

# **E-ATTENDANCE SYSTEM**

**FAKRUL RADZI BIN ISHAK  
NURFATHUL AQILAH BINTI HIDAYATULLAH**

**A THESIS SUBMITTED IN FULFILLMENT OF  
THE REQUIREMENTS FOR THE AWARD OF  
THE BACHELOR OF INFORMATION  
TECHNOLOGY IN E-COMMERCE**

**FACULTY OF COMPUTING & INFORMATICS  
LABUAN INTERNATIONAL CAMPUS  
UNIVERSITI MALAYSIA SABAH**

**2014**



**UMS**  
UNIVERSITI MALAYSIA SABAH

## Approval

"I declare that I have read this thesis and according to my view is sufficient and the quality and scope purpose of setting the Bachelor of IT in E-Commerce."

Signature: \_\_\_\_\_

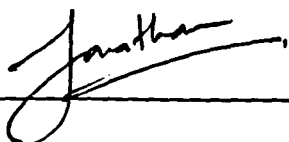
Examiner 1: MR TAMRIN AMBOALA

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Examiner 2: MISS NONA MASNIE

Date: \_\_\_\_\_

Signature: 

Supervisor: MR JONATHAN LIKOH

Date: 19/6/2014



## Declaration

"I hereby declare that the work in this thesis is our own except for quotations and summaries which have been duly acknowledge."

Signature: \_\_\_\_\_

Name: FAKRUL RADZI BIN ISHAK

Matrix No: BI11110044

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: NURFATHUL AQILAH BINTI HIDAYATULLAH

Matrix No: BI11110117

Date: \_\_\_\_\_



## ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people and we are extremely fortunate to get this all along the completion of our project work. Whatever we have done it is only due to such guidance and assistance and we will not forget to thank them.

This research project would not have been possible without the support of many people. We would like wishes to express our deep in sincere gratitude to our supervisor, Mr Jonathan Likoh who was abundantly helpful and offered invaluable assistance, support and guidance. Deepest gratitude is also due to our consultants, Mr Soffri Yusoff, Mr Jetol Bolongkikit, Mdm Hadzariah Ismail and Mdm Ainnur Hafizah who help us while consultant sessions, without their knowledge and assistance, the study would not have been successful. We also would like to thank to our examiner, Mr Tamrin Amboala and Miss Nona Masnie for helping us in completing our FYP report. Furthermore, we are also like to convey appreciation to the respondent who helping us by participated in questionnaire and testing part.

We respect and thank Mr Jonathan Likoh for giving us an opportunity to do the project work and providing us all support and guidance which made us to complete the project on time. We are extremely grateful to him for providing such nice support and guidance though he had busy schedule as a lecturer.

We are thankful and felt fortunate enough to get constant encouragement, support and guidance from our family and friends which helped us in successfully completing our project work. Moreover, we are also would like to thank our friend who are honest support, give criticize, and opinion for our project. We also wishes to express our love and gratitude to our beloved families for their understanding and endless love, through the duration of our study.



## ABSTRACT

E – Attendance is a system that will replace paper based attendance into digital attendance system. This system purposely gives convenience in obtaining the attendance record. This system can help the School Science of Informatics Labuan (SSIL) in reducing the budget rather than producing the attendance form. E-Attendance system has three objectives. The system provides automatic information retriever which no need human input. This system provides subjects details such as venue, time, and classes. This system provides notification for the dean and lecturer if student absence more than three time. E – Attendance is built using PHP, HTML, and Photoshop CS6. The system also has integrated with the database which is MySQL. This system receives positive feedback from the target users which are admin, dean, lecturers, and student after research has been made using the survey form.



## **ABSTRAK**

*E-Attendance adalah satu sistem yang bakal menggantikan sistem kehadiran yang terdahulu iaitu menggunakan borang kehadiran kepada system kehadiran digital. Sistem yang diperkenalkan adalah bertujuan untuk memberikan kesenangan dalam mendapatkan kedatangan para pelajar. Sistem ini juga dapat membantu Sekolah Sains Informatik Labuan dalam mengurangkan perbelanjaan pengeluaran borang kehadiran. E-Attendance mempunyai tiga objektif yang bakal memberi perubahan. Sistem ini juga akan menyediakan perincian tempat, masa, dan kelas bagi setiap mata pelajaran yang di ajar. Sistem ini juga akan menyediakan penggera bagi setiap pelajar yang gagal hadir ke kuliah lebih dari tiga kali. E-Attendance dibina menggunakan PHP, HTML, dan Adobe Photoshop CS6. Sistem yang dibina akan di integrasikan bersama sistem pangkalan data iaitu MySQL. Sistem ini menerima reaksi positif oleh bakal pengguna iaitu admin, dekan, pensyarah, dan pelajar setelah kajian dibuat.*



# TABLE OF CONTENTS

ACKNOWLEDGEMENT	i
ABSTRACT	ii
<i>ABSTRAK</i>	iii
CHAPTER 1	1
INTRODUCTION	1
1.1. Introduction	1
1.2. Problem Statement	2
1.3. Project Objectives	3
1.4. Project Scope	3
1.5. Target User	3
1.5.1. Admin	4
1.5.2. Dean	4
1.5.3. Lecturers	4
1.5.4. Students	4
1.6. Project Description	5
1.7. Project Methodology	6
1.7.1. Phase 1: Planning	8
1.7.2. Phase 2: Logical Design	9
1.7.3. Phase 3: Design	10
1.7.4. Phase 4: Implementation	10
1.7.5. Phase 5: Testing	10
1.7.6. Phase 6: User manual	10
1.8. Project Timeline	11
1.9. Report Structure Outline	11
CHAPTER 2	12
LITERATURE REVIEW	12
2.1. Introduction	12
2.2. Attendance System	12
2.3. E – Attendance System	13
2.3.1. Advantages of E – Attendance System	14
2.3.2. Weaknesses of E – Attendance System	14
2.3.3. Drawbacks of E – Attendance System	15
2.3.4. Scanning Device	15
2.4. Application Review	17



2.4.1.	Application Review 1: E – Attendance	18
2.4.2.	Application Review 2: RFID in Cloud Environment for Attendance Monitoring System	19
2.4.3.	Application Review 3: Automatic RFID Student Attendance System for Attendance Management.	21
2.4.4.	Application Review 4: School Attendance System E - Attendance	22
2.5.	Summary	26
CHAPTER 3		27
ANALYSIS		27
3.1.	Introduction	27
3.2.	User requirement	27
3.2.1.	Questionnaire	28
3.2.2.	Interview	39
3.3.	Feasibility Study	39
3.3.1.	Economic Feasibility	39
3.3.2.	Technical feasibility	39
3.3.3.	Operation Feasibility	40
3.4.	Data Flow Diagram (DFD)	40
3.4.1.	Context Diagram	40
3.4.2.	Level 0 Diagram	43
3.5.	Entity –Relationship Diagram	46
3.6.	Database Design	47
3.7.	Summary	51
CHAPTER 4		52
DESIGN		52
4.1.	Introduction	52
4.2.	System Flow Chart	52
4.3.	Design of Interface	57
4.3.1.	User Interface	57
CHAPTER 5		66
IMPLEMENTATION		66
5.1.	Introduction	66
5.2.	Web Development Application	67
5.3.	Programming Language	67
5.4.	Relational Database Management System	68





5.5. Web Database Management	68
5.6. Functionalities	68
5.7. Structured Query Language	72
5.8. Summary	74
CHAPTER 6	75
TESTING AND EVALUATION	75
6.1. Introduction	75
6.2. Manual Inspections	76
6.3. System Testing	76
6.4. Navigation testing	78
6.5. Evaluation of testing	79
6.6. Improvement after testing plan	80
6.7. Summary	87
CHAPTER 7	88
CONCLUSION	88
7.1. Introduction	88
7.2. System Constraint	88
7.3. System Strength	89
7.4. Recommendation for System	90
7.5. Summary	91
REFERENCES	92
APPENDIX A: GANTT CHART	
APPENDIX B: QUESTIONNAIRES	
APPENDIX C: USER MANUAL	



3.10	BAR GRAPH OF THE REPLACEMENT TRADITIONAL ATTENDANCE WITH THE E-ATTENDANCE SYSTEM	34
3.11	BAR GRAPH OF METHOD TO SEND WARNING LETTER TO THE ABSENT STUDENT	35
3.12	BAR GRAPH OF THE BEST WARNING LETTER FORMAT	36
3.13	BAR GRAPH OF THE BEST COMMUNICATION METHOD	37
3.14	CONTEXT DIAGRAM	40
3.15	LEVEL 0 DIAGRAM	41
3.16	ENTITY RELATIONSHIP DIAGRAM	42
4.1	PROCESS OF E – ATTENDANCE FOR ADMIN	49
4.2	PROCESS OF E – ATTENDANCE FOR DEAN	50
4.3	PROCESS OF E – ATTENDANCE FOR LECTURER	51
4.4	PROCESS OF E – ATTENDANCE FOR STUDENT	52
4.5	LOGIN PAGE	53
4.6	PROFILE PAGE FOR ADMIN	54
4.7	MANAGE USER PAGE FOR ADMIN	55
4.8	UPDATE PROFILE PAGE FOR ADMIN	56
4.9	MANAGE SUBJECT PAGE FOR ADMIN	57
4.10	PROFILE PAGE FOR DEAN	58
4.11	CHANGE PASSWORD FOR DEAN PAGE	59
4.12	STUDENT ATTENDANCE LIST FOR LECTURER	60
4.13	SUBJECT LIST FOR STUDENT PAGE	61
5.1	CODING FOR ATTENDANCE	65
5.2	THE RESULT OF THE ATTENDANCE CODING	66



5.3	CODING FOR TAKING ATTENDANCE	67
5.4	THE RESULT OF TAKING ATTENDANCE	68
5.5	SQL CODING USED FOR EXTRACT DATA FROM ATTENDANCE TABLE AND AVOID DUPLICATE THE DATA EXTRACTED	69
5.6	SQL CODING USED FOR VERIFYING ATTENDANCE THAT SCANNED BY THE BAR CODE SCANNER	75
6.1	ORIGINAL LOGIN FORM	76
6.2	IMPROVED LOGIN FORM	77
6.3	VALIDATION BEFORE DELETE THE SUBJECT	78
6.4	ORIGINAL UPDATE PAGE	79
6.5	IMPROVED UPDATE PAGE	80
6.6	ORIGINAL ATTENDANCE LIST	81
6.7	LIST OF WARNING LETTER RECEIVER	81



## LIST OF TABLE

<b>TABLE</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	THE COMPARISONS TABLES FOR EACH APPLICATION REVIEWED	23
2.2	POTENTIAL FUNCTIONS FOR EACH FEATURES ADDED	24
3.1	USERS TABLE	43
3.2	COURSE TABLE	44
3.3	STUDENT TABLE	44
3.4	ATTENDANCE TABLE	45
3.5	MESSAGE TABLE	45
3.6	LECTURER TABLE	46
3.7	REGISTER SUBJECT TABLE	46
6.1	SYSTEM TESTING TABLE	73
6.2	NAVIGATION TESTING TABLE	74
6.3	EVALUATION OF TESTING TABLE	75



# CHAPTER 1

## INTRODUCTION

### 1.1. Introduction

E – Attendance system is a system has been developed by Mohamad Fauzeri Bin Abdullah and Muhammad Mateen Bin Mohd Sabri. They are the previous students of Sekolah Sains Informatik Labuan (SSIL), Universiti Malaysia Sabah, Kampus Antarabangsa Labuan (UMSKAL) that develop this system for their final year project as well as in fulfillment of the requirements for the award of the Bachelor of Information Technology in E-Commerce in year 2012. They were supervised by Miss Dinna Mohd Nizam. The team will upgrade this system for several improvements to make this system more users friendly and restructure back the functionalities of the system.

E – Attendance system is a system that digitalized manual attendance system. Regular attendance needs to be managed manually by paper but by using this system; it helps the lecturer keep in the data into the system. The E – Attendance system then will keep in the attendance data and lecturer can send messages to the students that absent in the time being to know what their reasons are.

The proposed project is to improvising and upgrading the system by input several features that the current system unable to do. The proposed project is to make the system more users friendly where the system can be simplify.

The benefits from this E – Attendance system are online and real time attendance reports and results where it provides proficient and successful tracking and management for the university. Besides that, this website-based system allows



lecturers to collect and organize the user data accurately. The E – Attendance system is a useful set of management functionality that can be accessed from any web browser.

Features that included in the E – Attendance system are Computerized Log In/Log Out System, Electronic Attendance Processing, Attendance Reports, Files Import Features and Web-based Database System.

## **1.2. Problem Statement**

- i. The attendance input is semi auto where the system need to key in by the user after barcode scanner read the student ID**

The E - attendance system not automatically insert the data in the system. This is because the lecturers need to click the barcode scanner and also need to enter the student ID to insert the data into system.

- ii. The system does not provide specific week, time and venue to each subject on student's, lecturer's and dean's page.**

The students, lecturers and dean need to remember the schedule of each subject date, time and venue because the system does not provide specific week, time and venue.

- iii. The students absent the class more than three times did not notify automatically on the lecturer's or dean's page.**

E - Attendance system does not provide notifications of the absentees who are absent more than three times in the lecturer's and dean's page. Therefore, the lecturers and dean cannot take immediate action towards the absentees such as messages and warning letters.



### **1.3. Project Objectives**

- i. To improve the attendance input into automatic where the attendance does not need to key in by the user.
- ii. To enhance user friendly system by providing specific week, time and venue to each subject on student's, lecturer's and dean's page.
- iii. To upgrade the system by implement automatic notification for the absentees on the lecturer's or dean's page after they logged in and view the attendance list for respective subjects.

### **1.4. Project Scope**

The attendance system will be used by students of SSIL in UMSKAL. The system will be upgraded into automatic detection where there are barcode scanners that scan the matric card manually and the data scanned will automatically inserted into database. The previous E - Attendance system using barcode scanner where they need to click on the barcode scanner to get the input of student ID and insert the data scanned manually using insert button. This will slower the operation and also time consuming. When the students, lecturers and dean using the system, they will be able to view the specific date, time and venue of each subject. If there are students who absent the class more than three times, the automatic notifications will notify the lecturers and dean.

### **1.5. Target User**

The target user must be considered in every proposed system to ensure that the proposed system will provide more benefit to all parties especially the faculties. For this project, the target user has been identified. It can be categorized into 4 groups.

There are:



### **1.5.1. Admin**

The administrator is holding the greatest priority in controlling the whole system. This significance of this system is mainly focusing for the *Sekolah Sains Informatik Labuan (SSIL)* itself. It also can reduce in term of paper usage and avoid human error. All activities are done by the system and will be monitories by admin. Admin also can control database such as view, insert, add, create and delete the data in the database. The data included such as users with details and subjects with details.

### **1.5.2. Dean**

The dean is the second priority in viewing the system where the dean can monitor all activities done by lecturers and students such as attendance list and the edited attendance done by the lecturer. The dean also can view the absentees in each subject teach by the lecturers. Moreover, the dean can print warning letters to the students who absent the class more than three times.

### **1.5.3. Lecturers**

The lecturers are the third priority users in the system. With this system, lecturers can record the attendance of their students in class easily and view the warning for the absentees that absent more than three times. Moreover, lecturers do not need to calculate each student in order to generate report of the absentees to the dean.

### **1.5.4. Students**

The students are the fourth priority users in the system. The students can view the class schedule for respective subjects. The students also can send





message to the dean and lecturers through the system. This system also helps students in motivating themselves to be more discipline and punctual.

## **1.6. Project Description**

The proposed project is to implement automatic insertion data after the barcode scanner scanned the matric card. This will help the lecturer to improve the time response in each input. The proposed project is also upgrading the systems by providing the specific date, time and venue for each user. When the students, lecturers and dean use the system, they will be able to view the specific date, time and venue of each enrolment subject. This will help systems to be more user-friendly. The user does not need to remember the details of each subject. If there are students who absent the class more than three times, the automatic notifications will notify the lecturers and dean. This will provide in counting absentees more than three times then the lecturers and dean can take immediate action without need to manually checking the absentees more than three times manually. After that, the lecturers and dean can send message and print warning letters to the absentees through the systems.



## **1.7. Project Methodology**

Methodology is the branch of philosophy that analyses the principles and procedures of the inquiry in particular discipline. The system should be evaluated by the users themselves in order to get the user friendly system. The development in this system consists a lot of phase and every phase has specific criteria. These phases are to ensure that the system can run efficiently. The phases that involve are:

- i. Phase 1: Planning
- ii. Phase 2: Logical Design
- iii. Phase 3: Design and prototype
- iv. Phase 4: Implementation
- v. Phase 5: Testing
- vi. Phase 6: User manual

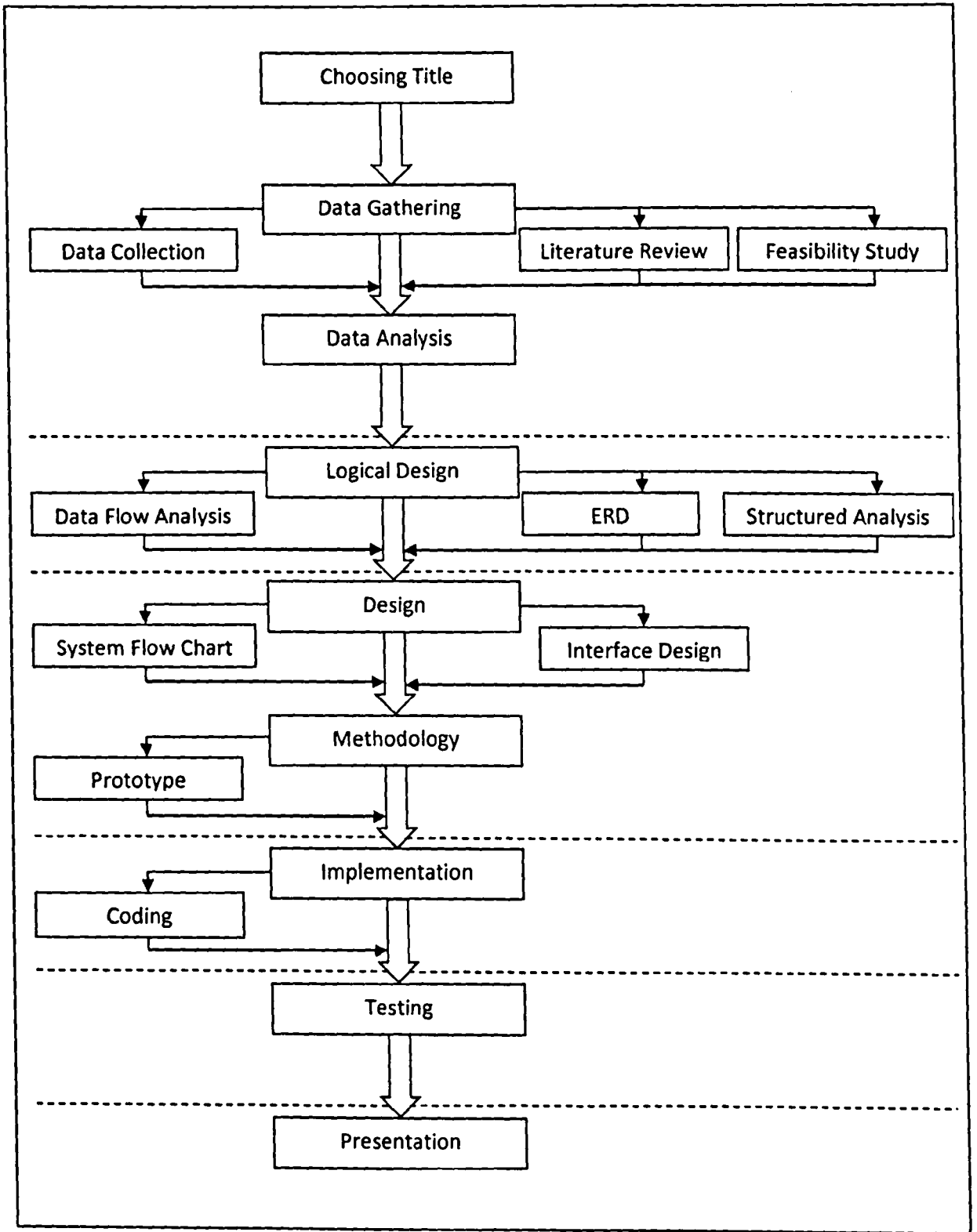


Figure 1.1: Project Framework

### **1.7.1.2. Interview**

Several students and lecturers of Sekolah Sains Informatik Labuan (SSIL) in Universiti Malaysia Sabah Kampus Antarabangsa Labuan (UMSKAL) had been interviewed. The purpose of this method is to evaluate the system related to the users themselves. Besides that, it is also to fill the requirement of enumerators during the survey session so that it can be apply in the system where the user friendly can be develop in the system.

### **1.7.1.3. Questionnaire**

Questionnaire is defined as a set of printed or written questions with a choice of answers, devised for the purposes of a survey or statistical study. The questionnaires are randomly distributed to 40 respondents from SSIL of UMSKAL. The respondents are 10 lecturers, 10 students of 1<sup>st</sup> year, 10 students of 2<sup>nd</sup> year and 10 students of 3<sup>rd</sup> year. The questionnaires consist of several questions that support the development of the system. The result from questionnaires will help the team to know what the user's requirements are and meet the user's expectation.

### **1.7.2. Phase 2: Logical Design**

In this phase the member of the team required to develop Data Flow Diagram (DFD) for each level. Next the team also needs to develop Entity-Relationship Diagram (ERD), both diagram is the illustration of the process of the proposed system.



### **1.7.3. Phase 3: Design**

Designing the template of the system by following the diagram that has been developed in earlier phase so that does not lost track of the system function. This step can illustrate future system that will be built by team.

#### **1.7.3.1. Prototype**

In this phase, the team is developing a prototype for the system as following the plan after completing the designing part. Prototype is created by using Adobe Dreamweaver.

### **1.7.4. Phase 4: Implementation**

The implementation of the system is develop in this phase in order the proposed system is becoming reality. In this phase the designing part has been converted to coding term.

### **1.7.5. Phase 5: Testing**

In this phase the team needs to test the proposed system as well as examine the effectiveness of the function of the system following the objectives and goals of the project. This phase is important to check whether there is weaknesses and strength of the system. This phase need to do frequently until the system is completely developed without facing any error.

### **1.7.6. Phase 6: User manual**

User manual will be developing in this phase as a guideline for the user to use the system. This phase will help in developing the system as well as maintain the system.

## **1.8. Project Timeline**

In order to meet the time scope accurately, the usage of Gantt chart is required in managing the time required in each development phases. The following figure shows a Gantt chart for the whole system development phases. The project timeline is attached in appendix.

## **1.9. Report Structure Outline**

In the first chapter in this report is the introduction that describe about e-attendance, problem statement, aim, objective, target user, project description, project scope, project methodology and project timeline. For chapter 2, research will be conducted to support development of the proposed project where the application review and journal or article review will be included. For chapter 3, the analysis will be conducted for better information in developing system. The data will be analysed and transform into logical design such as Unified Modelling Language (UML), Entity Relationship Diagram (ERD) and Data Dictionary will be developed. For chapter 4, the interface, functionalities and flowchart will be design. Chapter 5 will be the whole part of system is developed. Chapter 6 is testing and evaluation where the system being tested. Lastly, chapter 7 is about conclusion and summary of the project.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1. Introduction

In this chapter, the research is about implementation several features that make the E-Attendance system more reliable. This will helps and also act as guide in developing the attendance system as well as adding new feature to make the system more efficient. This research purpose is also to help in comparing with other existing system in order to improve the system performances and more to user friendly system.

In this section, it is also consist of several existing application and several journal or article that is related to E – Attendance system that have several features that can be implement in the current E-Attendance system that has been built by the team. Besides that, there are several websites that shows the existing application which is barcode scanner based input. These will be compared with the proposed system in application that also acts as guideline for proposed system. This will helps the understanding in development of the system as well as better function in the proposed system.

#### 2.2. Attendance System

Attendance system is a system that collects the attendance of person either in schools, colleges, and offices. For students in SSIL of UMSKAL, they use the manual attendance where the lecturers need to hands out the attendance list and students need to sign on the paper (Fauzeri, 2012). The manual attendance system has



several weaknesses which are missing attendance list, late submission, inaccurate data, cheating and others (Walsh, 2007). This because basically lecturers have limited time to re-check attendance due to other duties. Moreover, there will be always an inaccuracy problem in the attendance such as the user coming late to the present location.

### **2.3. E – Attendance System**

E – Attendance is systems that replace the old method which is signing on attendance sheet. This kind of taking attendance manually could be a waste of time and often cause manual errors. Software was geared towards ensuring an effective and efficient attendance management system using the scanner in monitoring compliance by faculty, staff and students of the University (Matthews, 2013). The information from the Database Handling will be used for the university administration to better manage classroom statistics, warning for unattended student via letter or e-mail and reminder for student (Walsh, 2007). Each student is assigned a unique tag, which he or she is required to swipe over the reader to give his or her attendance (Kar, 2012). In order to have complete functionality, RFID in E-Attendance is needed to integrate with Hardware Database Handling System (Walsh, 2007).

The system can collect and record the name, time of their attendance of both in and out, and ID number (Zubaira, 2011). Attendance taken will be more accurate since the time for the attendance taken will be recorded (Lim, 2009). The system can be connected to the computer through RS232 or Universal Serial Bus (USB) port and store the attendance taken inside database (Mansor, 2009). The cost of implementation of the system is only one time as the RFID chips are light and cheap containing information up to a few binary digits (Kumar, 2012). This project designed





## REFERENCES

- 365solutions (2011). *RFID-Based Attendance System*. Retrieved September 28, 2013, from [http://365solutions.com.my/index.php?option=com\\_content&view=article&id=22&Itemid=49](http://365solutions.com.my/index.php?option=com_content&view=article&id=22&Itemid=49)
- A.Parvathy, B. Rajasekhar, C.Nithya, K.Thenmozhi, J.B.B. Rayappan, Pethuru Raj, & Rengarajan Amirtharajan (2013). *International Journal of Engineering and Technology. RFID in cloud environment for Attendance monitoring system*, 3(3), 3116-3122. Retrieved from <http://www.enggjournals.com/ijet/docs/IJET13-05-03-219.pdf>
- Arulogun O. T., Olatunbosun, A., Fakolujo O. A., & Olaniyi, O. M. (2013). *International Journal of Scientific & Engineering Research. RFID-Based Students Attendance Management System*, 4(2), 1-9. doi:2229-5518
- Atlas RFID Solutions (2013). *Active vs. Passive RFID*. Retrieved October 6, 2013, from <http://www.atlasrfid.com/auto-id-education/active-vs-passive-rfid/>
- CISCO (n.d.). RFID Tag Considerations. *Wi-Fi Location-Based Services 4.1 Design Guide*, 1161201, 1-38. Retrieved from <http://www.cisco.com/en/US/docs/solutions/Enterprise/Mobility/wifich6.pdf>
- DAILY RFID CO.,LIMITED (2011). *Latest RFID Class Attendance System for Students Attendance Recording*. Retrieved September 28, 2013, from [http://www.rfid-in-china.com/2011-10-17/info\\_9510.html](http://www.rfid-in-china.com/2011-10-17/info_9510.html)
- Dr. Victor O. Matthews (2013). *Department of EIE Develops RFID e-Attendance Software for Covenant University*. Retrieved September 28, 2013, from <http://www.covenantuniversity.edu.ng/News/Department-of-EIE-Develops-RFID-e-Attendance-Software-for-Covenant-University>



- Ken Lynch (2013, June 10). Attendance Management [Web log post]. Retrieved from <http://rfid.thingmagic.com/rfid-blog/?Tag=Attendance%20Management>
- Kumar K., Anant Gupta, Dheeraj Joshi, & Jitin Kohli (2012). *RFID BASED EMPLOYEE ATTENDANCE SYSTEM*. Retrieved from VIT-Techzoids website: <http://anantzoid.files.wordpress.com/2012/03/oursrs1-final.pdf>
- Mohamad Fauzeri Bin Abdullah , & Muhammad Mateen Bin Mohd Sabri (2012). *E-ATTENDANCE SYSTEM*.
- Mohd Firdaus Bin Mahyidin (2008). *STUDENT ATTENDANCE USING RFID SYSTEM* (345). Retrieved from <http://umpir.ump.edu.my/345/1/3275Firdaus.pdf>
- Muhamad Khalil Bin Yeop Sabri@Ariffin (2007). *SMART ATTENDANCE SYSTEM BY USING RFID* (113). Retrieved from [http://library.utem.edu.my/index2.php?option=com\\_docman&task=doc\\_view&gid=4678&Itemid=113](http://library.utem.edu.my/index2.php?option=com_docman&task=doc_view&gid=4678&Itemid=113)
- Ononiwu G. Chiagozie, & Okorafor G. Nwaji (2012). Academic Research International. *RADIO FREQUENCY IDENTIFICATION (RFID) BASED ATTENDANCE SYSTEM WITH AUTOMATIC DOOR UNIT, 2*, 168-183. doi:2223-9944
- Paddy Walsh (2007). USING RFID TO RECORD CLASS ATTENDANCE [Electronic Engineering]. Retrieved from [http://www.eeng.nuim.ie/news/documents/FYP\\_Poster\\_Paddy.pdf](http://www.eeng.nuim.ie/news/documents/FYP_Poster_Paddy.pdf)
- Rahul Kar (2012). *Attendance System using AVR and RFID*. Retrieved September 28, 2013, from <http://www.engineersgarage.com/contribution/attendance-system-using-avr-and-rfid>
- Schmidt, R. H., & Newslow, D. L. (2007). Hazard Analysis Critical Control Points (HACCP) ,Principle 6: Establish Verification Procedures. University of Florida , 1.

Schwalbe (2010). *Managing Information Technology Projects*, 6th Edition, Course Technology

Siti Zubaira Binti Mamat (2011). *RFID EMPLOYEE TRACKER SYSTEM* (5368). Retrieved from [http://eprints2.utm.edu.my/5368/1/RFID\\_Employee\\_Tracker\\_System\\_24\\_pages.pdf](http://eprints2.utm.edu.my/5368/1/RFID_Employee_Tracker_System_24_pages.pdf)

T.S. Lim, S.C. Sim, & M.M. Mansor (2009). *Industrial Electronics and Applications. RFID Based Attendance System, 09, 778-782*. Retrieved from 978-1-4244-4683-4

Tan Ewe Seong (2007). *School Attendance System E - Attendance Module*. Retrieved September 26, 2013, from <http://www.slideshare.net/smjk/school-management-system-e-attendance-module>

Vennapoosa, C. (2014). *Software Project Planning*. Retrieved May 20, 2014, from IT Training and Consulting Website: <http://www.exforsys.com/tutorials/testing/software-project-planning.html>

