FACULTY OF COMPUTING

SESSION 2023/2024

COURSE CODE: SECD2613

SECTION: 3

LECTURER'S NAME: DR. Rozilawati Binti Dollah

Proposal for Campus Resource Management System

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Introduction

In the dynamic environment of UTM, the management of campus resources represents a significant operational challenge that impacts the overall efficiency and effectiveness of the educational institution. With the growing student population and the expanding scope of campus activities, it has become increasingly difficult to manage resources optimally using traditional methods. These challenges underscore the need for an innovative and integrated approach to resource management.

The proposed Campus Resource Management System (CRMS) is a digital platform aimed at transforming how resources are managed on campus. By leveraging technology, CRMS seeks to unify various administrative and operational functions into a single, user-friendly system. This system will not only simplify processes but also enhance transparency, accessibility, and real-time decision-making capabilities.

CRMS will serve as the backbone for managing all campus resources, including academic facilities, administrative offices, recreational areas, and communication channels. The integration of these resources under one platform is expected to lead to better coordination, reduced redundancies, and more effective utilization of the campus's assets. Furthermore, CRMS will play a crucial role in improving the campus environment by ensuring that resources are readily available to students, faculty, and staff, thereby supporting the institution’s mission of providing high-quality education and fostering a vibrant campus community.

Background study

At UTM, the management of campus resources currently involves a combination of manual processes and disjointed electronic systems. Facilities are booked through separate departmental systems, student information is handled by different administrative offices, and communication between various campus stakeholders often relies on outdated channels. This fragmented approach results in inefficiencies and a lack of cohesion in resource management and communication.

Existing Systems and Challenges:

1. **Facility Management:** Different departments manage their own booking systems, leading to conflicts and underutilization.
2. **Academic Administration:** Manual handling of enrollment, scheduling, and academic records leads to delays and increased administrative burden.
3. **Communication:** Reliance on multiple platforms for communication creates gaps and delays in disseminating vital information.

4. **Technological Landscape:** Advancements in integrated software solutions have shown significant benefits in other educational institutions. Systems that consolidate multiple functions into a single platform have improved operational efficiency, resource utilization, and stakeholder satisfaction.

Case Studies:

All the faculties: Implemented a unified resource management system that resulted in a 30% increase in facility utilization and a significant reduction in scheduling conflicts.
Faculty of Computing: Introduced a digital academic administration system that decreased the time spent on administrative tasks by 40% and improved data accuracy.
These examples illustrate the potential benefits of implementing a similar system at UTM. The CRMS aims to capitalize on these advancements by providing a unified, user-friendly platform that covers all aspects of campus resource management.

Justification for CRMS:
The need for CRMS at UTM is evident from both the internal challenges and the success stories of other institutions. By adopting a centralized, digital approach, the university can expect significant improvements in operational efficiency, resource management, and overall campus communication.

Technical Feasibility:

Assessment: Evaluated the compatibility of proposed systems with existing IT infrastructure.
Findings: The current IT infrastructure supports the integration of new systems with minimal adjustments. Technologies required for automation, data analytics, and mobile access are readily available and well-understood.
Conclusion: Technically feasible.

Economic Feasibility:

Assessment: Analyzed the cost-benefit ratio of implementing the proposed solutions.
Findings: Initial setup costs are justified by the long-term savings and efficiency improvements. A detailed cost analysis indicates that the return on investment (ROI) will be realized within 2-3 years of implementation.
Conclusion: Economically feasible with a favorable ROI.

COSTS		Year 0	Year 1	Year 2	Year 3
Development Cost (One-time)					
Hardware	50000	**10000**			
Software	85000	**85000**			
Training	10000	**10000**			
Total (Development Cost)		**105000**			
Production Cost					
Maintenance			10000	12500	15000
Updates and Patches			5000	5000	5000
Additional Costs			4000	5850	7000
Annual Production Costs			**19000**	**23350**	**27000**
(PRESENT VALUE)			**17272.73**	**19298**	**20285**
ACCUMULATED COSTS			**122272.7**	**141570**	**161856**

BENEFITS	Year 1	Year 2	Year 3
Increasing Communication Efficiency	50000	65000	75000
Increased Facility Utilization	40000	45000	50000
Reducing Scheduling Conflicts	27000	34000	38000
TOTAL BENEFITS	117000	144000	163000
(PRESENT VALUE)	**106364**	**119008**	**122464**
ACCUMULATED BENEFITS	106364	225372	347837

GAIN OR LOSS	-15909	83802	185981
PROFITABLE INDEX	**1.771246**		

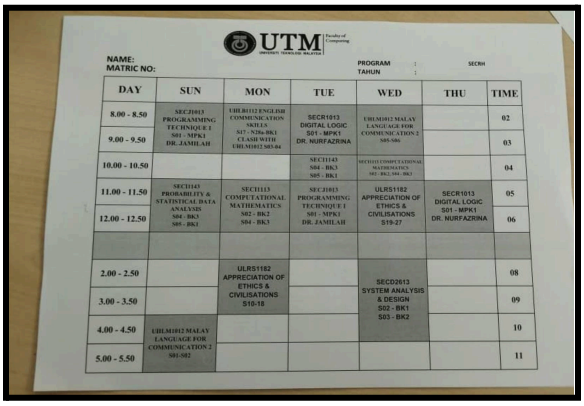
Operational Feasibility:

Assessment: Examined the impact of the new system on current operations and user adaptability.
Findings: The proposed solutions align well with existing workflows. Training programs and user-friendly design will mitigate any resistance to change.
Conclusion: Operationally feasible with a smooth transition expected.

Problem Statement

Despite the advancements in educational technologies, UTM continues to face significant challenges in managing its vast array of resources efficiently. The existing processes, primarily manual and siloed in nature, lead to several critical issues:

1. **Inefficiency in Resource Allocation:** Due to the lack of a centralized resource management system, there is frequent overbooking or underutilization of campus facilities like classrooms, laboratories, and meeting spaces. This results in logistical conflicts and dissatisfaction among users.
2. **Communication Gaps:** The current decentralized communication channels hinder effective information flow between students, faculty, staff, and administration. Important notifications and updates often do not reach all stakeholders timely, leading to miscommunication and missed opportunities. A notable instance is the issuance of hard copy schedules to first-semester students, which not only delays updates and corrections but also poses challenges in accessibility and convenience.



3. **Administrative Burden:** The manual handling of resource bookings, event management, and academic administration consumes considerable staff time and effort, which could be better utilized in more strategic tasks. This also increases the risk of human error and delays in processing requests.
4. **Limited Access to Real-Time Data:** Decision-makers and stakeholders lack real-time access to data regarding resource usage, student performance, and administrative metrics. This impedes their ability to make informed decisions quickly, impacting the overall operational responsiveness of the institution.
5. **Inadequate Support for Strategic Planning:** Without a comprehensive system to analyze and report on the utilization and effectiveness of campus resources, strategic planning is hampered. This limits the institution's ability to adapt to changing educational demands and to plan for future growth.

The CRMS aims to resolve these issues by introducing a unified platform that not only streamlines resource management but also enhances communication, improves decision-making, and supports strategic administrative planning.

Objectives

The primary objective of implementing the Campus Resource Management System (CRMS) at UTM is to enhance the management of campus resources through digitization and integration. The specific goals of the CRMS include:

- **Streamline Resource Management:** To create a centralized platform that enables efficient scheduling, management, and utilization of campus facilities such as classrooms, laboratories, auditoriums, and sports fields.
- **Improve Communication:** To establish a robust communication system within CRMS that ensures timely and effective dissemination of information to all campus stakeholders, thereby eliminating existing communication gaps.
- **Reduce Administrative Overhead:** To automate routine administrative tasks related to resource booking, event management, and academic administration, thereby reducing the workload on staff and minimizing human errors.
- **Enhance Decision-Making**: To provide administrators, faculty, and staff with real-time access to critical data about resource utilization, academic performance, and operational metrics, facilitating more informed and quicker decision-making.
- **Support Academic and Operational Planning:** To generate comprehensive reports and analytics that aid in strategic planning and decision-making processes, ensuring that the institution can adapt to future challenges and opportunities efficiently.
- **Digitalize Academic Schedules:** To transition from hard copy schedules to a digital platform, ensuring that all students, particularly those in their first semester, have instant access to accurate and up-to-date scheduling information.

These objectives are designed to address the specific challenges faced by UTM, as identified in the problem statement, and to leverage technology to improve the overall campus experience for students, faculty, and staff.

Scope

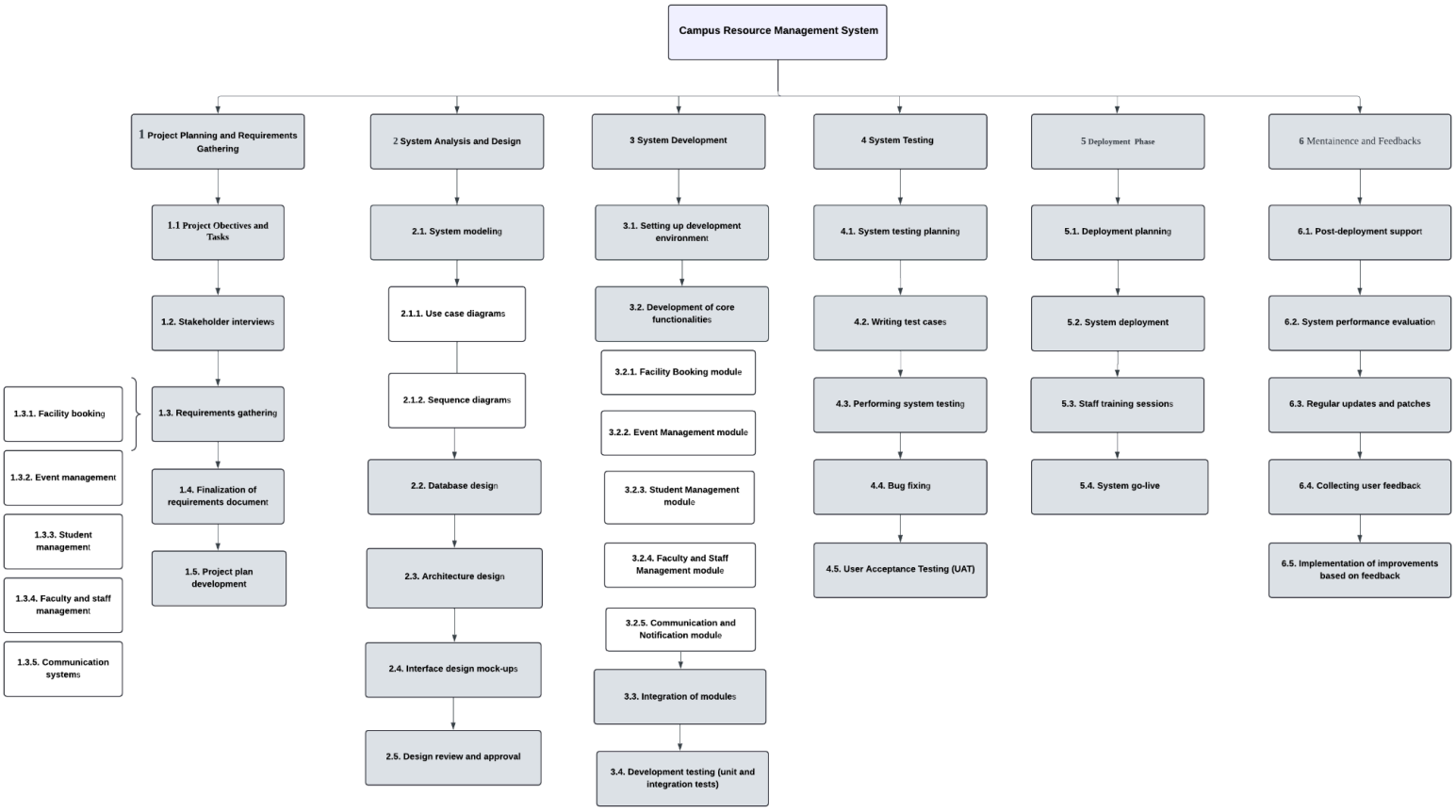
The Campus Resource Management System (CRMS) is designed to enhance the management of campus resources at UTM through a comprehensive digital platform. The system will encompass several key functionalities including the management of facilities, events, student and faculty records, and communications. It will enable facility managers to streamline the booking and utilization of campus spaces such as classrooms, auditoriums, and laboratories, while also allowing event organizers to efficiently manage activities ranging from seminars to extracurricular events.

Additionally, the CRMS will facilitate better management of student and faculty affairs by automating processes related to enrollment, course registration, academic records, and human resources management. An integrated communication system will ensure timely and effective dissemination of information across all levels of the campus community, enhancing connectivity between students, faculty, administrative staff, and management.

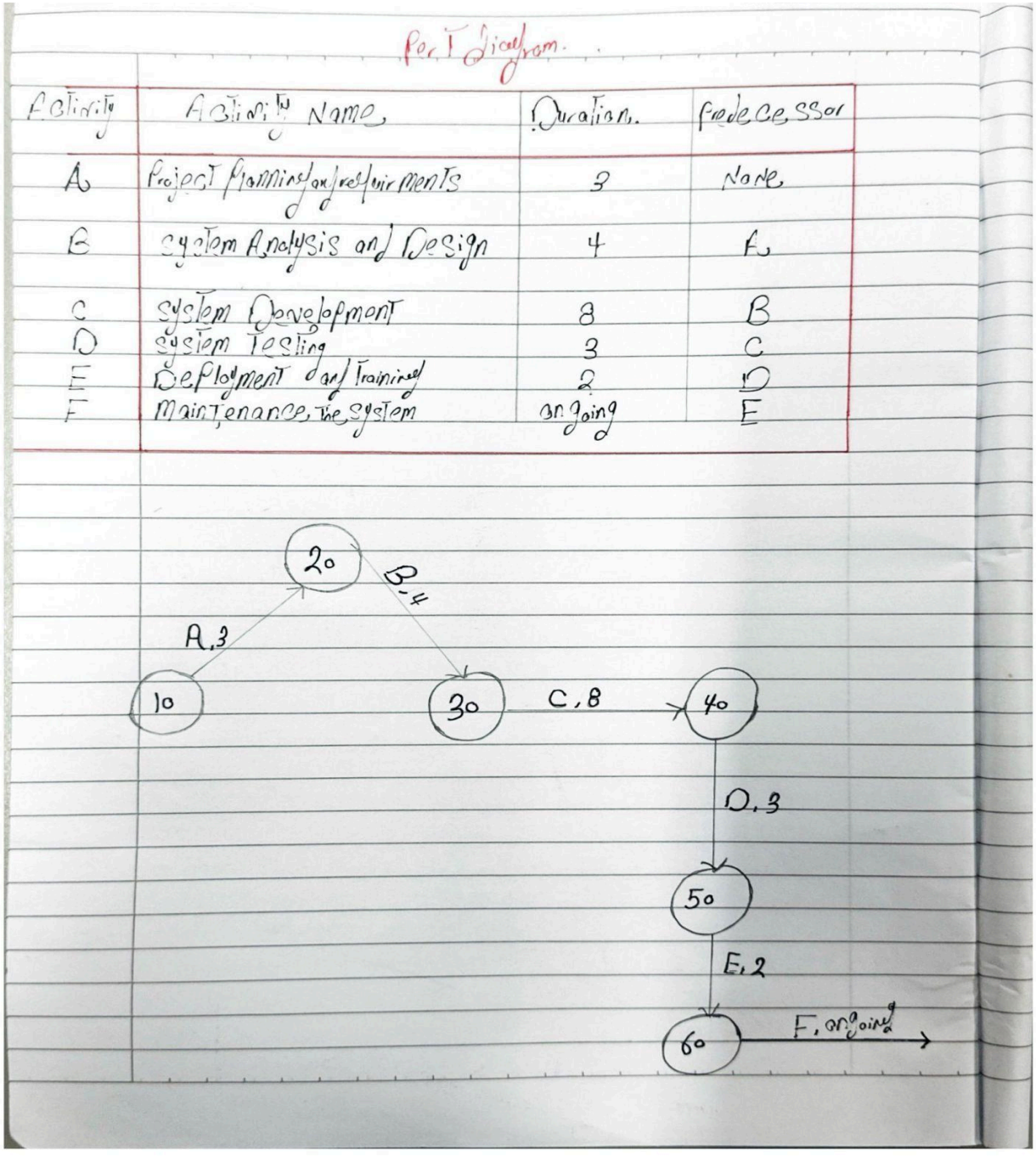
The implementation of the CRMS will be campus-wide, impacting all academic departments, administrative offices, and auxiliary services at UTM. The project will focus on leveraging existing data and system integrations without necessitating major overhauls in current IT infrastructure or the creation of new academic programs. While the CRMS will significantly aid in administrative decision-making, it is not intended to replace all administrative processes but to provide essential tools to support efficient decision-making.

Excluded from this project are any developments that require external network connections beyond the university's IT services or highly customized solutions for specific departmental needs that deviate significantly from standardized functionalities. The aim is to foster a unified approach to resource management that aligns with the overall strategic goals of the university and addresses the critical challenges currently faced.

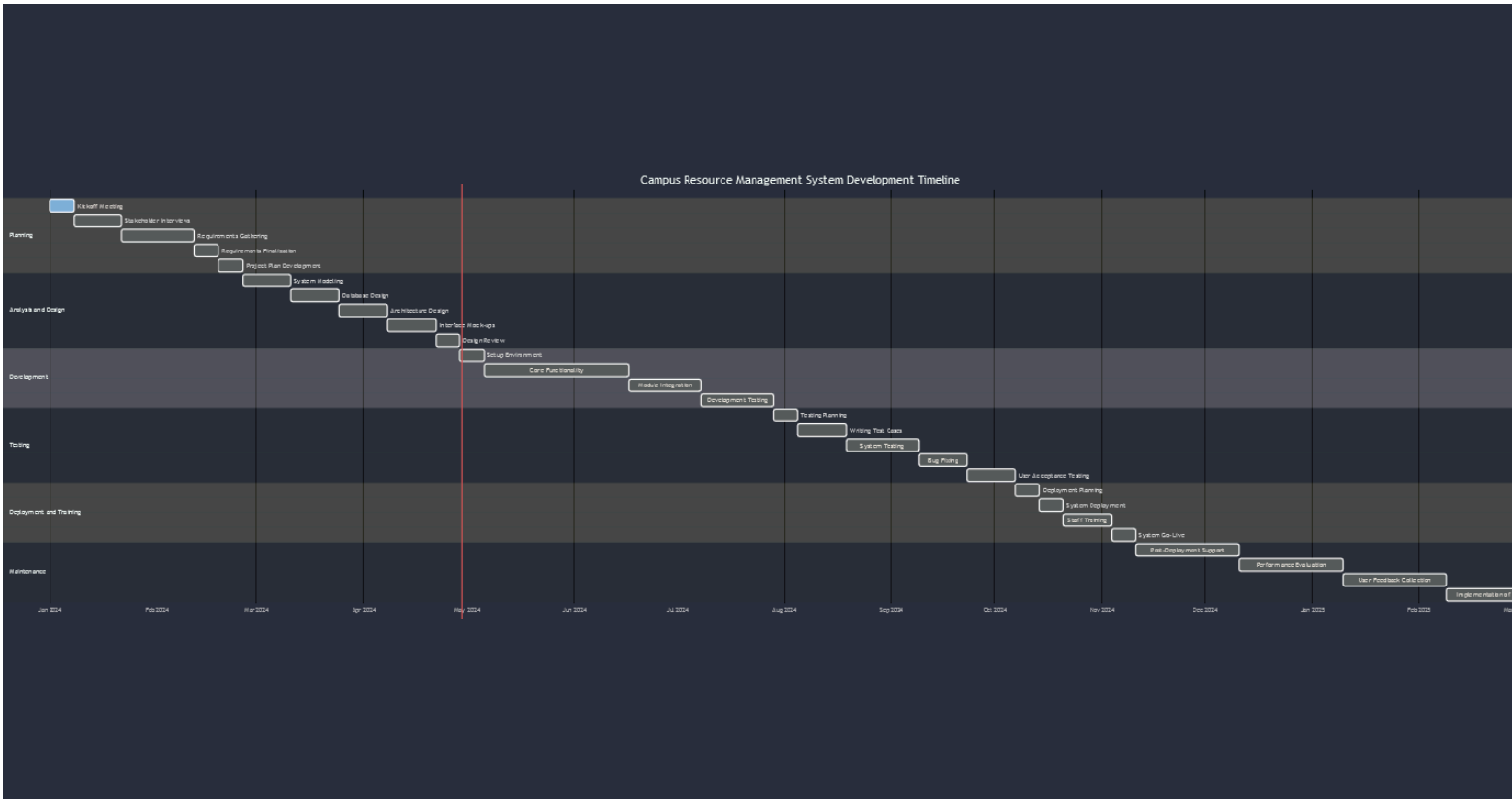
WBS for Campus Resource Management System (CRMS)



PERT Diagram



Gantt Chart


Campus Resource Management System Development Timeline
Planning
Kickoff Meeting
Stakeholder Interviews
Requirements Gathering
Requirements Finalization
Project Plan Development
Analysis and Design
System Modeling
Database Design
Architecture Design
Interface Mockups
Design Review
Development
Setup Environment
Core Functionality
Module Integration
Development Testing
Testing
Testing Planning
Writing Test Cases
System Testing
Bug Fixing
User Acceptance Testing
Deployment and Training
Deployment Planning
System Deployment
Staff Training
System Go-Live
Maintenance
Post-Deployment Support
Performance Evaluation
User Feedback Collection
Jan 2024
Feb 2024
Mar 2024
Apr 2024
May 2024
Jun 2024
Jul 2024
Aug 2024
Sep 2024
Oct 2024
Nov 2024
Dec 2024
Jan 2025
Feb 2025