needed to complete the event?

Less than 10 people	<input type="checkbox"/>
Less than 20 people	<input type="checkbox"/>
25 people	<input type="checkbox"/>
More than 25 people	<input type="checkbox"/>

11. Do you issue any vehicle pass for event participants?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

Appendix D : User Evaluation

Once analyzed the given answers of each question, identified the following results.

	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7
Excellent	2	3	1	5	2	1	1
Very Good	10	10	8	8	6	12	6
Good	6	7	9	6	8	6	7
Poor	2	0	2	1	4	1	5
Very Poor	0	0	0	0	0	0	1

Table D.1 User Feedback

1. Do you agree that Developed System would beneficial your Conference/ Event Management process?

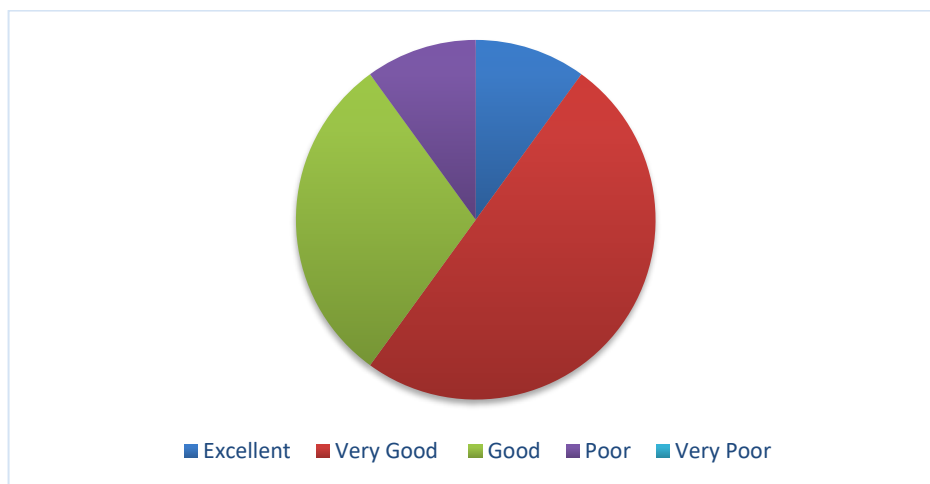


Figure D 1: Question 1

2. Do you agree that Developed System is user-friendly?

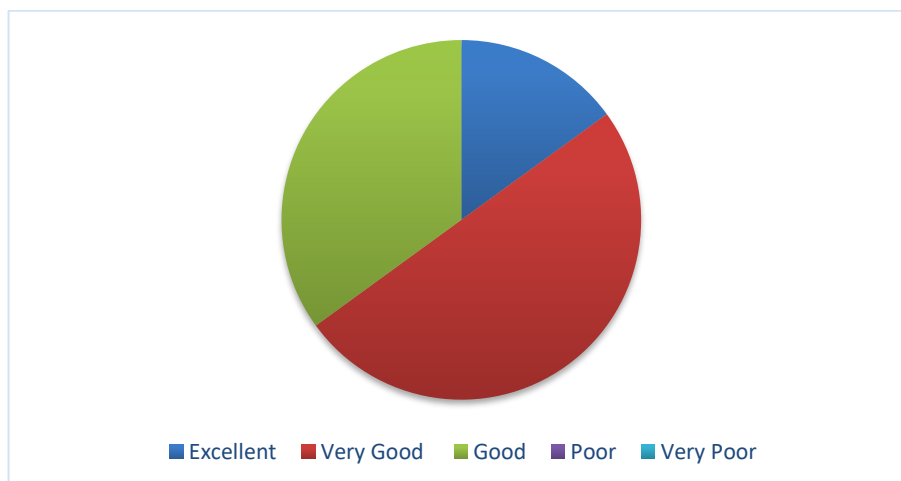


Figure D 2: Question 2

3. Is there consistency in the theme used on this system?

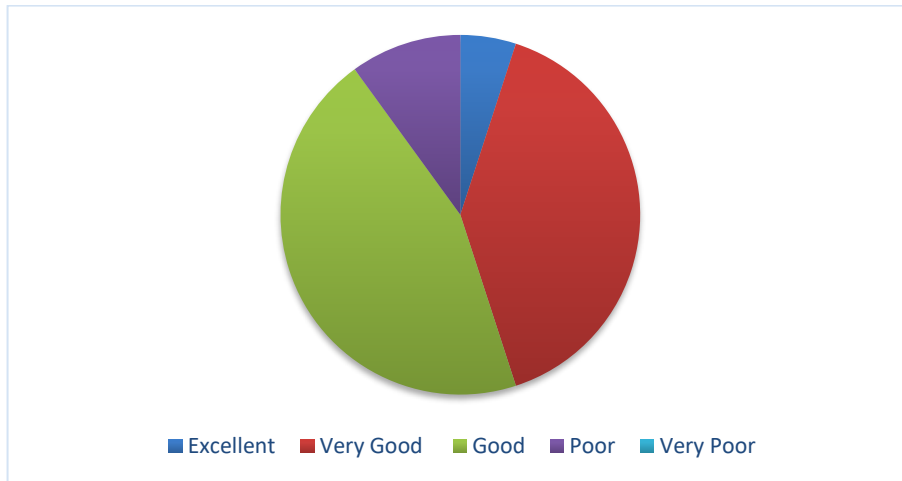


Figure D 3: Question 3

4. Has the system satisfied your requirements of office environment?

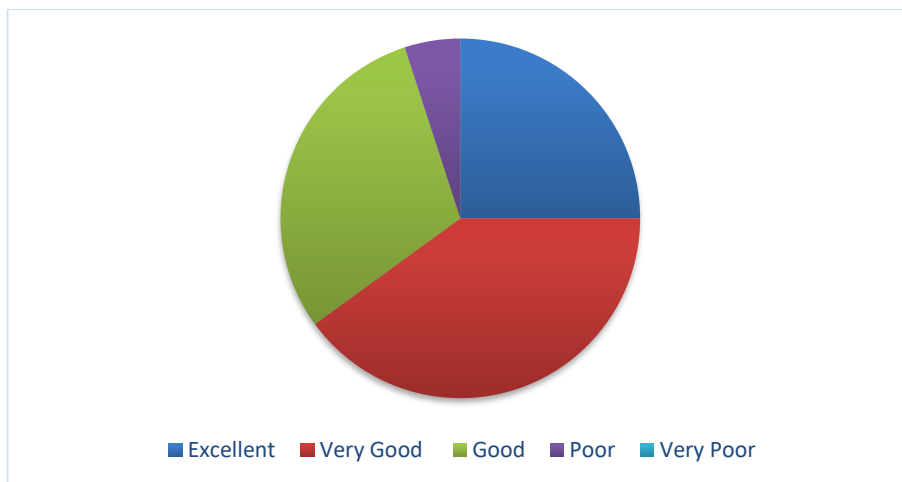


Figure D 4: Question 4

5. Do you think this system is better than existing manual approach?

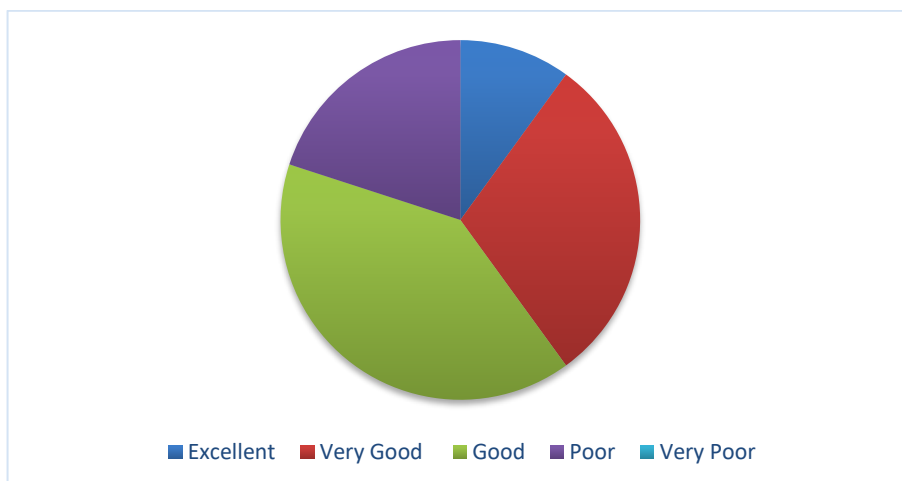


Figure D 5: Question 5

6. Do you agree that system can help save the cost of learning?

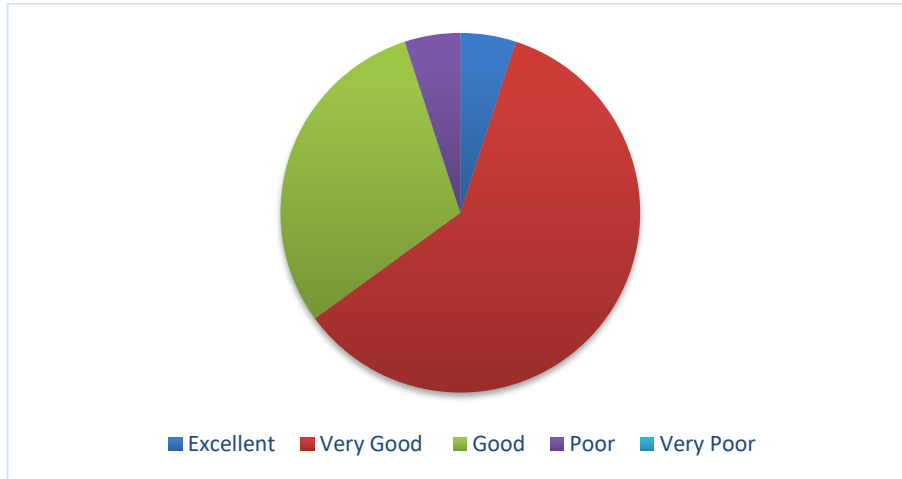


Figure D 6: Question 6

7. Did you encounter any difficulty while using the system?

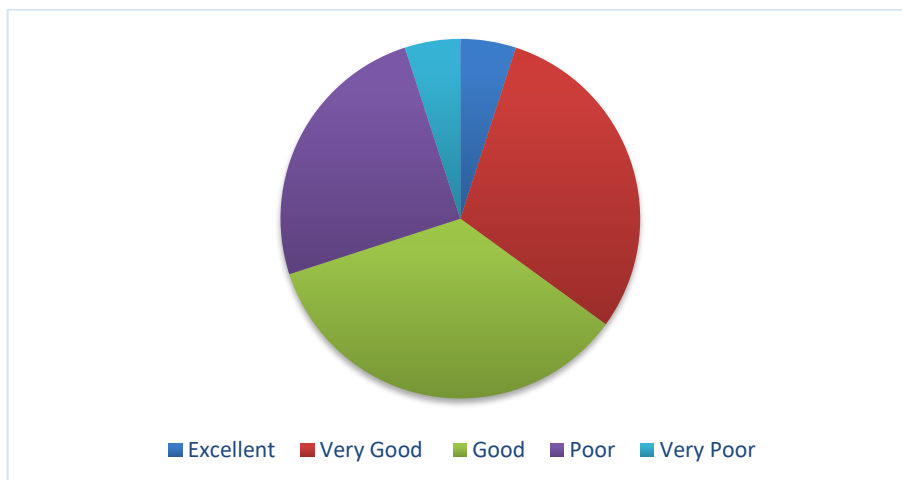


Figure D 7: Question 7

Appendix E : Database Design

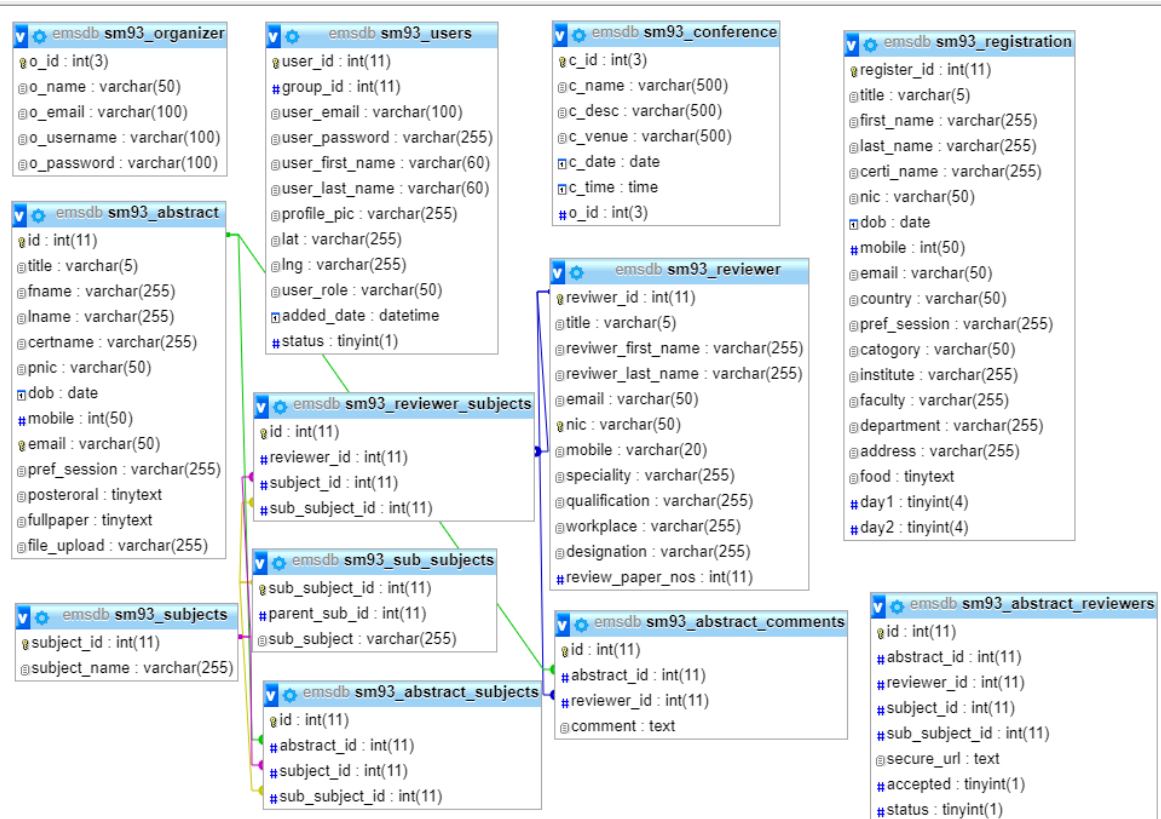


Figure E 1: Database Design