



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

SYSTEM ANALYSIS AND DESIGN

SECD2613 - 07

PROJECT PHASE – 03

2023/2024 - 2

LECTURER'S NAME: DR. ROZILAWATI

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

TABLE OF CONTENTS

1.0 OVERVIEW OF THE PROJECT	3
2.0 PROBLEM STATEMENT	4
3.0 PROPOSED SOLUTION	5
4.0 CURRENT BUSINESS PROCESS.....	6
5.0 LOGICAL DFD AS-IS SYSTEM	8
5.1 Context Diagram.....	8
5.2 Diagram 0.....	8
5.3 Child Diagram.....	8
6.0 SYSTEM ANALYSIS AND SPECIFICATION	10
6.1 Logical DFD TO-BE system (Context Diagram, Diagram 0, Child)	10
6.1.1 Context Diagram	10
6.1.2 Diagram Level 0	10
6.1.3 Child Diagram.....	11
6.2 Process Specification	14
7.0 PHYSICAL SYSTEM DESIGN.....	19
7.1 Physical DFD TO-BE system (Partitioning, CRUD Matrix, Event Response Table, Structure Chart, System Architecture)	19
7.1.1 Diagram 0.....	19
7.1.2 Child Diagram.....	19
7.1.3 Partitioning DFD.....	22
7.1.4 CRUD Matrix.....	23
7.1.5 Event Response Table.....	23
7.1.6 Structured Chart	25
7.1.7 System Architecture	26
8.0 SYSTEM WIREFRAME (Input Design, Output Design)	27
9.0 SUMMARY OF PROPOSED SYSTEM.....	32

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.

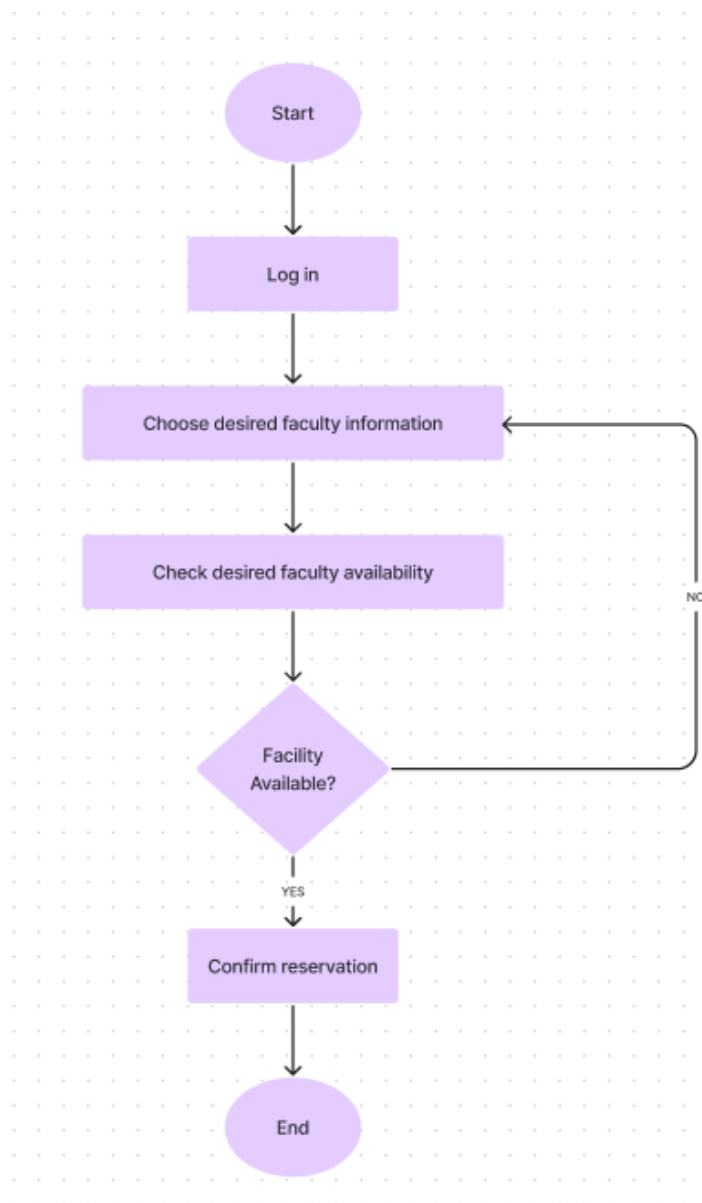
Communication and Notification system will help administrators and students on keeping up to date with the latest news in the faculty. This system allows communication among stakeholders through email, messaging, and notifications. This system will make sure that students are notified with important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

4.0 CURRENT BUSINESS PROCESS

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

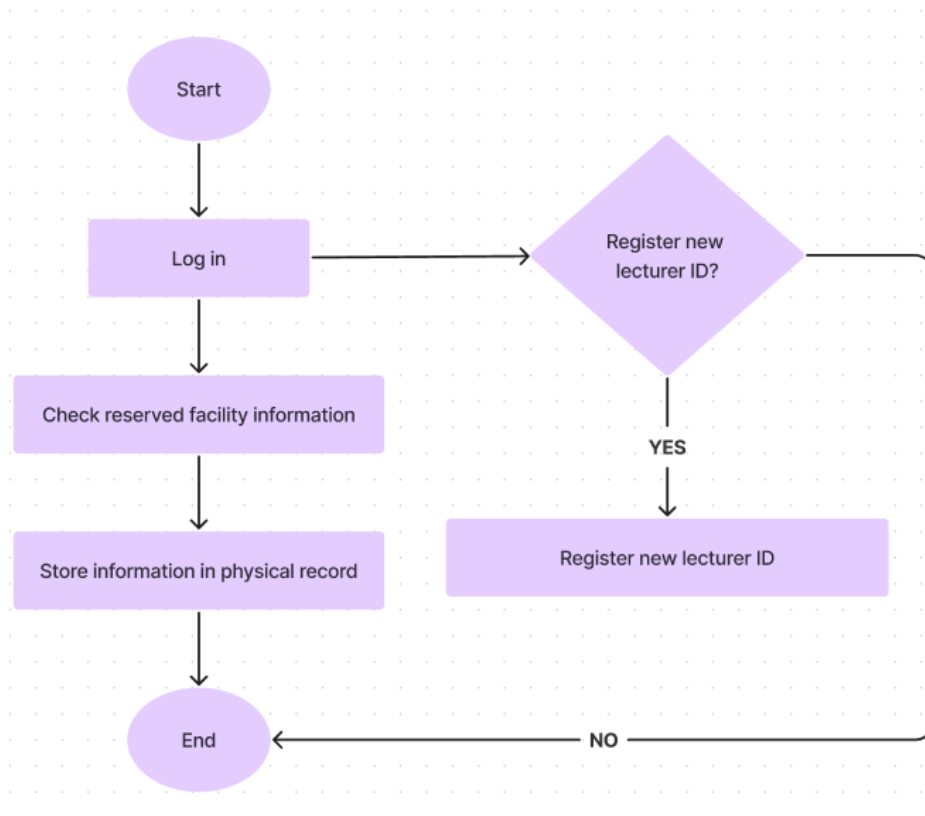
1. Lecturer

- 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



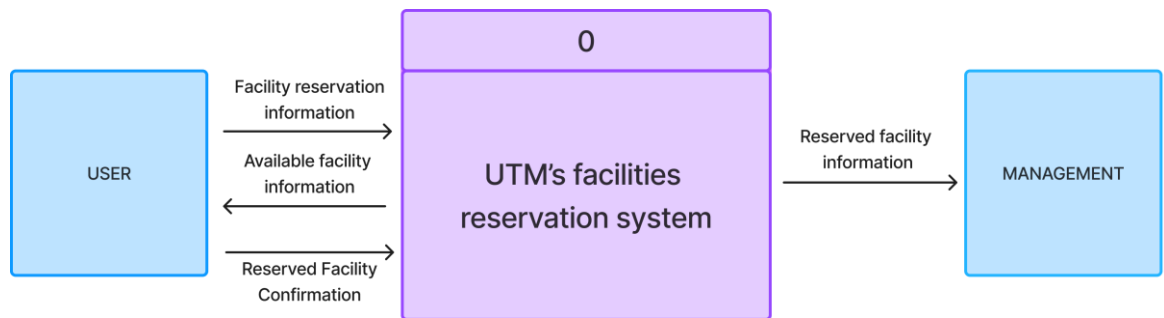
2. Management/Administration

- 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

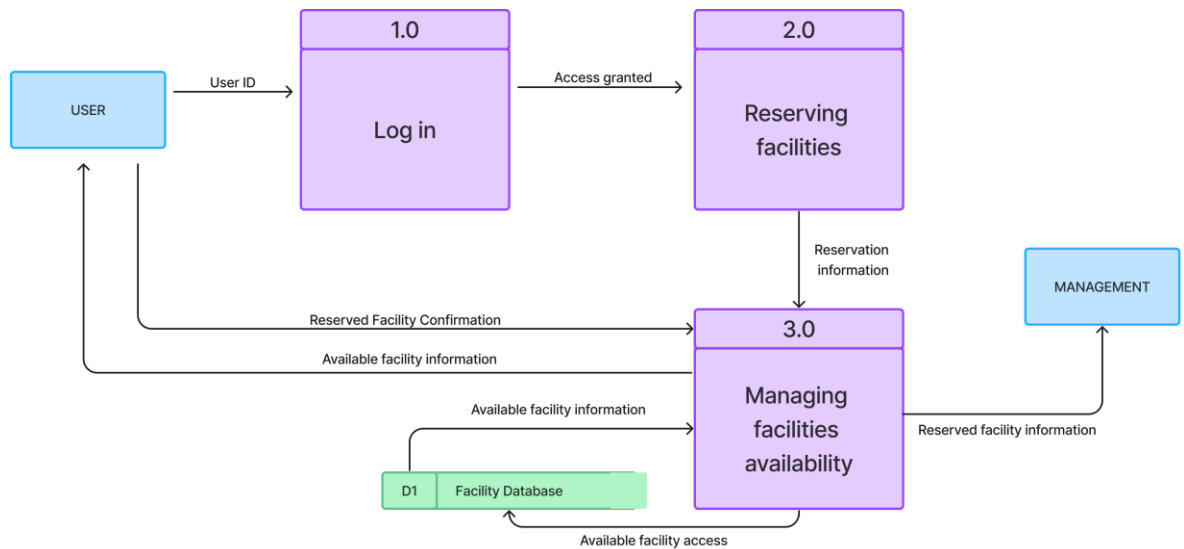


5.0 LOGICAL DFD AS-IS SYSTEM

5.1 Context Diagram

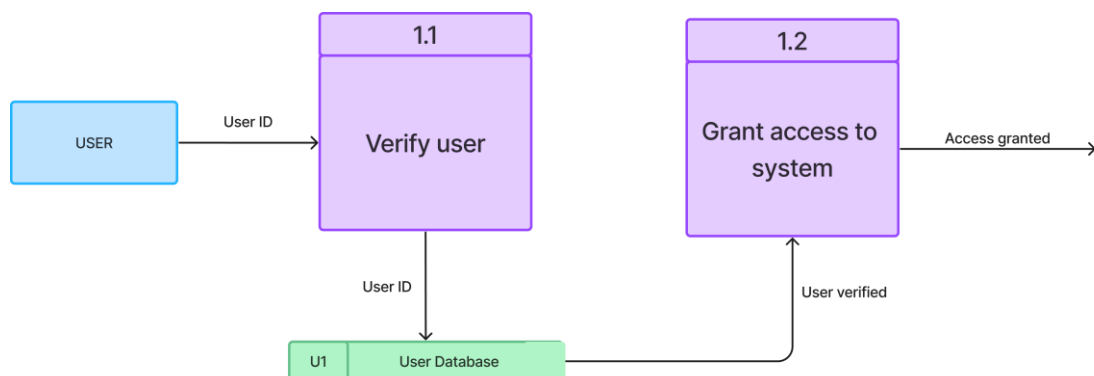


5.2 Diagram 0

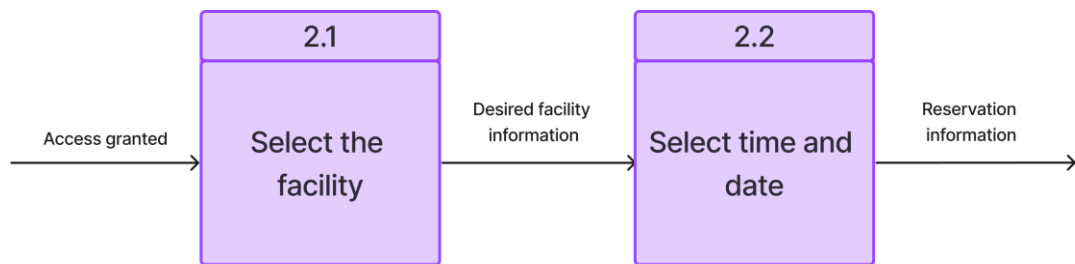


5.3 Child Diagram

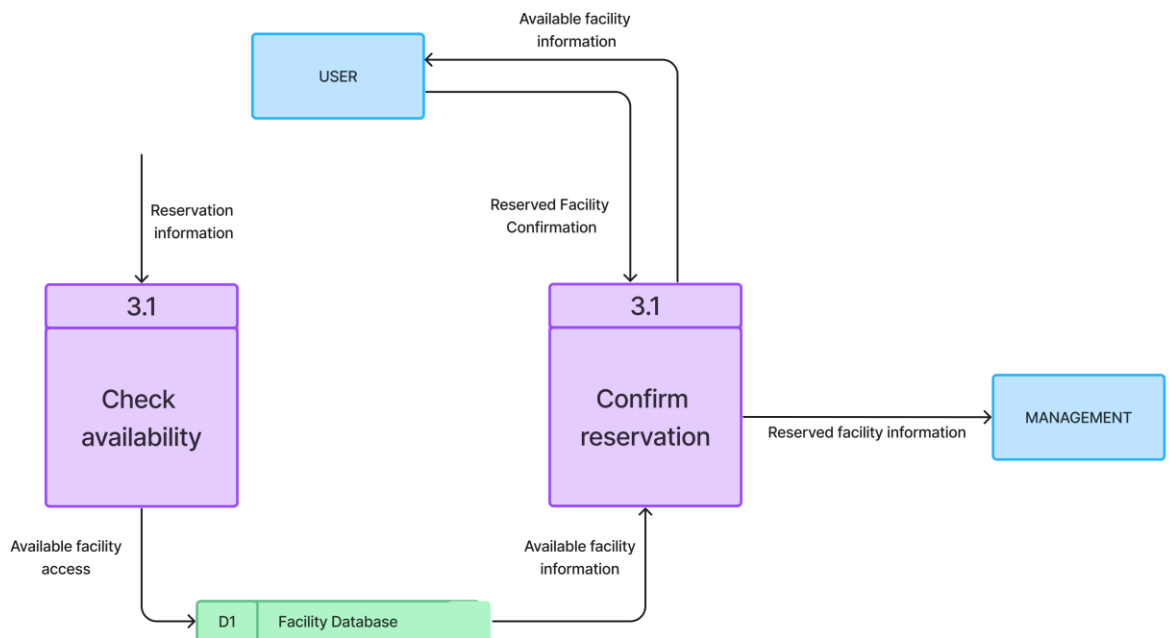
5.3.1 Process 1.0



5.3.2 Process 2.0



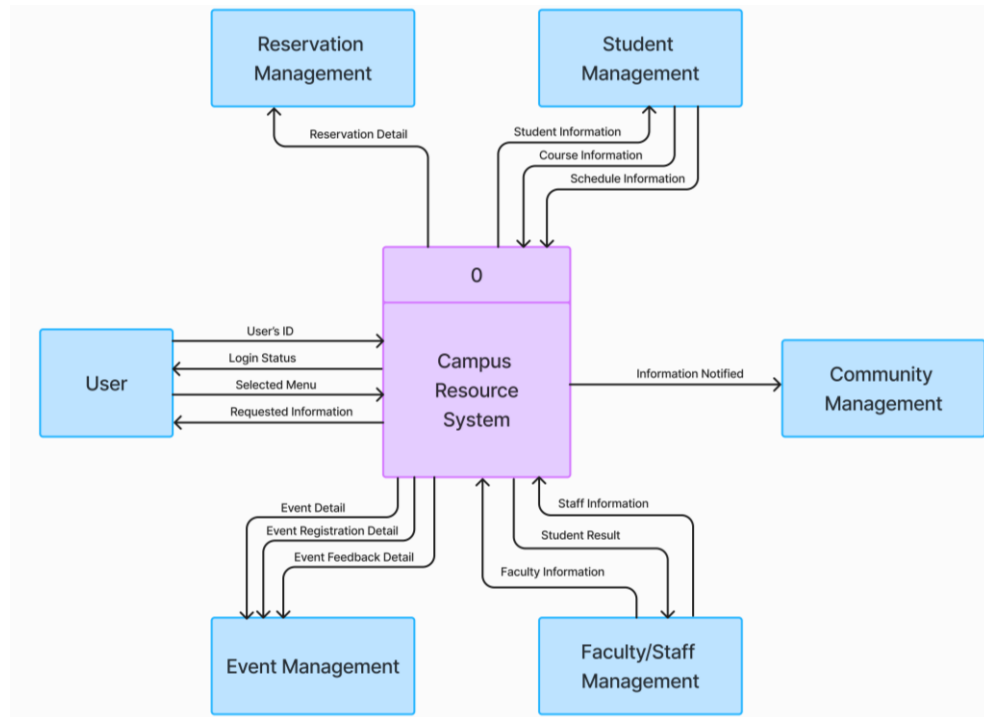
5.3.3 Process 3.0



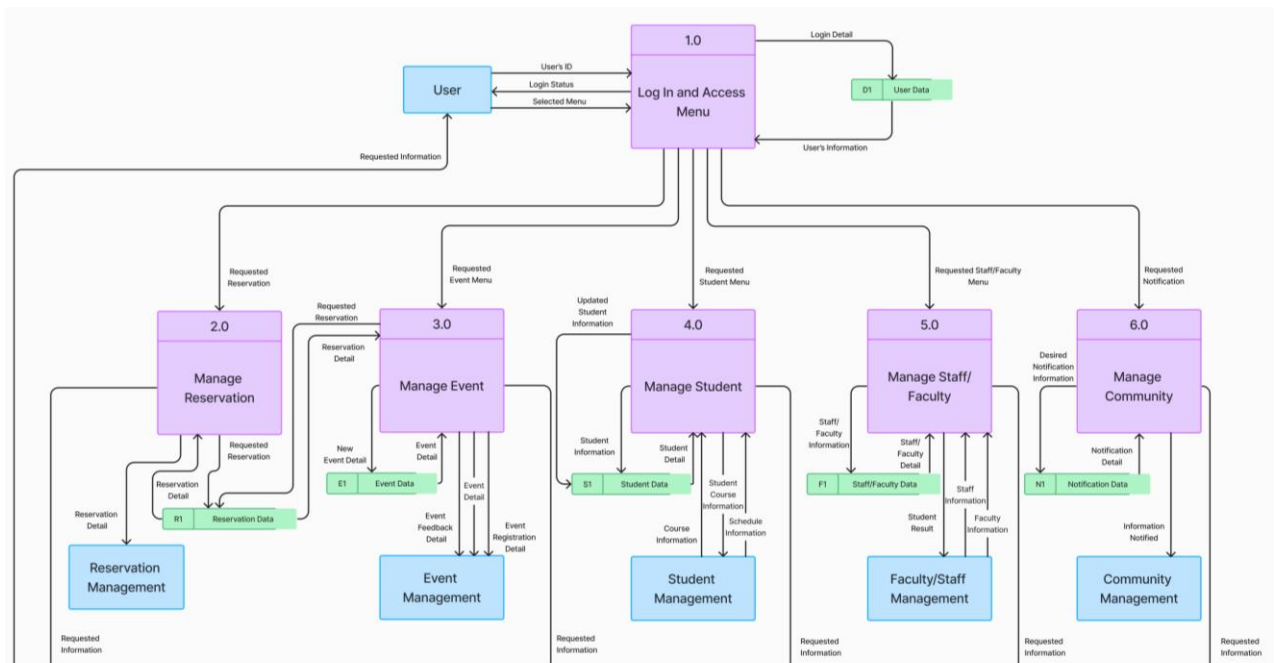
6.0 SYSTEM ANALYSIS AND SPECIFICATION

6.1 Logical DFD TO-BE system (Context Diagram, Diagram 0, Child)

6.1.1 Context Diagram

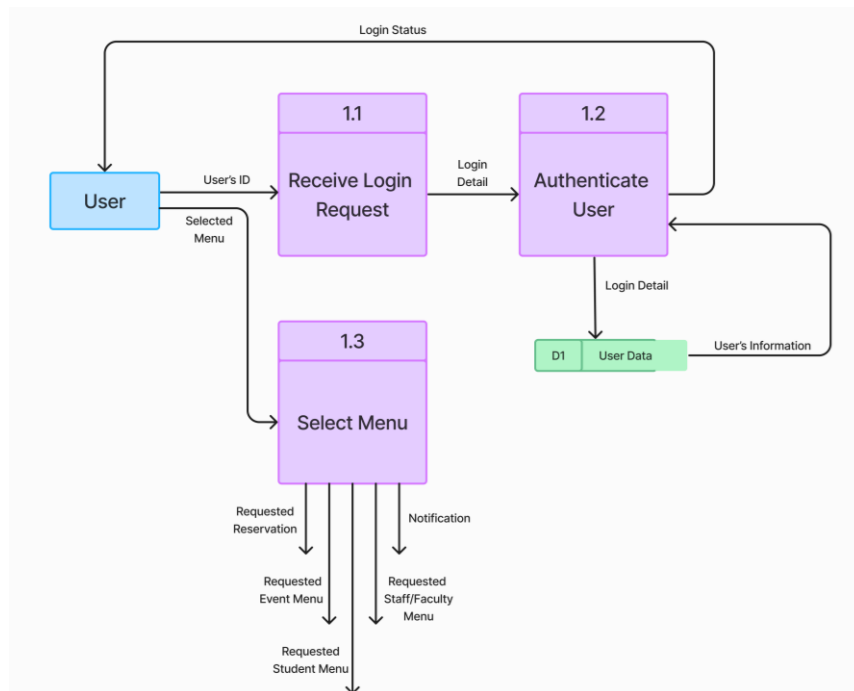


6.1.2 Diagram Level 0

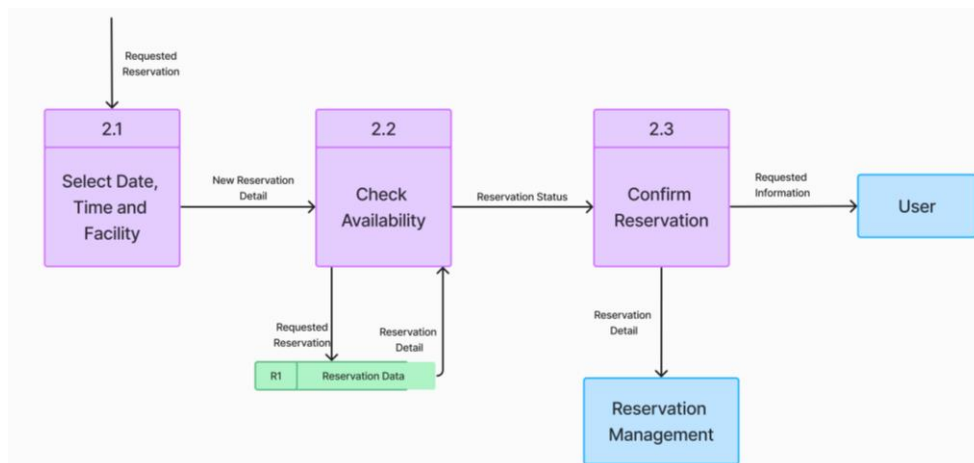


6.1.3 Child Diagram

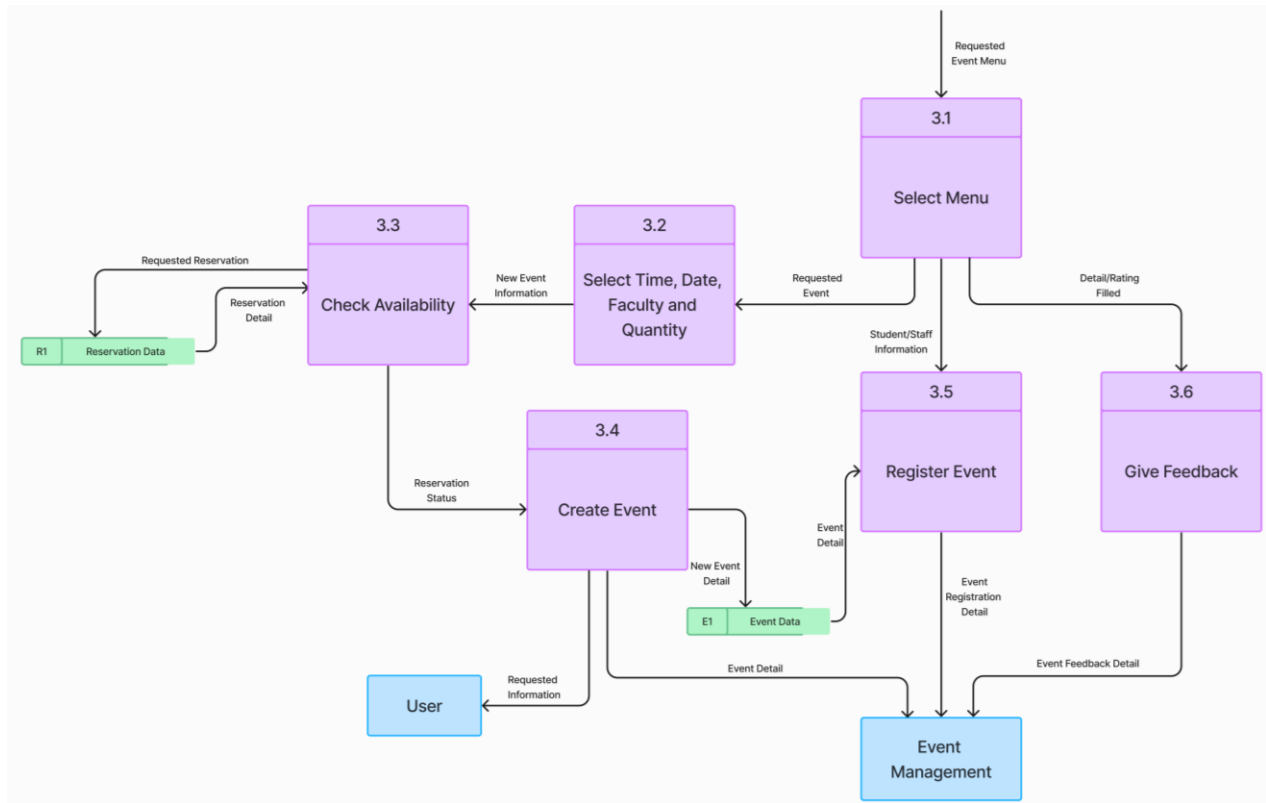
6.1.3.1 Process 1



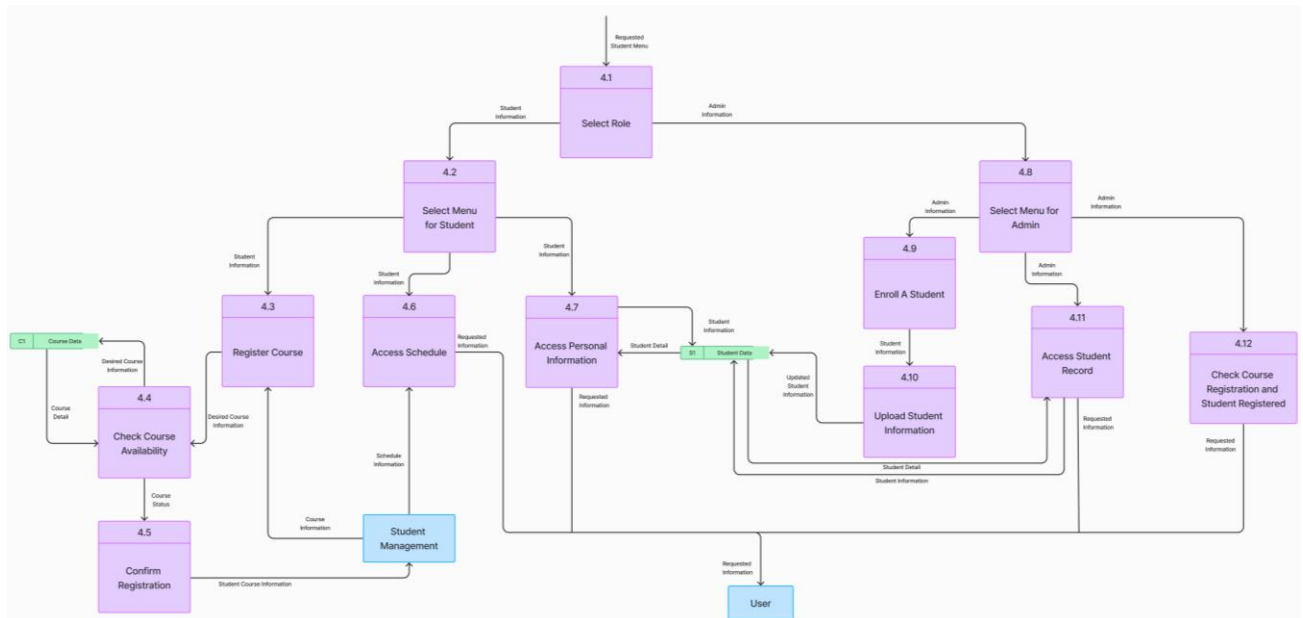
6.1.3.2 Process 2



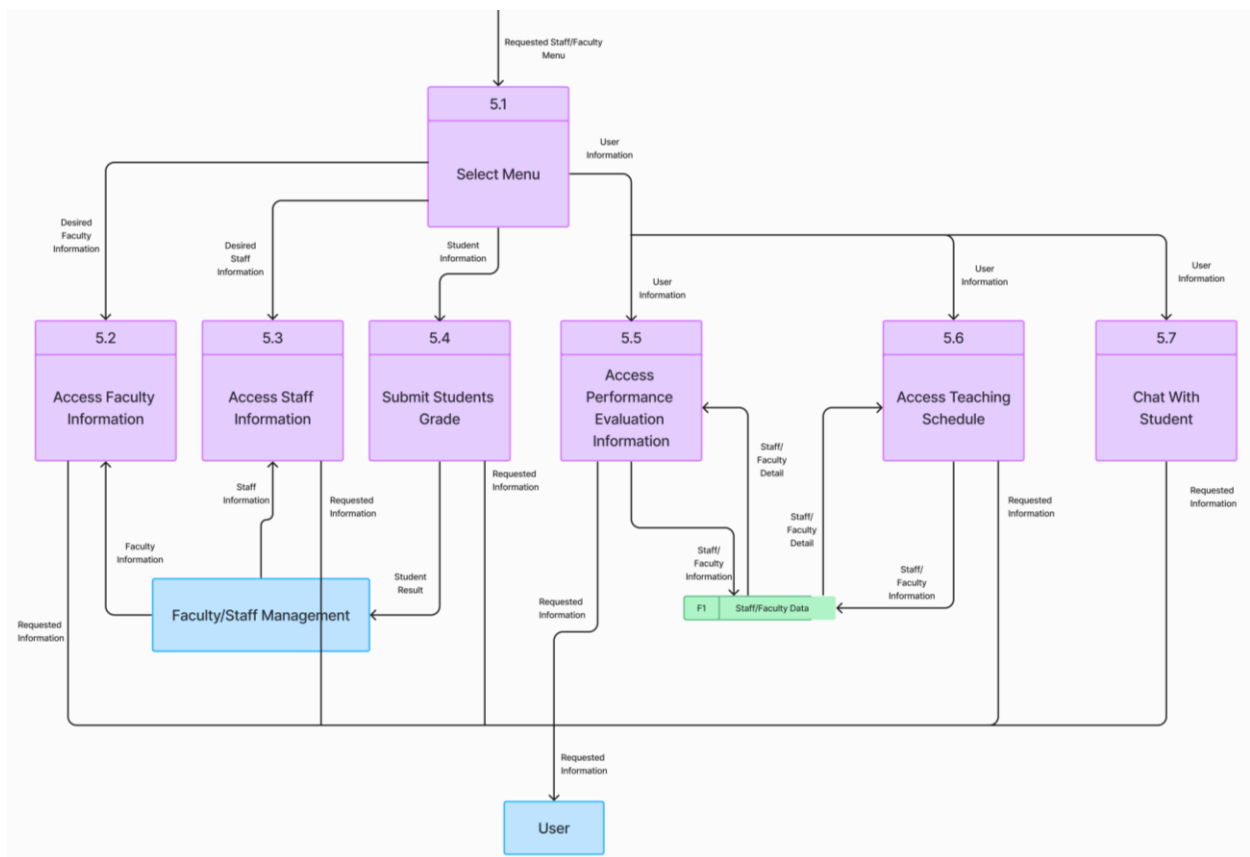
6.1.3.3 Process 3



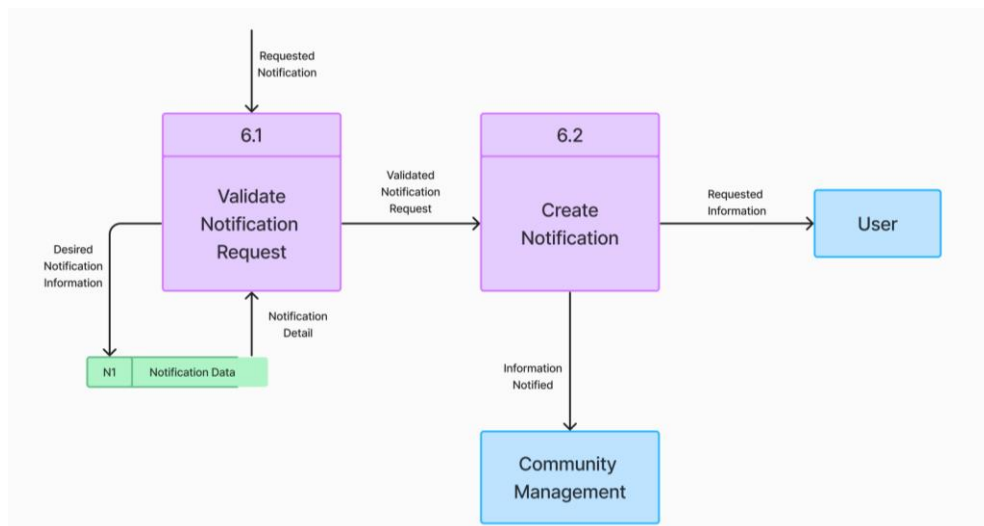
6.1.3.4 Process 4



6.1.3.5 Process 5



6.1.3.6 Process 6



6.2 Process Specification

1. Login In and Access Menu
 - 1.1 Authentication Log In
 - Input: User ID
 - Process: Receive Log in Request from User
 - Output: Login Detail
 - 1.2 Authentication User
 - Input: Login Detail
 - Process: Check the validity of user login details
 - Output: Login Status (valid/invalid), User's Information
 - 1.3 Access System Menu
 - Input: User's Information
 - Process: Display menu options based on the user's role
 - Output: Selected Menu
2. Manage Reservation
 - 2.1 Select Date, Time and Facility
 - Input: Requested Reservation
 - Process: Process to compile the details of reservation
 - Output: New Reservation Detail
 - 2.2 Check Availability
 - Input: Reservation Details
 - Process: Check the availability of selected date, time and facilities
 - Output: Reservation Status, Reservation Detail
 - 2.3 Confirm Reservation
 - Input: Reservation Status, Reservation Detail
 - Process: Display the reservation status, details and wait for user confirmation
 - Output: Confirmed Reservation Detail
3. Manage Event
 - 3.1 Select Menu
 - Input: Requested Event Menu (User)
 - Process: Receive Selected Menu Request from User
 - Output: New Event Organize Detail
 - 3.2 Select Time, Date, Faculty, and Quantity
 - Input: Event Organize Detail
 - Process: Process to compile the details of event organize
 - Output: Reservation Status, Reservation Detail
 - 3.3 Check Availability

- Input: Reservation Details
- Process: Check the availability of selected date, time and facilities
- Output: Reservation Status, Reservation Detail

3.4 Create Event

- Input: Reservation Status
- Process: Update the New Event Organize
- Output: New Event Detail, Event Detail

3.5 Register Event

- Input: Event Detail, Student/Staff Information
- Process: Record the Registration
- Output: Event Registration Detail

3.6 Give Feedback

- Input: New Event Detail, Detail/Rating Filled (User)
- Process: Record the Feedback Detail
- Output: Event Feedback Detail

4. Manage Student

4.1 Select Role

- Input: Requested Role (User)
- Process: Receive Selected Role Request from User
- Output: Admin Information, Student Information

4.2 Select Menu for Student

- Input: Student Information
- Process: Receive Selected Menu Request from User
- Output: Student Information

4.3 Register Course

- Input: Student Information
- Process: Receive Selected Course Request from User
- Output: Desired Course Information

4.4 Check Course Availability

- Input: Desired Course
- Process: Check the availability of selected Course
- Output: Course Status

4.5 Confirm Registration

- Input: Course Status
- Process: Update Student Course Information
- Output: Student Course Information

4.6 Access Schedule

- Input: Student Information
- Process: Receive Student Course Information
- Output: Schedule Information

4.7 Access Personal Information

- Input: Student Information
- Process: Retrieve Student Course Information
- Output: Student Detail

4.8 Select Menu for Administration

- Input: Admin Information
- Process: Receive Selected Menu Request from User
- Output: Admin Information

4.9 Enroll a student

- Input: Admin Information
- Process: Update Student Information
- Output: Updated Student Information

4.10 Upload Student Information

- Input: Admin Information
- Process: Update Student Information
- Output: Student Detail, Student Information

4.11 Access Student Record

- Input: Student Information
- Process: Receive Requested Student Information from User
- Output: Requested Information

4.12 Check Course Registration and Student Registered

- Input: Admin Information
- Process: Check Student Information and Course Registration
- Output: Requested Information

5. Manage Staff/Faculty

5.1 Select Menu

- Input: User Information, Requested Staff/Faculty Menu
- Process: Receive Selected Menu Request from User
- Output: Desired Faculty Information, Desired Staff Information, Student Information, Requested Information

5.2 Access Faculty Information

- Input: Desired Faculty Information
- Process: Provide Access to Faculty Information
- Output: Faculty Information
- Operations: Retrieve faculty information from the Faculty/Staff Management database.

5.3 Access Staff Information

- Inputs: Desired Staff Information
- Process: Provides access to staff information.
- Outputs: Staff Information
- Operations: Retrieve staff information from the Faculty/Staff Management database.

5.4 Submit Students Grade

- Inputs: Student Information
- Process: Receive submission of student grades.
- Outputs: Student Result
- Operations: Submit and store student grades into the system.

5.5 Access Performance Evaluation Information

- Inputs: User Information, Requested Information
- Process: Provides access to performance evaluation information
- Outputs: Staff/Faculty Detail
- Operations: Retrieve performance evaluation information from the Staff/Faculty Data repository

5.6 Access Teaching Schedule

- Inputs: User Information, Requested Information
- Process: Provides access to teaching schedules
- Outputs: Staff/Faculty Detail
- Operations: Retrieve teaching schedules from the Staff/Faculty Data repository

5.7 Chat with Student

- Input: User Information, Requested Information
- Process: Enables chatting with a student
- Output: Requested Information
- Operations: Facilitate communication between the user and the student

6. Manage Community

6.1 Validate Notification Request

- Input: Requested Notification, Notification Detail
- Process: Validate Notification Request receive from user
- Output: Validated Notification Request, Desired Notification Information
- Operations:
 - Check the requested notification details against the existing notification data.
 - Validate the request based on predefined criteria.
 - Retrieve desired notification information from the Notification Data repository if needed

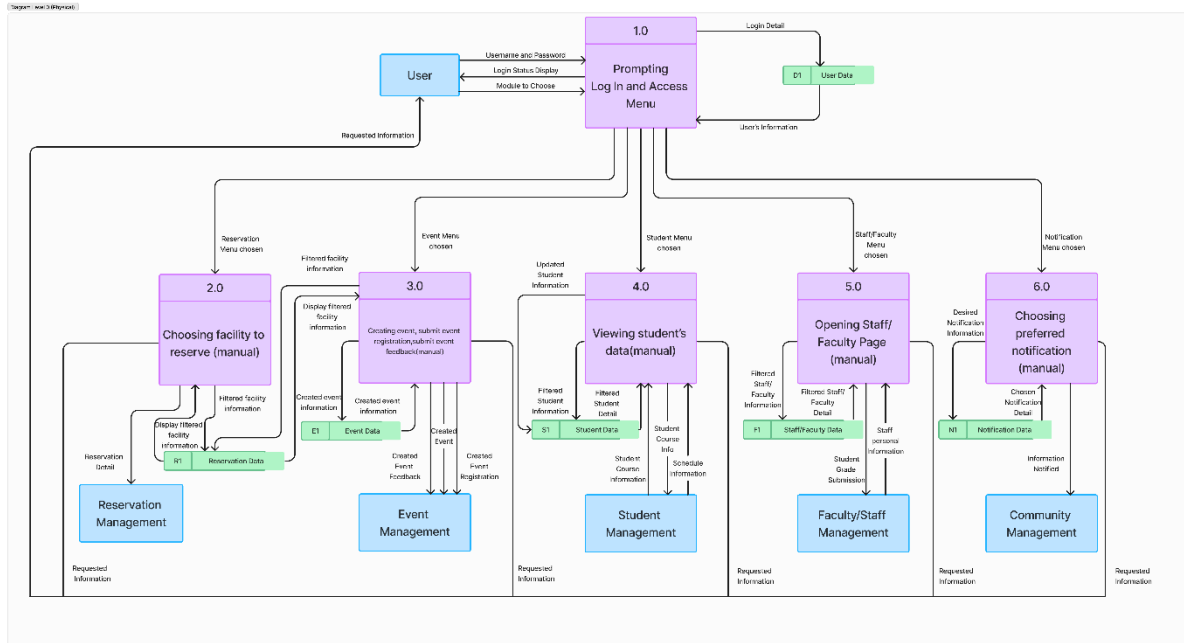
6.2 Create Notification

- Input: Validated Notification Request
- Process: Creates a notification based on the validated notification request.
- Output: Information Notified, Requested Information
- Operations:
 - Generate the notification based on the validated request.
 - Send the notification information to the Community Management.
 - Provide requested information back to the user.

7.0 PHYSICAL SYSTEM DESIGN

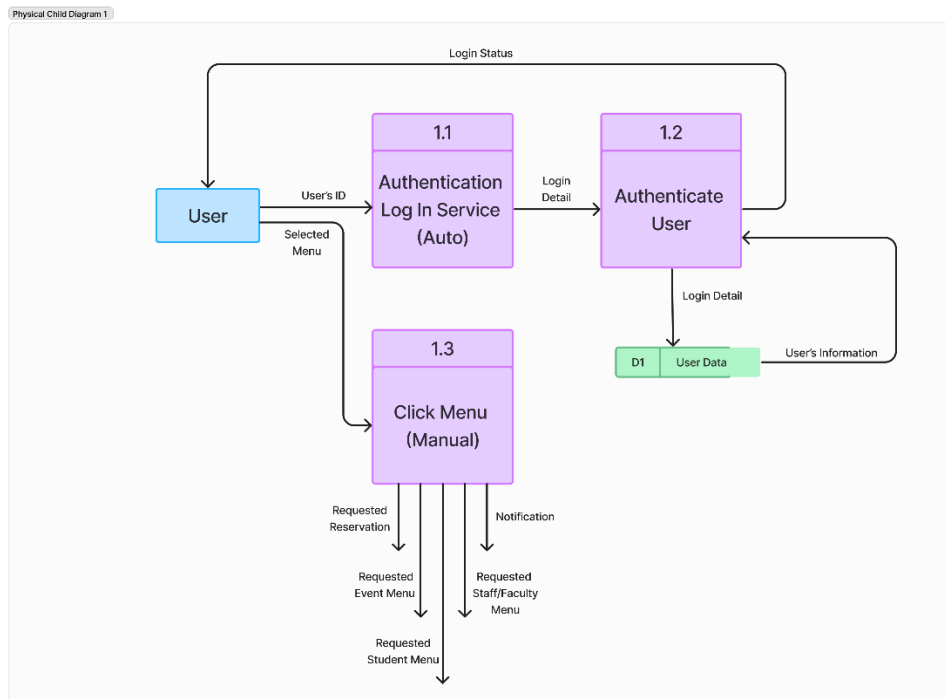
7.1 Physical DFD TO-BE system (Partitioning, CRUD Matrix, Event Response Table, Structure Chart, System Architecture)

7.1.1 Diagram 0

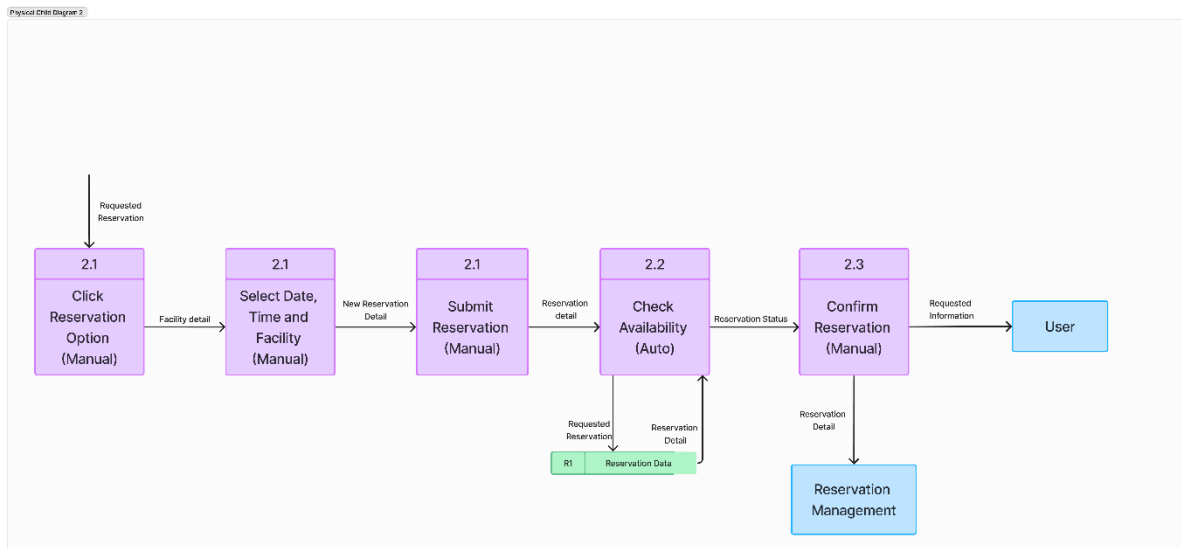


7.1.2 Child Diagram

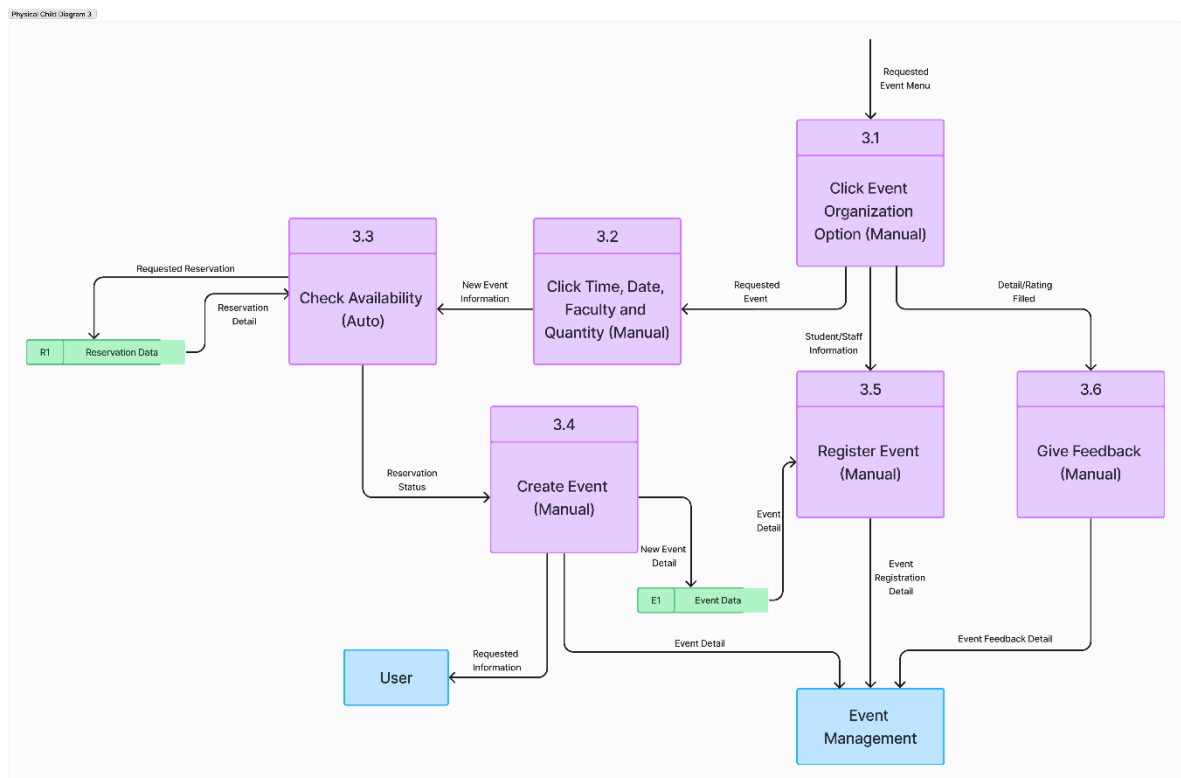
7.1.2.1 Process 1



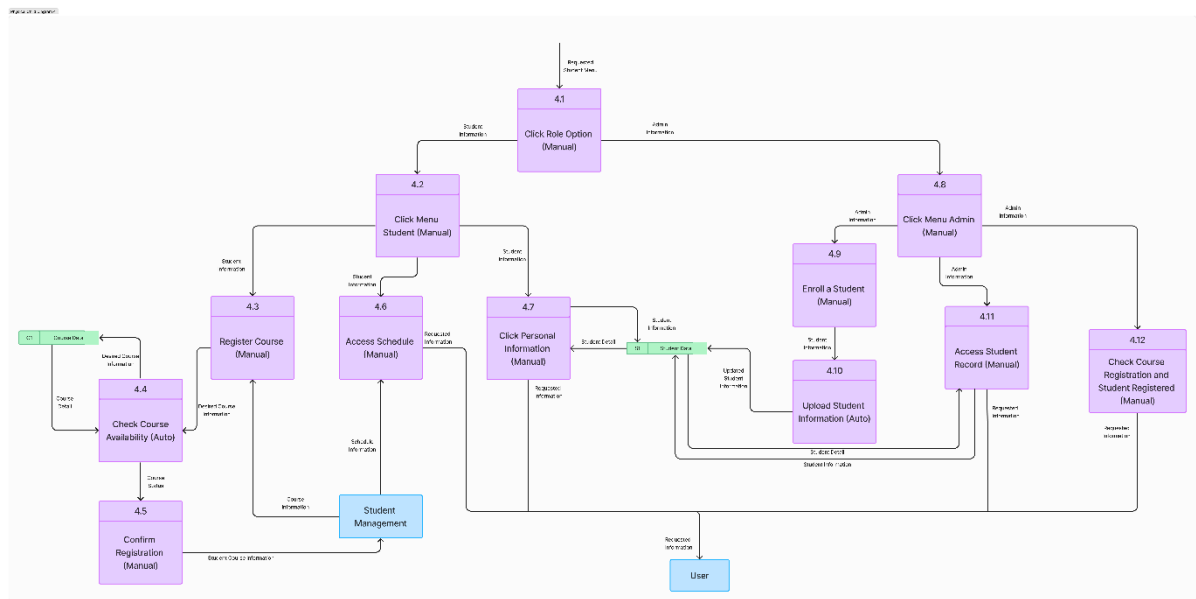
7.1.2.2 Process 2



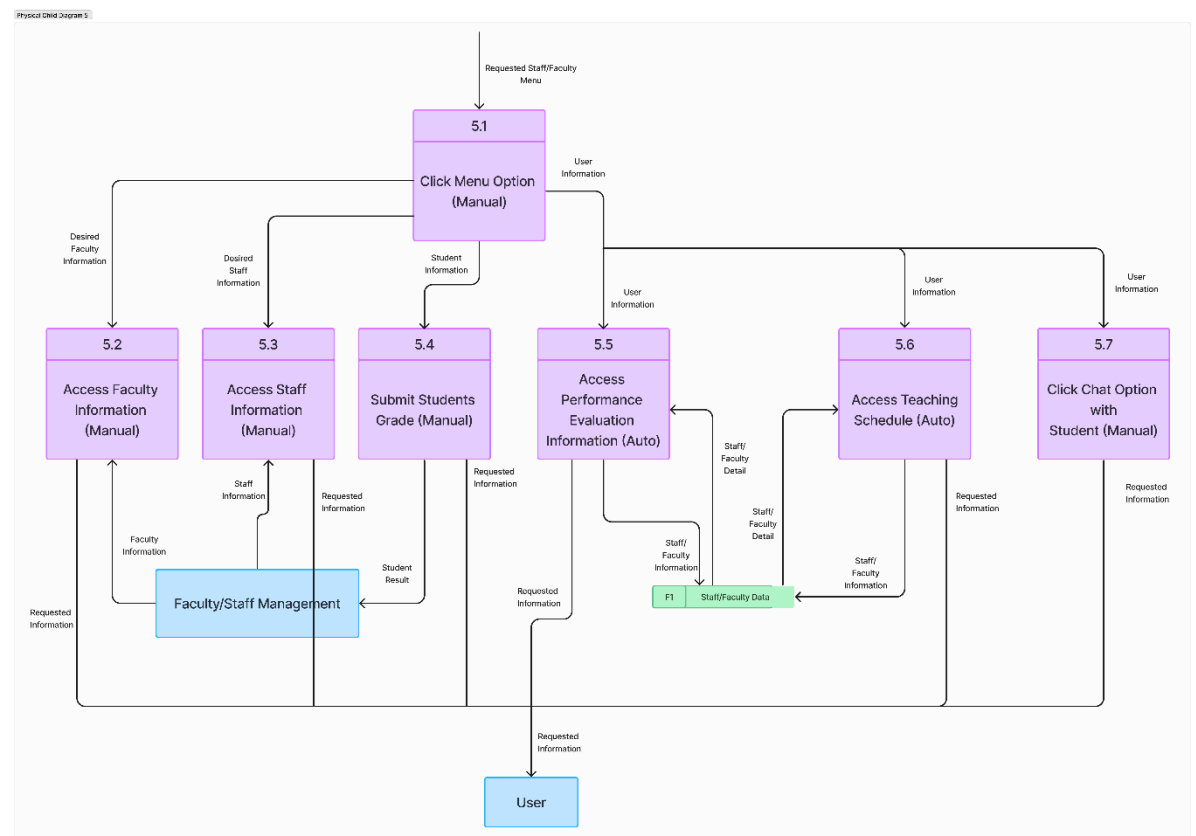
7.1.2.3 Process 3



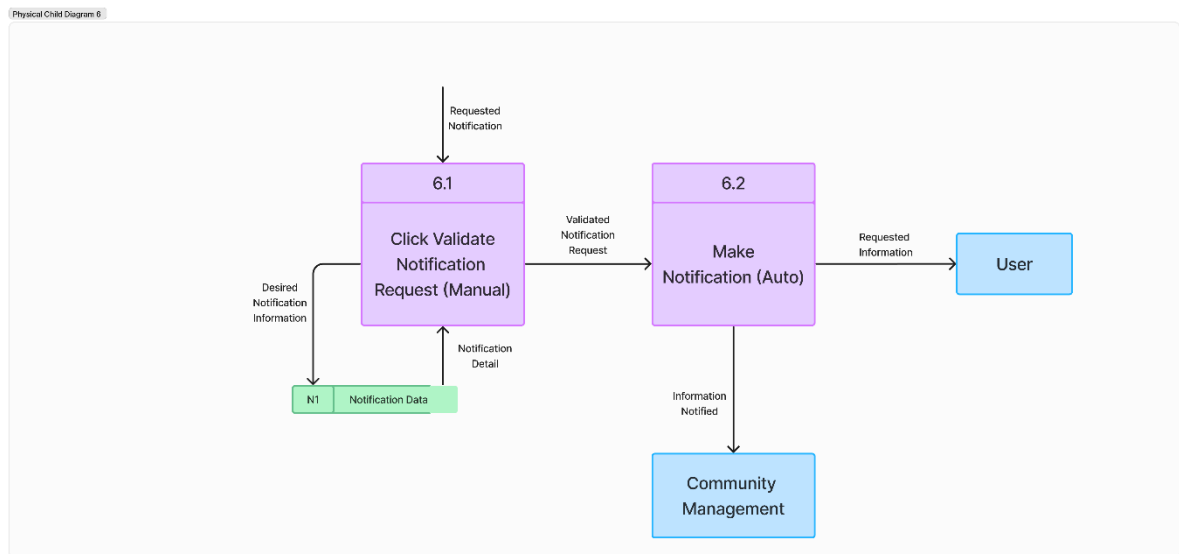
7.1.2.4 Process 4



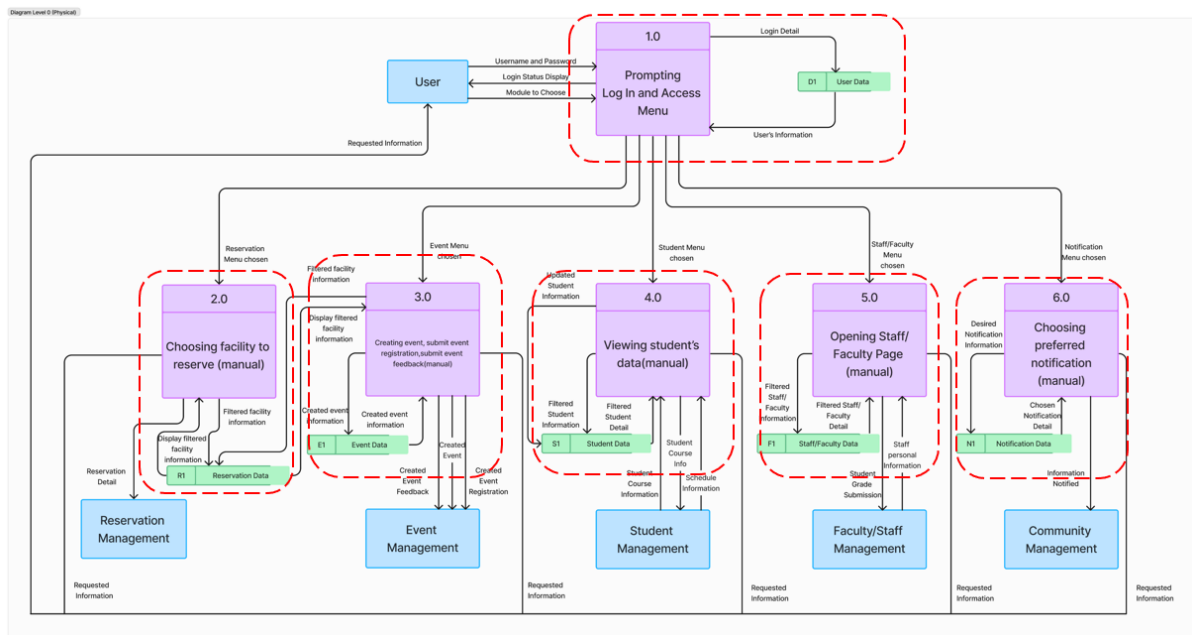
7.1.2.5 Process 5



7.1.2.6 Process 6



7.1.3 Partitioning DFD



7.1.4 CRUD Matrix

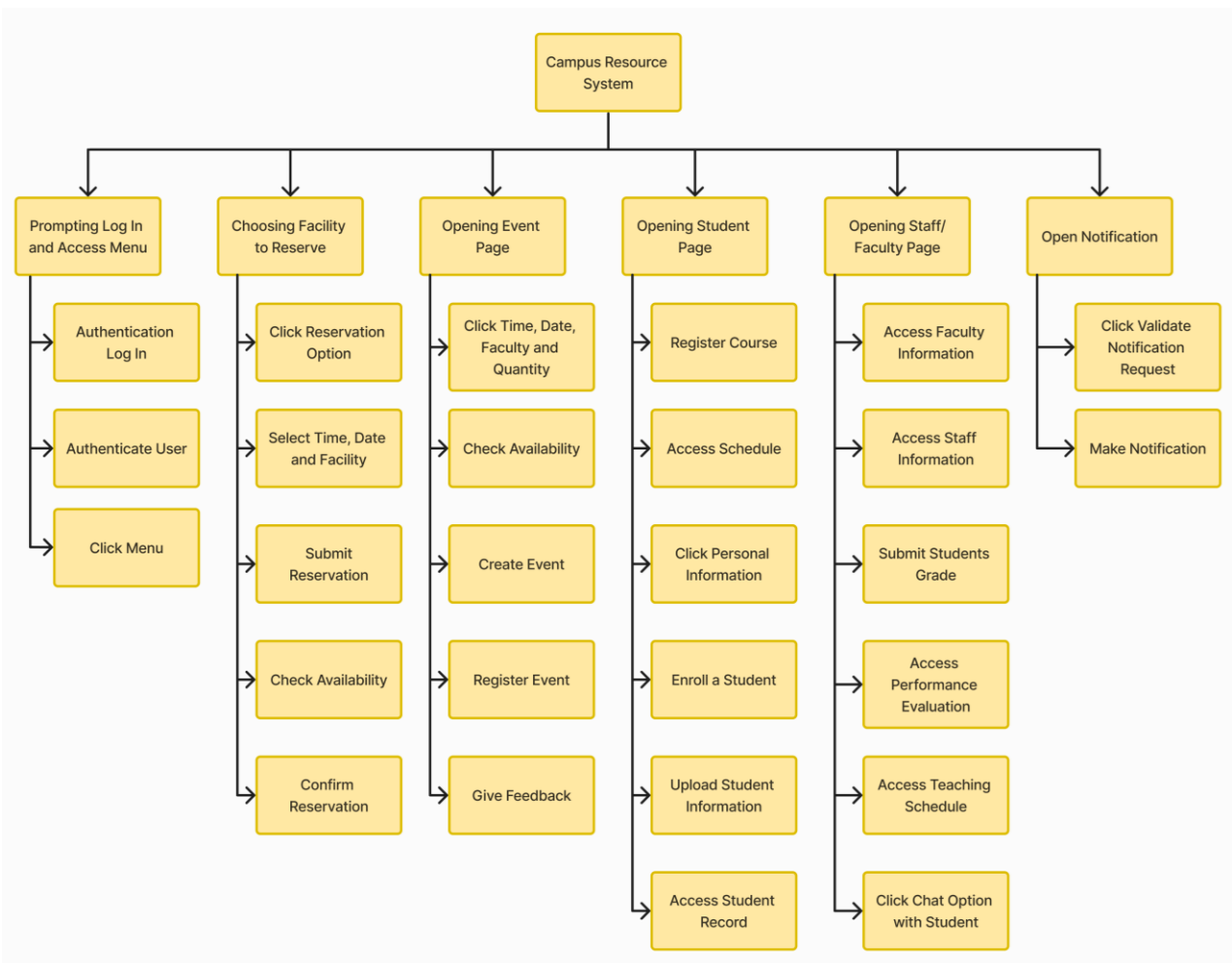
Functionality / Entity	Create	Read	Update	Delete
User Data (D1)		X	X	
Reservation Data (R1)	X	X	X	X
Event Data (E1)	X	X	X	X
Student Data (S1)	X	X	X	X
Staff/Faculty Data (F1)	X	X	X	X
Notification Data (N1)	X	X	X	X

7.1.5 Event Response Table

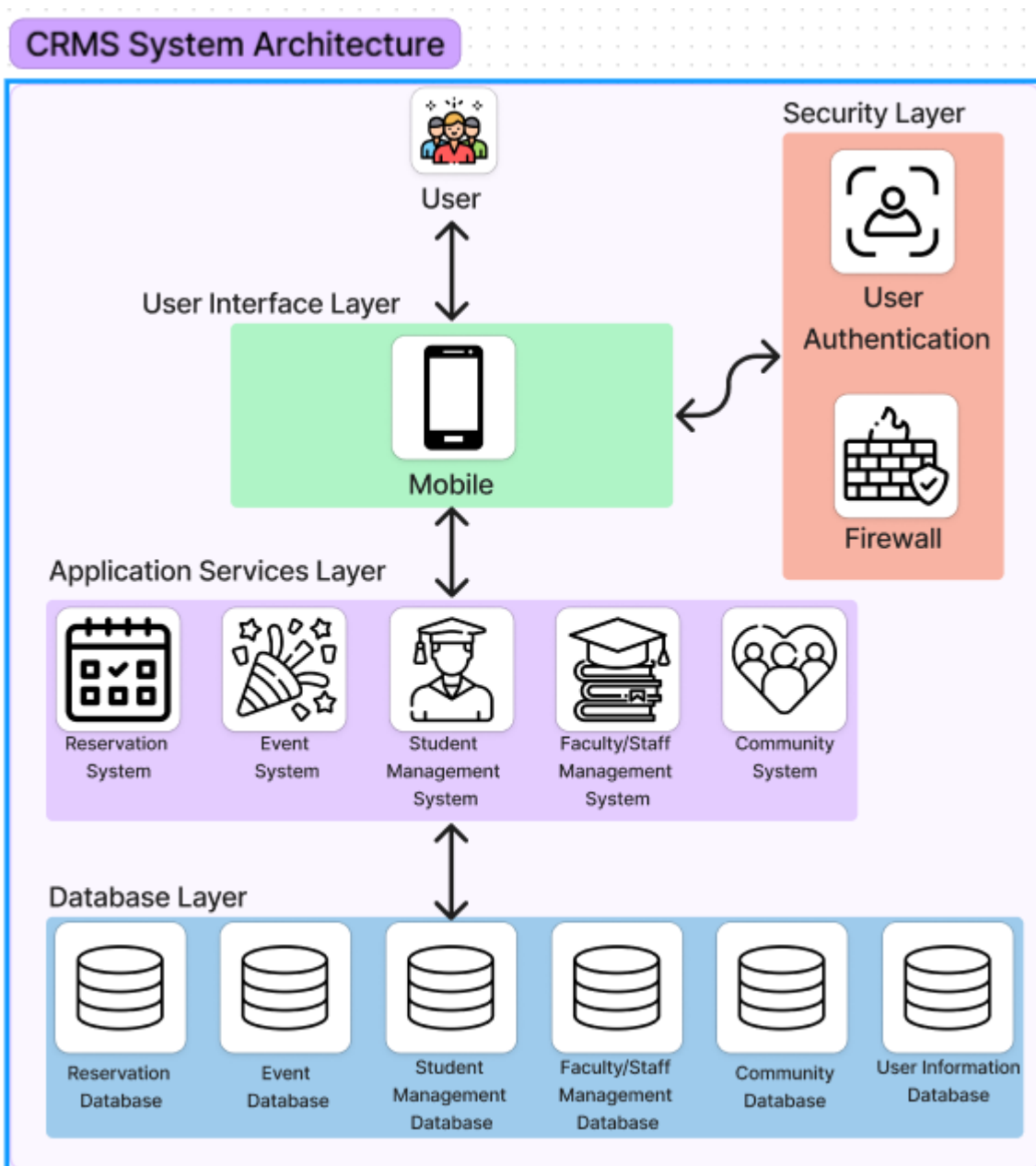
Event	Source	Trigger	Activity	Response	Destination
User Login Request	User	User submits login form (User ID and Password)	Process user login	Receive Login Request, Authenticate User, Return Result	User
Reservation Request	User	User submits reservation request	Handle reservation creation and updates	Receive Reservation Request, Check Availability, Validate Request, Create/Update Reservation, Send Details	User, Reservation Data (R1), Reservation Management
Event Information Request	User	User requests event details	Provide event details	Receive Event Info Request, Check Availability, Validate Request, Retrieve Event Details, Send Details	User, Event Data (E1), Event Management
Event Registration	User	User registers for an event	Handle event registration	Receive Registration Request, Validate Request, Process Registration, Send	User, Event Management

				Registration Details	
Event Feedback Submission	User	User Submits feedback for an event	Collect and store event feedback	Receive Feedback, Validate Feedback	User, Event Management
Student Information Request	User	User request student info	Provide student information	Receive Info Request, Validate Request, Retrieve Student Info, Send Info	User, Student Data (S1)
Students Course Request	User	User register course or check course registration	Handle course registration	Receive Course Info, Check Availability, Validate Request, Send Info	Student Management
Faculty/Staff Information Request	User	User request faculty/staff info	Provide faculty/staff information	Receive Info Request, Validate Request, Retrieve Faculty/Staff Info, Send Info	User, Staff/Faculty Data (F1), Faculty/Staff Management
Community Notification Request	Community Management	Community management send notification request	Manage community notifications	Receive Notification Request, Validate Request, Create Notification, Send Notification, Store Notification	User, Notification Data (N1)

7.1.6 Structured Chart

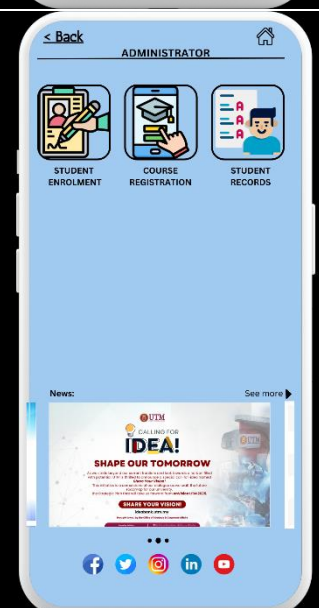
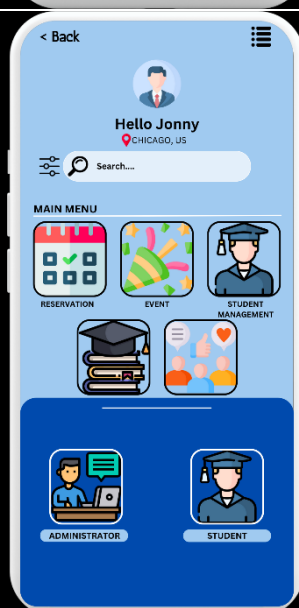
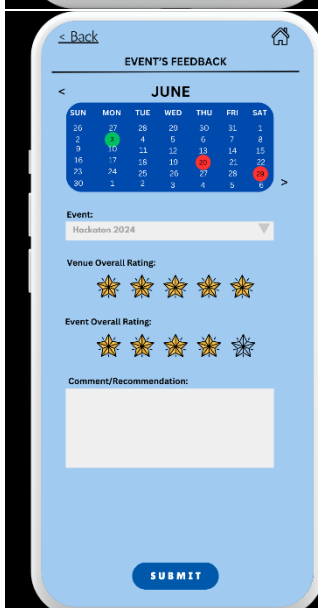
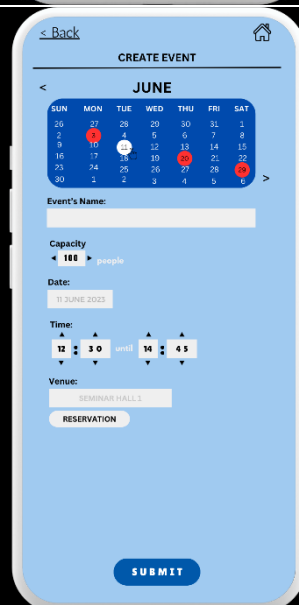
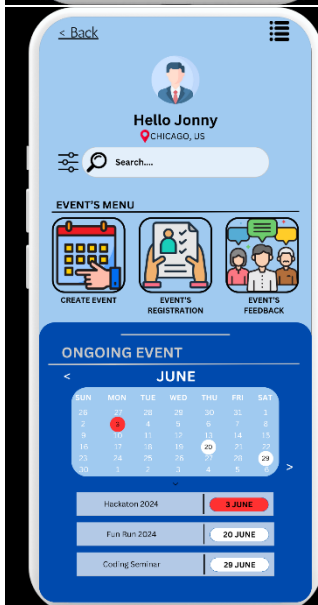
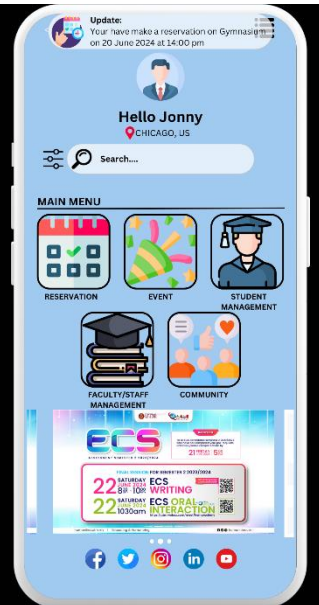
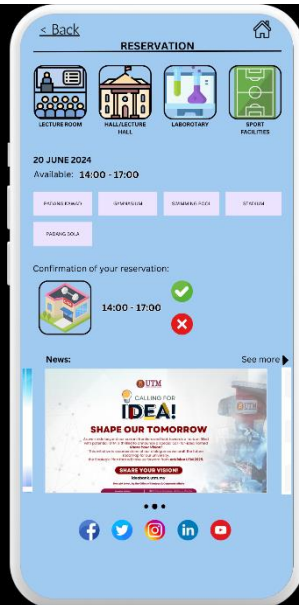


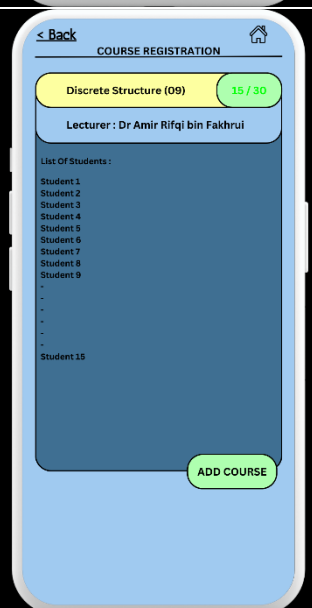
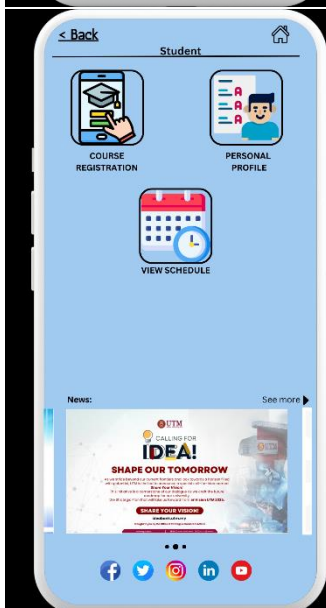
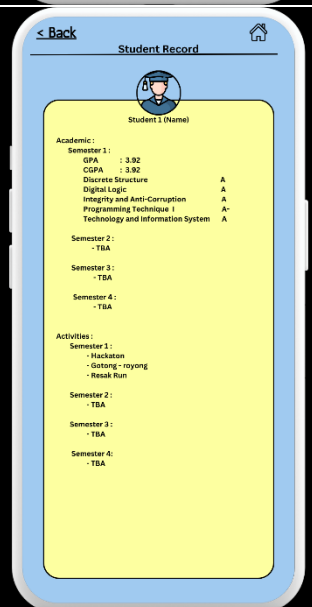
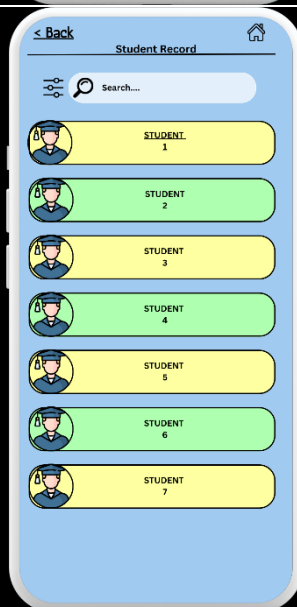
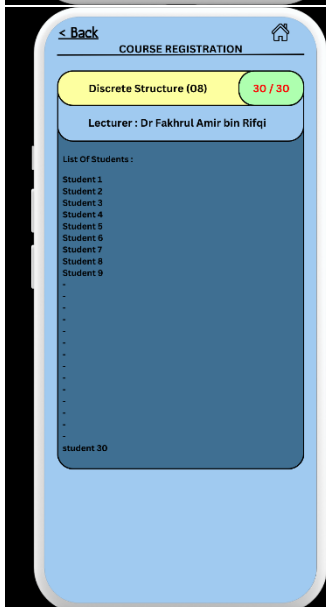
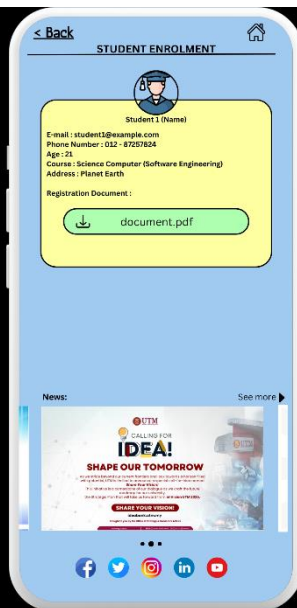
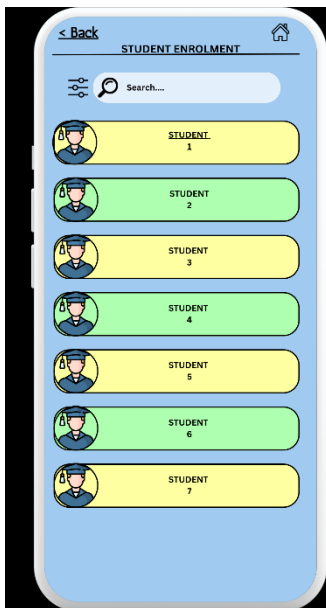
7.1.7 System Architecture




8.0 SYSTEM WIREFRAME (Input Design, Output Design)







< Back



TEACHING SCHEDULE

DAY: SUNDAY

RESULT


SCEC 2512	1 / SECIN	SECTION 09	8.00 - 10.00
SCEC 1123	2 / SECIN	SECTION 01	12.00 - 13.00
ULRS 2102	3 / SECIN	SECTION 27	16.00 - 16.00
SCEC 1131	2 / SECIN	SECTION 04	15.00 - 17.00

[!\[\]\(92d24e9ac7c4df415611d4d64a481755_img.jpg\)
Back](#)




SUBMIT GRADE


SUBJECT:




SECTION:



STUDENT'S MATRIC ID:



GRADE:



RESULT

SECD 2812	09	A23C90001	A+
SECD 2812	09	A23C90002	B
SECD 2812	09	A23C90003	B
SECD 2812	09	A23C90004	A
SECD 2812	09	A23C90005	A

SUBMIT

[← Back](#)

COMMUNICATE WITH STUDENTS



Rifa (SECD 2612)
Madam do you already upload the mark?



Aina (SECD 1123)
Dr- you we have class tomorrow?



Fahru (SECD 1123)
Me : carrymark.pdf



Ali (ULRS 2123)
Me : please submit your final project by today



Amina (SECD 2612)
Me : i notice you absent today, can you give me a notice by today

RETURN



9.0 SUMMARY OF PROPOSED SYSTEM

The Campus Resource Management System (CRMS) unifies several capabilities into a single platform, providing a comprehensive solution to improve efficiency and save time. The reservation system, event management system, student management system, faculty/staff management system, and community communication system are the current five functionality or modules that make up this system.

In the reservation system, users can check whether the facilities are available or not within a specific time frame. Users can use the filter function in reservation system to book specific facilities. As for event management system, users can create an event, submit event registration as well as submit event feedback. For student management system, the users are split into two categories, which are student and administrator. For student users, they have access to course registration, personal profile and class schedule. Meanwhile, for administrator users, they can view student enrolment information, course registration information and student record.

Users having a lecturer or staff account in the faculty/staff management system can access teaching schedules, faculty and staff information, and performance reviews for lecturers. This system allows lecturers to interact with students and submit or change their grades. Finally, there are many user interactions in community communication systems, including student-student and lecturer-student interactions. Users of this system can receive notifications regarding events, assignments, and reserved facilities. It also facilitates communication between lecturers and students.

10.0 Video Demonstration Link

<https://drive.google.com/drive/folders/19bEjs1PRGL1IXrtmXfN0lX0mBKDWK7-Y?usp=sharing>