UTM UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

SECD 2613

System Analysis and Design

Section 7

Group 2

Theme: Campus Resource Management System

Module 1: Facility Booking and Management

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1.0 Introduction

The Campus Resource Management System (CRMS) is a comprehensive platform designed to streamline administrative and operational processes within a university or college campus. By integrating multiple functionalities into a single system, CRMS simplifies resource allocation, scheduling, communication, and decision-making processes. The modules involved in the CRMS include facility booking and management, event management and finally communication and notification. Three of the modules work together to provide a centralized platform for managing various campus resources, including facilities, events, students, faculty, and staff. Enhancing efficiency by automating processes related to facility booking, event management, and communication.

2.0 Background study

Traditionally, event management involves multiple manual processes, such as paper-based scheduling, venue reservation, and attendee registration. These processes can be time-consuming, prone to errors, and lack efficient communication channels. As a result, it can be challenging for event organizers to coordinate with various departments, faculty members, and students involved in the event.

1-Current Processes and Systems

Investigate the existing methods and systems used for event management within the campus. This includes manual processes, spreadsheets, standalone event management software, and any other tools currently in use. Identify pain points, inefficiencies, and areas for improvement.

2-Resource Utilization:

Analyze the use of campus resources like venues, equipment, and personnel for hosting events. Determine the availability, capacity, and scheduling constraints of different facilities and resources to optimize their usage and avoid conflicts.

3-Communication and Collaboration:

Assess the effectiveness of communication channels and collaboration tools used for coordinating events. Identify gaps in communication, delays in information dissemination, and challenges in collaborative planning among event organizers and stakeholders.

4-Technology Infrastructure:

Evaluate the existing technology infrastructure and IT capabilities within the campus. Determine the feasibility of implementing a centralized Campus Resource Management System (CRMS) and integrating it with other campus systems and databases.

3.0 Problem statement

I) Facility booking and management:

When it comes to facility booking and management, the main goal is to efficiently manage the booking of resources within a facility. The problem often arises when there is a lack of a centralized system leading to double bookings, confusion, and inefficiencies in resource allocation. Another common problem is the manual handling of bookings, which can be time-consuming and prone to errors.

ii) Event management:

For event management, the focus is on planning and organizing events effectively. The common problem faced is the coordination of various tasks, vendors, and attendees leading to miscommunication and disorganization. Budget constraints and last-minute changes often pose significant challenges for organizers.

iii) Communication and notification:

Regarding communication and notification, the challenge lies in ensuring timely and effective communication with stakeholders. Inefficient communication methods can lead to missed deadlines, misunderstandings, and lack of engagement. Managing multiple communication channels and ensuring messages reach the right recipients can be complex and overwhelming.

4.0 Proposed solution

Sunbucks is a system that allows users to have convenience and accessibility on searching, viewing availability, and booking campus facilities such as classrooms, auditoriums, labs, and sports fields for managing an event. The system also allows the facility managers to define booking policies, manage reservations, and track resource utilization.

Primarily, in order to tackle the problem in terms of facility booking and management, a proposed solution would be to implement a centralized online booking system that allows users to check availability, book facilities, and receive instant confirmations. A user-friendly interface that is accessible via web browser will be provided. This ensures the ease of sue for all stakeholders including students, faculty, staff and admistrators. A secure login system with role-based access control will be included in the system to ensure that users only have access to functionalities appropriate to their roles. Different user roles would be defined, such as students, faculty, staff, and facility managers, each with varying levels of access permissions.

In terms of event management issues, a proposed solution would involve using event management software that integrates all aspects of event planning such as scheduling, budgeting, guest management, and logistics. This software facilitates smooth communication among team members, vendors, and attendees, ensuring a well-coordinated and successful event.

In terms of communication and notification issues, a proposed solution is to implement a communication and notification system that allows for automated reminders, updates, and alerts. This system can use various channels like emails, SMS, and notifications to keep stakeholders informed and engaged, improving overall communication efficiency. There will also be a feature which will allow users to provide feedback and reviews. After using a facility, users would have the option to provide feedback and ratings based on their experience by writing comments or sharing pictures of facilities used. The users review will be visible by the other users. This helps in continuously improving the quality of services and addressing any issues promptly.

4.1 technical feasibility

Implementing a new CRMS involves various technical challenges. However, it is technically feasible for a university with adequate resources, expertise, and careful planning. Successful implementation requires collaboration among stakeholders and effective project management. A university has a lot of expert staff and students from various aspects of faculty of computing such as software engineering, data engineering, graphic and multimedia software and cyber security. This ensures the process of developing an intuitive and user-friendly interface for the facility booking system can be done. The user experience (UX) design and user interface (UI) design created will be able to meet the needs of various stakeholders. Also, university would have the ability to set up and manage databases effectively, ensuring data integrity, security, and scalability.

4.2 operational feasibility

A CRMS will be operational feasible especially for a facility booking and management system. This is because this system will meet the needs of users such as students and staff when they need a space to conduct short term events or activities. With the features provided by the system, even year 1 university students can apply to book and use the existing facilities inside campus. Apart from that, the system will allow and ease the management of faculties on the facilities available. This solves the problems of unuse facilities inside campus as the management is able to track the usage of the facilities. A report based on the usage of facilities allows the management to make improvements and maintenance to the overused and underused facilities.

4.3 economic feasibility

Estimated cost	
Hardware	RM 15000
Software	RM 10000
Advertisement	RM 4000 per year
Maintenance	RM 5000 per year

Training expense	RM 3500 per year
IS support	RM 3000 per year

Estimated benefits	
Cost reduction	20000
Improved resource utilization	15000
Productivity increased	10000

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

Cost-Benefit Analysis

Cost	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Development cost					
Hardware	16500				
Software	11000				
Total (Development cost)	27500				
Production cost					
Advertisement		4400	4620	4851	5094
Maintenance		5500	5775	6064	6367

Training expenses		3850	4043	4245	4457
IS support		3300	3465	3638	3820
Annual production costs		17050	17903	18798	19738
Present value		15500	14796	14123	13481
Accumulated cost		43000	57796	71919	85400

Benefit	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Cost reduction		18000	19260	20608	22051
Improved resource utilization		13500	14445	15456	16538
Productivity increased		9000	9630	10304	11025
Annual benefit		40500	43335	46368	49614
Present value		36818	35814	34837	33887
Accumulated cost		36818	72632	107469	141356
Gain or loss		(6182)	14836	35550	55956
Profitable index	2.035				

Even though there is some loss in the first year when the system is implemented. However, the profitable index is greater than 2.035 which is greater than 1.0 showing that the project is a good investment.

5.0 Objectives

It is necessary to create and install a module for the Campus Resource Management System (CRMS) that makes it easier to manage campus events, reserve venues, register attendees, communicate, and use resources. The objective is to provide an efficient, user-friendly online interface that is accessible to various stakeholders. Role-based access control, centralized dashboards for venue availability search and check, user-friendly booking interfaces, resource utilization tracking, and feedback methods for ongoing enhancements should all be features of this interface.

The following elements have to be included in order to do this:

1.User-Friendly Interface: All stakeholders should be able to easily browse and utilize the user interface, and it should guarantee that all functionalities are easily accessible.

2. Role-Based Access Control: To guarantee that private data is safeguarded and that features are customized to the user's role, a secure login system with role-based access control should be put in place.

3. Centralized Dashboards: Centralized dashboards for facility search and availability should be developed in order to offer real-time information on venue availability, capacity, amenities, and scheduling limitations.

4. Intuitive Booking Interfaces: Users should be able to select the date, time, duration, and purpose of their reservation using an intuitive booking interface, which should also give them with rapid access to the availability status after confirmation.

5. Resource Utilization Tracking: To analyze facility usage patterns, peak times, and overall resource efficiency and provide data-driven insights for optimization, a comprehensive resource utilization tracking system should be implemented.

6. Automated Notifications and Reminders: To enhance communication, automated notifications and reminders for event information, updates, and registration should be put into place. This will guarantee that accurate and timely information is shared.

7. Feedback systems: It is recommended to have feedback mechanisms that enable users to offer ratings, evaluations, and comments regarding their experiences with the facility. This will allow for ongoing development and quick resolution of any problems.

6.0 Scope of the project

The scope of the project encompasses the entire lifecycle of developing and implementing the Campus Resource Management System (CRMS) Event Management module. This includes:

1- **Requirements Gathering:** Collaborating with stakeholders to gather functional and technical requirements for the system.

2- **Design:** Creating the system architecture, user interface design, and database structure.

3- **Development:** Writing code, integrating features, and implementing security measures.

4- **Testing:** Conducting unit testing, integration testing, and user acceptance testing to ensure functionality and quality.

5- **Deployment:** Deploying the system in a production environment and configuring for live usage.

6- **Training and Documentation:** Providing training sessions for users and administrators and creating documentation for system usage and maintenance.

7- **Maintenance and Support:** Offering ongoing maintenance, updates, and technical support for the system post-deployment.

7.0 Project planning

7.1 human resource

Advisor: Rozilawati Binti Dollah

- Give useful advises to aid in correcting the errors in the project

Project manager: Austin See Yong Hui

- Manage the task
- Assign task to members
- Make correction to the task

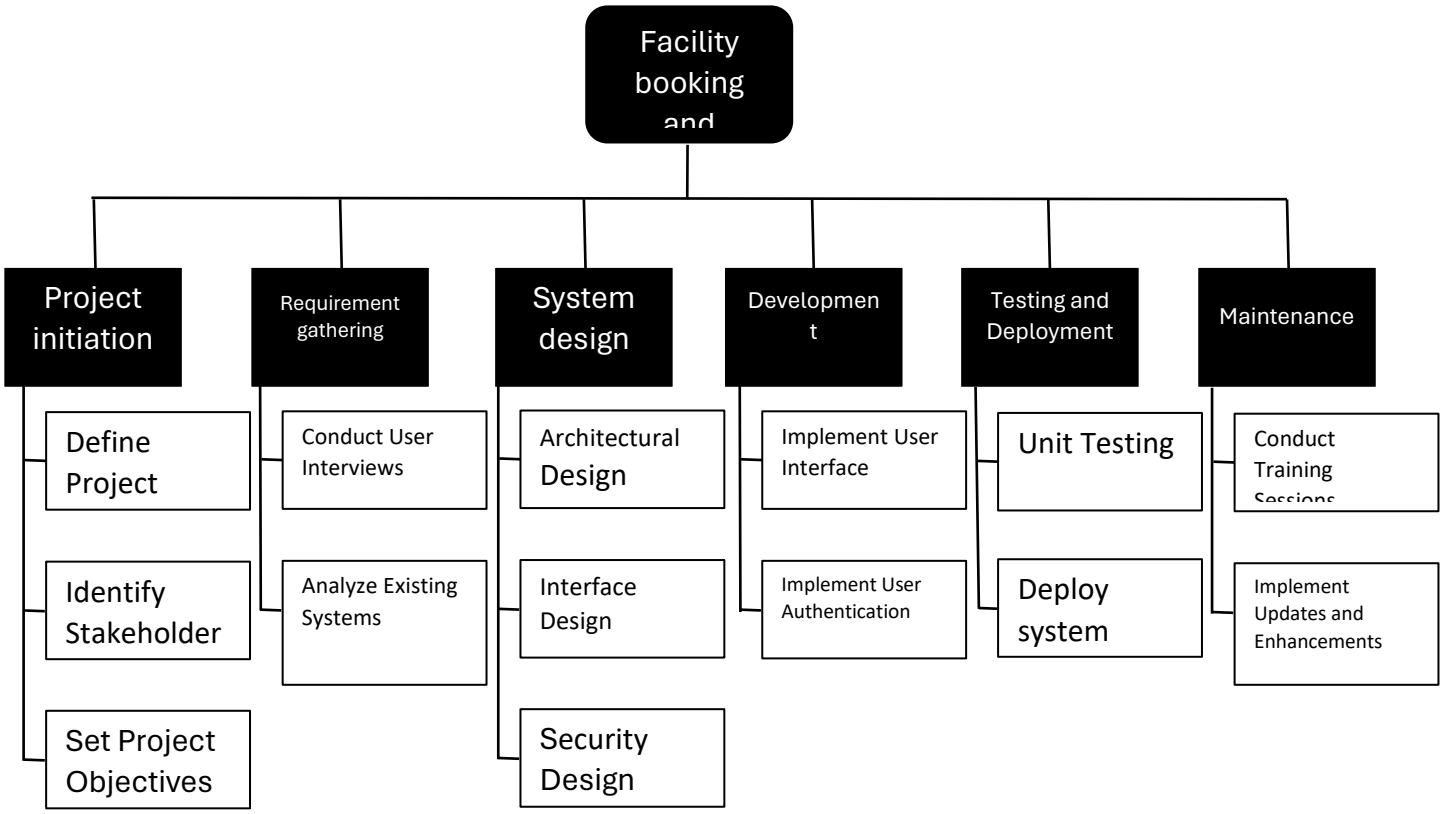
Designer: Faisal Abdulhakim Bakouban

- Design for the system interface
- Design prototype

Team advisor: Mohamed Adel Abdullah

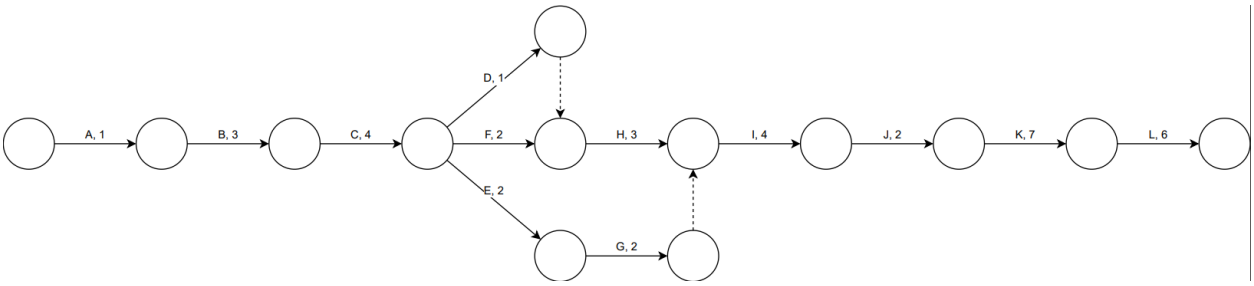
- Give advises for improvement
- Track the progress

7.2 WBS

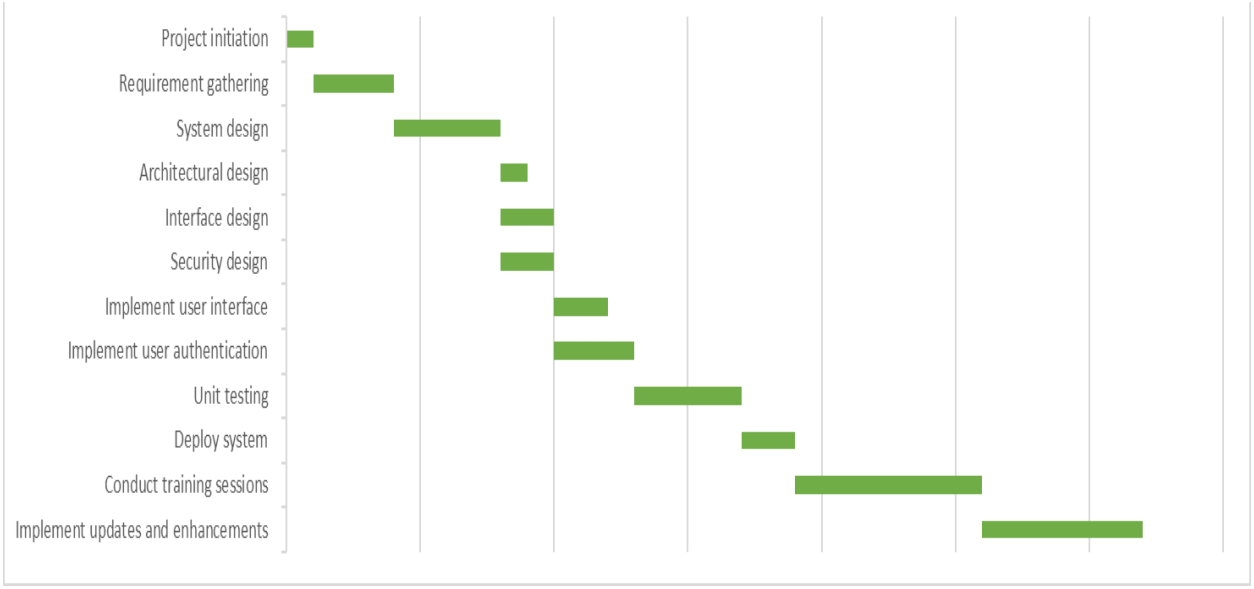


7.3 PERT chart

Activity	Description	Predecessor	Duration
A	Project initiation	-	1 day
B	Requirement gathering	A	3 days
C	System design	B	4days
D	Architectural design	C	1day
E	Interface design	C	2 days
F	Security design	C	2 days
G	Implement user interface	E	2 days
H	Implement user authentication	D, F	3 days
I	Unit testing	G, H	4 days
J	Deploy system	I	2 days
K	Conduct training sessions	J	7 days
L	Implement updates and enhancements	K	6 days



7.4 Gantt chart



8.0 Benefit and overall summary of the proposed system

For colleges and universities, the Campus Resource Management System (CRMS) has added an Event Management feature. This module replaces manual procedures with a centralized platform to streamline event planning and management. It provides advantages like increased productivity, more effective use of resources, smoother communication, easier registration for attendees, an intuitive interface, and extensive feedback mechanisms. Data security and accessibility are guaranteed by the module's role-based access control and user-friendly interface. By allowing users to rate, assess, and remark on their event experiences, the feedback systems promote ongoing development. All things considered, the CRMS Event Management module provides a streamlined and intuitive platform that enables stakeholders to easily plan, organize, and participate in events. By increasing productivity, the module adds to a lively campus community and enhances the university experience in general.