SMART MANAGEMENT SYSTEM FOR TM TRAININGS AND CONFERENCE EVENT

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"My dearest family, PM Dr Shahizan Othman and my friends"

This is for all of you

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ABSTRACT

The system developed under the name of the Smart Management System for TM Trainings and Event Conference, is a system for enhancing attendance assessment and facilitating the management and monitoring process within an organization. The methodology used for the development of this project are using the Agile methodology. The Smart Management System for TM Trainings and Event Conference is developed using the Ionic (software development kit) for the development of hybrid mobile applications as well as programming languages PHP and Javascript while building a database using MySQL. This developed system is based on a combination of smartphone and web application technology that can be accessed through any electronic component such as a computer, a smartphone with an internet connection for the application. The recorded arrival notification will be mailed to the user if the attendance is successfully recorded or rejected by the staff of the organization itself. Additionally, arrival schedule data and reporting generation on attendance are provided for auditing purposes are also provided in this developed system. The great expectations of the system builders so that this system is utilized by all users in helping to solve the technical problems faced now and in the future.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

It has been established in many studies that attendance during event example (seminars, workshop, lectures and other learning) correlate positively to the participant performance during their event. Some studies have even found additional compounding factors, such as that the negative effect of absenteeism affect lower-performing participant more as well as gender.

Thus, it is of utmost importance that the participant attendance is monitored and efforts are made to improve them. Participant and organizer, being the relatively are more likely to be familiar and early adopters of new technology. However, technology is only a tool and can thus be a double-edged sword. The use of technology, while making event more interactive and thus more attractive to participant has also the potential to deter them to be physically present for event activities.

The role of virtual or online event even with web-based, organizers should only be as an enhancement and not a substitute to face-to-face interaction with the participant, and this has been found to be a view of the user themselves. With the benefits of participant attendance established and noting the change of the event landscape in today's world, technology might as well be capitalised upon to manage the attendance of the users in event activities. This is compounded by the fact that the monitoring participant attendance, which is in most cases performed manually, is a tedious and repetitive additional task for the organizers, especially with large event.

There have thus been efforts to facilitate the process using technology, such as a software-based system for user management as well as hardware-based solutions such as using RFID based technology, biometrics, or a combination of the two. They have been found to ease the management of participants for the organizer and thus increase participant attendance, which further improves their performance.

However, in the first case of a purely software-based solution, while less tedious still requires the organizers to manually monitor participants attendance before it is entered into the software. In the latter cases on the other hand, i.e. with a hardware-based solution, either with RFIDs or biometric, presents a rather substantial additional cost to the institution, especially with the infrastructures needed to track the RFIDs. In the case of biometric, in addition to the extra hardware needed there is a question of reliability of the system.

Hence in this work, i propose a QR-code based system, in combination with mobile devices to display and scan the QR-codes. This thus removes the need for any additional hardware, noting that in Malaysia there is high ownership of mobile internet-capable devices, especially in the form of smart-phones as well as high mobile internet usage , with an increasing aerial coverage and penetration over time. The system is described in more detail in Chapter 2. In Chapter 4, i describe the trial deployment of the system over the current academic year in a few selected courses as well as the method of surveying its impact. We also discuss the early anecdotal and response to this plan as well as initial performance tests and comparison with other systems. Finally, we conclude in Chapter 4 with some notes on the future outlook.

1.2 Problem Background

The existing attendance system is based on manual signing attendance that needs organizer to manage the attendance sheet during event. Typically, the attendance system is managed by each organizer. The organizer needs to record and keep the attendance sheets. This non-effective system lead organizer unable to track count and manage event attendee. Therefore, organizer should provide a system that able to improve the event attendance system more efficiently.

Hence, a more organized system of arrival and management should be established to realize the expectation and facilitate all parties, especially the organizers whose problems often occur when the arrivals process is not recorded or is not confirmed in terms of approval due to several technical factors and errors human error. This makes it very difficult for many parties to harm the organization.

1.3 Problem Statement

Refer to the list in the background problem, it can be concluded that the main problem to be studied is focusing on how to change and improved the way to capture event attendance. The existing problem has limited human beings using paper tracking, they have created to manage currently. The inherent constraints will indirectly deny the ability of a technology that has been created to ease humanity. The statement of the issue is listed after observations are made and surveys with organizers and participants. If the era of globalization has now come to the era of industry transition 4.0 which one of its branches is related to the Internet of Things, then this problem also needs to be solved by using that aspect.

1.4 Goal of Project

The main purpose of this project is to design and develop Smart Management System for TM Trainings and Conference Event that will help ease the process of organizer to monitor participant attendance to event and increase the efficiency of TM management.

1.5 Objective of Project

This project defines some objectives to be achieved. The objectives are:

i. To identify the user requirement of Smart Management System for TM Trainings and Conference Event.
ii. To design Smart Management System for TM Trainings and Conference Event that provide a complete process on participant attendance.
iii. To develop Smart Management System for TM Trainings and Conference Event according to all functional requirement.
iv. To test the functionality of Smart Management System for TM Trainings and Conference Event as per user requirement.

1.6 Project Scope

The system was developed named Smart Management System for TM Trainings and Conference Event. The scopes are:

i. The system can integrate with TM Infra Management Systems.
ii. The system should be able to complete all events complete process from participants attend until the events finish.

1.7 The Significance of Project

The Smart Management System for TM Trainings and Conference Event is a requirement that can change the attendance management adn monitoring system from traditional way to a more efficient way through electronic data storage. The system can reduce the common constraints faced by an organizer, especially the errors and misunderstandings of communication between user.

The four importance of developing this system are:

i. Ability to capture event attendance.
ii. Ability to track event attendance.
iii. Simple concept design.
iv. Portal and Mobile apps to interact with this "Smart Management System for TM Trainings and Conference Event" will be designed with user-friendly interface.

1.8 Report Organization

This project contains 5 chapters and it is organized according to the set guidelines. Chapter 1 writing is based on the introduction of the project to be developed, stating the background of existing system problems, goals, objectives, scope and project importance. Chapter 2 contains literature studies. Literature research can help to better understand the existing system, whether it is almost or less similar to the system to be developed. Comparison and improvement need to be done so that the system to be developed is better than the existing system. Writing in Chapter 3 will describe the methodology project, phases-phase development, technology and equipment used and analysis of system requirements that will be used to develop the Smart Management System for TM Trainings and Conference Event. Requirements analysis, system architecture design, base database and system interface design will be described in Chapter 4. Chapter 5 will then explain in detail the phase implementation and testing. Finally, Chapter 6 will summarize the entire chapter and suggestions for improvements in relation to future developed systems.

1.9 Summary

This chapter explains the introduction, existing system problems, objectives, scope and project importance. The system is designed to improve and find solutions to improve the current system vulnerability by developing a Smart Management System for TM Trainings and Conference Event. The target of the system user is divided into two, namely event's organizer and user/participant/attendees. This system is developed using the Hypertext Preprocessor program language system known as PHP. The next chapter will discuss literature studies between systems developed with existing systems.

In conclusion, this chapter explains in detail the projected system project, the background of existing system problems, objectives, objectives, scope and importance of the project and report organization to facilitate system development. It is important that the goals and objectives of the developed system be achieved. This is because human beings today have changed in times of circulation which require a computerized system to replace the manual system in helping users perform activities such as recording, updating, and providing reports more easily, efficiently and systematically.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss the literature review topic. The purpose of the literature study is to analyze some existing methods or applications. Another purpose of the literature study is to study existing applications and to study the various methods used in developing an application. This study is based on printed materials such as books, journals, theses and newspapers. In addition to the printed materials, surveys are also conducted through electronic media from the internet sites as well as obtaining survey information from survey forms given to respondents. The literature review is very important as it can provide ideas and directions about the development of the app.

2.2 Brief Description of Smart Management System for TM Trainings and Conference Event

Smart Management System for TM Trainings and Conference Event is a system that allows collecting of attendance information by mobile phone application. The information is collected via an Android or IOS. It can be monitor via Android or IOS phone as well or through an email. All the user detail and participant detail are stored in a web based that called Admin Panel. Admin Panel is controlled by an organizer. The application needs to verify the record of participant by scanning their QR code. The participant detail is compiling in QR code technology. There are two main systems for this project: Event Organizer as administrator and QR Participant application. Only organizer can use the app and view the attendance list. When participant enter the event, organizer will generate a unique URL that one can publish QR code. Participant will take the unique URL that one can publish QR code to scan their QR code for register their attendance. The information will be recorded and store in database. Before that each participant will produces their own QR code by using QR code application. At the end of event, organizer can view the attendance list on the application or in their email.

2.3 Existing System Analysis

2.3.1 Online Attendance Management System

Figure 2.1: Online Attendance - Main Page

This Online Attendance Management System software is designed and implemented in such as way that taking student attendance in a class is done in a more effective way. The software system is based on inserting, deleting, searching and updating of database management system.

The key features of online attendance management software can be outlined as:

- Members can log in to the system by providing valid id (username and password).
- Time-limit is maintained in the system.
- Attendance is calculated at the end of each day.
- Attendance reports are generated at the end of the each month.
- Students can find details of their attendance for every day and month.
- Faculty can find details of their attendance for every day and month.
- Faculty can view the attendance details of students.
- The system is secure for all the modules.

2.3.2 Attendance Tracker System

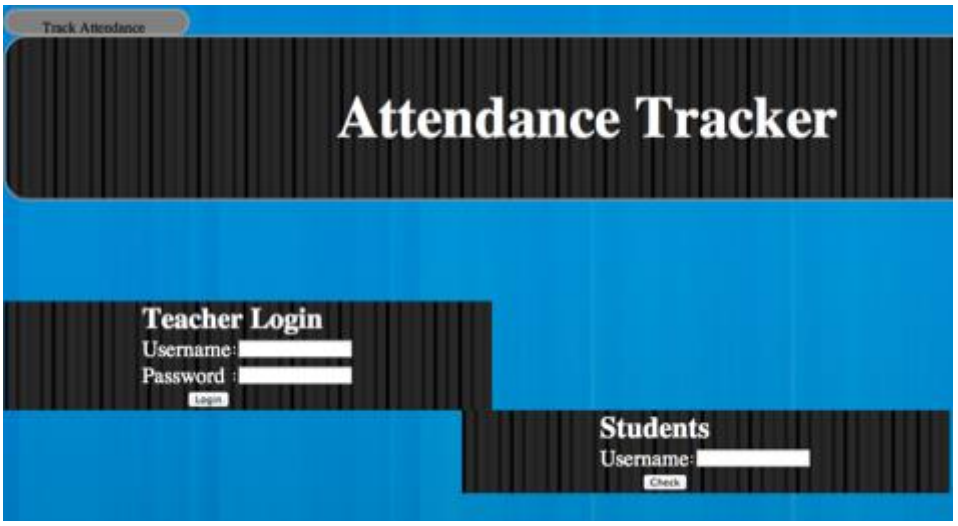

Figure 2.2: Attendace Tracker – Main Page

Attendance Tracker System is a web-based application in PHP. This project aims at managing attendance details of students so that both students and teachers have all the attendance-related information of respective subjects and respective streams. The attendance tracking system is designed in such a way that attendance information is accessible for every individual class and can be analyzed by the respective subject teacher.

When the application is run, the main login form of the project is displayed. It consists of teacher login and student login boxes as shown in output screen. Teachers will have unique username and password for login, and from there, they can track students' attendance records.

Attendance details of students can be tracked by using either username or registration number. Students can simply give their username and check the details of attendance recorded in the database of the application. Passwords are not needed for students.

Below is a list of forms used in Attendance Tracker System Project:

- Log in form – For teachers to log in to the application and view existing attendance records of students.
- Check log in – To check details of username and password with database records.
- Log out – For teachers to log out of the application after tracking or viewing existing record.
- Retrieve – Records are retrieved from the database when a request for tracking students' records is made.
- Retrieve teacher – Details of teachers' records are displayed by retrieving them from the database.
- Update form – To update and add new records to the database.

2.4 Compare Between Existing System

Comparison have been made between Online Attendance Management System and Attendance Tracker System. There are a few similarities and differences between the systems. Table 2.1 show the comparison between the systems.

Table 2.1 : Comparison between existing systems

System Name	Online Atendance Management System	Attendance Tracker System
Programming Language	Java	PHP
Database	MYSQL	MYSQL
Technology	Web Based	Web Based
User Involved	• Administrator • Faculty • Student	• Admin • Teacher • Student
Systems Module	• View • Track • Record	• View • Track • Record

2.5 Literature Review on Technology Used

2.5.1 QR Code (Quick Response)

QR is short for Quick Response it can be read quickly by a mobile phone. From piece of information from a transitory media and can be read by smart phone. Figure 2.1 show the example of QR code image. QR Code always used in advertising materials in the environment such as magazine advert, on a billboard, a web page or even on television. It may give details about that business or details and show the URL (Uniform Resource Locator is a reference (an address) to a resource on the Internet) about link to the individuals full resume or website. This will be a shortcut to connect directly with websites or online resources without having to type a URL into an internet browser. The patterns included in a QR-code image are finder, alignment, timing, and separator patterns. Each of these patterns has its own functionality.

2.5.1.1 Allignment Pattern

Similar to the finder, there is no data stored in the alignment pattern; however, it provides information scanner devices to correctly position the data stored in the encoded data region. The alignment pattern is positioned between encoded data and is usually in the center of the image. The structure of this pattern consists of a small square with a tiny dot inside. In addition, the number of alignment patterns can differ for different QR codes.

2.5.1.2 Timing Pattern

This pattern lies between two finder patterns. Timing patterns are arranged both vertically and horizontally. There is a black dot inside each timing pattern. The main purpose of the timing pattern is to correct the central coordinate for each data cell when any distortion occurs during decoding of symbols or when an error is found in any cell pitch in the QR code. No data is stored in the timing pattern.

2.5.1.3 Finder Pattern

This pattern can be found at the edges of a QR code image. The finder pattern is a square block that contains that contains a black square. There are three finder patterns on every QR code image; at the top left, top right, and bottom left. There is not finder pattern at the bottom right. The primary functionality of the finder pattern is to tell a scanner or decoder that the image that has been encoded as a QR-code image. No data is stored in the finder pattern.

2.5.1.4 Encoded Data

This pattern is located at the center of the image. Data is stored within this pattern. In addition, when data is inserted, it is converted to binary data. This binary data is converted back to the normal text when the image is decoded by a scanner.

Figure 2.1: Example QR Code

2.5.2 QR Reader

QR Reader is used to read the QR Code information by using smart phone set up with the camera. It an application in smart phone that need to install in it. To read a QR code, it scans or capture by a smart phone camera and a QR code reader is required.

Figure 2.2: Example QR Code Reader Software

2.6 Comparative Study on Related Other Software

2.6.1 Barcode vs RFID vs QR Code

Item	Bar Code	QR Code	RFID
Data Type	Only Characters	Any Type	Any Type
Access Online	Cannot	Can Access Directly	Cannot
Cost	Cheap	Cheap	Expensive
Tracking URL	Cannot	Can	Can
Reader	1 Item	1 Item	Multi Item
Decoder Device	Barcode Reader	Any IOT with Camera and Decoder Software	RFID Reader

Table 2.2: Comparative Summary Barcode vs RFID vs QR Code

The Barcode is an optical machine-readable representation of data relating to the object to which it is attached. On the other hand, the Radio-frequency identification (RFID) is the use of a wireless non-contact system that uses radio frequency electromagnetic fields to transfer data from a tag attached to an object, for the purposes of automatic identification and tracking. Quick response (QR) codes are a very convenient way to display a small bit of information that is easily scanned and processed typically by mobile devices allowing physical items to almost become interactive, by providing information that is easily scanned like a website URL.

RFID involves applying RFID tags to items or boxes or pallets. Tags vary greatly in size, shape and capabilities, but one example is in figure2.3 below. The tag with its small antenna emits a radio frequency signal that is picked up and read by a special wireless RFID reader, conveying information from the tag about the item it is affixed to.

The QR (Quick Response) Code is a two-dimensional (2-D) matrix code as shown on figure 2.3, which belongs to a larger set of machine-readable codes, all of which are often referred to as barcodes, regardless of whether they are made up of bars, squares or other shaped elements. Compared with 1-D codes, 2-D codes can hold a larger amount of data in a smaller space, and compared with other 2-D codes, the QR Code can hold much more data still. In addition, an advanced error-correction method and other unique characteristics allow the QR Code to be read more reliably
than other codes.

2.7 Operating System

IOS

iOS (formerly iPhone OS) is a mobile operating system created and developed by Apple Inc. exclusively for its hardware. It is the operating system that presently powers many of the company mobile devices, including the iPhone, iPad, and iPod Touch. It is the second most popular mobile operating system globally after Android.

Originally unveiled in 2007 for the iPhone, iOS has been extended to support other Apple devices such as the iPod Touch (September 2007) and the iPad (January 2010). As of January 2017, Apple App Store contains more than 2.2 million iOS applications, 1 million of which are native for iPads. These mobile apps have collectively been downloaded more than 130 billion times.

The iOS user interface is based upon direct manipulation, using multi-touch gestures. Interface control elements consist of sliders, switches, and buttons. Interaction with the OS includes gestures such as swipe, tap, pinch, and reverse pinch, all of which have specific definitions within the context of the iOS operating system and its multi-touch interface. Internal accelerometers are used by some applications to respond to shaking the device (one common result is the undo command) or rotating it in three dimensions (one common result is switching between portrait and landscape mode). Apple has been significantly praised for incorporating thorough accessibility functions into iOS, enabling users with vision and hearing disabilities to properly use its products.

Major versions of iOS are released annually. The current version, iOS 11, was released on September 19, 2017. It is available for all iOS devices with 64-bit processors; the iPhone 5S and later iPhone models, the iPad (2017), the iPad Air and later iPad Air models, all iPad Pro models, the iPad Mini 2 and later iPad Mini models, and the sixth-generation iPod Touch.

Android

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics.

Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. The operating system has since gone through multiple major releases, with the current version being 8.1 "Oreo", released in December 2017. The core Android source code is known as Android Open Source Project (AOSP), and is primarily licensed under the Apache License.

Android is also associated with a suite of proprietary software developed by Google, including core apps for services such as Gmail and Google Search, as well as the application store and digital distribution platform Google Play, and associated development platform. These apps are licensed by manufacturers of Android devices certified under standards imposed by Google, but AOSP has been used as the basis of competing Android ecosystems, such as Amazon.coms Fire OS, which utilize its own equivalents to these Google Mobile Services.

Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013. As of May 2017, it has over two billion monthly active users, the largest installed base of any operating system, and as of 2017, the Google Play store features over 3.5 million apps.

2.8 Study on Technologies and Development Tools

This section will talk about IDE, development kits, deployment framework, testing tools and technologies that are required for developing FFC.

MySQL

MySQL is a fast, easy-to-use relational database management system (RDBMS) based on Structured Query Language (SQL). It is being used for many small and big business. MySQL is becoming so popular because it is released under an open source license. It handles a large subset of the functionality of the most expensive and powerful database packages. MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA and so on. MySQL works very quickly and well even with large data sets.

PHP

PHP is a popular general-purpose scripting language that is especially suited to web development. It is fast, flexible and powerful tool for making dynamic and interactive web pages. PHP is a widely used, free and efficient alternative to competitors such as Microsoft's ASP.

JavaScript

JavaScript is one of the three core technologies of the world wide web. It is used to make dynamic webpages interactive and provide online programs. Nowadays over all modern web browser can support. Java script can embed with PHP in making web site more interactive.

Ionic (Mobile Apps Framework)

Ionic is a complete open-source SDK for hybrid mobile app development. The original version was released in 2013 and built on top of AngularJS and Apache Cordova. The more recent releases, known as Ionic 3 or simply "Ionic" are built on Angular. Ionic provides tools and services for developing hybrid mobile apps using Web technologies like CSS, HTML5, and Sass. Apps can be built with these Web technologies and then distributed through native app stores to be installed on devices by leveraging Cordova. Ionic was created by Max Lynch, Ben Sperry, and Adam Bradley of Drifty Co. in 2013.

2.9 Summary

The literature review is aimed at obtaining an initial scan of the study conducted. The literature review is more focused on the functions that are in the study of results to detect the weaknesses. Research is also being carried out on the languages and techniques to be used in the development of the system and to study the existing system trips to obtain information related to the system to be developed. Additionally, the processes used in existing systems also help developers to renew existing systems to a mobile apps system. This study is a guide to system builder to produce a better system and meet the requirements. The next chapter will discuss the development of the Methodology of the Smart Management System for TM Trainings and Conference Event.

CHAPTER 3

SYSTEM DEVELOPMENT METHODOLOGY

3.1 Introduction

This chapter explains the system development methodology used in Smart Management System for TM Trainings and Conference Event project. It also discusses the justification of the chosen methodology. A good system will be developed if a suitable methodology is used. So, the advantages of using Software Development Life Cycle as the development model will be discussed. In addition, methodology helps to estimate the time and cost needed in developing a system. Lastly, the justification of software is explained in this chapter.

3.2 Research Methodology

This project is to design and build an QR Code application which is used to track attendee attendance. The QR Code also has the ability to store unique info auto-generated by application and process the info when it being scanned using mobile application.

First of all, literature review is carried out in order to gather the required information including the problem statement that is needed to be solved. Then, the basic communication between the camera on smart phone will be determine and choose. For this project, the Camera technology will be choosing as reader using an application on smart phone. The application for smart phone also will be determine in this phase and ionic framework will be choosing as a mobile development application to develop and application that communicate with the server via network.

On server-side application, Php & JavaScript will be used for mediator and portal access view. For Database, will choose MySQL to store centralize data.

The choice of appropriate methodology is important because the methodology is a comprehensive one in which it contains methods, policies, procedures, rules, standards, techniques and tools as well as programming languages to be used in developing this project. There are many different types of methodological models today. Among them are waterfall models and agile models.

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3.3 Software Development Life Cycle (SDLC)

SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process. The figure is 3.1 a graphical representation of the various stages of a typical SDLC.

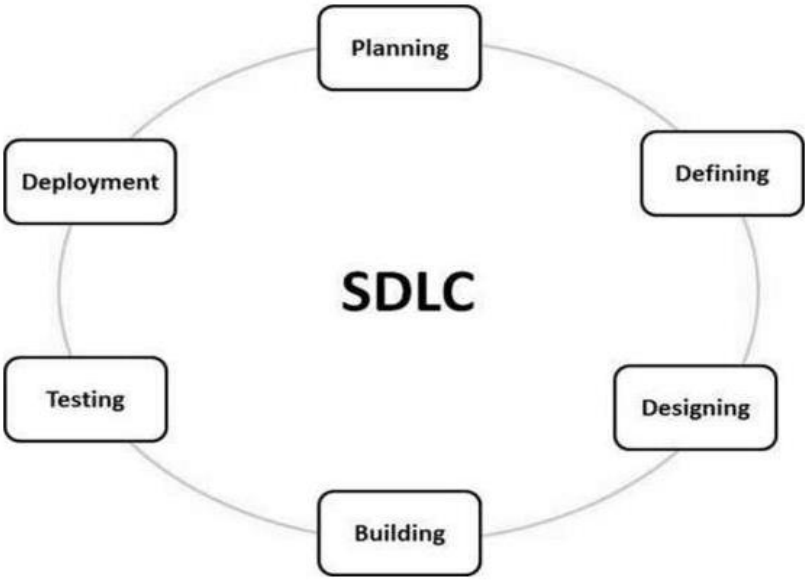


Figure 3.1: Stages of SDLC

A typical Software Development Life Cycle consists of the following stages −

Planning and Requirement Analysis

Requirement analysis is the most important and fundamental stage in SDLC. It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry. This information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational and technical areas.

Planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage. The outcome of the technical feasibility study is to define the various technical approaches that can be followed to implement the project successfully with minimum risks.

Defining Requirements

Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts. This is done through an SRS (Software Requirement Specification) document which consists of all the product requirements to be designed and developed during the project life cycle.

Designing the Product Architecture

SRS is the reference for product architects to come out with the best architecture for the product to be developed. Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented in a DDS - Design Document Specification.

This DDS is reviewed by all the important stakeholders and based on various parameters as risk assessment, product robustness, design modularity, budget and time constraints, the best design approach is selected for the product.

A design approach clearly defines all the architectural modules of the product along with its communication and data flow representation with the external and third-party modules (if any). The internal design of all the modules of the proposed architecture should be clearly defined with the minutest of the details in DDS.

Building or Developing the Product

In this stage of SDLC the actual development starts and the product is built. The programming code is generated as per DDS during this stage. If the design is performed in a detailed and organized manner, code generation can be accomplished without much hassle.

Developers must follow the coding guidelines defined by their organization and programming tools like compilers, interpreters, debuggers, etc. are used to generate the code.

Different high-level programming languages such as C, C++, Pascal, Java and PHP are used for coding. The programming language is chosen with respect to the type of software being developed.

Testing the Product

This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC. However, this stage refers to the testing only stage of the product where product defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.

Deployment in the Market and Maintenance

Once the product is tested and ready to be deployed it is released formally in the appropriate market. Sometimes product deployment happens in stages as per the business strategy of that organization. The product may first be released in a limited segment and tested in the real business environment (UAT- User Acceptance Test).

3.4 Software Development Life Cycle Models

There are various software development life cycle models defined and designed which are followed during the software development process. These models are also referred as Software Development Process Models". Each process model follows a Series of steps unique to its type to ensure success in the process of software development. Here I list two SDLC models that I was choose for comparison.

3.4.1 Waterfall Model

In this model, the entire system development process is divided to several phases ie the collection of requirements and analysis, design system, implementation, testing, system implementation and final phase system maintenance. All of these phases are represented by the activity in which they are located a phase will start as the previous phase ends, hence its name is the model waterfall. Figure 3.2 below shows the phase flow of the Waterfall Model.

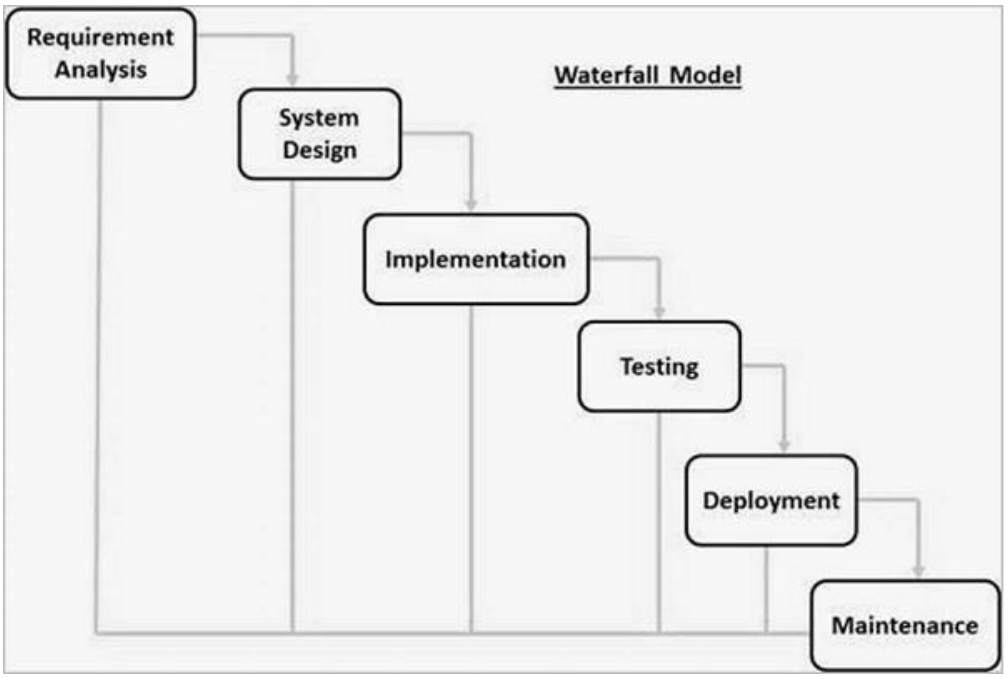


Figure 3.2: Waterfall Model

i. Requirements Collection and Analysis

All the requirements of the developed system will be collected in the phase this is. These requirements are collected from end-user systems using some specific methods. Then the needs to be collected will be analyzed to be documented as a Software Requirements Specification

ii. System Design and Software

Before the programming process is started, the requirement specification from the first phase was studied to provide system design. System design will assist the selection of hardware and software for development purposes system as well as defining overall system architecture.

iii. Implementation and Testing

After receiving the system design documentation, the necessary work done divided into smaller units or modules. System programming will also start at this time. System developed by unit then tested separately.

iv. System Integration and Testing

The units to be developed in the previous phase will be integrated into a complete system. This system will then be tested as a whole to determine whether it runs smoothly or not.

v. System Implementation

The system that passes all tests then will be released as a complete and usable system.

vi. Maintenance

The maintenance phase is a phase that will not cease as long as the system is used. Any problems that could not be detected at the time testing will be corrected. The system will also be upgraded by needs and will be added with new functions.

3.4.2 Agile Model

In agile, project needs to go through a series of iterations like analyzing, designing, developing and testing each feature in iterations. It is first beginning with requirement analysis. It is used to brainstorm necessary requirements in the project. The initial planning and analysis is kept to a very high level. Besides that, to plan and schedule time for project activities, Gantt charts were created. Figure 3.3 is the overview of agile development life cycle with divided development iteration.

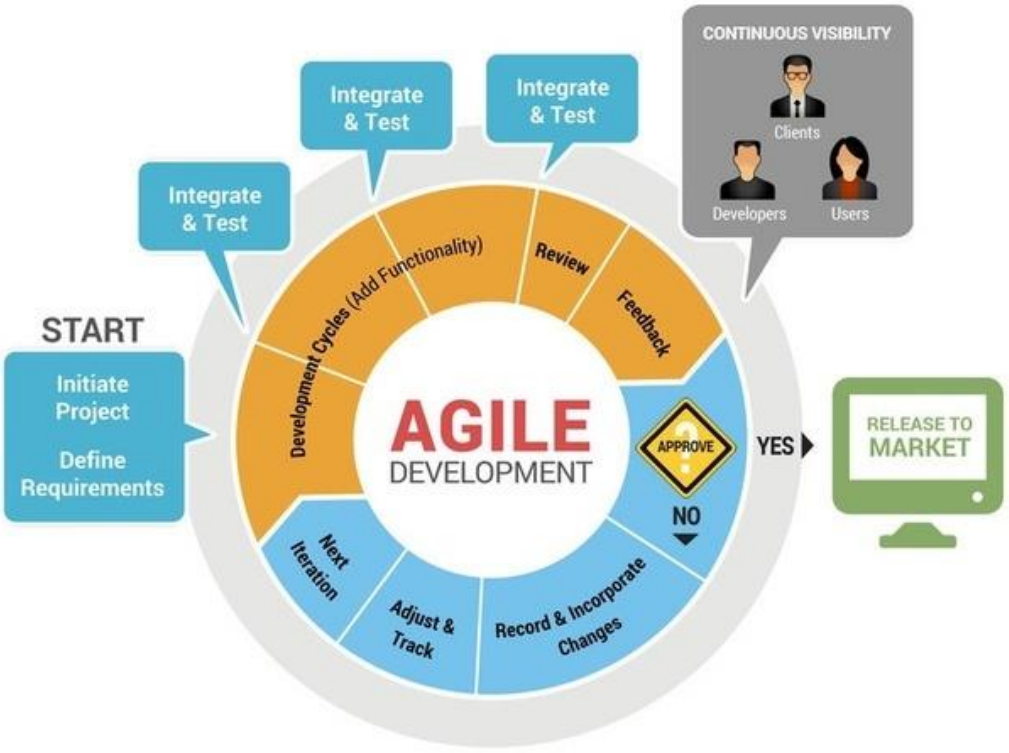


Figure 3.3: Agile lifecycle with Divided Iterations of Developments

Agile development is a general term for iterative and incremental software development methodologies like Scrum, Extreme Programming (XP), Crystal, Dynamic Systems Development Method (DSDM), Lean Development, and Feature-Driven Development (FDD). Every one of the agile methods has its own uniqueness, but they all share the same vision in Agile. Among all these agile development methodologies, normally scrum framework is used for project development.

Scrum is a lightweight process framework for agile development which is less document-oriented and usually emphasizes a smaller amount of document for a given task. A simple review based on current application is made to enable project to elicit and prioritize requirements based on current available resources.

In the design phase of Event Attendance Management & Monitoring system project, techniques that are essentially used to enhance system analysis, specification of project is Unified Modelling Language (UML). It is a tool which provides a common language for analyzing, evaluating and specifying systems. UML enables visualization of complex systems and enables more efficient reasoning about the problem in order to enhance the problem-solving process. It enhances the design documents that may reduce the time duration and cost of work.

In Scrum development, work is structured to a regular, repeatable work cycle, known as a sprint or iteration. Each feature is taken from start to finish within an iteration in all stages of development cycle, with the software being released and completed at the end of each iteration. Every functional releases in scrum sprints is used to be scheduled in an iteration with a short and fixed duration. Typically, an iteration is between 1week and 30days, but it is more common in 2 or 3 weeks. Figure 3.3 shows the steps in scrum which focus on process in each iteration.

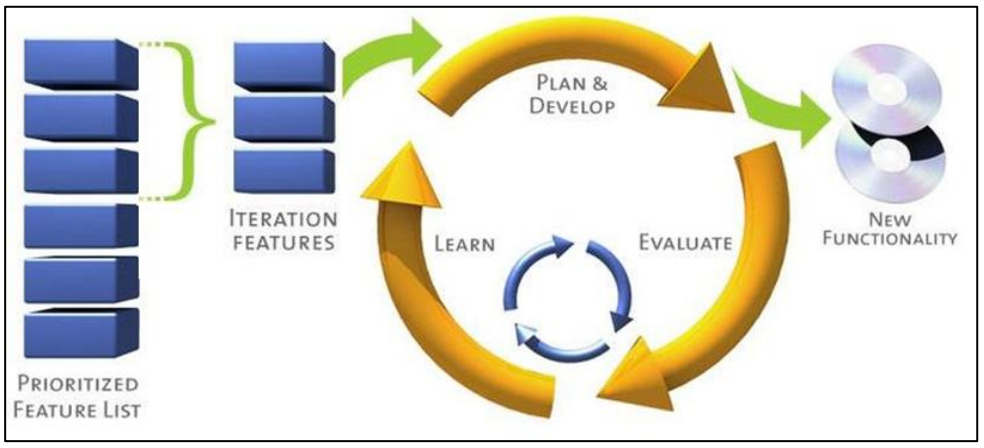


Figure 3.4 Step Involve in Scrum

During each sprint, project is needed to prioritize a release's most essential requirements features, called user stories. This is to encourage developers to focus on short-term goals. Because a release may require multiple sprints, scrum is described as iterative and incremental as every iteration of works add to the functionality from the previous release.

After plan and development, products of the project are tested and evaluated in every release and defects are caught to create a visible, complete working features much earlier on in the project life-cycle. Incremental releases ensure that the products are regression tested and allow for a better progress and quality. It also allows an early feedback and adaption along the way. This method allows results produced earlier, risk moderated, and to allow flexibility to accommodate changes in producing a new functionality,

At the end of each sprint, a potentially shippable product is delivered to ensure product are potentially usable before project completion. Scrum can be implemented at the beginning of a project or in the middle of a project or product development effort that is in trouble, so that project can get evolved in the Right direction.

3.5 Comparative Study

Table 3.1 shows the comparison between the advantages and disadvantages that can be found of the Waterfall Model and Agile Model. The results from studies have been carried out.

Table 3.1: Comparative Study Table

Metric	Waterfall Model	Agile Model
Planning Scale	Long-term	Short-term
Distance Between Customer and Developer	Long	Short
Time Between Specification and Implementation	Long	Short
Time to Discover Problems	Long	Short
Project Schedule Risk	High	Low
Ability to Respond Quickly/ to Change	Low	High

3.6 Methodology Choice and Justification

Agile was chosen as the methodology for Smart Management System for TM Trainings and Conference Event project. There are some reasons why agile was selected as the methodology for this project. Firstly, agile methodology acts against traditional waterfall methods. The use of the waterfall model is inflexible, slow, and inconsistent with the ways that software developers perform their tasks. Meanwhile, agile software development is a group of software development methods based on iterative and incremental development.

Agile encourages rapid and iterative development of products in small releases. Smart Management System for TM Trainings and Conference Event project may provide a better estimate of results while spending less time creating them by using this methodology. It focuses on improvement during and after product development. So, the development process can be more in control of the project schedule and state. The understanding of environment and flexibility in the development cycle can lead to focuses on shortening the time frame and cost for improved quality. Figure 3.4 is the overview of agile development methodology.

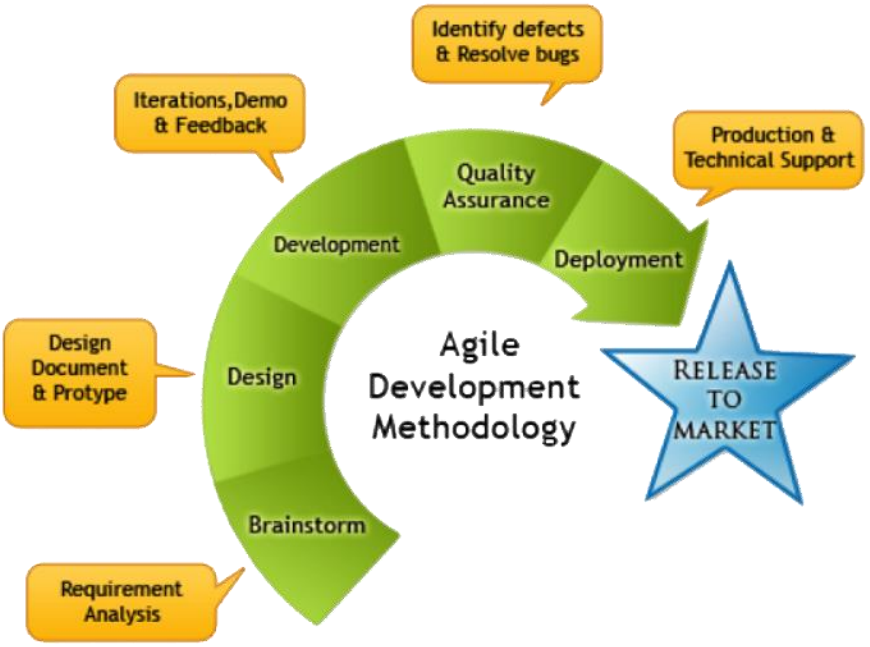


Figure 3.5 Overview of Agile Development Methodology

In addition, agile methods used in Smart Management System for TM Trainings and Conference Event can response to a drastic degree of change and cope better with the changes of expected and unexpected requirements based on the current situation and environment. The highly dynamic environment brings software development to respond to changes and continuously deliver application products valuable to customer or user. Therefore, this process will help to increase the quality of the deliverables for Smart Management System for TM Trainings and Conference Event.

In conclusion, agile development methodology is a flexible, speedy, lean, learning and responsive methodology. It is very suitable for this project although it may face a lot of changes in requirements from time to time.

3.7 System Requirement Analysis

System requirements are separated into two main specifications, which are hardware and software. There are several suitable and correct hardware and software that are required for a particular software development process to reduce the cost of work and time for software development. The software and hardware that are required for the development of Smart Management System for TM Trainings and Conference Event are discussed below.

3.7.1 Hardware Requirements

Table 3.2 outline hardware and network requirements for Smart Management System for TM Trainings and Conference Event development and testing.

Hardware	**Minimum Specification**
Central Processing Unit	Intel® Core™ i5, 2.3GHz dand above
Random Access Memory	4 GB and above
Hard Drice Capacity	500 GB and above
Operating system architecture	32-bit/64-bit
Display	14” Display (Resolution: 1366x768)
Accessory	Mouse/Keyboard

Table 3.2: Hardware Requirement for Smart Management System for TM Trainings and Conference Event

3.7.2 Software Requirement

Table 3.3 below show the lists and justified software used in Smart Management System for TM Trainings and Conference Event Development

Table 3.3: Software Requirements for System Development

Software/Application	Justification
macOS	This operating system is fast, stable, and compatible with most of the third-party application and devices
Microsoft Word	It is a text editor and used for report documenting
Microsoft PowerPoint	It is a slide show presentation program used for project presentation.
Chrome Web Browser	It is a web browser to search useful article, journal and information related to Event Attendance Management & Monitoring system project. Also as Debugging tools
NodeJS	It is used for download ionic component
Visual Studio Code	Integrated Development Environment
balsamiq	UI/UX mockup and website wireframe builder application
MySQL	Database Management Systems
Microsoft Project	Software to draw Gantt Chart
StarUML	It is a software to create and develop a UML graph, diagram and chart.

3.8 Summary

This chapter explains agile methodology that is chosen for Smart Management System for TM Trainings and Conference Event project. The project activities in each iteration of Agile are briefly described. The last section of this chapter also justifies

hardware and software requirements for the project. Overall, this chapter explains the methodology chosen to fit the development of the system. Justification was made to explain the methodology chosen. Furthermore, this chapter clearly explains each phases involved in the methodology. Each phases are important to make sure the system will be develop according to user requirement. In addition, this chapter also describe the hardware and software justification that will be used to develop the system.

CHAPTER 4

SYSTEM ANALYSIS AND DESIGN

4.1 Introduction

As described in Chapter 3, the project goal of design phase in agile development methodology is to establish the baseline of a system architecture using UML. This chapter analyses both users and system requirements for Smart Management System for TM Trainings and Conference Event, and illustrates the result using UML behavioral diagrams, which uses case diagrams, sequence diagrams, and activity diagrams.

A Software Requirement Specification (SRS) is then used to document all these requirements and UML behavioral diagrams. Besides that, this chapter also describes the design of overall system architecture, system database and its graphical user interface. All the diagrams related to implementation design of the Smart Management System for TM Trainings and Conference Event is documented in a Software Design Document (SDD).

4.2 Product Design

The product developed is a web-based system where this product is an access application using internet networking and computerized electronic equipment to get the results. This developed product features an interface display and some function buttons that produce results to assist management and workforce at the organizing agency. The function generation process can be removed after the user submits the data to user interface display before being processed by the system.

4.3 Application Architecture Design

Application architecture application on a mobile apps-based system, where the developed system will be fully functional if the user has a smartphone gadget and network network equipment. The developed system can be accessed anywhere, if the following facilities are provided. Storage and data entry into this developed system is online and processed while reservation approvals will be displayed via email display and others.

4.4 System Design

System design developed based on the concept of Unified Modeling Language (UML). UML Unified Modeling Language (UML) is a standard specification for documenting, defining, and building software systems. UML also contains graphic elements that can be merged into the Use Case Diagram and Entity Relationship Diagrams.

4.5 Use Case Diagram

Application trips are a bit difficult to understand, for the purpose of simplifying users and illustrating how the built-in system works and developers will show a use case diagram before the system is developed. The case diagram is used to provide an overview of the system operation that you want to develop.

The case diagram also aims to show how actors' scenarios interact with each other in the developed system. Before generating this diagram, each user or actor involved will be shown how the system operates. Description of the actors and roles of actors concerned are recorded on Figure 4.1 below. There are 3 main actors operating on the Smart Management System for TM Trainings and Conference Event. It is classified as Administrator, Organizer and Participants.

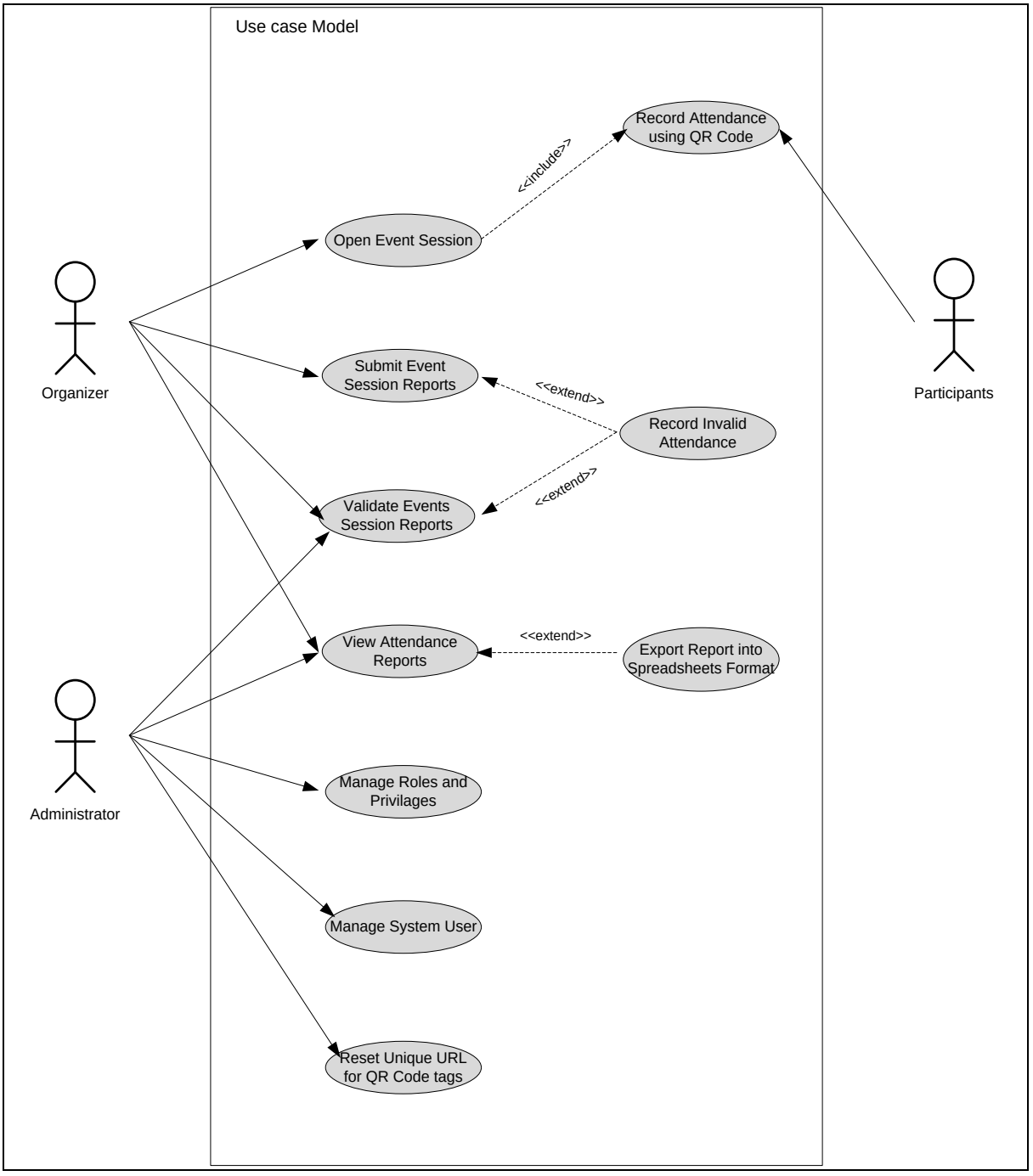


Figure 4.1: Use case diagram overall

4.5.1 Actor`s Description

Actors are users who will use the system to be developed. The definition of an actor can be represented by objects such as machines or humans. The role of the actor is also to explain how the user is concerned with interacting with the system to be developed. Actors can communicate with other actors using the information contained in the system through the work process to be performed. Actor classifications are described in the table below.

Table 4.1 Actor`s Description and Role

Actors	Role
Administrator	Administrator has to update and monitor the registered participant details, add a new user, provide register number (ID) for all users, assign unique URL for users scan QR Code. Administrator can update his profile, and also can give help to the users. Administrator will have access to add, delete and modify information stored in the database.
Organizer	Organizer will have access to only view the data stored in the database and can update the participants attendance in the form of formatted reports. Organizer can check, verify and update the participants attendance. Organizer also have a role to setup events.
Participants	Participants main role is to verify events attendance by scan QR Code and verify the attendance. Participants also can only view their personal details, events created and their attendance.

4.5.2 Use Case Diagram for Actor

Figure below shows the case diagram for the actors involved. This component is also known as a user who will use the Smart Management System for TM Trainings and Conference Event.

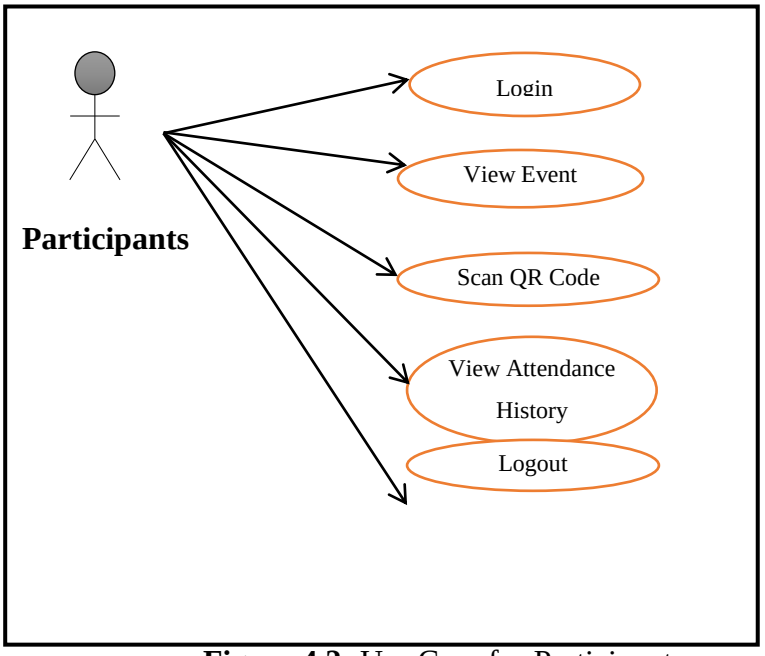


Figure 4.2: Use Case for Participants

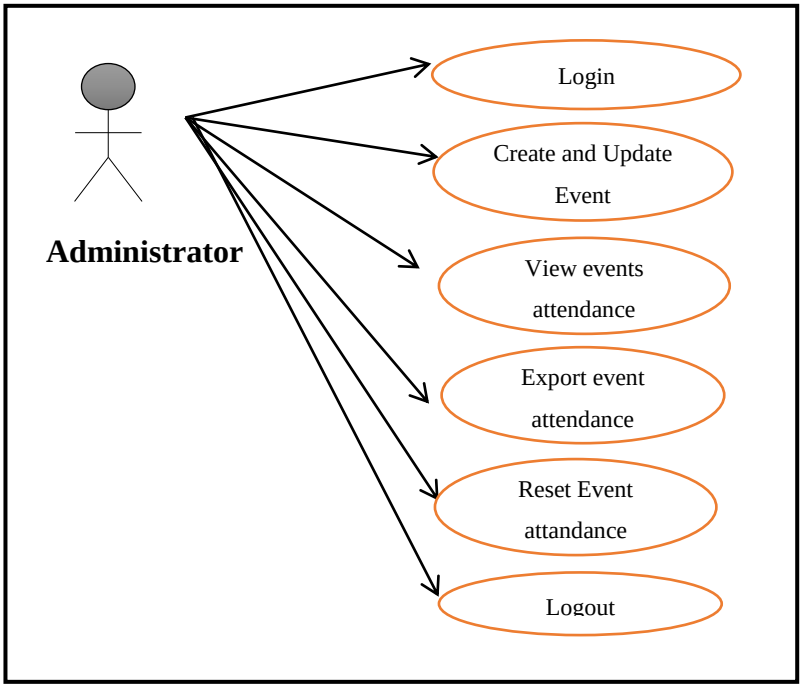


Figure 4.3: Use Case for Administrator

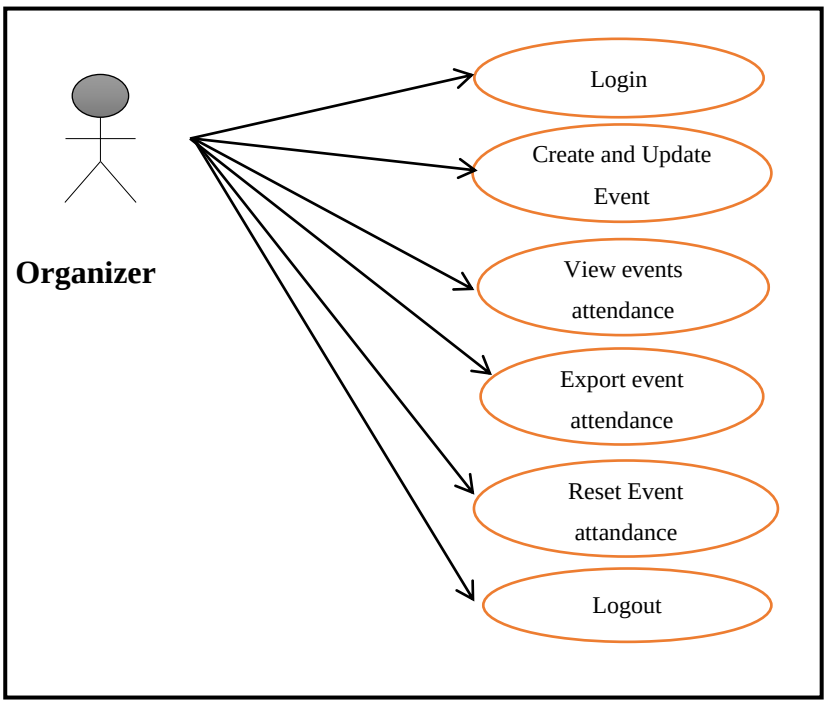


Figure 4.4: Use Case for Organizer

4.5.3 Use Case Description

The Case Diagrams are used to describe the activities of actors who have the role in the system. The table below also describes the activities performed by actors such as Administrator, Organizer, and Participants/Attendees

Table 4.2 : Description of Use Case for Participants

Activity	Description
Login	Participants log into the system using the user id and password that has been registered
View Event	View list of events that organizer created.
Scan QR Code	Scan QR Code for enroll the attendance.
View Attendance History	Verify the attendance if succesful or not.

Logout	The participants log out of the system after the task is solved as a sign terminates the use of the session over the system.

Table 4.3 : Description of Use Case for Administrator

Activity	Description
Login	Administrator log into the system using the user id and password that has been registered.
Record and update users information	Administrator records a list of system user data such as events organizer and participant. The following purpose is to enable the following users to use this system. In case of errors, the administrator may also update the recorded user data.
Record and update events	Administrative records the list of events create. The following objective is to enable the user to select the list of events contained therein. In case of mistakes, the administrator may also update the events data that has been entered
Assign unique URL	Administrator create a unique URL for user scan QR Code.
Verify the record	Administrative record and update their respective users' information in the event of the addition or conversion of track and record data information.
Logout	The Administrator log out of the system after the task is solved as a sign terminates the use of the session over the system.

Table 4.4: Description of Use Case for Events Organizer

Activity	Description
Login	Events Organizer log into the system using the user id and password that has been registered.
Record and update user's information	Events Organizer records a list of participants system data. The following purpose is to enable the following users to use this system. In case of errors, the administrator may also update the recorded user data.
Record and update events attendance	Events Organizer records the list of events create. The following objective is to enable the user to select the list of events attendances and assign to participants. In case of mistakes, the administrator may also update the events data that has been entered.
Verify the participant attendance	Events Organizer verify the participants attendance in the events of the addition or conversion of track and record data information.
Display statistic and Print report	Events Organizer can display the order statistics used by the user and can then print a attendance report that has been created for the purpose of periodic reporting.
Logout	The events Organizer log out of the system after the task is solved as a sign terminates the use of the session over the system.

4.7 Workflow Analysis Phase

Analysis phase workflow is a process of researching and describe all the needs that have been collected from the workflow needs phase. In this analysis phase of the analysis, the Use Case model will analyzed and detailed to get a clearer picture about system design. It is explained through the flow chart diagram and sequence diagram.

4.6 Activity Diagram

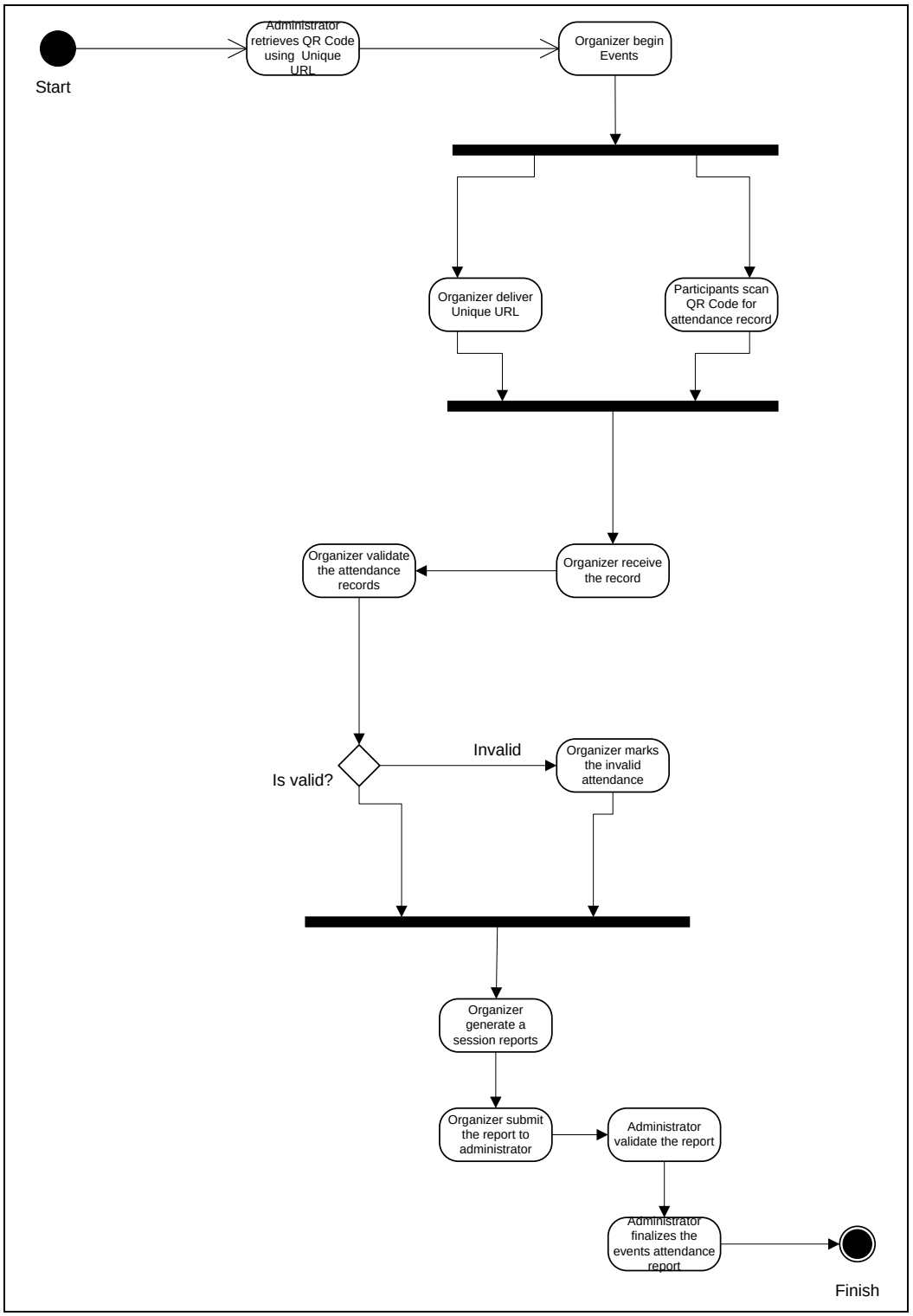


Figure 4.5: Smart Management System for TM Trainings and Conference Event Activity Diagram

Figure 4.4 above shows the flow chart of Smart Management System for TM Trainings and Conference Event. One of the most frequent uses of flowcharts is to map out a new project.

Engineers and software designers often use flowcharts for this purpose, but others may find them useful, as well. They are particularly helpful when the project will involve a sequence of steps that involve decisions.

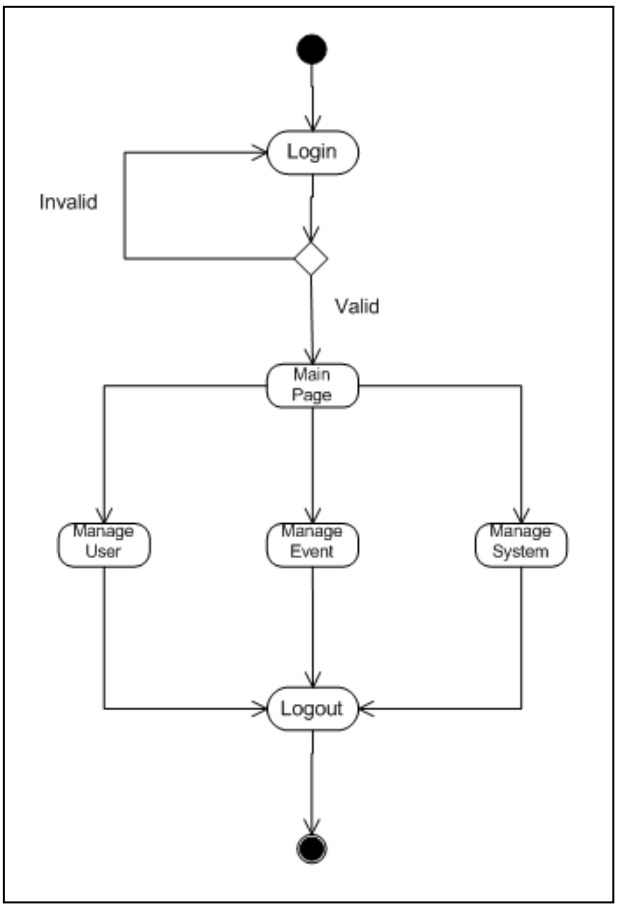


Figure 4.6: Administrator Activity Diagram

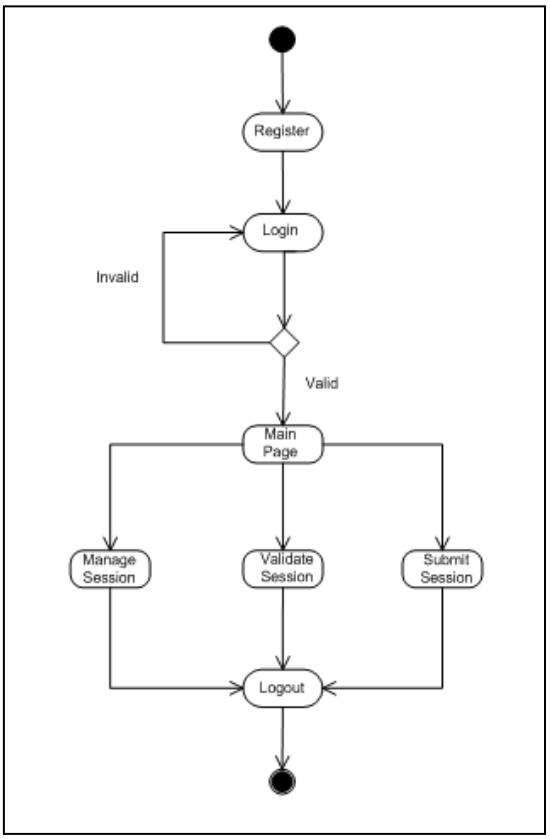


Figure 4.7: Organizer Activity Diagram

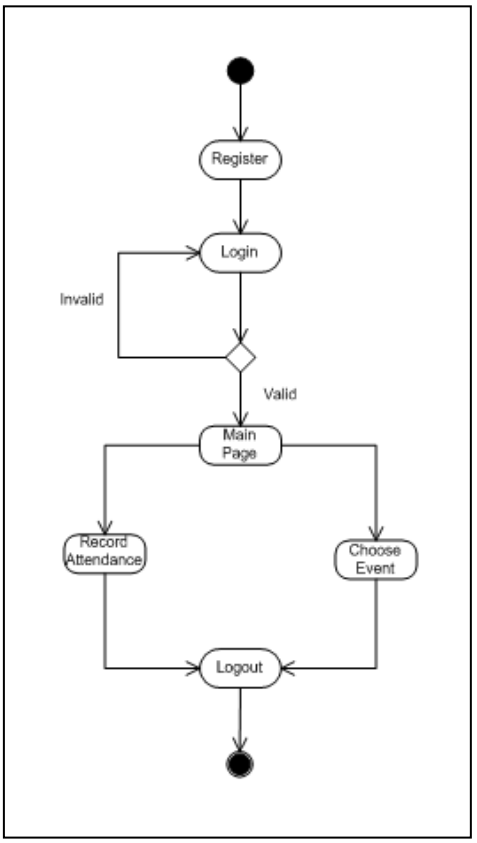


Figure 4.8: Participants Activity Diagram

4.7 Data Flow Diagram

Figure 4.8 below shows the data flow diagram of Smart Management System for TM Trainings and Conference Event. Data flow diagrams are used by information technology professionals and systems analysts to document and show users how data moves between different processes in a system. Analysts generally start with an overall picture and then move on to the finer details of each process.

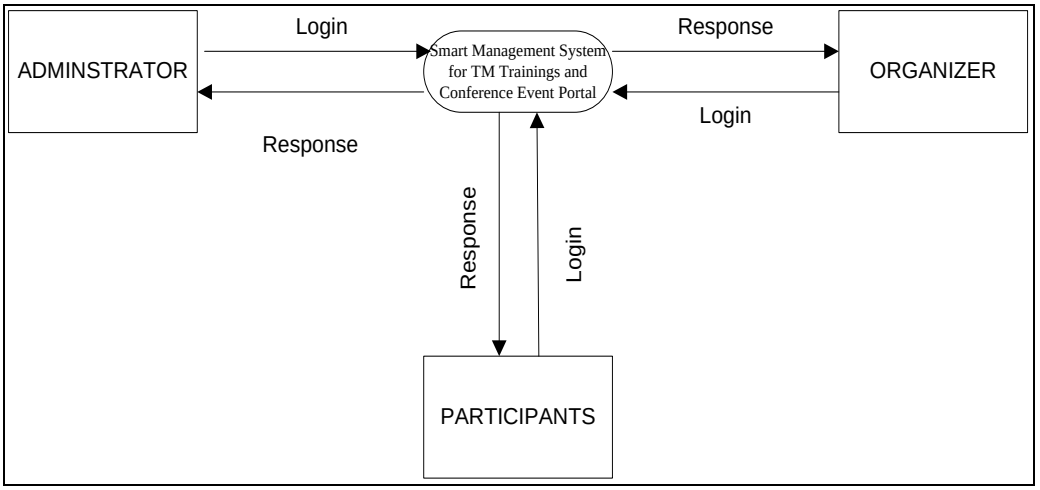


Figure 4.9 Event Smart Management System for TM Trainings and Conference Event Data Flow Diagram (DFD) Context Level

4.8 Sequence Diagram

Figure 4.9 below shows the sequence diagram of overall Smart Management System for TM Trainings and Conference Event functions. This sequence diagram is used to model the interactions between objects in a single use case. It's also illustrated how the different parts of Smart Management System for TM Trainings and Conference Event interact with each other to carry out a function, and the order in which the interactions occur when a particular use case is executed.

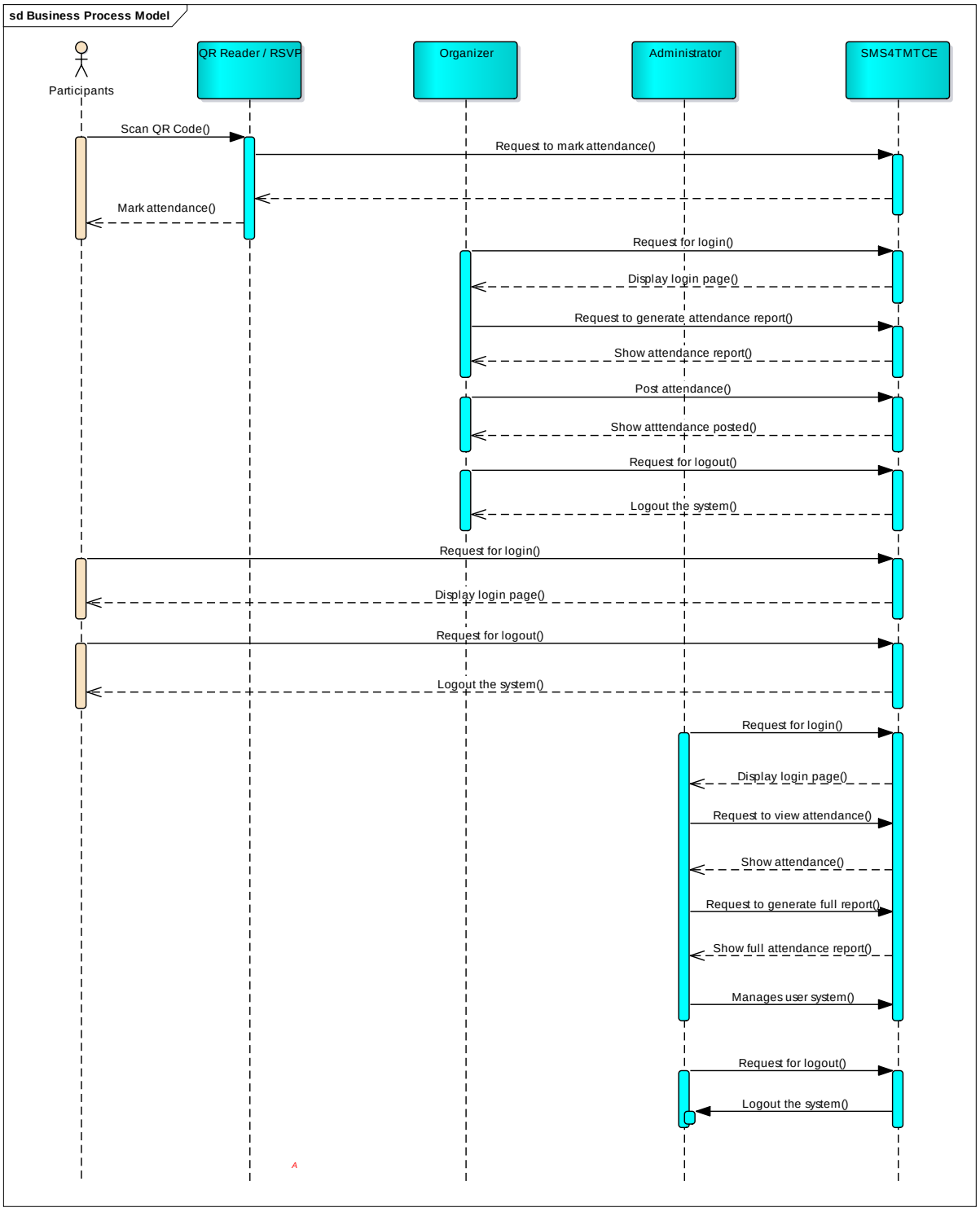


Figure 4.10 Smart Management System for TM Trainings and Conference Event Overall Functions Sequence Diagram

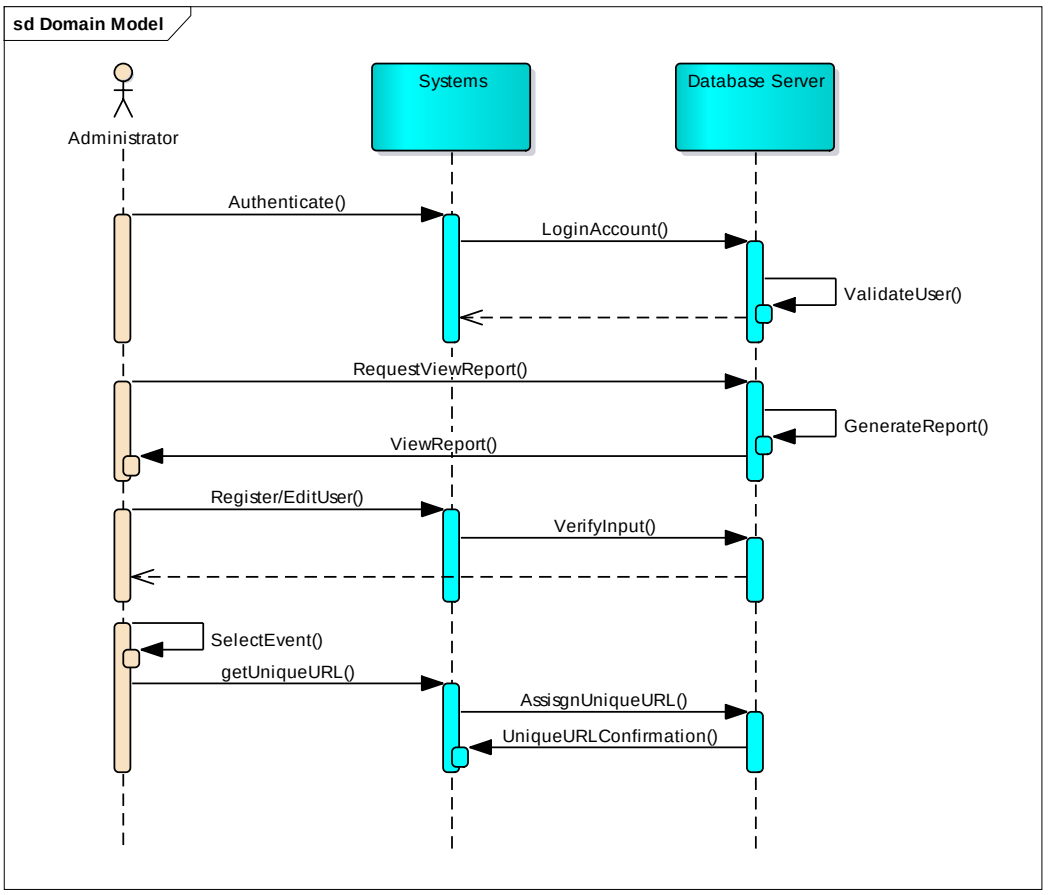


Figure 4.11 Administrator Functions Sequence Diagram

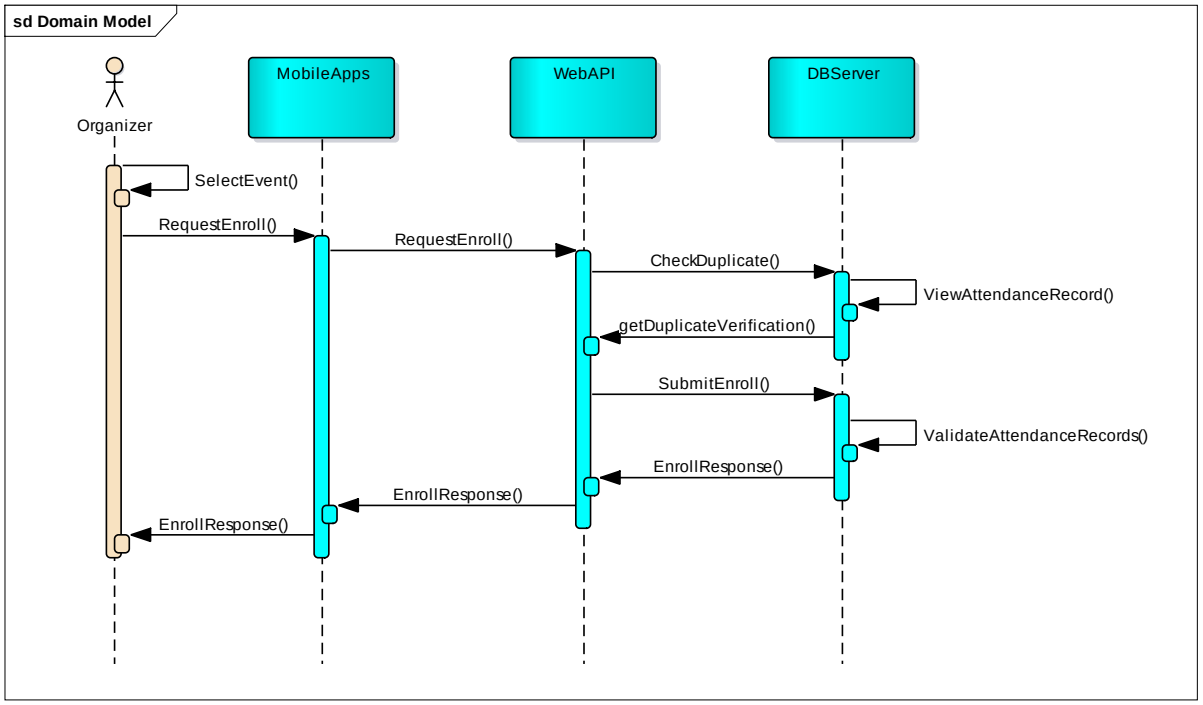


Figure 4.12 Organizer Functions Sequence Diagram

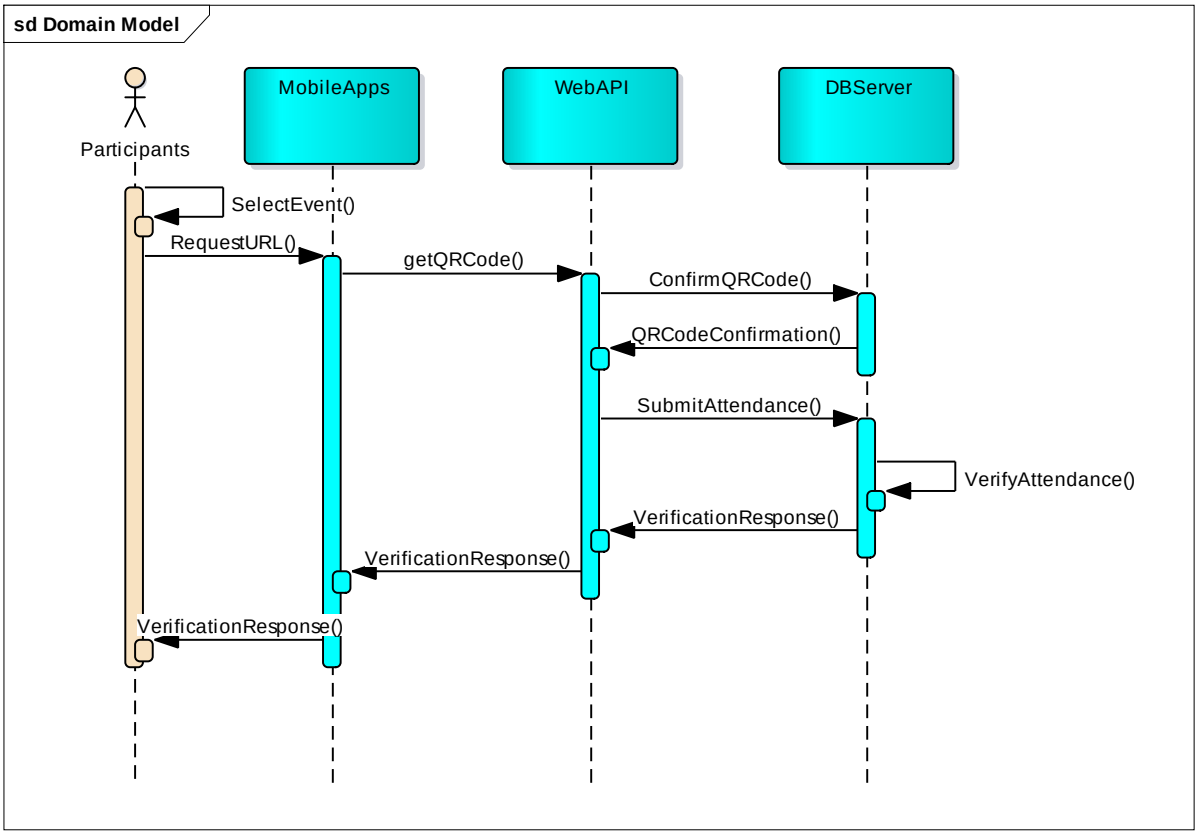


Figure 4.13 Participants Functions Sequence Diagram

4.9 System Module

4.9.1 Scan QR Code and Authentication

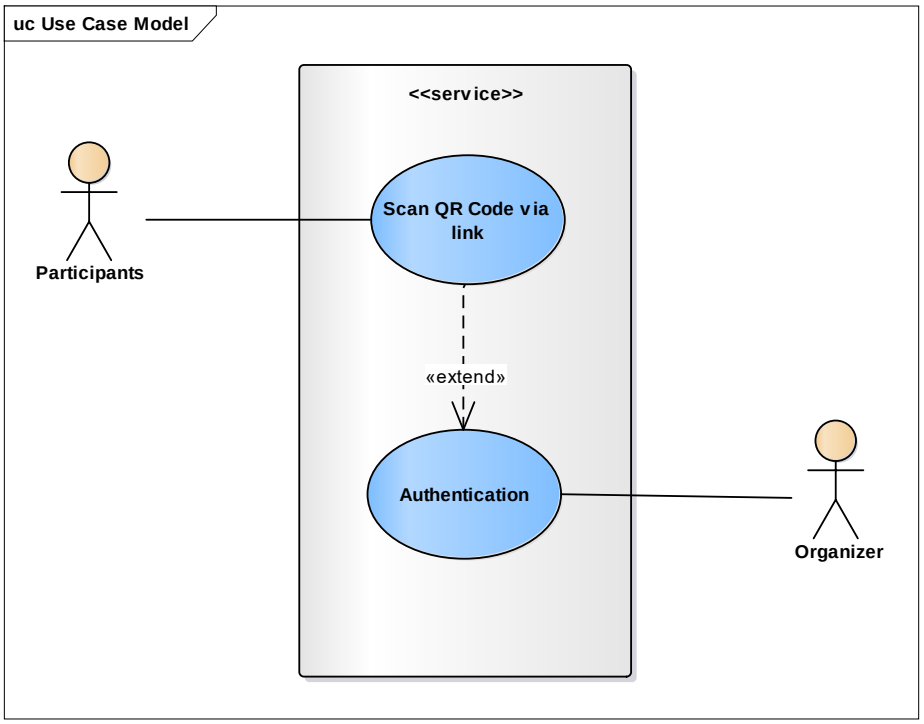


Figure 4.14 : Device Pairing and Authentication Module

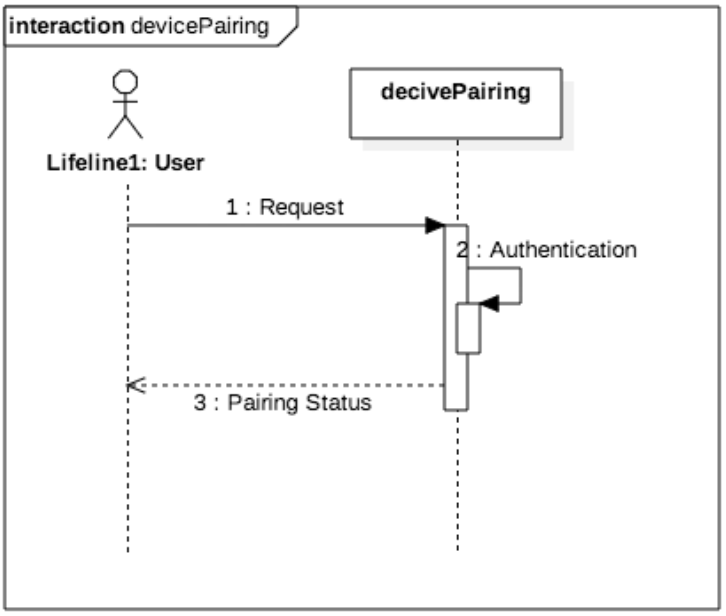


Figure 4.15 : Device Pairing and Authentication Module Sequence Diagram

Table 4.5 : Use Case Description of Device Pairing and Authentication Module

Use Case	Device Pairing and Authentication
Brief Description	The use case allows the user to make a pairing to Smart Management System for TM Trainings and Conference Event via QR Coder Reader and in same time authenticate user by match an authentication token.
Flow of Events	The use case begins when user find a Smart Management System for TM Trainings and Conference Event QR Coder Reader indicator and start a pairing to it. Then the system will check the user authentication token. If the token matched, user will get connecting message.
Pre-condition	• Provide a QR Coder Reader connection • Check user authentication token
.Post-condition	• mainFunction • checkConnection • sendCommand

Table 4.6 : Functional Requirements of Device Pairing and Authentication Module

Functional Requirements	Description
System Requirements	• Smart Management System for TM Trainings and Conference Event shall be able to provide a QR Coder Reader connection • Smart Management System for TM Trainings and Conference Event shall be able to check the user authentication token
User Requirements	• Authenticate user shall be make a pairing to Smart Management System for TM Trainings and Conference Event. • Authenticate user shall be notifying the connection status.

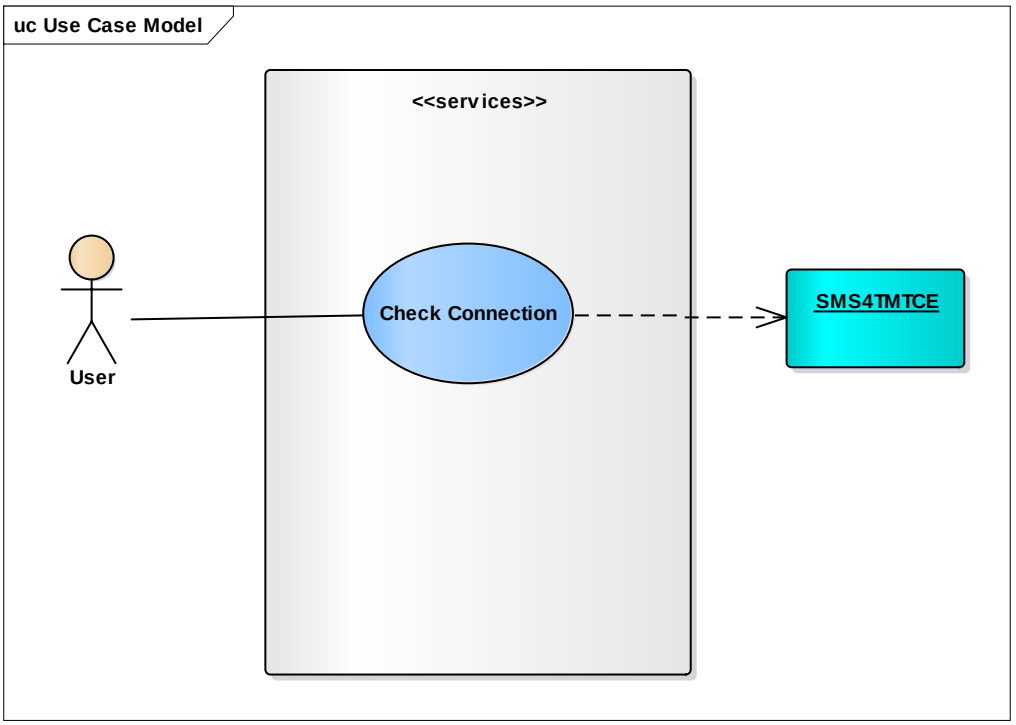


Figure 4.16 : Check Connection Module Use Case

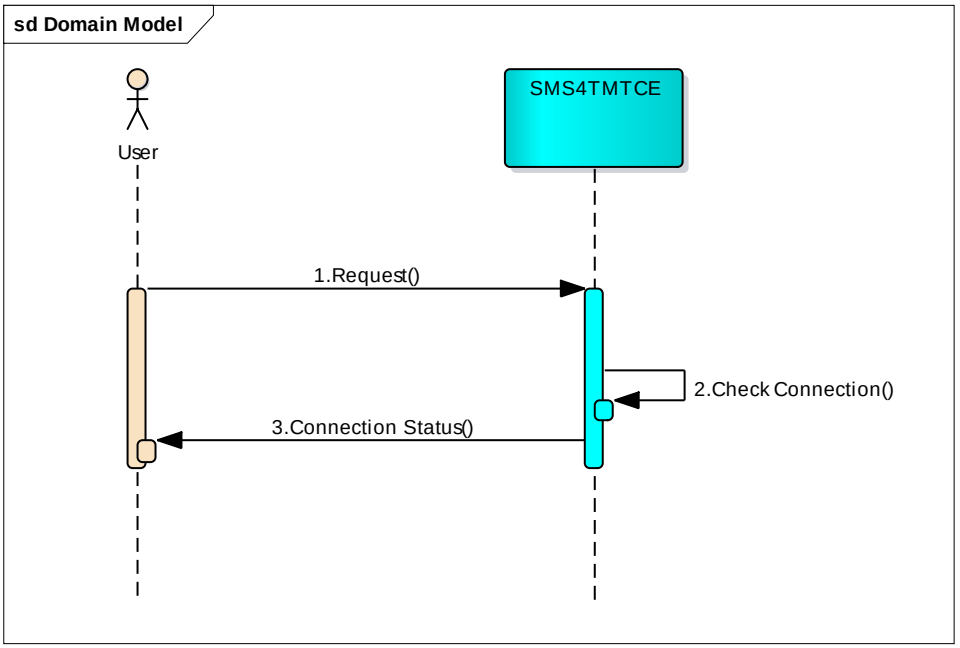


Figure 4.17 Check Connection Module Sequence Diagram

Table 4.7 Use Case Description of Check Connection Module

Use Case	Check Connection
Brief Description	The use case allows the user to check a current status of connection.
Flow of Events	The use case begins when user request a connection status by click on checking button in Blynk's application. Smart Management System for TM Trainings and Conference Event will check the authenticate user connection and reply the request by sending a current connection status message.
Pre-condition	Wait for request by user
Post-condition	Reply by sending current connection status message

Table 4.8 Functional Requirements of Check Connection Module

Functional Requirements	Description
System Requirements	• Smart Management System for TM Trainings and Conference Event shall be able check a authenticate user's current status of QR Coder Reader connection • Smart Management System for TM Trainings and Conference Event shall be able to reply a message of connection status to authenticate user.
User Requirements	• User shall be able to check a current status of QR Code Reader connection.

4.10 Non-Functional Requirements

Non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. Non-functional requirements consist of performance, reliability, availability, security, usability and more. The non-functional requirements of Smart Management System for TM Trainings and Conference Event are identified and shown in the Table 4.9 below.

Table 4.9 List of Non-Functional Requirement

Non-Functional	**Descriptions**
Performance	• Smart Management System for TM Trainings and Conference Event shall respond within less than 10 second for any request/connection. • Smart Management System for TM Trainings and Conference Event should follow the user's movement within the prescribed circle.
Reliability	• Smart Management System for TM Trainings and Conference Event should only approve the connection with the authentication token from the mobile app used.
Availability	• Smart Management System for TM Trainings and Conference Event should perform depending on the life span of the bet used. • The applications used should be able to make QR Coder Reader connectivity when needed.
Security	• Only users with valid authentication tokens can make connect with Smart Management System for TM Trainings and Conference Event.
Maintainability	• The system should be built in incremental stages, in order to add new features.

4.11 System Architecture Design

System Architecture is a set of rules and standards deployed in technical framework of computer system, customer requirements and specifications which design and integrate system components. In this project, four-tier architecture is selected as Smart Management System for TM Trainings and Conference Event architecture. Four-tier architecture includes four main layers which are application layer, network layer, management layer and machine layer.

In application layer, only the application's interface is present to the users. Users interact with the interface like connect and send command. When a user makes a connection via QR Coder Reader, the data will be sent to the management layer via the Network Layer. The network layer only describes the medium used for the connection. In the Management Layer section, the description pertains to how the microprocessor works. In this layer, it serves as the intermediary between the user and its functions in Smart Management System for TM Trainings and Conference Event. Lastly, the Machine Layer. This layer describes how data transmission is made between Management Layers and components involved such as participants mobile phone as a device to scanning QR Code.

By using the four-layer architecture style, the application and system is easier for maintenance. Since all layers' components are independent of each other, hence update or modification can be done without affecting the entire application and system. This ensures the modifiability and maintainability of Smart Management System for TM Trainings and Conference Event. Figure 4.17 below, describes how this four-tier layer works.

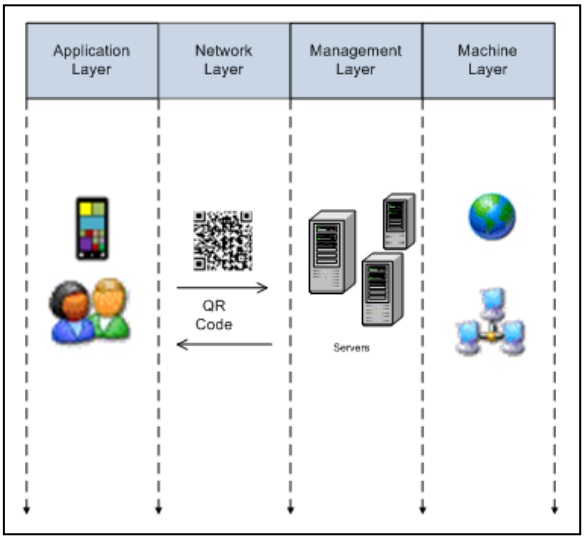


Figure 4.10: Four-tier Layer of Smart Management System for TM Trainings and Conference Event Architecture Design

4.11.1 Database Design Phase – Class Diagram

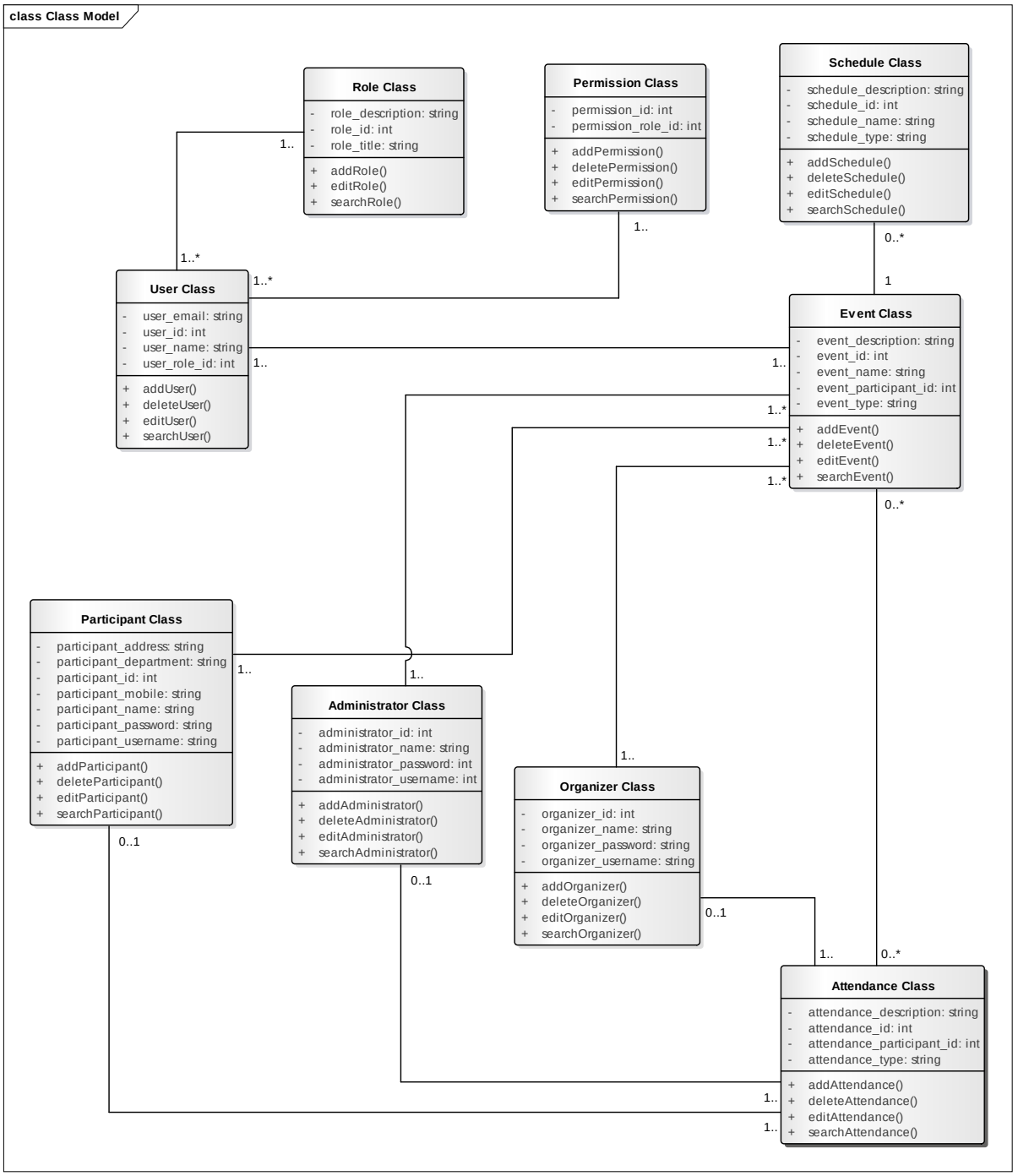


Figure 4.11: Class Diagram

The database plays a role as a place to store all the information obtained from the input the user enters. This developed database system uses MySQL database type. MySSQL is used to store any data included such as user error, meeting room and reservation schedule. All this data will be collected and saved in the form of tables. It will have a real relationship with the database management that allows the use of more than one table at a time.

The design of this database is also built with the creation of security features and avoidance of data repetitions. data redundant input. The database can not be viewed by the system user and it is stored in the server. For users who do not register and no data in the database, the user is unable to login into the system. This is to maintain the integrity of the system data where only registered users are allowed to enter and use this system.

4.11.2 User Interface Design Phase

System application interface design plays an important role in determining the usability of a system. A good user interface can demonstrate the user's ability to develop system applications. The application interface should also be emphasized because the interface is one of the users interacting with the system.

In this section will describe the interface drafts that users will use to interact with Smart Management System for TM Trainings and Conference Event. This mobile application system only has a single interface. At this interface, there are several switches with separate functions. The following figure shows the interface drafts that will be used in the Blynk application.

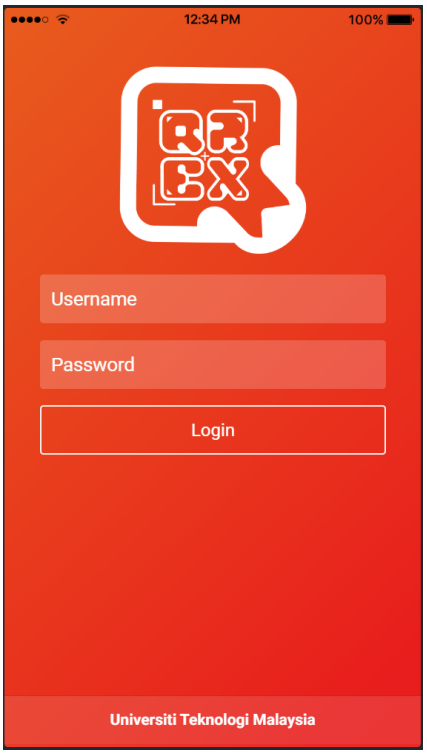


Figure 4.20: Login Interface

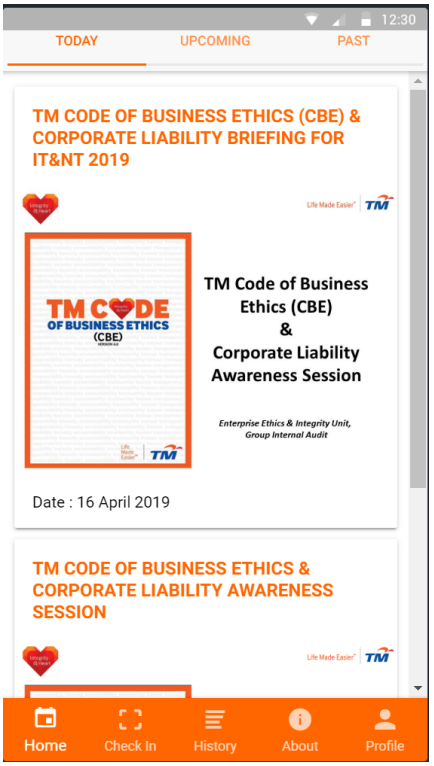


Figure 4.21: User Main Event Interface

Figure 4.22: Check In Interface

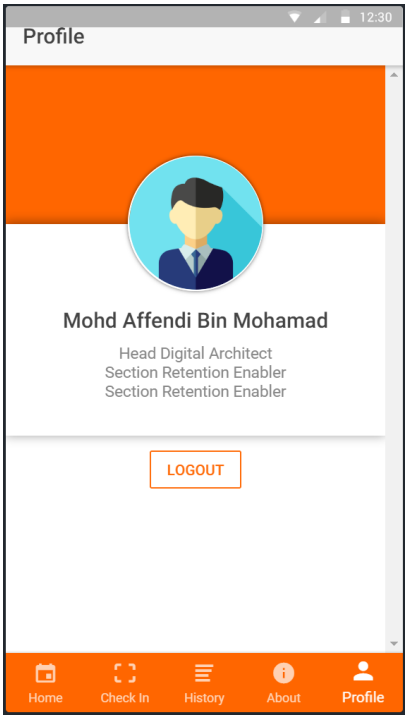


Figure 4.23: User Profile Interface

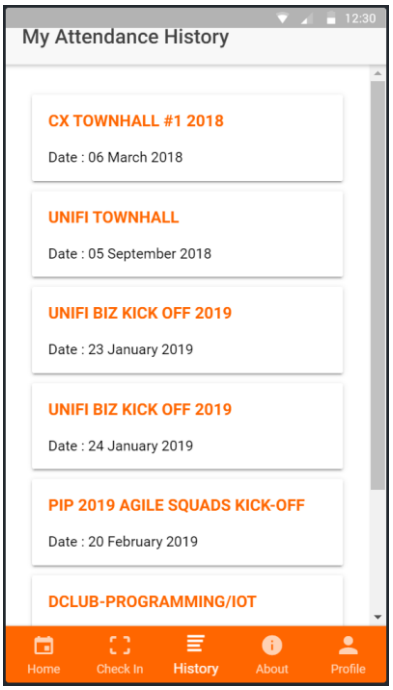


Figure 4.24: History Interface

Figure 4.25: About Interface

Table 4.10 : Description of Items Function in Draft Interface

Menu	Description/Function
Home	To view list of event Today, Upcoming.
Check In	To Scan Event QR Code
History	To View Attandance History
About	To show info on Apps
Profile	To view user profile

4.12 Summary

Overall, this chapter will describe the design developed by the system builder. The data and information obtained in the investigation phase and the analysis phase will be categorized accordingly. The description of this design is taken through the methodology, case diagram, activity diagram which generates system requirements specification and system requirements specification requirements.

This phase will also generate a system for the purpose of implementing and testing the system by the user. The developed system has characteristics that are contained in system requirements analysis. Database structuring is also very important in ensuring the developed system works well.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1. Introduction

The effectiveness of the attendance system is a factor that must be achieved by every organization. Failure to achieved the system effectively will resort a wasting in term of money, time, and resources. The dependencies towards manual process will continuously cause more problems. With adapting the technology that has been on the system, all the manual process that has been used before will be replaced with a centralized system that can handle the entire problem that arises.

The previous system is a manual system that has plenty of flaws and weaknesses. The ability to collect information limits the process of collecting the claim information and details. These problems that arise will be overcome during the implementation process and user testing for the system that will develop during implementation phases.

The project aim is to develop an Smart Management System for TM Trainings and Conference Event in Telekom Malaysia Berhad. There are several users for the system include participant, organizer and administrator. The system will cover all attendance process for the participant and record all activity during the events. The system can be used to approve application from participants or attendees. A notification will be sent from tm.com.my website alerting the users involved when there are any events need to be attend.

The system can record all event attendance history and changes that have been made whether it involves the application process or the activity recorded. Once approval have been made, the system will update the application status. Applicant can keep track of the application status using the system and see what part the application process are still on going. During the program, the system can be used to keep track of all activity made by applicant. Administrator can generate attendance activity daily and write report. All those activity and report made can be monitored by only this user in the system.

5.2. Objective Achievement

Observation and interview from the staff at Telekom Malaysia Berhad have been carried out. All the working process and problem background of the existing system have been identified and solution have been proposed.

Chapter 2 discussed the literature review for this project. Literature review are done by studying the current system and three other existing system. The three existing system studied have similar feature to the proposed system. Throughout the study, developer can find out what elements that need to be included in the system. Element such as track application progress, approve application and upload related documents are included in the system. The chapter also discussed the technology used for the system that is SQL database, Active Server Pages (ASP).net and etc.

The methodology used to develop the project is discussed in Chapter 3. The methodology chosen is Agile Methodology. All the phases involved in the methodology are discussed in the chapter from planning phase until operational and support phase. This chapter also discuss the software requirement analysis which involves the hardware and software justification. Project planning are discussed by explaining using a Gantt chart.

System analysis and design are discussed in Chapter 4. Each user's requirement analysis, the flow of the system, database design, use case diagram and interface design are discussed in this chapter. The next part is a project implementation that will be using all the information that have been collected before for development of a complete system that will be use to achieve an expected outcome. All the development and testing regarding the develop system will be done in this phase. All of the objective in the first phase will be fulfill in this critical phase.

5.3. Implementation Planning

In developing a system, implementation planning process must be emphasized to avoid the system from being fail executed or taking too much time to finish. All the modules and information that is thoroughly examined will be use to develop this system. These modules will be combining to produce the desired system.

User interface will also being developed according to phases that has been identified before. The purpose is to gain feedback from the user regarding the system that will be developed. Besides that, the user can adapt with the system that will be develop from the early stage of the development. It is to avoid confusion or problem using the system in the future.

5.4. Development of Smart Management System for TM Trainings and Conference

Smart Management System for TM Trainings and Conference Event methodology states that the iteration of the phase happens during productionize phase and thus, the documentation of SRS and SDD were being initialized. This is due to the dynamic environment of website application. The requirements of the system will always changing, has a new features, new updates and because of this, the development of the mobile application phase will keep iterate until it meets its condition. There were several programs that needed to be installed before the developer can started build the application.

5.4.1. Setting Up XAMPP

XAMPP is a free and open source cross-platform web server solution stack package. Because XAMPP is a cross-platform, which means it works equally well on Linux, Mac and Windows. XAMPP is developed by Apache Friends, consisting mainly of the MariaDB database, Apache HTTP Server, and interpreters for scripts written in the Perl and PHP programming languages. Besides that, it is a simple and lightweight Apache distribution that makes it easy for developers to build and create a local web server for deployment and testing purposes. XAMPP also is easy to install as compare to others web server like WAMP. In XAMPP, there are everything that the developer

needs to set up a web server such as Apache for server application, MariaDB for database, and PHP for scripting language which is included in an extractable file. It also comes with a number of other modules such as WordPress, phpMyAdmin, OpenSSL, and more. The transition from local test server to a live server is extremely easy as most actual web server deployments use the same components as XAMPP. Figure 5.1 and Figure 5.2 show the configuration display as well as the XAMPP homepage on the system builder computer.

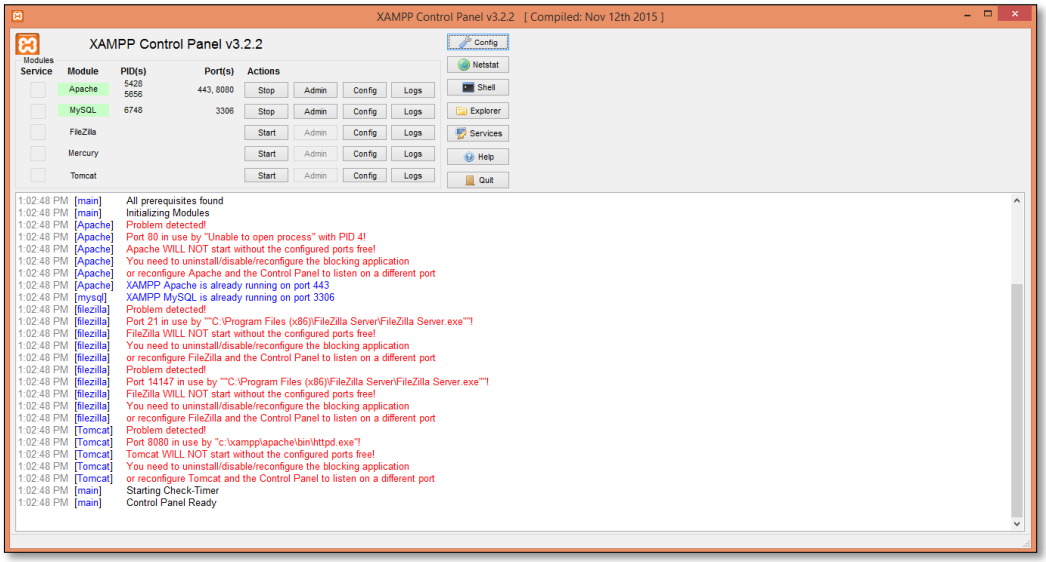


Figure 5.1: XAMPP Configuration View

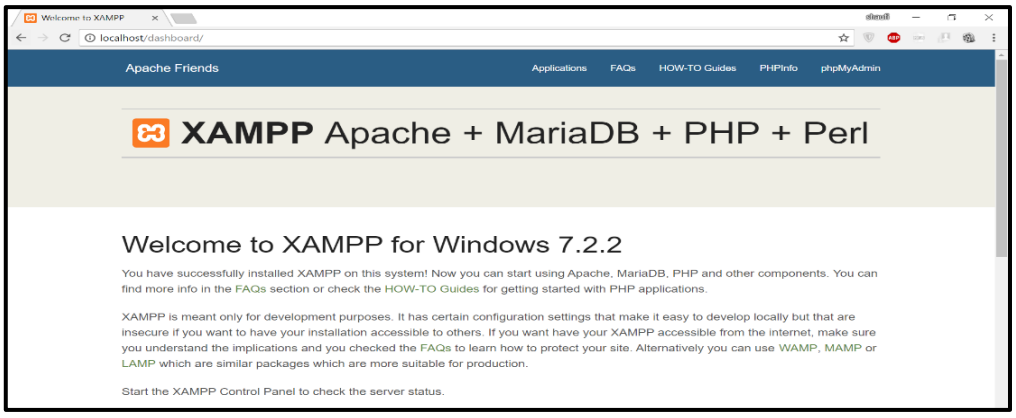


Figure 5.2: XAMPP Interface View

5.5. Database Development

The database means a storage or data collection that has been entered by the user into the system. These entered data will be stored and managed for the purpose of updating, accessing and displaying by users. For the development of this Smart Management System for TM Trainings and Conference Event system, i have chosen MySQL database. The process of system communication to the database is done directly using the PHP program code. Figure 5.3 shows a program code example of connecting a base to a developed system.

```
$db['default'] = array(
  'dsn'   => '',
  'hostname' => 'localhost',
  'username' => 'root',
  'password' => 'rootroot
',
  'database' => 'qrex',
  'dbdriver' => 'mysqli',
  'dbprefix' => '',
  'pconnect' => FALSE,
  'db_debug' => (ENVIRONMENT !== 'production'),
  'cache_on' => FALSE,
  'cachedir' => '',
  'char_set' => 'utf8',
  'dbcollat' => 'utf8_general_ci',
  'swap_pre' => '',
  'encrypt' => FALSE,
  'compress' => FALSE,
  'stricton' => FALSE,
  'failover' => array(),
  'save_queries' => TRUE
);

Utm Fendii, [05.05.19 00:17]
function &DB($params = '', $query_builder_override = NULL)
{
  // Load the DB config file if a DSN string wasn't passed
  if (is_string($params) && strpos($params, '://') === FALSE)
  {
    // Is the config file in the environment folder?
    if ( ! file_exists($file_path = APPPATH.'config/'.ENVIRONMENT.'/database.php')
      && ! file_exists($file_path = APPPATH.'config/database.php'))
    {
      show_error('The configuration file database.php does not exist.');
    }

    include($file_path);
```

Figure 5.3: Database Connection Code

5.6. Login Implementation

Implementation of the Login is necessary to authenticate user with the ldap through the program inserted. Therefore, system users can access the system to perform function. The code to implement the Login is as shown in Figure:

```php
// set variables from the form
$username = $params['username'];

$ldap   = ldap_connect("10.41.86.223", 389);
$search = ldap_search($ldap, 'ou=People,o=Telekom', '(uid='.$username.')');

    foreach (ldap_get_entries($ldap, $search) as $d):
    endforeach;

    $output = array();

    $output[] = array(
        'username' => (string)$d['uid'][0],
        'name' => (string)$d['givenname'][0],
        'mail' => strtolower((string)$d['mail'][0]),
        'ic' => (string)$d[`pprimaryic`][0],
        'cell' => (string)$d['ppcellno'][0],
        'post' => (string)$d['pppostdesc'][0],
        'unit' => (string)$d['ppsuborgunitdesc'][0],
        'division' => (string)$d['pporgunitdesc'][0]
    );

    header('Access-Control-Allow-Origin: *');
    header('Content-Type: application/json');

    $print = '{"userData":';
    $print .= json_encode($output[0]);
    $print .= '}';

    echo $print;
```

Figure 5.4: Login Implementation Code

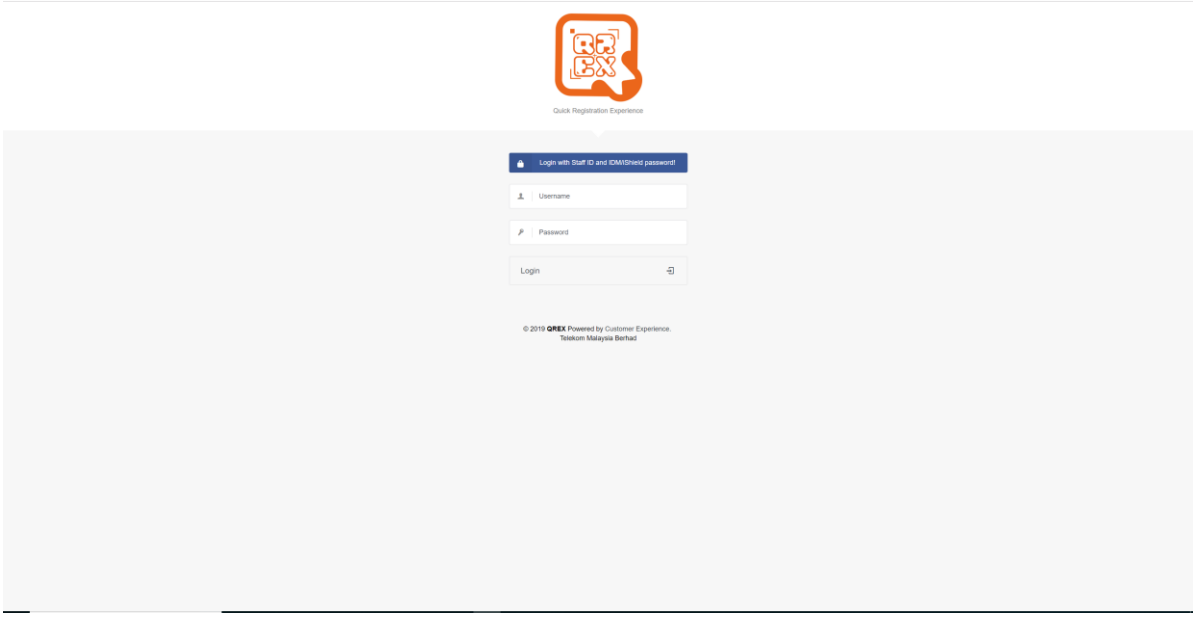


Figure 5.5: Login Implementation Interface

5.7. QR Implementation

Implementation of the QR is necessary to connect the system with the database through the program inserted. Therefore, system users can access the database to perform attandence. The program to implement the QR Code is as shown in Figure:

```
<!-- panel body -->
<div class="panel-body">

    <div class="col-md-4" align="center">

        <table class="table table-bordered">
            <thead>
                <tr>
                    <th width="100%" style="text-align:center"><b>Display this QR Code at your event for participant to scan!</b></th>
                </tr>
            </thead>
            <tbody>
                <tr>
                    <!--<td align="center"><img src="<?php echo 'https://api.qrserver.com/v1/create-qr-code/?data='.$event_detail->event_id; ?>" width="70%" /></td>-->
                    <td align="center"><img src="<?php echo 'http://qrickit.com/api/qr.php?d='.$event_detail->event_id; ?>" width="70%" /></td>
                </tr>
            </tbody>
        </table>

    </div>

</div>
```

Figure 5.4: QR Impelemtation Code

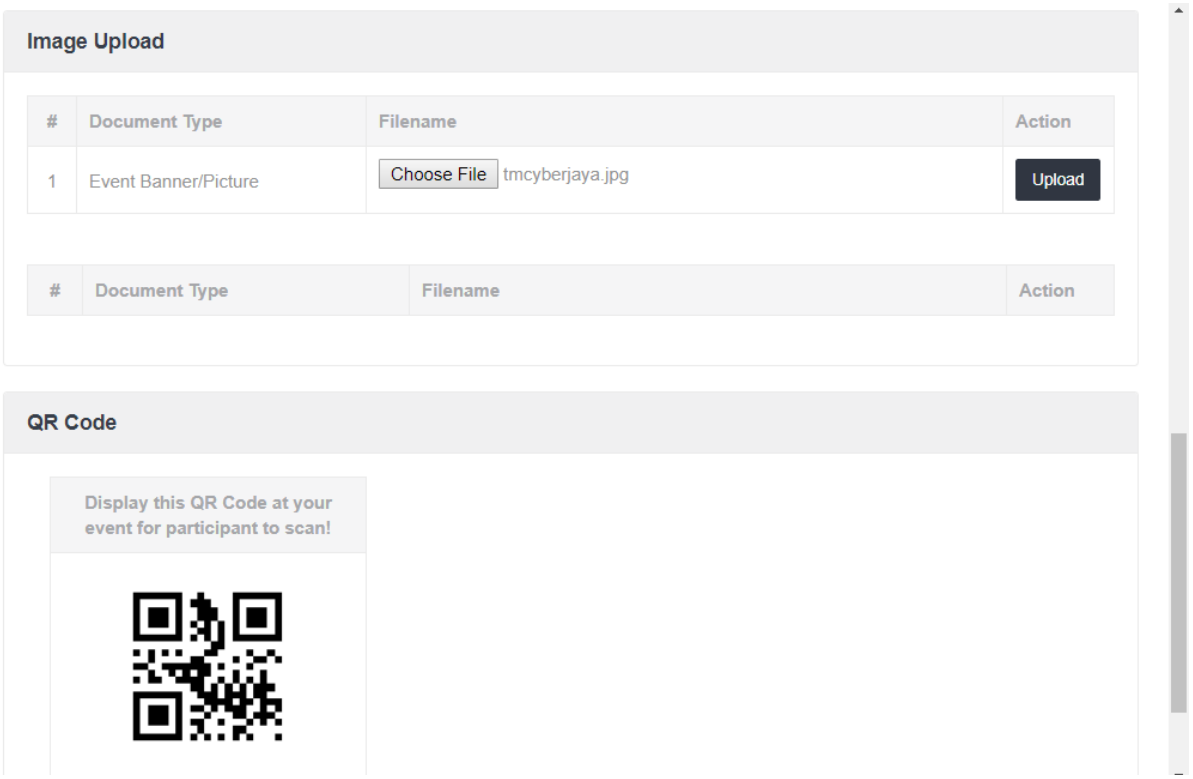


Figure 5.5: QR Implimentation Interface

5.8. Update Event Implementation

Implementation of the Update Event is necessary to update the system with the the program inserted. Therefore, system organisor can update the event. The program to implement the database is as shown in Figure:

```
<!-- panel body -->
<div class="panel-body">

    <div class="col-md-12">

        <?php echo form_label('Event Name/Title'); ?>
        <?php $data = array('class' => 'form-control','name' => 'e_name','value' => $event_detail->e_name); ?>
        <?php echo form_input($data); ?>

    </div>

    <div class="clear"></div>
    <br>

    <div class="col-md-3">

        <?php echo form_label('Organizer'); ?>
        <?php $data = array('class' => 'form-control','name' => 'e_organizer','value' => $event_detail->e_organizer); ?>
        <?php echo form_input($data); ?>

    </div>

    <div class="col-md-3">

        <?php echo form_label('Venue'); ?>
        <?php $data = array('class' => 'form-control','name' => 'e_venue','value' => $event_detail->e_venue); ?>
        <?php echo form_input($data); ?>

    </div>

    <div class="col-md-3">

        <?php echo form_label('Coordinate'); ?>
        <?php $data = array('class' => 'form-control','name' => 'e_coordinate','value' => $event_detail->e_coordinate); ?>
        <?php echo form_input($data); ?>

    </div>

    <div class="clear"></div>
    <br>


    <div class="col-md-3">

        <div class="input-group">
            <label>Start Date</label>
            <input type="text" class="form-control datepicker" name="e_start_date" value ="<?php echo $event_detail->e_start_date; ?>" data-format="dd MM yyyy">

        </div>
    </div>
```

Figure 5.6: Update Event Implementation code

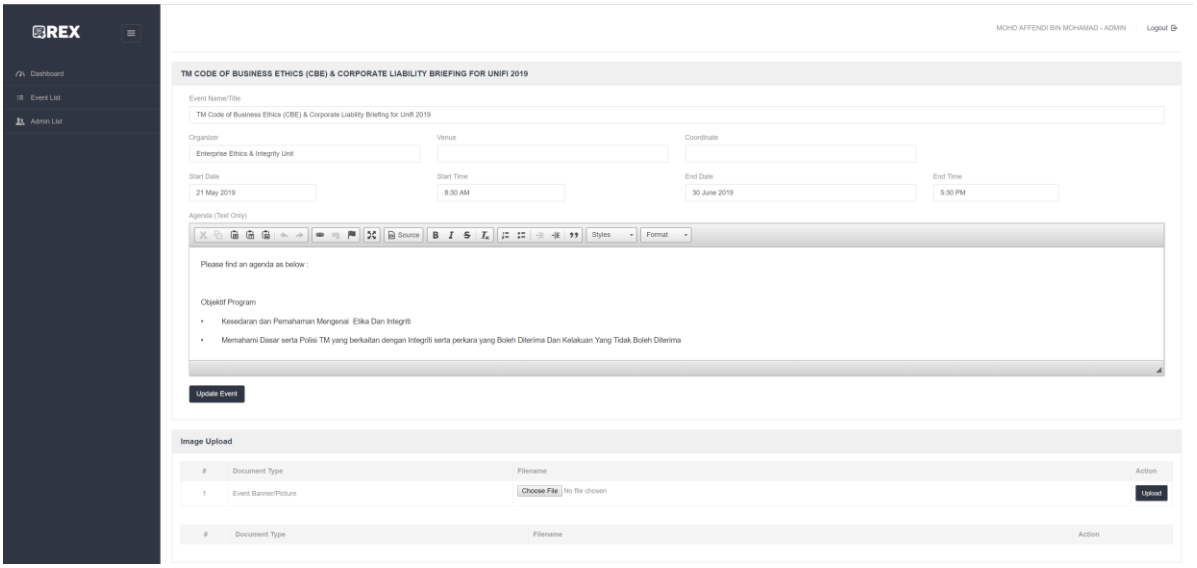


Figure 5.6: Update Event Implementation interface

5.9. Attendance Implementation

Implementation of the QR is necessary to connect the system with the database through the program inserted. Therefore, system users can scan Attendance. The program to implement the database is as shown in Figure:

```
public function delete_attendance($event_id) {

        $this->db->where('event_id', $event_id);
        $this->db->delete('tbl_attendance');
```

Figure 5.6: Attendance Implementation Delete code

```
public function get_attendance($event_id) {

        //$col_attendance = 'a_status_'.$event_id;
        //$this->db->where($col_attendance, 'attended');

        $array = array('a_status' => 'attended', 'event_id' => $event_id);

        $this->db->where($array);
        $this->db->order_by('a_date', 'DESC');

$query = $this->db-> get('tbl_attendance');

return $query->result();
```

Figure 5.7: Attendance Implementation Get code

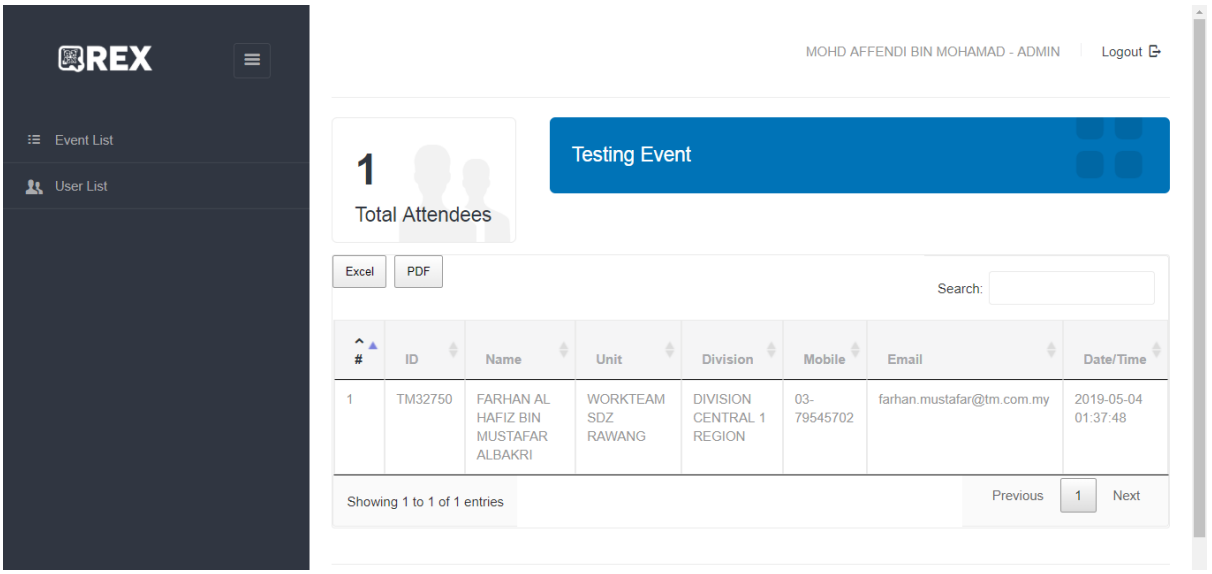


Figure 5.8: Implementation Interface Attendance list

5.10. Event Manager Implementation

Implementation of the Event Management is necessary to connect the system with the database through the program inserted. Therefore, system manager need to create event . The program to implement the database is as shown in Figure:

```
        public function publish($event_id) {

                $this->db->set('e_publish','yes');
                $this->db->where('event_id', $event_id);
                $this->db->update('tbl_event');

redirect('/event');

        }

        public function unpublish($event_id) {

                $this->db->set('e_publish','no');
                $this->db->where('event_id', $event_id);
                $this->db->update('tbl_event');

redirect('/event');

        }
```

Figure 5.9: Event Manager Implimentation Code

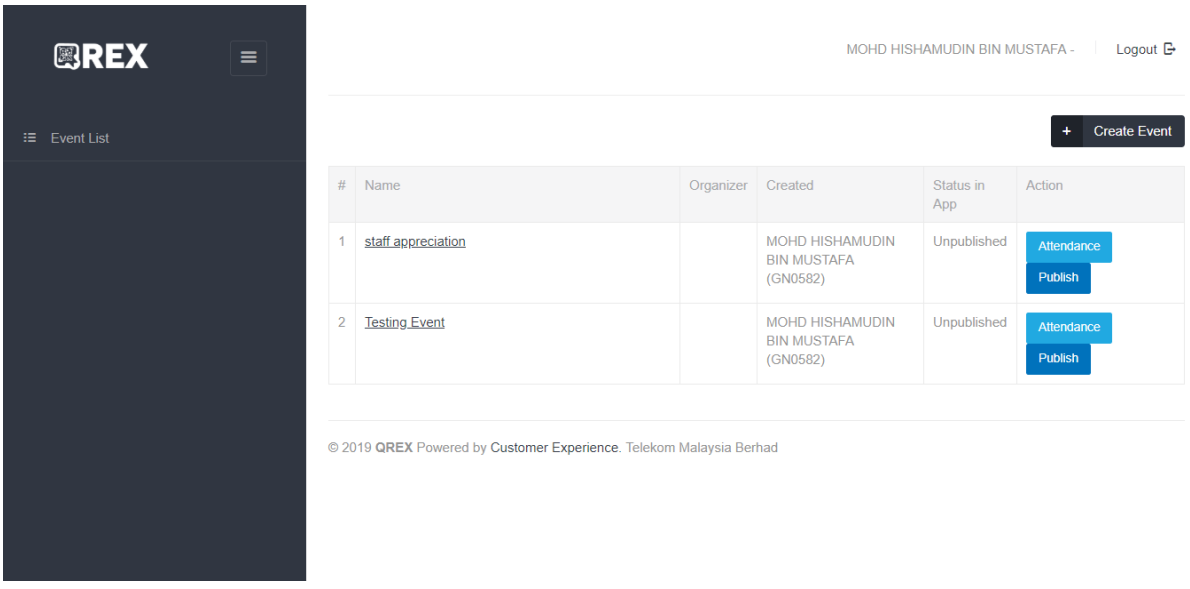


Figure 5.10: Event Manager Implimentation Interface

5.11. Create Event Implementation

Implementation of the creat event management need to publish is necessary to connect the system with the database through the program inserted. Therefore, system users can access see upcomming event The program to implement the database is as shown in Figure:

```
        public function create_event($data) {

$insert_query = $this->db->insert('tbl_event', $data);

                return $insert_query;

        }

        public function update_event($event_id, $data) {

                $this->db->where('event_id', $event_id);
                $this->db->update('tbl_event', $data);

                return true;

        }
```

Figure 5.11: Create Event Implimentation Code

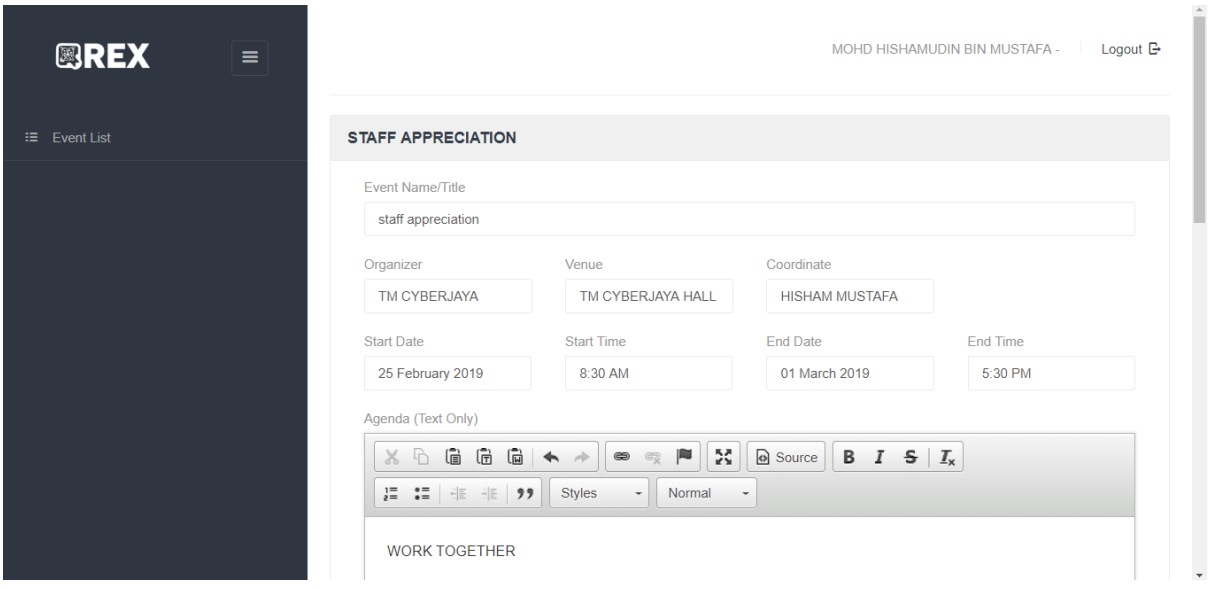


Figure 5.12: Create Event Implimentation Interface

5.12. Event Dashboard Implementation

Implementation of the Event Dashboard is necessary to connect the system with the database through the program inserted. Therefore, administrator able to view overview of event summary. The code to implement the view is as shown in Figure:

```php
<?php foreach ($results as $object) { ?>

<div class="row">
    <div class="col-sm-4 col-xs-6">
        <div class="tile-stats tile-orange stat-tile">
            <div class="icon"><i class="entypo-download"></i></div>
            <h3><div class="num" data-start="0" data-end="<?php echo $object->unpublish ?>" data-postfix="" data-duration="1500" data-delay="0"></div></h3>
            <h3>Un-Publish Event</h3>
            <p>Number of Event not yet been publish</p>
        </div>
    </div>
    <div class="col-sm-4 col-xs-6">
        <div class="tile-stats tile-blue stat-tile">
            <div class="icon"><i class="entypo-upload"></i></div>
            <h3><div class="num" data-start="0" data-end="<?php echo $object->publish ?>" data-postfix="" data-duration="1500" data-delay="0"></div></h3>
            <h3>Publish Event</h3>
            <p>Number of Event has been publish</p>
        </div>
    </div>
    <div class="col-sm-4 col-xs-6">
        <div class="tile-stats tile-aqua stat-tile">
            <div class="icon"><i class="entypo-users"></i></div>
            <h3><div class="num" data-start="0" data-end="<?php echo $object->upcoming ?>" data-postfix="" data-duration="1500" data-delay="0"></div></h3>
            <h3>Upcoming Event</h3>
            <p>Number of upcoming Events</p>
        </div>
    </div>
</div>

<?php } ?>
```

Figure 5.13: Create Event Implimentation Code

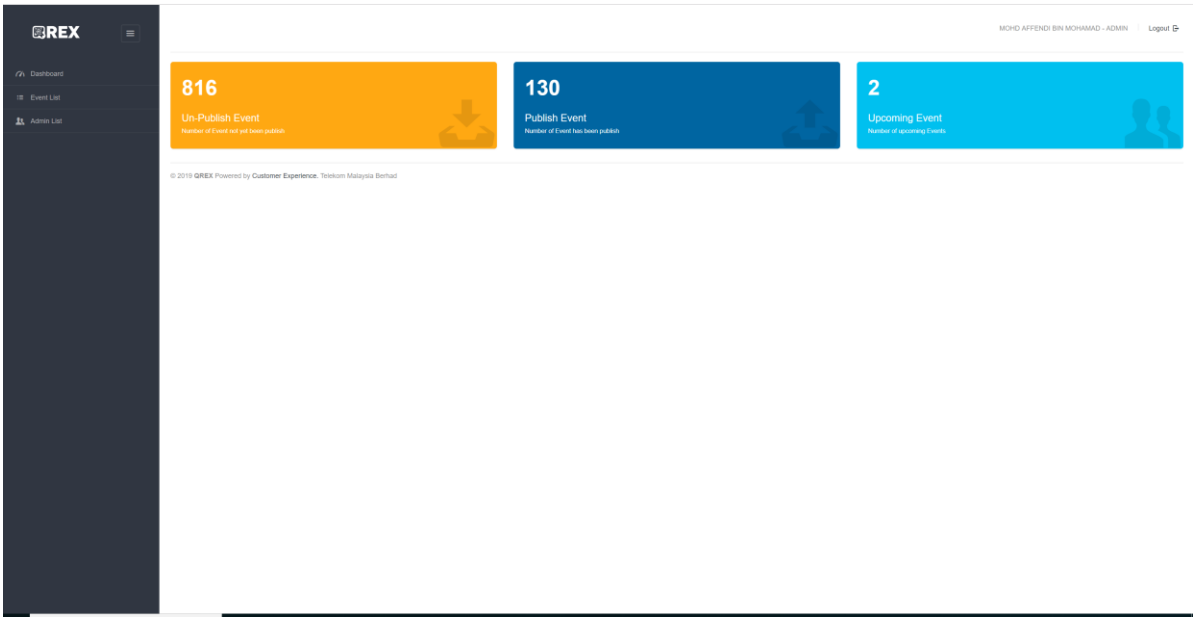


Figure 5.14: Create Event Implimentation Code

5.13. Participant scan QR Implementation

Implementation of the scan QR by user necessary to connect the system with the database through the program inserted. Therefore,need to scan when attending the event. The program to implement the database is as shown in Figure:

```
openScanner() {
    this.selectedEvent = {};
    this.barcodeScanner.scan().then((barcodeData) => {
      if (barcodeData.cancelled) {
        console.log("Cancelled");
        return false;
      }
      this.selectedEvent = this.events.find(product => product.event_id === barcodeData.text);
      if(this.selectedEvent !== undefined) {
        this.eventFound = true;
        if (this.eventFound == true) {
            this.userData.event_id = barcodeData.text;
            this.userData.staffid = this.userDetails.username;
            this.userData.name = this.userDetails.name;
            this.userData.unit = this.userDetails.unit;
            this.userData.division = this.userDetails.division;
            this.userData.mobile = this.userDetails.cell;
            this.userData.email = this.userDetails.mail;
            this.userData.position = this.userDetails.post;
            this.authService.postAttend(this.userData,"attend");
            this.presentAlert();
        } else {
          this.alerterror();
        }
      } else {
        this.selectedEvent = {};
        this.eventFound = false;
            this.alerterror();
```

Figure 5.13: Participant scan QR Implementation Code

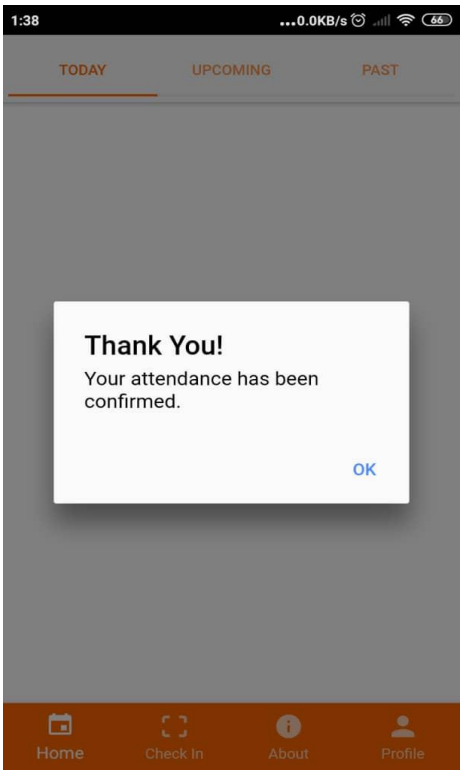


Figure 5.14: Participant scan QR Implementation Interface

5.14. List Event Implementation

Implementation of the list event by event manager is necessary to connect the system with the database through the program inserted. Therefore, user can see upcoming event need to attend. The program to implement the database is as shown in Figure:

```
getEventCurrent() {
  this.authService.getEventCurrent('today', "event")
    .then((result) => {
      this.responseData = result;
      if (this.responseData.event) {
        this.currentevent = this.responseData.event;
        console.log(this.currentevent);
      } else {
        console.log("No access");
      }
    }, (err) => {
      //Connection failed message
  });
}
getEventUpcoming() {
  this.authService.getEventUpcoming('upcoming', "event")
    .then((result) => {
      this.responseData = result;
      if (this.responseData.event) {
        this.upcomingevent = this.responseData.event;
        console.log(this.upcomingevent);
      } else {
        console.log("No access");
      }
    }, (err) => {
      //Connection failed message
  });
}
getEventPast() {
  this.authService.getEventPast('past', "event")
    .then((result) => {
      this.responseData = result;
      if (this.responseData.event) {
        this.pastevent = this.responseData.event;
        console.log(this.pastevent);

      } else {
        console.log("No access");
      `
```

Figure 5.15: List Event Implementation Code

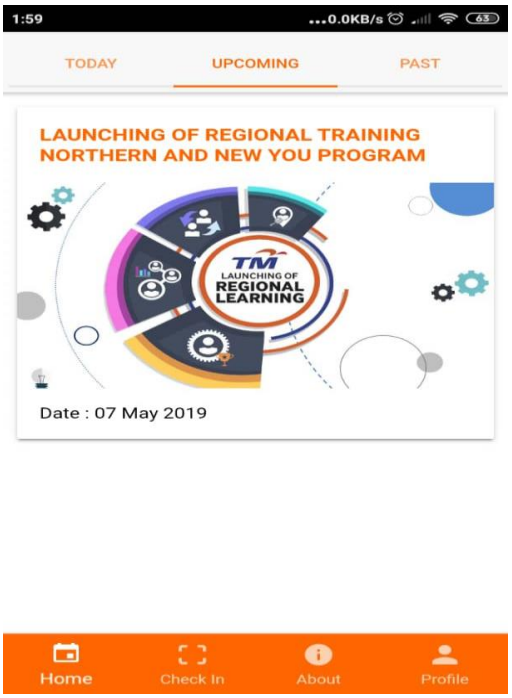
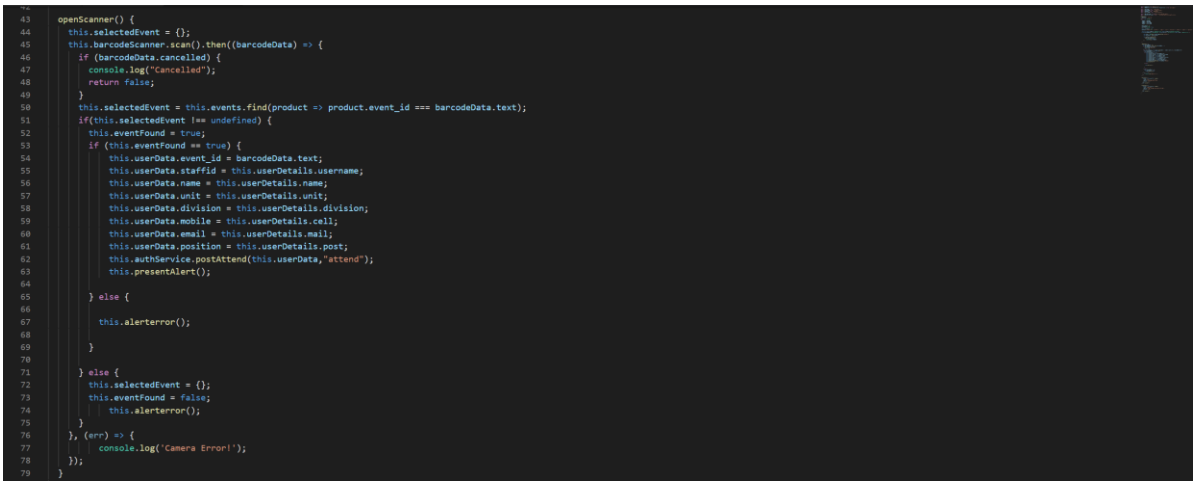


Figure 5.16: List Event Implementation Interface

5.15. QR Code Scanner Implementation

Implementation of the QR Code Scanner is necessary to connect the system with the database through the program inserted. Therefore, user can see scan the QR Code to confirm their attendance. The program to implement the database is as shown in Figure:



```
openScanner() {
  this.selectedEvent = {};
  this.barcodeScanner.scan().then((barcodeData) => {
    if (barcodeData.cancelled) {
      console.log("Cancelled");
      return false;
    }
    this.selectedEvent = this.events.find(product => product.event_id === barcodeData.text);
    if(this.selectedEvent !== undefined) {
      this.eventFound = true;
      if (this.eventFound == true) {
          this.userData.event_id = barcodeData.text;
          this.userData.staffid = this.userDetails.username;
          this.userData.name = this.userDetails.name;
          this.userData.unit = this.userDetails.unit;
          this.userData.division = this.userDetails.division;
          this.userData.mobile = this.userDetails.cell;
          this.userData.email = this.userDetails.mail;
          this.userData.position = this.userDetails.post;
          this.authService.postAttend(this.userData,"attend");
          this.presentAlert();

      } else {

        this.alerterror();

      }

    } else {
      this.selectedEvent = {};
      this.eventFound = false;
        this.alerterror();
    }
  }, (err) => {
      console.log('Camera Error!');
  });
}
```

Figure 5.16: QR Code Scanner Implementation Code

5.16. Event History Implementation

Implementation of the Event History Implementation is necessary to connect the system with the database through the program inserted. Therefore, user can see scan the Event History to confirm their attendance. The program to implement the database is as shown in Figure:

```
export class HistoryPage {

  public responseData : any;
  public pastevent : any;

  public userDetails : any;
  userData = {"event_id":"", "staffid":"" , "name":"", "unit":"", "division":"", "mobile":"", "email":"", "position":""}


  constructor(public modalCtrl: ModalController,public navCtrl: NavController, public navParams: NavParams, public authService:AuthServiceProvider) {
      const data = JSON.parse(localStorage.getItem('userData'));
      this.userDetails = data.userData;

  }

  ionViewDidEnter() {
    this.getEventAttendance();
  }


  getEventAttendance() {
    this.authService.getAttendance(this.userDetails.username, "attendance")
      .then((result) => {
        this.responseData = result;

        if (this.responseData) {
          this.pastevent = this.responseData;

        } else {
          console.log("No access");
        }

      }, (err) => {
        //Connection failed message
    });
  }

}
```

Figure 5.17: Event History Implementation Code

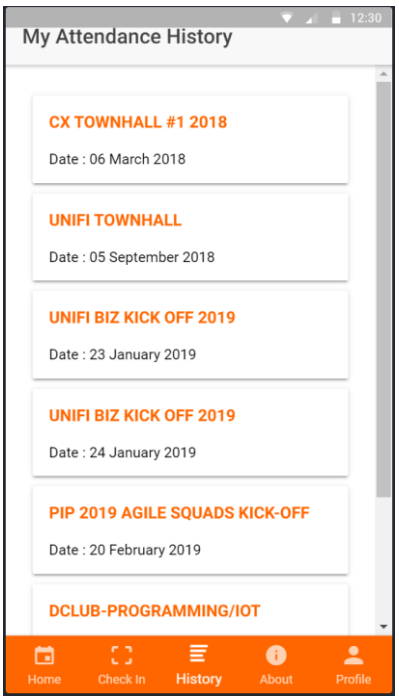


Figure 5.18: Event History Implementation Interface

5.17. Profile View Implementation

Implementation of the Profile View Implementation is necessary to connect the system with the database through the program inserted. Therefore, user can see scan the Profile View to confirm their Profile. The program to implement the database is as shown in Figure:

```
import { Component } from '@angular/core';
import { NavController, App } from 'ionic-angular';

@Component({
  selector: 'page-contact',
  templateUrl: 'contact.html'
})
export class ContactPage {

  public userDetails : any;
  public backgroundImage = 'assets/imgs/bg.png';

  constructor(public navCtrl: NavController, public app: App) {
    const data = JSON.parse(localStorage.getItem('userData'));
    this.userDetails = data.userData;
  }

  backToLogin() {
    const root = this.app.getRootNav();
    root.popToRoot();
  }

  logout() {

    //localStorage.clear();
    setTimeout(() => this.backToLogin(), 1000);

  }
}
```

Figure 5.19: Profile View Implementation Code

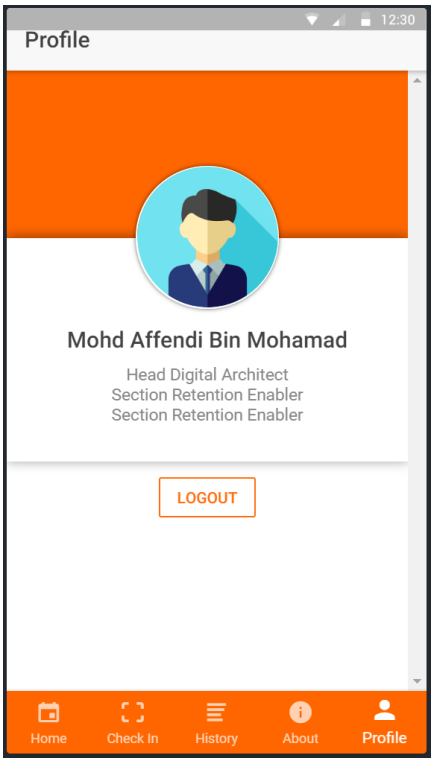


Figure 5.20: Profile View Implementation Interface

5.18. User Acceptance Test

User acceptance testing is often the most essential to get right because when implemented correctly, it is the most effective in reducing both cost and time, whilst increasing customer satisfaction. User acceptance testing (UAT) is considered the last phase in the web development process, the one before final installation of the software on the client site, or final distribution of it.

For this system, the developer will implement a functional testing or black-box testing. Functions are tested by feeding them input and examining the output. Table 5.1 to Table 5.6 is shown below which test every aspect of the whole system.

Table 5.1: User Acceptance Test Module 1

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1001
STORY: System Login Process
TARGET GROUP: System Administrator, Event Manager, Participant
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. Login using username and password. 2. Login using wrong username and password 3. Login without entering any username and password
EXPECTED RESULT: (what is expected as result) 1. Registered users will be able to login to system using username and password. 2. Users will not be able to login to the system. 3. Users will not be able to login to the system.
RESULT: 1. Registered users able to login to system using username and password. 2. Users are not able to login to the system. 3. Users are not able to login to the system.

Table 5.2: User Acceptance Test Module 2

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1002
STORY: Event Registration
TARGET GROUP: Event Manager
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. The users must complete the form before submitting the application. 2. An error message is display if the users did not complete the application form. 3. After clicking the 'submit' button, the system will prompt a message that the user's application is successful.
EXPECTED RESULT: (what is expected as result) 1. An error message will display if the users did not complete the application form. 2. The system will prompt a message that the user's application is successful after the users complete the form and click the 'submit' button.
RESULT: 1. An error message display when the users did not complete the application form. 2. The system prompts a message that the user's application is successful after the users complete the form and click the 'submit' button.

Table 5.3: User Acceptance Test Module 3

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1003
STORY: Manage Event
TARGET GROUP: Event Manager
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. Add and update event information. 2. Able to publish or unpublished the event that has been made.
EXPECTED RESULT: (what is expected as result) 1. Users will be able to manage event information (add and update) 2. Users will able to publish or unpublished the event that has been made.
RESULT: 1. Users able to manage event information (add and update) 2. Users will able to publish or unpublished the event that has been made.

Table 5.4: User Acceptance Test Module 4

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1004
STORY: Attend Event
TARGET GROUP: Participant
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. Users can use QR Code through the system. 2. A notification will be prompt if the claim application is success.
EXPECTED RESULT: (what is expected as result) 1. An error message will be prompt if the application is not complete. 2. A notification will be prompt if the application is success.
RESULT: 1. Error message is displayed when the application is not complete. 2. A notification message is displayed when the application is not complete.

Table 5.5: User Acceptance Test Module 5

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1005
STORY: View Attendance Status
TARGET GROUP: Event Manager, System Administrator and Participants
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. View attendance status
EXPECTED RESULT: (what is expected as result) 1. User will able to view the status of the attendance through the system. 2. System Administrator and Event Manager will able to view the attendance status of the employee that attend event.
RESULT: 1. User will able to view their attendance status through the system. 2. System Administrator and Event Manager able to view the attendance status of the participant that attend event.

Table 5.6: User Acceptance Test Module 6

ACCEPTANCE TEST SHEET
TEST ID: TEST_ SMSTMTCE_1006
STORY: Generate Report
TARGET GROUP: Event Manager, System Administrator
DATE WRITTEN: 20 February 2019
DATE RUN: 20 Mac 2019
PASSED / DEFECT ID: PASS
DESCRIPTION: (what functionality system must implement to pass) 1. View attendance report 2. View user report
EXPECTED RESULT: (what is expected as result) 1. Users will able to view the attendance report generated by the system. 2. System administrator will able to view the report of users that using the system. 3. All report will be display in table or list for easy reading.
RESULT: 1. Users able to view the attendance report generated by the system. 2. System administrator able to view the report of users that using the system. 3. All report is displayed in form of table and list.

5.19. Finalized System and Documentation (SRS and SDD)

After several iteration and changes that has been made in the production phase and also the essential functionality and business value of the project has been implemented and projected to the client, the project proceeded to the next phase of the evolutionary prototyping which is delivering the system to the user. The goal of this phase is to finalize the implementation, to enhance and ensure the quality of the product and also to finalize the documentation of the product. During the delivering the system phase, the developer finalized the SRS and SDD after meeting and confirmed with the client about these documents. If the client still not satisfied and want to add a new requirements, the client can still do so. But if the client is satisfied, the developer will proceed with the current phase.

During this stage, the developer will compile all the constructed code into one whole complete system. Code refactoring was done in this stage for easy maintenance of the code for the future. Code refactoring is a disciplined technique that changes the internal structure of an existing body of code and restructuring it without changing its external behavior. In other words it means simplified the code. Finally, the developer tested the system again to ensure all the functionality of the system was working perfectly and meets the customers satisfaction and standard.

5.20. User Manual

A user manual is a technical communication document intended to give assistance to people using a particular system. It is usually written by a technical writer, although user manuals are written by programmers, product or project managers, or other technical staff, particularly in smaller companies. For this system, the developer has produced the user manual to help the user on how to use the system. The user manual can be access on Appendix 4.

5.21. Summary

This chapter explains the process of the project, how the project being conducted in order to produce desired outcome. All of the steps, stages and phases were based on the methodology explained in Chapter 3 which is Research Methodology chapter. From the first phase of the methodology which is Requirements Analysis / Gathering and Integration Phase until the end of the methodology phase which is delivering the system, the number iteration or changes made were recorded in this chapter. The testing phase is an important and crucial phase because it can be a platform to prove the ability of the system and entitled it to become part of the claim processing department process. Through the outcome from the testing phase will help elevate on the claim processing department staff efficiency in doing the daily works that have been expecting of them. Finally, the last process was to ensure that all the functionality of the system was 100% fully working and meets the customers satisfaction by finalizing the system.

CHAPTER 6

CONCLUSION

6.1. Introduction

This chapter gives a summary on the overall development of the project and concludes what has been made throughout the project. This chapter also summarized all the previous chapters which are introduction, literature review, research methodology, and design. A discussion about the recommendation for the system and the limitation on the making of the system also will be explained in this section.

6.2. Achievement of Project Objective

The project begins with the introduction of the project which explained in the Chapter 1 which gives brief explanation and overview on what is the project all about. Chapter one discusses an overview of the research conducted. It consists of seven subtopics which are introduction, problem background, problem statements, project goal, objectives, project scopes, significance of the project, and thesis organization. The current and existing system is a manual-based system that requires all the process to be record on a piece of paper. All the attendance and related document for event must be attached with the attendance application form. From there, the users must get verification whether their attendance status is successful or not. And by using the website, the system will speed up each process and eliminate unnecessary procedure to smoothen the process of making a attendance and monitor the status.

Chapter two is about the reviews and project works that was conducted and method chosen by system developer. Problem and analysis study are discussed in details during this chapter including the solution taken and software that have been used to solve the problem. Literature review on the existing and related system will give advantages to the system that being develop. All the advantages and weaknesses of the related system will be study and fully utilize for further development of the system. It means that all the weaknesses of the existing system that has been identified will be overcome in the new system.

Meanwhile, chapter three reveals the methodologies that are used in performing the project. This chapter explains about solution techniques taken including activity that has been done. Methodologies that are used in this development are based on time factor and suitable technology that can be used. Suitable methodologies that are used in this project are Agile Model. Through this, each module that is being developed will be test first before the system complete. The purpose is to analyze every output result from each module so that it fulfills the objective and goals of the system. The entire system will be test after every module has been developed. Documentation or user manual is mandatory because it will be use as a reference to the users.

Chapter four discusses the design of the system. Unified Modeling Language (UML) is being presented during this chapter including the flowchart in details of the system. System design is very important because it will leave first impression from the users about the system. The system that will develop is a web-based system that can be access through web browser. All the input and output have been determined and analyzed so that it is suitable with the database that is being used. Meanwhile, the database that will be use is MySQL. The finalize system will be test completely to determine the capabilities of the system is achieve.

Expected results are described in Chapter five. The interface design of the system including the conclusion will be including during this chapter. Chapter 5 also discussed about how the selected methodology has been used to accomplish the projects objective and what has been done throughout the project. This chapter explains in detail about what the developer has carried out from the start of the project until the end of the project. The result or outcome of the project is also explained in this chapter.

In chapter five also, the explanation and discussion about the findings and result of the project is being discussed. The methods and techniques that have been selected to achieved the objectives of the project is displayed. Throughout the chapter, the problem that occurred during the implementation and development process is also being explained. It also includes the strength and weaknesses of using the technique and method while the explanation will be elaborated in more detail for purpose to show the flow of the project.

Finally, this chapter gives a summary on the overall development of the project and concludes what has been made throughout the project. Chapter six also summarized all the previous chapters which are introduction, literature review, research methodology, and design. A discussion about the recommendation for the system and the limitation on the making of the system will also be explained.

6.3. Suggestion for Future Improvement

There are quite a number of disadvantages or limitations of this Smart Management System for TM Trainings and Conference Event. The most common is in case of a system breakdown, the information may be lost. One of the limitations of this system is directly linked to one of the biggest advantages. Some companies find it difficult to integrate web-based attendance processing system with other applications. This usually happens when they use cloud software from multiple providers or continue to run certain computer-based programs.

A downside of online file storage and global access is that it increase the risk of data breaches. All of the data has to travel through the Internet before it reaches a web-based server. Although security software and encryption minimize the risk, it's not impossible for hackers to intercept the company confidential data.

Besides that, as individuals do not have another individual to deal with in the claim process, it is left to them to read and understand the often complicated terms and conditions. Another limitation is Web-based solutions make the company business more dependent on the Internet. When an outage occurs, the Event Manager and System Administrator lose the ability to access data and perform general system tasks. This drawback causes more problems for companies in remote regions or areas with frequent severe weather.

Recommendation to the system that has been developed must be done according to the time. The weaknesses that has been highlight above must be overcome in order to give ease of use and convenience to the user. For example, the system can be integrated with company domain to allow single sign-on to be adapt without requiring user identification and new password when using the system. Besides that, the client has suggested that the system to be upgrade in terms of providing mobile messaging notifications or alerts to users to avoid dependency on email account (web).

The system also require improvement in term of upgrading the system to online inquiry, so that the user can easily get a feedback or answer once they send an inquiry or message. Another recommendation that been highlight is to include an audit trail, to track the time of log-in and log-out of the participant. And lastly, the recommendation the system to enable editing of content for other modules.

There are number of positive things that can be taken from this project especially during the development of the project. One of them is experience to improving the developer skill in the programming language. The coding is totally different even though the application uses PHP programming language. Though basic of the PHP programming comes in handy, the developer needs to refresh and learn

back from the scratch. Besides that when progressing with the project, the developer has realized the important of SRS and SDD in developing the system. It is because the SRS document works to provide a detailed overview of software product, its parameters and goals. This document describes the project's target audience and its user interface, hardware and software requirements.

And for SDD document, it works as a written description of a software product, that the developer writes in order to give a software development team overall guidance on the architectural of the project. Some developers actually develop the system first before making the documentation. This will cause a lot of problem in the future such as not fully fulfill the requirement of the stakeholder or not finishing the project on time. Besides that, the developer must always stay on the right track because a lot of changes in requirement happen in the development phases. Finally, as a conclusion, the developer has gained a lot of knowledge and experience about the web-based claim processing system during the development of this project.

6.4. Summary

Smart Management System for TM Trainings and Conference Event is a system that will develop to replace manual system that is still being used. This system will become a system that will simplify the process of making a participant attendance and monitor the participant attendance status. This report is a report that examined the entire necessary requirement that must be consider during the development of this Smart Management System for TM Trainings and Conference Event. Hopefully with the existence of this new system, it will become a platform for the company to progress and this report will be beneficial to the interested party on the system that is being called Smart Management System for TM Trainings and Conference Event.

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