UNIVERSITI TEKNOLOGI MALAYSIA SEMESTER 1 SESSION 2023/2024

SCHEDULE MANAGEMENT SYSTEM

Project 2: Information System Gathering and Requirement

SECD2613: SYSTEM ANALYSIS AND DESIGN

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1.0 INTRODUCTION

As undergraduate students majoring in Bioinformatics at Universiti Teknologi Malaysia (UTM), we are committed to pursuing academic excellence. To fulfil the requirements for the Systems Analysis and Design course (SECD2613), we undertook this project to demonstrate our capabilities in this important area. This project allowed us to apply theoretical knowledge to a real-world challenge, developing a practical solution that could have a significant impact on the academic writing experience.

We believe that a cloud-based thesis management system can address current limitations and enable students and supervisors to navigate the thesis writing process more easily and effectively. The following sections of this proposal will delve deeper into the current challenges of the traditional thesis writing process, followed by a detailed description of the proposed cloud-based management system, its features, and its features.
it and the potential benefits it brings to the academic community.

2.0 PROBLEM STATEMENT

The academic world, particularly research-intensive environments, faces a critical roadblock: the inefficiency of managing complex thesis writing projects. Lecturers and postgraduate students currently rely heavily on traditional, manual processes like pen and paper, spreadsheets, and basic project management software. These methods, while familiar, are demonstrably inadequate for the intricate demands of academic research and writing.

These manual processes are plagued by several limitations. Data entry for tasks, deadlines, and communication notes in spreadsheets and notebooks is time-consuming and prone to errors. This human element introduces the potential for inaccuracies, missed deadlines, and wasted time spent on corrections. Furthermore, traditional methods hinder real-time collaboration and co-writing of thesis documents. Version control issues arise from using email attachments and external cloud storage solutions. Feedback exchange becomes fragmented, lacking a centralized platform for discussions and annotations on drafts.

Spreadsheets and notes also fail to provide a comprehensive view of project progress. Both students and supervisors struggle to track overall completion, identify potential delays, or

adjust timelines effectively. This lack of transparency can lead to confusion and missed opportunities to address issues before they escalate. Inefficient workflows translate to wasted time spent on manual updates, sorting through documents, and clarifying communication through scattered email threads. These activities detract from the core research and writing activities critical for academic success.

The limitations of manual processes have significant negative impacts on the academic writing experience. The inefficiencies can significantly delay thesis completion due to missed deadlines and overall workflow hangups. The stress associated with missed deadlines, confusion, and disorganization can negatively impact the well-being of postgraduate students. Time wasted on manual tasks and communication management reduces overall efficiency and productivity for both students and supervisors. Lack of centralized communication platforms can lead to misunderstandings and breakdowns in communication between students and supervisors. Disorganization and inefficiency can hinder the quality of research and writing, potentially leading to subpar thesis work.

The current methods for managing thesis writing are outdated and hinder the success of both students and supervisors. There is a critical need for a more efficient, collaborative, and cloud-based solution specifically designed to address the challenges faced in academic research and writing projects. By implementing a new approach, we can create a more streamlined and productive workflow, fostering academic excellence and a more positive learning environment for all stakeholders.

3.0 PROPOSED SOLUTION

This paper proposes a solution: a cloud-based thesis management system designed specifically to address these pain points. This innovative platform will empower postgraduate students and their supervisors to navigate the thesis writing process with greater efficiency, organization, and collaboration. By replacing outdated manual processes with a centralized and user-friendly system, this project aims to Reduce wasted time. Eliminate the need for cumbersome tasks like creating and updating multiple spreadsheets or managing versions of documents through email attachments. Secondly, to enhance collaboration by foster seamless communication and real-time co-editing of drafts between students and supervisors. It can also improve organization by providing a central platform

to manage tasks, deadlines, and project milestones, ensuring everyone remains on the same page. Next, it is to increase transparency. Offering supervisors a clear view of student progress and facilitate timely feedback exchange. Lastly, to boost productivity by equipping students and supervisors with the necessary tools to streamline the thesis writing process, allowing them to focus on the core research and writing tasks.

This cloud-based system has the potential to revolutionize the thesis writing experience for postgraduate students and their supervisors. By transforming the traditional, often cumbersome process into a more efficient and collaborative one, this project aims to significantly improve the quality and timeliness of thesis completion.

4.0 INFORMATION GATHERING PROCESS

4.1 METHOD USED

Open Ended

1. What specific challenges with the current manual process led to the idea of developing a new task management system?
    - Challenges include inefficiency in communication and reminders, reliance on email and WhatsApp which are easily cluttered, and difficulties in managing and scheduling tasks for multiple students.

2. Were there any incidents or feedback from users that highlighted the need for a new system?
    - Feedback highlighted issues with communication and reminders, where emails and WhatsApp messages were often missed or overlooked.

3. What tools (e.g., Excel, notepad, calendars) are primarily used for task management, and how are they integrated?

- Primarily Excel, emails, and WhatsApp for communication and reminders. These tools are not well integrated, leading to inefficiencies.

4. Are there any specific examples or scenarios where the manual process has fallen short?

- Communication and reminders often fall short due to cluttered email inboxes and high volumes of WhatsApp messages. Important tasks and deadlines can be missed.

5. What operational constraints (e.g., training requirements, adoption hurdles) must be considered when rolling out the new system?
   - Operational constraints include the need for user training, financial calculations for maintenance, and ensuring all supervisors adopt the new system.

Closed Ended

1. What goals do you aim to achieve with the introduction of this new system?
   - Goals include improving task listing, scheduling, tracking progress, enhancing collaboration and communication, and providing reminders and alerts.

2. Can you describe in detail how tasks are currently managed using manual processes?
   - Tasks are managed using a combination of Excel sheets with multiple versions (version 1, version 2), email communications, and scheduling through meetings.

3. Who are the primary stakeholders of the current task management process?
   - Primary stakeholders are postgraduate students and their supervisors.

4. What are the specific needs and expectations of each stakeholder group (students, lecturers, administration staff) from the new system?
   - Students need efficient task management, progress tracking, and effective communication tools. Supervisors need to easily assign tasks, check work, and track progress. University administration expected improved efficiency and streamlined workflows.

5. How do different stakeholders prioritize features like usability, accessibility, and functionality in the new system?

- Usability, accessibility, and functionality are prioritized highly. The system must be user-friendly (Figma, UI UX), easily accessible (web development focus), and functional for both supervisors and students.

6. What are the must-have features and functionalities for the new task management system?
   - Must-have features include task listing, scheduling, progress tracking, collaboration tools, communication tools, reminders, alerts, and a log-in/sign-up system for students and supervisors.

7. How important are real-time updates and collaborative tools for the effectiveness of the system?
   - Real-time updates and collaborative tools are crucial for the effectiveness of the system, enabling seamless communication and task management.

8. What are the desired capabilities for managing deadlines and reminders within the system?
   - Desired capabilities include automated task creation, deadline tracking, and reminder alerts to prevent missed deadlines.

9. Can you provide examples of how you envision these features improving task management?
   - Examples include reducing time spent on manual updates, improving communication efficiency through real-time co-editing and centralized feedback, and ensuring all stakeholders are on the same page with automated reminders and task tracking.

10. What are the budgetary limitations for developing and implementing the new system?
    - The system will use free, high-fidelity software, free open-source tools, and minimal cost for servers and hosting. Laravel will be used for development, with one person maintaining the servers.

4.2 SUMMARY FROM METHOD USED

To address the inefficiencies of the current manual task management process and develop a more effective system, a holistic research approach was undertaken. This approach used interviews, questionnaires, and observations to gather insights from key stakeholders, including graduate students, supervisors, and university administrative staff.

Interview was the primary method of gathering insights from stakeholders.
Through structured conversations, supervisors and students shared their specific challenges and expectations. Supervisors reported significant issues with using Excel for task management, citing version control issues and scheduling conflicts.
They also highlighted inefficiencies in communication when using email and WhatsApp, which often led to missed reminders and confusion. Students echoed these concerns, highlighting the need for better progress tracking and a centralized platform to manage their assignments and communicate with supervisors.

To complement the qualitative data from the interviews, the questionnaire was distributed to a wider group of stakeholders. This method helps collect quantitative data and identify general trends. Students were asked about the tools they currently use to manage work, such as Excel, notebooks, and calendars.
They provide specific examples of where manual processes have failed, especially in terms of reminders and communication. Supervisors answered questions related to the types of problems they encounter when managing multiple students, the importance of real-time updates, and their preferences for integration with platforms other.

Direct observation provides additional insights into the practical challenges of current manual processes. Observing task management meetings between students and supervisors becomes clear that version control issues with Excel files and missed deadlines due to ineffective reminders are serious problems. Observations of communication practices further reveal the chaos and ineffectiveness of email and WhatsApp use and highlight the need for a more organized and integrated communication system.

The findings from these methods highlight some important challenges facing current manual processes. Inefficiencies in communication and reminders, difficulties in managing and organizing tasks for multiple students, and problems with version control using Excel were identified as major problems. Stakeholders have clearly expressed their needs and expectations for the new system. Students want effective work management, progress tracking, and effective communication tools. Supervisors are looking for an easy way to assign tasks, check work, and track progress, while university administrators expect improved efficiency and streamlined workflows. Desired features and functionality for the new system include to-do lists, planning, progress tracking, collaboration tools, communication tools, reminders, alerts, and posting systems log in/register. Collaboration tools and real-time updates are considered crucial, along with automated task creation, deadline tracking, and reminder alerts.

Several technical and operational limitations have also been identified.
Budget constraints require the use of free and open-source tools, with minimal costs for servers and hosting services. The operational part of the system will be managed by a single person, ensuring that the system remains profitable.

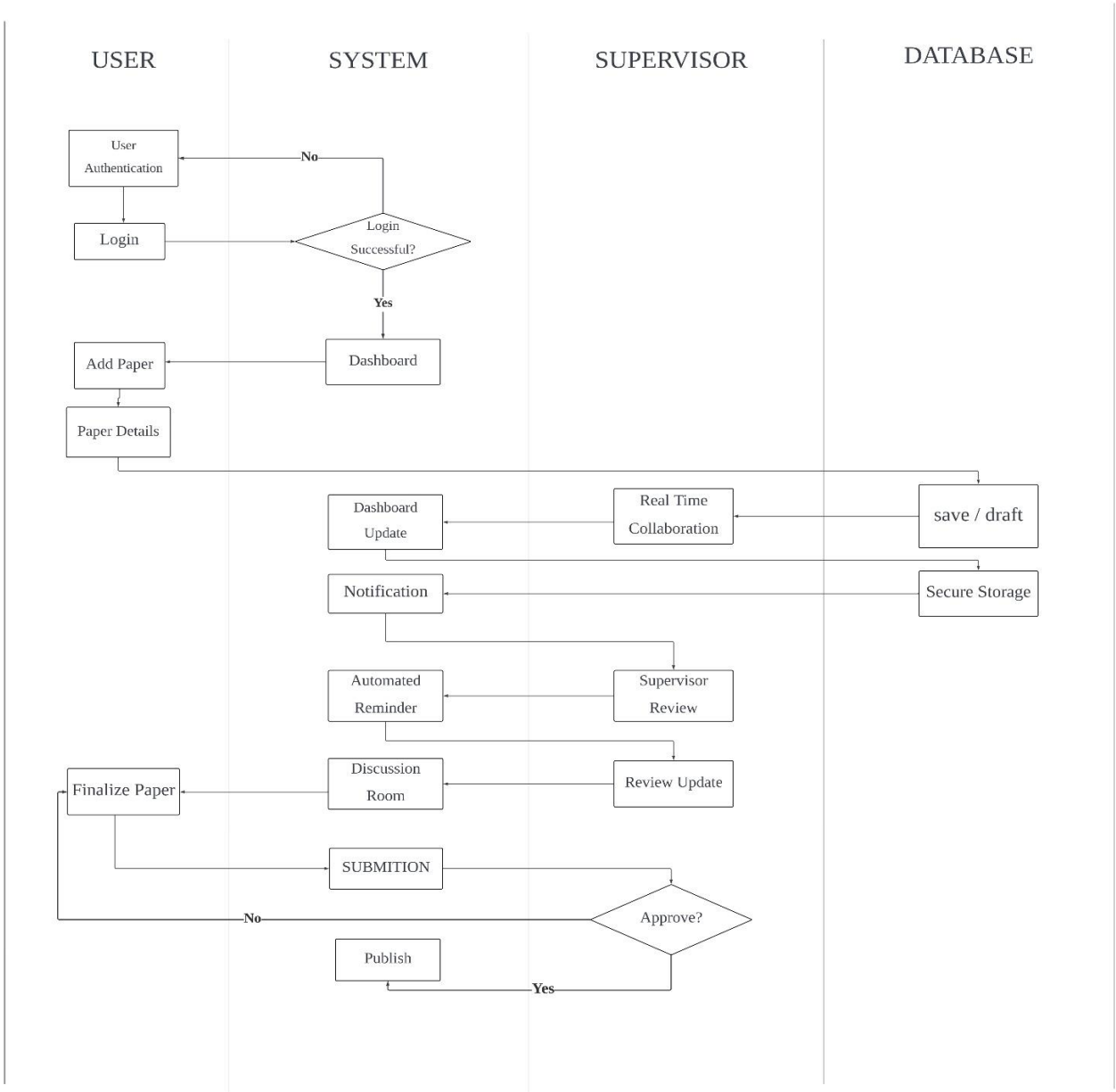
Conclusion By combining information from interviews, questionnaires, and observations, the project team developed a comprehensive understanding of the current challenges and functionality required for the management system.
handle new tasks. This thorough approach ensures that the new system will effectively meet the needs of all stakeholders, providing a streamlined, efficient and user-friendly solution for task management.

5.0 REQUIREMENT ANALYSIS

5.1 Current business process (scenarios, workflow)

1. Students need to register first the thesis management system and get the confirmation code based on email they send if not then they need to request for confirmation email back.
2. Then, the student login the thesis management system.
3. Student will add the thesis paper by enter the title, field of study, choosing the dates of thesis, selecting paper type and scope, filling the first author up to 13 co-author and design the corresponding author with a checkbox that disables others once selected.
4. The paper can save as draft and can be edit.
5. The system allows real-time co-editing of the documents, synchronized changes and seamless feedback exchange with the enhancing collaboration.
6. Notification sent to supervisors and co-authors when the progress is updated to ensuring transparency.
7. A visual dashboard displays the progress of the task status, deadlines.
8. The system features secure cloud storage with the automated reminders for upcoming deadlines, and prompts supervisors to review updates.
9. Students and supervisors can communicate to each other through discussion room for student to consult with their supervisor.
10. Finally, once a paper is completed and approved, it can be prepared for publishing, streamlining the entire thesis process.

Workflow


USER
SYSTEM
SUPERVISOR
DATABASE
User Authentication
No
Login
Login Successful?
Yes
Add Paper
Dashboard
Paper Details
Dashboard Update
Real Time Collaboration
save / draft
Notification
Secure Storage
Automated Reminder
Supervisor Review
Finalize Paper
Discussion Room
Review Update
SUBMITION
No
Approve?
Publish
Yes

5.2 Functional Requirement (input, process and output)

Functionality Requirements	Description
FR1	A user should be able to log in using their university email and password. ***Input:*** University email and password. ***Process:*** Authentication and verification of credentials. ***Output:*** Access to the user's account or an error message for failed login attempts.
FR2	A student should be able to add a new paper. ***Input:*** Title, area of study, date selection, paper type, scope, author names, corresponding author checkbox ***Process:*** Data validation and storage of paper details. ***Output:*** Confirmation of paper addition or error message for invalid inputs.
FR3	The system should allow real-time co-editing of documents. ***Input:*** Document file, real-time edits from users. ***Process:*** Synchronization of changes, saving edits. ***Output:*** Updated document visible to all collaborators in real-time.
FR4	A student should be able to save a paper as a draft. ***Input:*** Paper details (title, area of study, authors, etc.). ***Process:*** Save paper details in draft mode. ***Output:*** Draft saved confirmation message.
FR5	The system should display a visual dashboard with project progress, task statuses, and deadlines. ***Input:*** Task and progress data. ***Process:*** Aggregate and display data on the dashboard. ***Output:*** Visual dashboard showing current project status.
FR6	Students should be able to prepare their paper for publishing after approval. ***Input:*** Final paper document, approval status. ***Process:*** Verify approval, prepare publishing format. ***Output:*** Confirmation of paper readiness for publishing.

5.3 Non-functional Requirement (performance and control)

Non-Functional Requirement	Description
Security	The system must ensure that all data, including student and supervisor information, as well as documents, are securely stored and not leaked
Usability	The system should be user-friendly and easy to navigate for both students and supervisors, minimizing the learning curve.
Reliability	The system should be reliable and available with minimal downtime to ensure users can access it whenever it needed.
Performance Efficiency	The system should perform efficiently, with quick response times for all operations, including login, document upload, and real-time editing.
Availability	The system should be available for use 24/7, ensuring that users can access their work at any time.
Portability	The system should be accessible on various devices and operating systems, including desktops, tablets and smartphones.

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

Context Diagram

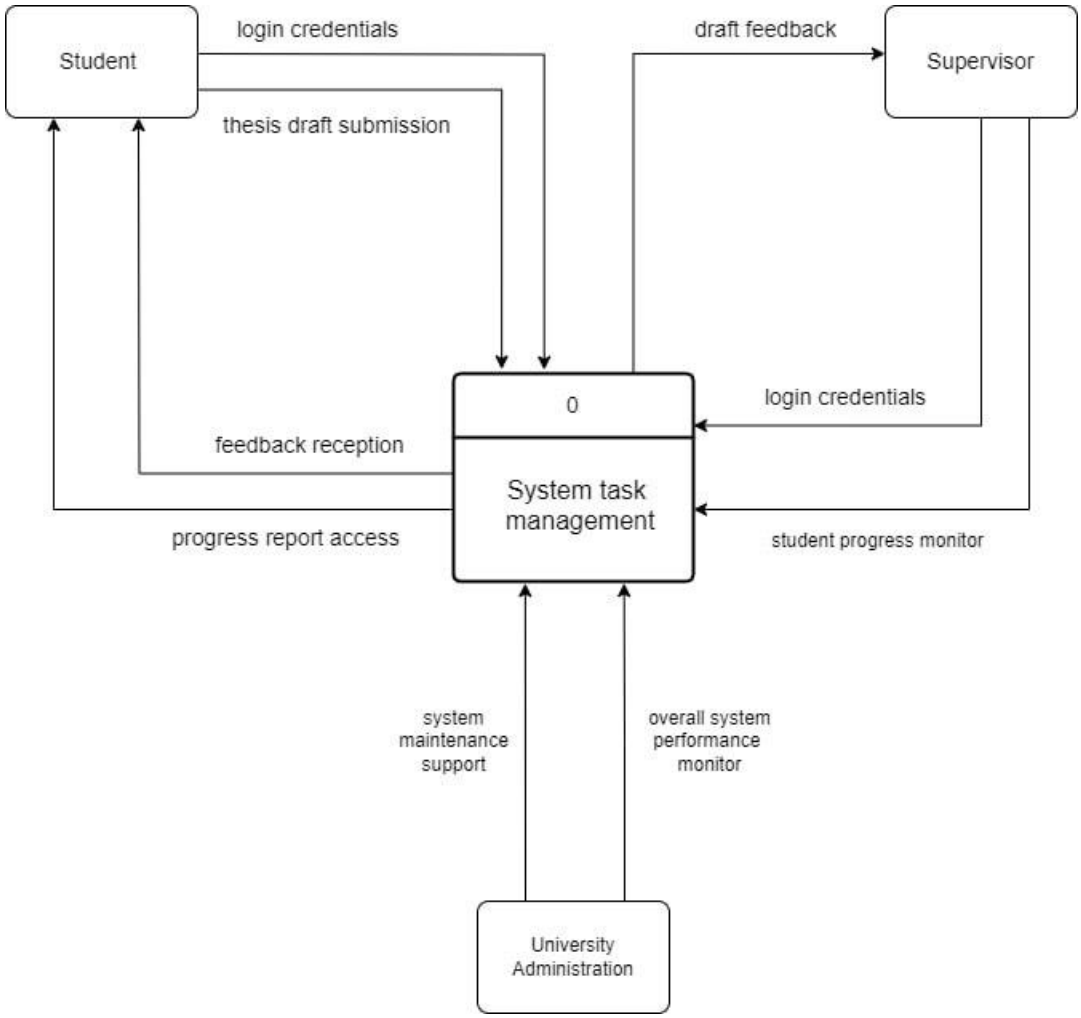
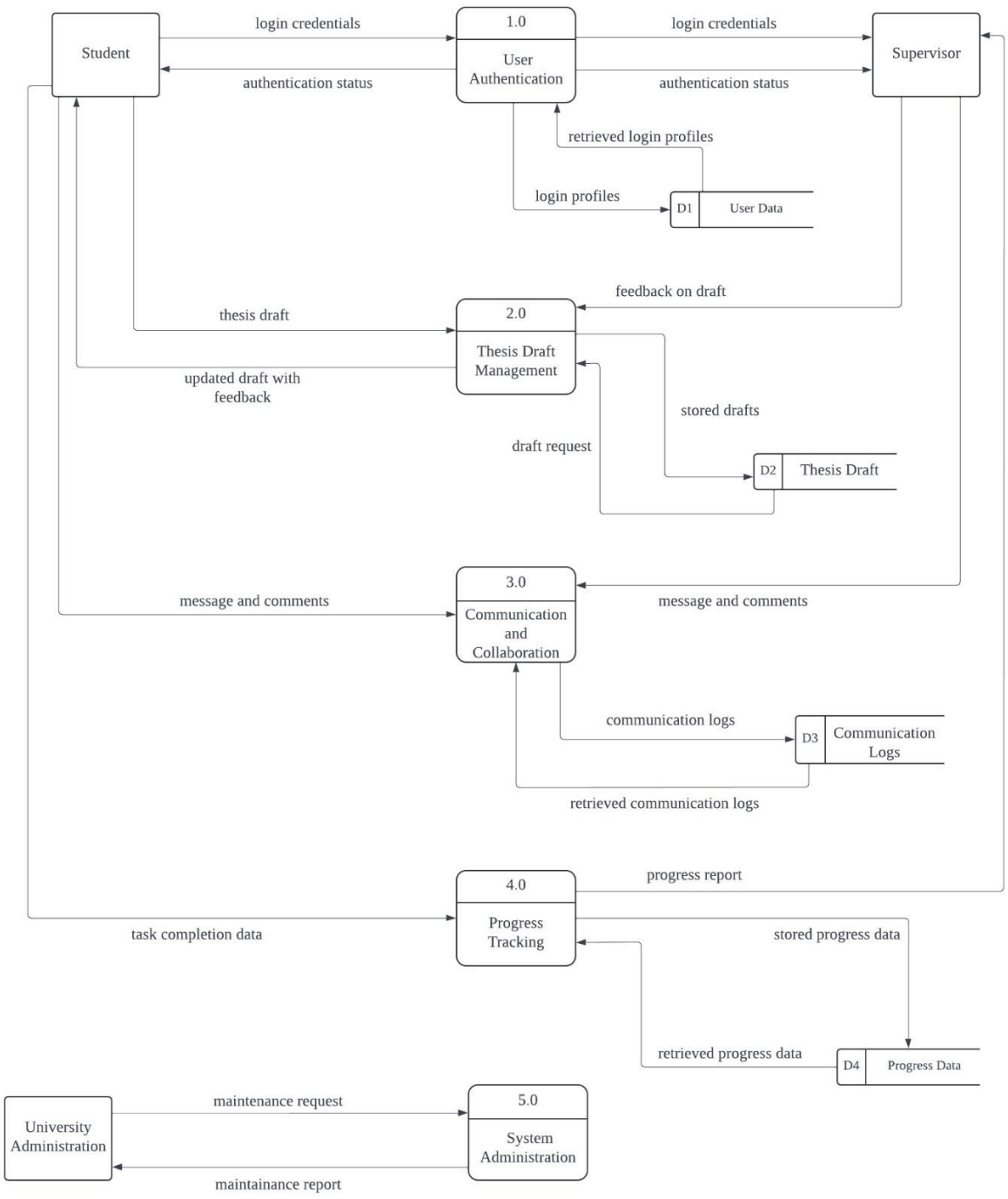
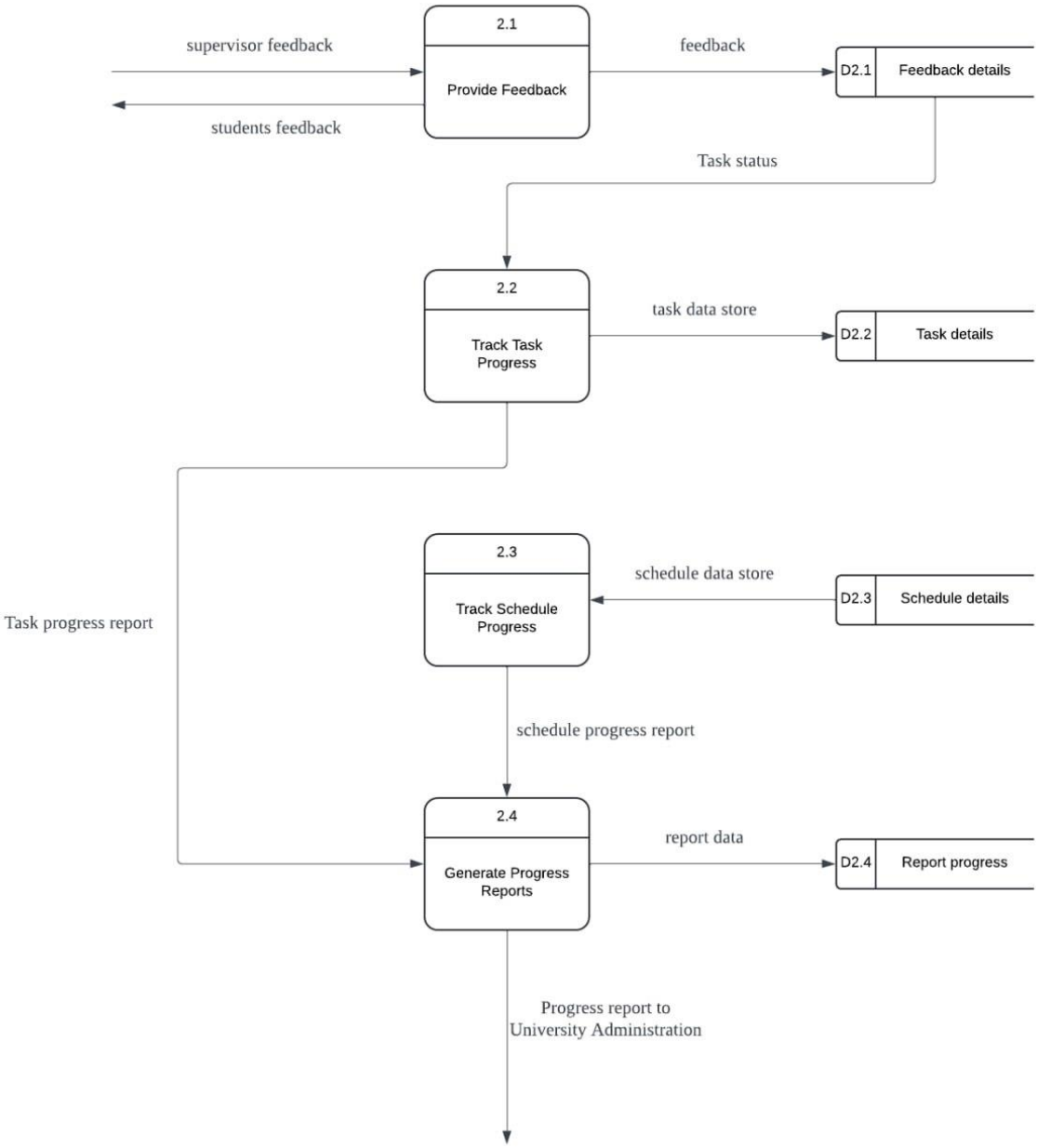


Diagram 0

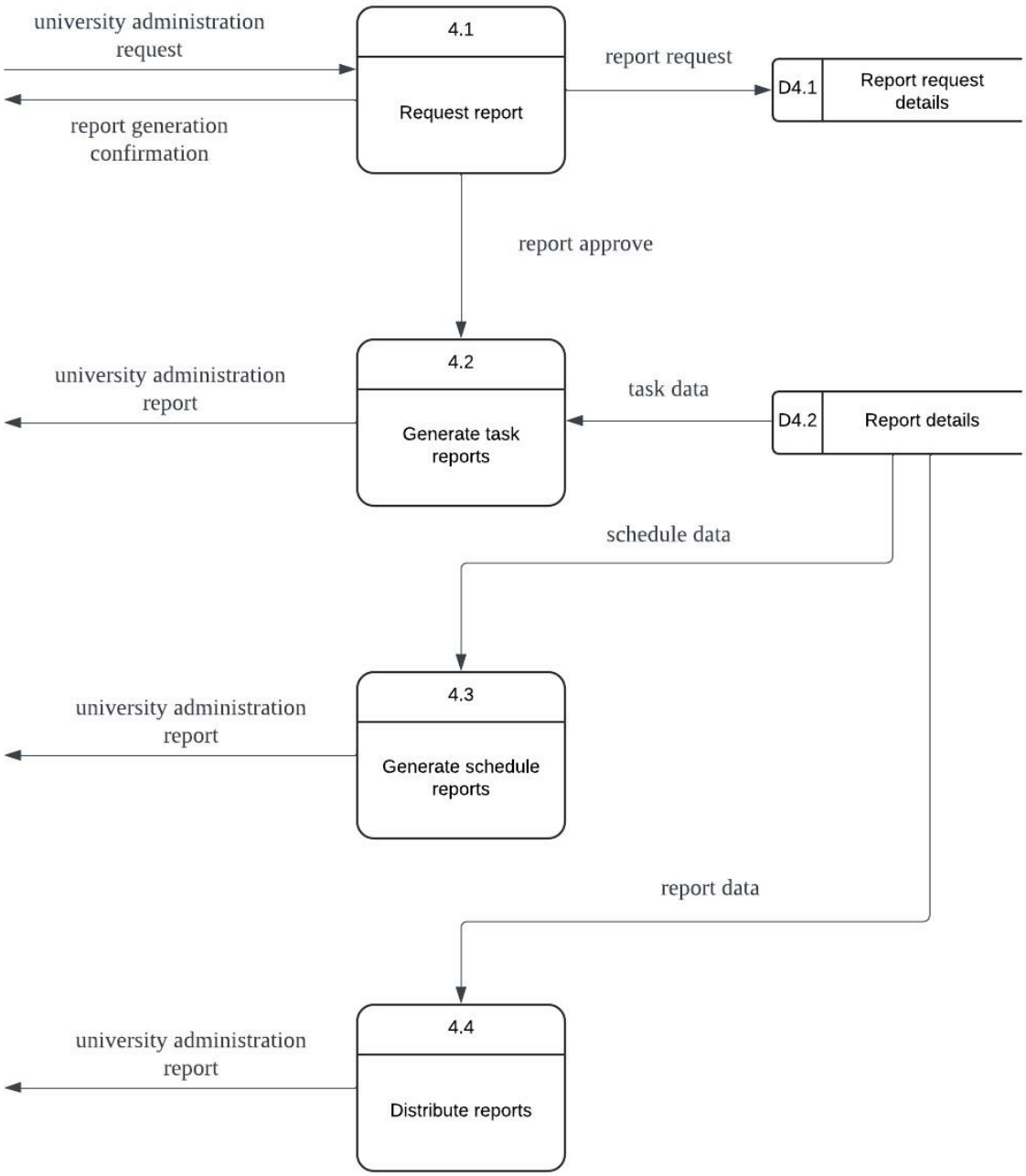

Student
login credentials
authentication status
1.0
User Authentication
login credentials
authentication status
Supervisor
retrieved login profiles
login profiles
D1
User Data
feedback on draft
thesis draft
2.0
Thesis Draft Management
updated draft with feedback
stored drafts
draft request
D2
Thesis Draft
3.0
Communication and Collaboration
message and comments
message and comments
communication logs
D3
Communication Logs
retrieved communication logs
4.0
Progress Tracking
progress report
task completion data
stored progress data
retrieved progress data
D4
Progress Data
University Administration
maintenance request
maintainance report
5.0
System Administration

Child Diagram

Process 2.0 Thesis Draft Management



Process 4.0 Progress Tracking



6.0 Summary of Requirement Analysis process

In conclusion, our team has gained valuable insights into the Requirement Analysis process through this project. Despite the challenges in gathering and analyzing requirements, we successfully navigated through them with our teamwork. This collaborative approach not only enhanced our understanding of stakeholder needs and system functionalities but also strengthened our synergy and ability to address complex issues efficiently.