UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

SYSTEM ANALYSIS AND DESIGN

SECD2613 - 07

PROJECT PHASE – 02

2023/2024 - 2

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1.0 OVERVIEW OF THE PROJECT

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 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 Administrators often struggle with manual processes and outdated systems, leading to inefficiencies and errors.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.

3.0 PROPOSED SOLUTION

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 makes 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, ad 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.

4.0 INFORMATION GATHERING PROCESS

4.1 Method Used

4.1.1 Interactive Method:

- Interview
- Questionaries (Survey)

4.1.2 Unobtrusive Method:

- Observation

4.2 Summary from Method Used

4.2.1 Interview

Questions:

1. What is the problem you often face with the current system?
2. Do you think the current system reliable and convenient?
3. If we want to propose a new system, what improvement do you think we can add to our system?
4. How do you think about giving students access to booking facilities for their activities?
5. Do you find it easy to identify and communicate with students if there are problems, using the current system?

Content Of Interview:

Type of Question	Interview questions	
Opening	Interviewer:	Assalamualaiikum and good morning, Dr Shariffah. My name is Muhammad Fakhrul Razzi, a first-year student from faculty of computing. Before I start, I would like to thank you for your time with us today. Today I would like to interview you about the **current management system in the context of reservation system** in UTM.

	Interviewee:	Thank you Fakhrul for choosing me for your interview. I will try my best to provide all necessary information that might help you in your project.
Closed-ended	Interviewer:	Alright Dr, without wasting any more time, let's begin our interview with the first question, **do you think the current system is reliable and convenient?**
	Interviewee:	My answer is no, the current system is neither reliable nor convenient.
Open-ended	Interviewer:	I see, may I ask why you think so, or should I say, **what is the problem you often face with the current system?**
	Interviewee:	The primary issues with the current system that I face is difficulty in accessing available time slots. Other than that, there are frequent cases of double booking which can cause some headache. I personally has experienced this problem where the place that I booked, are also booked by another lecturer. I also face a problem when navigating through the current system's user interface due to it not being user friendly. Lastly, I want to mention that the current system often crashes during peak hour which can be frustrating and inefficient.
Open-ended	Interviewer:	Thank you for your insight about these problems, **do you find it easy to identify and communicate with students if there are problems, using the current system?**
	Interviewee:	No, identifying and communicating with students through the current system is challenging. The system lacks integrated communication tools, making it hard to reach out to students promptly when issues arise.

Open-ended	Interviewer:	From your description on the current system, we can conclude that the current system needs an upgrade or improvement, **if we want to propose a new system, what do you think an improvement we can add to our system?**
	Interviewee:	A proposed new system could include features such as a user-friendly interface, real-time booking updates, integration with calendar apps, automated notifications for booking confirmations and cancellations, and a more robust backend to handle peak loads. Additionally, implementing a feedback system where users can report issues directly could significantly enhance the overall user experience. Lastly, implementing a feature that allows direct messaging or notifications within the system could significantly improve communication efficiency.
Open-ended	Interviewer:	Alright Dr Shariffah. We all know that current system only allow lecturer to book a place, what do you think about giving students access to booking facilities for their activities or events?
	Interviewee:	Allowing students to access booking facilities can empower them to manage their activities more efficiently and independently. It can foster a sense of responsibility and provide them with the flexibility to organize their schedules. However, it is crucial to implement a system that prevents misuse and ensures fair access to all students, possibly through verification processes and usage limits.
Closing	Interviewer:	I think that is the last question for our interview session today. I would like to thank you again for your time and energy that you spent with us today.
	Interviewee:	Your most welcome, Fakhrul.

4.2.2 Questionnaire (Survey)

What is your role in UTM?

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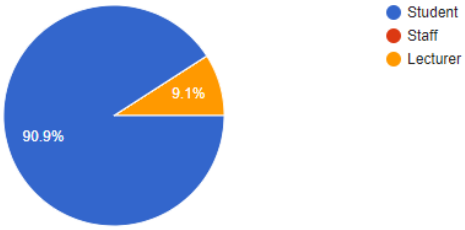
22 responses



Section Student

Have you ever used a booking system

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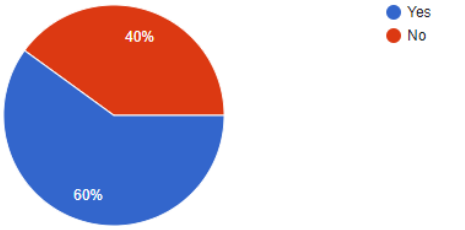

How often did you use booking system

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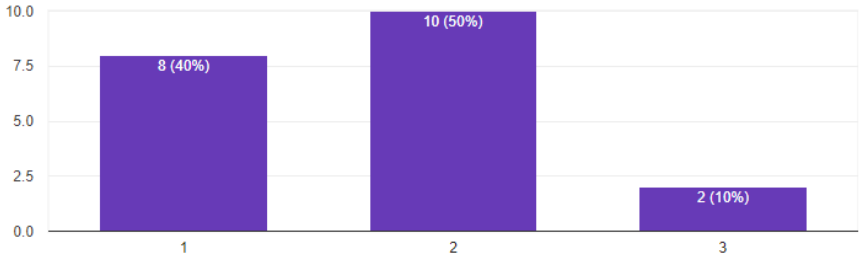

Your preferred method to book a booking facilities

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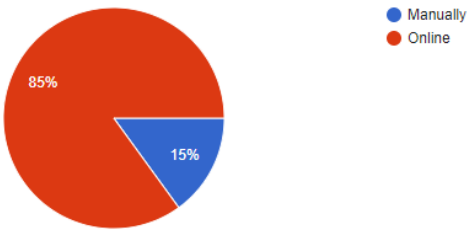
20 responses



Do students require access to the rooms on campus for facilities?

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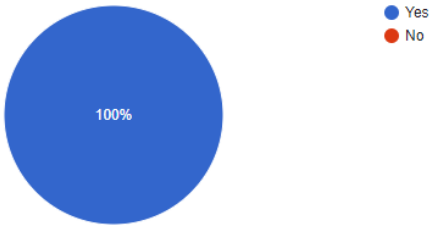
20 responses



Does the reservation system facilitate your daily requirements?

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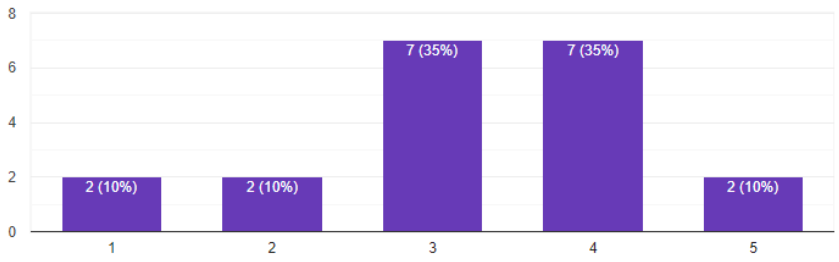
20 responses



Section Lecturer

Have you ever used a booking system

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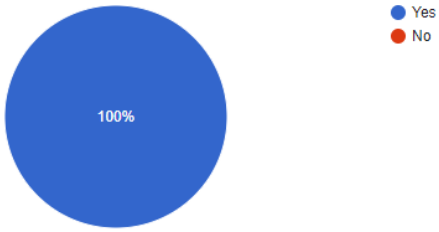
2 responses



How often did you use booking system

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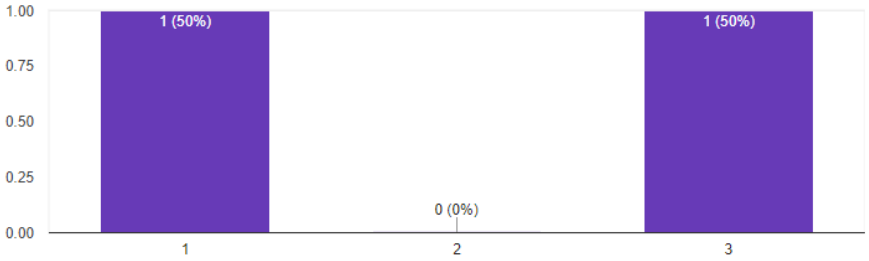

Your preferred method to book a booking facilities

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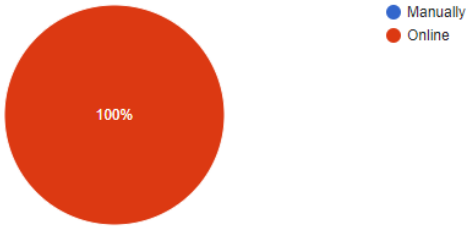

Rate the current booking facility system

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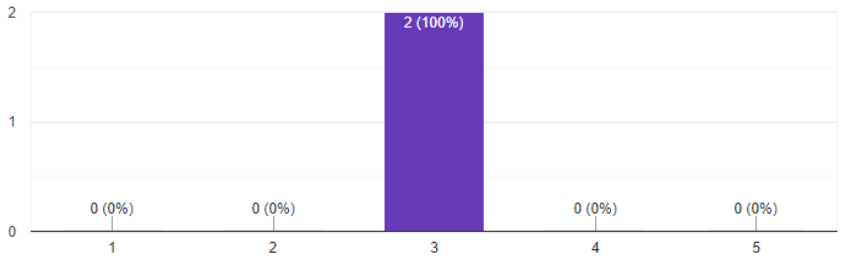
2 responses



Does the reservation system facilitate your daily requirements?

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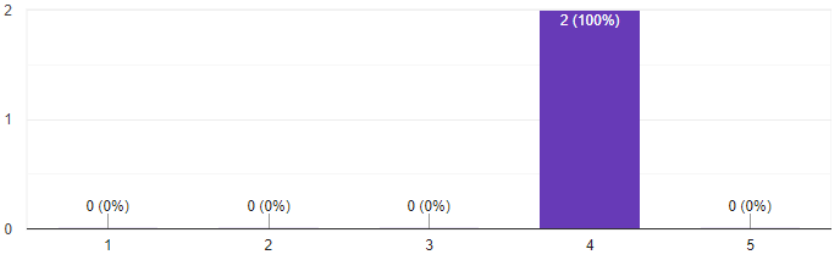
2 responses



Do you agree to allow student to make a reservation on the campus facilities room?

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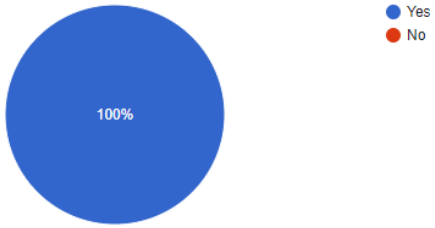
2 responses



Thank you

4.2.3 Observation

The observation method that was used is Structured Observation of Environment where we observed the surroundings of the system's management/administration office. Based on our organized observation, we find that the data records are well kept on a shelf. The arrangement of office furniture such as desks and chair are done in a way that supports better communication between team members. The attire of team members is formal in order to maintain the formal work environment. The team members also use computers as their main working device. From this observation, we can conclude that the team member of UTM's facility reservation system can manage the reservation data efficiently and have a good Human Computer Interaction.

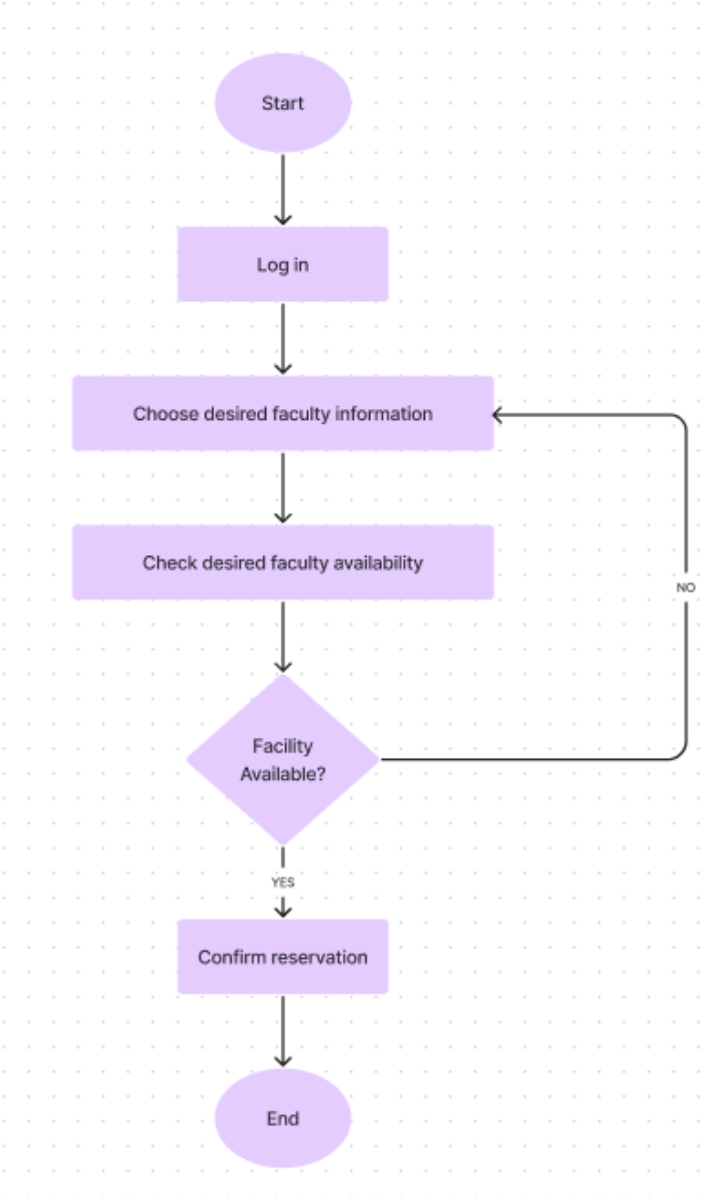
5.0 REQUIREMENT ANALYSIS

5.1 Current Business Process

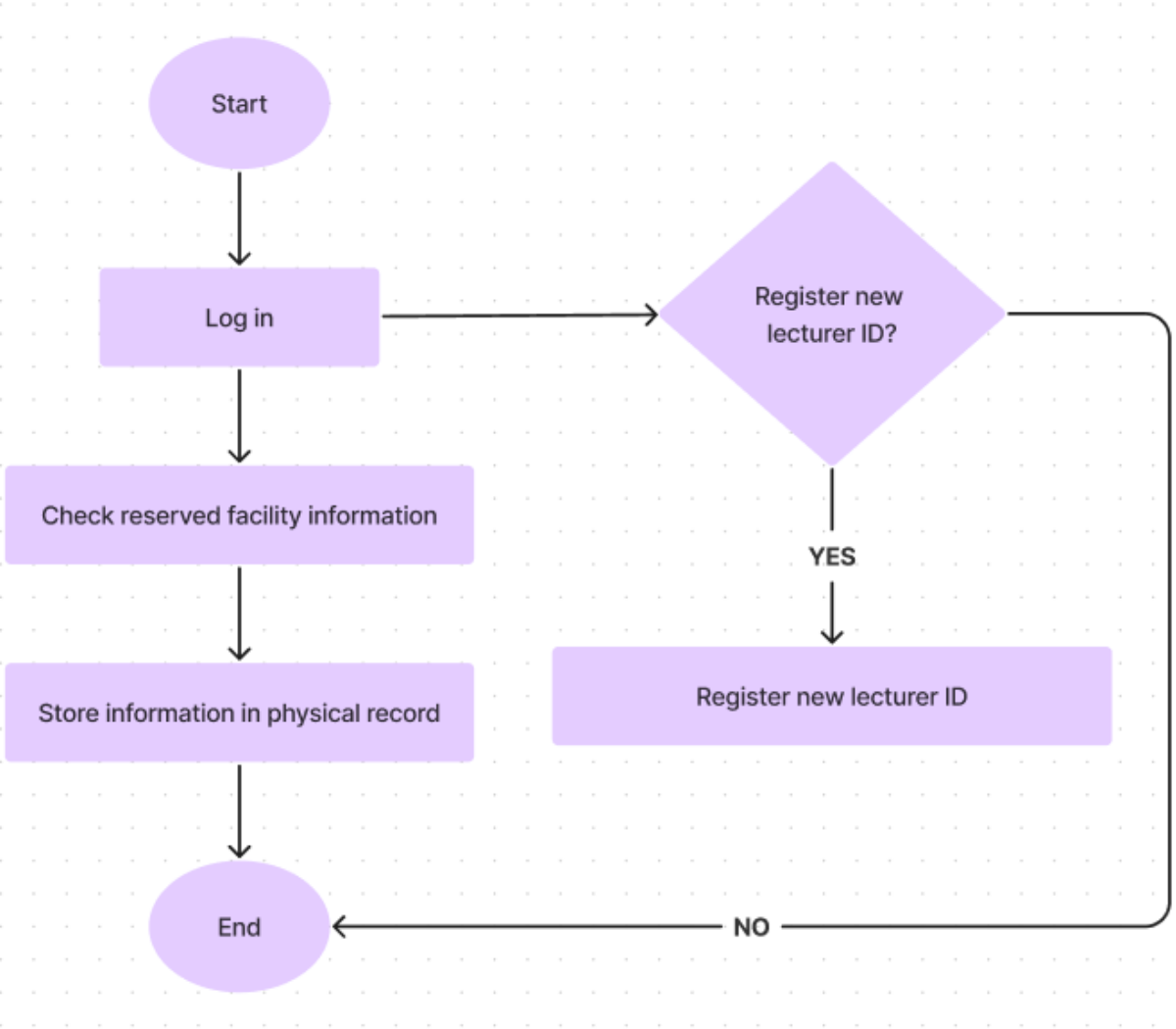
The business process and workflow of online facility reservation system in UTM:

1. Lecturer

- Log in to the system using given lecturer ID
- Choose the desired facility's information (time, location, availability)
- Check the availability of the desired facility
- Reserve the facility if available



2. Management/Administration
   - Log in to the system using administration ID
   - Register an ID for new lecturer if needed
   - Check the reserved facility information
   - Storing the information in physical record



5.2 Functional Requirement

1. Lecturer

Inputs:

- Lecturer ID
- Facility Reservation Information

Processes:

- Log In
- Reserving Facilities
- Facility Availability Management

Outputs:

- Reserved Faculty Information

2. Administrator

Inputs:

- Administrator ID
- Lecturer ID Registration

Processes:

- Log In
- Checking Reserved Facilities
- Register Lecturer ID

Outputs:

- Physical Record of Reserved Facilities

5.3 Non-functional Requirement

1.Lecturer

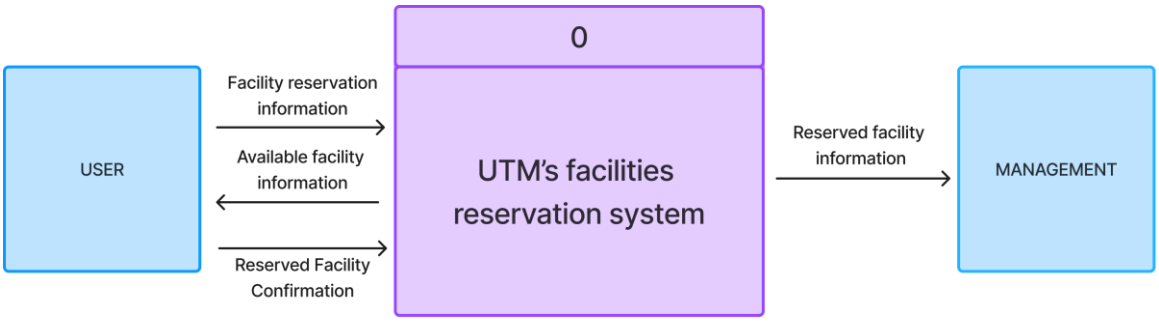
The lecturer may enter their ID into the system. From there, they may input the location and time they desire for a facility and can check which facility is available. If it is available, they may confirm their decision and the facility will be reserved. This information will be sent to the administrators.

2. Administrator

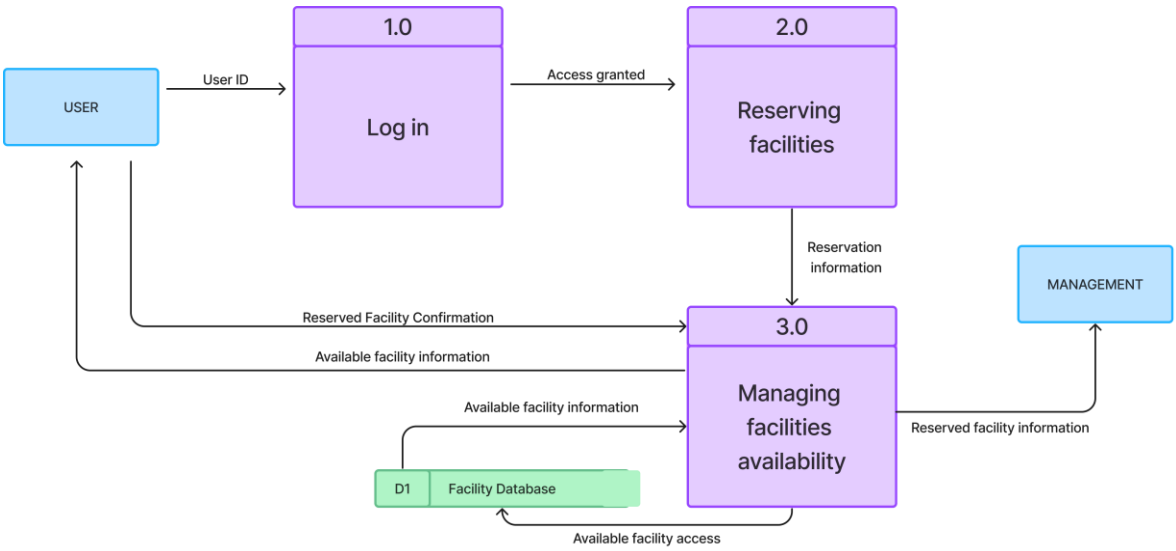
The administrator may enter their ID into the system. From there, they can perform two tasks. They may register a new lecturer ID into the system or check on which facilities are reserved. They can then make a physical record of which facilities are reserved.

5.4 Logical DFD AS-IS System

5.4.1 Context Diagram

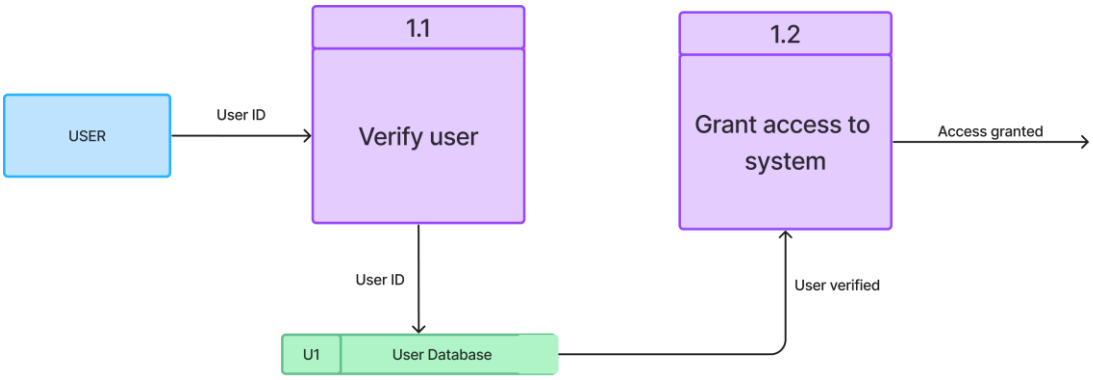


5.4.2 Diagram 0

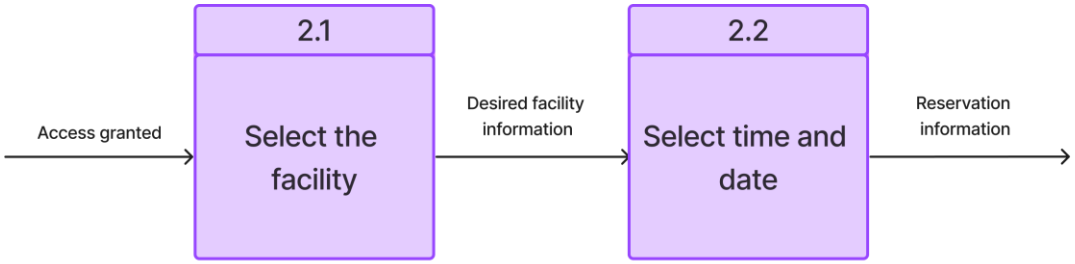


5.4.3 Child Diagram

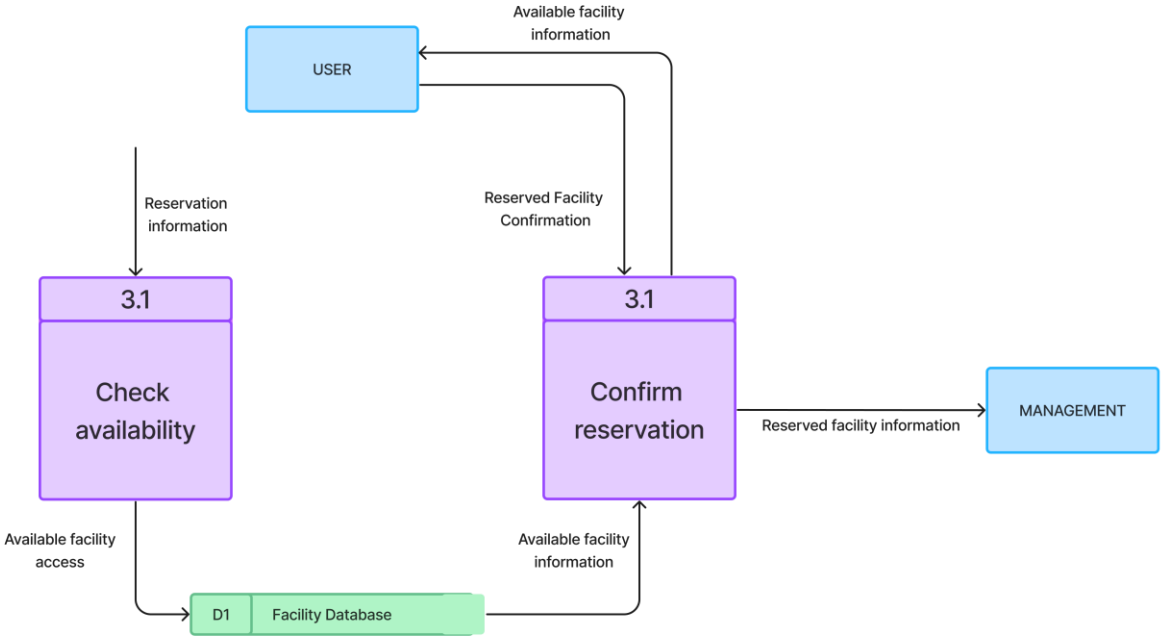
5.4.3.1 Process 1.0



5.4.3.2 Process 2.0



5.4.3.3 Process 3.0



6.0 SUMMARY OF REQUIREMENT ANALYSIS PROCESS

In this project, the key stakeholders are users of the booking system, including lecturers and students. We gather information about current booking systems, their feedback, and their suggestions for improvement so we can add to our system. We gather information and feedback using interactive and unobtrusive methods. In the interactive method, we use surveys and do interviews with relevant stakeholders, while in unobtrusive method, we make an observation about the current system. From this requirement analysis process, we understand the workflow and the weakness of the current system which will give us a clear goal on how to improve the current system. Thus, problems like the long process of booking campus facilities, students hard to managing an event, outdated facility with poor system management can be avoided.