UTM UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

SYSTEM ANALYSIS AND DESIGN – SECD2613

PROJECT PHASE 1

NO	STUDENT'S NAME	MATRIC NO
01	MUHAMMAD FAKHRUL RAZZI BIN MD NOOR	A23CS0128
02	MUHAMMAD AMIR ZAFRI BIN MOHD ADHAR	A23CS0120
03	MUHAMMAD RIFQI BIN RAZALI	A23CS0136
04	RIFQI AHMAD MUSYAFFA	A23CS0024

1.0 INTRODUCTION

Universities and College are organizations that manage a lot of data like students' information, course information, lecturer information and facilities usage and its maintenance. Due to the large number of people, universities and colleges face numerous challenges in efficiently managing their resources, coordinating events, and facilitating effective communication among users and managements. To address these challenges, the Campus Resource Management System (CRMS) emerges as a comprehensive solution designed to increase system efficiency and save time as well.

CRMS serves as a centralized platform aimed to solve problems in universities and college management. By integrating multiple functionalities into a single system, CRMS simplifies resource allocation, scheduling, communication, and decision-making processes, which ultimately fosters an efficient environment for academic and administrative excellence. By harnessing the power of technology, data collection and management and an intuitive user interface, CRMS seeks to revolutionize and upgrade the way universities and colleges allocate, track, and optimize their resources, thereby laying the foundation for a more agile, resilient, and energetic community.

2.0 BACKGROUND STUDY

Campus Resource Management System (CRMS) involves the allocation and utilization of various resources, including facilities, equipment, personnel, and events, to support the academic mission and operational needs of educational institutions. Common challenges faced by universities and colleges in resource management like manual scheduling processes leading to scheduling conflicts and inefficiencies. This usually lead to clashes between classes in one place at the same time.

Many higher education institutions rely on old systems or spreadsheets for resource management and academic management such as place for the class to be conducted and the lecturer assign to that class. This type of system often causes problems like confusion in determining where the class is being held. This happens because the existing system is not a very user-friendly display which needs the user to read one by one from all the data to search for their class.

Advancements in technology have introduced ways for improving campus resource management. Emerging trends such as cloud computing, mobile applications, and data analytics offer potential solutions to address the challenges faced by educational institutions. For example, Integration of Internet of Things (IoT) devices for real-time monitoring of facilities and equipment. Another example that is very familiar to us is the development of mobile applications for on-the-go access to resource management functionalities.

Many educational institutions encounter various challenges in managing campus resources effectively. This challenge happens because of the increasing demands for resources due to the growing student’s population which increases every year. Another factor that plays an important role in this problem is complex academic schedules and event calendars that require meticulous arrangement. To address these challenges requires innovative solutions that prioritize efficiency, collaboration, and user experience.

3.0 PROBLEM STATEMENT

1. **Booking a campus facility is tedious and long process.**

   Conventional methods and system of booking a campus facility, which involve scheduling meetings and spreadsheet, may be time-consuming and tedious. As of right present, there's no system in place to expedite the booking procedure.

2. **Managing an event can be hard for students.**

   Most student-organized events go unpublicized, which might have an impact on how well they function. Due to the lack of a specialized event management system, even though several events have been organized, not many students are aware of them.

3. **Managing and viewing academic information can be hard for both administrators and students.**

   In educational institutions, managing student information, academic records, course registrations, and related activities can be a complex and time-consuming task. Administrators often struggle with manual processes and outdated systems, leading to inefficiencies and errors. Similarly, students face challenges in accessing their academic profiles, registering for courses, and tracking their progress effectively.

4. **Outdated faculty and staff management system.**

   HR administrators spend significant time and effort managing faculty and staff information using outdated, paper-based systems or disparate software solutions. This leads to inefficiencies, errors, and delays in processing various HR-related tasks.

5. **Poor Notification Management.**

   Users receive a high volume of notifications, including irrelevant messages, resulting in notification fatigue and decreased responsiveness to important alerts. Lack of customization options and preferences management further severely affect this issue.

4.0 PROPOSE SOLUTIONS

Campus Resource Management System (CRMS) is a centralized platform that will help both students and faculty administrators by combining multiple modules into one system. The modules included are Facility Booking and Management system, Event Management system, Student Management system, Faculty and Staff Management system and Communication and Notification system.

In Facility Booking and Management system, users can search, view availability, and book campus facilities such as classrooms, auditoriums, labs, and sports fields. Facility managers can define booking policies, manage reservations, and track resource utilization. This system ensure that the user can conveniently book facility without consuming much time.

In Event Management system, event organizers can create, schedule, and manage campus events, workshops, seminars, and extracurricular activities. This system also includes many feature that will help the event organizers, such as event registration, promotion, attendee management, and feedback collection. This system make sure that students receive new about events in the faculty.

In Student Management system, faculty administrators can manage student enrolment, course registration, academic records, and student activities. Students also have access to their academic profiles, register for courses, view schedules, and track progress. This system will ensure that the administrator and students can easily access and manage academic information.

Faculty and Staff Management system will greatly improve the quality of work for HR administrators. HR administrators can manage faculty and staff information, including recruitment, scheduling, performance evaluation, and leave management. This system also allows faculty members to access teaching schedules, submit grades, and communicate with students.

Communication and Notification system will help administrators and students on keeping up to date with the latest news in the faculty. This system allows communication among stakeholders through email, messaging, and notifications. This system will make sure that students are notified with important and latest news in the faculty.

Feasibility Study

1. **Technical Feasibility**

   This system is technically feasible because it can be implemented with the current technology. In addition to that, there are people in faculty that are willing to give their manpower to manage this system.

2. **Operational feasibility**

   This system is operational feasible because it helps faculty administrator on their job. This system also help student in their academic work. The people in faculty will definitely use this system since it will improve their working and studying life.

3. **Economic feasibility**

   Cost-Benefit Analysis

Estimation Cost	
Hardware	RM 45 000
Software	RM 7 000
Consultant	RM 15 000
Training	RM 15 000
Supplies	RM 2 000/year
IS support	RM 14 000/year
Maintenance	RM 2 000/year

Assumptions	
Discount rate	10%
Sensitivity factor (cost)	1.1
Sensitivity factor (benefits)	0.9
Annual change in production costs	7%
Annual change in benefits	5%

Estimated Benefits	
Inventory Savings	RM 3000/week

Costs	**Year 0**	**Year 1**	**Year 2**	**Year 3**
Development Costs • Hardware • Software • Consultant • Training	 49 500 7 700 16 500 16 500			
Total	90 200			
Production Costs • Supplies • Network Personnel • Maintenance		 2 200 15 400 2 200	 2 354 16 478 2 354	 2 519 17 632 2 519
Annual Production Costs (Present Values)		19 800 18 000	21 186 17 509	22 670 17 032
Accumulated Costs		108 200	125 709	142 741

Benefits	**Year 0**	**Year 1**	**Year 2**	**Year 3**
Reduced inventory costs (Present Value)		140 400 127 637	147 420 121 835	154 791 116 297
Accumulated benefits (Present Value)		127 637	249 472	365 769
Gain or Loss		19 437	123 763	223 028
Profitability Index	2.47			

Since the profitability index is 2.47 which is greater than 1, this system is a good investment hence economically feasible.

5.0 OBJECTIVES

The main objectives of our research about the Campus Resource Management System (CRMS):

1. **To Centralize Data Management**

   CRMS is establish a robust, centralized repository for all critical institutional data, encompassing student records, course details, faculty information, and facility utilization statistics. This is one way to make all the data easily accessible in the database.

2. **To Enhancing Resource Allocation**

   Through sophisticated resource management capabilities, the CRMS endeavors to optimize the allocation of institutional resources, including classrooms, laboratories, and equipment, while minimizing conflicts about the available resources and maximizing utilization efficiency.

3. **To Improving Communication**

   The CRMS is to foster effective communication and collaboration among all stakeholders within the university community. By integrating robust communication channels, such as centralized messaging systems, notification alerts, and collaborative portals, the system facilitates seamless interaction between students, faculty, administrators, and support staff.

4. **To act as Streamlining Administrator Processes**

   CRMS streamlines and automates cumbersome administrative workflows, ranging from student enrollment and registration to grading and reporting such as group assignment and exercise submission for each of the students.

5. **To Ensuring Data Security and Privacy**

   Through tight data encryption protocols, access controls, and regular security audits, the system implements robust safeguards to mitigate the risk of data breaches, unauthorized access, and compliance violations.

6. **To encourage Fostering Collaboration**

   Collaboration and knowledge sharing are facilitated by the CRMS, serving as a catalyst for interdisciplinary collaboration, research partnerships, and community engagement initiatives. By collaborative project management, and virtual learning environments, the system fosters a culture of innovation, and creativity, thereby enriching advance towards institutional goals.

6.0 THE SCOPE OF THE PROJECT

As to why to make a system like the Campus Resource Management System, it allows efficiency and convenience for the students. They can book and register for their desired classrooms, facilities, and activities provided by the facility managers with confidence. The students can also view their academic profiles and schedules to remind themselves of their registered courses, and if there is a problem, they can simply email or message a faculty staff member for help, making the system convenient for students in need.

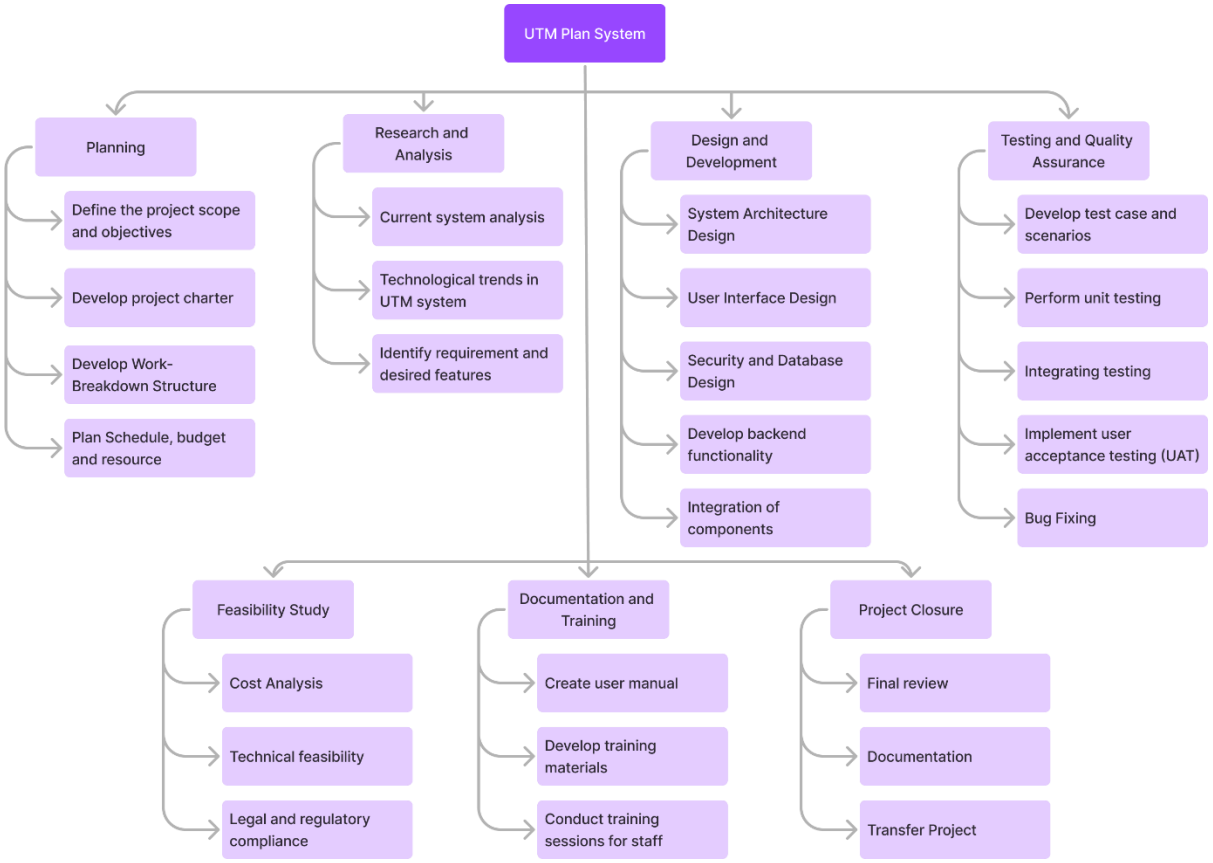
Of course, it is also a system that positively increases the convenience of the faculty and staff. They can easily track and manage events and coordinate with other administrators and lecturers to plan the schedule of each separate course. With the Communication and Notification module, these coordinations are much more efficient and clearer to understand and can notify the students of upcoming events or even changes in the location of their class.

7.0 PROJECT PLANNING

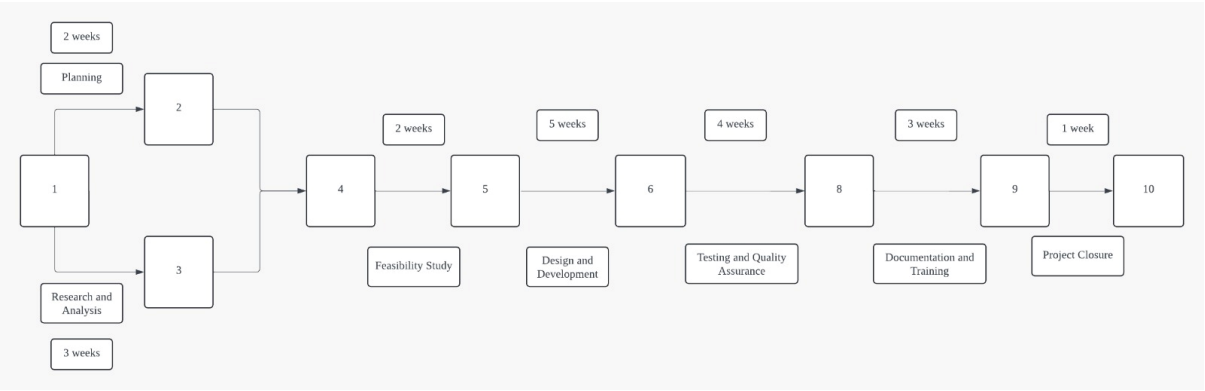
7.1 HUMAN RESOURCES

TASKS	HUMAN RESOURCESS
Planning	Rifqi
Research and Analysis	Fakhrul, Rifqi Ahmad Musyaffa
Feasibility Study	Rifqi
Design and Development	Fakhrul, Rifqi Ahmad Musyaffa, Amir
Testing and Quality Assurance	Fakhrul, Rifqi Ahmad Musyaffa, Rifqi, Amir
Documentation and Training	Amir, Fakhrul
Project Closure	Rifqi

7.2 WORK BREAKDOWN STRUCTURE (WBS)



7.3 PERT CHART



7.4 GANTT CHART

Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Planning																		
Research and Analysis																		
Design and Development																		
Testing and Quality Assurance																		
Feasibility Study																		
Documentation and Training																		
Project Closure																		

8.0 SUMMARY

Benefits:

1. This system provides a platform for managing all campus facilities and enhancing management across universities and colleges.
2. More communication between management teams and users will improve management to be more efficient and systematic.
3. Prioritize user experience through intuitive interfaces, mobile compatibility, and personalized features, meet needs of the campus community and enhance user satisfaction.
4. Adapt to future growth, evolving requirements, and technological advancements, ensuring long-term viability and sustainability.

Summary:

For higher education organizations looking to maximize university and college management, our technology offers a revolutionary alternative. Through the centralization of resource and faculty access, as well as the utilization of cutting-edge technologies, this system enables colleges and universities to boost productivity, foster innovation, and increase communication. Our project is positioned to transform how educational institutions manage their resources and serve their academic mission in an increasingly complex and dynamic environment because of its user-centric design, scalability, and dedication to continual improvement.