SECD2613 - ANALISIS DAN REKABENTUK SISTEM (SYSTEM ANALYSIS AND DESIGN)

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Project Proposal 2

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1.0 OVERVIEW OF THE PROJECT

This project aims to develop an integrated task management system to streamline paper writing and publication processes for postgraduate students and lecturers. Currently, these tasks rely on inefficient and error-prone manual methods using tools like Excel, WhatsApp, and email. Our proposed system will centralize task management into a user-friendly platform, offering features such as task organization, dynamic scheduling, real-time collaboration, and automated progress tracking. This will enhance productivity and efficiency, reduce dependency on multiple tools, and ensure the accuracy and integrity of academic work. With universal browser compatibility and responsive design, users can access and manage their tasks from any location and device. Leveraging advanced web technologies, this project aims to deliver a scalable, reliable, and secure solution, ultimately improving the quality of academic research and publication.

2.0 PROBLEM STATEMENT

In academic settings, particularly among postgraduate students and their supervisors, the process of managing paper writing and publication is fraught with inefficiencies due to reliance on a variety of disparate tools. These tools include Excel for task tracking, WhatsApp for communication, and email for coordination and document sharing. This fragmented approach lacks coherence and integration, making it difficult to maintain a streamlined workflow. Consequently, users face significant challenges in efficiently managing their tasks and ensuring all aspects of the paper writing process are handled systematically.

One of the primary issues with the current manual system is the difficulty in tracking progress accurately. Supervisors and students must manually update multiple documents and spreadsheets, leading to inconsistencies and errors. Additionally, scheduling tasks and setting reminders are often done in isolation from the task tracking tools, resulting in overlooked deadlines and missed milestones.

The cumulative effect of these inefficiencies is a significant increase in the administrative workload for both students and supervisors. Time that could be spent on research and writing is instead consumed by managing logistics and resolving issues caused by the fragmented system. This not only hampers academic productivity but also impacts the quality and timeliness of research outputs. Therefore, there is an urgent need for an integrated task management system that can centralize and streamline these processes, enhance collaboration, and reduce the administrative burden, ultimately leading to improved efficiency and higher quality academic work.

3.0 PROPOSED SOLUTION

To address the inefficiencies and challenges of traditional academic task management, we propose developing WorkStudio, a comprehensive web platform designed for postgraduate students and lecturers. This platform will streamline academic processes and enhance productivity through the integration of several key features.

WorkStudio will provide robust task listing capabilities, enabling users to create and organize tasks with essential details such as deadlines, priority levels, and assigned stakeholders. Advanced categorization and tagging options will facilitate efficient organization and quick navigation, ensuring easy access and management of tasks.

The platform will include sophisticated task management and scheduling functionalities. Users can create dynamic schedules that automatically update project timelines in real-time, ensuring precise and clear task management. The system will also allow setting dependencies and milestones, offering a comprehensive overview of project progress and upcoming tasks.

Automated progress tracking mechanisms will streamline project management processes. Task statuses will be updated automatically based on user inputs or predefined triggers, providing real-time visibility into each task's progress. Detailed reports and visualizations will help users easily assess project status and make informed decisions.

Effective collaboration tools will facilitate seamless communication among team members. Users can share documents, edit collaboratively, leave comments, and receive notifications for immediate feedback. Real-time communication features will ensure all stakeholders are aligned, promoting efficient teamwork and accelerating project completion.

Personalized reminders and alerts will help users stay organized and meet important deadlines. The system will send notifications for upcoming deadlines, key milestones, and any changes in task statuses, ensuring users are always aware of their responsibilities and can manage their time effectively. Customizable notification settings will allow users to choose their preferred alert methods and timing.

In conclusion, WorkStudio aims to revolutionize academic task management by providing a centralized, efficient, and user-friendly platform tailored to the needs of postgraduate students and lecturers. By integrating comprehensive features such as task listing, task management and scheduling, progress tracking, collaboration tools, and system notifications, WorkStudio will eliminate the inefficiencies of traditional methods and foster a more productive and collaborative academic environment.

4.0 INFORMATION GATHERING PROCESS

In order to understand and track the current state of processes, systems, and workflows before suggesting any changes, the information gathering phase of our project was essential for performing an "as-is" study. The current research covers a number of processes, all of which were systematically carried out to guarantee a thorough understanding of the job management practices now in use at Universiti Teknologi Malaysia (UTM).

4.1 Methods Used

We used interviews as our main data gathering strategy in order to fully analyze the situation of task management today. We were able to obtain in-depth information directly from significant stakeholders by using this qualitative approach.

4.1.1 Interviews

An extensive interview with Dr. Aliff, a UTM lecturer who actively assists postgraduate students with their studies and writing processes, became the foundation for our information-gathering method. Because of Dr. Aliif's vast experience, we were able to gain insightful knowledge about current task management processes as well as the difficulties experienced by instructors and students.

We created a thorough series of questions ahead of time with the intention of learning about the procedures, technology, and particular difficulties that are being faced. Aspects of task management such as the order of tasks, individuals involved, tools and technologies utilized, lines of communication, and any documentation already in place were all covered by these questions.

Dr. Aliif discussed the condition of task management today during the interview, emphasizing how common digital notepads and Excel spreadsheets are. He clarified that while being well-known and frequently utilized, these tools have a number of issues. He pointed out that maintaining and updating these spreadsheets by hand takes a lot of time and is error-prone due to labor-intensive processes. This frequently leads to information that is out-of-date or inaccurate which causes inefficiencies and misunderstandings.

Dr. Aliif also talked about the difficulties in supervising several research initiatives at once. He stressed that it is quite inefficient to use manual methods to follow the progress of numerous students and their projects. Information is frequently spread over several papers and platforms due to the lack of a centralized system, making it challenging to obtain a clear picture

of ongoing tasks and deadlines. Because of this division, there is less time available for more important academic tasks and an increase in administrative burden.

The lack of real-time collaboration features in the existing tools was one of the most pressing issues that Dr. Aliif made clear. He clarified that the inability to update and exchange information instantly hinders efficient collaboration and communication with students. This lack of coordination frequently leads to delays, unneeded work, and missed deadlines, which has a substantial negative impact on both lecturers' and students' total productivity. Dr. Aliif emphasized the necessity of a task management system that can enable smooth communication and real-time updates, guaranteeing that all stakeholders are constantly informed and in agreement.

Dr. Aliif further brought attention to the restricted accessibility of the existing task management techniques in addition to these operational issues. He said that important records and data are frequently restricted to local storage or certain devices, which makes it difficult to collaborate and share information effectively. This restriction is especially inconvenient in a hectic academic setting when prompt access to information is essential.

Additionally, Dr. Aliif gave insightful explanations of the characteristics he thinks a new task management system should have. In order to reduce the learning curve for new users, he underlined the importance of having a user interface that is simple to use. He also emphasized the significance of automated scheduling and progress tracking tools that may dynamically adjust project deadlines and timelines. Integrated communication channels, strong data security measures, and real-time collaboration tools were some of the other essential elements he suggested.

4.2 Summary of Findings from the Interview

A thorough understanding of the condition of task management in the academic setting was obtained from the interview with Dr. Aliif. Among the main conclusions drawn from our "as-is" analysis are:

1. Understanding Current Processes: Digital notepads and Excel spreadsheets are the main tools used in current task management procedures, and they are laborious and prone to inaccuracy.

2. Data Collection: The complexities revealed by Dr. Aliif revealed the difficulties and inefficiencies resulting from manual task management techniques.

3. Mapping Processes: By identifying the decision-making points, interactions, and order of actions involved in handling academic assignments, the interview helped us to map the current workflows.

4. Identifying Pain Points: Notable areas for concern include dispersed information, the labor-intensive nature of manual updates, the inability to collaborate in real-time, and the restricted accessibility of task management systems.

5. Analyzing the Root Causes: The primary reason for these inefficiencies is the usage of outdated tools that aren't made for effective task management and teamwork in a fast-paced educational setting.

6. Assessing Technology and Tools: The needs of effective task management, real-time collaboration, and accessibility are not being met by the tools that are already in use, which include Excel spreadsheets and digital notepads.

7. Documenting Findings: The results of the interview with Dr. Aliff underscore the value of an integrated task management system to improve efficiency, coordination, and production when handling assignments and projects for academic credit.

Overall Summary

Our interview with Dr. Aliff offered plenty of information that allowed us to conduct a thorough "as-is" examination of the task management procedures that are currently in place at UTM's educational facility. The current manual techniques are ineffective, prone to mistakes, and lacking in crucial aspects for instantaneous cooperation and ease of use. By offering a user-friendly, real-time, collaborative environment, our suggested platform, WorkStudio, seeks to address these problems and improve productivity, coordination, and general efficiency in handling academic work and projects. This "as-is" analysis provides a fundamental understanding of the situation as it is, which paves the way for the development of focused solutions that satisfy lecturers and postgraduate students' demands.

5.0 REQUIREMENT ANALYSIS

5.1 Current Business Process (Scenarios, Workflow)

Under the existing method, tasks are manually created by professors and postgraduate students using digital notepads or Excel spreadsheets, where they include task descriptions, deadlines, and priority levels. These spreadsheets are used for task management. Different columns are used to indicate different details, such as priority and status, and users manually update the status of activities such as not started, in progress, and completed and when they are completed. Email exchanges and shared drives, such as Google Drive or Dropbox, are the main means of user collaboration. This frequently leads to document versions and misunderstanding about which is the most recent. Limited real-time collaboration causes delays and breakdowns in communication.

Scheduling is managed by manually entering deadlines into calendars such as Google Calendar and setting up reminders, with any changes to deadlines requiring manual updates across all tools used. Progress tracking is also manual, with users checking and updating progress in spreadsheets and generating reports by copying data into new documents, a process that is both time-consuming and error-prone. Notifications and reminders are set individually, often resulting in missed notifications, and communication about task updates and deadlines relies on email or chat applications, which can be fragmented and inconsistent.

5.2 Functional Requirements (input, process and output)

The input for the current task management system includes detailing task names, descriptions, deadlines, priority levels, and assigned stakeholders using spreadsheets or digital notepads. Users provide inputs by performing actions such as updating tasks, changing their status, and adding comments and feedback. Collaboration data input consists of shared documents with comments and edits, typically managed through email exchanges and shared drives like Google Drive or Dropbox. Scheduling information input includes dates and times for deadlines, milestones, and reminders, which are manually entered into calendars such as Google Calendar, necessitating manual updates across all tools when changes occur.

Creating, modifying, and deleting tasks on the platform, classifying them for simple navigation using tags and categories, and designating tasks to certain individuals or groups are all part of the task management process. Real-time document sharing and editing, a system for comments and feedback inside tasks, and instantaneous team member notifications of changes and updates all improve collaboration. By creating dynamic project timelines based on work progress and automatically updating and syncing deadlines with integrated calendar tools, scheduling is streamlined.

Automated progress monitoring features include visual progress indicators like Gantt charts and progress bars, as well as task status updates triggered by user input or preset events. Users receive individualized notifications and reminders through email and in-app notifications, informing them of impending deadlines, work assignments, and status updates. This all-encompassing strategy guarantees smooth task administration, flawless teamwork, precise scheduling, and successful progress monitoring.

The output of the current system includes comprehensive task lists detailing status, priority, and deadlines, providing a clear overview of all tasks. Progress reports are automated, displaying task progress, completed tasks, and upcoming deadlines, ensuring users are informed of their status. Collaboration records capture logs of comments, edits, and feedback from team members, maintaining a transparent history of interactions. Updated project timelines and calendars illustrate task deadlines and milestones, facilitating effective scheduling. Additionally, notifications deliver alerts and reminders to users' devices and emails, keeping everyone updated on important changes and deadlines.

5.3 Non-functional Requirement (performance and control)

Platform performance is critical, with an emphasis on dependability, scalability, and responsiveness. It should ensure a seamless user experience by loading rapidly and reacting to user inputs without any discernible latency. Scalability is crucial because as the system expands, it must be able to manage more users and jobs without seeing a decrease in performance. Another important component is reliability, which is exemplified by the platform's constant operation devoid of glitches or outages, offering users a solid and trustworthy setting for job management and teamwork.

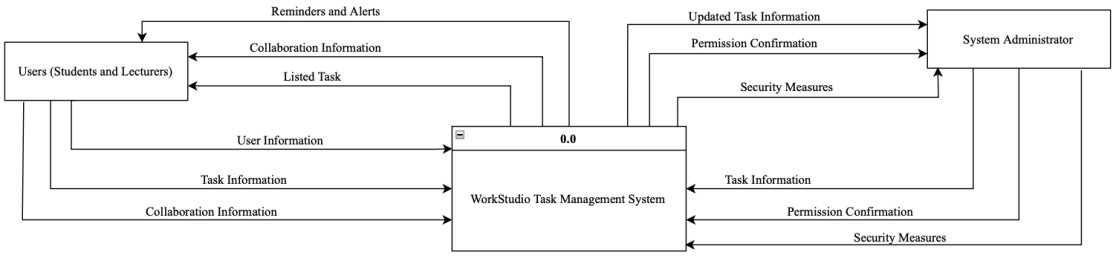
For the control platform, there are usability, security, data encryption, user authentication and data integrity. In usability, we emphasize an intuitive interface design that provides clear instructions and user-friendly features. This ensures that students, faculty and administrators can navigate the platform effortlessly, enhancing their overall experience. Security is paramount, particularly when it comes to protecting sensitive academic data. We employ robust data encryption protocols to safeguard information. User authentication measures are implemented to ensure that only authorized individuals gain access to the system, bolstering overall security as well. Data integrity is maintained through regular checks to guarantee the accuracy and consistency of information stored within the platform. From this we also can prevent unauthorized by alterization or data corruption.

Maintainability is facilitated through comprehensive documentation and support. The documentation provided for both users and administrators serves as a resource for troubleshooting and guidance, ensuring smooth operation of the platform. Additionally , ongoing technical support is available to address any issues or inquiries promptly, promoting the long-term sustainability of the system.

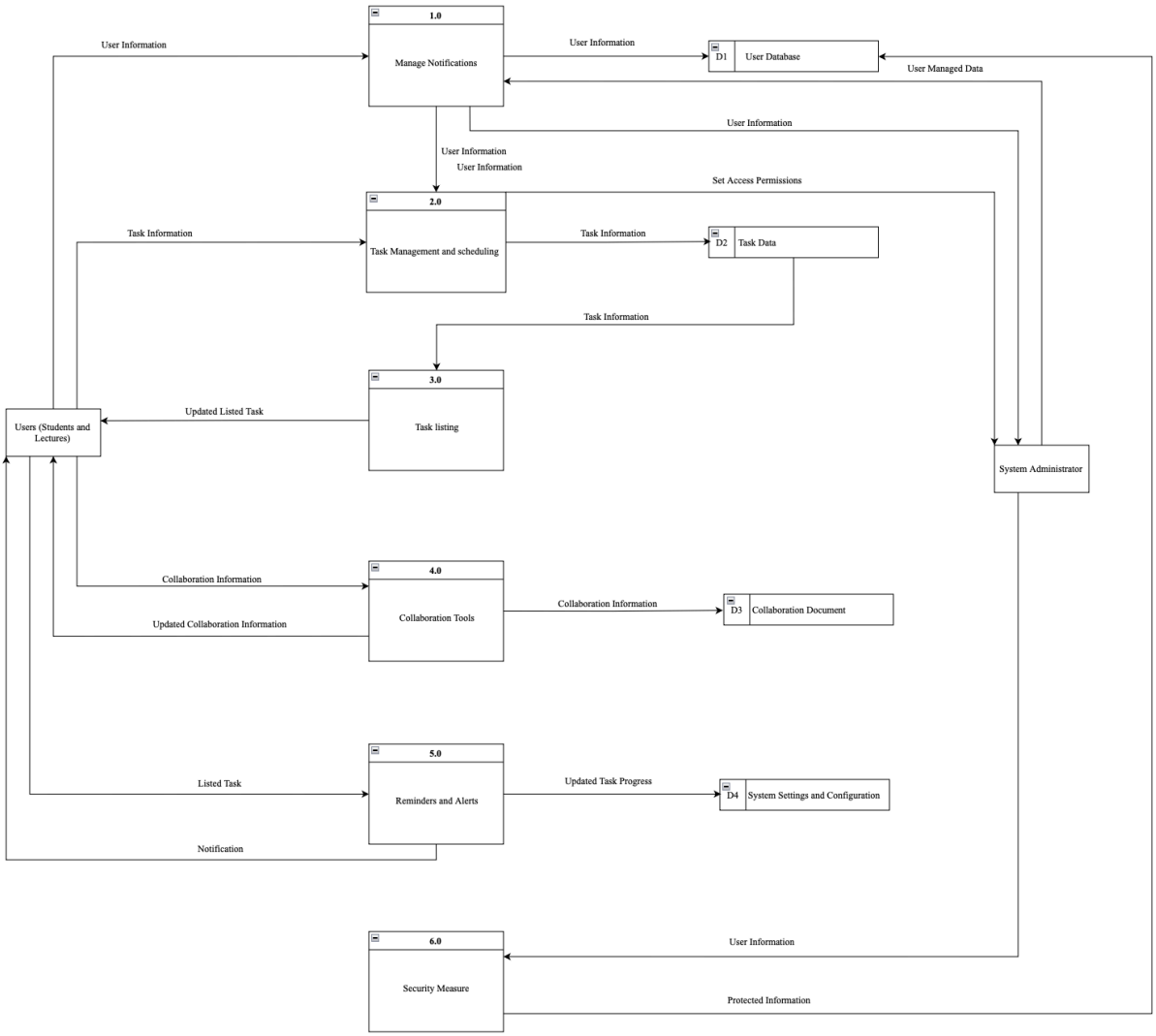
Compatibility part is crucial for ensuring widespread accessibility. We can see our platform is designed to be compatible with various devices, including desktop, laptops, tablet, and smartphones, allowing users to access it regardless of their preferred device. But for browser compatibility, the platform should be accessible via major web browsers

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

5.4.1 Context Diagram

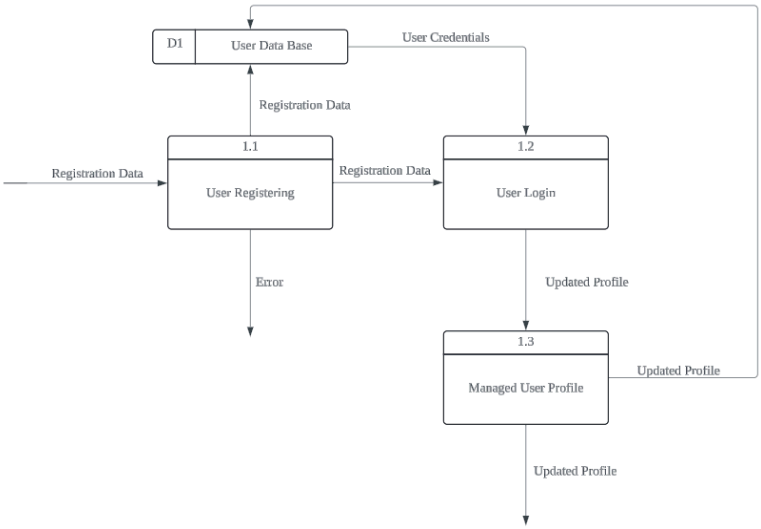


5.4.2 Diagram 0

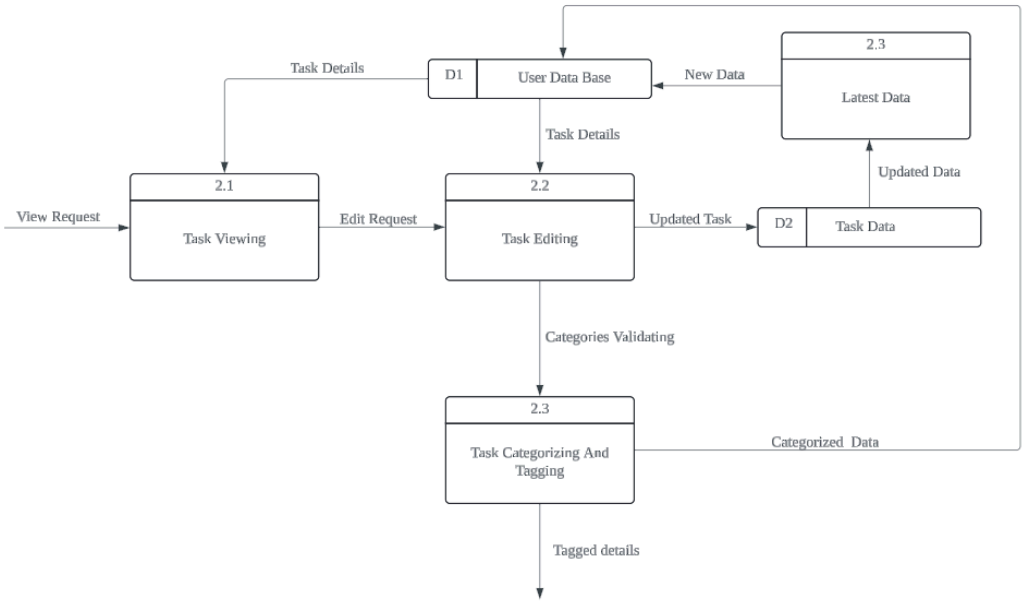


5.4.3 Child Diagram:

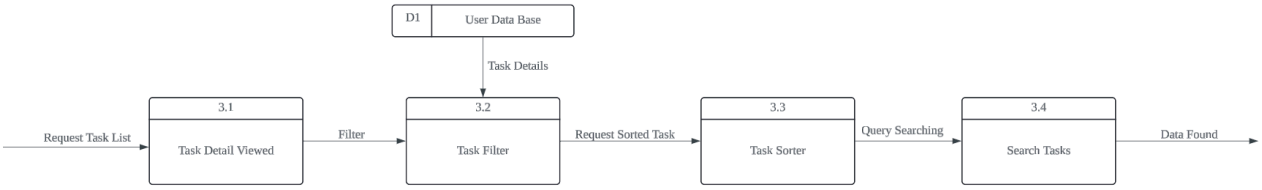
1.0 User Management Child



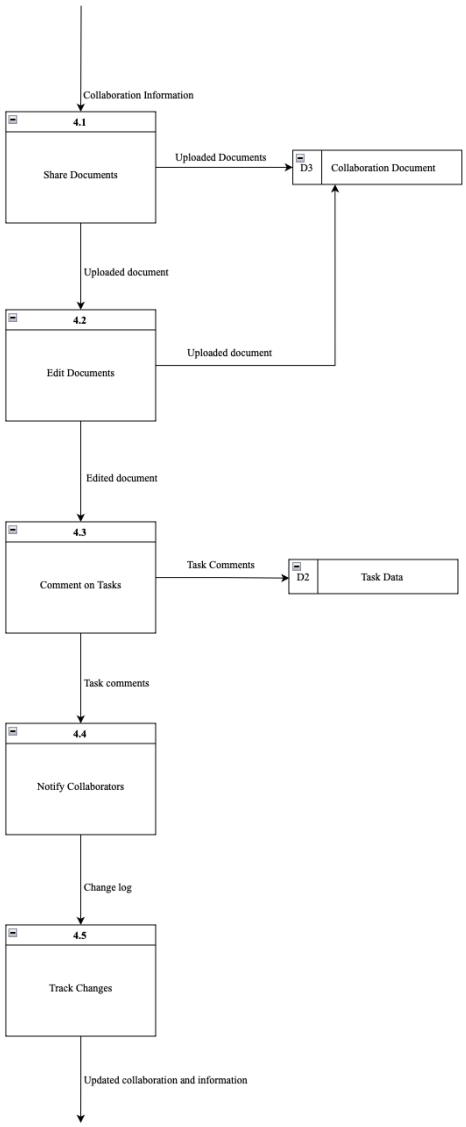
2.0 Task Management and Scheduling



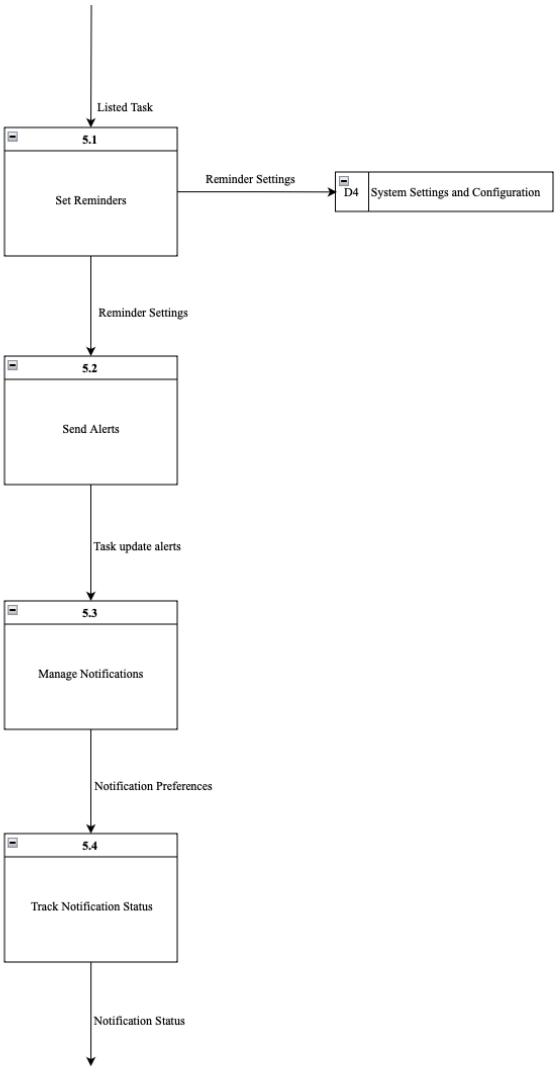
3.0 Task Listing



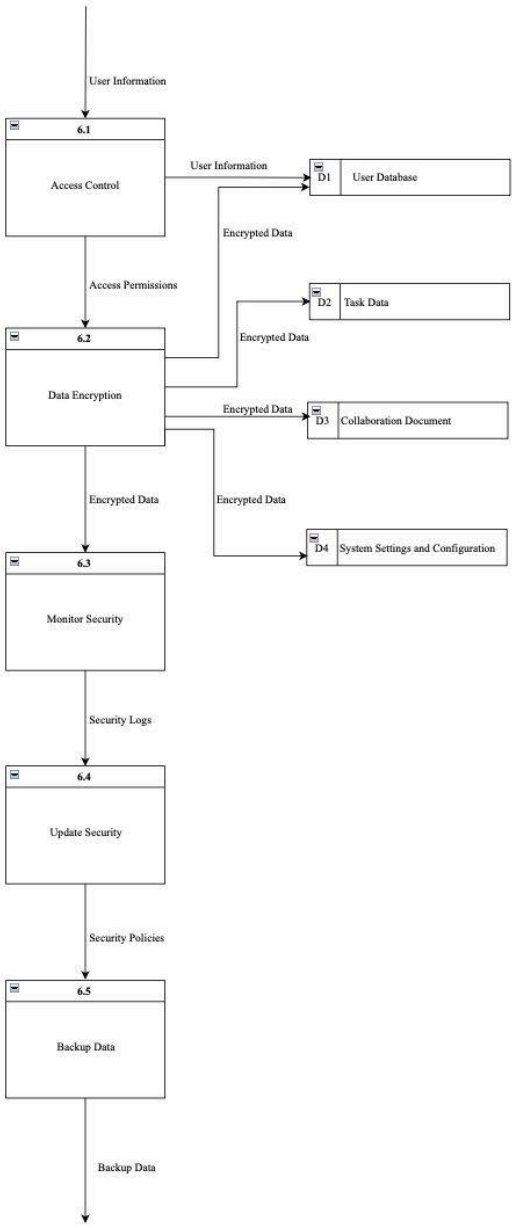
4.0 Collaboration tools



5.0 Reminders and Alert



6.0 Security Measure



6.0 SUMMARY OF REQUIREMENT ANALYSIS PROCESS

The requirement analysis process for the proposed task management system, WorkStudio, revealed significant inefficiencies and challenges in the current manual processes used by postgraduate students and lecturers. Currently, task management relies heavily on disparate tools like digital notepads, Excel spreadsheets, email, and shared drives such as Google Drive and Dropbox. These methods result in fragmented and inconsistent communication, version control issues, and a lack of real-time collaboration, leading to delays and increased administrative workload. Scheduling and progress tracking are manually intensive, often leading to errors and missed deadlines due to the necessity of updating multiple tools independently.

Functional requirements for WorkStudio were identified to streamline these processes. The platform will include features for creating, modifying, and deleting tasks with detailed information such as descriptions, deadlines, priority levels, and assigned stakeholders. Task management will be enhanced with real-time document sharing, integrated commenting and feedback systems, and dynamic project timelines that automatically update based on progress. Automated progress tracking will provide visual indicators like Gantt charts and progress bars, while personalized notifications and reminders will keep users informed of upcoming deadlines and task updates. This integration aims to ensure seamless task management, effective collaboration, precise scheduling, and efficient progress monitoring.

Non-functional requirements focus on the platform's performance and control aspects. Emphasis will be placed on ensuring high reliability, scalability, and responsiveness to maintain a seamless user experience. Robust security measures, including data encryption and user authentication, will protect sensitive academic data, while data integrity checks will ensure accuracy and consistency. Usability will be prioritized through an intuitive interface design, and comprehensive documentation along with ongoing technical support will facilitate maintainability. Compatibility with various devices and major web browsers will ensure widespread accessibility, making WorkStudio a versatile and reliable tool for academic task management.