PROJECT: PHASE 1

SECD2613 SYSTEM ANALYSIS AND DESIGN

2023/2024

SECTION: 07

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1.0 INTRODUCTION

In the dynamic and evolving landscape of higher education, universities play a pivotal role in cultivating future professionals and leaders. As these institutions grow and diversify, the complexity of managing campus resources—ranging from academic services to administrative functions—increases significantly. The need for an integrated approach to manage these resources efficiently has never been more critical.

The proposed Campus Resource Management System (CRMS) aims to solve these challenges by implementing a comprehensive solution that uses technology innovation to streamlines operations, enhances collaboration, and improves overall campus efficiency. The goal of the Campus Resource Management System (CRMS) is to transform the traditional campus environment into a more accessible, organised, and user-friendly for staff, teachers, and students by utilising cutting-edge technologies.

2.0 BACKGROUND STUDY

As we all know, campus or university is like a factory that produces its own product which is the students. Campus plays an important part in ensuring the future of a country by producing young talents and future leaders. Moreover, campus or universities are the centre for research, education and innovation. Thus, it plays a very crucial part in addressing the future of the country. Hence, to achieve this, surely, the management of the campus must also be on top of the world.

Throughout the advancement of technology, we could say that all the campus has already implement their own campus resource management system to manage the resources in the campus systematically. Even so, since the number of students and staffs could always increase every year, they will still face many challenges in managing student records, faculty data, facilities, and finances without an efficient campus resource management system. Then, without an efficient management, the quality of education, student performance and overall campus performance could also be impacted.

Therefore, developing an effective Campus Resources Management System is very crucial in order to manage the data of the campus efficiently. So that, the campus resources can be manage excellently to produce the best product for the future of this country.

3.0 PROBLEM STATEMENT

One of the biggest challenges facing modern universities is effectively managing the variety of resources available on campus. Universities frequently experience inefficiencies of resource managements since there is no centralized system in place. The absence of a centralized platform causes university's unorganized managements, which makes it more difficult to schedule events, provide facilities, and organize the activities of staff, faculty, and students.

To overcome these challenges, the Campus Resource Management System (CRMS) must develop a variety of features that allow users to efficiently manage the resources of the campus, which will improve effectiveness, and collaboration throughout the entire university.

Thus, the primary objective of this project is to create an effective CRMS that addresses the management problem that universities experience by improving resource use and implementing strategic plans and actions in organizing activities for staff, faculty, and students.

4.0 PROPOSED SOLUTION

1. Technical feasibility:

The Campus Resource Management System (CRMS) will have a centralized database to efficiently store campus data, ensuring an efficient storage and retrieval of data. It will use secure authentication mechanisms and role-based permissions to restrict data access with high security in order to protect students' and staffs' information. The CRMS will allow reservations of facilities in which students will be able to view availability and book any campus facility, while the administrators will be able to keep a track record of the reservations. Event organizers can create, schedule, and manage campus events, workshops, seminars, and extracurricular activities, which include event registration, promotion, attendee management, and feedback collection. Administrators can manage student enrolment, course registration, academic records, and student activities, while students can access their academic profiles, register for courses, view schedules, and track their progress. Lastly, HR administrators can manage faculty and staff information, including recruitment, scheduling, performance evaluation, and leave management. Faculty members can also access teaching schedules, submit grades, and communicate with students via the CMRS system.

2. Operational feasibility:

Operational feasibility will be developed with user-friendly design, thorough guides, and continuous maintenance. The CRMS will have a straightforward user interface in order to ensure easy access to the system. Training sessions and user guides will be provided to familiarize users with the system features. The CMRS will be customized to meet the specifications needed by the university with continuous feedback systems to ensure and improve the performance of the CMRS.

3. Economic feasibility:

Economic feasibility will be determined using cost-benefit analysis and ROI estimations. The CRMS will optimize resource usage and reduces the need for manual managements which will decrease the costs for staffs and increase efficiency. A budget plan will detail the initial development cost, maintenance fees, and possible future upgrades.

5.0 OBJECTIVES

- Campus Resource Management System (CRMS) seeks to enhance effectiveness and collaboration throughout the entire university community.

- To design and implement a Campus Resource Management System (CRMS) that efficiently stores and manages campus data.

- To develop a user-friendly system with comprehensive guides and continuous maintenance.

6.0 SCOPE OF STUDY

Knowing the goal is the first step towards designing and developing a complete Campus Resource Management System (CRMS) that will streamline different administrative and operational processes on a university or college campus. Due to that, the first objective of this CRMS is to design and implement a Campus Resource Management System (CRMS) that efficiently stores and manages campus data. This includes ensuring secure authentication and role-based permissions to protect sensitive information, such as students' and staff members' data. Next to develop a user-friendly system with comprehensive guides and continuous maintenance. This involves designing a straightforward user interface, providing training sessions and user guides, and customizing the system to meet the university's specific needs.

Based on these goals, CRMS aims to improve efficiency and teamwork across the board for the university community. To achieve that, CRMS must need a team to carry out different tasks such as Facility Booking and Management team, Event Management team, Student Management team and Communication and Notification team.

The Facility Booking and Management team is necessary to ensure that users are able to search, view, and reserve campus facilities like sports fields, auditoriums, classrooms, and labs. Workshops, seminars, extracurricular activities, and campus events can all be planned, scheduled, and overseen by the Event Management team. The Student Management team can then take care of academic records, student activities, course registration, and student enrolment. The Communication and Notification team must also ensure that all announcements, bookings, and deadlines pertaining to forthcoming events, bookings, and alerts are received.

7.0 PROJECT PLANNING

7.1 Module 1: Facility Booking and Management

7.1.1 Human Resource

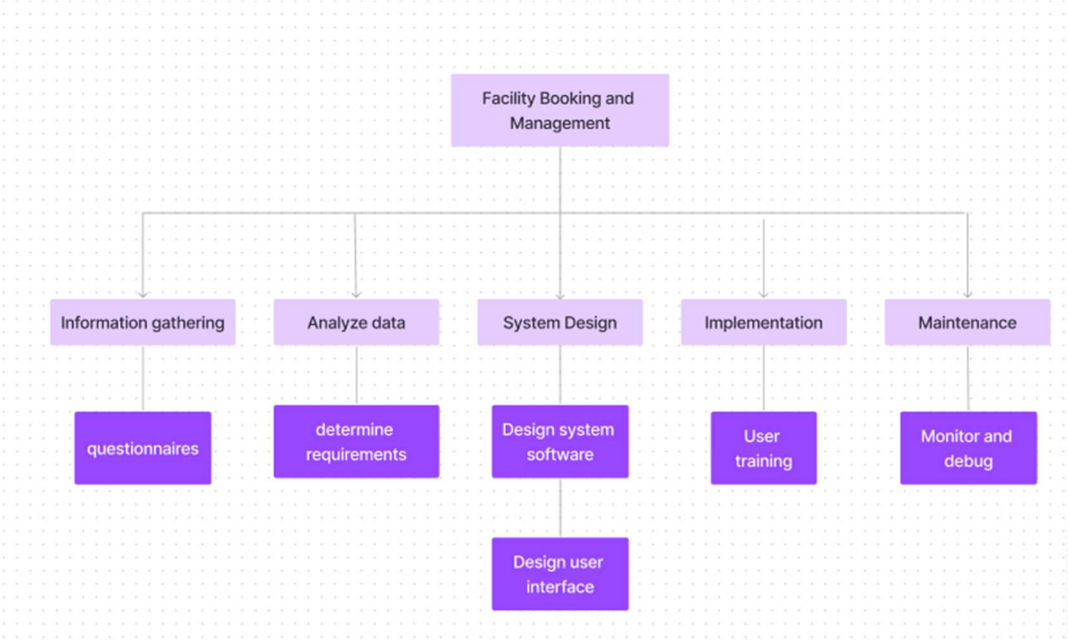
Data Analyst: Gather data through questionnaires and series of interview with university's administration and analyse the data to determine requirements and goals for the system.

System Designer: Design the system's organization and architecture to suit the current and future technology used by the university's administration, as well as the system's interface which accommodate users with easier understanding and navigation of the system.

Software Developer: Develop the system software that fulfil all the requirements set by the university's administration, while working with the data analyst and system designer. Software Development team also must debug following the report given by the maintenance team.

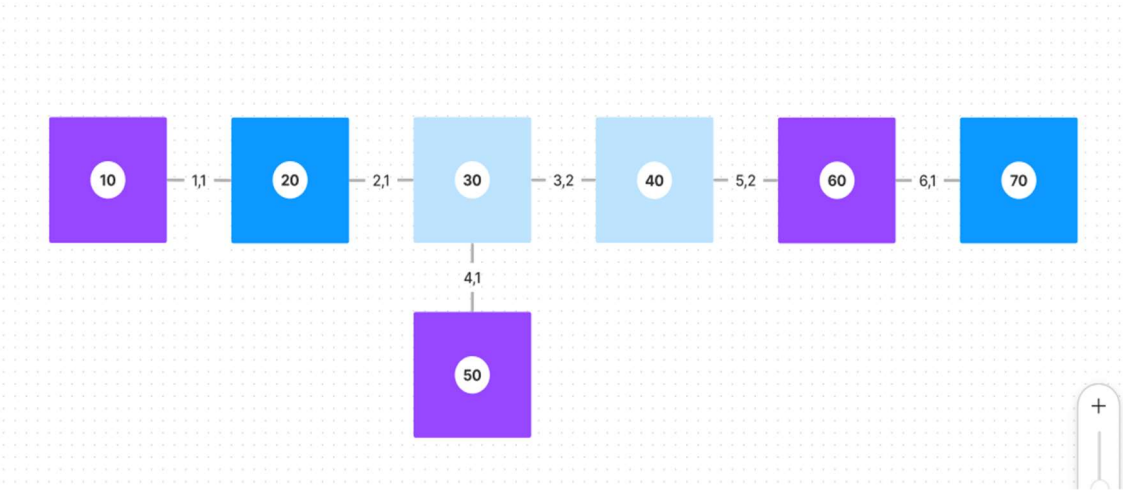
Maintenance: Monitor progress of system during the implementation of the system to ensure everything works as expected and all requirements are met with standard, as well as document all problems and bugs found during the implementation phase.

7.1.2 Work Breakdown Structure

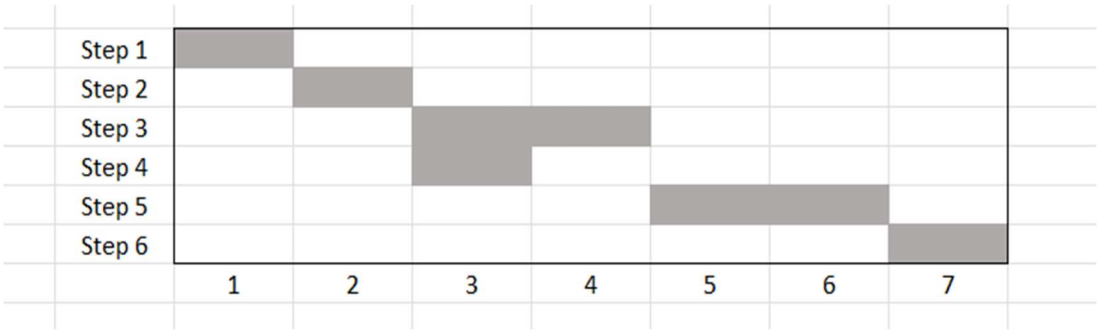


7.1.3 PERT Chart

Activity	Predecessor	Duration (week)
1 Information Gathering	None	1
2 Analyse Data	1	1
3 Design System	2	2
4 Design User Interface	2	1
5 System Implementation	3	2
6 Maintenance	5	1



7.1.4 Gantt Chart



7.2 Module 2: Facility Booking and Management

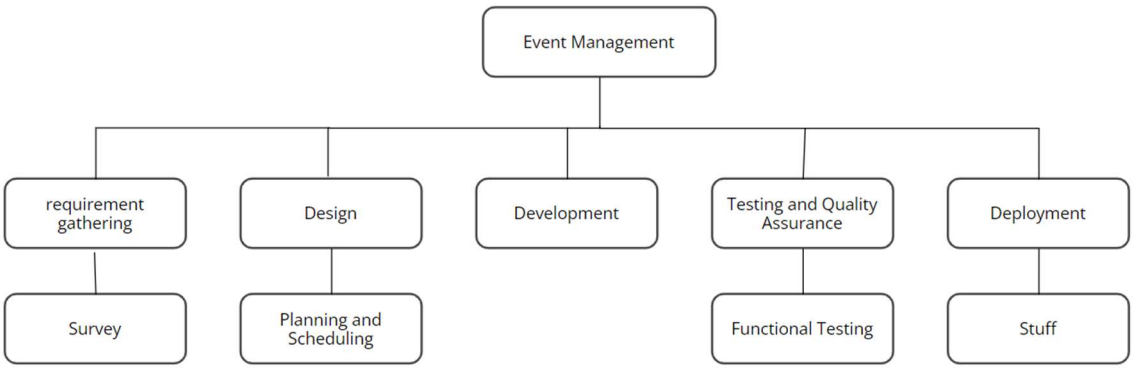
7.2.1 Human Resource

Quality Assurance team :Quality Assurance ensures that the event management module functions as intended. They test features such as event creation, scheduling, attendee management, and feedback collection to ensure they work correctly and meet stakeholder requirements

Operation team : The operations team may be involved in logistical aspects of event design and scheduling, such as coordinating venue setup, managing equipment and facilities, and ensuring smooth operations during events

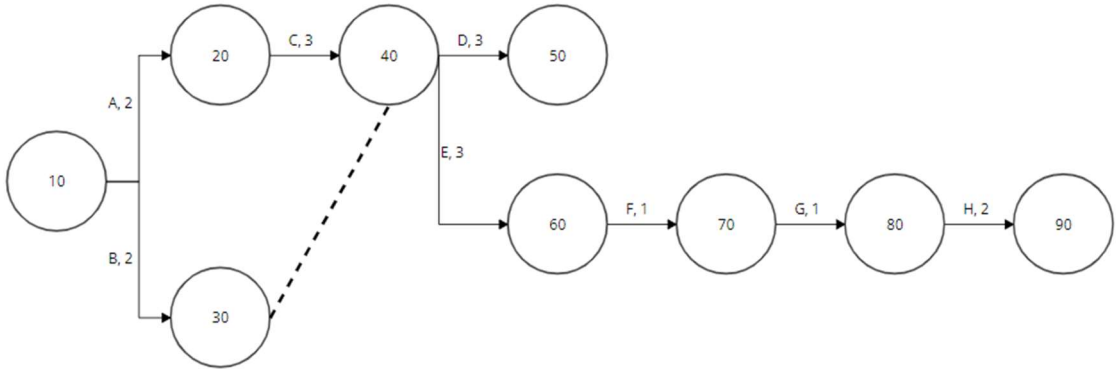
Training and Development team: This team can provide training and development opportunities for existing employees involved in event management software development

7.2.2 Work Breakdown Structure



7.2.3 PERT Chart

Activity	Predecessor	Duration (week)
A Requirement Gathering	None	2
B Survey	None	2
C Design	A, B	3
D Planning and Schedule	C	3
E Development	C	3
F Testing and Quality Assurance	E	1
G Functional Testing	F	1
H Deployment	G	2



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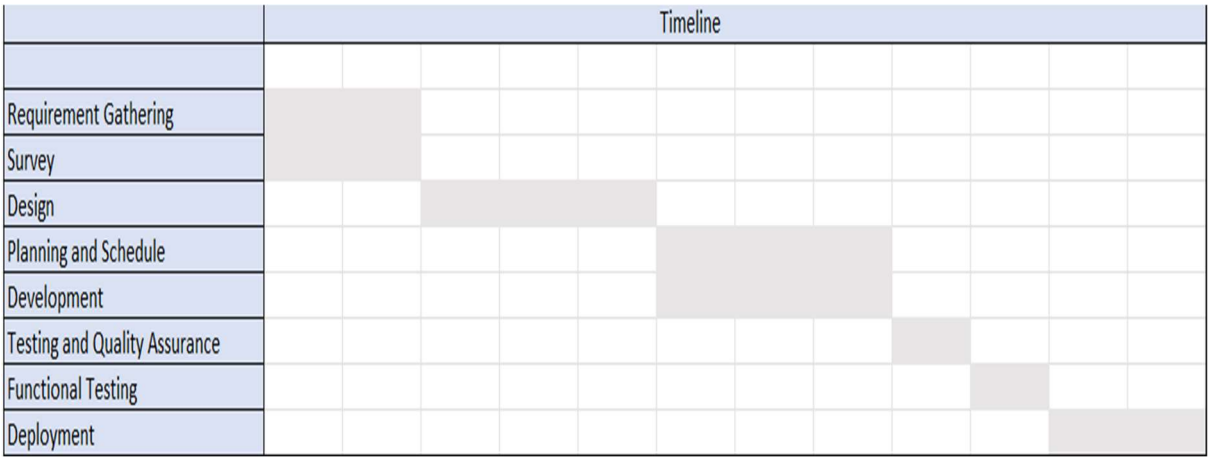


7.3 Module 3: Student Management

7.3.1 Human Resource

Data Analysists: Analyses and interprets complex data sets related to student enrolment, course offerings, and academic performance to inform system design and functionality. Gathering requirements, conducting interviews and surveys, and providing data-driven insights to enhance system capabilities.

System Designer: Designs the architecture of the CRMS, focusing on creating a scalable and efficient system that integrates seamlessly with existing university databases and IT infrastructure. Developing system blueprints, creating user interface designs, and ensuring the system is adaptable to future technological advancements.

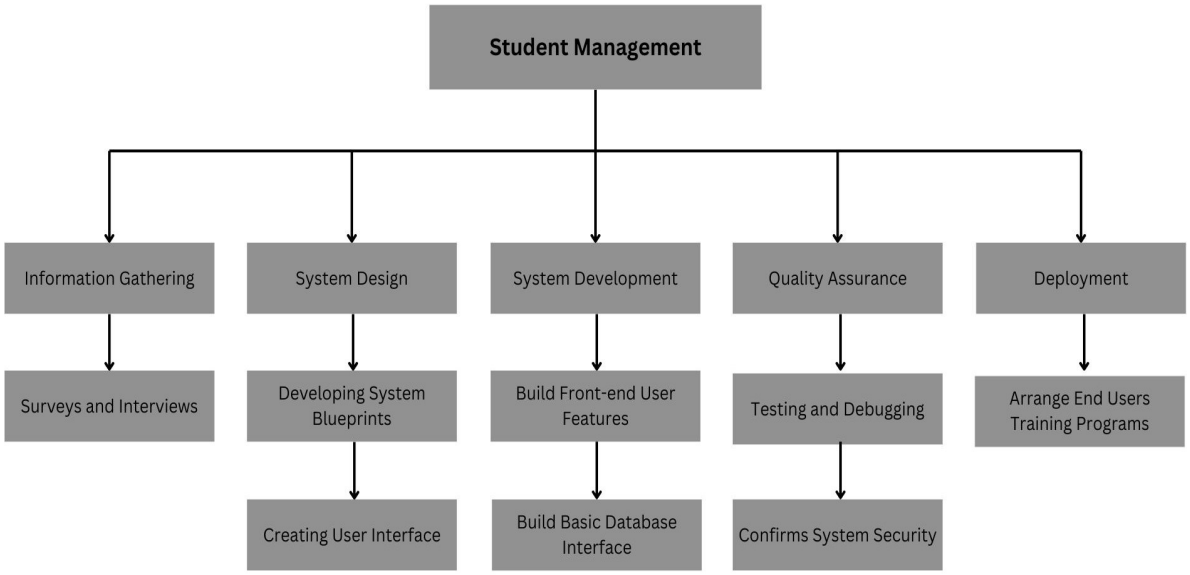
Software Developer: Builds the actual software components of the CRMS, including front-end user features and basic database interfaces. Creating user-centric features for managing student data, like enrolment and course registration, and writing, testing, and debugging code.

Database Administrator: Manages and optimizes the database systems that underpin the CRMS, focusing on performance, scalability, and data security. Ensures efficient data storage and retrieval, maintains data integrity, and implements data security measures.

Quality Assurance Specialist: Makes sure it works as intended and is free of defects and usability problems. carries out thorough testing methods, finds flaws, and confirms system security and performance.

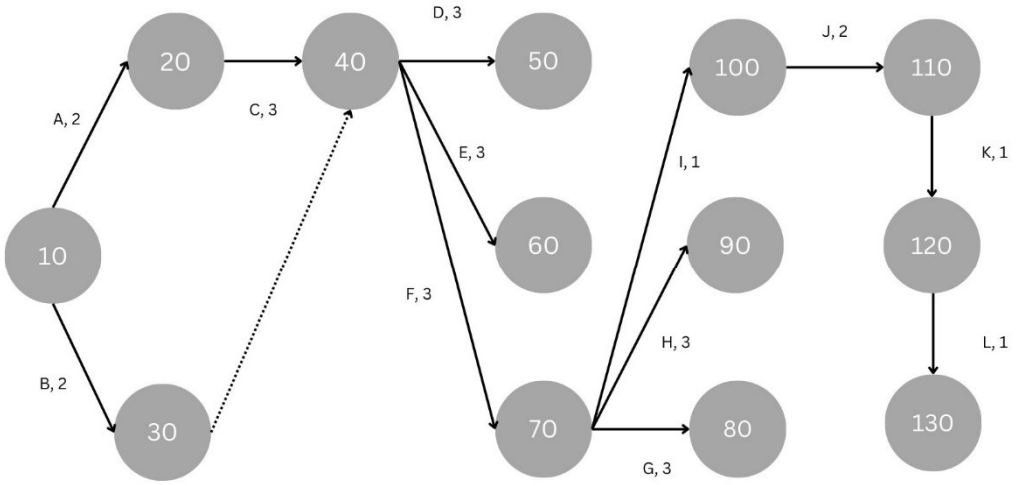
Training and Support Coordinator: Creates and conducts end-user training programmes to guarantee they are prepared to utilise the CRMS efficiently. creates training materials, user manuals, and offers continuous support after implementation.

7.3.2 Work Breakdown Structure



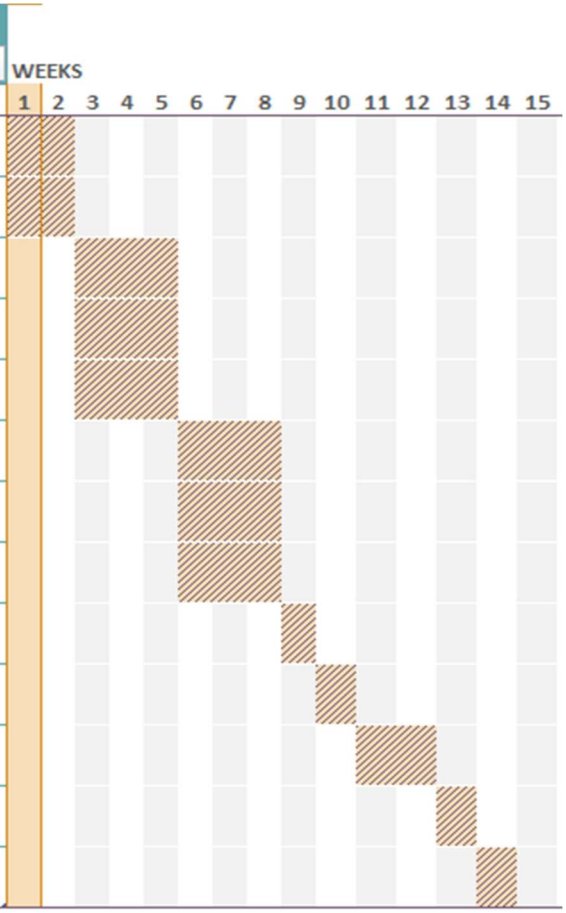
7.3.3 PERT Chart

Activity	Predecessor	Duration (week)
A Information Gathering	None	2
B Surveys and Interviews	None	2
C System Design	A, B	3
D Developing System Blueprints	C	3
E Creating User Interface	C	3
F System Development	C	3
G Build Front-End User Interface	F	3
H Build Basic Database Interface	F	3
I Quality Assurance	F	1
J Testing and Debugging	I	1
K Confirms System Security	J	2
L Deployment	K	1
M Arrange End-User Training	L	1



7.3.4 Gantt Chart

ACTIVITY	ACTUAL START	ACTUAL DURATION
Information Gathering	1	2
Surveys & Interviews	1	2
System Design	3	3
Developing System Blueprints	3	3
Creating User Interface	3	3
System Development	6	3
Build Front-end User Interface	6	3
Database Interface	6	3
Quality Assurance	9	1
Testing & Debugging	10	1
Confirms System Security	11	2
Deployment	13	1
Arrange End-User Training	14	1



7.4 Module 5: Communication and Management

7.4.1 Human Resource

Project Manager: Project manager will oversee the entire project to design the system to ensure the project is met within the time and budget. He is also responsible in defining the project scope, plan and scheduling the project activities to develop the system. Project manager will serve as a bridge connecting the technical teams and the stakeholder.

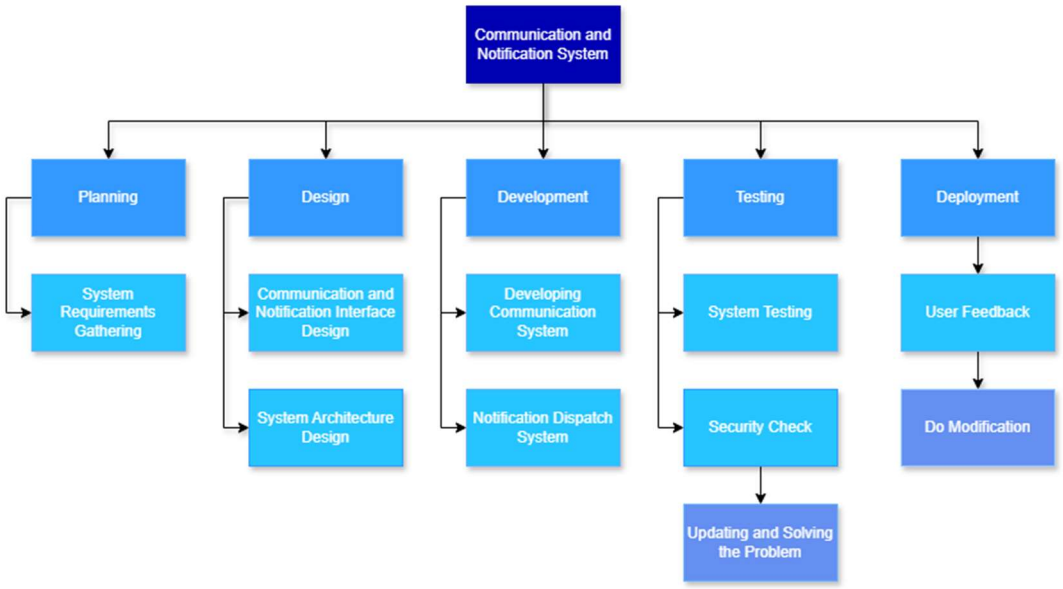
System Designers: They will design the communication interface and notification system to ensure it met the end user standard. System designers will collaborate with the project manager to ensure the need of the user is fulfilled in the design and will elaborate about the design to the system developer to ensure the CRMS being develop fulfilled the requirements and can be connected properly.

Security Specialist: They will ensure the data sent and received through the communication system is secured and cannot be breach by outside attack. Besides, they will ensure that the system designed complies with the privacy regulations.

Software Developer: Software developer will collaborate with the system designer to develop the communication and notification system for the CRMS. They will also develop the base to manage the delivery and receipt of email, messages and notifications. Besides, they will also develop the communication and notification interface to ensure it met the end user standard.

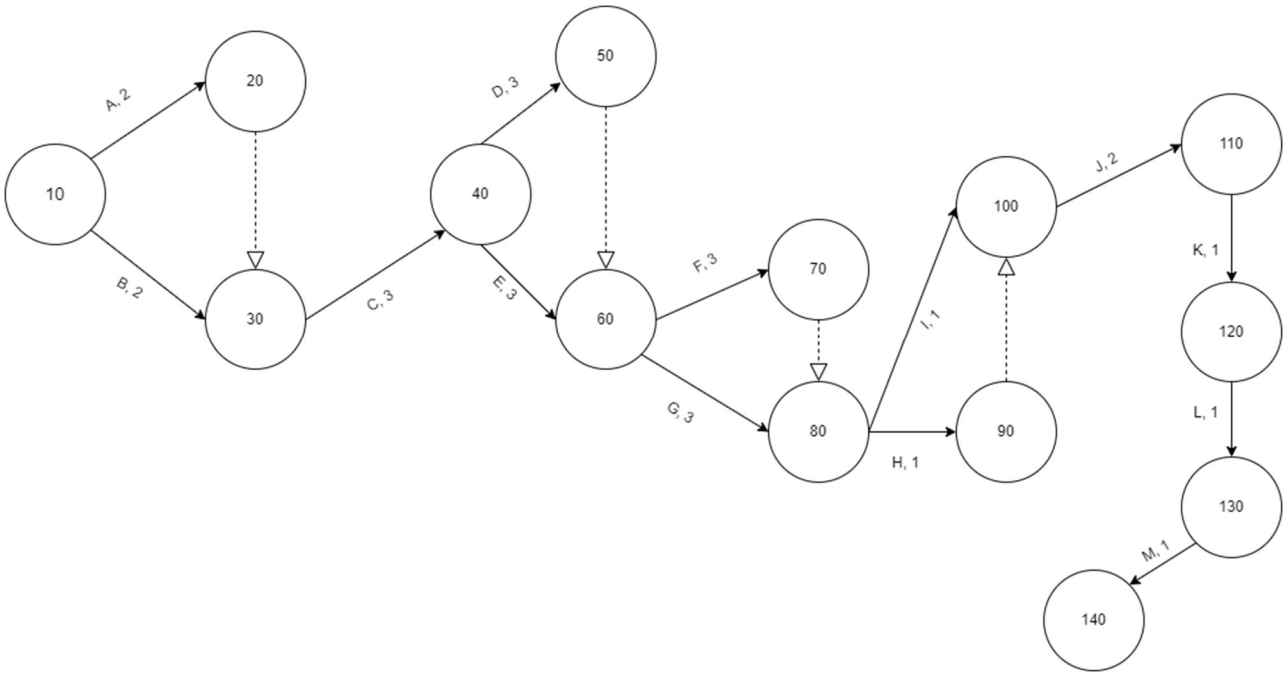
Database Administrator: They will work closely with the stakeholders to understand their need and translate them into database design for CRMS. Database administrator will manage the data receive in the communication log, user preferences and the scheduling of notifications.

7.4.2 Work Breakdown Structure



7.4.3 PERT Chart

Activity	Predecessors	Duration (weeks)
A Planning	None	2
B System Requirements Gathering	None	2
C Designing	A, B	3
D Communication and Notification Interface Design	C	3
E System Architecture Design	C	3
F Developing Communication System	D, E	3
G Notification Dispatch System	D, E	3
H System Testing	F, G	1
I Security Check	F, G	1
J Updating and Solving Any Problem	I	2
K Deployment	J	1
L User Feedback	L	1
M Modification	M	1



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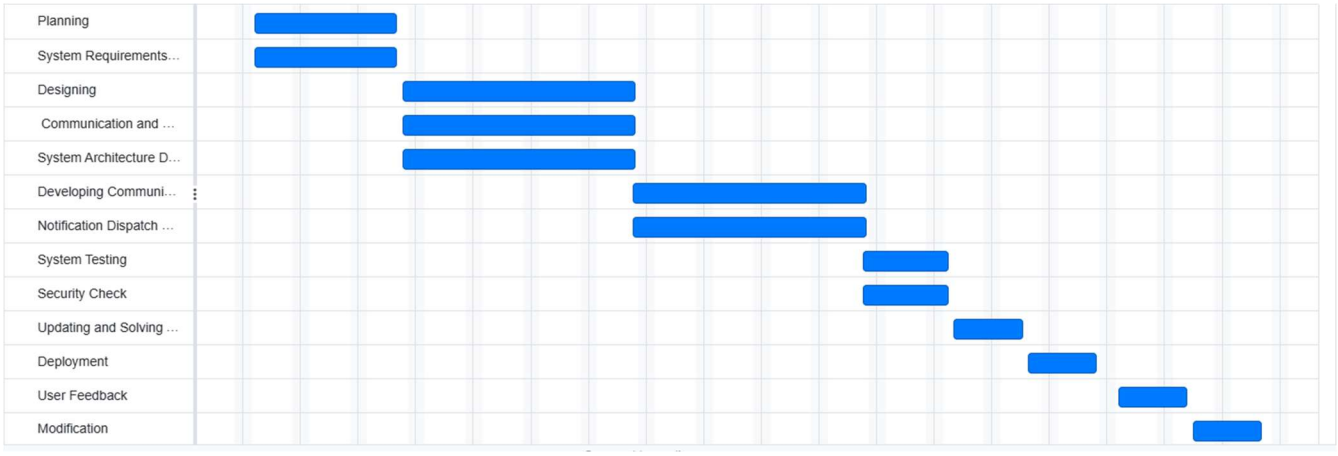

8.0 BENEFIT AND OVERALL SUMMARY OF THE PROPOSED SYSTEM

The Campus Resource Management System (CRMS) offers numerous benefits that fundamentally improve the operational effectiveness and strategic management of university resources. The comprehensive integration of this system reduces manual labour and related expenses by streamlining procedures in a number of areas, including academic administration, event planning, human resources, and facilities management.

Key benefits of the Campus Resource Management System (CRMS) include:

Enhanced Resource Efficiency: By centralizing data and operations, the CRMS ensures optimal use of campus facilities and resources. It allows for better planning and utilization, reducing waste and overlapping in resource allocation.

Improved Accessibility and Collaboration: The system facilitates easier access to information and resources for all users, including students, faculty, and staff. This accessibility enhances collaboration across departments and functions, leading to more cohesive campus operations.

Operational Cost Reduction: By automating repetitive processes and improving resource management, operational costs can be decreased by minimising the requirement for labour-intensive manual administration.

Enhanced User Experience: A user-friendly interface, along with comprehensive support and training materials, ensures that users can effectively utilize the system without a steep learning curve.

Overall, the Campus Resource Management System is more than just a technological upgrade; it is a strategic tool designed to advance institutions towards greater operational excellence and instructional quality. It ensures that the institution stays flexible and responsive to the evolving educational landscape by addressing the immediate challenges of resource management and setting the stage for future developments.

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