UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECD2613 ANALISIS DAN REKABENTUK SISTEM (SYSTEM ANALYSIS AND DESIGN)

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Phase 1 : Project Proposal and Planning

Campus Resource Management System

LECTURER : ROZILAWATI BINTI DOLLAH @ MD.ZAIN

SECTION : 3

GROUP : 4

STUDENTS :

- **CORNELIA LIM ZHI XUAN (A23CS5044)**
- **MELODY LUI RUO NING (A23CS0244)**
- **LEO MIN XUE (A23CS0237)**

TABLE OF CONTENTS

1.0 Introduction

In the ever-changing educational environment, universities and colleges are struggling with the task of managing resources effectively in the face of changing demands. Traditional methods often prove inadequate, lacking the transparency and efficiency needed to meet modern expectations. To address these challenges, we propose the development of a Campus Resource Management System (CRMS) specifically tailored to the needs of educational institutions.The CRMS serves as a centralized platform that integrates a variety of administrative and operational processes, such as facility booking, event management, and student and faculty management. By integrating these functions, CRMS improves efficiency and communication while optimizing resource utilization. The system empowers stakeholders with an user-friendly interface that promotes productivity and collaboration across the campus community. As educational institutions embrace innovation and technology, CRMS serves as a catalyst for positive change, opening up new possibilities for growth and student success.

2.0 Background Study

Currently, educational institutions are using outdated and disconnected approaches to resource management. These methods often involved manual processes and standalone systems, resulting in fragmented data, poor communication and operational inefficiencies.

For example, when it comes to facility reservations, administrators often rely on inefficient methods such as paper forms or disjointed spreadsheets. This outdated approach not only leads to scheduling conflicts, but also makes it difficult for users to efficiently check availability and make reservations. Similarly, event management involves multiple platforms or manual processes, leading to coordination difficulties and missed opportunities for collaboration.

Additionally, the lack of connectivity between student and faculty management systems creates significant barriers for administrators. For example, maintaining accurate academic records and tracking student progress can become complicated when data is dispersed across different databases or systems. This fragmentation affects not only administrative efficiency but also the quality of services provided to students and faculty.

In addition, communication among stakeholders suffers from the lack of a centralized platform. Important notifications, reminders, and updates are often issued through different channels, resulting in delayed and inconsistent communication. As a result, critical information may be missed or overlooked, affecting operational efficiency and decision-making processes.

With a CRMS in place, educational institutions can improve efficiency, optimize resource utilization, and enhance the overall campus experience for students, faculty, and staff.

3.0 Problem Statement

Poor communication

Communication between faculty, staff and students is disjointed. Consequently, it can lead to misunderstandings and delays in information dissemination. At the same time, it may also result in lack of transparency in decision-making processes.

High possibility of human error in administrative tasks

Human error will increase when using a manual system that highly relies on human resources. Many administrative tasks such as equipment requests and faculty maintenance requests are performed manually. Hence, it can result in a time consuming and error-prone process.

Take attendance manually

Sometimes, the staff need to take students' attendance manually. It is because the system is down and unable to proceed to the next step. Hence, the attendance also will be recorded and stored manually

Inefficient Announcement Delivery and Management

When the system experiences downtime, the staff's announcements will be made through social media platforms such as WhatsApp, which is the primary medium to make announcements to send to the students.

Payment

The primary payment method in the current system is online transfer. However, the system occasionally experiences downtime, leading to temporary closures. Consequently, students are unable to make payments during these periods.

Registration

Currently, all the registration procedures undergo a manual process such as filling out forms manually. During registration, most of the personal information, including private and sensitive information of students and parents will be collected. However, this manual process is prone to errors and delays. Therefore, there is a pressing need to enhance security, and improve the overall registration experience.

4.0 Proposed Solutions

The Campus Resource Management System (CRMS) will act as the central hub for coordinating and optimizing various campus resources. It will streamline various administrative and operational processes within a university. At the same time, this system will serve as a centralized platform for overseeing a multitude of campus resources, encompassing facilities, events, students, faculty and staff. Additionally, the CRMS aims to improve overall campus efficiency, communication and resource utilization too. Ultimately, it will not only be enhancing the efficiency of resource management but also improve overall campus operations. As the saying goes, kill two birds with one stone. Not to forget that the primary purpose of CRMS is to provide a centralized platform for managing various campus resources, including facilities, events, students, faculty and staff.

Since the system has poor communication problems, we decided to add some communication features in order to avoid misunderstandings. For instance, Introducing communication tools such as announcements, notifications and collaborative spaces within the system. It will not only improve communication between staff, students and stakeholders, but also foster collaboration between each other. Hence, effective communication will occur. Besides, we need to modify the manual settings into automation. For example, automation of administrative tasks. By implementing this automation of administrative tasks into our system, it is able to reduce manual effort and minimize errors. Furthermore, the processes such as student registration, faculty scheduling and decision-making processes can be streamlined and executed with precision. So, effectiveness in managing campus resources will be increased.

To solve the problem of inefficient announcement delivery, we need to develop a dedicated mobile application for the system that allows users to receive notifications directly on their smartphones. At the same time, ensuring that the system will be accessible via mobile devices is a must for us to develop so that everyone can use it at any time, anywhere. The system will allow us to access resource information, perform tasks on-the-go and enhance convenience and productivity. This is not only saving time and effort but also ensures consistency and accuracy.

To ensure continuous availability of the payment processing system , we are able to build backup servers to avoid the unexpected downtime. For example, when the main system triggers a downtime period of the payment, it will automatically switch to the backup system. Consequently, it can minimize disruption of the payment processing. In addition, constructing an online registration portal can simplify data collection without wasting time. This portal should be user-friendly and accessible from various devices to fit in with different users' needs. Moreover, we should develop continuous improvement and feedback mechanisms from users. It is because the functionality and usability of the CRMS can be improved based on user needs from time to time.

Last but not least, we will develop a user-friendly interface within the CRMS system that provides students, staff and stakeholders with easy access to all information. We hope that this system can enhance the working experience of everyone.

Feasibility Studies

Technical

This system is sufficient as the current resources are enough for us to develop and design this new system. We decided to develop it which can be accessed on mobile or PC. The websiteFurthermore, it just requires a gadget, server, and internet access. It also needs a strong database system because it needs to help every online merchant store their information and data.

Operational

Based on the interview with the staff,students and stakeholders, they desperately need this system to ease the burden by providing a centralized platform for managing campus resources and events . Since we are required to develop the system, this project will be a long-term project as we need to consider the need for thorough requirements gathering. As such, a strategic long-term approach will be essential to ensure the success and sustainability of the CRMS project.

Economical (CBA)

ASSUMPTIONS	
DISCOUNT RATE	10%
SENSITIVITY FACTOR - COST	1.1
SENSITIVITY FACTOR - BENEFITS	0.9
ANNUAL CHANGE IN COSTS	7%
ANNUAL CHANGE IN BENEFITS	5%

ESTIMATED COST	
HARDWARE	RM 16 650
SOFTWARE	RM 16 650
ADVERTISEMENT	RM 3 300
SALARY	RM 22 000
ESTIMATED BENEFITS	
SALE	RM 21 500
SAVING	RM 41 500

COST	YEAR 0	YEAR 1	YEAR 2	YEAR 3
DEVELOPMENT COST				
HARDWARE	18 315			
SOFTWARE	18 315			
TOTAL	36 630			
PRODUCTION COST				
ADVERTISEMENT		3 630	3 884	4156
SALARY		24 200	25 894	27 707
Annual Production Cost (Present Value)		27 830 **25 300**	29 778 **24 610**	31 863 **23 939**
Accumulated Costs		**61 930**	**86 540**	**110 479**

Benefits	YEAR 0	YEAR 1	YEAR 2	YEAR 3
INCREASED SALE		19 350	20 318	21 334
REDUCED SAVING		37 350	39 218	41 179
TOTAL		56 700 **51 545**	59 536 **49 203**	62 513 **46 967**
ACCUMULATED BENEFITS (PRESENT VALUE)		**51 545**	**100 748**	**147 715**
GAIN/LOSS		**(10 385)**	**14 208**	**37 236**

Profitable Index: 1.02 (37 236 / 36 630)

This project is a good investment because its index is more than 1.

5.0 Objectives

The following are the project objectives :

- To improve the productivity of operations in managing administration duties
- To provide convenience for users in accessing resources
- To speed up and smooth communication between different departments
- To maximize the usage of campus resources
- To assemble and store resources and information

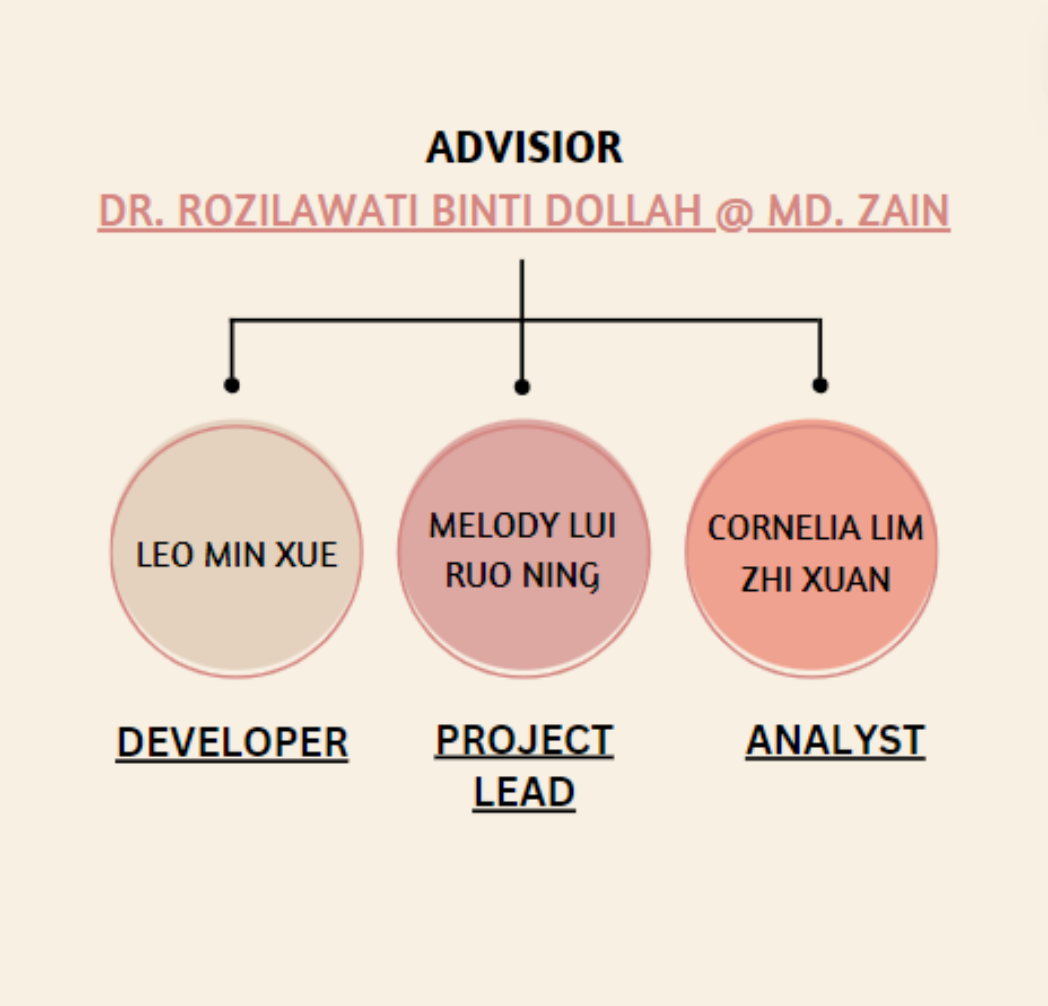
6.0 Scope of the Project

Our aim is to develop a system that manages campus resources. This system is a tool to assemble all data and resources regarding the campus, such as facilities, activities, students, faculty and staff while storing them in a central location that can be easily accessed for various purposes. In addition, users are able to check available resources on campus and arrange appointments directly through the system without visiting the respective departments physically, with the aim of saving time.

Indirectly, the system helps to improve the productivity of operations in handling administration duties that involve facility booking, event management, and scheduling. Transitioning from traditional paper-based systems to digital systems for scheduling appointments, which helps a lot in cutting down on paperwork and manual tasks. Furthermore, this system acts as a communication channel for sharing information, organizing activities, and delivering announcements which enhances interactions between different departments. Other than that, this system allows campus resources to be maximized as users are able to keep track of available resources on campus. The system will organize the appointments in order to avoid conflicts and notify the user in advance to remind them, ensuring smooth scheduling.

7.0 Project Planning

7.1 Human Resource

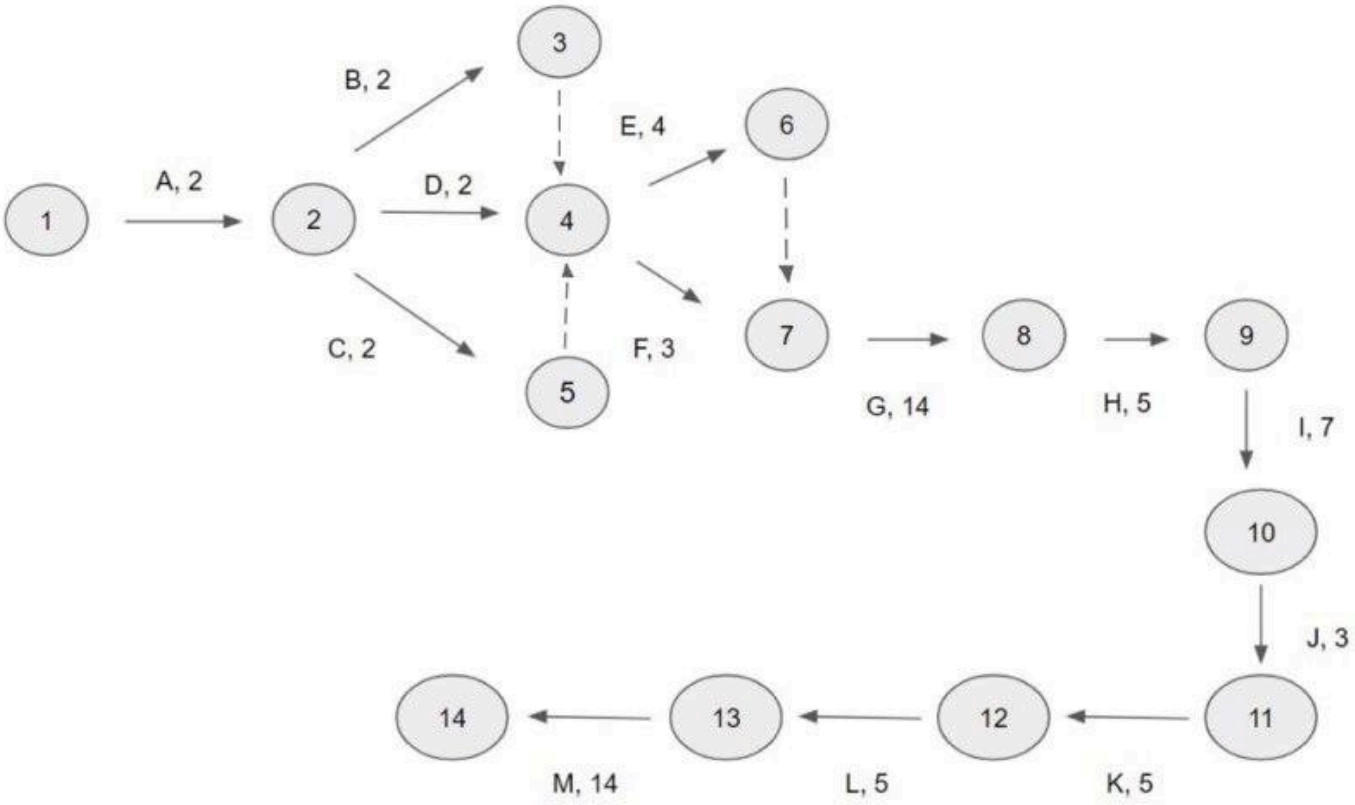


7.2 Work Breakdown Structure (WBS)

1.0	**ANALYSIS**
	1.1 Identify the problem and requirements (2 days)
	Predecessor Task : None
2.0	**PLAN**
	2.1 Determine the objective (2 days) **2.2 Determine the budget (2 days** **2.3 Proposed solution (2 days)**
	Predecessor Task : Phase 1.0
3.0	**DECISION**
	3.1 Evaluation of the estimated cost (4 days) **3.2 Evaluation of the engineering candidates (3 days)**
	Predecessor Task : Phase 2.0
4.0	**DESIGN**
	4.1 Create a prototype (14 days) **4.2 Refine the prototype (5 days)**
	Predecessor Task : Phase 1.0 & 2.0
5.0	**TEST**
	5.1 User testing (7 days) **5.2 Collect feedback (3 days)** **5.3 Debug and improve (5 days)**
	Predecessor Task : Phase 4.0
6.0	**IMPLEMENTATION**
	6.1 Install the system (5 days) **6.2 Training (14 days)**
	Predecessor Task : Phase 5.0

7.3 PERT Chart (based on WBS)

NO	Task	Predecessor	Duration(Days)
1	**A -** Identify the problem and requirements	None	2
2	**B** - Determine the objective	A	2
3	**C -** Determine the budget	A	2
4	**D -** Proposed solution	A	2
5	**E -** Evaluation of cost	D	4
6	**F -** Evaluation of candidates	D	3
7	**G -** Create a prototype	F	14
8	**H -** Refine the prototype	G	5
9	**I -** User testing	H	7
10	**J -** Collect feedback	I	3
11	**K -** Debug and improve	J	5
12	**L -** Install the system	K	5
13	**M -** Training	L	14


1
A, 2
2
B, 2
3
C, 2
D, 2
4
5
E, 4
6
F, 3
7
G, 14
8
H, 5
9
I, 7
10
J, 3
11
K, 5
12
L, 5
13
M, 14
14

Possible paths & their durations(days) :

1. **A -> B -> C -> D -> E -> F -> G -> H -> I -> J -> K -> L -> M**
   Duration: 2 + 2 + 2 + 2 + 4 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 68 days

2. **A -> B -> C -> D -> E -> F -> G -> H -> I -> J -> K -> L -> M**
   Duration: 2 + 2 + 2 + 2 + 4 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 68 days

3. A -> D -> E -> F -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 4 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 64 days

4. A -> D -> E -> F -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 4 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 64 days

5. A -> D -> F -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 60 days

6. A -> D -> F -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 60 days

7. A -> D -> E -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 4 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 61 days

8. A -> D -> E -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 4 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 61 days

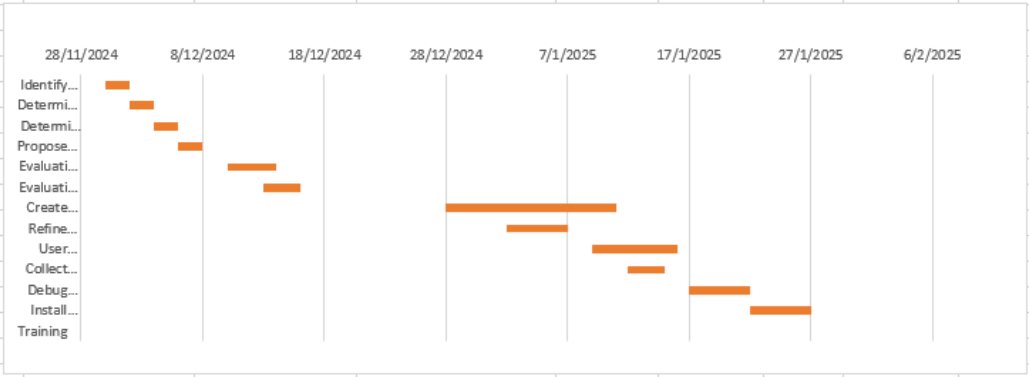
9. A -> D -> F -> G -> H -> I -> J -> K -> L -> M
   Duration: 2 + 2 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 60 days

10. A -> D -> F -> G -> H -> I -> J -> K -> L -> M
    Duration: 2 + 2 + 3 + 14 + 5 + 7 + 3 + 5 + 5 + 14 = 60 days

Since the critical path is the longest path through the network diagram, Path 1 and Path 2 are the critical path for this Project.

7.4 Gantt Chart

NO	Task	Predecesso	Duration(Days	START	FINISH
1	Identify the problem and requirements	None	2	28/11/2024	29/11/2024
2	Determine the objective	A	2	30/11/2024	1/12/2024
3	Determine the budget	A	2	2/12/2024	3/12/2024
4	Proposed solution	A	2	4/12/2024	5/12/2024
5	Evaluation of cost	D	4	6/12/2024	9/12/2024
6	Evaluation of candidates	D	3	10/12/2024	12/12/2024
7	Create a prototype	F	14	13/12/2024	27/12/2024
8	Refine the prototype	G	5	28/12/2024	1/1/2025
9	User testing	H	7	2/1/2025	8/1/2025
10	Collect feedback	I	3	9/1/2025	11/1/2025
11	Debug and improve	J	5	12/1/2025	16/1/2025
12	Install the system	K	5	17/1/2025	21/1/2025
13	Training	L	14	22/1/2025	3/2/2025



8.0 Benefit and Overall Summary of Proposed System

In short, the main objective of Campus Resource Management System (CRMS) is to provide a platform that centralized data and resources of the campus. The development of CRMS is an opportunity to modernize and upgrade the operations of the campus. CrMS simplifies the administrative and operational life within the campus.

One of the benefits of CRMS is reducing manual work as all the processes have been digitized. This approach is more systematic and organized compared to the traditional approach that takes time and energy. Besides, this step helps to increase overall productivity and efficiency across departments. Other than that, relevant data is gathered and kept inside the system. Thus, users such as students and staff are able to access all the information and data related to the campus using their device which makes things more efficient. Furthermore, the communication between departments is sped up as every information will be updated in the system from time to time. CRMS also acts as a medium to connect all the departments inside the campus which helps to increase the collaboration of various departments.