



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SEMESTER 2 2023/2024

SYSTEM ANALYSIS AND DESIGN(SECD2613)

PHASE 3

Analysis and Design

PREPARED BY

NAME	MATRIC NUMBER
LIOW JIA FENG	A23CS0302
NURISH SYAFIQA BINTI HAZLAN	A23CS3016
ALIA NATASHA BINTI MOHD HAFIZAR	A23CS3007
SYAZA SYAFIAH BINTI AHMAD AKMAL	A23CS3018

PREPARED FOR

DR AHMAD NAJMI BIN AMERHAIDER NUAR

SECTION

01

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1.0 Overview of the Project

This project focuses on **developing a specialized task management system** custom fitted to the needs of postgraduate students and lecturers locked in academic paper writing and publication. The activity stems from recognizing wasteful aspect and limitations inborn the current manual forms predominantly **dependent on Excel and notepad applications for overseeing tasks.**

Through an insightful **interview** with a master's student, Dr. Muhammad Aliif Bin Ahmad, we gained important view points on these challenges, which have guided the conceptualization of this new system. The manual task management handle currently utilized by student and lecturers includes a few **basic exercises, task posting, planning, update tracking and setting updates.**

These activities are currently performed using basic tools, such as Excel and notes pad **not functional enough and it has shortcomings.** Applying manual forms can result in delays, increased errors, and poor resource allocation when managing a large number of writing assignments, setting deadlines for their completion, and coordinating work for a team.

In order to the achieve the project's objectives, the new system will be designed in a structured manner that includes building a **Context Diagram, Level 0 Diagram, and Child Diagrams.** This comprehensive diagrammatic approach ensures that every functionality of the system and allowing smooth updating and modifications. In providing a detailed visual model of the system's functionality, this project is aiming to develop a **more efficient and user-friendly** solution for managing academic tasks, therefore improving both the productivity and organization for both postgraduate students.

2.0 Problem Statement

2.1 Operation inefficiency and time-consuming

Manual task recording and updating requires a significant time, and effort commitment and takes important resources from important academic work. Task management is trying to manage several technologies at once for scheduling, task listing and tracking progress results in fragmented processes and lower productivity.

2.2 Automating task and deadline management

When responsibilities and schedules are handled through paper and pen, people often forget deadlines or even never remember them at all. Work assignments or instructions may not be completed to perfection, some details may not be given much attention since there is no procedure put in place to check on them. With no automation in place, one finds it hard to keep track of having all members of a certain project working on the same version of

documents or tasks which then creates confusion and variations. Also, the new information is not relayed through a reminder that everyone concerned needs to check the document, hence they work with a wrong information which may be out of date.

2.3 Scalability Issues

The problem with manual systems is that they are not very efficient in terms of scalability, meaning that if the amount of work that needs to be done increases, the system will be stressed. Imagine sorting papers by hand: at first it seems quite feasible to handle, but as more papers stack on the desk, it is difficult to sort them within the normal working time without making some mistakes or facing some delays. Such is the system that slows performance as personnel can only work at a certain rate and with a certain level of error control. They also tend to quickly reach their limit of capability where tasks are not simple or there is a higher volume of them. They might be forced to put in extra hours at work or feel the pressure working on priorities and requisite and thus get burnt out while at it or resources might be used up in the process.

2.4 Balancing time and resources

Proper task prioritization is important for postgraduate learners and members of faculties, however, doing it in a manual approach would be challenging. For instance, consider having a laundry list of tasks that are due with no means of determining the most critical assignments. Everything becomes disorganized because no one is able to plan properly to understand what will require his/her time and effort most. This lack of clarity means that jobs are not completed as quickly, and could become a source of issues with timers or in terms of reaching project goals. Since objectives are not specific and there are no set parameters on how decisions are made, students and other faculty members can easily be overwhelmed and not know where to focus their efforts hence the productivity may be affected on when the work needs to be completed.

3.0 Proposed Solutions

The proposed solution that we have pondered over and chosen is to create a **centralized task management system for writing and publishing academic papers**. This system will incorporate a few of essential features. Through a **user-friendly interface**, this system will offer assistance with task listing, scheduling, tracking of progress and updating the task to lecturer.

The other solution is we set up **progress tracking and status updates**. This solution is pivotal for maintaining transparency and accountability. The users will be able to overhaul statuses, track progress in genuine time, and **get notices when assignments are continuous or pending**.

Furthermore, in arrange to optimize task management, we will **implement algorithms for task prioritization**. The users can utilize these algorithms to identify and prioritize the most

important tasks, decreasing delays and progressing project results based on preset criteria or user-specified needs. Besides, automatic tasks reminders and alerts will ensure that users are ceaselessly reminded of impending due dates, assignments doled out to them, and overhauls as they approach them, advancing timely task management and decreasing the likelihood of missed deadlines. Furthermore, the system **provides users with easily understandable tools** to choose a category for a specific task, set priorities and use customizable to-do lists in order to improve the characteristic by directing students' attention toward task planning and management. This will help the students in their time management pertaining to their assignments, research, and other academic projects, in turn helping them be more productive with their time by adhering to the sought deadlines of their task.

4.0 Requirement Analysis (based on AS-IS analysis)

4.1 Current business process (scenarios, workflow)

Below are the scenarios and workflow on how Postgraduate Task Management System current business process:

User Registration

- Users register a personal account on the postgraduate task management system.
- In case the user already has an account, one can log in; otherwise, one can register or even recover the password, if lost.
- The system also validates the user's email through email validation process.

Dashboard Access

- Once the email is validated, users can go to the dashboard.
- The dashboard also includes various tasks and progress bar concerning their postgraduate studies.

Task Management

- Due dates for assigned tasks and submissions can be set.
- It allows users to edit tasks and receive notification on the due date and reminder dates.

Proposal Submission

- Users submit their proposals through the system.
- The system checks if the proposal needs approval.
- If approval is required, the system alerts the supervisor.
- When the supervisor approves the proposal, it is saved in the database.
- If not approved, the user receives an alert notification so as to edit the details accordingly.

Progress Tracking

- The system provides calendar integration to help users manage their schedules.

Notifications and Alerts

- Users receive notifications for due dates, task updates, and alerts for pending approvals.

Publishing

- Once tasks or proposals are approved, users can proceed to publish their work or update their progress status.

4.1.1 Workflow

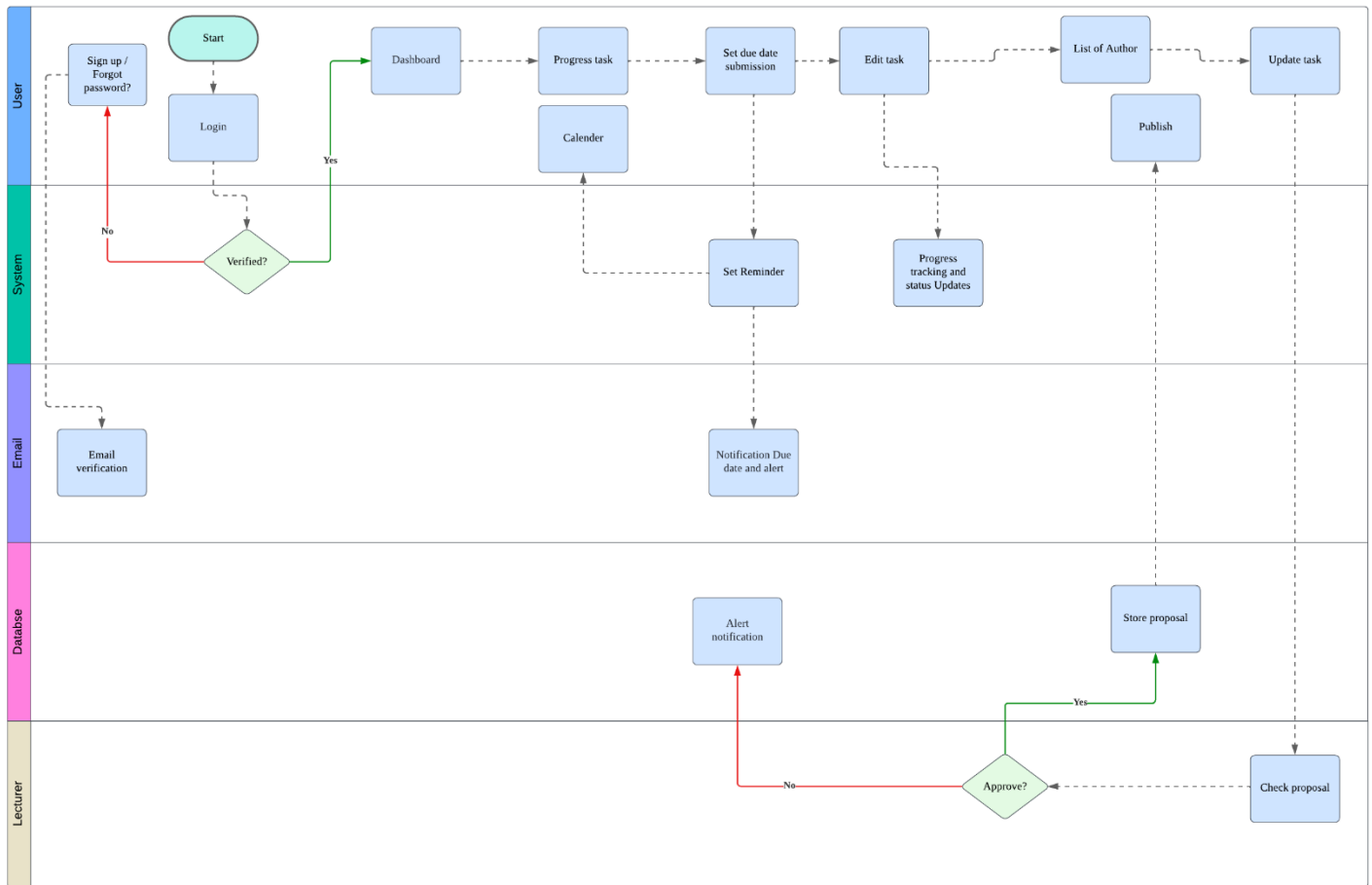


Figure 4.1.1

5.0 Logical DFD AS-IS system (Context Diagram, Diagram 0, Child)

5.1 Context Diagram

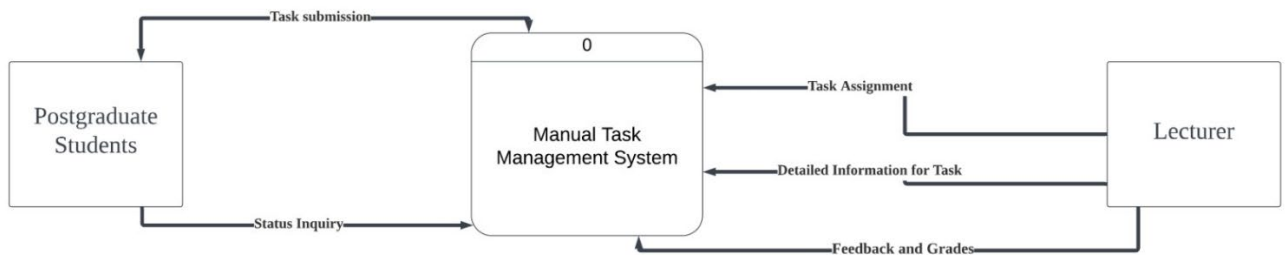


Figure 5.1.1

5.2 Level - 0 Diagram

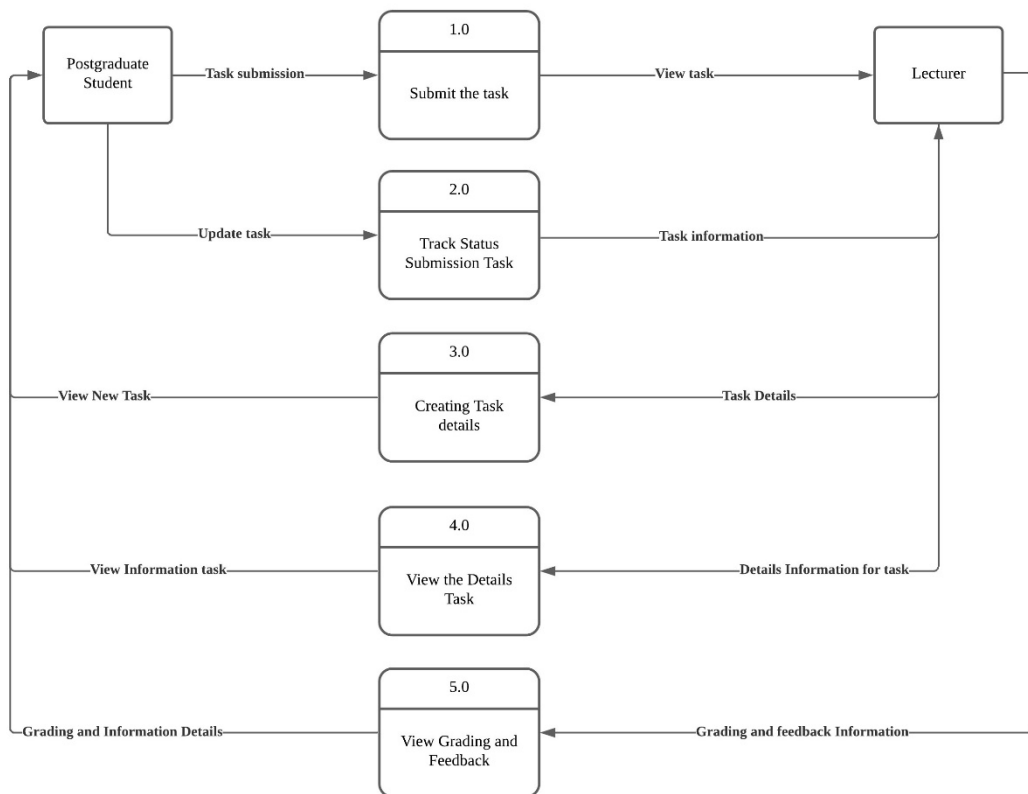


Figure 5.2.1

5.3 Child diagram

Process 1.0

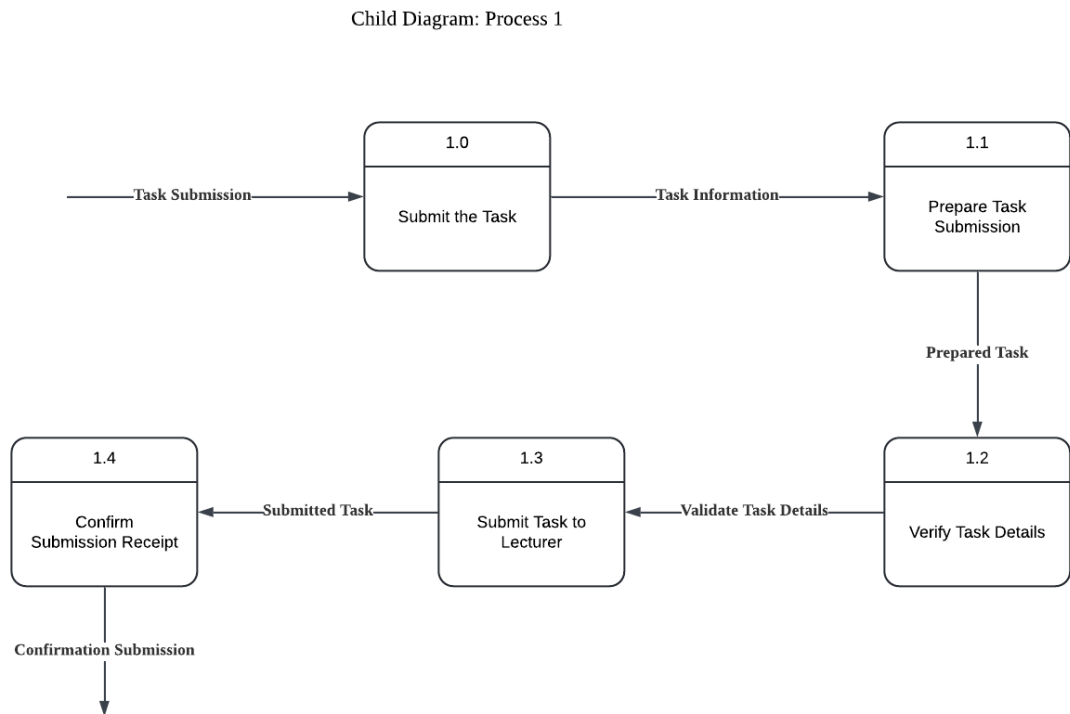


Figure 4

Process 2.0

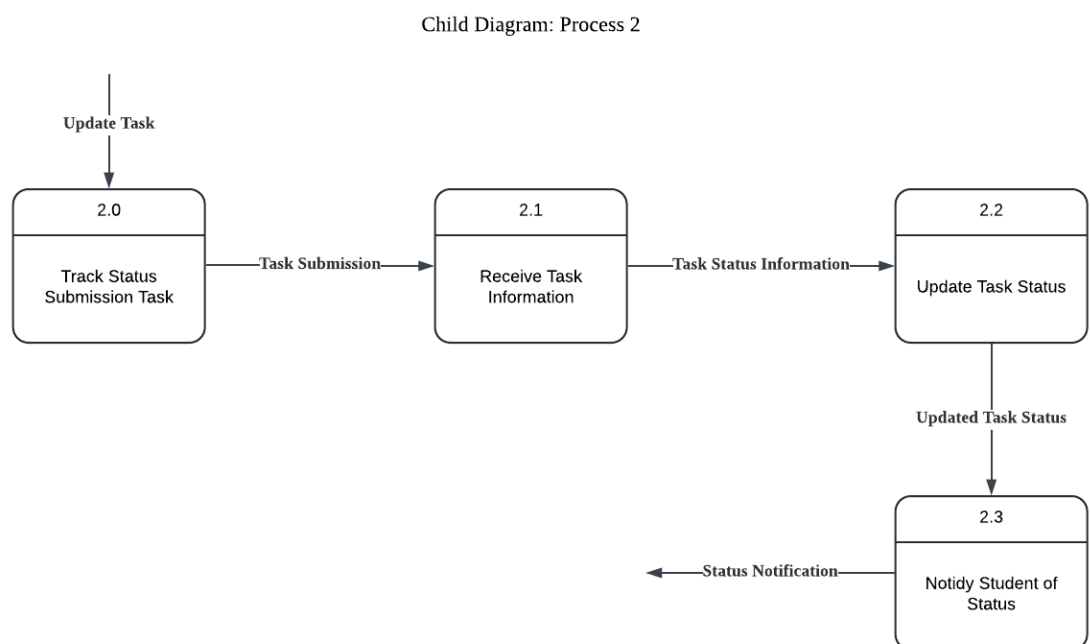


Figure 5

Process 3.0

Child Diagram: Process 3

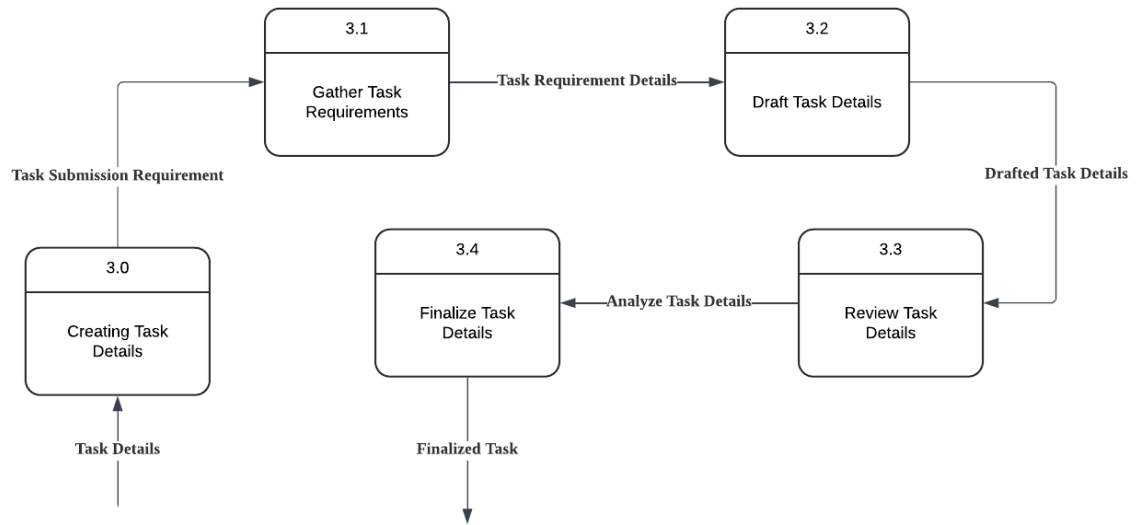


Figure 6

Process 4.0

Child Diagram: Process 4

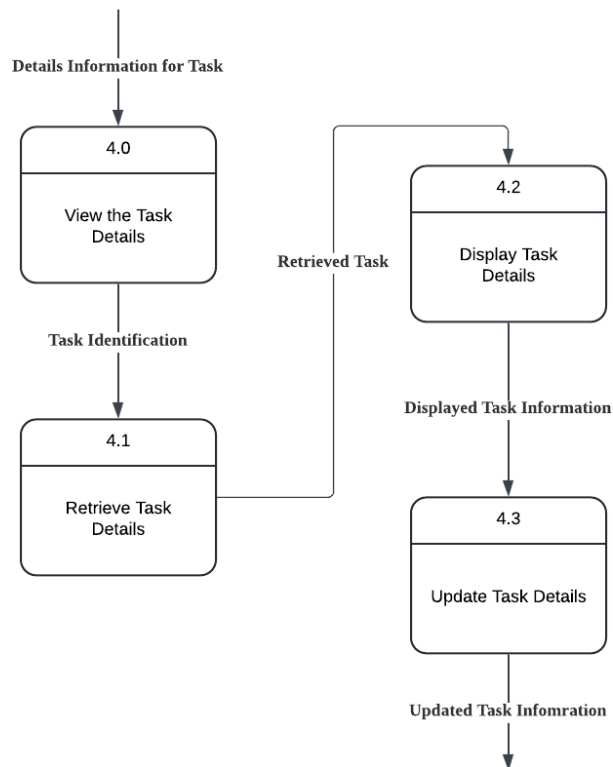


Figure 7

Process 5.0

Child Diagram: Process 5

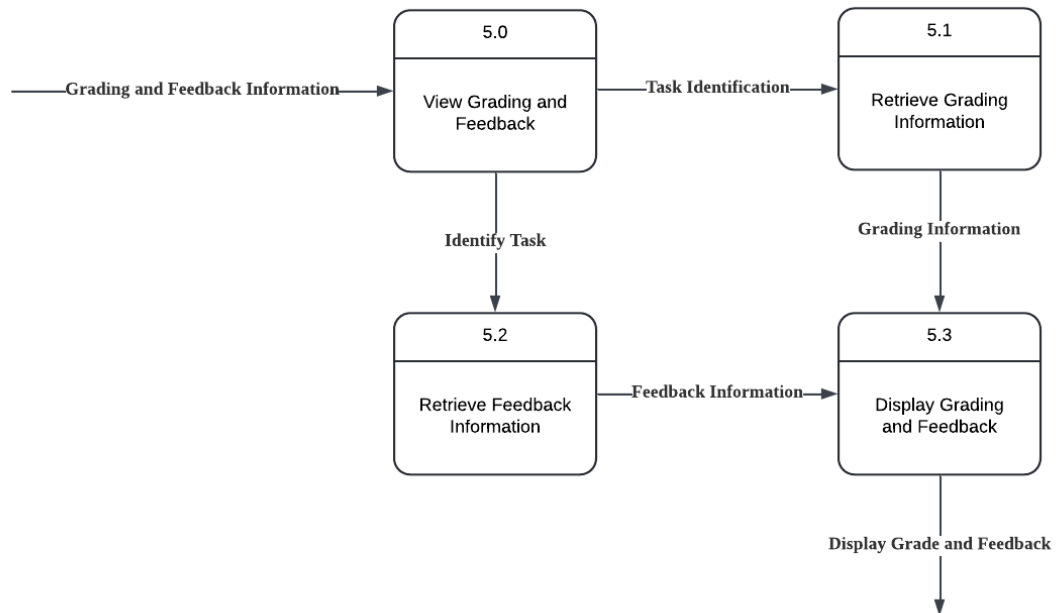


Figure 8

6.0 System Analysis and Specification

6.1 Logical DFD TO-BE system

6.1.1 Context Diagram

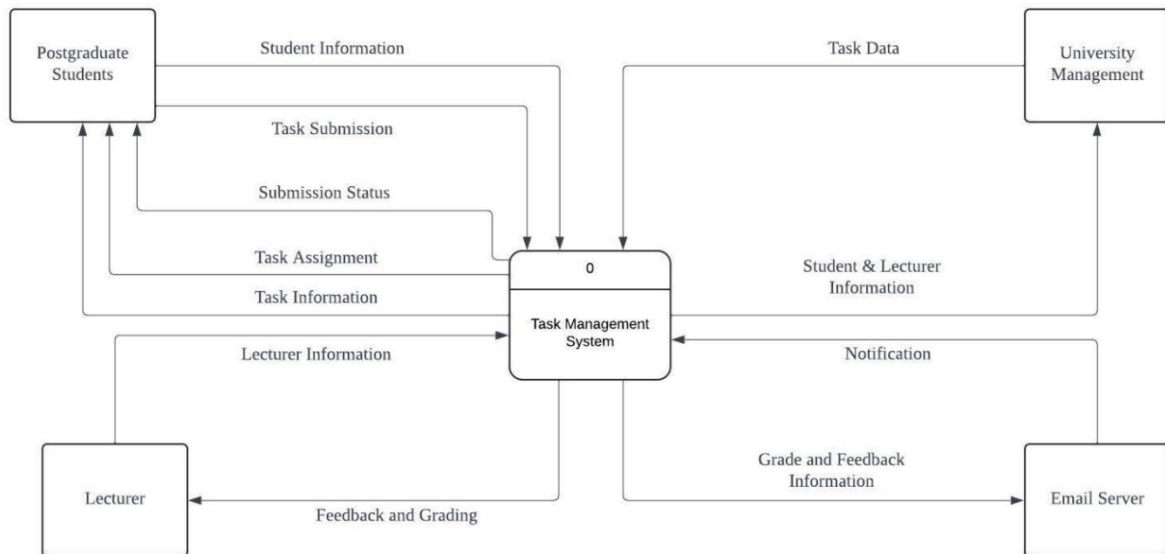


Figure 6.1.1

6.1.2 Level 0 Diagram

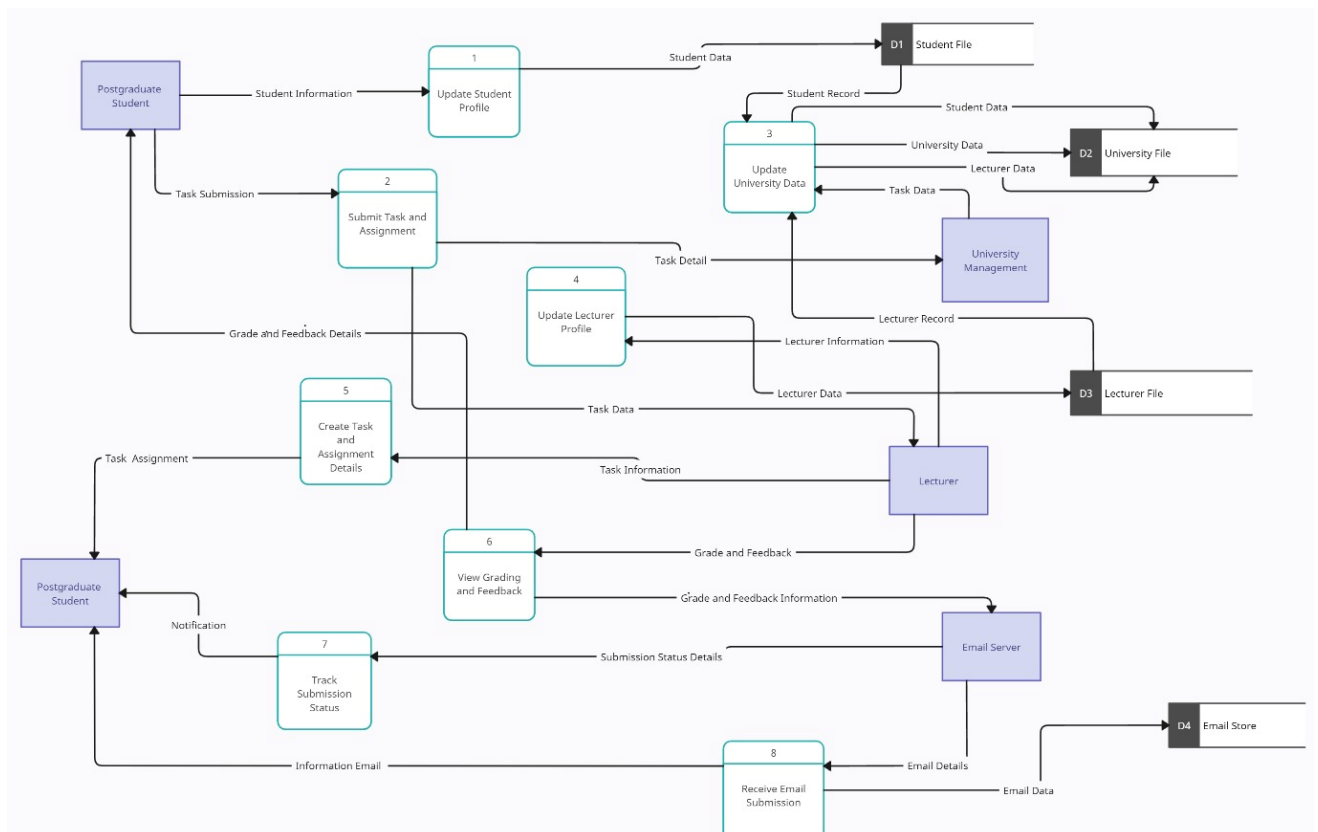


Figure 6.1.2

6.1.3 Child Diagram

Process 1.0

Child Diagram : Process 1

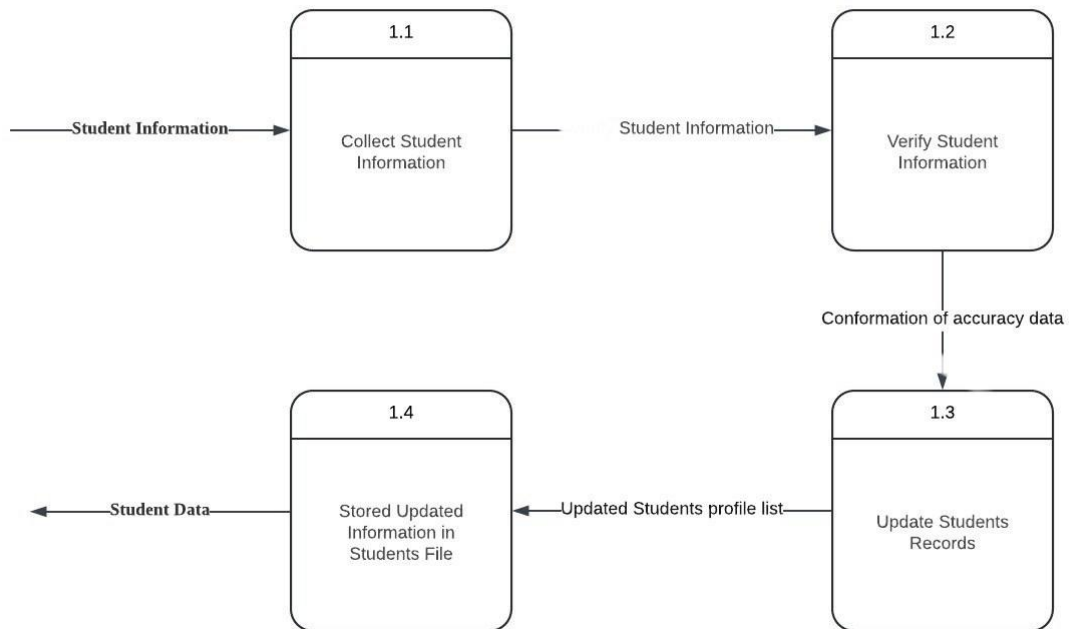


Figure 6.1.3.1

Process 2.0

Child Diagram : Process 2

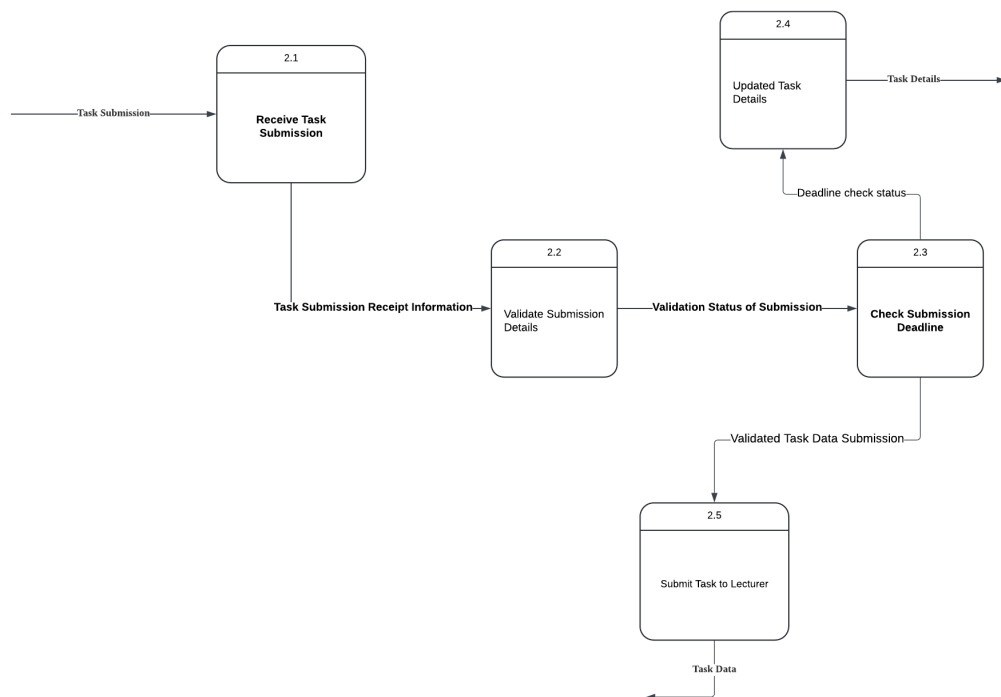


Figure 6.1.3.2

Process 3.0

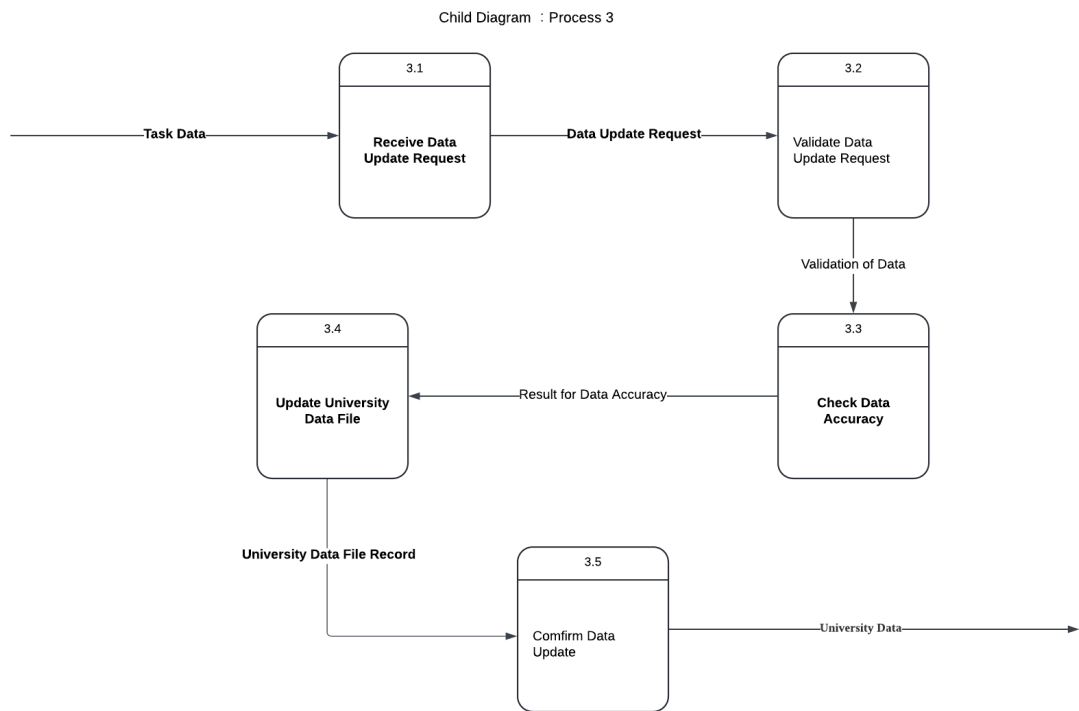


Figure 6.1.3.3

Process 4.0

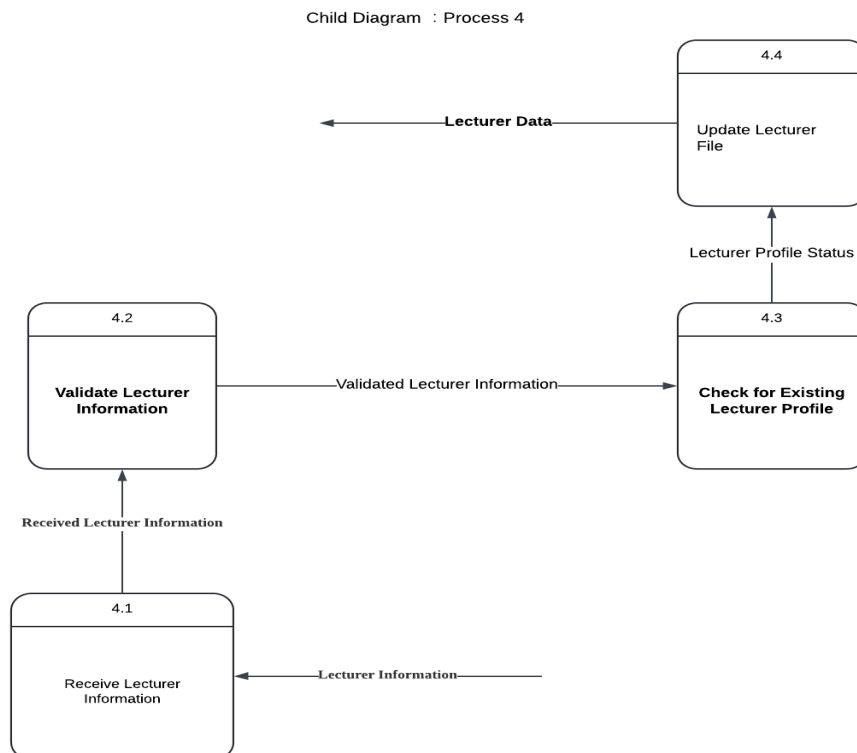


Figure 6.1.3.4

Process 5.0

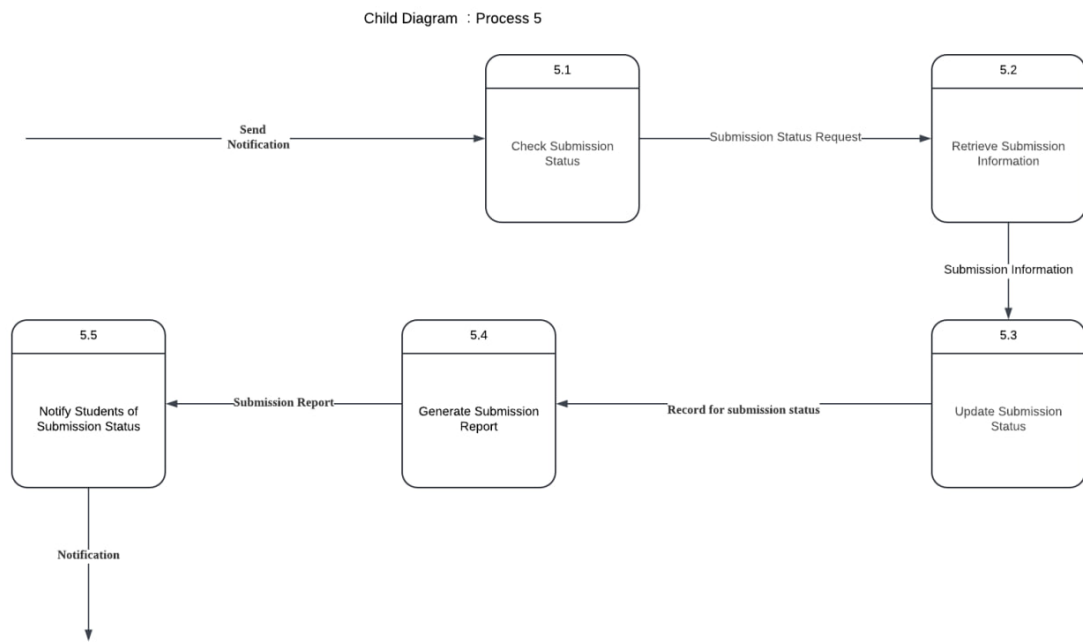


Figure 6.1.3.5

Process 6.0

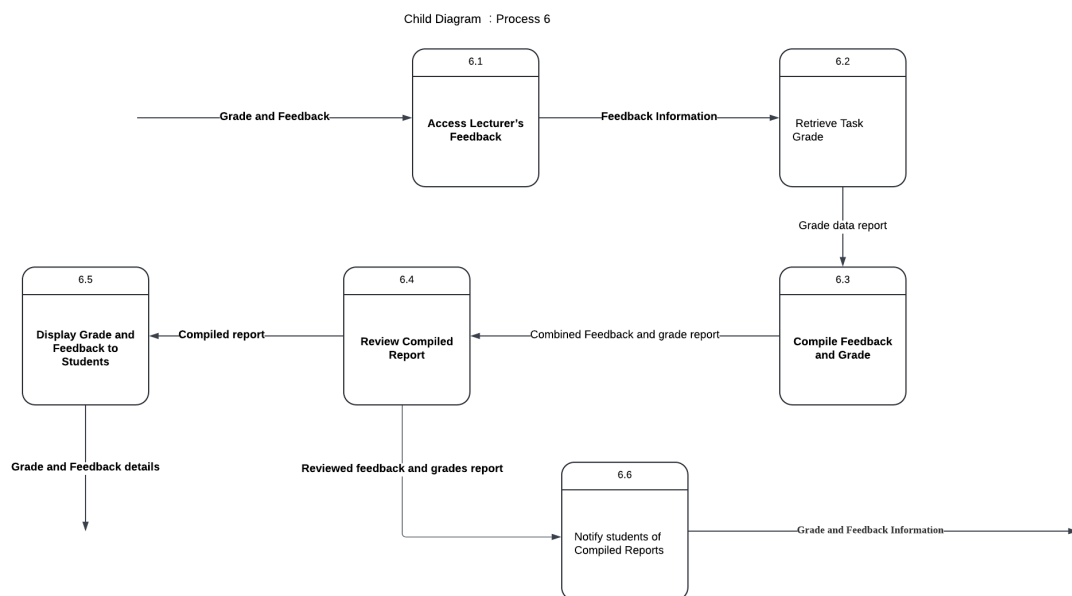


Figure 6.1.3.6

Process 7.0

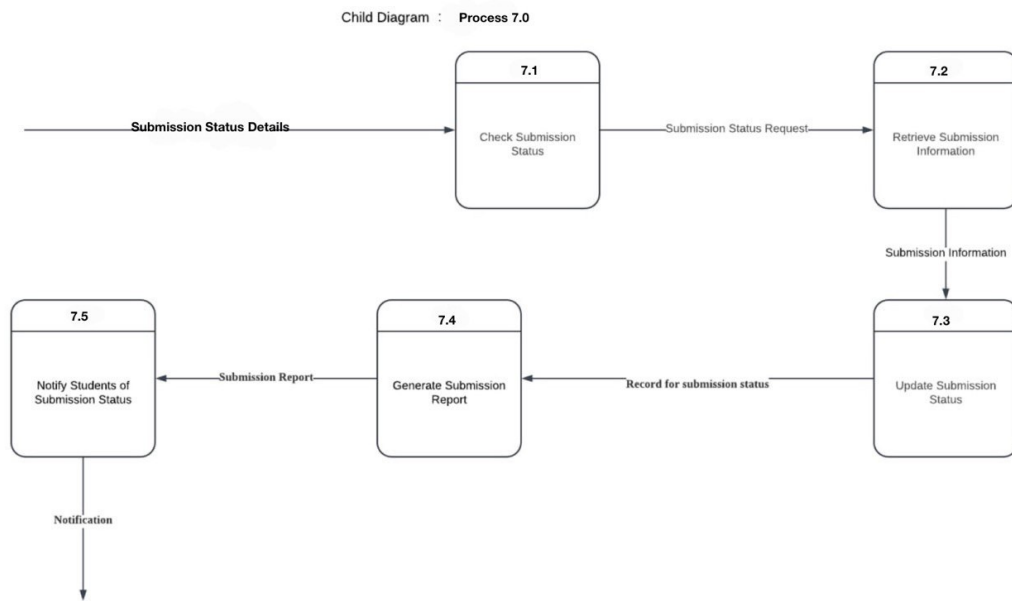


Figure 6.1.3.7

Process 8.0

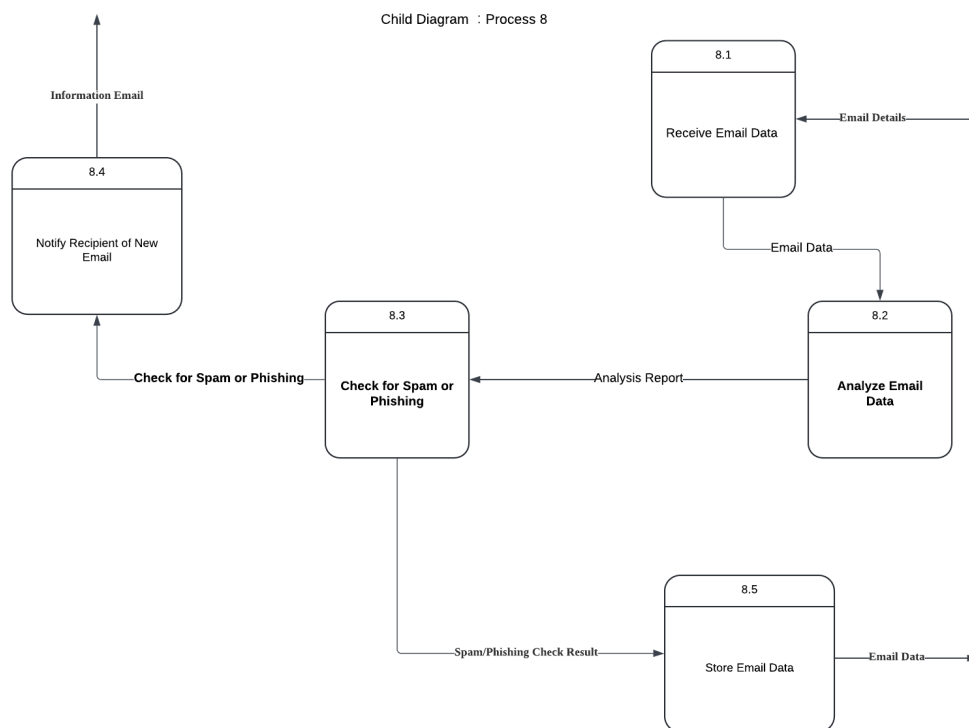


Figure 6.1.3.8

6.2 Process Specification (based on Logical DFD TO-BE)

DO

READ User status (existing/new)

IF the user already has an account

THEN Prompt user to log in

ELSE

Prompt user to register

READ user details (name, email, password)

Validate email through email validation process

IF email is validated

Confirm account creation

Send confirmation notification

ELSE

Notify user of validation failure

ENDIF

ENDIF

Receive login credentials

IF credentials are valid

LOAD user-specific dashboard

DISPLAY tasks, progress, and notifications

ELSE

DISPLAY login error message

ENDIF

Receive task details (due date, description, reminders)

IF task is new

THEN Create task

SET due dates and reminders

Notify user of task creation

ELSE IF task is being edited

```

THEN Update task details
    Notify user of task update
ELSE IF task is to be deleted
    THEN Delete task
    Notify user of task deletion
ENDIF
SET reminders for due dates
Notify user of upcoming deadlines
Track and update task progress
Integrate task updates with user's calendar
Receive task submission details
Submit task for review
Check if task requires approval
IF approval is required
    THEN Notify lecturer for approval
    IF lecturer approves task
        THEN Save task submission to database
        Notify user of approval
    ELSE
        Notify user to edit task submission
    ENDIF
ELSE
    Save task submission to database
    Notify user of successful submission
ENDIF
Track task submission status and update user on progress
Monitor task and task submission status changes
Generate notifications for due dates, task updates, and approvals
Send notifications and alerts to users
IF task or task submission status changes
    THEN Update user dashboard with new status
ENDIF

```

7.0 Physical System Design

7.1 Physical DFD TO-BE system

7.1.1 Diagram 0

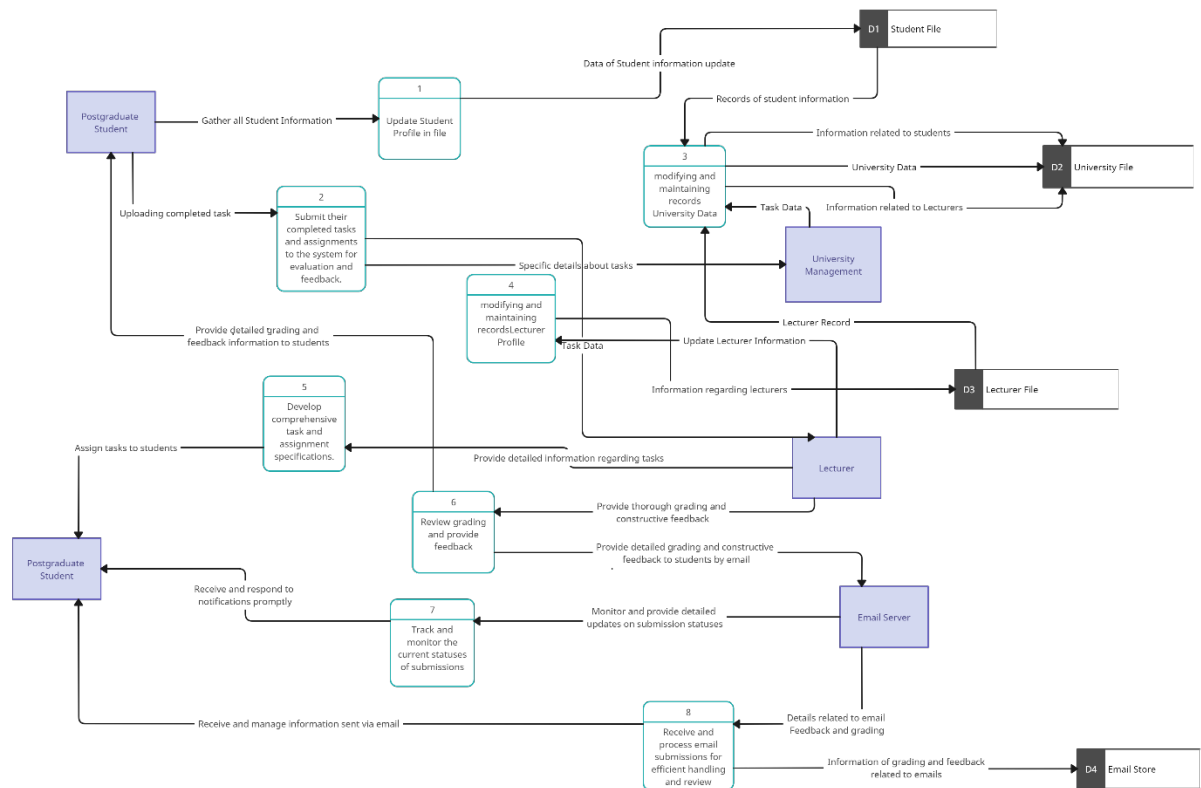


Figure 7.1.1.1

7.1.2 Child Process 1

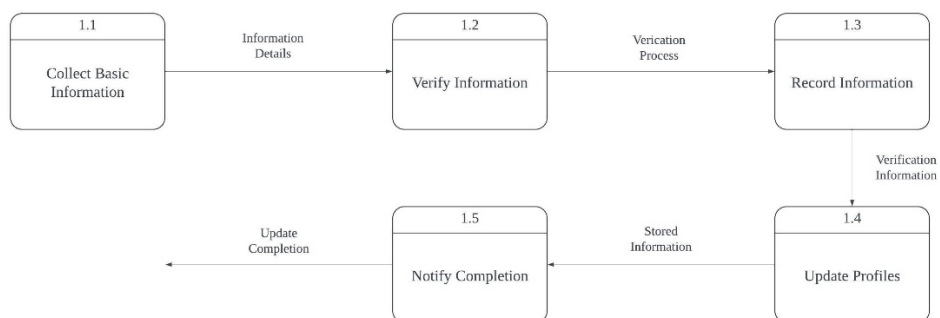


Figure 7.1.2.1

Process 2

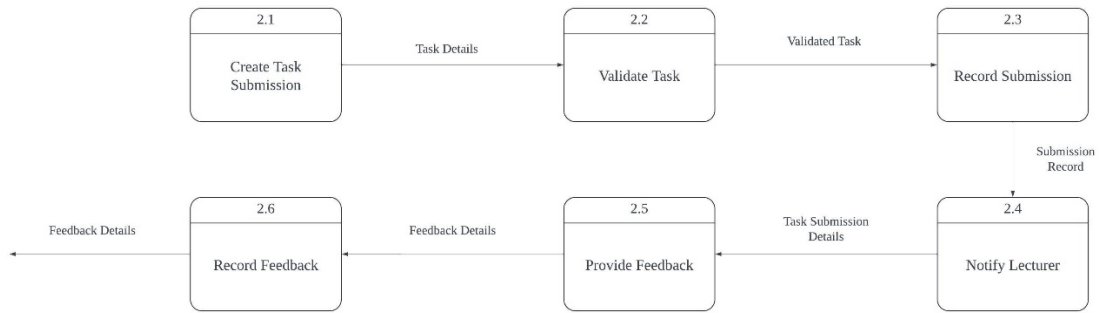


Figure 7.1.2.2

Process 3

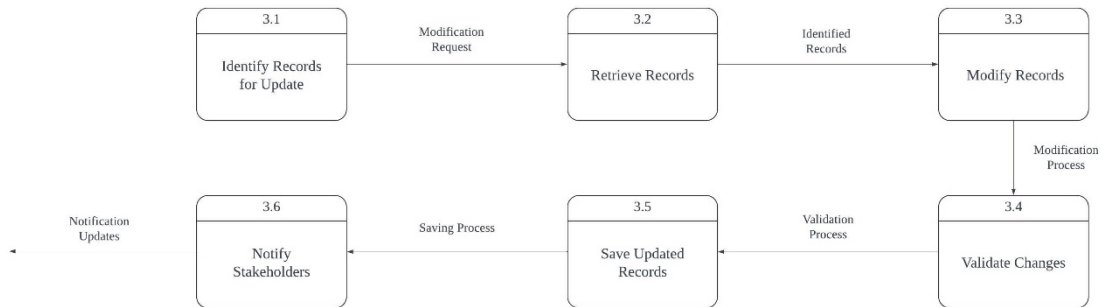


Figure 7.1.2.3

Process 4

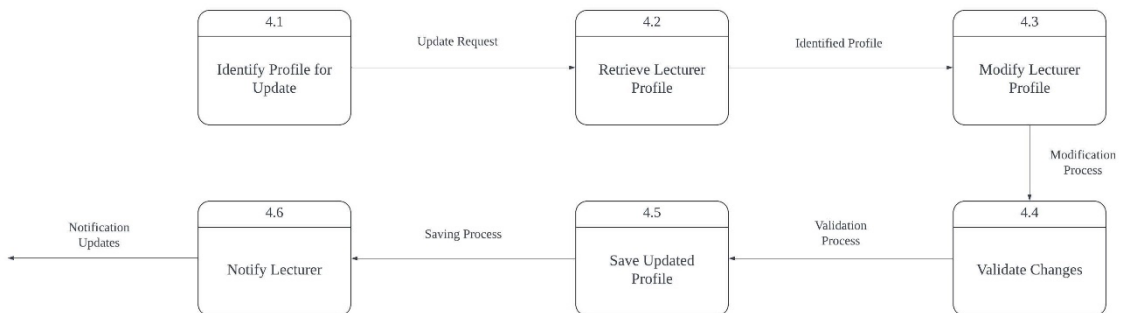


Figure 7.1.2.4

Process 5

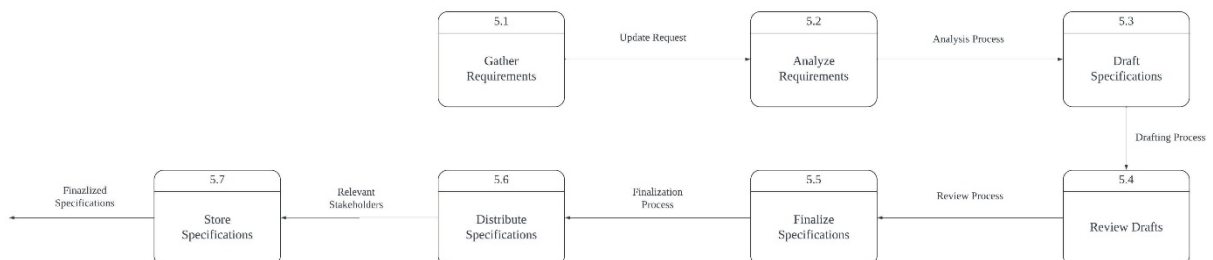


Figure 7.1.2.5

Process 6

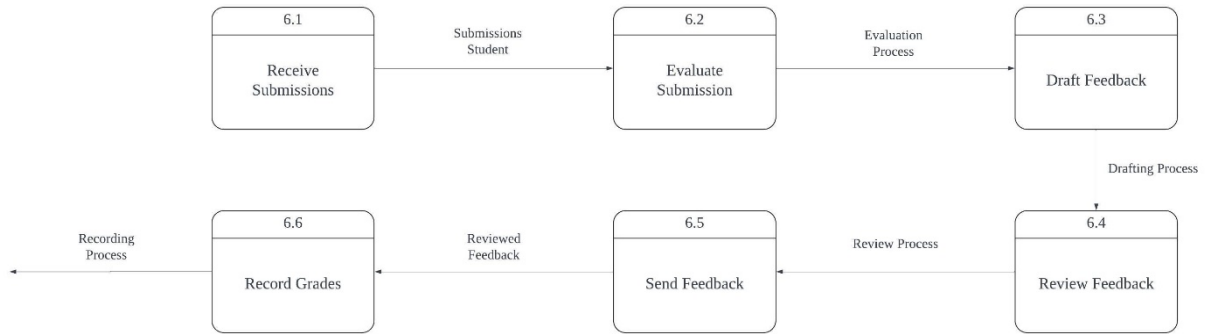


Figure 7.1.2.6

Process 7

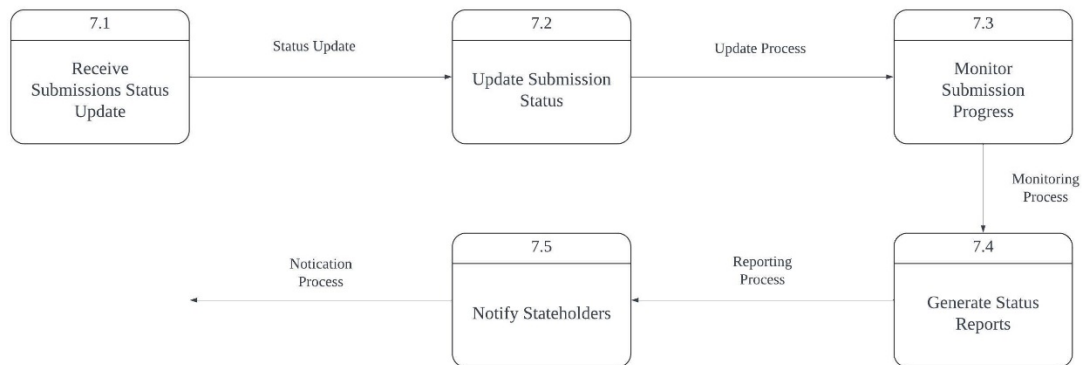


Figure 7.1.2.7

Process 8

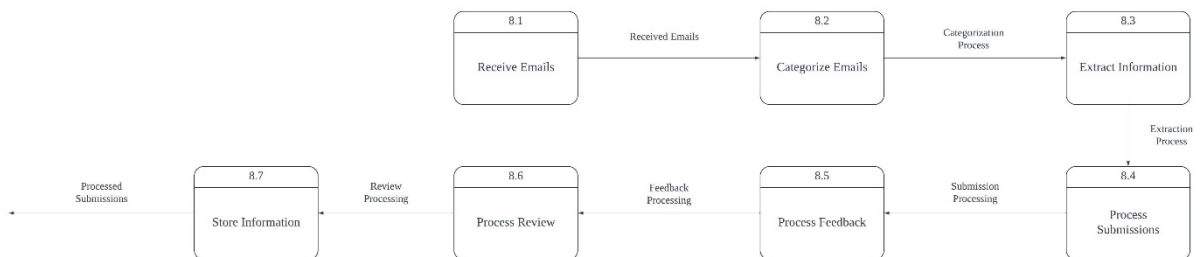


Figure 7.1.2.8

7.1.3 Partitioning

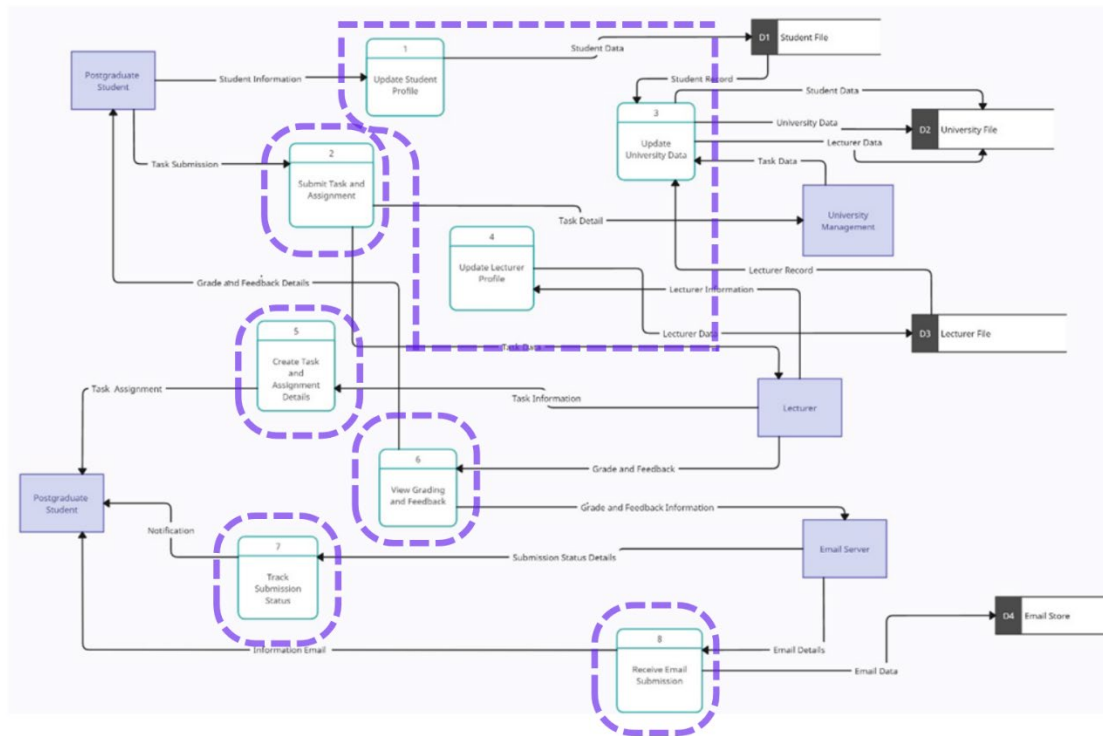


Figure 7.1.3.1

7.1.4 CRUD Matrix

Activity	User Data	Task Data	Proposal Data	Notification Data	Calendar Data
User Registration	C				
User Login	R				
Task Creation		C			
Task Update		U			
Task Deletion		D			
Proposal submission			C		
Proposal Approval			U	C	
Proposal Rejection			U	C	
Progress Tracking		R			C
Notification Generation				C	
Calendar Integration					C

Figure 7.1.4.1

7.1.5 Event Response Table

Event	Source	Trigger
User Registers	User	User submit registration form
User Login	User	User submit login form
User create a task	User	User fills task creation form
User update a task	User	User edit task details
User delete a task	User	User delete a task
User submit a proposal	User	User fills proposal submission form
Lecturer approve a proposal	Lecturer	Lecturer approve the proposal
Lecturer rejects a proposal	Lecturer	Lecturer reject the proposal
User track the progress	User	User access the progress tracking
Generate a notification	System	Due date or task update occurs
Calendar Integration	System	Task deadlines and reminders are set

Figure 7.1.5.1

7.1.6 Structure Chart

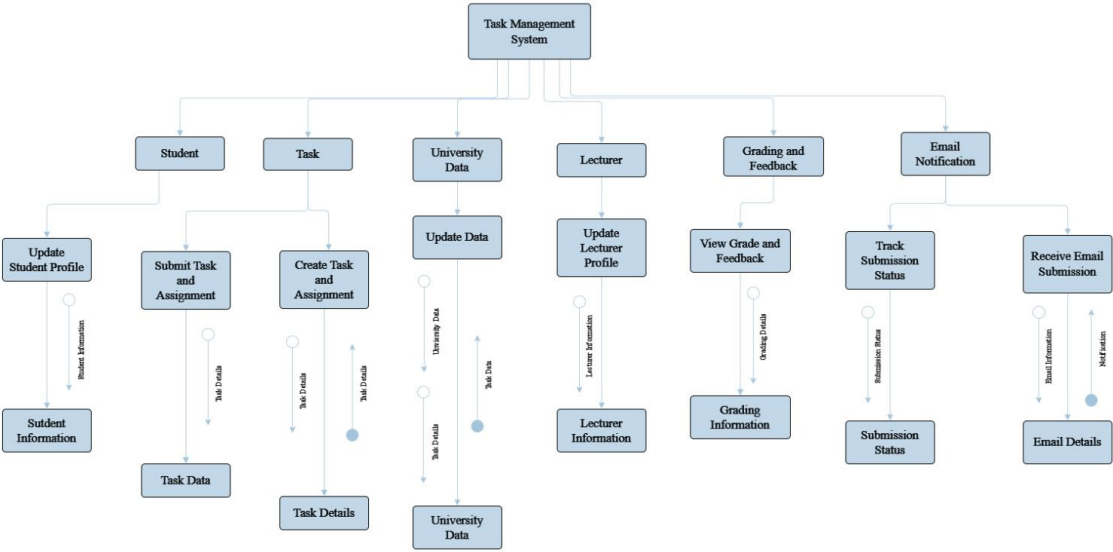


Figure 7.1.6.1

7.1.7 System Architecture

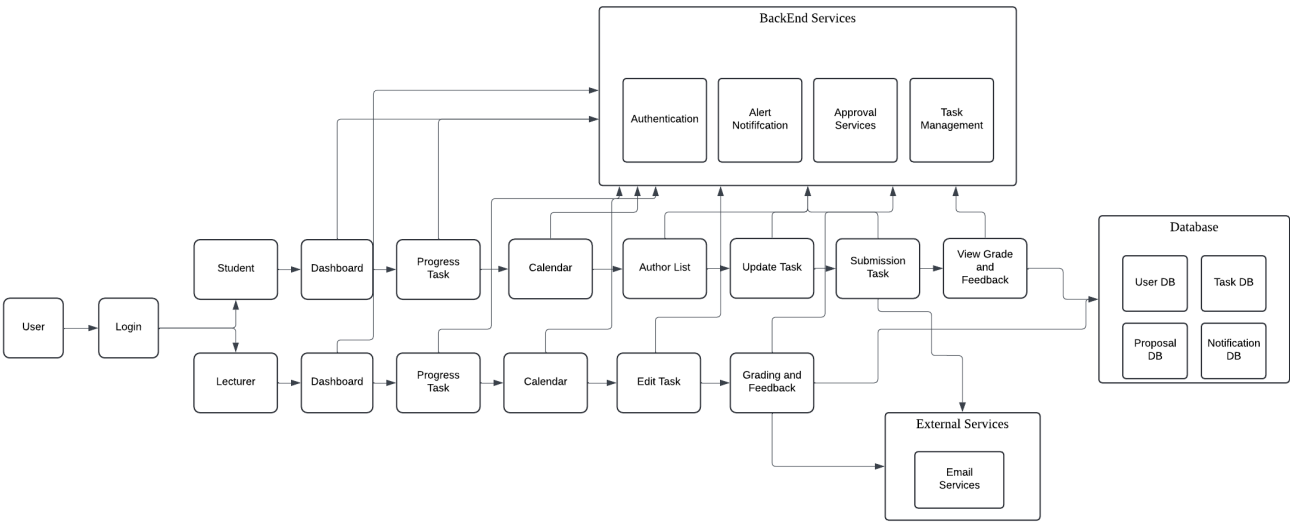


Figure 7.1.7.1

8.0 System Wireframe (Input Design, Output Design)

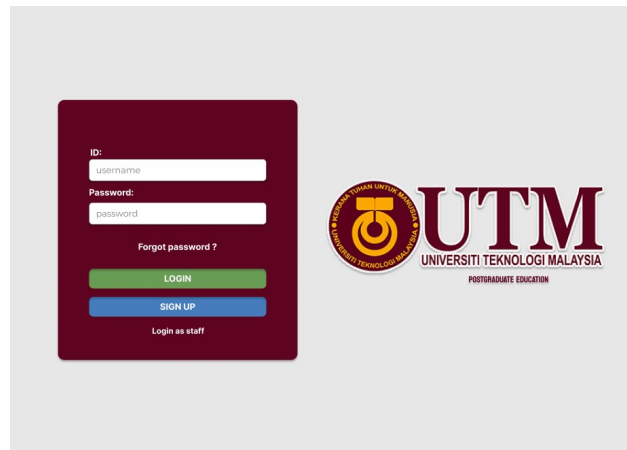


Figure 8.0.1

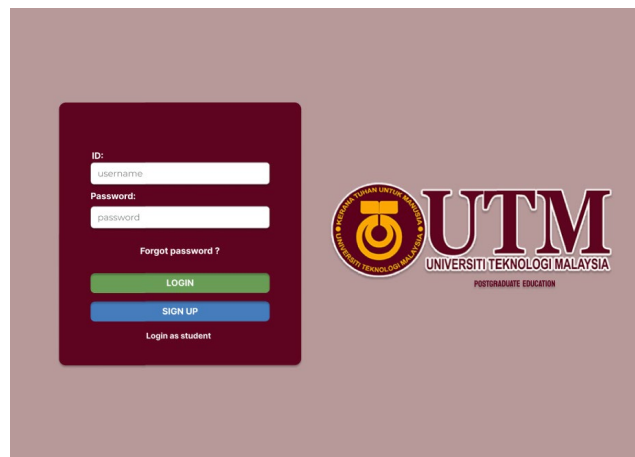


Figure 8.0.2

This is the login page for students to enter the system. The student needs to enter their ID and password to log in but if the student does not have the account they need to click the sign-up button to move to another interface which is the sign-up page for the student to create the account and if they forgot their password to log in that can click on the forgot password to move to the forgot password page. If the person is a lecturer to log in they need to click on login as staff on the student login page so they can move to the lecturer login page. If the lecturer doesn't have an account, they need to click on sign-up to move to the lecturer sign-up page and if they forgot their password to log in they can click on the forgot password to move to the forgot password page.

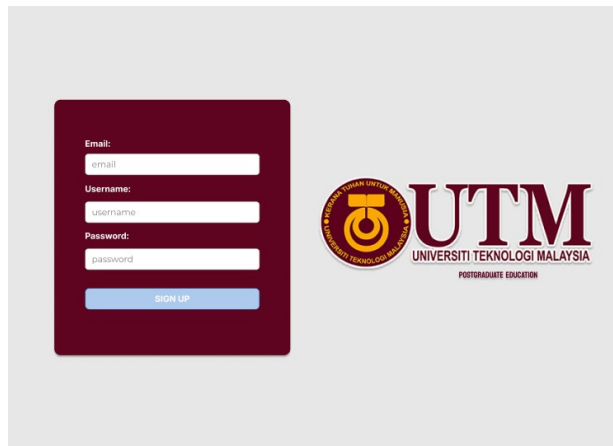


Figure 8.0.3

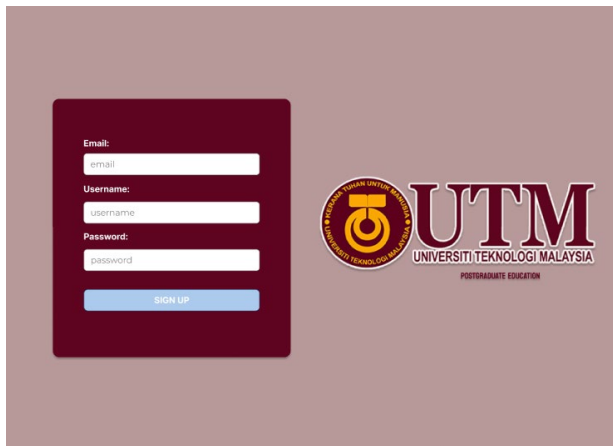


Figure 8.0.4

This is the interface of the student and lecturer sign-up page once they click the sign-up button it will bring the user to the login page.

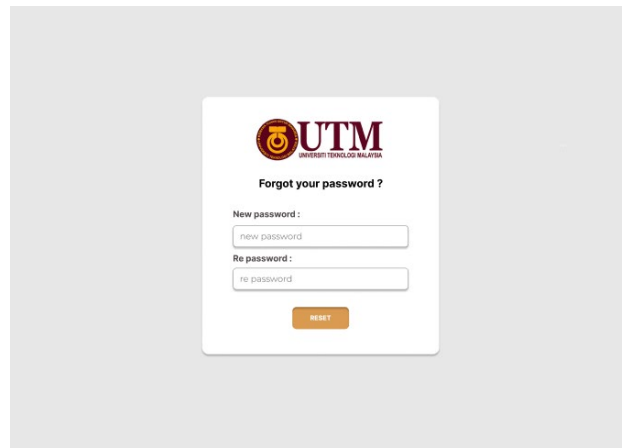


Figure 8.0.5

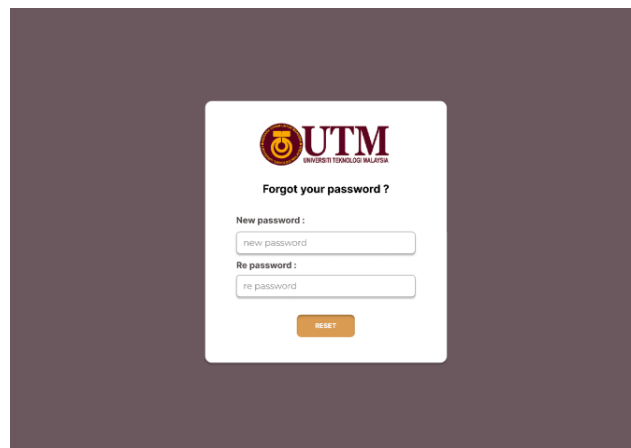


Figure 8.0.6

This is the interface of the student and lecturer forgot password page; if the user clicks on the reset button, it will return to the login page.

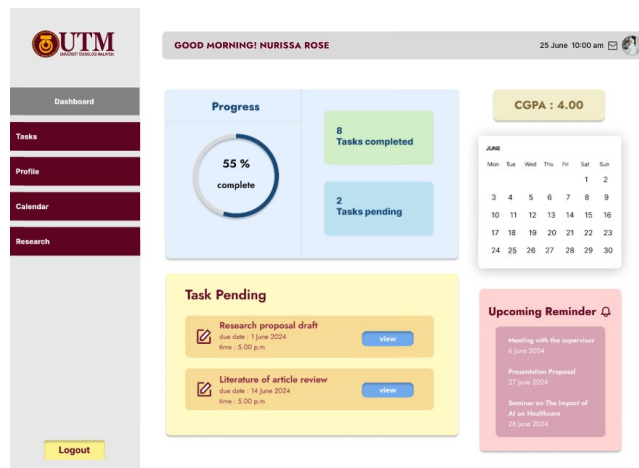


Figure 8.0.7

This is the homepage for students. This interface will show the progress task of the student, the mini calendar, the upcoming reminder to show what student activity will be upcoming, and the CGPA student how the score was managed before this semester. The button view that appears on the task pending will move to another interface which is the student task page. On the left side, there is the menu bar for the button dashboard, tasks, profile, calendar and last is the research.

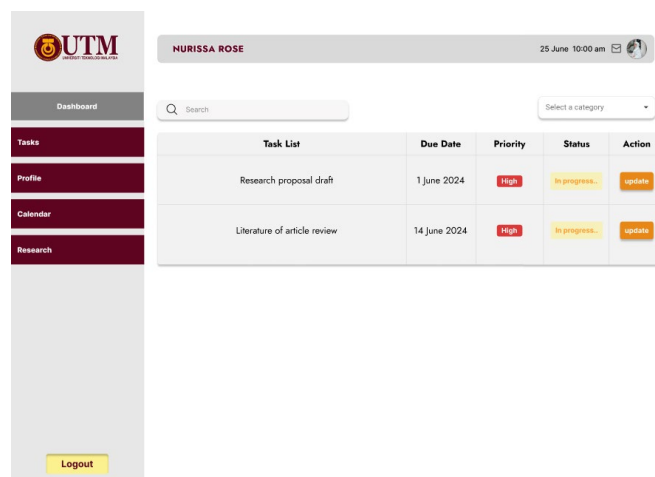


Figure 8.0.8

This is the interface of the student task page. On this page, it will show what task list of the student that includes the due date, priority, status, and action. The Select a Category button is to select the category by task list, status, priority, and due date. The Search button is to search the task list by searching on it. If the user wants to update their task list, they can click on the update button and it will bring the user to the submit task page.

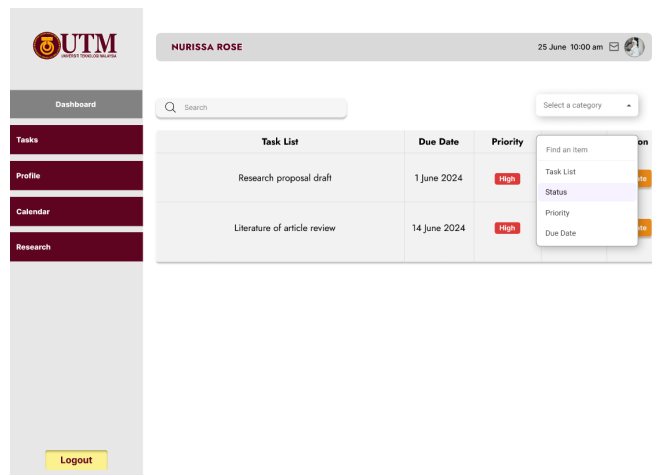


Figure 8.0.9

The dropdown button to select a category.

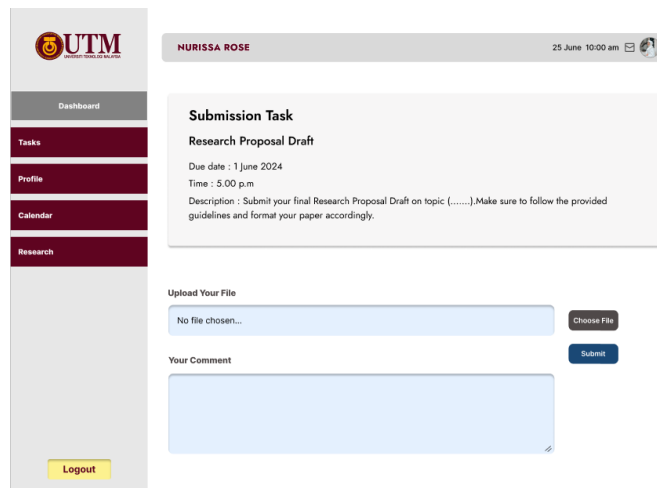


Figure 8.0.10

This is the interface for the submit task page. The user which is a student can submit their task on this page by clicking on the choose file button and then clicking on the submit button.

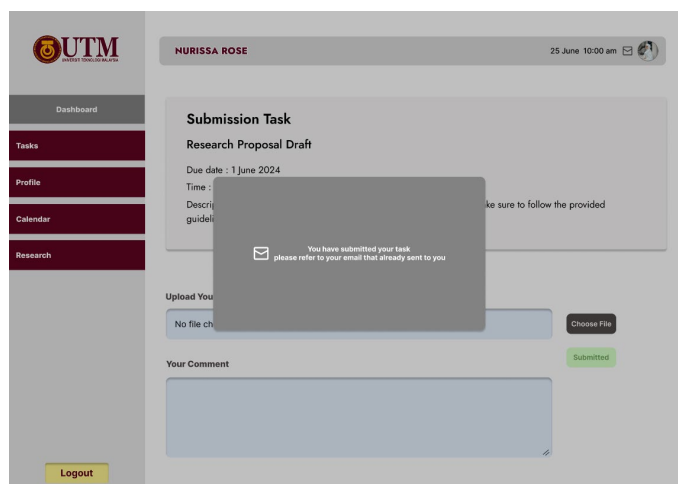


Figure 8.0.11

Once the user clicks on the Submit button it will pop up the notification that they already submit the task.

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Nurissa Rose
Department Of Faculty Computing
Postgraduate Student

Full Name: Nurissa Rose
Matri No: A23CS3000
Program: Masters of Computer Sciences
Academic Advisor: DR Hilman Ukayyah
Address: Jalan Sri Putri 11/8, Taman Putri Kulai, Kulai, 81000, Johor.

Department: Faculty Computing
Email: nurissarose@graduate.utm.my
Phone Number: 012345699
GPA: 4.00

ACADEMIC ACHIEVEMENTS

Award and Honors	Publication and Presentation	Conferences Attended
Outstanding Thesis Award	Journal and Article	Joint Mathematics Meeting (JMM)
Graduate Research Fellowship	Conferences Paper	International Congress of Mathematicians (ICM)
Dean's List	Research Poster	Topology Conferences

[Logout](#)

Figure 8.0.12

This is the interface for the student profile page and it shows all the details of the student. The user also can update their details by clicking on the Update button.

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Nurissa Rose
Department Of Faculty Computing
Postgraduate Student

Full Name: Nurissa Rose
Matri No: A23CS3000
Program: Masters of Computer Sciences
Academic Advisor: DR Hilman Ukayyah
Address: Jalan Sri Putri 11/8, Taman Putri Kulai, Kulai, 81000, Johor.

Department: Faculty Computing
Email: nurissarose@graduate.utm.my
Phone Number: 012345699
GPA: 4.00

ACADEMIC ACHIEVEMENTS

Award and Honors	Publication and Presentation	Conferences Attended
Outstanding Thesis Award	Journal and Article	Joint Mathematics Meeting (JMM)
Graduate Research Fellowship	Conferences Paper	International Congress of Mathematicians (ICM)
Dean's List	Research Poster	Topology Conferences

[Logout](#)

Figure 8.0.13

Once the user clicks on the button update it will pop up the notification that the update already been successfully updated.

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UNIVERSITI TEKNIKAL MALAYSIA

NURISSA ROSE 25 June 10:00 am

Saturday, 1 June 2024 Research proposal draft

Friday, 28 June 2024 Present proposal defense to Dr Hilman

JUNE 2024

Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

[Logout](#)

Figure 8.0.14

This is the interface for student calendar page and it show all the upcoming reminder and due date for the task for student.

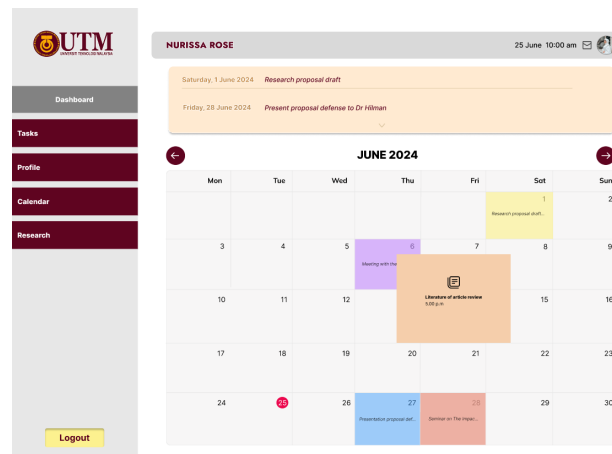


Figure 8.0.15

When the user hovers over the reminder that has been colored it will pop up.

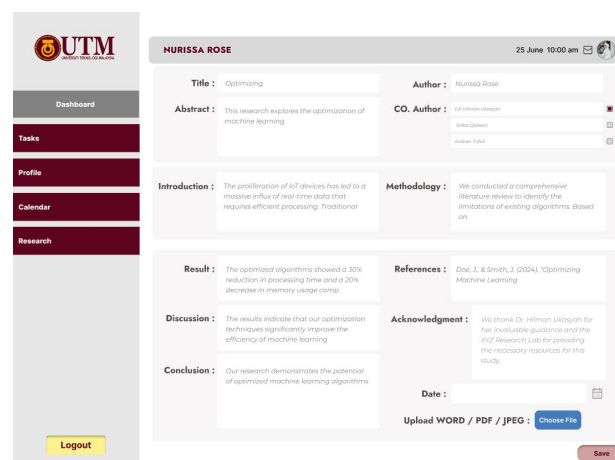


Figure 8.0.16

This is the interface for the student research page. On this page, the user can key in their research paper details and the co-author the user only can tick one for the co-author and they also can upload the Word, PDF, or jpeg then they can save this.

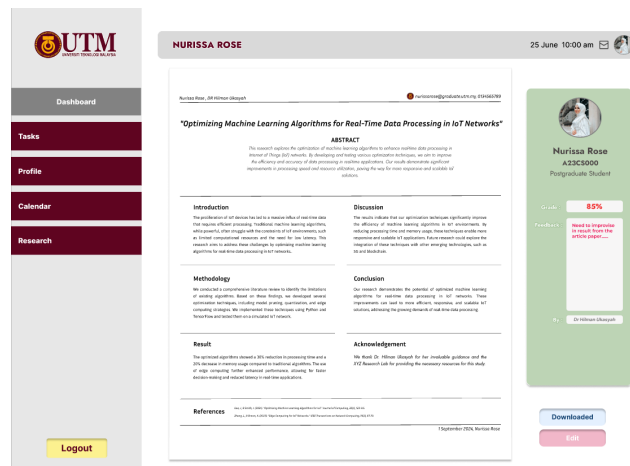


Figure 8.0.17

Once the user clicks on the save button it will move to this page where the user can check on their grade and feedback that has been given by the supervisor but they also can edit back by clicking on the edit button and download their research paper.

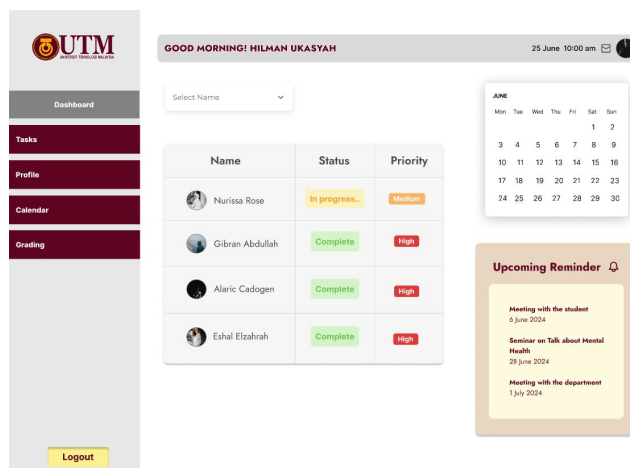


Figure 8.0.18

This is the homepage for the lecturer. This interface will show the progress task of the student, the mini calendar, and the upcoming reminder to show what student activity will be upcoming. On the left side, there is the menu bar for the button dashboard, tasks, profile, calendar and last is the research.

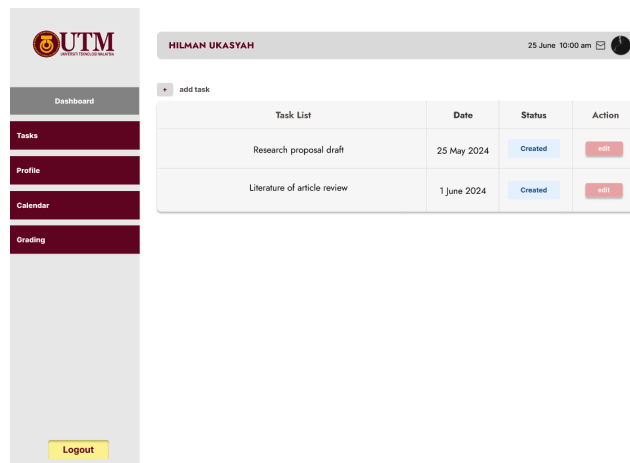


Figure 8.0.19

This is the interface for the lecturer task page and it will show all the tasks that already have been created for their student. The user also can add a task by clicking on the add task button and the user can edit the task by clicking on the edit button.

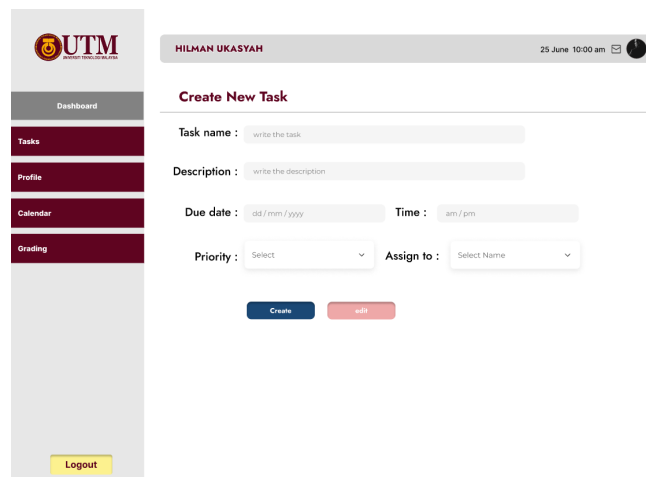


Figure 8.0.20

Once the user clicks on the add task button it moves to this page where the lecturer creates a new task page. On this page, the user can create and edit the task for their student.

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Dashboard

Tasks

Profile

Calendar

Grading

Logout

HILMAN UKASYAH
Department Of Faculty Computing
Lecturer

Full Name: Hilman Ukasyah Bin Dato' Uzair
Staff ID No.: SLC523368
Experience: 4 Years
Address: Jalan Bunga Raya 1, Taman Melawati, Selangor, 681000, Selangor.

Department: Faculty Computing
Email: hilmanukasyah@utm.my
Phone Number: 01436748995

ACADEMIC INFORMATION

Course code	Course Taught	Section
SECL1234	Calculus I	1, 3, 6
SECT3234	Stochastic Processes	8, 10, 13
SECB4567	Bioinformatics and Bioinformatics	2, 9
SECO2435	Statistics	7

update

Figure 8.0.21

This is the interface for the lecturer profile page and it shows all the details of the student. The user also can update their details by clicking on the Update button.

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HILMAN UKASYAH
Department Of Faculty Computing
Lecturer

Full Name: Hilman Ukasyah Bin Dato' Uzair
Staff ID No.: SLC523368
Experience: 4 Years
Address: Jalan Bunga Raya 1, Taman Melawati, Selangor, 681000, Selangor.

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SECO2435	Statistics	7

update

Your information successfully updated!

Figure 8.0.22

Once the user clicks on the button update it will pop up the notification that the update has already been successfully updated.

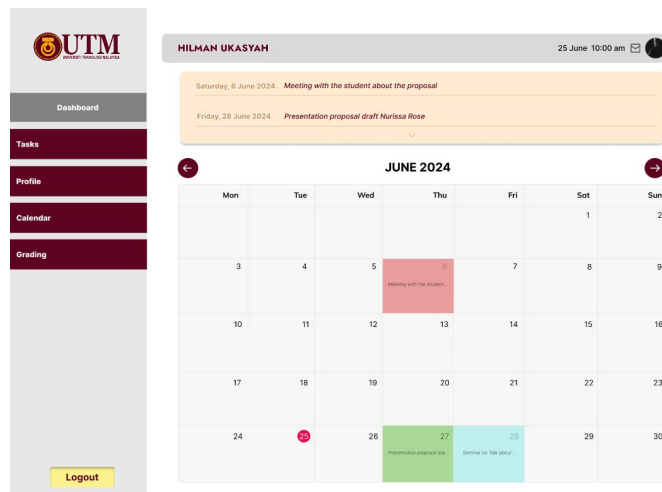


Figure 8.0.23

This is the interface for the student calendar page and it shows all the upcoming reminders and due dates for the task for a student.

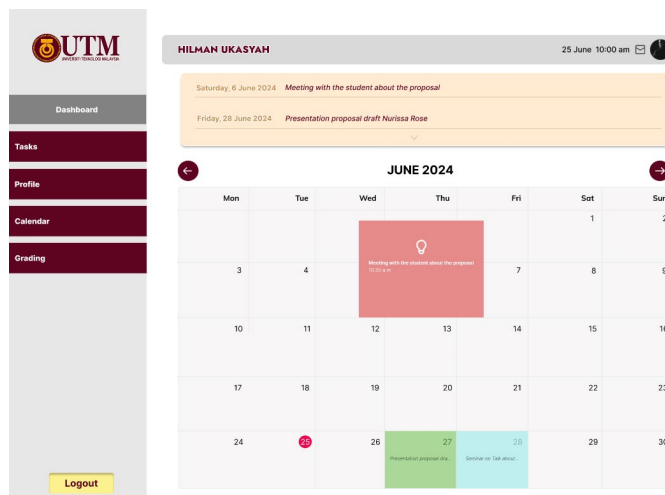


Figure 8.0.24

When the user hovers over the reminder that has been colored it will pop up.

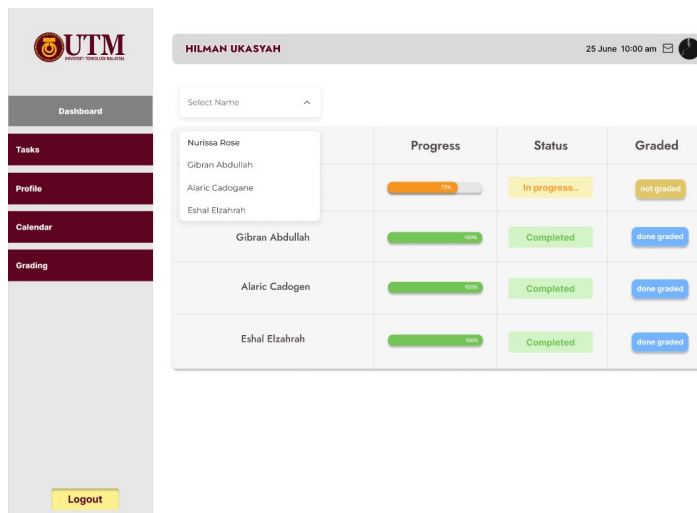


Figure 8.0.25

This is the interface for the lecturer grading page and this page will show the progress and status grading of students that the user already graded but if the grade shows that the student has not been graded the user can click on the not graded button to continue grading and giving feedback on a student.



Figure 8.0.26

This is the interface for the grading and feedback page. On this interface, the user which is the lecturer can key in the grade of their student on their research paper and also can give some feedback on them. They can click on the Update button to update their grade and the feedback. The user also can send a notification to the student that their grade has been graded by clicking on the Send Email button. The user also can download the research paper by clicking on the Download button.

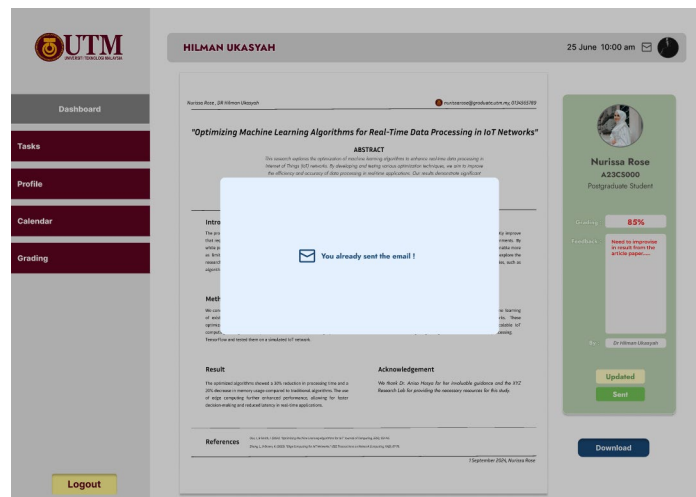


Figure 8.0.27

Once the user clicks on the Send Email button it will pop up the notification that they already sent the email.

9.0 Summary of the proposed system

A task management website system for postgraduate students was created to simplify academic and research-related responsibilities since UTM doesn't have a special system for postgraduate students for their task management. It offers a well-organized and productive platform for managing workloads, deadlines, and priorities. Among the important features were task tracking, calendar integration, priority setting, progress tracking, and alerts. The system's early success was attributed to its user-friendly interface, customizable choices, and effectiveness in assisting students in managing their time and obligations.

The system is successful, however, it is still missing collaborative features that are necessary for research teams and group projects. Its functionality would be substantially improved by incorporating features like collaborative document editing, shared task lists, and team communication. Students' academic endeavors would also be further supported by advancements in mobile accessibility, integration with other research and educational tools, and improved reporting and analytics features.

The task management website system has to address these areas for development to reach its full potential. More user assistance, such as FAQs and tutorials, would enable students to get the most out of the system. These improvements will enable the system to serve better the varied demands of postgraduate students—especially those involved in cooperative projects—and offer a more complete approach to handling their assignments and projects.