



Faculty of Computer Science and Information Technology

**UNIMAS COMMUNITY SUSTAINABILITY CENTRE (USC)
INFORMATION SYSTEM**

Ainul Hayat Binti Mustafa Kamal

Bachelor of Computer Science with Honours (Software Engineering)

2019

**UNIMAS COMMUNITY SUSTAINABILITY CENTRE (USC) INFORMATION
SYSTEM**

AINUL HAYAT BINTI MUSTAFA KAMAL

This project is submitted in partial fulfilment of the requirements for the degree
of Bachelor of Computer Science and Information Technology with Honours

Faculty of Computer Science and Information Technology

UNIVERSITI MALAYSIA SARAWAK

2019

UNIVERSITI MALAYSIA SARAWAK

THESIS STATUS ENDORSEMENT FORM

TITLE UNIMAS COMMUNITY SUSTAINABILITY CENTRE (USC)
INFORMATION SYSTEM

ACADEMIC SESSION: SEM 2 18/19

(CAPITAL LETTERS)


hereby agree that this Thesis* shall be kept at the Centre for Academic Information Services, Universiti Malaysia Sarawak, subject to the following terms and conditions:

1. The Thesis is solely owned by Universiti Malaysia Sarawak
2. The Centre for Academic Information Services is given full rights to produce copies for educational purposes only
3. The Centre for Academic Information Services is given full rights to do digitization in order to develop local content database
4. The Centre for Academic Information Services is given full rights to produce copies of this Thesis as part of its exchange item program between Higher Learning Institutions [or for the purpose of interlibrary loan between HLI]
5. ** Please tick (✓)

- CONFIDENTIAL (Contains classified information bounded by the OFFICIAL SECRETS ACT 1972)
- RESTRICTED (Contains restricted information as dictated by the body or organization where the research was conducted)
- UNRESTRICTED



(AUTHOR'S SIGNATURE)

Validated by


(SUPERVISOR'S SIGNATURE)

Permanent Address
NO. 31F, LOT 1241, LRG 5,
TAMAN SURIA JAYA, JLN
MATANG, 93050 KUCHING, SRWK

Date: 13/5/19

Date: 13/5/2019

Note * Thesis refers to PhD, Master, and Bachelor Degree
** For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

DECLARATION

I hereby declare that this project is my original work. I have not copied from any other student's work or from any other sources except where due reference or acknowledgement is not made explicitly in the text, nor has any part had been written for me by another person.

(AINUL HAYAT BINTI MUSTAFA KAMAL)

2019

ACKNOWLEDGEMENT

I would like to deliver my greatest gratitude to my supervisor, Dr. Suriati Khartini Binti Jali, who had provided continuous support, advice and guidance throughout my Final Year Project. Secondly, I wish to express my deepest gratitude to my examiner, Mr Mohd Johan Bin Ahmad Khiri who had provided constructive comments and feedbacks regarding my Final Year Project. I would also like to give my appreciation to Final Year Project coordinator, Professor Dr. Wang Yin Chai, who had provided useful guidelines throughout this Final Year Project.

Other than that, I would like to express my appreciation to my university, Universiti Malaysia Sarawak (UNIMAS) as well as my faculty, Faculty of Computer Science and Information Technology (FCSIT) for giving me this opportunity to do this Final Year Project. I am truly appreciated because throughout this project, I gain a lot of new knowledge which can help me to do better work in the future. Special thanks to Madam Noraziah Binti Abdul Wahab, USC Director for her cooperation and sharing in order for me to gather information regarding this project.

Last but not least, I also wish to thank my family and friends who had helped and supported me in completing this Final Year Project.

ABSTRACT

Nowadays, many organizations prefer to use an online system to keep their data. It is preferable as it has more advantages compared to a manual approach that need a lot of paper resources and time-consuming. Currently, USC is using a manual approach to keep and manage application and progress records. Therefore, the purpose of this proposed system is to ease applicants to make online application. Besides that, this system is designed to keep the applicants data and allow administrator to post any announcements. By having this system, it is hoped that it will provide a more systematic application and management for USC.

ABSTRAK

Pada masa kini, banyak organisasi memilih untuk menggunakan sistem untuk menyimpan data mereka. Ia lebih baik kerana ia mempunyai lebih banyak kelebihan berbanding dengan pendekatan manual yang memerlukan banyak sumber kertas dan memakan masa. Pada masa ini, USC menggunakan pendekatan manual untuk menyimpan dan menguruskan permohonan serta rekod terkini mereka. Oleh itu, tujuan sistem yang dicadangkan ini adalah untuk memudahkan pemohon membuat permohonan secara atas talian. Selain itu, sistem ini mampu menyimpan data dan membolehkan pihak administrasi membuat sebarang hebahan pengumuman. Dengan mempunyai sistem ini, ia diharapkan dapat menyediakan permohonan dan pengurusan yang lebih sistematik untuk USC.

TABLE OF CONTENT

ACKNOWLEDGEMENT	i
ABSTRACT	ii
ABSTRAK	iii
Chapter 1: Introduction	1
1.1 Introduction	1
1.2 Problem Statements	1
1.3 Objectives	2
1.4 Methodology.....	2
1.5 Scopes.....	3
1.6 Significance of Project.....	4
1.7 Project Schedule	4
1.8 Project Outcome	5
1.9 Project Outline.....	6
Chapter 2: Literature Review	8
2.1 Introduction	8
2.2 Reviews on Similar Existing Systems	8
2.3 Comparison of Features between Existing Systems and Proposed System	17
2.4 Reviews on Tools and Technology Used	19
2.5 Summary.....	21

Chapter 3: Requirement Analysis and Design	22
3.1 Introduction	22
3.2 Rapid Application Development	22
3.2.1 Analysis.....	23
3.2.2 Design and Prototyping.....	25
3.2.3 Prototype Cycle.....	37
3.3 Summary.....	39
Chapter 4: Implementation.....	40
4.1 Introduction	40
4.2 Implementation tool.....	40
4.2.1 System Server	40
4.2.2 Database Application	41
4.2.3 Setting up the Website	42
4.2.4 System Flows	42
4.3 UNIMAS Community Sustainability Centre (USC) Information System	43
4.3.1 Overview of the System.....	43
4.3.2 Homepage	45
4.3.3 User Manual Page	46
4.3.4 Contact Page	47
4.3.5 Organization Unit Page.....	48
4.3.6 Login Page	49

4.3.7 Sign Up Page.....	50
4.3.8 Application Page (Applicant)	51
4.3.9 Status Review Page (Applicant)	53
4.3.10 Announcement Page (Applicant).....	54
4.3.11 Report Page (Admin)	55
4.3.12 Application List Page (Admin).....	56
4.3.13 Status Page (Admin)	57
4.3.14 Announcement Page (Admin).....	58
4.4 Summary.....	59
Chapter 5: Testing	60
5.1 Introduction	60
5.2 Functional Testing	60
5.2.1 Unit Testing	60
5.3 Non-Functional Testing.....	72
5.3.1 Usability Testing.....	72
5.4 Summary.....	82
Chapter 6: Conclusion and Future Works	84
6.1 Introduction	84
6.2 Objective Achievements.....	84
6.3 Project Limitations	85
6.4 Future Work.....	85

6.5 Conclusion.....	85
References.....	86
Appendix.....	88

LIST OF FIGURES

Figure 1.1: Graphical Representation of Rapid Application Development (Gharai, 2008).....	2
Figure 2.1: Email Sample (Gmail Compose Email, n.d.).	9
Figure 2.2: Filing System Sample (Company, 2018).....	9
Figure 2.3: Login Page (Pendaftaran Pekerjaan dalam Perkhidmatan Awam , n.d.).....	10
Figure 2.4: Application Main Page (Pendaftaran Pekerjaan dalam Perkhidmatan Awam , n.d.).	11
Figure 2.5: Co-curricular Details Page (Pendaftaran Pekerjaan dalam Perkhidmatan Awam , n.d.).....	11
Figure 2.6: Login Page (Yayasan Peneraju Pendidikan Bumiputera, n.d.).....	12
Figure 2.7: Application Home Page (Yayasan Peneraju Pendidikan Bumiputera, n.d.).....	13
Figure 2.8: Applicant’s Details Page (Yayasan Peneraju Pendidikan Bumiputera, n.d.).	13
Figure 2.9: Family Details Page (Yayasan Peneraju Pendidikan Bumiputera, n.d.).....	14
Figure 2.10: Login Page (Internsheeps, n.d.)	15
Figure 2.11: Main Page (Internsheeps, n.d.)	15
Figure 2.12: Notification Page (Internsheeps, n.d.).	16
Figure 2.13: Applicant’s Profile Account (Internsheeps, n.d.).	16
Figure 2.14: Desktop Operating System Market Share Market Share Worldwide (Desktop Operating System Market Share Worldwide, n.d.)	19
Figure 3.1: Rapid Application Development (Gharai, 2008).....	22
Figure 3.3: Level 0 Diagram for Admin and Applicant Entities.....	26
Figure 3.4: Level 1 Diagram for Process 1.0	27
Figure 3.5: Level 1 Diagram for Process 2.0	28
Figure 3.6: Level 1 Diagram for Process 3	28

Figure 3.7: Level 1 Diagram for Process 4.0	29
Figure 3.8: Level 1 Diagram for Process 5.0	29
Figure 3.9: Level 1 Diagram for Process 6.0	30
Figure 3.10: Entity Relationship Diagram for UNIMAS Community Sustainability Centre (USC) Information System.....	31
Figure 3.11: Main Page	34
Figure 3.12: Login Page	35
Figure 3.13: Registration Page	35
Figure 3.14: Application and Progress Record Page.....	36
Figure 3.15: Status Review Page.....	36
Figure 3.16: Announcement Page	37
Figure 4.1: XAMPP Control Panel	41
Figure 4.2: PhyMyAdmin page.....	42
Figure 4.3: Hierarchy of the UNIMAS Community Sustainability (USC) Information System	44
Figure 4.4: Homepage	45
Figure 4.5: User Manual Page.....	46
Figure 4.6: Contact Page	47
Figure 4.7: Organization Unit Page.....	48
Figure 4.8: Login Page	49
Figure 4.9: Sign Up Page	50
Figure 4.10: Application Page (Applicant)	51
Figure 4.11: Submit Application (Applicant)	52
Figure 4.12: Status Review Page (Applicant)	53

Figure 4.13: Announcement Page (Applicant).....	54
Figure 4.14: Report Page (Admin)	55
Figure 4.15: Application List Page (Admin).....	56
Figure 4.16: Delete Application List (Admin)	56
Figure 4.17: Status Page (Admin)	57
Figure 4.18: Delete Status (Admin).....	57
Figure 4.19: Announcement Page (Admin).....	58
Figure 4.20: Delete Announcement (Admin)	58
Figure 5.1: The system is attractive and has strong eye appeal.....	75
Figure 5.2: The system has good form layout	76
Figure 5.3: The text is readable	76
Figure 5.4: The use of font size and font color is suitable.....	77
Figure 5.5: The button and the menu displayed is clear and attractive	77
Figure 5.6: The background used is suitable and not disturbing	78
Figure 5.7: User is able to determine the content of the system.....	78
Figure 5.8: The system is user friendly	79
Figure 5.9: All links are working properly	79
Figure 5.10: All the functions in the system are working	80
Figure 5.11: The system content is relevant to the user	80
Figure 5.12: It was easy to learn to use this system	81
Figure 5.13: I feel comfortable using this system	81
Figure 5.14: I like using the interface of this system.....	82
Figure 5.15: Are you satisfied with the system?	82

LIST OF TABLES

Table 1.1: Tasks for Final Year Project	5
Table 2.1: Comparison between the Existing Systems and Proposed System.....	17
Table 3.1: Data Dictionary for Applicant Table	31
Table 3.2: Data Dictionary for Admin Table	32
Table 3.3: Data Dictionary for Borang.....	32
Table 3.4: Data Dictionary for Status Table	33
Table 3.5: Data Dictionary for Announcement Table.....	33
Table 5.1: Test Case for Login Module	62
Table 5.2: Test Case for Submit Application Module	63
Table 5.3: Test Case for View Status Module	64
Table 5.4: Test Case for View Announcement Module.....	65
Table 5.5: Test Case for Logout Module	65
Table 5.6: Test Case for Login Module	66
Table 5.7: Test Case for View Report Module	67
Table 5.8: Test Case for View Application Module	68
Table 5.9: Test Case for Delete Application Module.....	68
Table 5.10: Test Case for Post Status Module	69
Table 5.11: Test Case for Delete Status Module.....	69
Table 5.12: Test Case for Post Announcement Module.....	70
Table 5.13: Test Case for Delete Announcement Module.....	71
Table 5.14: Test Case for Logout Module	71
Table 5.15: Summary of Usability Testing of UNIMAS Community Sustainability Centre (USC) Information System.....	73

Table 6.1: Objective Achievement of UNIMAS Community Sustainability Centre (USC)

Information System 84

Chapter 1: Introduction

1.1 Introduction

UNIMAS Community Sustainability Centre (USC) is a one-stop centre providing a wide range of services to the community in Sarawak at a minimal cost. USC which was formerly known as University Community Transformation Centre (UCTC) was the result of the National Blue Ocean Strategy or NBOS initiative. There are a number of initiatives introduced by YBhg Datuk Vice Chancellor in order to fulfil the vision to widen its ties with the industry and the community. USC is responsible in expanding UNIMAS network with outsiders, especially industries below SCORE Sarawak. USC plays a huge role in helping UNIMAS to provide services in term of high impact research and human capital development that meet the needs of industries.

1.2 Problem Statements

Applicants interact with staff through email in order to download application form to be filled in. Since the current system been used is manual filing system, it is quite difficult for the staff to track applicant's record. Manual filing system increase the use of paper to keep applicants record which lead to high paper wastage.

Besides that, applicants could not check their application status or progress regularly unless being updated by the staff through email or call. Hence, to know the latest information or announcement regarding fund availabilities or any industrial and community programmes offered, applicants need to ask staff by email or make a phone call. This is due to no web-based system for the staff to update the latest news to be known by applicants who are interested.

1.3 Objectives

The project aim is to develop a well-function system that helps the USC staff to manage data by automate the manual system. Based on the problem statements, two objectives are identified which are :

1. To develop UNIMAS Community Sustainability Centre (USC) Information System which able to make online application, keeping records of applicants and make announcement to be viewed by applicants.
2. To evaluate the usability of UNIMAS Community Sustainability Centre (USC) Information System.

1.4 Methodology

Rapid Application Development (RAD) is chosen as the methodology for this project. It is because RAD can reduce development time which is suitable for this project that has short and limited time to develop. RAD uses an iterative approach and prototyping to speed up application development.

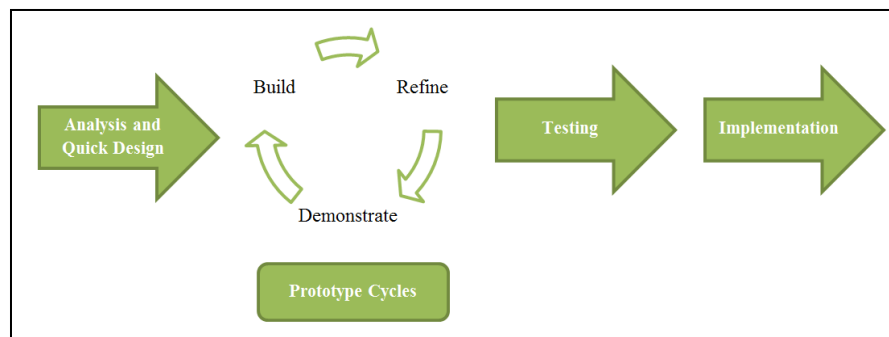


Figure 1.1: Graphical Representation of Rapid Application Development (Gharai, 2008)

In analysis process, project's needs, project scope, constraints, and system requirements are determined. The analysis of the current approach and the proposed system will be carried out. The process of gathering user requirements is done through an interview where targeted users were being asked to express their opinions on the proposed system. After analysis process, prototypes and model that represent all system processes, inputs, and outputs will be developed. It is an iterative process of building, demonstrating and refining. Next process is to perform system and user acceptance testing.

The proposed system will be tested whether it fulfilled all the requirements needed in the system and did not have any error. The last process involves implementing the new system which includes converting data and training users. The proposed system will be implemented and the user will use it by applying the real-life data. User acceptance is the endpoint of this implementation process.

1.5 Scopes

This web-based system is developed to keep applicants' record, make online application and update announcement. It is designed specifically to be used by using PC only.

This is an improvement for USC from manual filing system to web-based system to easily manage and keep data. Other than that, this web-based system is also designed to make online application and applicants also able to do status checking. By referring to online user manual, they would generally know the process of application. Later, the user

need to fill in the documents in order as being instructed in online user manual, and then check for their status after being updated by staff.

Any latest announcement could be updated by staff through this system so that all applicants will be updated with the current event or industrial and community programmes offered by USC.

1.6 Significance of Project

The project has the potential to improve the current management of applicants' record at USC. Keeping the data by using manual filing system is difficult to manage and inefficient as the number of application forms submitted will increase and tracking of data might be hassle. By having this web-based system, it will ease staff in data management.

Besides that, this system acts as a platform to make online application and status checking. It will be very useful for the applicant as they will be updated with their application status. Lastly, this system provides a section to post announcement to be viewed by applicants.

1.7 Project Schedule

The project schedule is a listing of a project's milestones, activities, and deliverables, usually with intended start and finish dates. In completing this final year project, all progress will be done throughout the first and second semester of the academic year of 2018/2019. Below is the project timeline for Final Year Project 1.

Table 1.1: Tasks for Final Year Project

Bil	Task	Duration	Start	Finish
1	Brief Project Proposal	5 days	24/9/2018	28/9/2018
2	Full Project Proposal	21 days	29/9/2018	19/10/2018
3	Chapter 1 : Introduction	7 days	20/10/2018	26/10/2018
4	Chapter 2 : Literature Review	21 days	27/10/2018	16/11/2018
5	Chapter 3 : Requirement Analysis and Design	22 days	17/11/2018	8/12/2018
6	Final Year Project 1	6 days	9/12/2018	14/12/2018
7	Chapter 4	22 days	1/3/2019	22/3/2019
8	Chapter 5	13 days	23/3/2019	5/4/2019
9	Chapter 6	10 days	6/4/2019	15/4/2019
10	Final Year Project 2	12 days	16/4/2019	27/4/2019
11	Symposium and Exhibition	2 days	2/5/2019	3/5/2019

1.8 Project Outcome

The main outcome of this project is a web-based system that enables the user to make an online application, keeping record of applicants and make announcement.

1.9 Project Outline

Chapter 1: Introduction

This chapter introduces the content of this project briefly. It consists of project title, introduction, problem statement, objectives, methodology, scope, significance of project, project schedule, and expected outcome. Problems statements describe the current system used by the user and discussed the weaknesses of the system. The objectives state what to be achieved at the end of the project. On the other hand, methodology discussed the software development that will be used to develop the project which is Rapid Application Development (RAD).

Chapter 2: Literature Review

Chapter 2 discusses the existing systems that are similar and related to the proposed project. It is done based on review of several journals, websites, conference papers, and articles. It also will discuss the weaknesses of the existing systems and how it can be improved by the proposed system.

Chapter 3: Requirement Analysis and Design

This chapter will explain the detailed of the methodology used to develop this project. Requirement analysis and database design also will be discussed in this chapter

Chapter 4: Implementation and Testing

This chapter focuses on the project implementation and testing.

Chapter 5: Conclusion and Future Work

This chapter will conclude overall of the project. Besides that, future works of the proposed system also will be discussed in this chapter.

Chapter 2: Literature Review

2.1 Introduction

The purpose of this chapter is to make a review and comparison of the similar existing systems with the proposed system. Besides that, this chapter also discusses the tool and technology that will be used in developing the proposed system.

Nowadays, as the uses of technology increase rapidly, more organisations prefer to use online information system in their business or management. An information system is important to the organisation. It helps them to store and organise their data. Besides that, it helps to improve the organisation's operation as data can be retrieved easily. Currently, UNIMAS Community Sustainability Centre (USC) Information System is using manual approach to manage their data. All data are kept and manage in a traditional way which is using paper-based.

However, this approach has a few drawbacks compared to the online system. This manual approach is time-consuming in tracking applicants' record, unlike an online system which is more efficient and systematic as it uses database to store the data. At the same time, it will reduce the uses of paper resources.

2.2 Reviews on Similar Existing Systems

In this section, four existing systems had been chosen which are "USC Manual System", "Job Registration in Public Sector System (SPA8i)", "Tunas Potensi Financial Aid Application System", and "Internship Application System (Internsheeps.com)."