TaskBooster: Web-Based Productivity and Collaboration Task Management System

By

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ABSTRACT

This project is regarding the development of a web-based task management system that incorporates productivity and collaboration features. In the age of modernization, the demand for task management system has become increasingly essential typically after the widespread COVID-19 pandemic. Many individuals struggle to coordinate tasks effectively. The advance of technology also results in distractions which often disrupt the attention of users and lead users to become inefficient and reduce productivity. This shows the need for a system that helps users to maintain their focus and boost their productivity. This project presents the development of a web-based system of task management with productivity and collaborative features called TaskBooster. This web-based system is designed to address common inefficiencies in task organization and team collaboration by integrating real-time collaborative tools that streamline work arrangements. In addition, TaskBooster implements personalized productivity features to track and enhance productivity over time. Besides the mentioned above, this proposed system also focuses on the ease of use for its simplified user interface to ensure that new users can navigate the platform and understand its basic functions within the first fifteen minutes of use. The objective of the combination of intuitive design with robust functionality of TaskBooster is to provide an efficient and user-friendly solution for both individual and team task management to enhance the overall productivity as well as foster effective collaboration in a digital environment. The target users for this system are managers and employees. The key features of this platform include login module, a collaborative feature, to-do list, a communication feature, a Pomodoro clock, analysis charts and a calendar feature. This project is expected to use Agile methodology and tools such as hardware and software to develop this web-based task management system.

Area of Study (Maximum 2): Website Development

Keywords (Maximum 5): Web-Based System, Task Management System, Collaborative Features, Productivity Features, Pomodoro Technique

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LIST OF ABBREVIATIONS

HTML	HyperText markup Language
CSS	Cascading Style Sheet
PHP	Hypertext Preprocessor
ERD	Entity-Relationship Diagram

CHAPTER 1: Project Background

Chapter 1 will discuss the background of the project and problem statement of this proposed system, web-based Productivity and Collaboration Task Management System, research objectives and motivation, project scope, contribution and report organization.

1.1 Introduction

Nowadays, the advancement of technology and the widespread use of devices such as tablets and laptops often create distractions that pull individuals away from their goals or work-related tasks [1][2]. These distractions probably lead to wasted time and foster procrastination habits. As a result, an effective task management system has become essential for maintaining productivity and ensuring the efficient completion of both personal and professional tasks [1].

The demand for a task management system has become essential, typically after the pandemic of COVID-19 [2]. Individuals often find it difficult to coordinate tasks effectively. Based on research [3], 33% of the population uses to-do lists to coordinate their tasks. This result indicates that many individuals are starting to rely on basic task systems to manage their tasks which suggests that there is a potential market for task management systems. In addition, the majority of users in the 10-20 age group are more interested in and have a greater need for task management tools [3].

Task management is very crucial for an organization. According to the researchers, task management can be defined as a structured process used by organizations to initiate, organize, and monitor tasks in order to ensure smooth execution [4]. Besides that, task management systems are used to track users' tasks from beginning to end, delegate subtasks to team members and set deadlines to ensure projects are completed on time. Moreover, the task management system is unable to separate from time management [2]. According to [5], the task management system also plays a crucial role in managing time. This can be done by monitoring the use of time to prevent wasting time [6].

According to the researcher, the features implemented in the task management system included managing to-do lists and streamlining email inboxes [7]. In addition, the task management system also included calendar features. This feature is capable of helping and supporting busy professionals who require it to manage their overloaded work [2]. Users just require marking down their important tasks and dates in the calendar. When the date is around the corner, the system will remind the user by sending a notification.

Based on [5], collaboration and teamwork are crucial to achieve success in a career in the 21st century. With the incorporation of a collaborative communication module in the task management system, individuals can easily create working groups [8]. According to researchers [5], the majority of features for collaboration included real-time communication which can manage teams and tasks more effectively and efficiently. It is easier for the individuals to communicate and report their work progress within the group. In addition, the generated file can also be shared within groups for easier access rather than sending it one by one. If a modification is made, all members can view the first update. It allows members to stay updated on the progress of their working tasks [8].

In addition, the Pomodoro Technique is a time management technique that helps individuals stay focused and avoid procrastination on their tasks. It involves breaking work into intervals, typically twenty-five minutes for work and followed by five-minute breaks. After completing four sessions of twenty-five minutes, take a longer fifteen to thirty minutes break to recharge [9].

In conclusion, the rapid growth of technology will come across several challenges such as distractions, poor time management and the need for effective collaboration. While existing systems provide useful features such as calendars, scheduling, and communication tools, many still fall short in offering a simplified, user-friendly, and integrated platform that meets the diverse needs of modern users. Therefore, the development of an efficient and accessible task management system is essential to improve productivity, enhance teamwork, and ensure tasks are managed and completed effectively.

1.2 Problem Statement and Motivation

1.2.1 Lack of integration of real-time collaboration features in existing task management systems

The first problem is lack of integration of real-time collaborative features in existing task management systems. The majority of task management systems focus primarily on individual task tracking and scheduling, with limited or no support for real-time collaboration. The absence of such integration within a single platform forces users to switch between multiple applications to manage tasks and collaborate simultaneously. These limitations create frustration and reduce the effectiveness of collaboration [10].

1.2.2 Absence of integration of productivity features in the task management system

The second problem is the absence of integration between productivity tools and task management systems to keep individuals focused. In today's era of advanced technology, individuals are constantly exposed to various distractions that can undermine their discipline and task management skills. Therefore, many individuals struggle to stay focused on their tasks due to the constant switching between platforms [11]. As a result, the cognitive load will increase and result in more difficult prioritizing tasks effectively and leading to stress and burnout. Additionally, opening too many tabs in a web browser can cause performance issues that will lead to sluggishness and inefficiency. This problem is further exacerbated in areas with poor Wi-Fi connectivity which can significantly hinder productivity and make it difficult to work effectively.

1.2.3 Over complex and disorganized features layout

The third problem is the overly complex and disorganized layout of the task management system. In recent years, many platforms have adopted advanced features without providing a clear dashboard to summarize essential information. As a result, users are forced to navigate through multiple sections to access basic functions, which creates confusion and inefficiency. However, these disorganized and overly complicated interfaces pose significant challenges for those users who have no prior technical background or experience in navigating such platforms. Many users who have no prior experience will find difficulties performing basic tasks which leads them to feel frustrated due to their inability to use the platform effectively. According to the

researchers, a task management system must prioritize simplicity and intuitive design to support daily operation for the employee [8]. This issue is further compounded by the diverse user demographics, which may include individuals over the age of 40 or 50 who may not be as familiar with accessing these modern website interfaces.

1.3 Project Scope and Direction

The project scope involves designing and developing a web-based task management system that includes the features of collaboration and productivity, TaskBooster. The target audience includes employees and managers of a specific company, such as Company ABC, particularly those who require a simplified yet efficient solution to manage tasks, coordinate with team members, and enhance overall workflow. The target customers are likely to be newly established companies that do not have many employees.

The primary deliveries of this system include the development of a web-based platform with real-time collaborative features to enhance work arrangements such as a communication chat that allows users to send or receive messages within the system. Additionally, the platform will feature personalized productivity tools tailored to individual user needs. For example, a Pomodoro timer will help users stay focused by allowing them to start the timer and enter their tasks. The system will track the time spent on each task, and an analysis bar chart will display the total focus time for each day.

In addition, the platform will also include a to-do list feature by allowing users to organize and track their tasks by categorizing them as "To Be Done," "In Progress," or "Completed." This feature ensures that users can easily monitor their task status. Besides that, a calendar feature will be available to help users schedule and manage their events more efficiently. This feature will allow users to create and view events in a well-organized manner by ensuring that all tasks and appointments are easily accessible and well-planned.

In this system, users will be categorized into two types which are employee and manager. Managers will have the ability to assign tasks to employees through the platform. Once assigned, employees will be able to view their task assignments in their dashboard. Employee can submit their tasks upon completion. This feature ensures

clear communication between managers and employees, streamlining task management and promoting accountability within the team.

This system prioritizes user-friendliness by ensuring an intuitive and accessible interface. The project focuses on enhancing the functionality of the existing system through improvements that enable employees with different levels of technical expertise to navigate it easily and efficiently. Features such as external integration with third-party tools or non-corporate use cases will be excluded to maintain a streamlined focus on employee productivity within a professional environment. However, the implemented features included a login module, task allocation module, real-time communication module, to-do list, calendar feature, Pomodoro timer, focus bar chart and pie chart.

1.4 Research Objectives

1.4.1 To integrate real-time collaboration features in the task management system

The first objective is to integrate real-time collaboration features into a task management system to provide a more convenient platform for work arrangements and time-saving coordination. This integration addresses the gap in existing systems that focus mainly on individual task tracking. By enabling users to collaborate online within the same platform, the system will streamline teamwork and task delegation, improve communication, and reduce reliance on multiple external tools.

1.4.2 To implement personalized productivity features

The second objective is to implement personalized productivity features within the task management system to help users maintain focus and manage their workload more effectively. Existing systems often lack integration with productivity tools, forcing individuals to switch between multiple platforms and increasing cognitive load. To address this, the proposed system will incorporate features such as task categorization for pending, in progress, completed and focus timers according to Pomodoro techniques with the generation of visualization graphs. These features will enable users to organize tasks more clearly, monitor the time spent on each activity and visualize productivity trends through graphs. As a result, users can improve efficiency, reduce stress and develop more sustainable work habits.

1.4.3 To implement a simplified user interface system

The last objective is to implement a simplified user interface that allows new users to quickly understand and navigate the platform with minimal learning effort. Many existing task management systems adopt complex and disorganized layouts that can overwhelm users, especially those without prior technical experience. To overcome this limitation, the proposed system will emphasize an intuitive design that presents essential functions clearly and avoids unnecessary complexity. The purpose is to allow users to become familiar with the platform and perform basic tasks within the first 15 minutes of use. By reducing confusion and frustration, the simplified interface will improve accessibility, enhance user satisfaction, and encourage consistent use across diverse user groups. To support this, a well-structured dashboard will be implemented to provide users with a centralized view of their tasks, progress and key features by ensuring quick access to the most important functions.

1.5 Contributions

The contribution of this project is to integrate real-time collaborative features which address the gap in existing task management systems where real-time collaboration features often lack user-friendliness. Many current systems fail to provide seamless and intuitive tools for team members to collaborate in real-time by hindering efficient communication and task tracking. By incorporating features like live task updates and real-time messaging, this project enhances team coordination and enables smooth and instant interaction. The user-friendly design ensures that these features are easy to navigate by allowing users to stay connected and productive. This integration significantly improves workflow efficiency that making real-time collaboration more accessible and effective within task management systems.

The implementation of personalized productivity features plays a crucial role in helping users optimize their time and reduce inefficiencies. By offering customizable task management tools, users can prioritize their personal tasks more effectively such as setting deadlines to prevent forgetting due dates. This not only minimizes the chances of forgotten tasks or delays but also ensures a more organized and productive daily workflow. Over time, as users become adapted to these features, their productivity trends will improve thereby creating a long-term positive impact on their work efficiency and ability to meet deadlines. The motivation for this implementation of this

project is to develop and introduce a new solution to integrate task management with productivity, which currently does not exist on any single platform. This system aims to help users manage their tasks more effectively, stay focused by eliminating unnecessary distractions and reducing the need to open multiple tabs.

In addition, the development of a simple user interface is able to overcome the challenge for new users who may lack prior experience or technical knowledge. With an intuitive and easy-to-understand interface, the platform ensures that users can quickly familiarize themselves with its functions within the first fifteen minutes of use. This will eliminate frustration and allow users to get started immediately without the need for a long exploration time that is often associated with complex systems. A user-friendly interface provides a more inclusive environment by allowing a wider demographic of users accessible to access the platform. Thus, users can effectively utilize its features from the very beginning. This will result in a smoother adoption process and better user satisfaction.

1.6 Report Organization

This report is structured into seven chapters. Chapter 1 introduces the background of project, outlines the problem statement and motivation, project scope, research objectives, contributions, and the organization of the report. Chapter 2 presents the literature review, which includes an analysis of existing systems such as Plaky, Asana, Monday Work Management, and Pomofocus, followed by their strengths, weaknesses, and a comparative summary leading to the proposed system. Chapter 3 discusses the system methodology and approach, including the project timeline, user requirements, and both functional and non-functional requirements. Chapter 4 focuses on system design, covering the ERD, use case and activity diagrams, sequence diagrams, and prototype development for various user perspectives. Chapter 5 describes the system implementation, including hardware and software setup, configuration, system operations across different user dashboards, and error handling, as well as challenges encountered during implementation. Chapter 6 presents the system evaluation and discussion, which includes testing results for employees, managers, and administrators, along with project challenges and evaluation of objectives. Last but not least, Chapter 7 concludes the project by summarizing the findings and providing recommendations to improve in the future.

CHAPTER 2: Literature Reviews

Chapter 2 focuses on reviewing and analyzing the current similar task management systems which are Plaky [14], Asana [17], Monday work management [21] and PomoFocus [29]. The advantages and disadvantages of the existing websites will be analyzed as well. In addition, suggestions will be provided to improve the current identified limitations that exist on the reviewed websites by offering potential improvements for their functionality and effectiveness.

2.1 Introduction

Nowadays, numerous advanced and innovative web-based task management systems have been developed and widely adopted. These systems are commonly used by project development teams to track tasks from start to finish, assign subtasks to team members, and set deadlines to ensure timely project completion [2].

The demand for using web-based task management systems is increasing compared to traditional methods such as paper or sticky notes. This is because current web-based task management systems provide a structured platform for users to create, update and track their tasks systematically for better organization unlike traditional methods that can be chaotic and disorganized which are just kept in paper form [12]. In addition, features like real-time progress tracking will display the completion status of tasks in percentage and reduce the chances of last-minute work while notifications can remind group members of upcoming deadlines and important dates which is often a problem that occurs in traditional methods [12]. Collaboration tools such as file-sharing features able to facilitate teamwork among team members as this tool allows real-time sharing and access to the necessary files to ensure all members stay updated [13].

2.2 Analysis of Existing Website

2.2.1 Plaky

The first analysis of an existing website is Plaky [14]. Plaky is a web-based task management and project collaboration tool designed for teams to organize and streamline their work for enhancing productivity and organization. There are 4 key features of Plaky which are Task Management, Collaboration, Progress Tracking and Administration as shown in Figure 2.2.1.1.
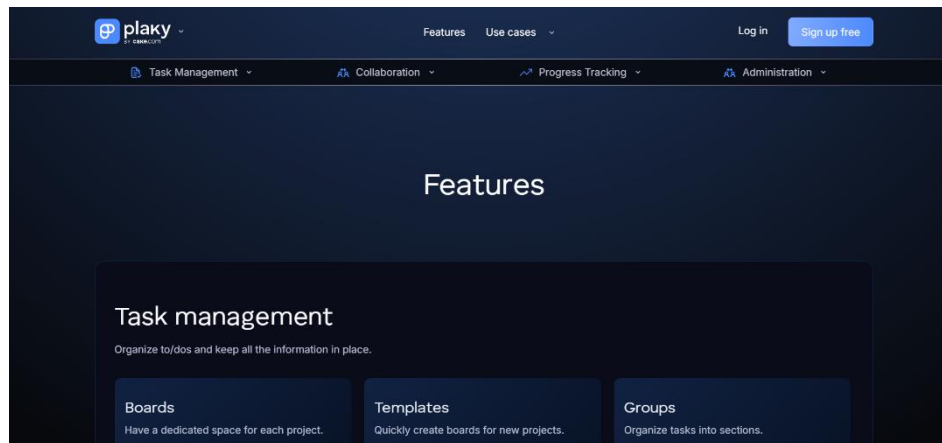
Figure 2.2.1.1 Home Page of Plaky

The first feature that is shown in Figure 2.2.1.2 below is Task Management. Task Management enables team members to organize their projects and tasks efficiently by keeping all relevant information in place. Users can create boards from scratch or utilize ready-made templates to proceed straight to their projects. The team leader can organize tasks into sections such as Stage 1 and Stage 2 to prevent an overwhelming workload from being completed all at once which could compromise the completeness and accuracy of the project. Moreover, this system also enables all team members to view their assigned tasks and monitor the overall project progress clearly. Once a task or project is completed, team members and leaders can mark its status as "done" to indicate completion. If a task is still in progress, they can mark it as "in progress" to ensure it is not overlooked. In addition, status indicators are color-coded, with green for completed tasks and yellow for tasks in progress. This is making it visually appealing and easy to track progress.
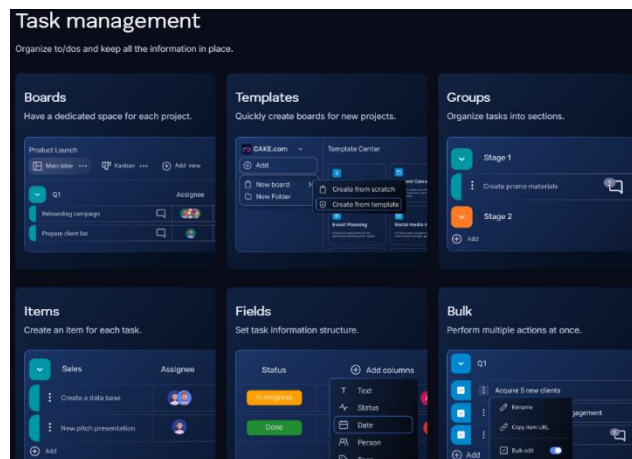
Figure 2.2.1.2 Task Management feature of Plaky

The second feature shown in Figure 2.2.1.3 below is Team Collaboration. It enables team members to work together by sharing updates and files for each task. Members can upload task-related files and documents. Furthermore, leaders or supervisors can add comments on the uploaded documents and members can straight away perform adjustments on the document. This will greatly eliminate the need for physical meetings to inform about the mistakes. Moreover, notifications ensure the team stays informed about important updates.
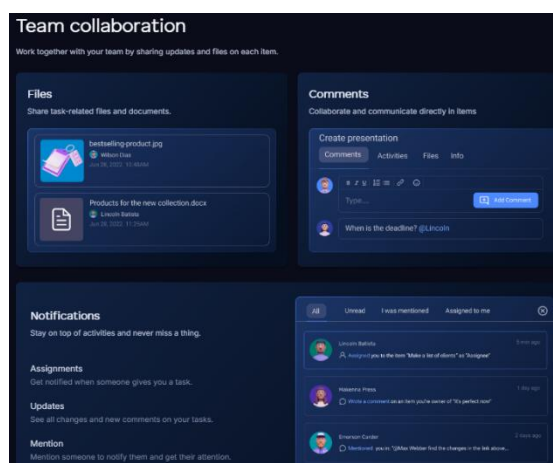
Figure 2.2.1.3 Team Collaboration feature of Plaky

The third feature, as shown in Figure 2.2.1.4 below is Progress Tracking. Progress Tracking provides a comprehensive overview of project progress and incorporates tools such as Gantt charts for better work arrangement and coordination. In addition, it also includes a summary row to ensure fair workload distribution. This

is to prevent any team member from shifting their responsibilities onto others. Apart from that, it offers a detailed view of task distribution among team members by clearly outlining each assigned role and the responsibilities of members. This transparency helps ensure accountability and discourages members from avoiding tasks or relying on others to complete their work. The team leader can also assign due dates to the members on that particular task to ensure that members stay on schedule. Certainly, the key feature of this system is its ability to track all activities related to each task and provide a detailed view of the hours team members spend on their work.
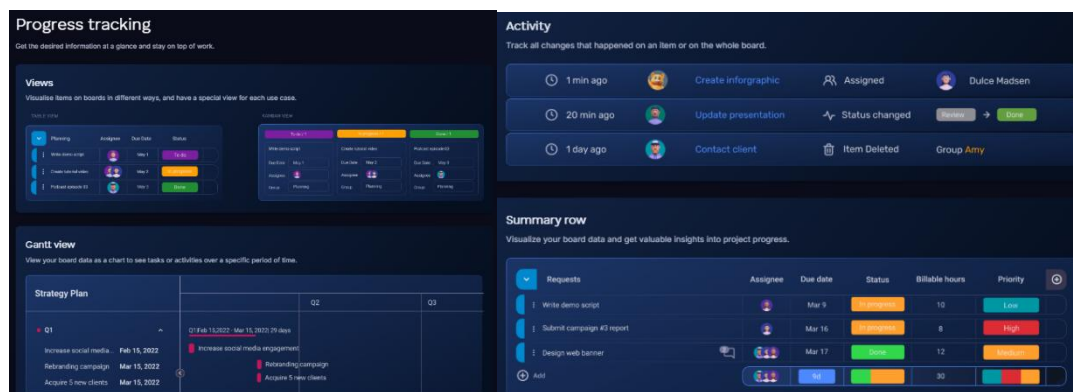
Figure 2.2.1.4 Progress Tracking feature of Plaky

The last feature shown in Figure 2.2.1.5 below is Administration. Administration allows system administrators to define user roles such as managers, team members or external collaborators and assign specific permissions based on their responsibilities. Admin can assign the privilege or user right that is needed by each user to perform their duty according to their position. This ensures that users have access only to the tools and data relevant to their tasks. Hence, the security of the system can be maintained and unauthorized access can be prevented as well.
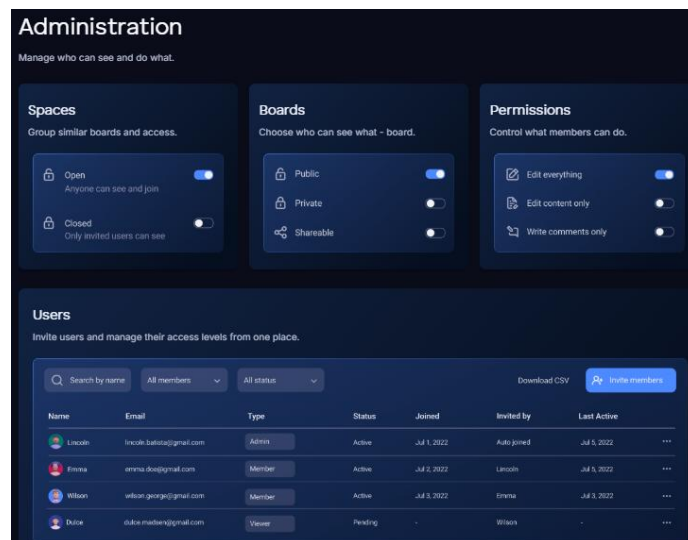
Figure 2.2.1.5 Administration side of Plaky

Based on [15], Plaky is suitable for organizations of all sizes and industries which include public institutions and NGOs as it is versatile for tasks related to the departments such as marketing, HR, sales, CRM and software development. Additionally, it provides a mobile version as well which can also allow managers to track the progress of their team members and manage tasks effectively [16]. This system is totally free of charge [15].

Last but not least, Plaky provides a demo video as shown in Figure 2.2.1.6. The purpose of this video is to assist users who have no prior experience with the platform. This video helps users to familiarize themselves with the features and functionalities on the website. Hence, the user can navigate and utilize those features efficiently.
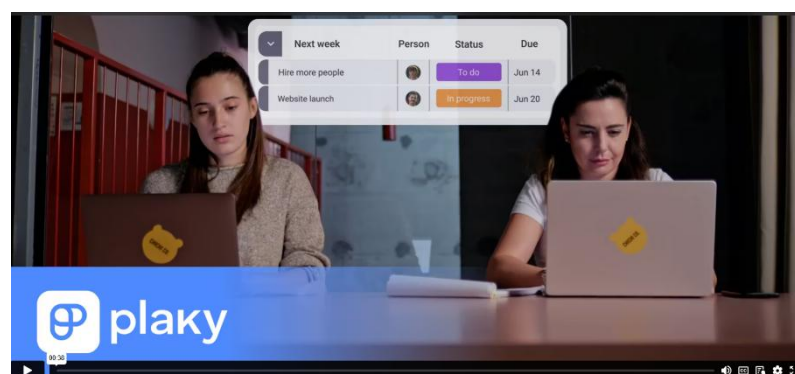
Figure 2.2.1.6 Demonstration video to guide user

2.2.2 Asana

The second analysed website is Asana as shown in Figure 2.2.2.1 [17]. Asana is a software as a service platform to help users manage projects and team collaborations on the project by easily organizing the project, prioritizing tasks, collaborating with team members and tracking progress.

Asana was created in 2008 by 2 software engineers, Dustin Moskovitz, co-founder of Facebook and Justin Rosenstein, ex-engineer for both Facebook and Google. Their goal was to enhance the efficiency and workflow of employees in Facebook [18]. There are 85% of Fortune one hundred companies that use Asana which include Amazon, Genentech, Affirm and so on [19]. There are five features that have been implemented in Asana which are team management, task management, communication, views, and reporting. These features help streamline workflows, enhance collaboration, and ensure that teams stay on track with their goals [18].
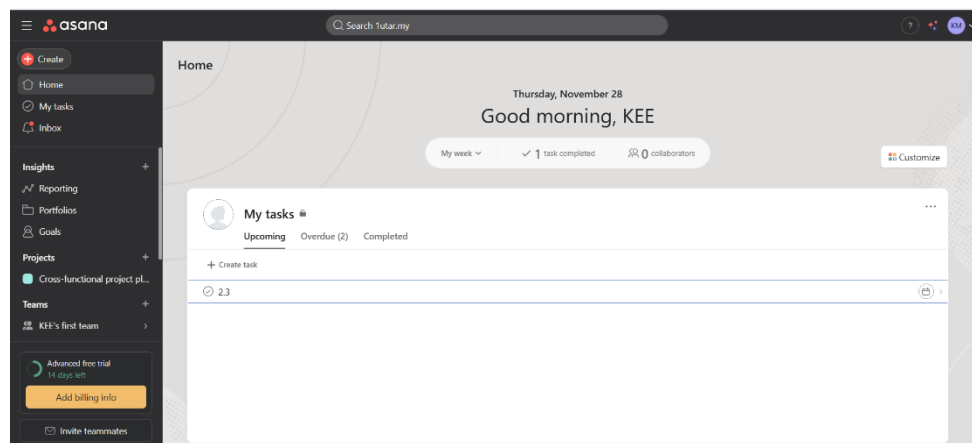
Figure 2.2.2.1 Home Page of Asana

The first feature is Team Management. Asana offers robust team management tools to help organize and coordinate teams effectively. Projects can be structured into shared lists or Kanban boards for better organization of initiatives, meetings, and programs. As shown in Figure 2.2.2.2 below, tasks can be assigned to individual team members or broken down into smaller subtasks and enriched with descriptions [20]. Users can set deadlines, priorities, and dependencies for tasks, which facilitates seamless project execution and helps team members focus on their most important responsibilities [20]. Deadlines ensure timely completion, while features like Gantt-style improve planning and scheduling. Other helpful tools include the Likes feature

for task approval and the Rules function for automating manual processes like task assignments and field updates [18].
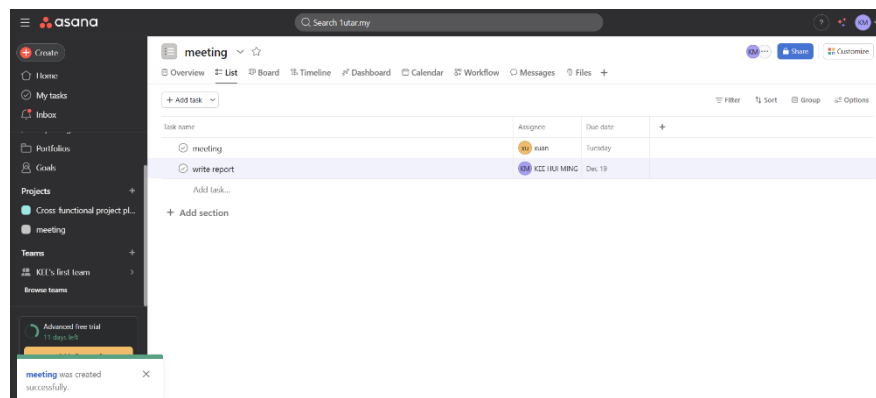
Figure 2.2.2.2 Task Allocation

The second feature is Task and Project Management. For managing specific tasks, projects, or assignments, Asana provides a range of tools. The Proofing feature allows users to leave feedback on images or PDFs, simplifying task tracking. Project discussions keep momentum alive by providing a space to discuss progress. Additionally, Asana supports multiple languages, including English, French, German, Spanish, Portuguese, and Japanese to make it accessible for diverse teams [18]. Asana offers many pre-built project templates tailored to streamline the setup process for various project types. For example, marketing campaigns shown in Figure 2.2.2.3 below. These templates can be customized to meet specific team needs and save time while ensuring consistency across projects. By leveraging these templates, teams can quickly adopt best practices and standardize their project management processes [20].
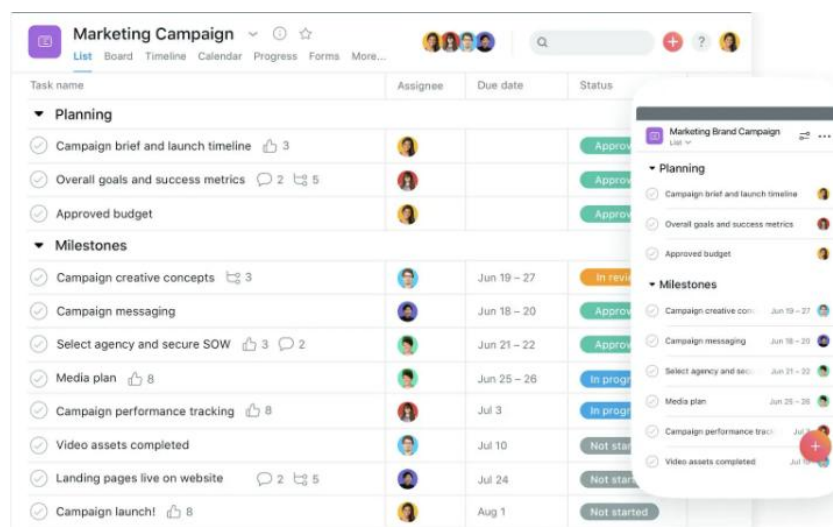
Figure 2.2.2.3 Sample of template provided

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The third feature is Communication. Effective communication is essential for teamwork, and Asana supports this through various features. As shown in Figure 2.2.2.4 below, task allocation and comments enable quick clarification and direction, with the option to tag colleagues or tasks for better connectivity. Proofing allows for constructive feedback directly on documents, ensuring improvements are precise and actionable [18].
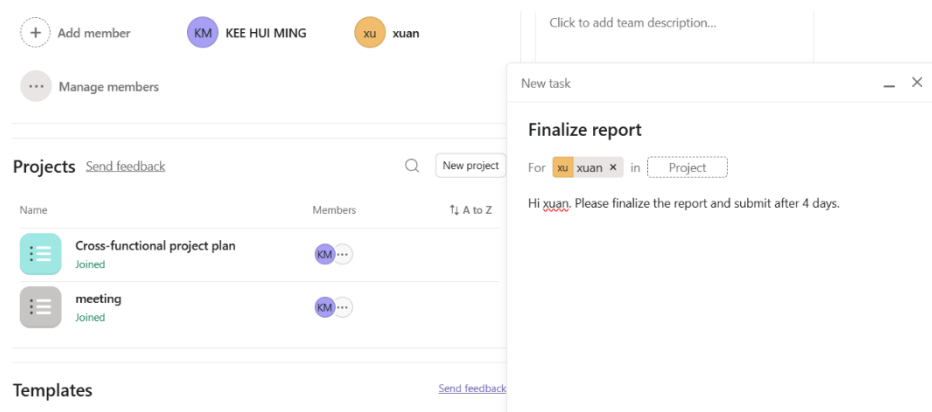
Figure 2.2.2.4 Communication feature and Task Assignment Channel

The fourth feature is Views. Asana provides customizable views to help users focus on their priorities as shown in Figure 2.2.2.5 below. The My Tasks feature allows users to plan their day with a to-do list, while the Inbox organizes messages and notifications using filters. Users can perform quick searches for tasks or projects and save advanced searches for future reference. Calendar views give a clear overview of planned tasks and deadlines, and a colorblind-friendly mode ensures accessibility for all users [18]. For example, Asana's timeline view visually represents the project schedule by enabling users to plan and adjust tasks and deadlines with a simple drag-and-drop interface. This feature helps teams identify potential bottlenecks, manage dependencies, and ensure that work is evenly distributed across team members. The timeline view also allows users to compare the planned schedule against actual progress, making it easier to adapt and make necessary adjustments throughout the project lifecycle [20].
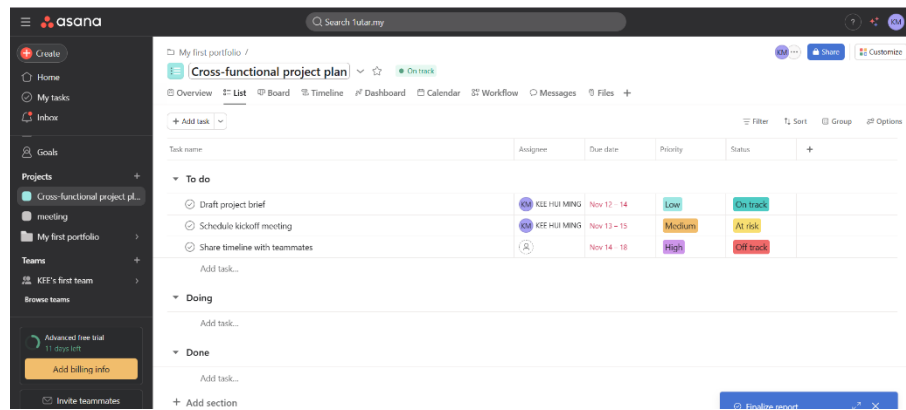
Figure 2.2.2.5 Priority level for each task

The last feature is Reporting. Asana's reporting features provide valuable insights into team performance and project progress as shown in Figure 2.2.2.6 below. Users can set, track, and manage goals, ensuring they are clearly communicated. Milestones allow teams to set targets and track progress more effectively, motivating them to stay on course. The Dashboard offers customizable real-time charts to identify bottlenecks or off-track tasks, with the ability to export these charts for further analysis. These features ensure that teams have the information they need to succeed [18]. The advanced search functionality of the Asana platform allows users to quickly find tasks, projects, and conversations based on specific criteria. Users can create and save custom search queries for future use, making generating reports and tracking specific metrics easy. This feature helps teams monitor their progress, identify trends, and uncover opportunities for improvement in their project management processes [20].
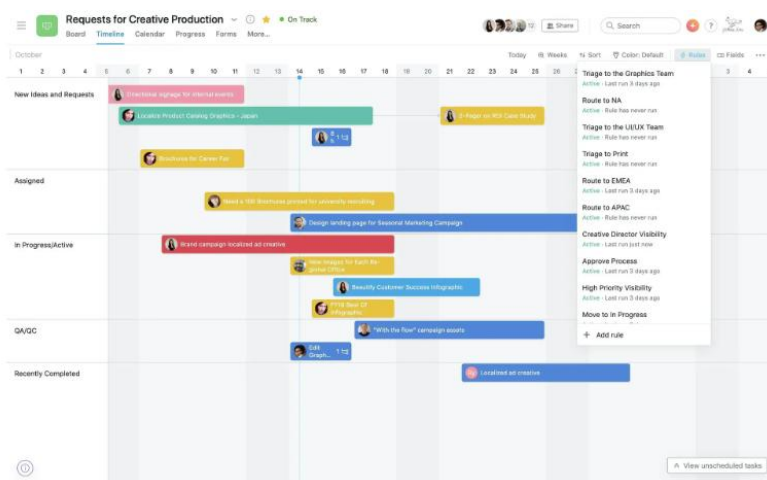
Figure 2.2.2.6 Project Progress View

2.2.3 Monday work management

Monday work management is the third website to be analyzed [21]. Monday is a cloud-based work management and project planning tool that tracks daily tasks [22]. Monday work management is a system that is implemented to construct workflows, generate templates and expand the community in order to boost productivity, streamline workflows and promote cooperation [23].

According to the news published on 31 July 2024, Monday.com brings portfolio management for enterprise users to standardize project work as shown in Figure 2.2.3.1 below. It is an enterprise-ready product that assists with making decisions about projects across teams and departments [24]. In addition, this platform is also considered as best project management software that available of its drag-and-drop functionality, as shown in Figure 2.2.3.2, impressive customization options and its constantly evolving feature package which includes a raft of time-saving AI capabilities [22].
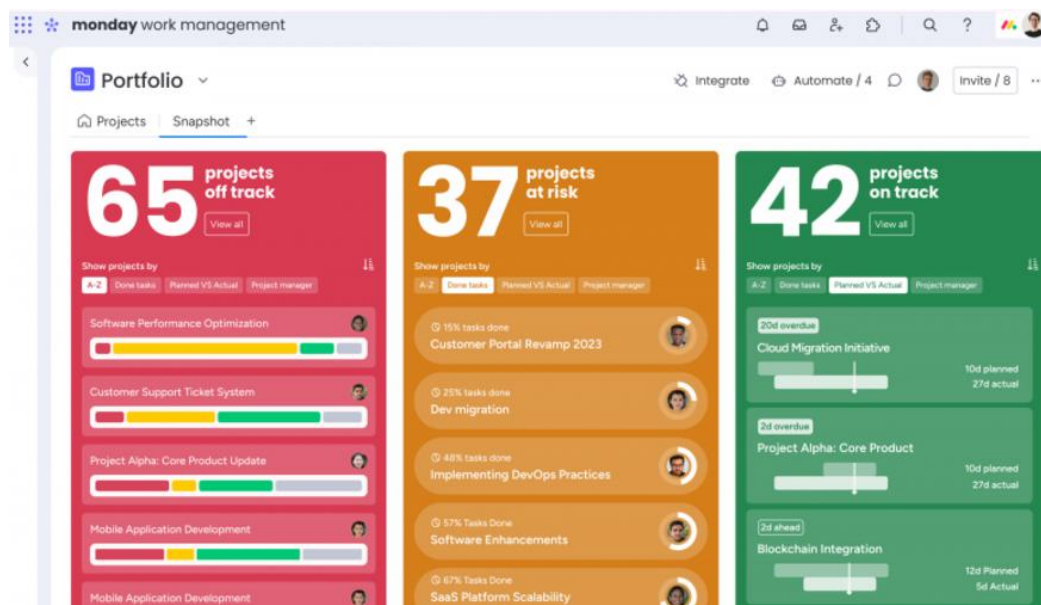
Figure 2.2.3.1 Portfolio Management

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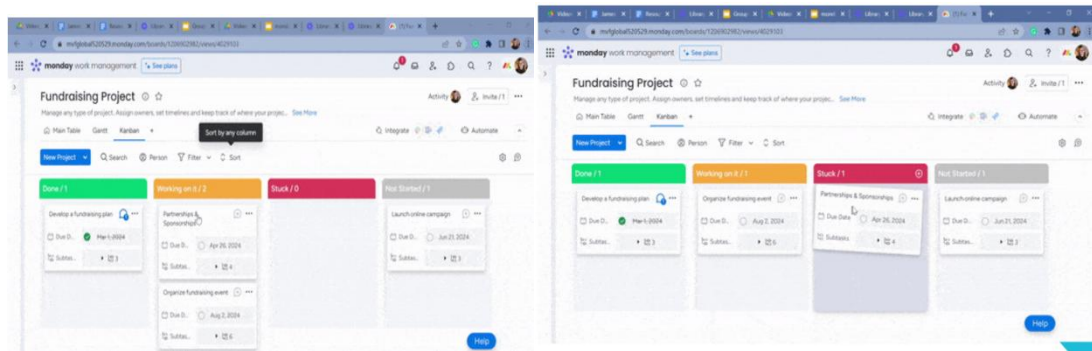
Figure 2.2.3.2 Drag and Drop Function

Monday can help teams with work monitoring, management, and planning. The software boasts a highly visual interface where users can add team members, assign tasks, create workflows and track progress from a centralized view. They can organize work and projects that align with their business requirements. The software enhances work visibility by enabling all parties to work closely and collaboratively to overcome challenges and create synergy for team performance improvements. [25] [26]. In addition, the existence of a project dashboard allows team leaders to assign tasks to specific team members, track task progress, view team members' online and offline statuses, comment and tag users within tasks [26].

The first introduced feature is a project management tool. As a project management tool, this platform offers advanced features such as a workload view that is used to monitor project progress and team responsibilities, as shown in Figure 2.2.3.3 below [22]. It also includes a customizable "Chart" area for project insights, a Kanban board, a time-tracking feature, and a classic grid or table view to enhance project management efficiency [22].
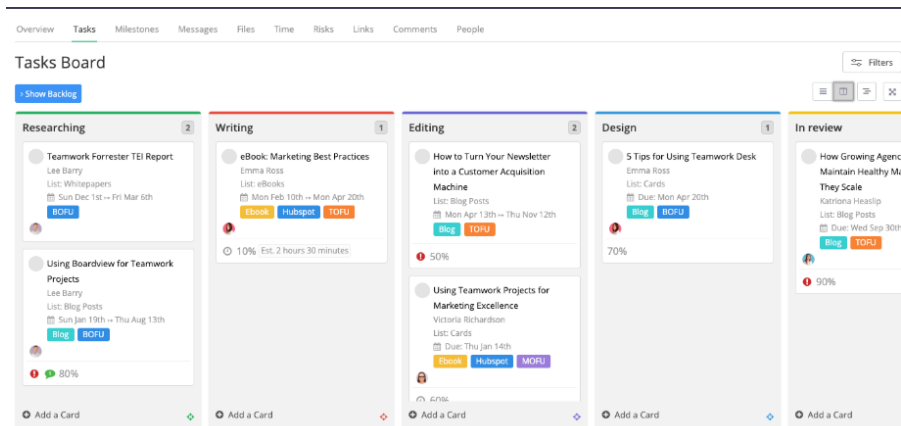
Figure 2.2.3.3 Task Board

The second feature introduced is automation. Monday provides a simple yet powerful automation builder that is easier to use compared to ClickUp's, complemented by a responsive live chat function for troubleshooting [22]. Workflow automations significantly accelerate daily processes and reduce repetitive tasks [22]. With dozens of ready-to-use templates, setting up notifications for completed tasks or reminders for upcoming due dates is quick and straightforward [27]. In addition, Monday.com offers a comprehensive library of automation templates for various use cases, making it easy for users to get started. The fill-in-the-blank style setup further enhances flexibility by allowing users to customize automations and create their own based on task movement, status changes and updates [26]. Moreover, as shown in Figure 2.2.3.4, the Monday platform considers an aggressive colour code [22]. The colour code makes user easier to check the status of progress on a task, waiting for an action or falling behind a deadline [27].
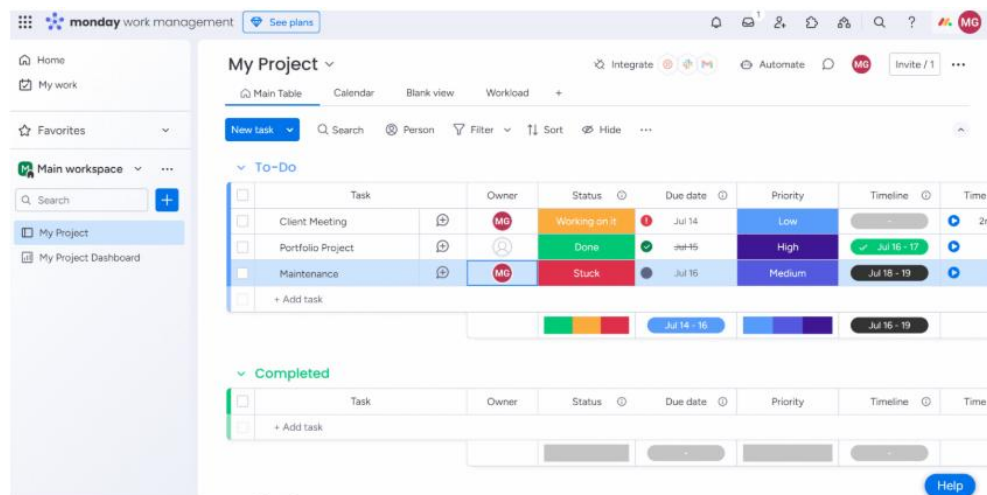
Figure 2.2.3.4 Color code status indicators designed to capture attention from user

Monday work management provides wide range of support options to help users learn and troubleshoot, including a self-guided knowledge base, video tutorials, solutions, a community forum, and 24/7 live chat, as shown in Figure 2.2.3.5 below [26]. The self-guided knowledge base is particularly helpful for new users by offering step-by-step instructions with screenshots to simplify the learning process [25]. Additionally, it includes a YouTube channel featuring educational content, updates, and information on new features by making it easier for users to enhance their understanding and maximize the platform's capabilities [26].

Monday work management also offers a wide range of support options of a live chat function that supports 24/7, email and phone that can fulfill the diverse needs of users [27]. For example, after encountering an issue, a customer service agent promptly aided by emailing a Loom video that clearly demonstrated how to resolve the problem. In addition, the live chat feature can help users seek help via email by referring the user to a comprehensive knowledge base and community forum or consult the numerous video tutorials available for troubleshooting issues independently [22]. It also has an online knowledge base. There are hundreds of helpful articles. Each article includes step-by-step walkthroughs and screenshots to illustrate how to accomplish tasks within the platform. The knowledge base is fully searchable and well-organized, so it is easy to find what you need [27].
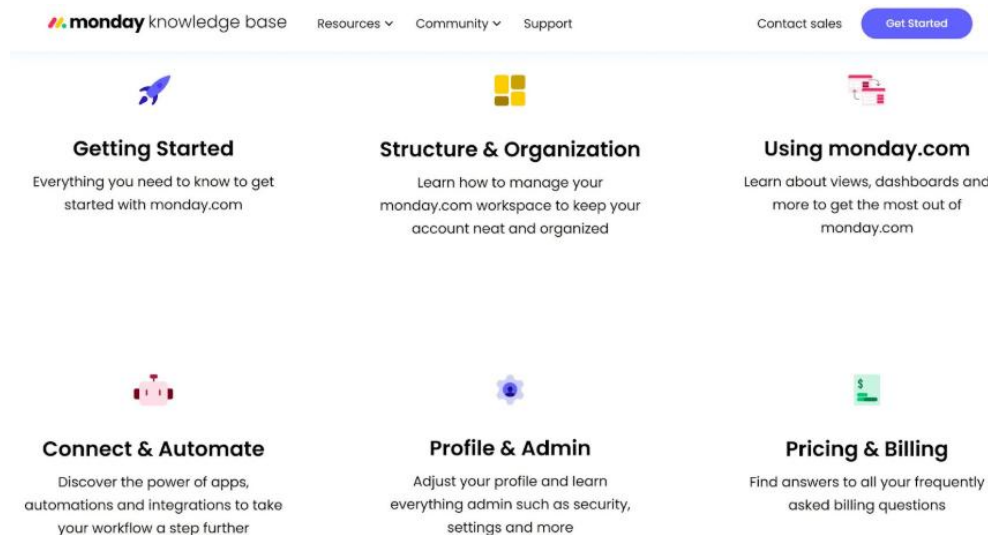
Figure 2.2.3.5 Help Centre

Monday Work Management also provides basic time tracking through a time-tracking column by allowing employees to easily start and stop a task timer. However, this feature has notable limitations for blue-collar businesses. The platform lacks built-in timesheets that is essential for payroll and compliance by forcing companies to rely on third-party integrations to manage detailed hours, overtime, and shift differentials. Since the system is primarily task-oriented, it is not well-suited for shift-based work, which is common in industries such as healthcare and hospitality. This can result in inaccuracies and potential payroll errors. Furthermore, it does not offer advanced capabilities such as geofencing for mobile workforce management or distinguishing between billable and non-billable hours, which are critical for precise client billing and project cost tracking. While the time-tracking feature may be adequate for office-based teams, it remains insufficient for industries that require more flexible, accurate, and comprehensive workforce management tools. [27]

Lastly, Monday work management also includes task scheduling features as shown in Figure 2.2.3.6 below that can be useful for scheduling employees' work. The leader can assign due dates or time frames to any task and then display them on a calendar so employees know what they need to work on. [27].

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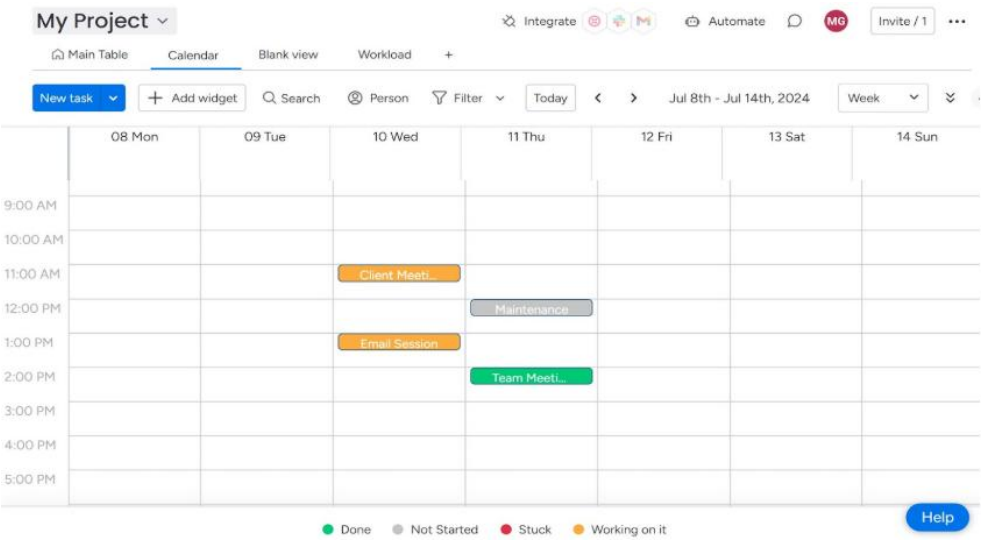
Figure 2.2.3.6 Calendar Feature

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2.2.4 Pomofocus

The last analysed website is Pomofocus [29]. Pomofocus is a web-based productivity tool designed to help individuals manage their time effectively using the Pomodoro Technique. The Pomodoro Technique is a time management method that encourages users to break their work into intervals, typically 25 minutes long, separated by short breaks as shown in Figure 2.2.4.1 below. Pomofocus offers a simple yet intuitive interface.
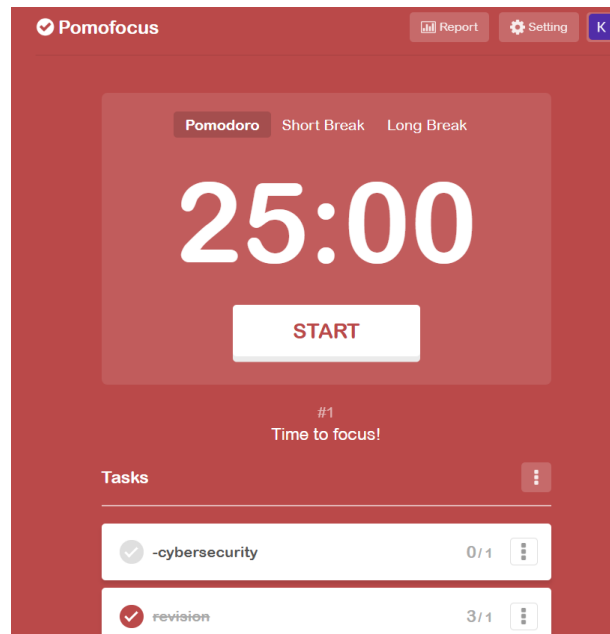
Figure 2.2.4.1 Home Page of Pomofocus

Pomofocus is a customizable pomodoro timer that works on desktop and mobile browsers. This app aims to help users focus on any task they are working on. This website is inspired by the Pomodoro Technique , which is a time management method developed by Francesco Cirillo [9].

The Pomodoro Timer platform offers a range of customizable features to enhance productivity. Users can adjust the duration of work sessions, short breaks, and long breaks to suit their personal preferences or workload with default settings of 25-minute work intervals and 5-minute breaks. Additionally, it includes task management capabilities by allowing users to create a task list, prioritize daily tasks, and track the number of tasks that have been completed for each task. It is accessible across multiple devices, including desktops, tablets, and mobile devices. Additionally, the platform provides basic analytics by offering insights into the number of Pomodoro completed

and time spent on tasks which help users assess their productivity. It is displayed in report form. The report generated will provide the summary of hours focused, day accessed for week, month and year as shown in Figure 2.2.4.2 below. There is also a ranking which can see the user that having the longest focus time, as shown in Figure 2.2.4.3 below.
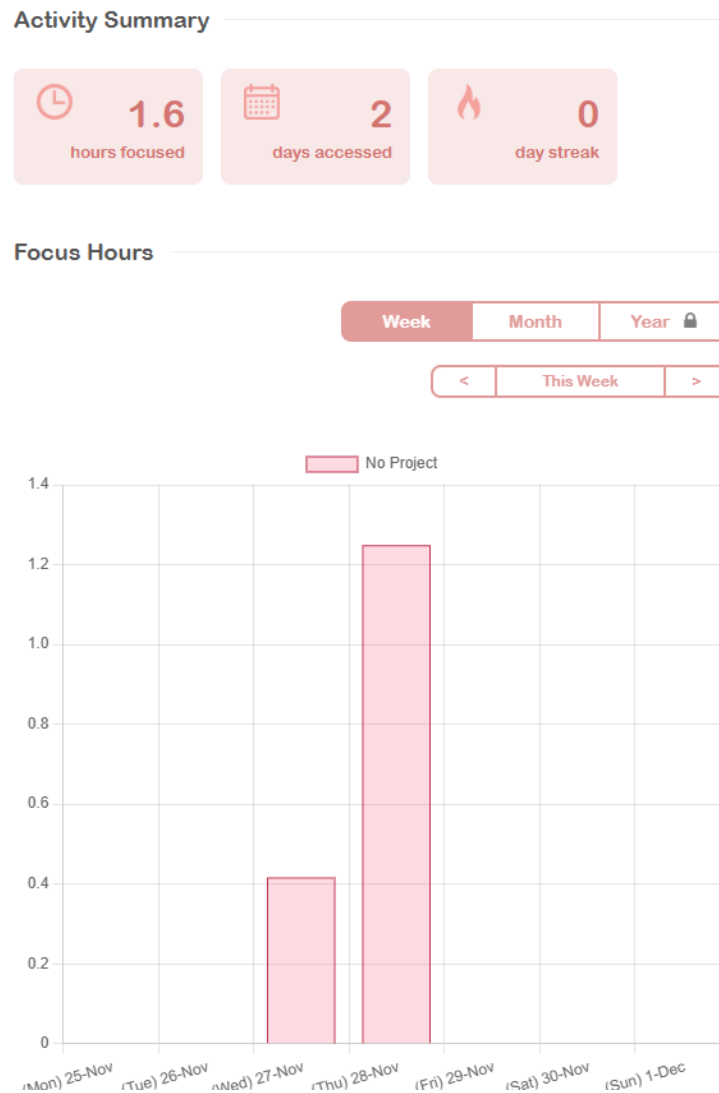
Figure 2.2.4.2 Bar Chart for focus hours

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Figure 2.2.4.3 User Ranking System based on Focus Hours

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2.3 Strength of Existing Website

2.3.1 Plaky

There are several advantages from this website Plaky. First and foremost, this website is implemented with advanced and complex team collaboration features. Users can share task-related files and documents in this system. This is easier for sharing which does not require members to send to each other one-by-one. In addition, members can straight away make adjustments or view the file shares directly. In addition, there is a comment feature. Therefore, the team leader or supervisor can comment on members' files and documents. This reduces the arrangement of time for having a meeting physically as all the comments and advice can be left in the comments section. Moreover, team members can also discuss the topic on which they are facing doubts. They can just create a section so that everyone is able to leave their comments or suggestions in that section. This is easier for discussion rather than having a physical meeting to discuss a solution. Besides that, this system also implemented notification feature that allows users to be notified of important messages. For example, user can know about the latest updates and given tasks mentioned by leaders or moderators.

The second advantage is having progress tracking features that obtain all the information at once. For example, a leader can monitor their team members' tasks such as know their status such as to-do, in progress or done. The leader can also set a due date for each team member. The Gantt chart is also able to see the tasks' arrangement over a specific period. This system will also provide the summary row that shows the collaboration or working hours of the member. This can prevent the team members from getting lazy and willing to skip their assigned jobs or tasks or even hand the job to others.

The last advantage is the simple and efficient for managing workflow across different departments. This is because in this system, if the team member has the permission to access the other departments, the member can straight away ask any inquiry directly from this system without the need to physically make an appointment with the department and wait for the approval time. In addition, if there are documents that need to be verified or sent to the relevant department, the user can straight away text them from this system or send the documents to them through this system.

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2.3.2 Asana

The first strength of Asana platform is its user interface is thoughtfully designed to provide an intuitive and user-friendly experience which makes it easy to navigate even for beginners [24]. Its simple interface and engaging features, such as color-coding options to allow users to personalize their project views for improved usability and enjoyment. As a feature-rich project management tool, Asana is ideal for both remote and on-site teams by offering multiple ways to manage tasks, workflows, and teams. Project managers can quickly create tasks, assign them to team members, and set deadlines, with the assigned members receiving immediate notifications about task statuses and upcoming due dates to ensure nothing important is missing. By prioritizing ease of navigation over overwhelming complexity, Asana delivers a seamless project management experience that balances functionality with simplicity.

The second strength is Asana significantly improves work efficiency by providing team members with a clear overview of all tasks for the week. This bird's-eye view allows teams to identify urgent tasks, prioritize effectively, and organize objectives that can ultimately boost productivity [26]. Features like task assignments and dependencies ensure that all work is completed on time. Additionally, Asana reduces the time spent on repetitive stand-up meetings by enhancing team communication and enabling everyone to stay up to date with changing plans or deadlines promptly.

The last strength is advanced collaboration features. Asana provides a platform where users can invite clients or team members into their workspace and engage in real-time communication through messages and file sharing [26]. Team members receive instant notifications when tasks are assigned or updated, promoting transparency and accountability across the organization. This ensures that everyone has clarity on their roles, shared goals, and the progress of others. This can result in a well-coordinated workflow that enhances overall team performance.

2.3.3 Monday work management

The first strength is the user-friendly interface of Monday work management is visually appealing, intuitive, and easy to navigate by making it ideal for beginners [22]. Its clean, color-coded layout helps users quickly locate what they need, while the well-organized design enhances overall usability [23]. With over two hundred pre-made templates and a drag-and-drop interface, new users can set up and manage their work without spending excessive time learning the system [23]. Account setup takes less than five minutes, with personalized prompts tailored to the user's industry and team size. In addition, the user-friendly project dashboard and pre-built project structures simplify task organization [26]. Importing data from Excel or Google Sheets is straightforward, requiring only three steps, while most actions, such as creating project boards, assigning tasks, and adding new views that can be completed in just a few clicks [26].

Another key strength of the Monday Work Management platform is its effective tracking tools. The software provides clear and comprehensive information, whether monitoring task progress or reviewing issue statuses. Its visual boards and intuitive interface allow users to grasp key details immediately, ensuring that everyone stays informed. Furthermore, the use of color-coding highlights urgent priorities, improves task management efficiency, and ensures that nothing is overlooked

2.3.4 Pomofocus

The first strength of Pomofocus website can enhance focus level by using Pomodoro technique. The Pomodoro technique is a well-known productivity method that enhances focus and reduces procrastination by breaking work into structured intervals. Typically, these intervals are set for 25 minutes of intense work followed by a short break, helping to maintain a high level of focus while preventing burnout. By dividing tasks into manageable chunks, users find it easier to start working without feeling overwhelmed. This approach not only keeps procrastination at bay but also encourages consistent progress by making it easier to complete tasks efficiently. The regular breaks help reset the mind to ensure that users stay productive throughout the day without feeling mentally fatigued.

The second strength of this platform is its simple and user-friendly interface that makes it suitable for users of all ages and skill levels. The intuitive design eliminates the need for any complex setup or training by allowing users to get started right away. The minimalistic interface avoids overwhelming the user with unnecessary features by just offering the needed requirements for effective task management. This makes the tool accessible to everyone by ensuring that everyone can take full advantage of its features with ease.

The last strength is provided generated report of focus time for the user. This platform provides a useful feature that generates bar chart reports of the time spent on each task to help users visually track their progress and focus. These reports give users insights into how well they are adhering to the Pomodoro intervals and whether they need to adjust their work habits. The bar chart allows for a clear visualization of time spent focusing versus taking breaks which offers a way to assess productivity over time. This feature can be especially helpful for users who want to optimize their time management strategies by identifying patterns and areas for improvement that making it easier to stay accountable and continue progressing toward goals.

2.4 Weakness of Existing Website

2.4.1 Plaky

Plaky platform implemented a variety of advanced features but there are also several drawbacks. First and foremost, the complexity of those features can be challenging for new users or those users without prior experience. Those users require spending more time to navigate and explore the features which may decrease productivity. Moreover, the arrangement of these features is disorganized which resulting an interface that is not user-friendly. There are many features that are not directly accessible from the main page. When users click on the desired feature, the feature will redirect them to a separate webpage. This additional step not only disrupts the workflow progress but also causes delays because the need may require extra time to wait for the webpage to load. These delays can be causing frustration for team members especially members who having poor internet connections as the slow loading times will further complicate the process of accessing and utilizing the features of the platform. For beginners who face the combination of an unfamiliar interface, a disorganized layout of features and scattered features may feel overwhelmed and maybe discouraged from using Plaky platform.

The second limitation is the requirement for users to log in repeatedly whenever they wish to access its features. This requirement will cause inconvenience for users who rely on this platform to perform quick access on using their project management tools throughout the day. Moreover, this repetitive process not only disrupts the workflow of the project at the same time also has the potential to cause frustration to the users. Over time, the constant need to re-enter login credentials can make the platform feel less user-friendly, especially when compared to competitors that offer more streamlined access. For busy professionals managing multiple tasks, this minor but frequent interruption can detract from productivity and create a less favorable impression of the platform, ultimately discouraging engagement and diminishing its appeal as a reliable tool for daily use.

2.4.2 Asana

Asana is a project management tool focused on task management, but the limitation exists is the lack of built-in time-tracking capabilities which are common and basic among most project management software [24]. Although it allows users to track tasks assigned to team members, Asana does not offer a native time-tracking feature. To track time, users must integrate Asana with a third-party application, which adds an extra step and may not be as seamless as having time tracking built directly into the platform.

The second limitation for Asana website is lackluster which means that only one user can be assigned to a task at a time [24]. This restriction is intended to avoid confusion about who is responsible for a particular task, but it can be problematic for team collaboration. When multiple team members need to work on the same task, Asana forces users to create separate tasks, which can lead to confusion about the remaining work in a project [24]. This will cause delays if the assigned person becomes unavailable and the task cannot be reassigned to the others [20].

2.4.3 Monday work management

The first significant limitation of Monday work management is the absence of an internal communication feature within the platform. It does not offer any built-in messaging or email capabilities for quick communication between team members. This means that if a user needs to send a message or update a teammate on a task, users have to rely on external tools like Slack or email integrations for communication [23]. This reliance on third-party applications can disrupt the workflow and make it less convenient, as users have to switch between different platforms to discuss or share updates, rather than having everything integrated into one system.

The second limitation of Monday work management is the clutter and disorganized interface. Although the platform is easy to use and implemented with many advanced features for new users especially those who do not have prior experience might spend several of time exploring [23]. This is due to the extensive selection of templates, customization tools and features which will increase the learning curve of exploring the website. This is because users may not be familiar with and do not know the function

of the provided templates. New users often need some time to become familiar with the specific terms and functions on this platform.

2.4.4 Pomofocus

The first limitation of Pomofocus platform is lacks customization options for time management. This can be a limiting factor for users with different preferences or work styles. For example, while some users may prefer longer work intervals with shorter breaks, others might prefer shorter work sessions with longer breaks. In contrast, providing more flexibility in this regard would help cater to a wider range of users and improve overall user satisfaction.

The last limitation is the unattractive visual appeal. The overall design of the platform could benefit from some improvements to make it more visually appealing and engaging. Although the functionality is important but a more attractive and modern design could make the user experience feel more enjoyable and less monotonous. Aesthetic improvements would not only make the platform more attractive but could also enhance its overall usability by creating a more intuitive and pleasant environment for users to navigate.

2.5 Summary table of existing websites

Table 2.5.1 shows all the strengths and weaknesses of the 4 existing websites which are Plaky, Asana, Monday work management and Pomofocus

Websites	Strength	Weakness
Plaky	-advance and complex team collaboration -have progress tracking features -efficient to manage workflow across departments	-overcomplex features -disorganized features in user interface -reputation log in process
Asana	-easy to use -improve work efficiency -enhance collaboration with the collaboration features for team message, comment tag and file sharing	-lack of progress tracking to track the progress of the project (time tracking) - One-Person-Per-Task Limitation
Monday work management	-ease to use -user-friendly interface -tracking tools	-lack of communication tool -clutter and disorganized interface
Pomofocus	-enhance focus and reduce procrastination -simple interface -generate bar chart report of the time focus	-no customizable for the time with different time management preference -can add some design to make it more attractive

Table 2.5.1 Summary table of strengths and weaknesses of existing websites

2.6 Proposed System

The proposed system aims to integrate real-time collaborative features accessible online in order to provide greater convenience for work arrangements. Additionally, the system implements personalized productivity tools to enhance user focus and boost efficiency. These features will be combined within a simple and intuitive user interface by ensuring effortless navigation and reducing the need for users to spend time exploring the system.

First and foremost, the proposed system prioritizes enhancing collaborative features to improve efficiency and streamline teamwork. The system accommodates two types of users which are Employees and Managers. Managers can assign specific tasks to employees by providing details such as the task title, description, and due date to ensure that employees clearly understand the requirements. Employees can easily view the tasks assigned by the manager, track deadlines and submit their completed work through the platform. From the manager's perspective, they have full visibility over all tasks assigned to employees and review submissions in real time.

Secondly, the system implements a communication chat box to facilitate real-time messaging between managers and employees. This feature allows team members to communicate instantly, share updates, ask questions and resolve issues as they arise within the platform. By centralizing communication within the system, the chat box feature eliminates the need to switch between different platforms which can make the workflow more efficient.

Furthermore, the proposed system includes a To-Do List feature that allows both employees and managers to set and manage their tasks directly on their respective pages. Users can input detailed information for each task, including the task title, description, due date, and status. Tasks are categorized into three status groups which are "To Be Done," "In Progress," and "Completed," providing a clear and organized view of ongoing work. This categorization enables everyone involved to easily track the progress of individual tasks and stay aligned with project goals. Users can update the task status as they progress, such as marking a task as "Completed" once it's finished. The To-Do List features streamlines task management by offering an intuitive interface for task assignment and tracking, improving organization and minimizing the risk of missed deadlines.

In addition, the proposed system also includes a Pomodoro Timer feature, which is set to a default of 25 minutes but allows users to adjust the timer according to their preferred focus duration. This flexibility ensures that users can tailor the timer to suit their individual needs. Once a focus session is completed, the system generates a bar chart that visually represents the user's focus time. This insight provides valuable insights for them to analyse their productivity level. This feature helps users stay on track by discouraging distractions, especially for those who may easily lose focus. By enabling users to monitor and analyse their focus sessions, the Pomodoro Timer encourages better time management and fosters increased efficiency over time.

The system also includes a Calendar feature that allows users to set events on specific dates, start time and end time. Users can customize events by choosing colors, which helps categorize them by priority or type. The calendar offers multiple viewing options, including month, week, and day views. This provides flexibility and convenience in managing their schedules. This feature helps users stay organized by offering various perspectives on their calendar by making it easier to track and plan activities across different time frames.

Last but not least, the proposed system prioritizes a user-friendly interface design, recognizing that the interface is the first impression users have of the platform and plays a crucial role in encouraging them to explore its features. To enhance user experience, the interface should be intuitive and simplified by grouping similar features into well-organized categories accessible directly from the main page, eliminating the need for redirection to separate pages. This approach not only reduces loading times but also improves the platform's overall performance. Addressing limitations in existing systems, such as requiring multiple login processes to navigate features, the proposed system can implement seamless login options, like a "stay logged in" feature, to ensure uninterrupted access. This would significantly improve convenience, streamline workflows and boost user satisfaction. These enhancements would make it easier for users to quickly access tools, avoid feeling overwhelmed, and maximize productivity.

2.7 Comparison Table for Proposed system

Table 2.7.1 displays the features of proposed websites compared to existing websites.

Features	Plaky	Asana	Monday work management	Pomofocus	Proposed Website
Login module	√	√	√	√	√
Collaborative feature	√	√	√	x	√
Communication feature	√	√	x	x	√
To-do list	√	√	√	√	√
Pomodoro clock	x	x	x	√	√
Analysis charts	x	x	x	√	√
Calendar	x	x	√	x	√

Table 2.7.1 Comparison Table

CHAPTER 3: System Methodology and Approach

Chapter 3 is the System Methodology and Approach. This chapter will discuss the system methodology, the timeline used for the development of the system and also user requirements.

3.1 System Methodology

The system development methodology that is used for this project is Agile. Based on [30], Agile is a methodology that is widely used for web development projects. The reason that Agile is chosen to be used is because of its flexibility and evolutionary nature [31]. Web-based systems often encounter frequent changes in requirements during development and even after deployment [32]. Therefore, the flexibility and adaptivity of Agile enable it to respond to immediate changing requirements during the development cycle to ensure that the output of the platform is of high quality and fulfils the demands and expectations of the users. Unlike the traditional methodology, Waterfall methodology just keeps the project in clear and simple as well as straight ahead the plans [33].

Agile methodology will break down the complex projects into small and manageable tasks. This can provide a clearer visual representation of project scope [34]. In this project, the development process of web-based task management will be broken into several sections such as collaborative feature, productivity feature and music feature. This breaking process is to ensure that each aspect of the system is developed independently and fosters an approach to reduce the complexity.

Each section of the project will follow a structured Agile development cycle of six phases as shown in Figure 3.1.1.1 below. The six phases included requirements gathering, design, implementation, testing, deployment and maintenance. Requirement gathering is the initial step to identify the key features and user requirements for this web-based task management such as real-time collaborative feature, productivity feature and simple and user-friendly interface. The development time and work required to complete this project will be outlined in this stage. The second stage is the design phase. This phase focuses on identifying the function and interface of the system and transforming them into a structural and functional framework. The following stage is the development stage. The development process was broken down into sprints and

each sprint concentrates on developing one specific feature. Additionally, writing code is also involved in this stage. The fourth stage is the testing phase. In this phase, various testing methodologies are applied to ensure the quality of the system. For example, Integration Testing is to ensure that different components work together while System Testing is used to test the functionality of the entire system. User acceptance testing is used to confirm that the system achieves the user expectations and requirements. Performance Testing is used to ensure that the system is scalable and stable. The deployment stage is undertaken after ensuring that every test is passed. In this stage, the system will be deployed to the production environment to let users use it in order to ensure that the system works smoothly. The final stage is Review and Maintenance. This stage addresses post-deployment challenges by resolving issues, releasing updates, and providing patches to enhance functionality and user experience. This continuous improvement ensures the system remains reliable and effective in meeting the evolving needs of users. Together, these stages form a structured approach to developing a web-based task management system that supports collaboration and boosts productivity [35].
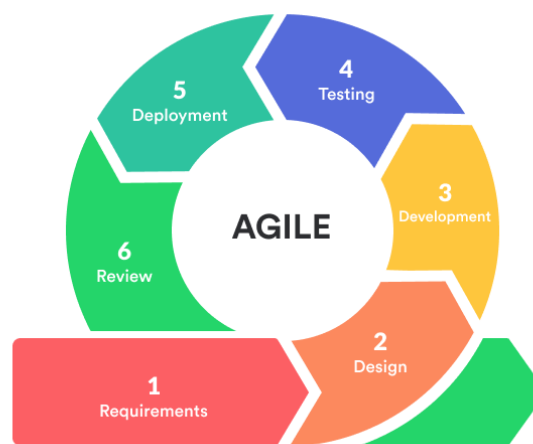

Figure 3.1.1.1 Agile Development Cycle [36]

3.2 Timeline

3.2.1 Timeline for FYP1

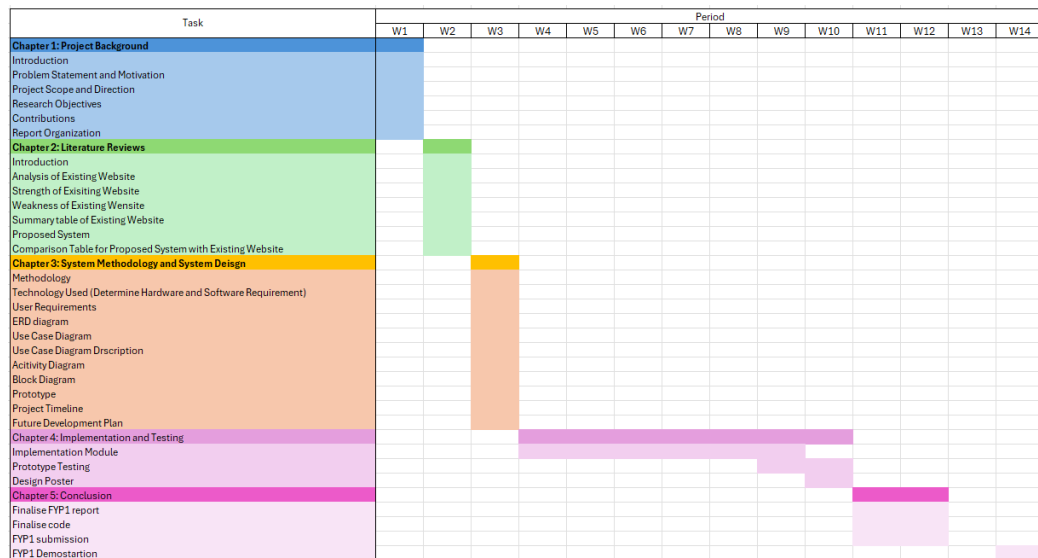| Task	Period													
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Chapter 1: Project Background														
Introduction														
Problem Statement and Motivation														
Project Scope and Direction														
Research Objectives														
Contributions														
Report Organization														
Chapter 2: Literature Reviews														
Introduction														
Analysis of Existing Website														
Strength of Existing Website														
Weakness of Existing Wensite														
Summary table of Existing Website														
Proposed System														
Comparison Table for Proposed System with Existing Website														
Chapter 3: System Methodology and System Deisgn														
Methodology														
Technology Used (Determine Hardware and Software Requirement)														
User Requirements														
ERD diagram														
Use Case Diagram														
Use Case Diagram Drscription														
Acitivity Diagram														
Block Diagram														
Prototype														
Project Timeline														
Future Development Plan														
Chapter 4: Implementation and Testing														
Implementation Module														
Prototype Testing														
Design Poster														
Chapter 5: Conclusion														
Finalise FYP1 report														
Finalise code														
FYP1 submission														
FYP1 Demostartion														

Figure 3.2.1.1 Timeline for FYP1

Figure 3.2.1.1 above is the project schedule that spans 14 weeks and begins with Chapter 1 which is the Project Background that is carried out in Week 1. This includes the introduction, problem statement and motivation, project scope and direction, research objectives, contributions, and report organization. Moving into Chapter 2 which is Literature Reviews that scheduled in Week 2. It focuses on analyzing existing websites, identifying strengths and weaknesses, summarizing findings, and proposing systems with a comparison to existing solutions. Chapter 3 is System Methodology and System Design starts in Week 3 and continues through Week 4, covering methodology, technology requirements, ERD and use case diagrams, activity diagrams and block diagrams, prototypes, and the development plan. From Weeks 5 to 10, Chapter 4 is Implementation and Testing which includes developing implementation modules, prototype testing, and designing posters. The final stage, Chapter 5 is Conclusion is conducted from Weeks 11 to 14, focusing on finalizing the FYP1 report, preparing for submission, and carrying out the FYP1 demonstration. This structured timeline ensures a logical flow from background research and design to implementation, evaluation, and project conclusions.

3.2.2 Timeline for FYP2

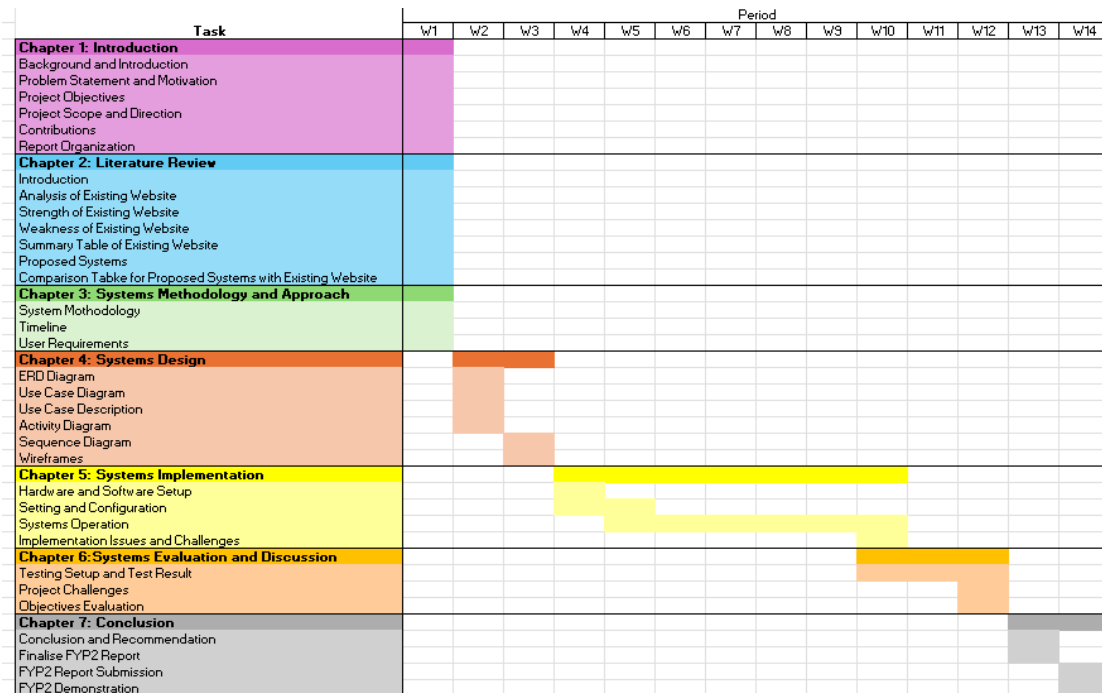| Task	Period													
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Chapter 1: Introduction														
Background and Introduction														
Problem Statement and Motivation														
Project Objectives														
Project Scope and Direction														
Contributions														
Report Organization														
Chapter 2: Literature Review														
Introduction														
Analysis of Existing Website														
Strength of Existing Website														
Weakness of Existing Website														
Summary Table of Existing Website														
Proposed Systems														
Comparison Table for Proposed Systems with Existing Website														
Chapter 3: Systems Methodology and Approach														
System Methodology														
Timeline														
User Requirements														
Chapter 4: Systems Design														
ERD Diagram														
Use Case Diagram														
Use Case Description														
Activity Diagram														
Sequence Diagram														
Wireframes														
Chapter 5: Systems Implementation														
Hardware and Software Setup														
Setting and Configuration														
Systems Operation														
Implementation Issues and Challenges														
Chapter 6: Systems Evaluation and Discussion														
Testing Setup and Test Result														
Project Challenges														
Objectives Evaluation														
Chapter 7: Conclusion														
Conclusion and Recommendation														
Finalise FYP2 Report														
FYP2 Report Submission														
FYP2 Demonstration														

Figure 3.2.1.2 Timeline for FYP2

Figure 3.2.1.2 above is the Gantt Chart outlines the project timeline across 14 weeks, beginning with Chapter 1 is Introduction that covers background, problem statement, objectives, scope, contributions, and report organization, scheduled in Week 1. Chapter 2 is Literature Review spans Weeks 2 to 4, addressing the analysis of existing websites, their strengths and weaknesses, and proposing systems with comparative analysis. In Week 5, Chapter 3 is Systems Methodology and Approach is planned, including methodology, timeline preparation and user requirements. Chapter 4 is Systems Design takes place from Weeks 5 to 6, involving ERD diagrams, use case diagrams, use case description, activity diagrams, sequence diagrams and wireframes. Chapter 5 is Systems Implementation is scheduled from Weeks 6 to 10, covering hardware/software setup, system configuration, operation, and addressing implementation challenges. Next, Chapter 6 is Systems Evaluation and Discussion runs from Weeks 9 to 11, focusing on testing, evaluation of objectives, and discussion of project challenges. Finally, Chapter 7 is conclusion is scheduled for Weeks 12 to 14, including conclusion, recommendations, finalizing the FYP2 report, report submission, and the final demonstration. This timeline ensures systematic progression from planning and design to implementation, evaluation, and project completion.

3.3 User Requirements

3.3.1 Functional Requirements- Employee Perspective

From the employee's perspective, the system includes a registration feature where users can create accounts by selecting their roles and providing necessary personal information and login credentials. All details will be securely validated and stored. Once registered, users can log in by selecting their role and entering their email and password which the system will validate to grant access to their respective dashboards. The system must allow them to create a to-do list to manage their tasks efficiently by including the status indicators such as "To-Do", "In-Progress" and "Completed". Employees should also be able to start the Pomodoro clock, helping them stay focused by managing their work intervals and break intervals effectively. Additionally, the system will enable employees to generate an analysis bar chart that visualizes their focus time based on the Pomodoro clock. They will be able to view tasks assigned by the manager, submit completed tasks and interact in real time with colleagues through integrated communication tools to enhance collaboration.

3.3.2 Functional Requirements- Manager Perspective

For managers, the system includes a registration feature where managers can create accounts by selecting their roles and providing the necessary personal information and login credentials. All details will be securely validated and stored. Once registered, the manager can log in by selecting their role and entering their email and password which the system will validate to grant access to the manager dashboards. The system will provide similar functionalities, such as creating a to-do list and starting the Pomodoro clock to track their own focus time. Managers will also be able to generate analysis bar charts of focus time based on the Pomodoro clock to allow them to monitor productivity trends. Moreover, managers will have the ability to create tasks and assign them to employees. In order to track the progress of each task, the submitted tasks will be categorized into "Pending", "In Progress", or "Approved" statuses that can enable clearer communication of task progress. Additionally, managers will have the functionality to manage employees within the system, ensuring effective oversight and support.

3.3.3 Functional Requirements- Admin Perspective

From the admin's perspective, admin can straight away login and directly access to admin's dashboard. The system will grant the ability to approve or reject new employee additions. This will allow the admin to maintain control over user access, ensuring that only authorized employees are granted system access

3.3.4 Non- Functional Requirements

In terms of non-functional requirements, the platform emphasizes usability by offering an intuitive and user-friendly interface that minimizes the learning curve for new users. It is built for high performance, ensuring fast response times and smooth handling of multiple concurrent users and tasks. Strong security measures are implemented to protect user data and maintain privacy, ensuring that all information is securely stored and transmitted. The platform is also designed for scalability, allowing it to grow alongside the organization by supporting an increasing number of users and tasks. Lastly, the system prioritizes accessibility, ensuring that users can access and use the platform effectively across a variety of devices including desktops, tablets, and smartphones, enabling remote task management and collaboration.

Chapter 4: System Design

4.1 ERD
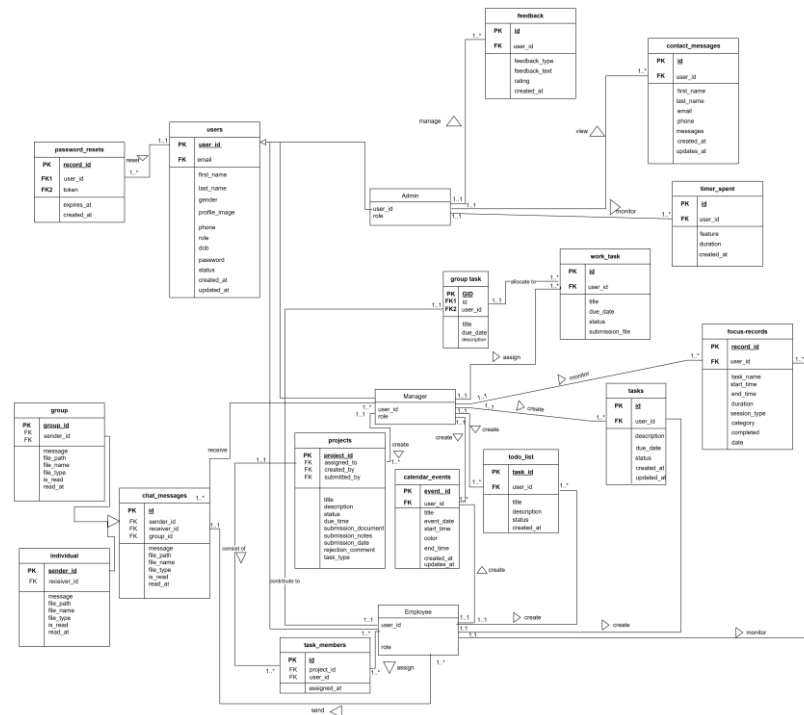
Figure 4.4.1 ERD

Figure 4.4.1 above is the ERD that represents the structure of a task management system with key entities and their relationships. The core entities include Users, which are divided into different roles such as Admin, Manager, and Employee. The Users table holds essential user details such as email, name, role, and password.

The Admin entity manages user information and has the ability to oversee feedback and contact messages. Admin entity has a one-to-many relationship with the feedback entity. which means that one admin can manage one or more feedback. In addition, admin entity has a one-to-many relationship with the contact_messages entity, meaning one admin can view one or many contact messages. The admin entity also has a one-to-many relationship with the timer_spent entity, meaning one admin can monitor one or many timer records.

The manager entity can create one to more tasks to employee as indicated by one to many relationship between Manager and Tasks entities. A Manager can create and assign one or many group tasks, which are captured in the Group Task entity, as

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shown by the one-to-many relationship between Manager and Group Task. A Manager can monitor one or multiple timer_spent records, as shown by the one-to-many relationship between Manager and Timer Spent entities. A Manager can create and manage multiple calendar_events, as indicated by the one-to-many relationship between the Manager and Calendar Events entities. A Manager can monitor one or more focus_records as shown by the one-to-many relationship between Manager and Focus_records. A Manager can create one or more todolist as shown by the one-to-many relationship between Manager and todo_list. A Manager can create one or more tasks as shown by the one-to-many relationship between Manager and tasks. A manager may assign many projects, and each project must include one or more team members shown by the one-to-many relationship between Manager, Projects and team_members.Manager can receive one or many message from the employee that shown by the relationship of one- to many between Manager and chat_messages.

An employee can be assigned one or more tasks. Each Employee can have multiple tasks assigned, as indicated by the one-to-many relationship between the Employee and group_task entities. An Employee can monitor one or multiple timer_spent records, as shown by the one-to-many relationship between Employee and Timer Spent entities. An Employee can create and manage multiple calendar_events, as indicated by the one-to-many relationship between the Employee and Calendar Events entities. An Employee can monitor one or more focus_records as shown by the one-to-many relationship between Employee and Focus_records. An Employee can create one or more todolist as shown by the one-to-many relationship between Employee and todo_list. An Employee can create one or more tasks as shown by the one-to-many relationship between Employee and tasks. An employee can assign to one or many projects that shown by the one-to many relationship between Employee, Projects and team_members. An employee can send one or more chat messages to the manager. These messages can take the form of individual messages sent directly to the manager or group messages.

4.2   Use Case Diagram (Overall system)
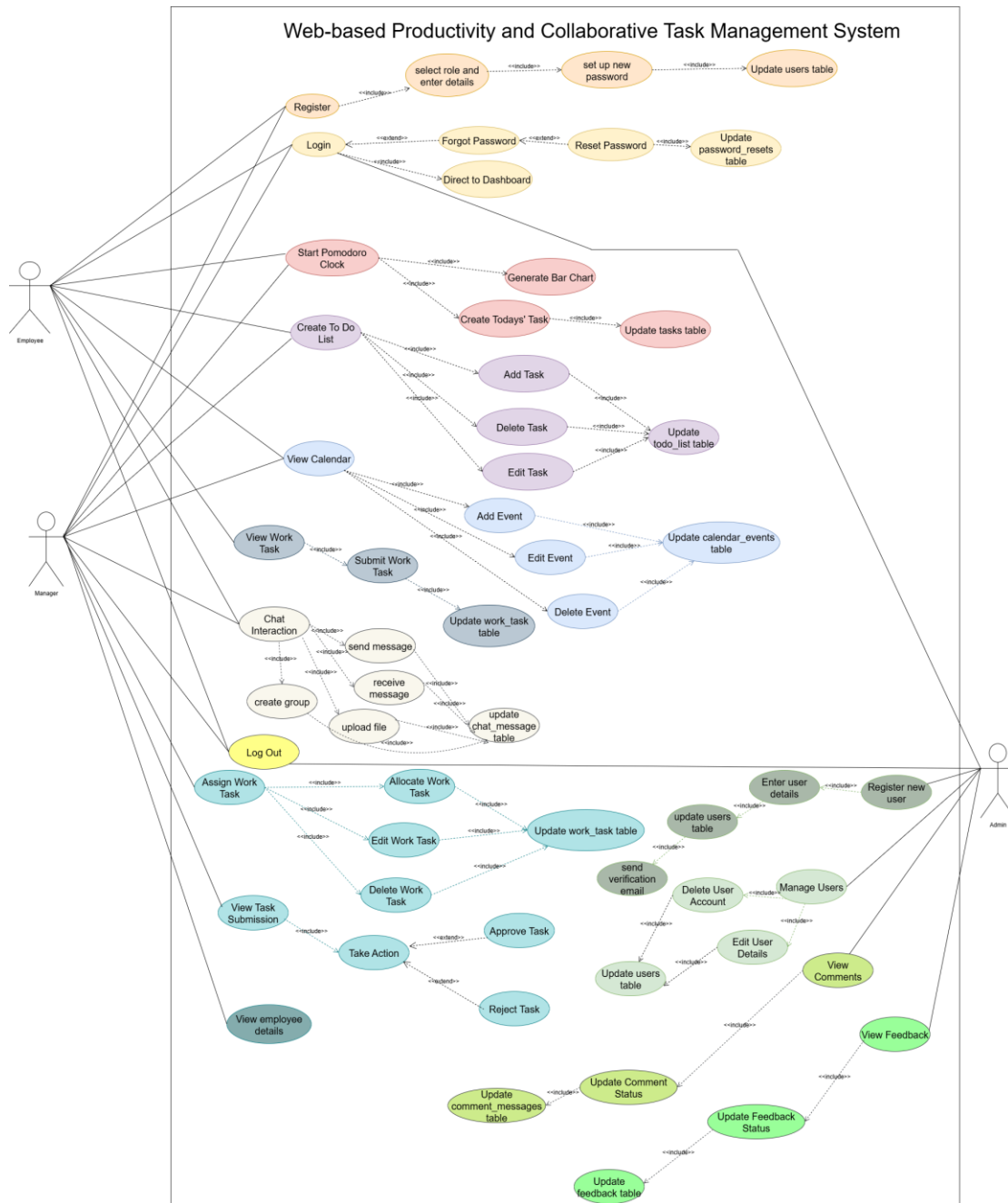
Figure 4.2.1.1 Overall Use Case Diagram

The use case diagram represents the structure and interactions within a Web-based Productivity and Collaborative Task Management System for three primary user roles which are Employee, Manager and Admin.

Employees focus mainly on personal productivity and completing assigned tasks. They can register, log in, reset their passwords, and use features such as the Pomodoro timer, to-do lists, and calendar for task organization. They can create, edit, and delete tasks, categorize them as pending, in progress, or completed, and visualize their progress through bar charts displayed on their dashboard. Employees are also able to submit completed tasks to their managers and collaborate through chat features by sending, receiving messages, uploading files in the chat and creating group chat for discussion.

Managers, in contrast, take on a supervisory role with broader responsibilities. They can allocate, assign, edit, and delete work tasks, as well as view calendar events and generate to-do lists similar to employees. In addition, managers can monitor employee submissions, take action by approving or rejecting completed tasks, and update task statuses accordingly. They also have access to features such as the Pomodoro timer, productivity charts, and chat interactions, which help them oversee workload distribution, maintain communication, and ensure effective team coordination and project progress. Manager also can communicate through chat features by sending messages, receiving messages, uploading files in the chat and creating group chat for discussion.

Admins hold the highest level of control, overseeing the system's management and ensuring its smooth operation. Their responsibilities include registering new users by entering and updating user details, editing or deleting accounts. In addition, the admin is also able to handle verification processes. For example, they also manage feedback and comments by reviewing and updating their statuses to ensure that issues are resolved efficiently. Unlike employees and managers, admins do not directly handle task execution but instead maintain system integrity and user management.

4.3 System Design Diagram (Use Case Description and Activity Diagram)

4.3.1 Registration Module – Employee and Manager Perspective

Use Case Name: Register New User	ID: 1	Importance Level: High
Primary Actor: Employee, Manager	**Use Case Type:** Detail, Essential	
Stakeholders and Interests: **Employee**: Wants to activate an account to access their dashboard and perform job-related tasks. **Manager**: Wants to activate an account to access their dashboard, manage employees, and monitor team progress.		
Brief Description: This use case describes how a new user, either an employee or a manager, activates their account after being registered by the admin. The user begins by selecting their role and entering the email address and temporary password provided by the admin. The system then checks if the email already exists in the database, validates the information, and stores the details. Once verification is successful, the user is prompted to set a new password. After completing this process, the system directs the user to the login page to access their account.		
Trigger: User clicked on the "Register" navigation tab from the header **Type:** External		
Relationship **Association:** Employee, Manager **Include:** store registration details **Extend:** none		

Normal Flows of Events:
  1. The new user receives email verification from admin.
  2. The new user navigates to the account activation page.
  3. The user selects their role either Employee or Manager.
  4. The user enters their email address and the temporary password provided by the admin.
  5. The system checks whether the email exists in the database.
  6. The system validates the provided temporary password against stored credentials.
  7. If the information is valid, the system verifies the account.
  8. The system prompts the user to create and confirm a new password.
  9. The user sets a new password.
  10. The system updates the account with the new password.
  11. The system directs the user to the login page.		

Sub Flows:
3a. Invalid Input
1.   Invalid email format
i.   If the email format is invalid, the system displays: "Invalid credentials"
4a. User Validation (Email already exists)"
i.   System detects that email already exists in the database
ii.   System displays an error message: "the email address provided is already in use"
8a. Password Validation
1.   Mismatched passwords
i.   If the password and confirm password do not match, the system displays "Password does not match."
Alternate/Exceptional Flows: Not applicable

Table 4.3.1.1 Use Case Description of Registration Module
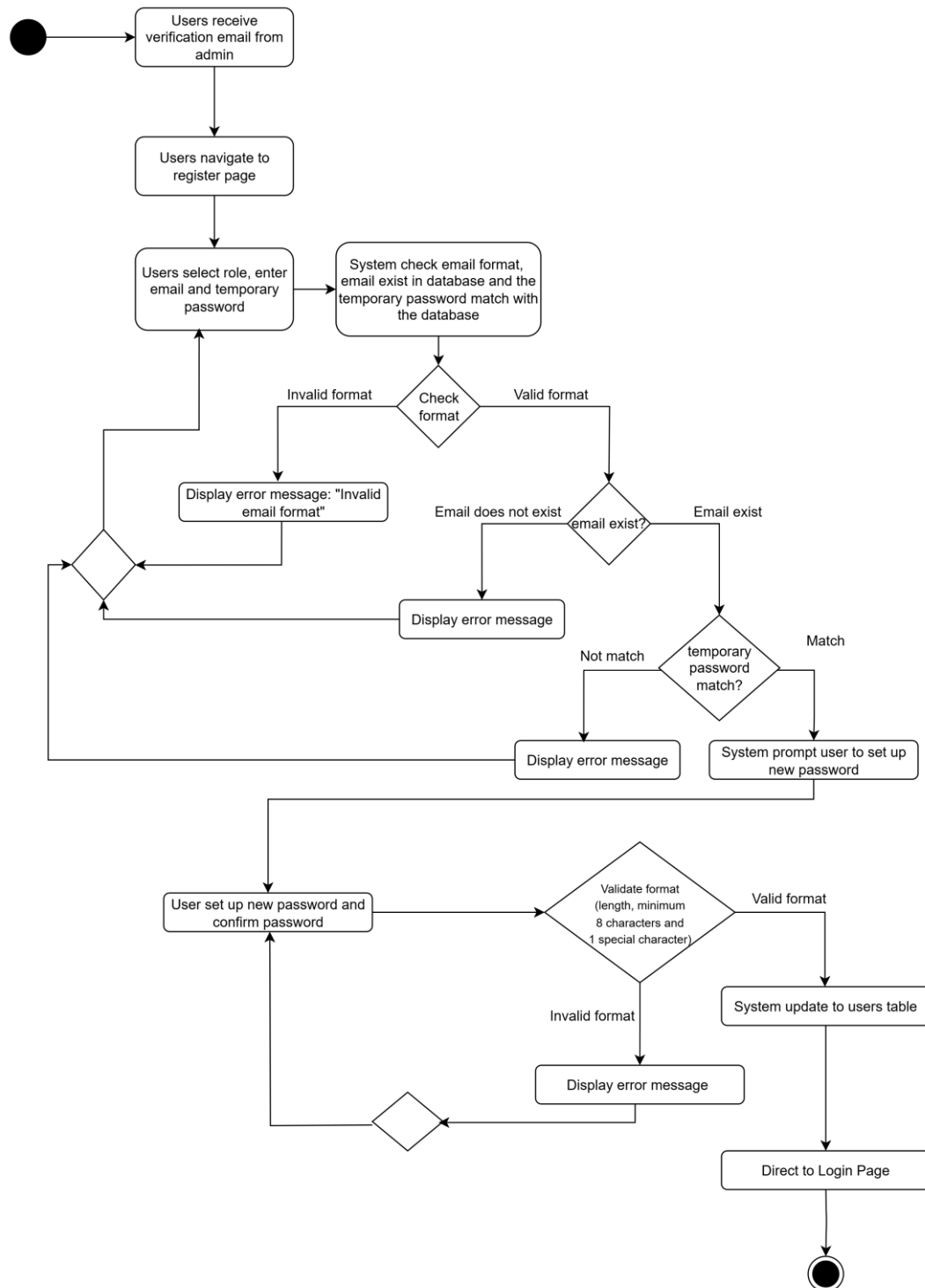
Figure 4.3.1.2 Activity Diagram for Registration Module

The above activity diagram illustrates the flow of the registration process for new users. For new users, they will receive a verification email from the admin. The email verification that is sent by the admin contains details of the users such as role, first name, last name, gender, date of birth, phone number, email and temporary password. By clicking the "Register" option in the header, the system will direct users to the registration form page. Firstly, the user selects their role, either Employee or Manager. After that, the user enters the email address and temporary password provided in the verification email. After clicking the "Verify Account" button, the system validates the entered details to ensure that the email exists in the database and the temporary password matches. If the information is valid, the system prompts the user to create a new password. The new password must meet the following requirements, which include a minimum of eight characters, at least one uppercase letter, and at least one special character. Once it is valid, the system updates the user's account with the new password and redirects the user to the login page.

On the other hand, if the provided role, email, or temporary password is incorrect, the system displays the message "Email not found or not authorized for registration. Please contact your administrator." Similarly, if the new password and confirmation password do not match, the system notifies the user that "Password does not match".

4.3.2 Login Module – Employee, Manager and Admin Perspective

Use Case Name: Login Module	ID: 2	Importance Level: High
Primary Actor: Employee, Manager, Admin	**Use Case Type:** Detail, Essential	
Stakeholders and Interests: **Employee**: Wants to access the employee dashboard and perform job-related tasks. **Manager**: Wants to access the manager dashboard, manage employees, and monitor team progress. **Admin:** Wants to access the admin dashboard for system management and user management		
Brief Description: This use case describes how a user, Employee, Manager, or Admin selects their role, enters their credentials such as email and password and successfully logs in to access their respective dashboard. The system validates the credentials against the database and, upon success, directs the user to the appropriate dashboard. If the user has forgotten their password, they can use the Forgot Password flow to reset it.		
Trigger: User clicks the "Login" button on the home page or "Login" navigation tab from the header **Type:** External		
Relationship **Association:** Employee, Manager, Admin **Include:** direct to dashboard **Extend: forgot password module**		
Normal Flows of Events: 1. User selects their role which are Employee or Manager or Admin in the login page. 2. The system prompts the user to enter email and password. 3. User enters all the required information. 4. User submits the information. 5. System validates email and password against the database. 6. On success, system directs to the respective dashboard which are Employee, Manager or Admin.		

Sub Flows:
 	
1a. Direct to different dashboard
 	
    i.   **Employee**: Directed to the employee dashboard.
 	
    ii.   **Manager**: Directed to the manager dashboard.
 	
    iii. **Admin**: Directed to the admin dashboard.		

Alternate/Exceptional Flows:

3a. Forgot Password Extension:

      i.   User clicks "Forgot Password?" link in the Login Page

      ii.   User enters their email

      iii.   System finds email from the database

      iv.   If email exists in the database, the system will send a verification link to the email

      v.   User clicks on the link and is directed to the Reset Password Page.

      vi.   User enters new password twice.

5a. Invalid Login

      i.   If login fails, the system prompts the user to re-enter their details

Table 4.3.2.1 Use Case Description for Login Module
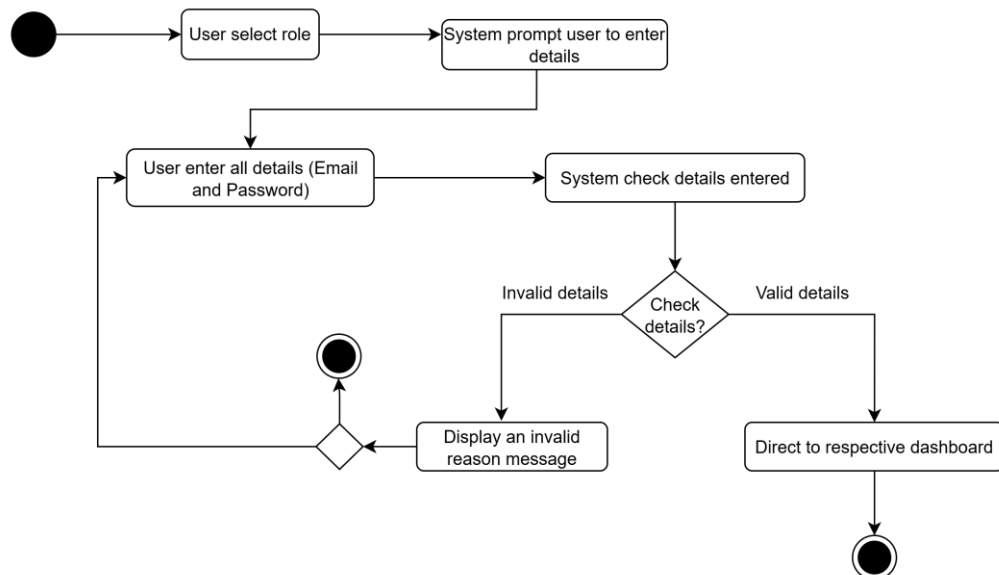
Figure 4.3.2.1 Activity Diagram of Login Module

The above activity diagram shows the flow of the login process. Firstly, the user selects their role which could be Employee, Manager or Admin. They are required to enter their email and password. The system then verifies the entered details against the users database table. If the details are correct, the user is directed to their respective dashboard. However, if the details are incorrect, the system will display an error message indicating the reason for the invalid login attempt.
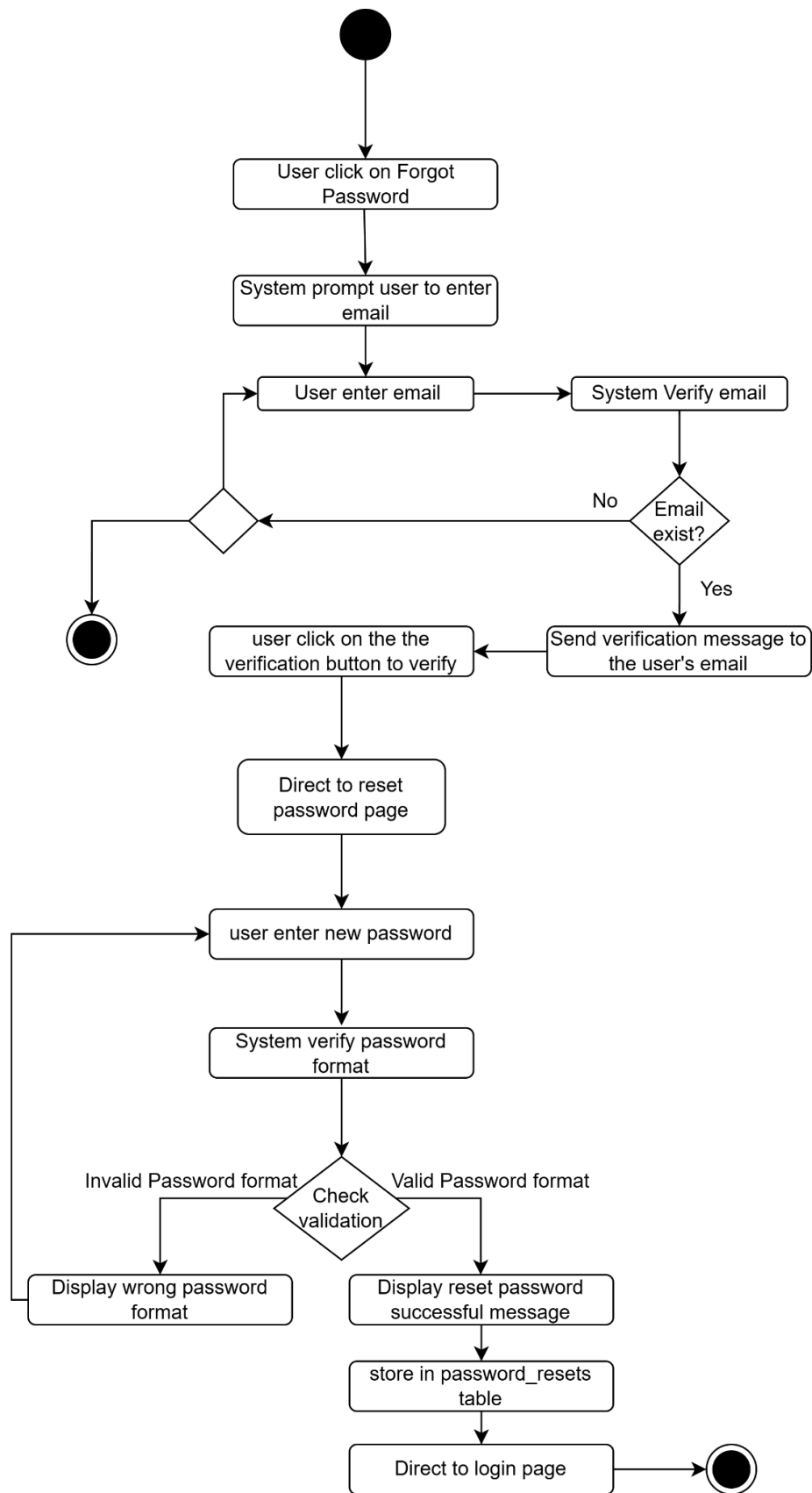
Figure 4.3.2.2 Activity Diagram for Forgot and Reset Password Module

The activity diagram illustrates the flow of the Forgot Password process for users to reset their passwords. The process begins when the user clicks on the "Forgot Password" option, prompting the user to enter their email address. The user then enters their email and the system verifies if the existence of the email in the users table. If the email is found, the system sends a verification message to the user's registered email. Users are required to click the link in the received email. After clicking on the link, the system will direct the user to the Reset Password page where they can reset their password. If the email doesn't exist, the system will display an error message to inform the user.

Next, the user clicks on the verification link to proceed. Upon entering a new password, the system verifies if the password format meets the required criteria such as length and special characters. If the password format is correct, the system checks the overall validation of the password. If the password meets all the criteria, the system stores the new password in the password reset table and displays a successful password reset message. However, if any issues arise, such as an incorrect password format or failed validation, the system will notify the user and prompt them to try again. Finally, after the password reset is successful, the user is redirected to the login page to log in with their new password

4.3.3 Pomodoro Timer Module – Employee and Manager Perspectives

Use Case Name: Pomodoro Timer module	ID: 3	Importance Level: Medium
Primary Actor: Employee, Manager	Use Case Type: Detail, Essential	

Stakeholders and Interests:
Employee and Manager: Want to start the Pomodoro timer to manage work intervals, list tasks to be completed, track focus time, and visualize the time spent on each task using a donut chart while the bar chart will be the total focus time for the whole day. They also want to have the flexibility to set their own preferred work and break intervals.
Brief Description: This use case describes how an Employee or Manager sets the Pomodoro timer, allowing them to define a preferred work interval such as 25 minutes by default, but adjustable to any other duration followed by a short break typically 5 minutes by default. The system tracks the user's focus time during each Pomodoro session and generates both a bar chart and a pie chart to visualize the total focus time and the time spent on each task across sessions.
Trigger: User chooses "Pomodoro" option from their dashboard   **Type:** External
Relationship   **Association:** Employee, Manager   **Include:** generate charts   **Extend:** none
Normal Flows of Events: 1. User selects the "Pomodoro" option from their dashboard.   2. System displays the default work time 25 minutes and break time for 5 minutes.   3. User enters their tasks to be done.   4. User clicks the Start button to begin the timer.   5. After 25 minutes, the system switches to the break session for 5 minutes.   6. System repeats step 4 for a total of 3 work cycles.   7. After completing 3 cycles, the system initiates a long break for 10 minutes.

Sub Flows:
 2a. User Adjusts the Pomodoro Session Timer according to their preference:
    i. During the work or break interval, the user can change the timer settings.
    ii. The system will update the timer based on the user's input.
 3a. Mark task as done:
    i. User clicks the tick mark beside a task to indicate that it is completed.
    ii. The system records the completion and tracks the time spent on each task.

6a. Generate Bar chart and donut chart:

i. System calculates the total focus time accumulated during the Pomodoro session.

ii. System generates a donut chart displaying the total time spent on each task.

iii. System generates a bar chart to visualize the total focus time during the Pomodoro session.

iv. Both charts are displayed on the user's dashboard for visual tracking of focus time and task completion.

Alternate/Exceptional Flows: not applicable

Table 4.3.3.1 Use Case Description for Pomodoro Timer Module
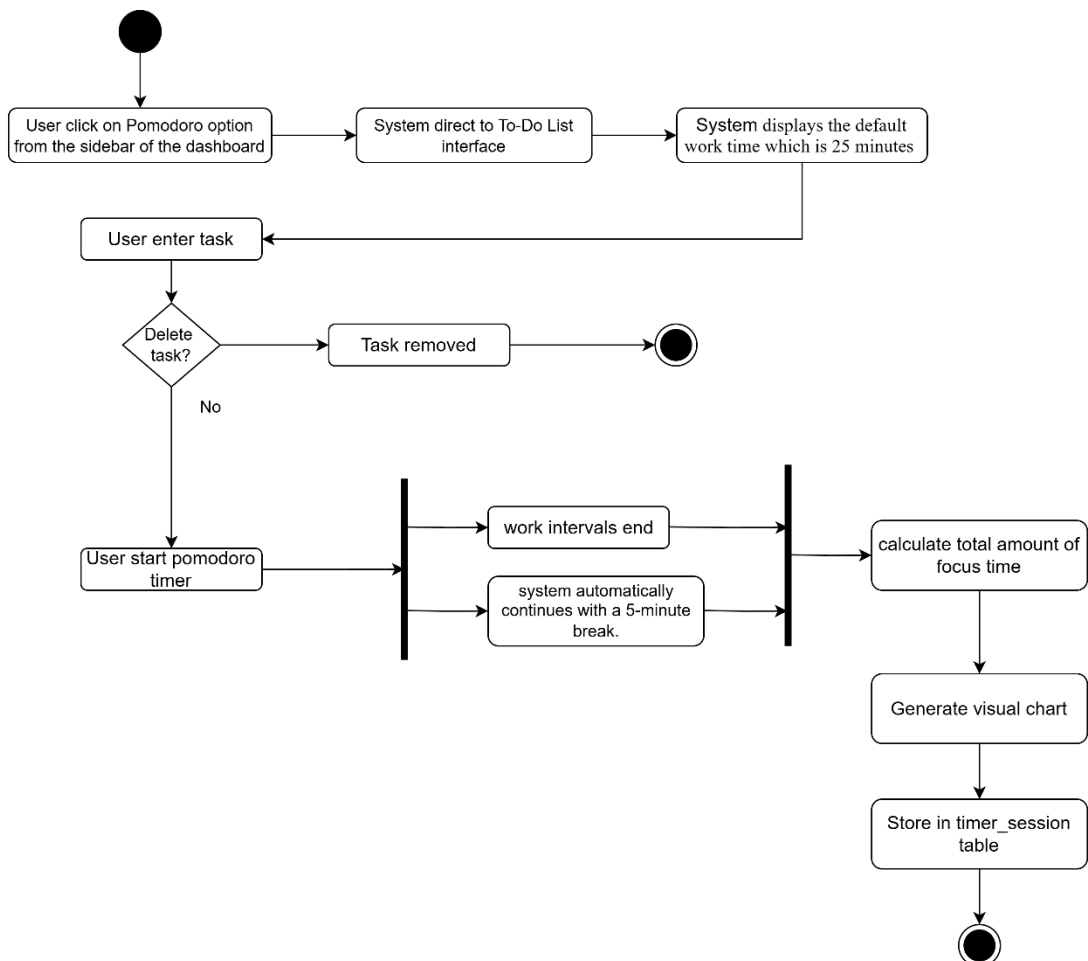
Figure 4.3.3.1 Activity Diagram of Pomodoro Timer Module

The activity diagram illustrates the flow of the Pomodoro Timer feature within the system. The process begins when the user clicks on the "Pomodoro" option from the

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sidebar of their dashboard. The system then displays the default work time, which is set to 25 minutes. The user enters the task they plan to focus on and starts the Pomodoro timer. Once the user starts the timer, the system begins the 25-minute work interval. After this interval ends, the system automatically switches to a 5-minute break.

Once the user completes a task, they can mark it as done by clicking a tick next to the task. If the user wishes to remove a task, they also have the option to delete it. After each work interval, the system calculates the total amount of focus time based on the completed intervals. It then generates a visual chart to reflect the user's focus time, allowing them to track their productivity. Additionally, the system stores the session data in the timer_session table for future reference and analysis. This process ensures that users can track their focus time effectively and maintain productivity through structured work and break intervals while also managing their tasks by marking them complete or deleting them.

4.3.4 To Do List module – Employee and Manager Perspective

Use Case Name: To-Do List module	ID: 4	Importance Level: Medium
Primary Actor: Employee, Manager	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Employee and Manager**: Insert task to be done, in progress and complete. Insert due date.		
Brief Description: This use case describes how a user, Employee or Manager creates a to-do list by adding tasks, setting deadlines, and assigning priorities. The to-do list helps the user manage their tasks more effectively by providing an organized list of items to be completed.		
Trigger: User chooses "To Do List" option from their dashboard **Type:** External		
Relationship **Association:** Employee, Manager **Include:** Add task, edit task, delete task **Extend:** none		

Normal Flows of Events:
 	
    1. User selects the "Task" option from their dashboard.
 	
    2. System displays the to-do list interface.		

	3. User clicks on the "Create Task" button to create a new task.
	4. System prompts the user to enter the task title, task description, status of category either in "In Progress", "Pending" or "Completed" and set a due date.
	5. User enters the task details
	6. User clicks on the "Save" button to add the task to their to-do list.
	7. System saves the task and updates the to-do list with the newly created task.
	8. Users view the list of the to-do list.

Sub Flows:

3a. Add Task:

   i.   User clicks the "Add Task" button.

   ii. System prompts the user to input the task details.

   iii. User enters the task information and clicks the Save button.

   iv. System saves the task and updates the to-do list with the new task.

8a. Edit Task:

   i.   User selects an existing task in the to-do list that needs to be edited.

   ii. System displays the current task details and provides an option to modify them.

   iii. User updates the task details as needed and clicks Save.

   iv. System updates the task in the to-do list with the new details.

8b. Delete Task:

   i.   User selects the task to delete from the to-do list.

   ii. System asks for confirmation before deleting the task

   iii. User confirms the deletion.

   iv. System removes the task from the to-do list and confirms deletion to the user.

Alternate/Exceptional Flows: not applicable
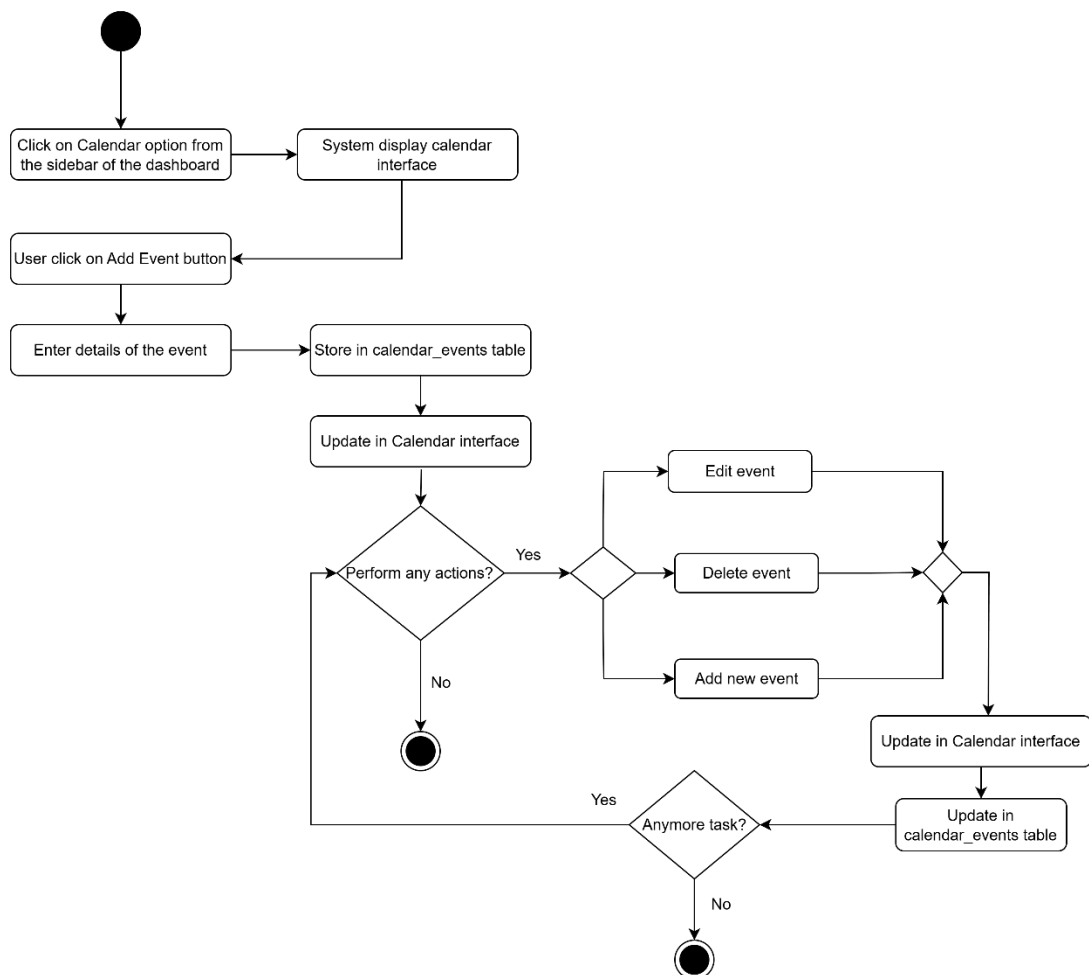
Table 4.3.4.1: Use Case Description of To Do List Module
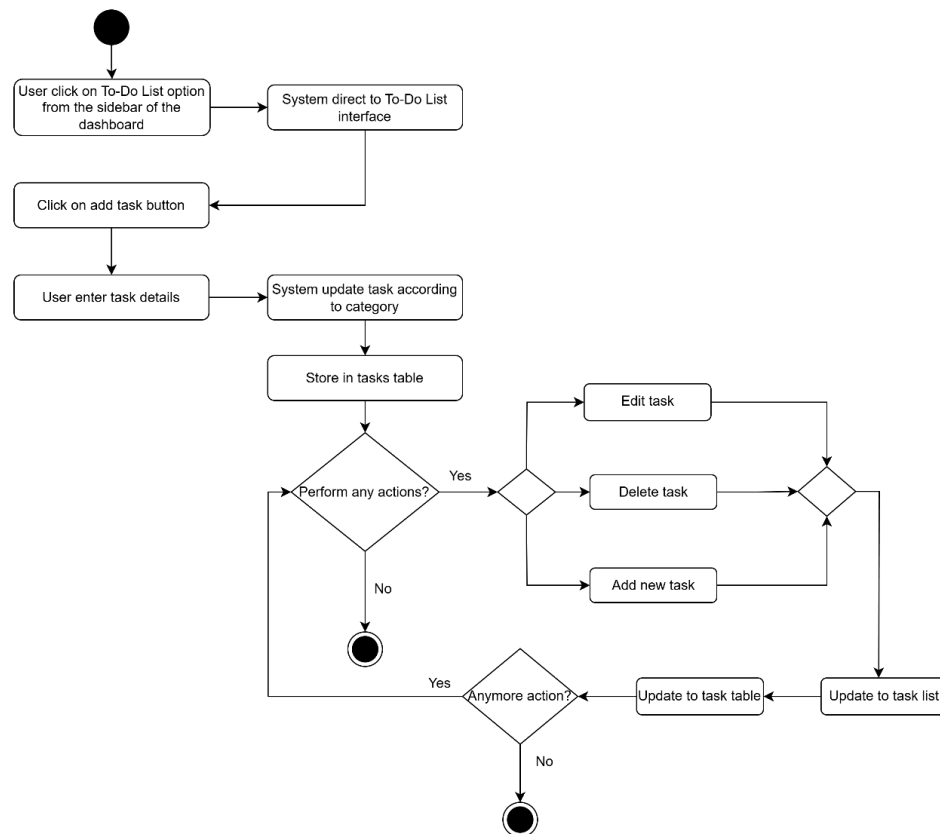
Figure 4.3.4.1 Activity Diagram of To Do List Module

The activity diagram outlines the flow of the To-Do List feature within the system. The process begins when the user clicks on the "To-Do List" option from the sidebar of the dashboard. Once on the To-Do List page, the user clicks the "Add Task" button to begin creating a new task. The system prompts the user to enter the task details, which may include the task name, description, status of category and due date. After the user enters the task details, the system updates the task according to the selected category that are "In Progress", "Pending" or "Completed" and stores the task in the tasks table.

Once the task is saved, the system asks the user if they wish to perform any further actions. The user can choose to edit the task, which will prompt the system to display the task's current details and allow the user to make changes. If the user chooses to delete the task, the system will remove the task from the task list and update the task table accordingly. Alternatively, if the user wants to add another task, they can do so by repeating the process. All the actions performed will be updated on the interface as well as task table.

4.3.5 Calendar Module- Employee, and Manager Perspective

Use Case Name: Calendar module	ID: 5	Importance Level: Medium
Primary Actor: Employee, Manager	Use Case Type: Detail, Essential	

Stakeholders and Interests:
Employee and Manager: Wants to insert events, start time and end time
System: The system allows users to view and manage events in various views that month, week, day.

Brief Description: This use case describes how an Employee or Manager can add events to the calendar. These events can be viewed in different views that are month, week, and day views.

Trigger: Users clicked calendar option from the sidebar of their dashboard
Type: External

Relationship
Association: Employee, Manager
Include: Add event, edit event, delete event
Extend: none

Normal Flows of Events:

1. User selects the "Calendar" option from the sidebar of their dashboard.
2. System displays the Calendar interface.
3. User clicks on the "Add Event" button to add event.
4. System prompts users to enter the event details such as Event Name, start date and end date.
5. User enters details of the event
6. User clicks on the "Save" button to add the event in the calendar.
7. User views events in month, week or daily view.
8. User edits the details of the added events.
9. The event remains in the calendar until it has been deleted

Sub Flows:

3a. Add Events:

      i.   User clicks the "Add Task" button.

      ii.   System prompts the user to input the task details such as task title, description, due date.

      iii.   User enters the task information and clicks the Save button.

      iv.   System saves the task and updates the to-do list with the new task.

8a. Edit Task:

      i.   User selects an existing event to be edited.

	ii.	System displays the current event details and provides an option to modify them.
	iii.	User updates the events details as needed and clicks Save.
	iv.	System updates the event in the calendar with the new details.
9a. Delete Task:		
	i.	User selects the event to delete from the calendar.
	ii.	System asks for confirmation before deleting the task
	iii.	User confirms the deletion.
	iv.	System removes the event from the calendar and confirms deletion to the user.
Alternate/Exceptional Flows: not applicable		

Table 4.3.5.1: Use Case Description of Calendar Module

Figure 4.3.5.1 Activity Diagram of Calendar Module

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The activity diagram outlines the process for adding, editing, and managing events within the Calendar Module of the system. The user begins by selecting the "Calendar" option from the sidebar of their dashboard, which prompts the system to display the calendar interface. The user then clicks the "Add Event" button to input details for the new event, such as the event name, date, and time. After the user enters the event details, the system stores this information in the calendar_events table and updates the calendar interface to reflect the newly added event.

Once the event is added, the system prompts the user to perform any further actions. The user can choose to edit an existing event, which allows them to modify the event details. If the user decides to delete the event, the system will remove it from the calendar and update the calendar_events table accordingly. Alternatively, the user can choose to add another event, in which case the system will repeat the process of storing the new event and updating the calendar interface.

After performing actions, the system continuously updates the calendar interface and the calendar_events table to reflect any changes made by the user. The flow continues until the user is done adding, editing, or deleting events, with the system ensuring that the calendar interface is always up to date

4.3.6 Communication Module – Employee and Manager Perspective

Use Case Name: Communication Module	ID: 6	Importance Level: Medium
Primary Actor: Employee and Manager	Use Case Type: Detail, Essential	

Stakeholders and Interests:
Employee: Wants to send and receive messages, share files, and participate in group discussions to improve collaboration
Manager: Wants to send and receive messages, monitor discussions, share files, and ensure smooth communication among employees

Brief Description: This use case describes how employees and managers can communicate within the system using the built-in messaging and group discussion features. It enables direct messaging, group chats, and file sharing to improve collaboration and information exchange.

Trigger: The user selects the "Communication" option from the sidebar of their dashboard.
Type: External

Relationship
Association: Employee, Manager
Include: send message, receive message, file upload, group chat
Extend: none

Normal Flows of Events:
1. User selects the "Communication" option from the sidebar of their dashboard.
2. System displays the communication interface, showing existing chats and groups.
3. User selects chats from the users list.
4. System opens the chat window where the user can type and send messages.
5. System delivers the message to the recipients.
6. All messages are stored in database.

Sub Flows:
3a Start a new chat
i.   System opens the chat window where the user can type and send messages.
ii.   System delivers the message to the recipients
iii.   All messages are stored in database.
3b. Group chat
i.   System opens the chat window of group chat where the user can type and send messages
ii.   System delivers the message to the group members.
iii.   All messages are stored in database
4a. File Upload

i.   Users choose files to upload
ii.   System delivers the files to the recipients
iii.   The uploaded file is stored in database.
Alternate/Exceptional Flows: not applicable

Table 4.3.6.1 Use Case Description of Communication Module
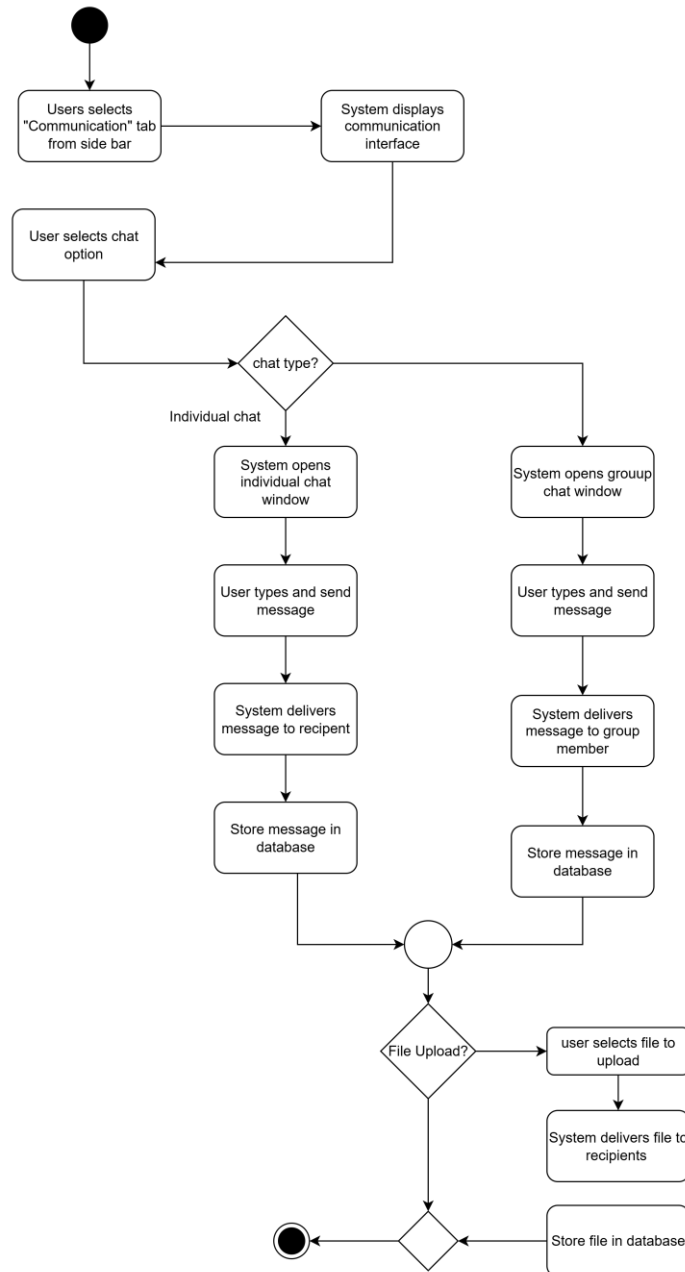
Figure 4.3.6.1 Activity Diagram of Communication Module

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The activity diagram in Figure 4.3.6.1 illustrates the workflow of the Communication Module. The process begins when a user selects the "Communication" option from the sidebar. The system then displays the communication interface, which includes existing chats and group discussions. Next, the user selects a chat option, after which a decision is made between two types of communication which are individual chat or group discussion.

In the case of an individual chat, the system opens a one-to-one chat window where the user can type and send messages. The system then delivers the message to the intended recipient and stores the message in the database. Similarly, in a group discussion, the system opens the group chat window, allowing the user to send messages to multiple group members. The system delivers the messages to all participants in the group and stores them in the database.

Additionally, the diagram includes an optional file upload flow. If the user chooses to upload a file, the system processes the file, delivers it to the intended recipients (either individual or group), and saves the file in the database. If no file is uploaded, the process moves directly toward completion.

4.3.7 View Work Tasks Module – Employee Perspective

Use Case Name: View Work Task	ID: 7	Importance Level: Medium
Primary Actor: Employee	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Employee:** Wants to view the tasks assigned by the manager, complete them, and submit them. **Manager:** Wants to assign tasks to employees and ensure that the tasks are completed and submitted on time.		
Brief Description: This use case describes how an employee views tasks assigned by the manager. Once a task is completed, the employee submits it. The manager can then review the task submission.		
Trigger: Employee chooses "My Assigned Task" option from the sidebar of their dashboard **Type:** External		
Relationship **Association:** Employee, Manager **Include:** Submit work task **Extend:** none		

Normal Flows of Events:
7. User selects the "View Task" option from the sidebar of their dashboard.
8. System displays the list of work tasks assigned by the manager.
9. System displays the details of each task, including description and deadline.
10. Employee work on the task.
11. Once the task is completed, the employee submits the task.
12. System marks the task as "Completed" and sends confirmation to the employee.
Sub Flows:
6a Submit work task
i. Employee submits the completed task.
ii. System updates the status of the task.
Alternate/Exceptional Flows: not applicable

Table 4.3.7.2 Use Case Description of View Work Task Management
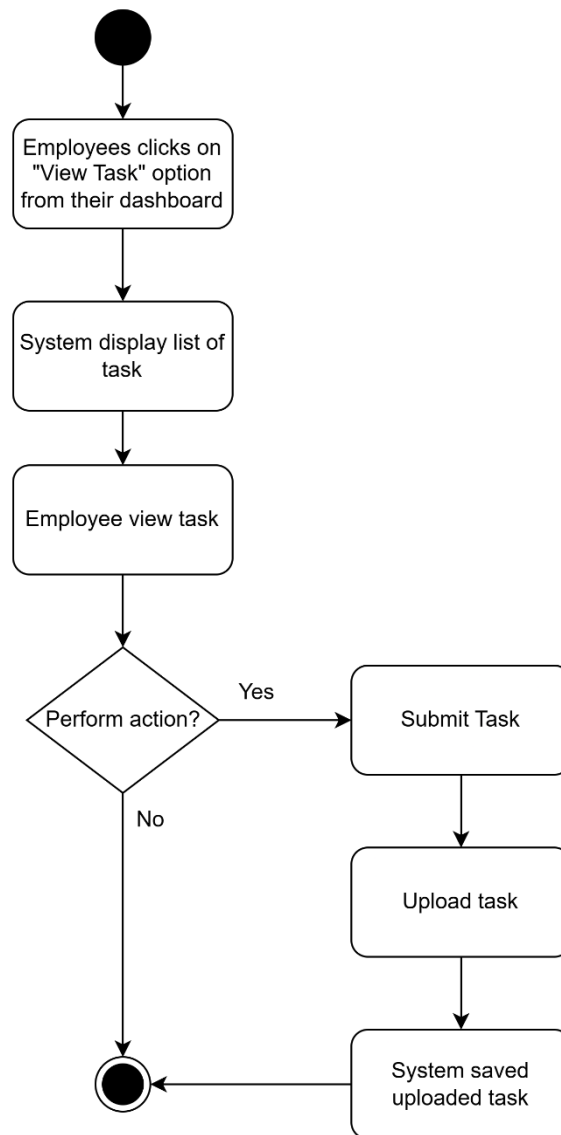
Figure 4.3.7.1 Activity Diagram of View Work Task Module

The activity diagram as shown in Figure 4.3.7.1 illustrates the workflow for employees interacting with a task management system. The process begins when an employee clicks the "My Assigned Task" option from their dashboard by prompting the system to display a list of tasks. The employee then selects and reviews a specific task. At this point, if the employee chooses to perform an action, they proceed to submit the task and upload any required files or documents. The system then saves the submitted task. If no action is taken, the workflow ends without further steps.

4.3.8 Assign Work Tasks -Manager Perspective

Use Case Name: Assign Work Task		ID:8	Importance Level: Medium
Primary Actor: Manager		Use Case Type: Detail, Essential	
Stakeholders and Interests:			
Manager: Wants to assign work tasks to employees, edit or update tasks, and delete tasks as necessary to manage workload effectively.			
Employee: Wants to receive clear and well-defined tasks from the manager in order to perform them efficiently.			
Brief Description: This use case describes how a manager assigns work tasks to employees. The manager can also edit, delete, or add new tasks. The system tracks the task assigned and ensures the employee is aware of their responsibilities.			
Trigger: Manager chooses "Assign Task" option from the sidebar of their dashboard			
Type: External			
Relationship			
Association: Manager, Employee			
Include: Edit work task, delete work task, add work task			
Extend: none			
Normal Flows of Events:			

1.   Manager selects the "Assign Task" option from the sidebar of their dashboard.
    2.   System displays the list of tasks that have been assigned.
    3.   Manager creates a new work task.
    4.   Manager enter all the details of the work task such as title, description and due date.
    5.   Manager select employee to assign the work task.
    6.   Manager can edit the details of any task.
    13. System will remain until manager manually delete the work task.			

Sub Flows:			
3a Add work task			
i. Manager enters all the details of the work tasks. ii. Manager selects employees to assign the work task.			
6a Edit work task			

i.   Manager selects an existing task from the task list.
    ii.   System displays the task details.
    iii.   Manager modifies the task details.
    iv. System updates the task in the system.			

7a Delete work task			

i.   Manager selects an existing task to delete.
ii.   System asks for confirmation to delete the task.
iii.   Manager confirms and the task is deleted.
iv.   System removes the task from the task list.
Alternate/Exceptional Flows: not applicable

Table 4.3.8.1: Use Case Description of Assign Work Task Module
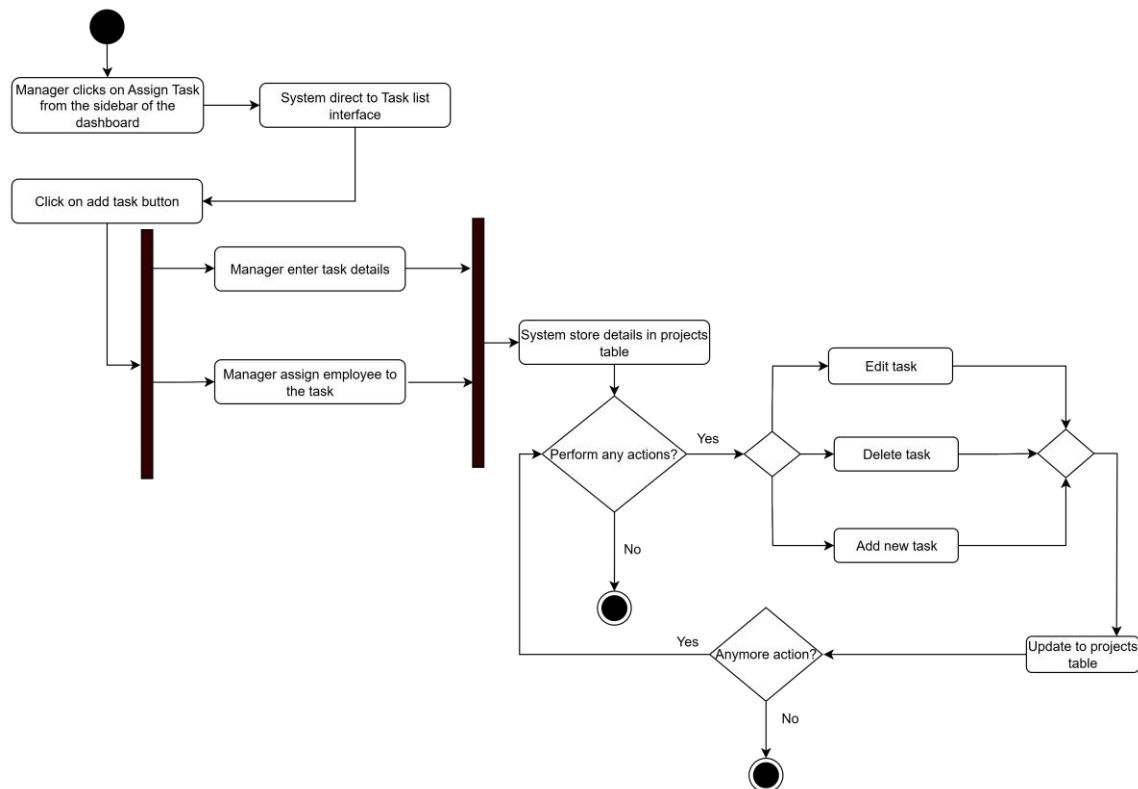
Figure 4.3.8.1: Activity Diagram of Assign Work Task Module

The activity diagram in Figure 4.3.8.1 above depicts the workflow for a manager managing tasks. The process begins when the manager selects the "Assign Task" option from the dashboard sidebar. Upon clicking the "Assign Task" button, the manager enters the necessary task details, such as title, description, due date and selects employees to assign. The system saved and displayed the tasks in the Task List and stored the information in the "projects" database table.

The manager can choose to perform additional actions, such as editing an existing task, deleting a task, or adding a new one. If the manager chooses to edit the task, the system displays the task's current details and allows the manager to make changes. If

the manager chooses to delete the task, the system will remove the task from the task list and update the project table accordingly.

4.3.9 View Submission Tasks -Manager Perspective

Use Case Name: View Submission Task	ID:9	Importance Level: Medium
Primary Actor: Manager	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Manager:** Reviews the submission task submitted by the employee and decide to approve or reject the tasks. **Employee:** wants confirmation that their submitted work has been reviewed and accepted or feedback if rejected.		
Brief Description: This use case describes how a manager views the work tasks submitted by employees. The manager can open task submissions, review the details, and take action to either approve or reject the submission.		
Trigger: User chooses the "Submission" tab from the sidebar of their dashboard **Type:** External		
Relationship **Association:** Manager, Employee **Include:** none **Extend:** Approve task, Reject task		
Normal Flows of Events: 1. The manager selects the "Submission" option from the sidebar of their dashboard. 2. The system displays a list of submitted tasks. 3. The manager selects a specific submission to review. 4. The system shows the task details such as title, description, due date, submission content, submission date and the employee in charge. 5. The manager reviews the submission. 6. The manager takes action on the submission task. 7. The action done will update the submission list and notify the user.		

Sub Flows:
 	
6a Approve Submission
 	
   i.   Manager clicks Approve
   ii.   System marks submission as Completed
   iii. System notifies the employee that the submission has been approved		

6b Reject Submission
i.   Manager clicks Reject
ii.   System prompts the manager to provide a reason for rejection.
iii.   Manager enters the reason and confirms.
iv.   System marks submission as In Progress and sends the rejection message to the employee.
Alternate/Exceptional Flows: not applicable

Table 4.3.9.1 Use Case Description for View Submission Task
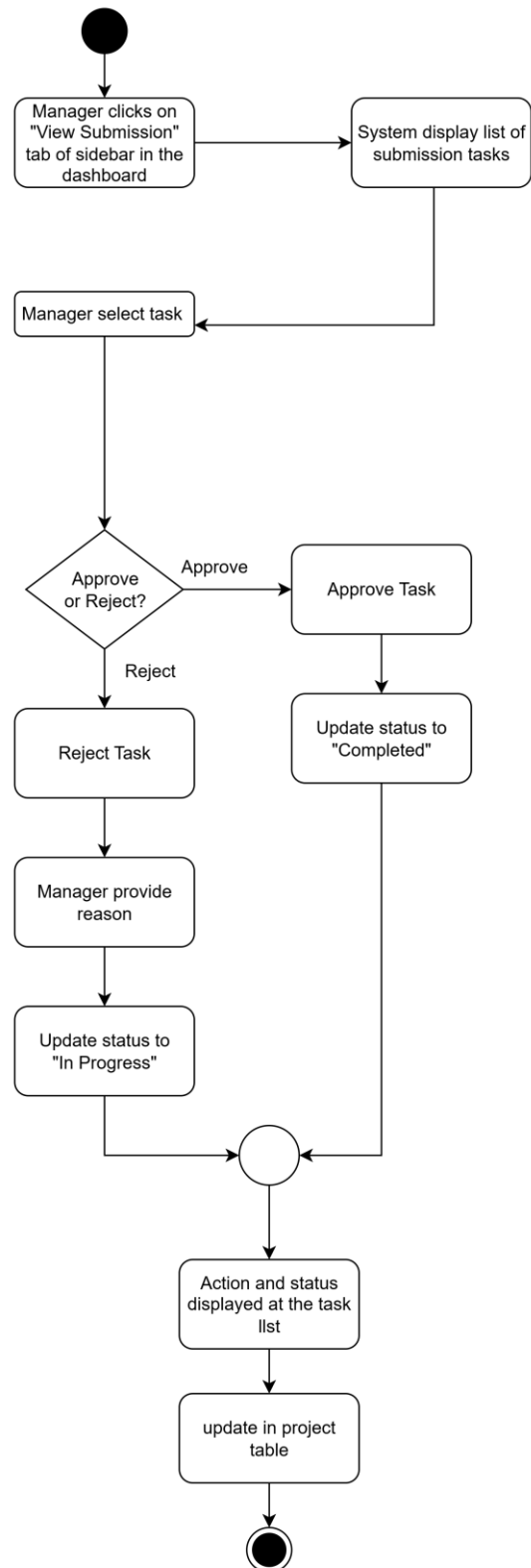
Figure 4.3.9.1 Activity Diagram of View Submission Task

The activity diagram shown in Figure 4.3.9.1 illustrates the process flow for the Submission use case. It begins when the manager clicks on the "Submission" option from the sidebar in the dashboard. The system then displays the list of submission tasks.

The manager selects a specific task to review. At this point, after the manager review the submission task, the manager will take action to approve or reject the submission. If the task is approved, the system updates its status to Completed. If the task is rejected, the manager is required to provide a reason, after which the system updates the task status to In Progress. In both cases, the updated status and action taken are displayed in the task list and recorded in the project table.

4.3.10 Register New User – Admin Perspective

Use Case Name: Register New User	ID: 10	Importance Level: High
Primary Actor: Admin		Use Case Type: Detail, Essential

Use Case Name: Register New User	ID: 10	Importance Level: High
Primary Actor: Admin	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Admin:** Wants to register new users efficiently by entering their details and assigning roles.		
Brief Description: This use case describes how the admin registers a new user in the system. The admin enters the required user details such as role, gender, first name, last name, email, phone number, date of birth, and a temporary password. Once the admin clicks on the "Create Account and Send Email" button, the system saves the details in the database and sends a verification email to the new user. The verification email contains the login credentials and instructions for account activation.		
Trigger: Admin chooses "New User" tab from the admin's dashboard. **Type:** External		
Relationship **Association:** Admin **Include:** send verification email **Extend:** none		
Normal Flows of Events: 1. Admin navigates to the "New User" tab from the sidebar of admin's dashboard. 2. Admin fills in all the required fields such as role, gender, first name, last name, email, phone number, date of birth, and temporary password. 3. Admin clicks on the "Create Account and Send Email" button. 4. System validates the entered details. 5. System generates and sends a verification email to the new user's registered email address. 6. System stores the details of the new user in the users database table.		
Sub Flows:		

2a. Missing or Invalid Information:
i.   The system displays an error message.
2b. Duplicate email
i.   The system displays an error message
Alternate/Exceptional Flows: not applicable

Table 4.3.10.1 Use Case Description for Register New User
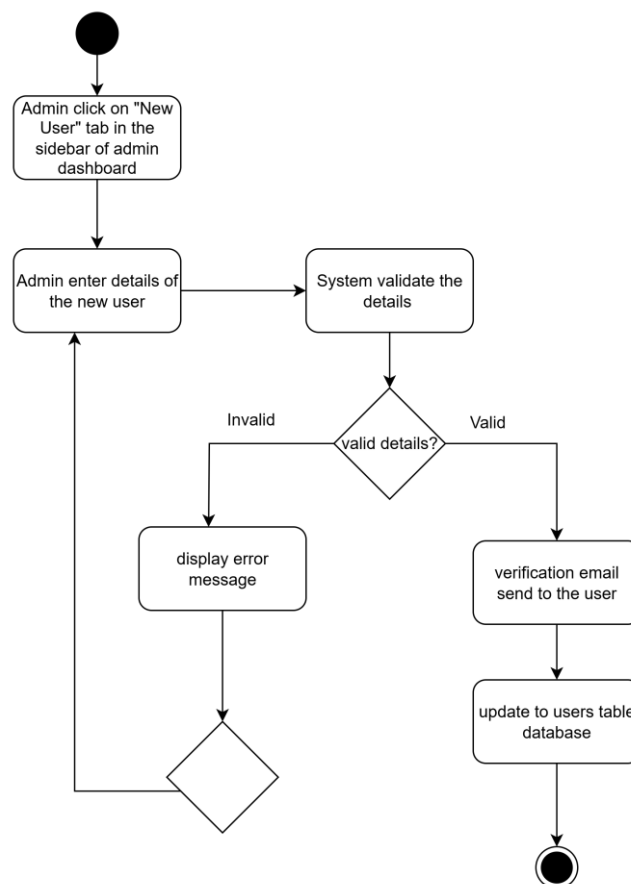
Figure 4.3.10.1 Activity Diagram for Register New User

In the activity diagram that shown in Figure 4.3.10.1 above, the Admin is responsible for registering new users into the system. From the admin's dashboard, the admin navigates to the "New User" tab to direct to a registration form. Admin required to fill in all the required details, including role either Employee or Manager, gender, first name, last name, email, phone number, date of birth, and a temporary password is

auto generated. Once all the information has been entered, the admin clicks the "Create Account and Send Email" button for submission.

Upon submission, the system validates the entered details and stores them in the database. At the same time, the system generates a verification email and sends it to the new user's registered email address. This email includes the login credentials, such as a temporary password, along with a link that directs the user to the system's registration page. After receiving the email, the new user must complete the verification process which is the registration process as shown in Figure 4.3.1.1 above.

4.3.11 Manage Users – Admin Perspective

Use Case Name: Manage User Module	ID: 11	Importance Level: High
Primary Actor: Admin	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Admin:** Wants able to view, edit, or delete user accounts.		
Brief Description: This use case describes how the Admin manages users. Admin can also edit or delete the user's details as needed.		
Trigger: Admin will perform this action in admin's dashboard **Type:** External		
<u>**Relationship**</u> **Association:** Admin **Include:** Edit user, Delete user **Extend:** none		

Normal Flows of Events:
 	
   1.   Admin clicked on "Existing User" in the sidebar of the admin dashboard
   2.   System displays a list of existing employees.
   3.   Admin can perform any action.
   4. The update detail store in user database table		

Sub Flows:
3a **Edit User**:
   i.   Admin selects an existing user from the user list.
   ii.   System displays the user's details.
   iii.   Admin modifies the details as needed.
   iv.   System updates the user's information in the database and saves the changes.
3b. Delete User:		

i. Admin selects an existing user to delete.

ii. System asks for confirmation to delete the user.

iii. Admin confirms, and the user is permanently removed from the system.

iv. System updates the user interface to reflect the deletion.

Alternate/Exceptional Flows: not applicable

Table 4.3.11.1: Use Case Description of Manager User Module
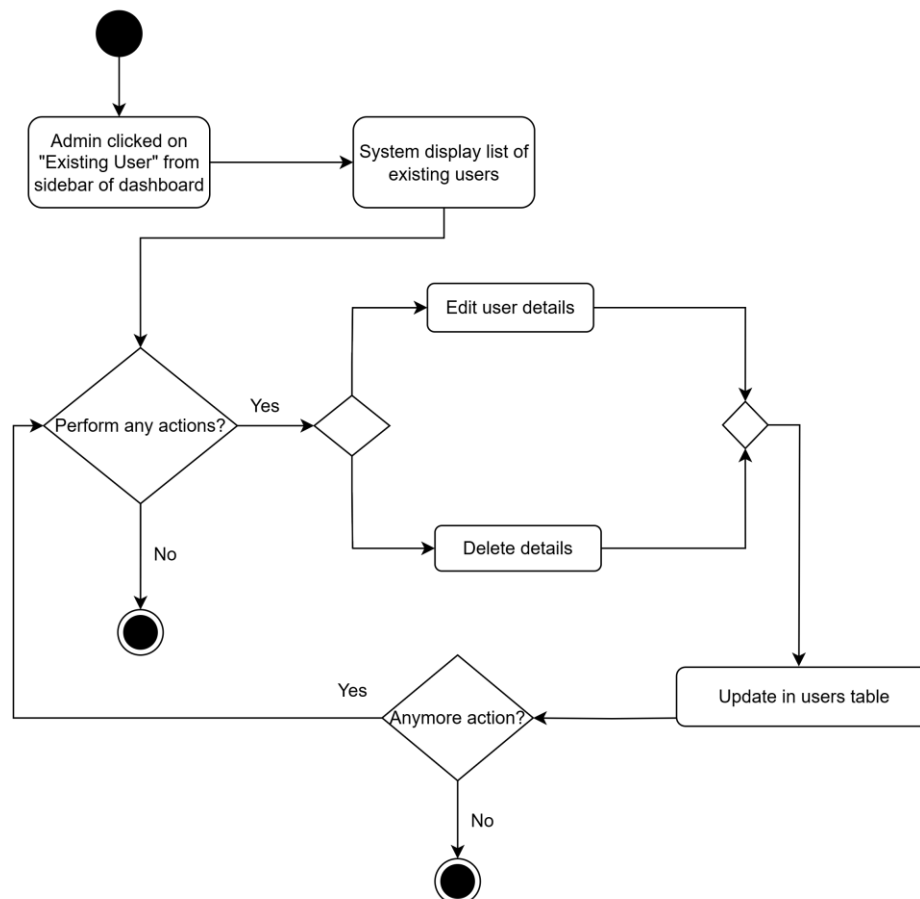
Figure 4.3.11.1: Activity Diagram of Manager User Module

The activity diagram in Figure 4.3.11.1 illustrates the process of the admin in managing registered users. Within the 'Existing Users' tab, the admin can view all details of registered users. The system displays each user's personal information, and the admin has the option to perform actions such as editing or deleting user records. If the admin chooses to edit, they can update the user's details as required. Alternatively, if the manager decides to remove a user, they can simply click the delete button. Any

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modifications, whether through editing or deleting, are immediately updated in the system and stored in the users database table.

4.3.12 View Comments Module – Admin Perspective

Use Case Name: View Comments Module	ID: 12	Importance Level: Medium
Primary Actor: Admin	Use Case Type: Detail, Essential	
Stakeholders and Interests: **Admin**: Wants to view comments posted by users, ensuring they can manage feedback or respond to inquiries. Admin also needs to track whether comments have been read, automatically updating the comment status to "Read" once viewed.		
Brief Description: This use case describes how the Admin views the comments posted by users. Initially, the comment status is marked as "Unread" by default. Once the Admin reads the comment, the status will be automatically updated to "Read" to indicate that the comment has been reviewed. This functionality helps Admins keep track of which comments have been addressed.		
Trigger: Admin selects the "View Comments" option from the dashboard **Type:** External		
Relationship **Association:** Admin **Include:** Update comment status **Extend:** none		

Normal Flows of Events:
 	
    1. Admin accesses the "View Comments" section from the dashboard.
    2. System displays the list of comments, each with a default status of "Unread".
    3. Admin read the comment.		

Sub Flows:
 	
 3a. Read Comment
    i. Admin clicked on status read
    ii. System update and save the status		

Alternate/Exceptional Flows: not applicable		

Table 4.3.12.1: Use Case Description of View Comments Module
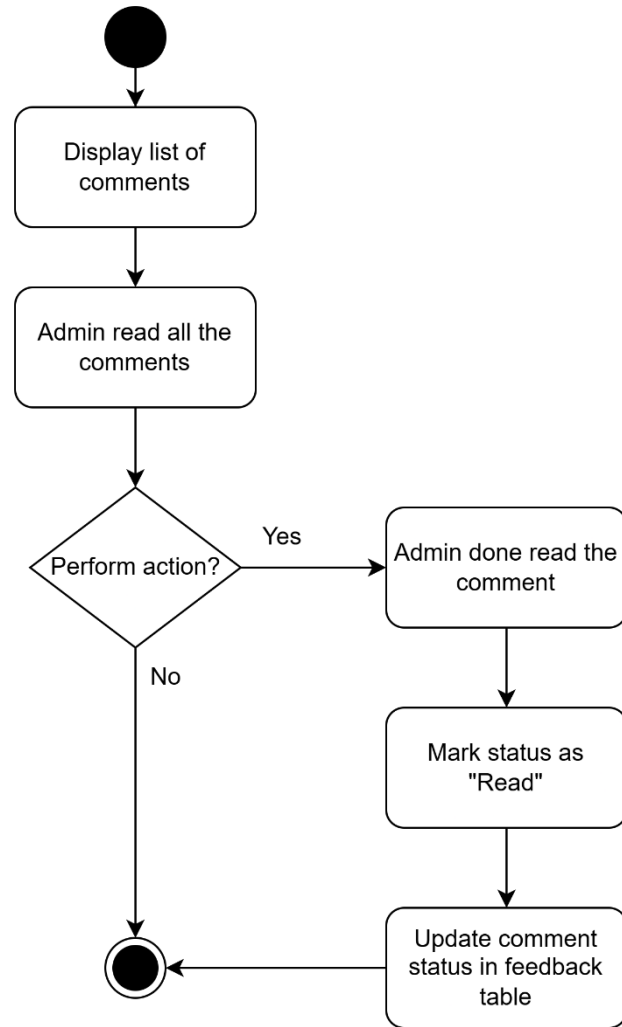
Figure 4.3.12.1: Activity Diagram of View Comments Module

The activity diagram above illustrates the process for managing user comments by an Admin. The process begins by displaying a list of comments that have been submitted by users. The admin reads all the comments to review the feedback provided. Once the admin has read the comments, they are prompted to decide whether to perform any actions on them.

If the admin chooses to take action, they mark the comment's status as "Read." This update is then recorded in the system by updating the status in the feedback table to reflect that the comment has been read.

4.3.13 View Feedback Module -Admin Perspective

Use Case Name: View Feedback Module	ID: 13	Importance Level: Medium
Primary Actor: Admin	Use Case Type: Detail, Essential	

Stakeholders and Interests:

Admin: Wants to view ratings submitted by users to assess performance, feedback, or user satisfaction. Admin also needs to track the status of each rating to see if it has been reviewed. By default, ratings are marked as "Unread", and once viewed by the Admin, the status is updated to "Read".

Brief Description: This use case describes how the Admin views the ratings submitted by users. Each rating has a status that is initially set to "Unread". Once the Admin has viewed the rating, the status will automatically update to "Read", indicating that the rating has been reviewed. This feature helps the Admin keep track of which ratings have been addressed or reviewed.

Trigger: Admin selects the "View Ratings" option from the dashboard

Type: External

Relationship

Association: Admin

Include: Update feedback status

Extend: none

Normal Flows of Events:

1. Admin accesses the "View Feedback" section from the dashboard.
2. System displays the list of feedback, each with a default status of "Unread".
3. Admin read the feedback.

Sub Flows:

3a. Read Feedback

    iii.   Admin clicked on status read

    iv.   System update and save the status

Alternate/Exceptional Flows: not applicable

Table 4.3.13.1: Use Case Description of View Feedback Module
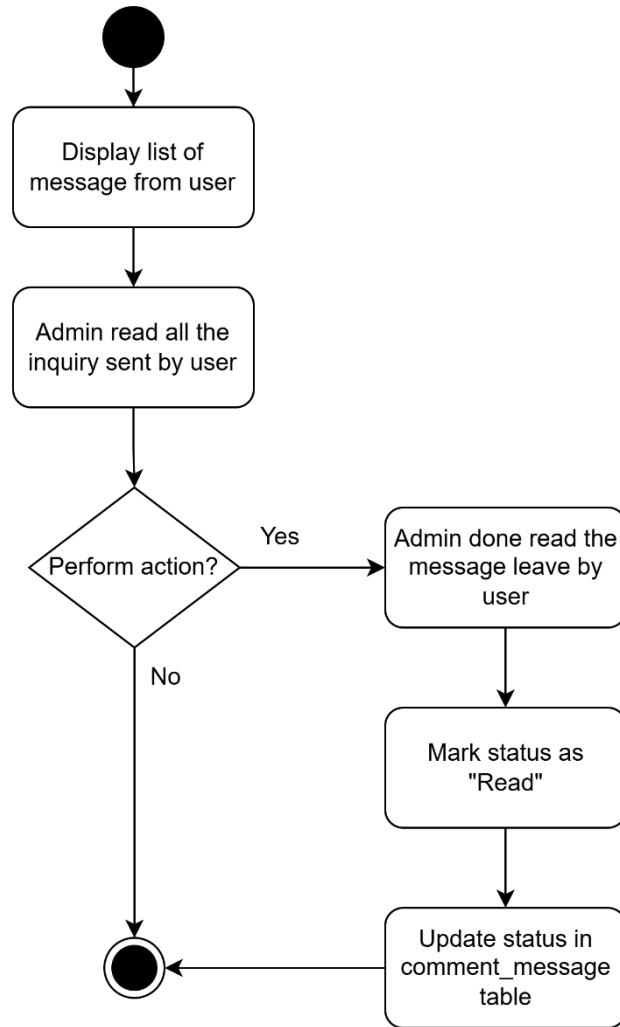
Figure 4.3.13.1: Activity Diagram of View Feedback Module

The activity diagram describes the process for managing user inquiries by an Admin. The process starts when the system displays a list of messages or inquiries sent by users. The admin then reads all the inquiries submitted by users. Once the admin has reviewed the messages, they are prompted to take action on the inquiries.

If the admin decides to take action, they mark the status of the message as "Read," indicating that it has been reviewed. After marking the message as "Read," the system updates the status in the comment_message table, ensuring that the message's status is recorded as having been read.

4.3.14 Logout Module- Employee, Manager and Admin Perspective

Use Case Name: Logout Module	ID: 14	Importance Level: High
Primary Actor: Employee, Manager, Admin	Use Case Type: Detail, Essential	
Stakeholders and Interests: Employee: Wants to securely log out of the system to ensure that no one else can access their account after they finish their tasks. Manager: Wants to securely log out to prevent unauthorized access to the managerial dashboard. Admin: Wants to securely log out to ensure that admin controls and access are not exposed to unauthorized users.		
Brief Description: This use case describes how the Employee, Manager, or Admin logs out of the system. Once logged out, the user is directed to the home page. The system ensures that the session is properly terminated to prevent unauthorized access after the user has logged out.		
Trigger: Admin selects the Logout option from the dashboard Type: External		
Relationship Association: Employee, Manager, Admin Include: None Extend: none		
Normal Flows of Events: 1. User selects the "Logout" button from their dashboard or any page in the system. 2. System terminates the current session to ensure that no unauthorized access occurs. 3. System redirects the user to the home page.		
Sub Flows: Not applicable		
Alternate/Exceptional Flows: not applicable		

Table 4.3.14.1: Use Case Description of Log Out Module
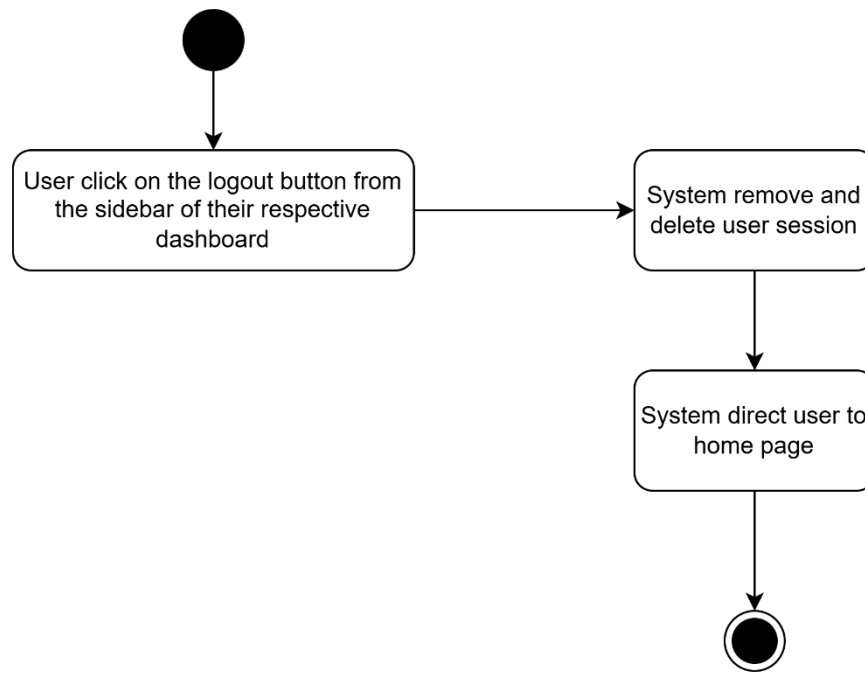
Figure 4.3.14.1: Activity Diagram of Log Out Module

Figure 4.3.14.1 above illustrates the activity diagram of a user logging out from the system. When the user clicks on the logout button located on the sidebar of their respective dashboard, the system immediately removes and deletes the user session to ensure that the user is logged out securely. Following this, the system redirects the user to the home. This flow ensures that the user session is properly terminated and prevents unauthorized access.

4.4 Sequence Diagram

4.4.1 Register Module
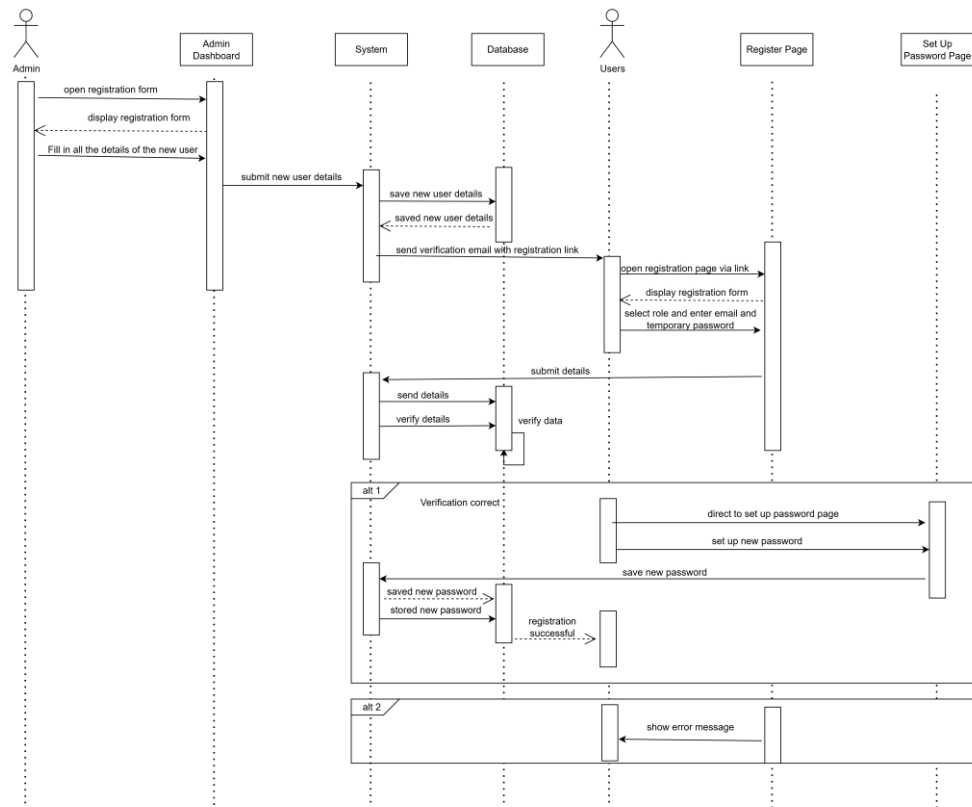
Figure 4.4.1.1 Sequence Diagram for Register Module

The sequence diagram in Figure 4.4.1.1 illustrates the registration process with verification and password setup for a new user. The process begins when the admin enters a new user's details through the Admin Dashboard. The system stores these details in the users database table and then sends a verification email to the new user. Upon receiving the email, the user clicks the provided link, which redirects them to the system's Registration Page. On this page, the user is required to select their role either is Employee or Manager, enter their email, and the provided temporary password. After submitting the form, the system validates the information against the database. If the validation is successful, meaning the email exists in the database and the temporary password matches, the process proceeds to alt 1, where the user is directed to the Set Up Password page to create a new password. The system saves this new password and updates the database accordingly, marking the registration as successful. In contrast, under alt 2, which is verification failed, if the provided details are incorrect, the system

displays an error message on the Registration Page, and the user is unable to complete the registration

4.4.2 Login Module
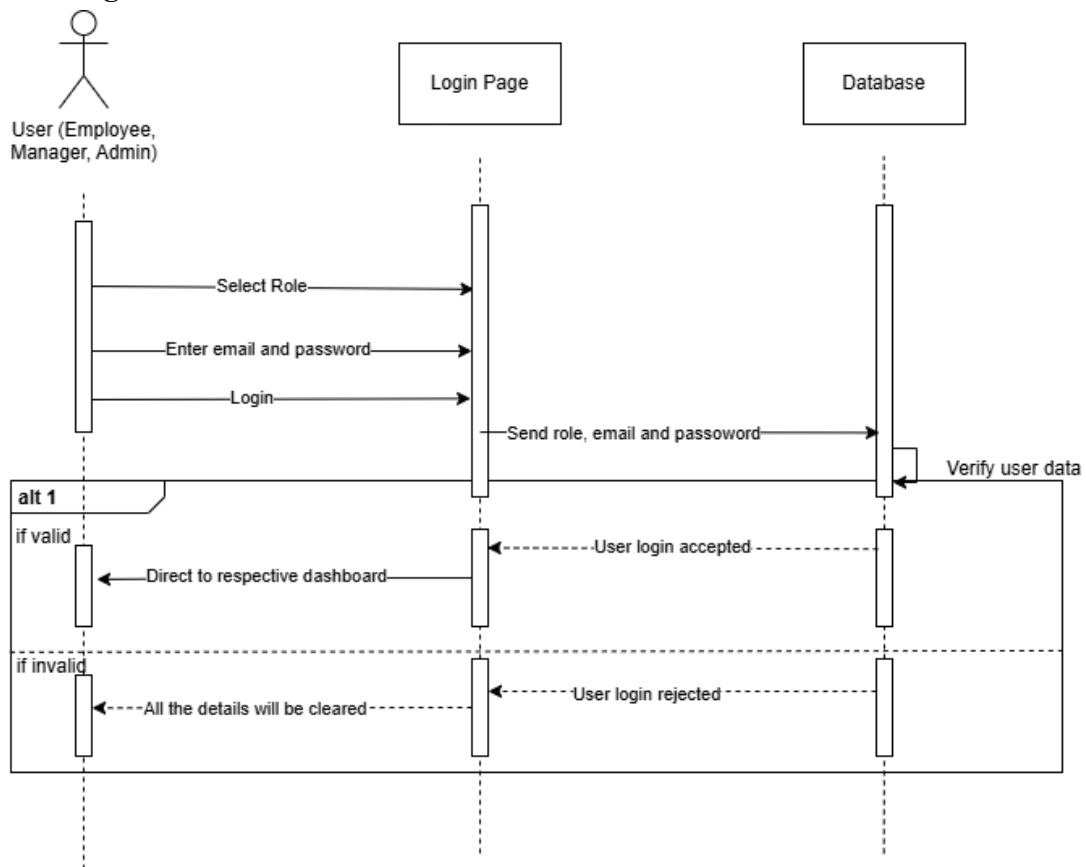
Figure 4.4.2.1 Sequence Diagram for Login Module

This sequence diagram shown in Figure 4.4.2.1, illustrates the login process for users including Employees, Managers and Admins in the system. The process begins when the user selects their role, enters their email and password on the Login Page and clicks the Login button. The system then sends the entered role, email and password to the Database for verification.

The Database verifies the provided data by checking if the details match the stored records. If the user's details are valid, the system accepts the login and directs the user to their respective dashboard based on their role. If the details are invalid, the system clears all entered details and rejects the login attempt by notifying the user that their login attempt was unsuccessful. This sequence ensures that only valid users can access the system and that they are directed to the appropriate dashboard based on their role. The alternative flow labelled as alt 1 shows the two possible outcomes which are a

successful login leading to the dashboard or an invalid login requiring the user to re-enter their details.

4.4.3 Forgot and Reset Password Module
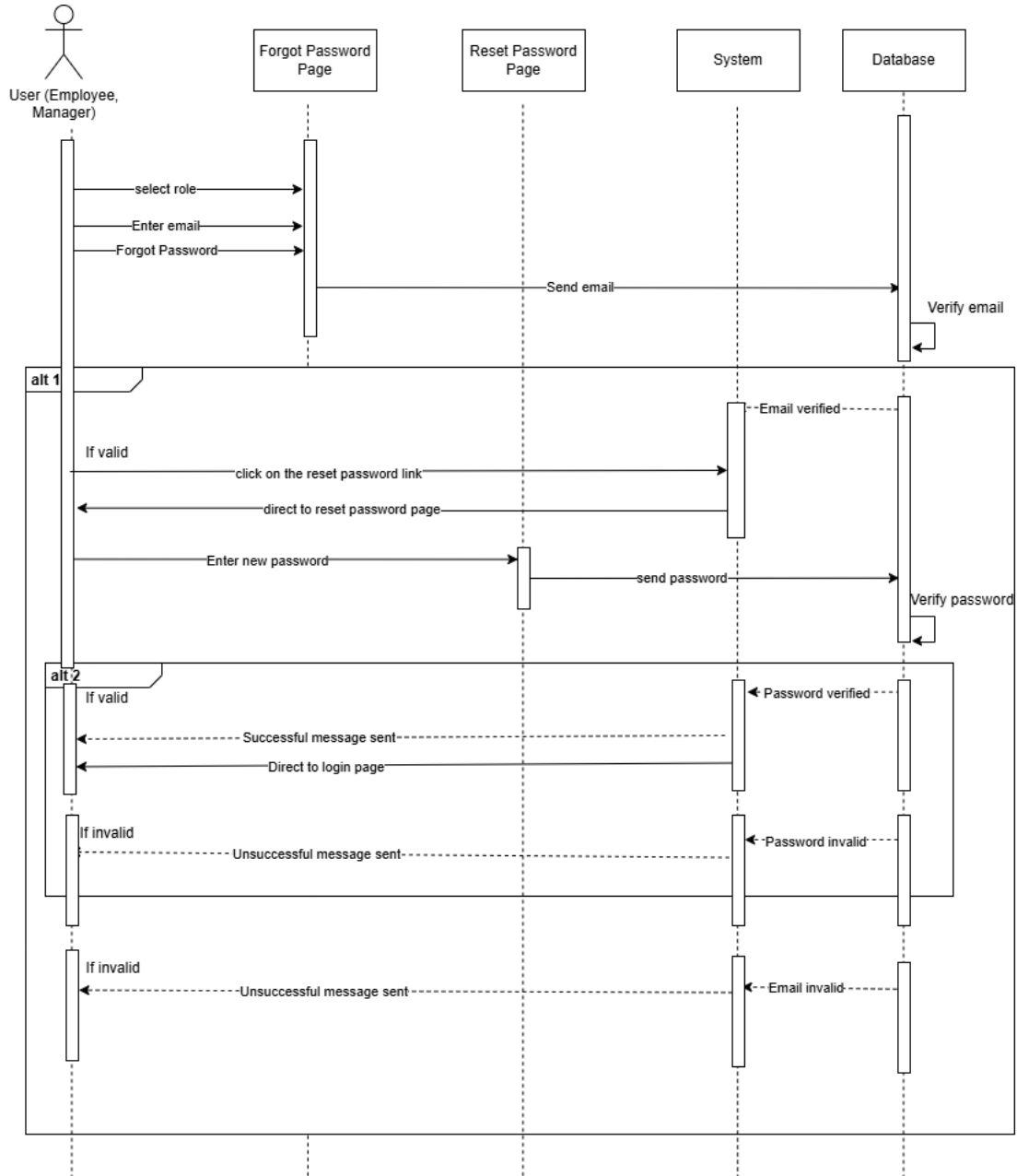
Figure 4.4.3.1 Sequence Diagram for Forgot and Reset Password Module

This sequence diagram, as shown in Figure 4.4.3.1 above, outlines the process of resetting a forgotten password in the system. The process begins when the user either an Employee or Manager selects their role and enters their email on the Forgot Password Page. Upon clicking the Forgot Password button, the system sends a

verification email to the user's registered email address which is verified by the Database.

If the email is valid, the user receives a link to the Reset Password Page. The user then enters a new password and the system sends the password to the Database for verification. If the new password is valid, a successful message is sent and the user is directed to the Login Page. If the new password is invalid, an unsuccessful message is sent and the user is informed that the password changes fail.

If the email provided is invalid during the initial step, an unsuccessful message is sent and the user is prompted to try again. The alternative flows of alt 1 and alt 2 represent the different outcomes based on whether the email and password verification are successful or not.

4.4.4 Poromodoro Timer Module
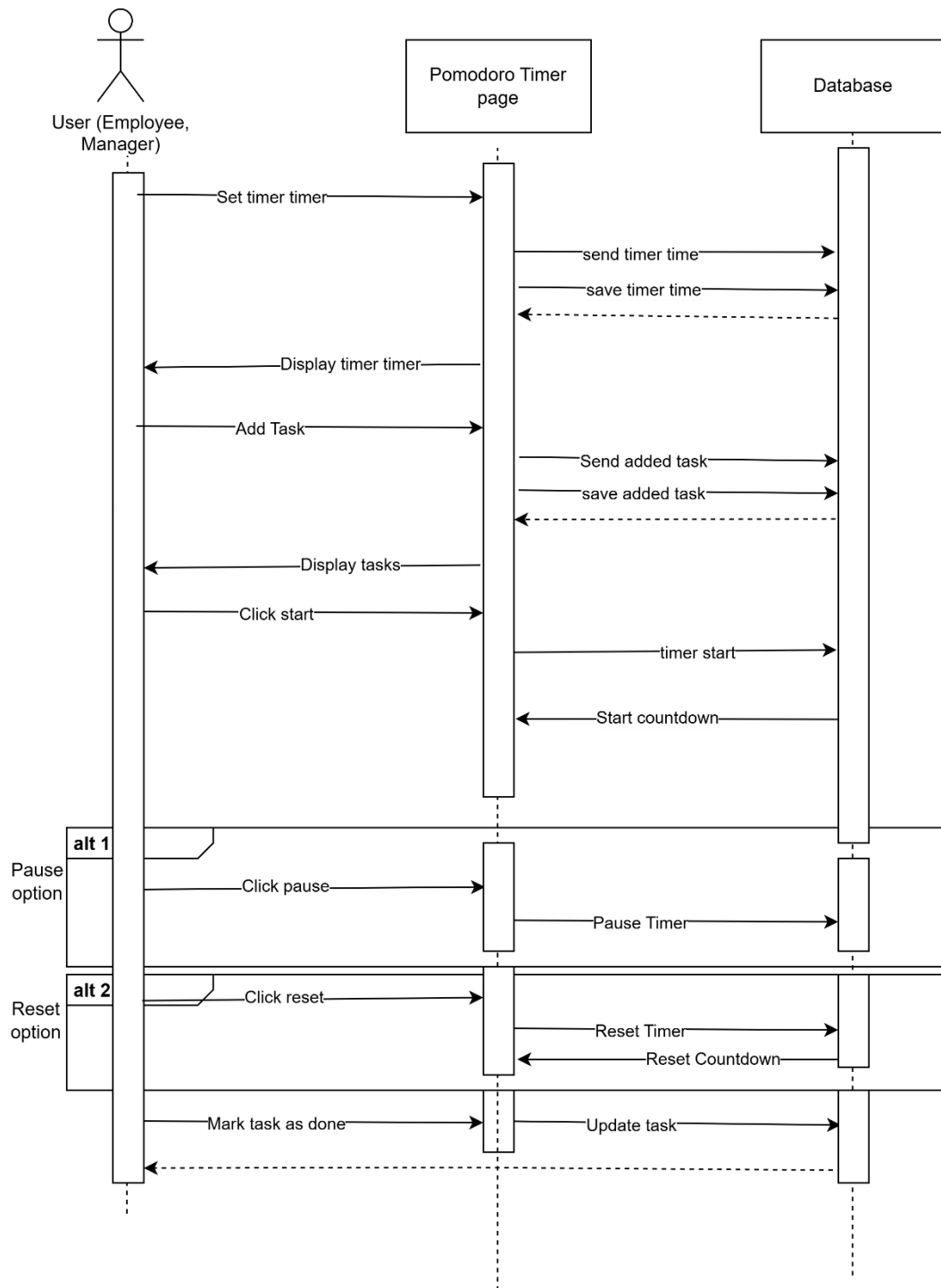
Figure 4.4.4.1 Sequence Diagram for Pomodoro Timer Module

This sequence diagram in Figure 4.4.4.1 above outlines the process of using the Pomodoro Timer feature in the system. The process begins when the user interacts with the Pomodoro Timer page by setting a timer for their task. The system then sends the

timer information to the Database to save the timer data. The user can add a task, which is displayed on the timer page. The task information is also sent to the Database to save.

Once the task is set, the user clicks the Start button by triggering the system to begin the countdown for the Pomodoro session. The Database starts tracking the timer countdown. If the user wishes to pause the timer, they can click the Pause button, which pauses the countdown and updates the system accordingly. If the user chooses to reset the timer, they can click the Reset button which resets the timer and the countdown in the system.

Once the Pomodoro session is complete, the user can mark the task as done. This is to prompt the system to update the task status in the Database to reflect its completion. They also include alternative flows which are alt 1 represents pausing the timer while alt 2 represents resetting the timer.

4.4.5 To Do List Module
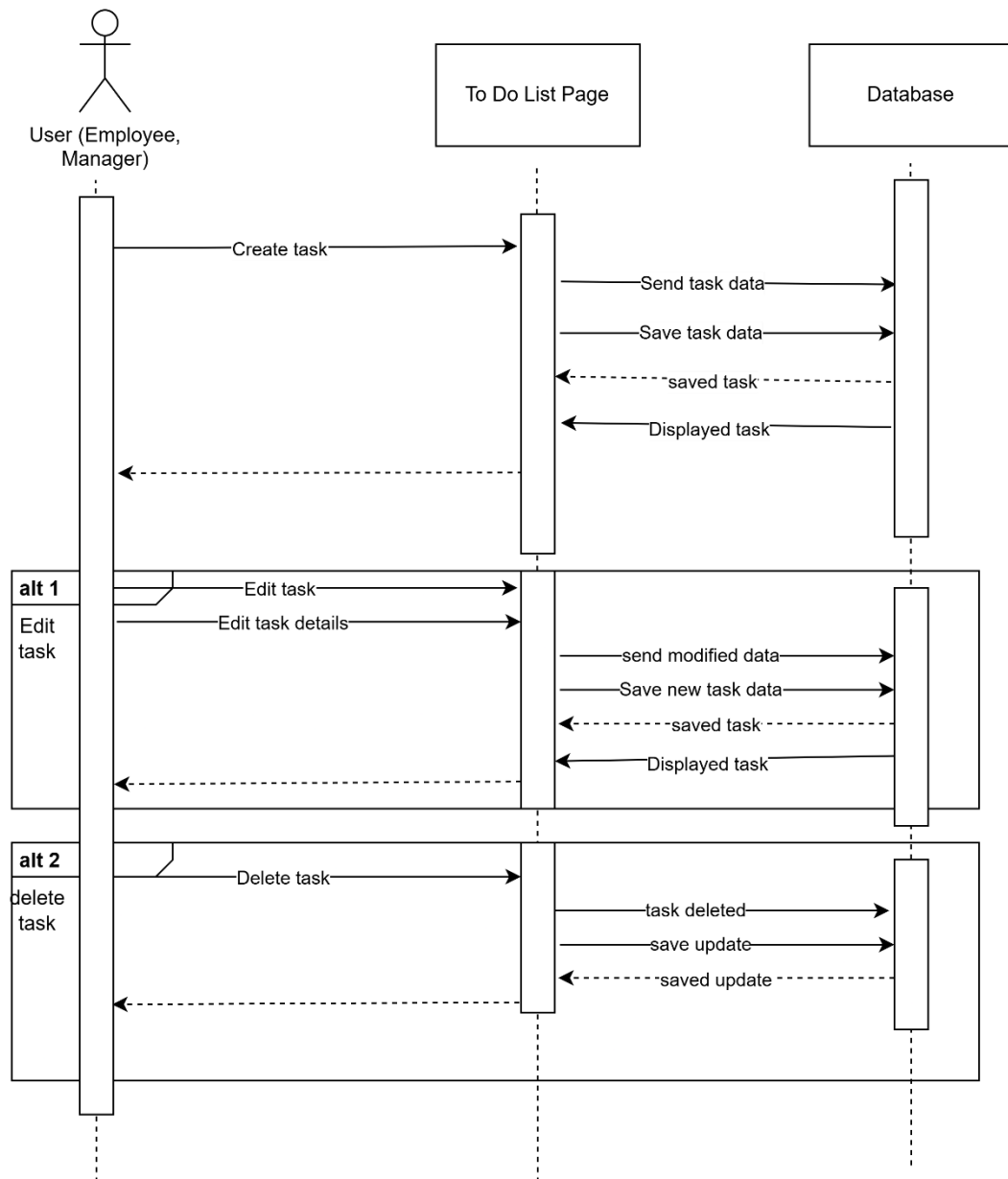
Figure 4.4.5.1 Sequence Diagram for To Do List Module

This sequence diagram as shown in Figure 4.4.5.1 outlines the process of managing tasks within the To-Do List Page of the system. The process begins when the user creates a new task. After entering the task details, the To-Do List Page sends the task data to the Database to save. Once the task is successfully stored, it is displayed on the To-Do List page for the user to view.

The diagram also includes two alternative flows for editing and deleting tasks. In Alternative Flow 1, if the user wishes to edit an existing task, they can modify the task details. The system then sends the updated data to the Database which saves the changes, and the task is displayed with the updated information. In Alternative Flow 2, if the user wants to delete a task, they can select the task for deletion. The system deletes the task from the Database, and the To-Do List page is updated to reflect the removal of the task.

4.4.6 Calendar Module
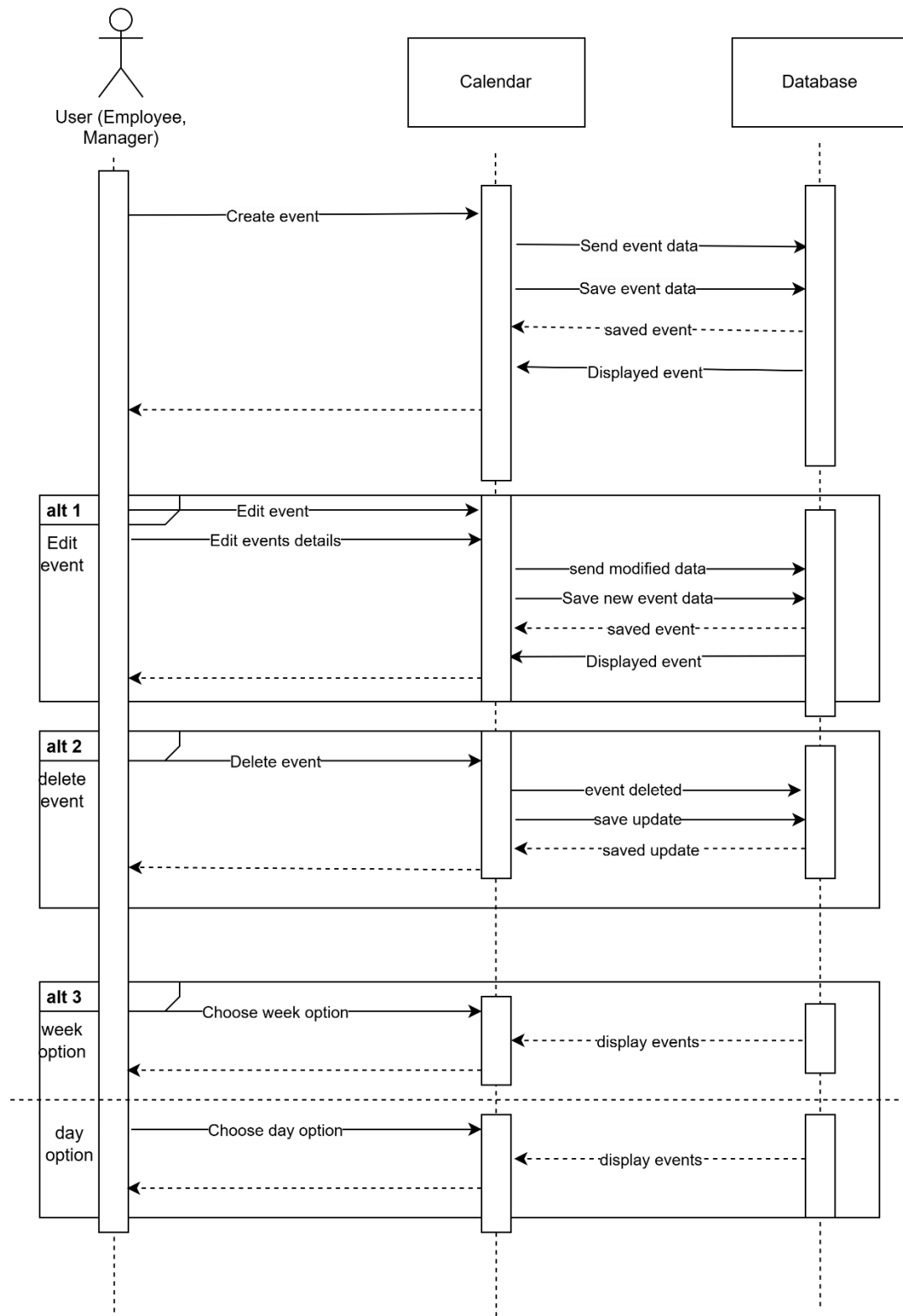
Figure 4.4.6.1 Sequence Diagram for Calendar Module

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This sequence diagram as shown in Figure 4.4.6.1 above illustrates the process of managing events within the Calendar module of the system. The process begins when the user creates a new event by entering the event details on the Calendar page. The system sends this event data to the Database to save and then displayed on the calendar for the user to view.

The diagram also shows two alternative flows for editing and deleting events. In Alternative Flow 1, if the user wishes to edit an existing event, they can modify the event details. The system then sends the updated data to the Database, saves the changes, and displays the updated event. In Alternative Flow 2, if the user wants to delete an event, they can select it for deletion. The system deletes the event from the Database, and the calendar is updated to reflect the removal of the event. Additionally, Alternative Flow 3 allows the user to view events by either selecting the week option or the day option. The system will then display the relevant events for the chosen day or week.

4.4.7 Communication Module
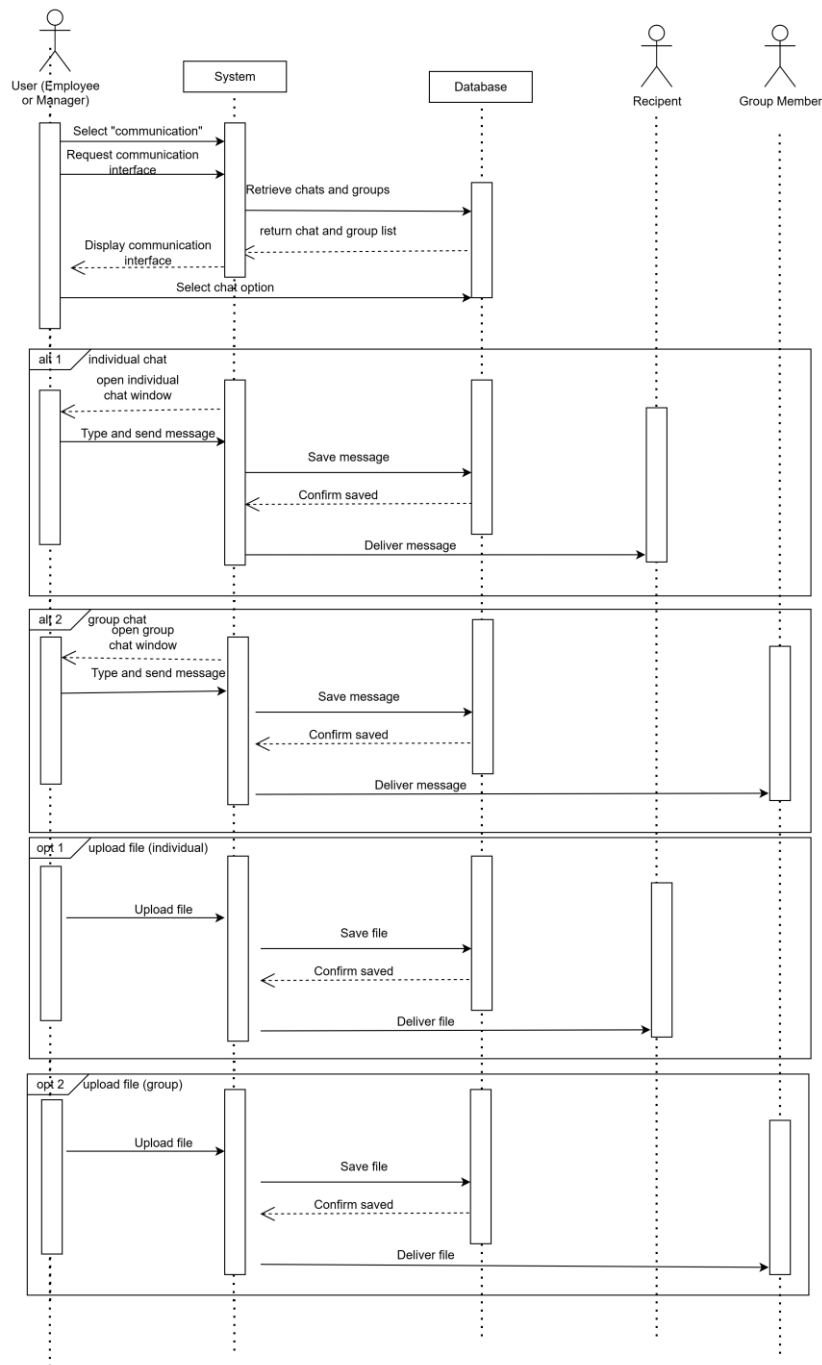
Figure 4.4.7.1 Sequence Diagram for Communication module

This sequence diagram in Figure 4.4.7.1 above illustrates the process flow of the Communication Module in a task management system, covering both individual and group chats as well as file sharing.

The sequence begins when the user selects the communication option. The system retrieves and displays the communication interface, including available chats and groups, from the database. From here, the user can either choose an individual chat or

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a group chat. If the user selects an individual chat, the system opens the chat window, allowing the user to type and send a message. The message is saved in the database, confirmed as stored, and then delivered to the recipient. Similarly, in the case of a group chat, the user types and sends a message, which the system saves and confirms in the database before delivering it to all group members.

Additionally, the diagram shows optional flows for file uploads. In both individual and group chats, the user can upload a file. The system saves the file in the database, receives confirmation that it has been stored successfully, and then delivers it either to the individual recipient or to all members of the group chat.

4.4.8 Task Allocation Module
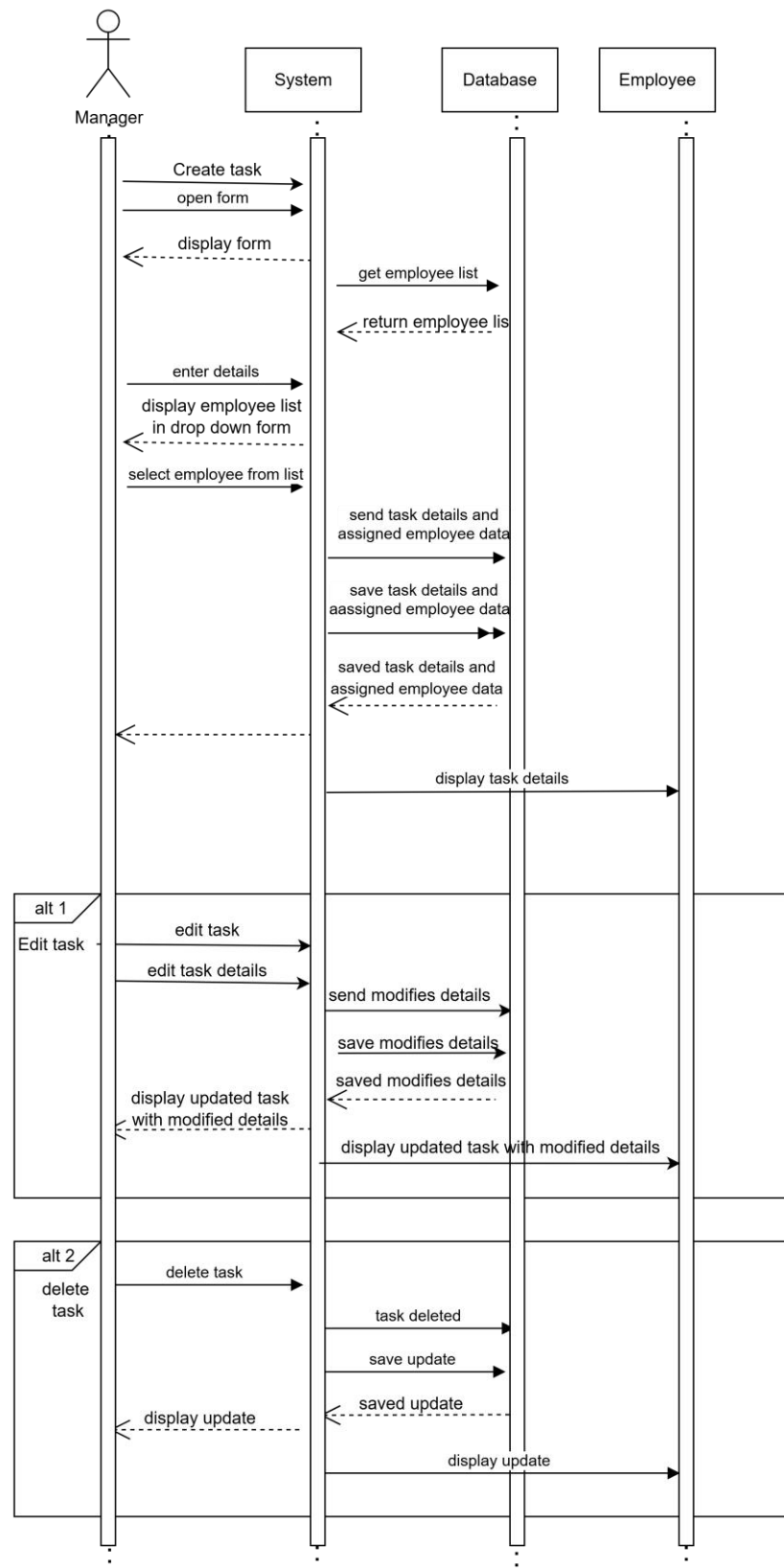
Figure 4.4.8.1 Sequence Diagram for Task Allocation

This sequence diagram in Figure 4.4.8.1 above illustrates the dynamic process of allocating a task to an employee within a collaborative system. The workflow begins when a manager opens the task allocation form and enters the necessary details such as title, task description, due date and selects employees from the employee list. The employee list is the list that is retrieved by the system with the list of available employees from the database. After the manager completes the form and submits it, the system sends the task details along with the assigned employees' information to the database for storage. Simultaneously, the task details are updated in real time and displayed in the employees' dashboard to ensure that those assigned can immediately see their tasks.

The diagram also incorporates alternative flows for task modifications. In Alt 1, the Manager may choose to edit an existing task. This involves updating task details, sending the modified data to the database, saving the changes, and finally displaying the updated task information to the employees. In Alt 2, the Manager can delete a task. The system triggers a deletion command, updates the database to reflect the removal, and confirms the action by displaying an updated task list or status message.

4.4.9 Submission Task and Action Done for Submission Task Module
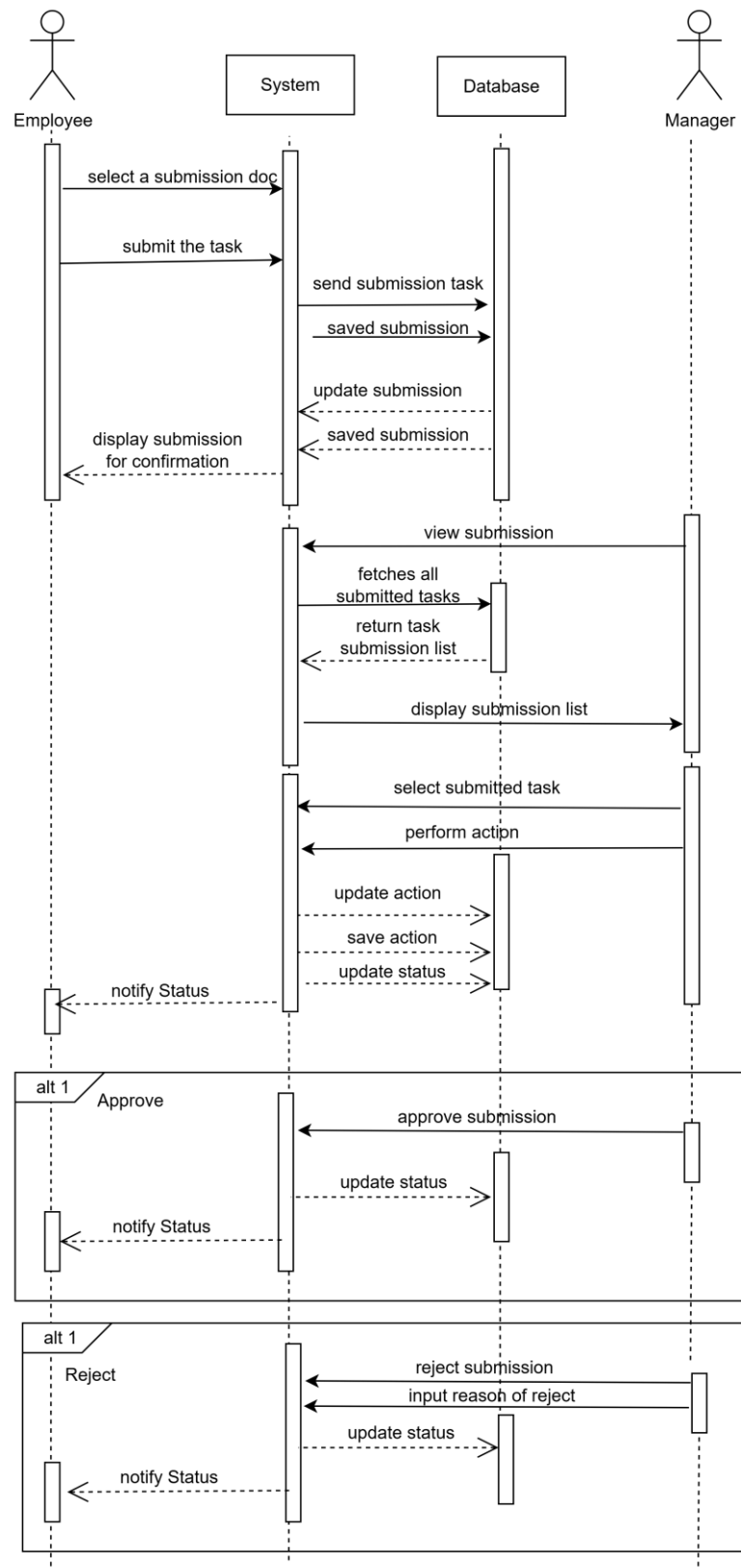
Figure 4.4.9.1 Sequence Diagram of Submission Task by employee and Action Done
Submission Task by manager

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The sequence diagram in Figure 4.4.9.1 above illustrates the process where an employee submits a task, and the manager reviews the submission before taking an action to either approve or reject it. The process begins when the employee submits a task to the system. The system then records the submission by saving the task details into the database and provides confirmation back to the employee to indicate that the submission was successful. Following this, the manager requests to view the list of task submissions. The system retrieves the required information from the database and displays the submissions to the manager for review. Once the manager has reviewed the task, action is taken to either approve or reject it. The system updates the task status accordingly in the database, and the database returns confirmation of the update. Finally, the system notifies both the manager and the employee of the updated task status.

The diagram also shows two alternative flows for approve submission task or reject submission tasks. In the approve branch, the manager approves the task, the system updates the task status in the database to "Completed" and the employee is notified of the approval. In the reject branch, the manager rejects the task, provides a reason for the rejection, and the system records the updated status as "In Progress" and rejection reason in the database.

4.4.10 Log Out Module
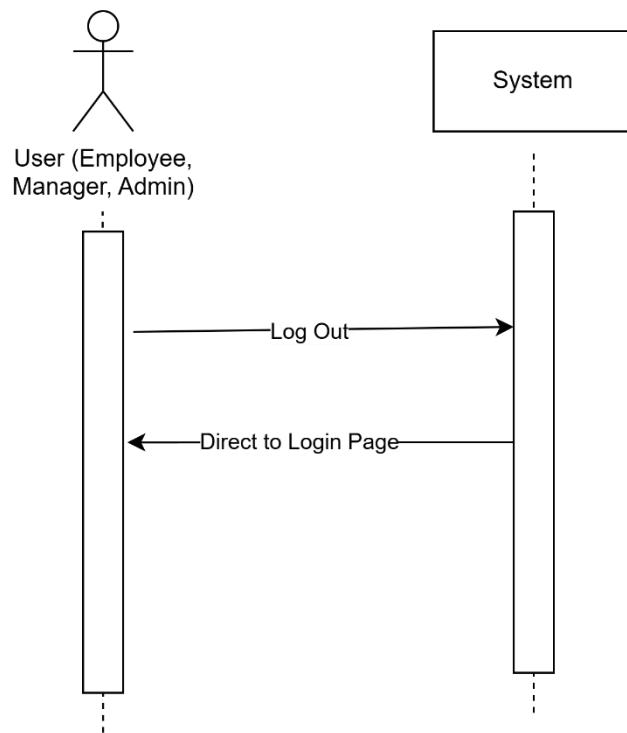
Figure 4.4.10.1 Sequence Diagram for Log Out Module

This sequence diagram as shown in Figure 4.4.10.1 illustrates the process of logging out from the system. The user initiates the logout action by selecting the Log Out option. Once the logout action is triggered, the system processes the logout request and removes the user session. After successfully logging out, the system directs the user to the Login Page. This sequence ensures that the user is securely logged out of the system and redirected to the login page where they can log in again if necessary.

4.5 Prototype

4.5.1 Main Page- All user perspectives
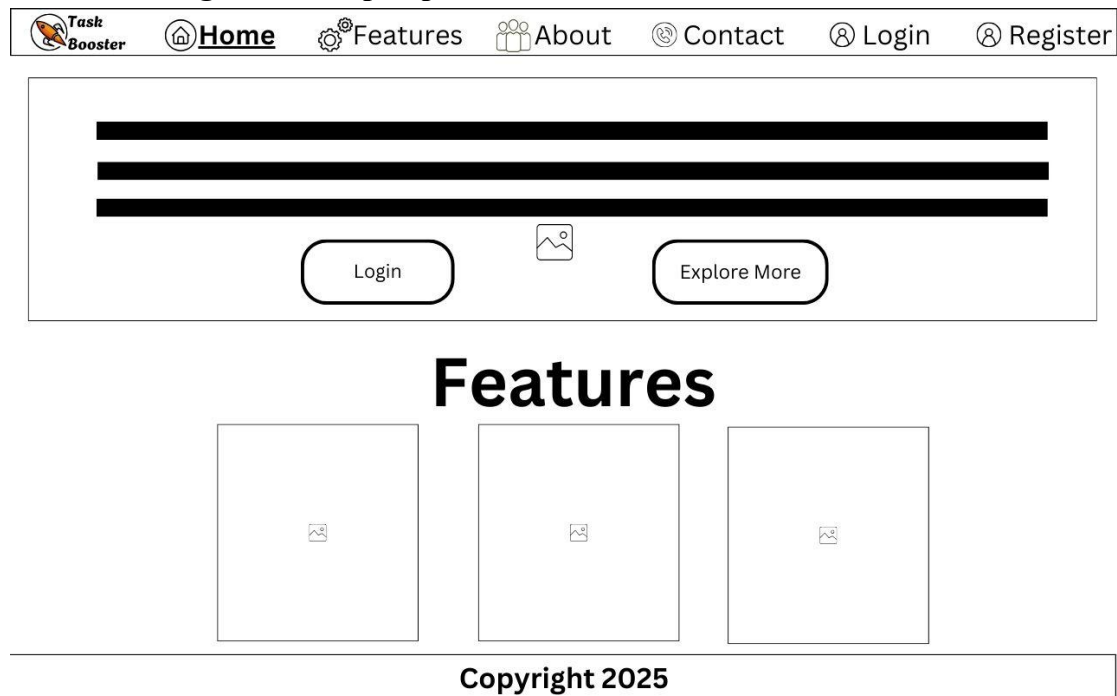
Figure 4.5.1.1 Main Page

Figure 4.5.1.1 above is the wireframe prototype of Main Page for this proposed system, TaskBooster. The design starts with a top navigation bar that includes the "Task Booster" logo on the left, followed by menu options such as Home, Features, About, and Contact for easy site navigation. On the right side, there are buttons for Login and Register that allows users to access their accounts or sign up for the service. A "Login" button and "Explore More" button are placed below. The "Login" button will direct user to login page while the "Explore More" button will direct user to the features page. The "Features" section will introduce the features that implemented in this system.
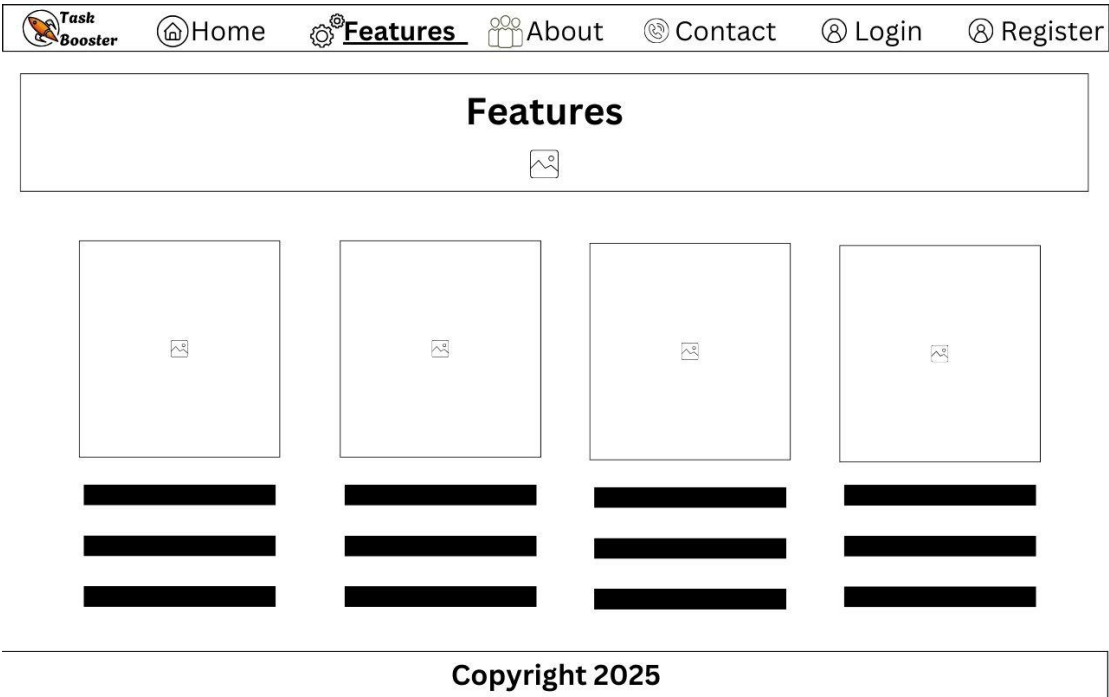
Figure 4.5.1.2 Features Page

Figure 4.5.1.2 above shows the wireframe prototype for the Features Page. This page will introduce the features implemented in the system with detailed information of those functionality of the features.
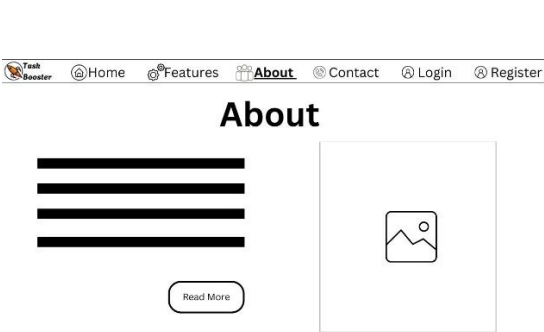
Figure 4.5.1.3 About Main Page

Figure 4.5.1.4 About Sub Page

Figure 4.5.1.3 and Figure 4.5.1.4 above are the wireframe of prototype of About Us Page. When user click on the "Read More" button in Figure 4.5.1.3, it will direct users to Figure 4.5.1.4 which will display the vision, mission and value of this system as well as the team member that involved in the development process.
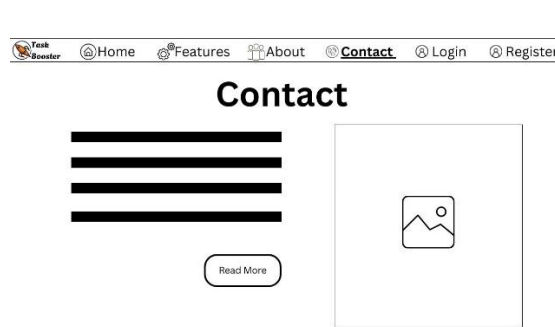
Figure 4.5.1.5 Contact Main Page   Figure 4.5.1.6 Contact Sub Page
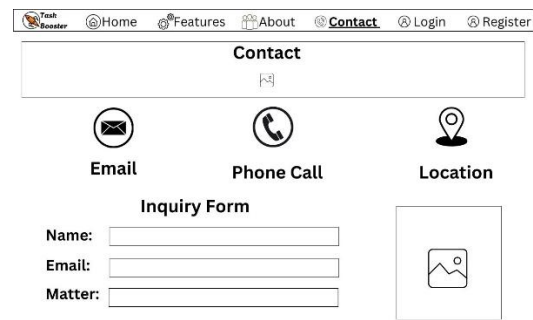
Figure 4.5.1.5 and Figure 4.5.1.6 above represent the wireframe prototype for Contact Page. When users click the "Read More" button in Figure 4.5.1.5, they will be directed to Figure 4.5.1.6. In Figure 4.5.1.6, the page will display detailed contact information, including the system's email address, phone number and physical address. Additionally, users will have the option to fill out and submit an inquiry form that allows them to send direct messages or questions to the admin.
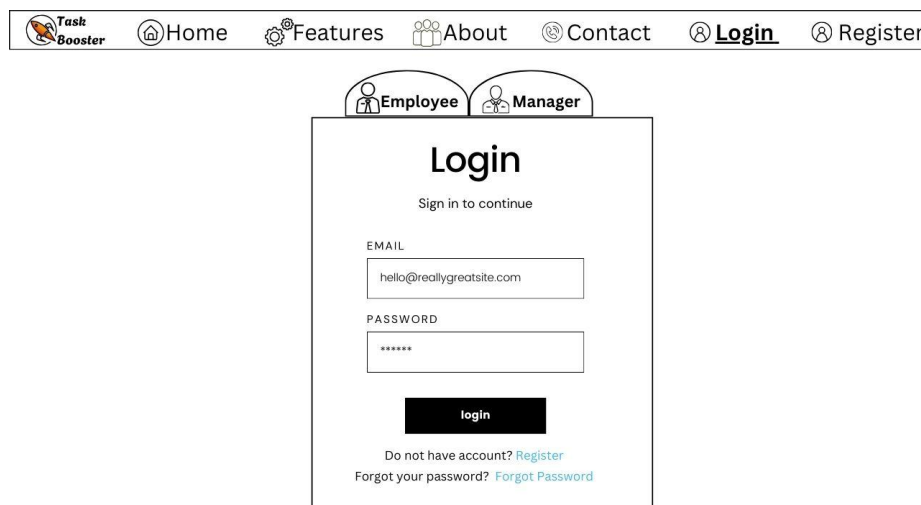
Figure 4.5.1.7 Login Page

The figure 4.5.1.7 above represents the wireframe prototype for Login Page. The page is designed to allow users to sign in by entering their email and password. There are two user role options at the top of the page which are Employee and Manager by allowing users to select their respective roles before logging in. Below the login button, there are two additional links. First link is Register, for users who do not yet have an account, and Forgot Password, for users who need to reset their password.

Figure 4.5.1.8 Register Page

Figure 4.5.1.8 represents the wireframe prototype for the Registration Page. The page allows users to activate accounts by selecting the role by choosing between Employee and Manager. Below that, the user is asked to provide Email and Password for verification. Once all fields are filled, the user can submit the form by clicking the Register button.

Figure 4.5.1.9 Set Up Password Page

After clicking the 'Register' button shown in Figure 4.5.1.8, the system proceeds to Figure 4.5.1.9, where the user is required to set up a password by entering it twice.
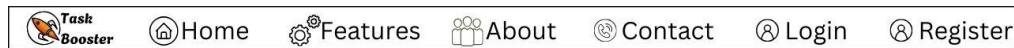
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4.5.2 Forgot Password Module

Figure 4.5.2.1 Forgot Password Page

Figure 4.5.2.1 above is the wireframe prototype for the Forgot Password Page of the "Task Booster" website. The page prompts users who have forgotten their password to enter their email address. Once the email is provided, users can click the Next button to proceed with the password recovery process.

Figure 4.5.2.2 Reset Password Page

Figure 4.5.2.2 above represents the wireframe prototype for the Reset Password. On this page, users who have initiated a password recovery process will be prompted to enter a new password in the Password field and confirm it in the Confirmed Password field. After entering the new password and confirming it, users can click the Submit

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button to finalize the password reset process. The page includes the Employee and Manager role options at the top for selecting the user role to ensure the correct account is updated according to their role.

4.5.3 Employee View
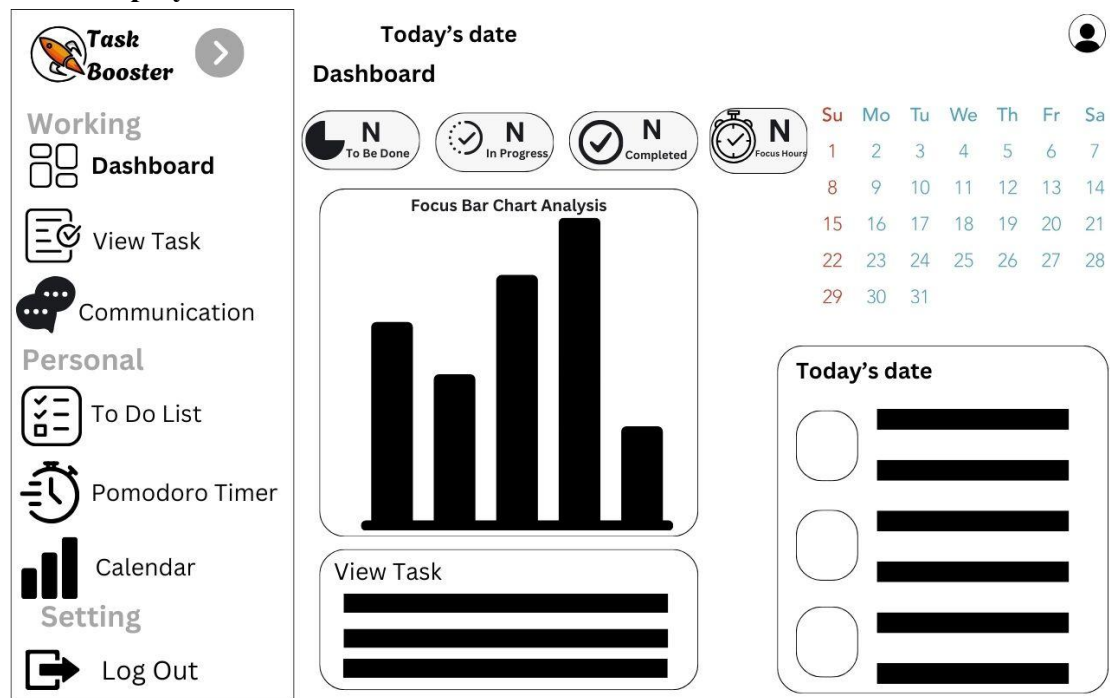
Figure 4.5.3.1 User Dashboard

Figure 4.5.3.1 above represents the wireframe prototype for the Dashboard page. The layout is divided into two primary sections which are the Sidebar and the Main Content Area. The Sidebar, located on the left, displays various features' navigation links organized into categories such as Working, Personal, and Setting. Under Working, users can access the Dashboard, View Task and Communication options. The personal section includes tools like the To-Do List, Pomodoro Timer, and Calendar for better personal task management, and the Setting section has a Log Out button to allow employee to log out from their account.

In the Main Content Area, a summary view of tasks will be displayed, categorized into three sections which are To Be Done, In Progress, and Completed. Additionally, a total focus timer will be shown and presented in bar chart by allowing users to monitor their productivity levels. Below the task summary, the View Task section enables employees to view tasks assigned by the manager. On the right side of the screen, a

calendar for the current month will be displayed, with Today's date and below the calendar have a space that displayed the ongoing tasks for that day.
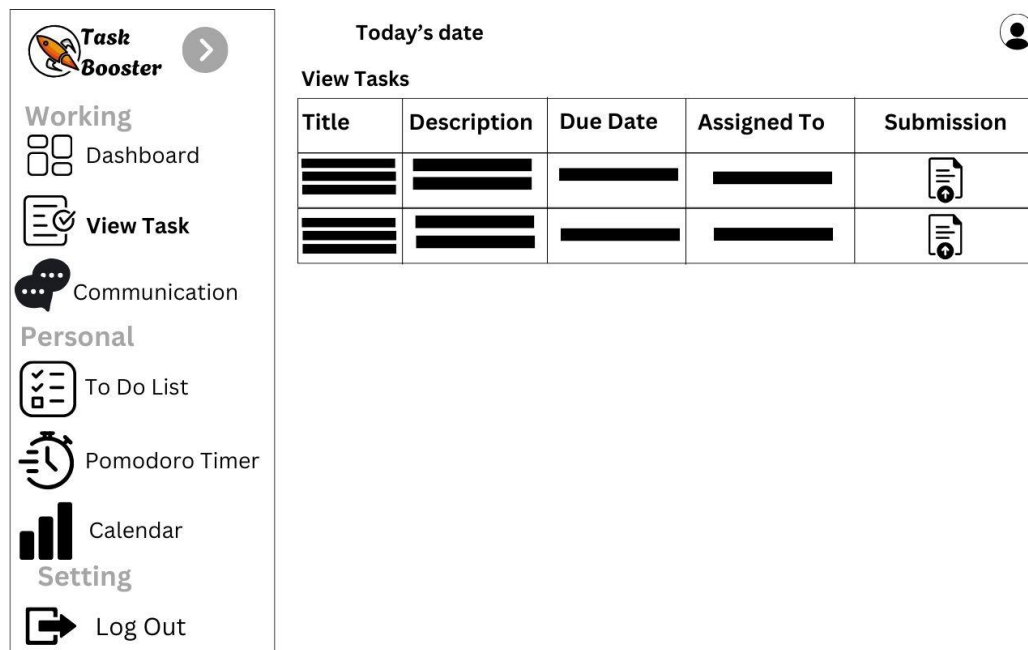
Figure 4.5.3.2 View Task Page

Figure **4.5.3.2** above illustrates the wireframe for the View Task page which allows employees to view tasks assigned by their managers. The layout displays a table with several columns which are Title, Description, Due Date, Assigned To and Submission. Each row in the table represents an individual task where employees can see the title, a brief description, the task's due date and the person to whom the task is assigned. The Submission column that allows employees to submit their completed tasks.
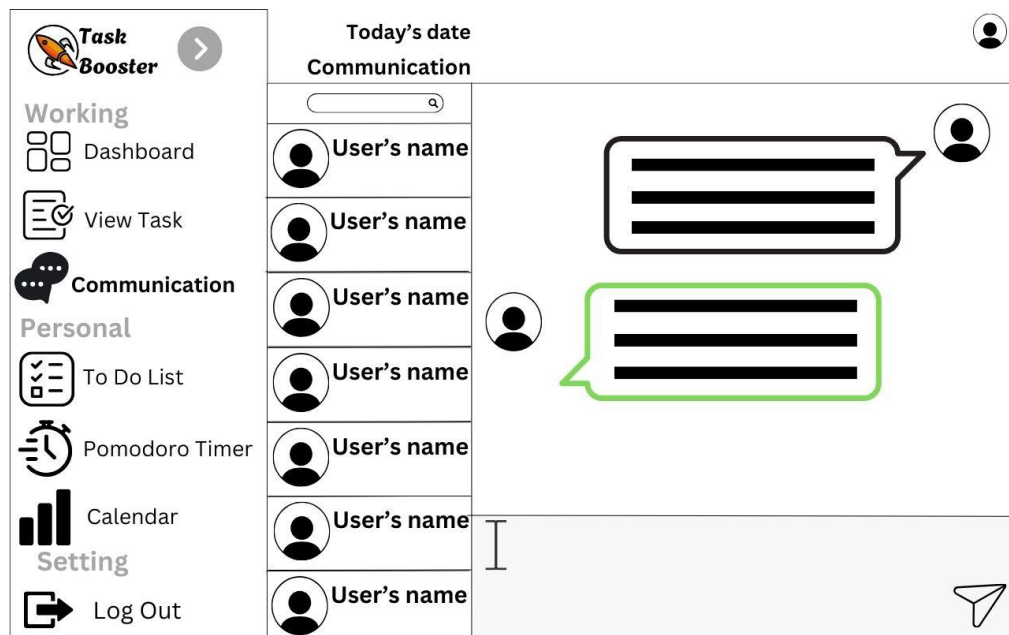
Figure 4.5.3.3 Communication Page

Figure 4.5.3.3 above represents the wireframe prototype for the Communication page. The layout consists of two main sections, which is the Sidebar on the left and the Main Content Area on the right. The Sidebar includes a list of users' names, possibly representing team members communication features. Each user's name is associated with their profile icon.

In the Main Content Area, there is a messaging interface that allows users to engage in communication with others. Two bubbles are shown, one in black and the other in green, representing messages sent between users.
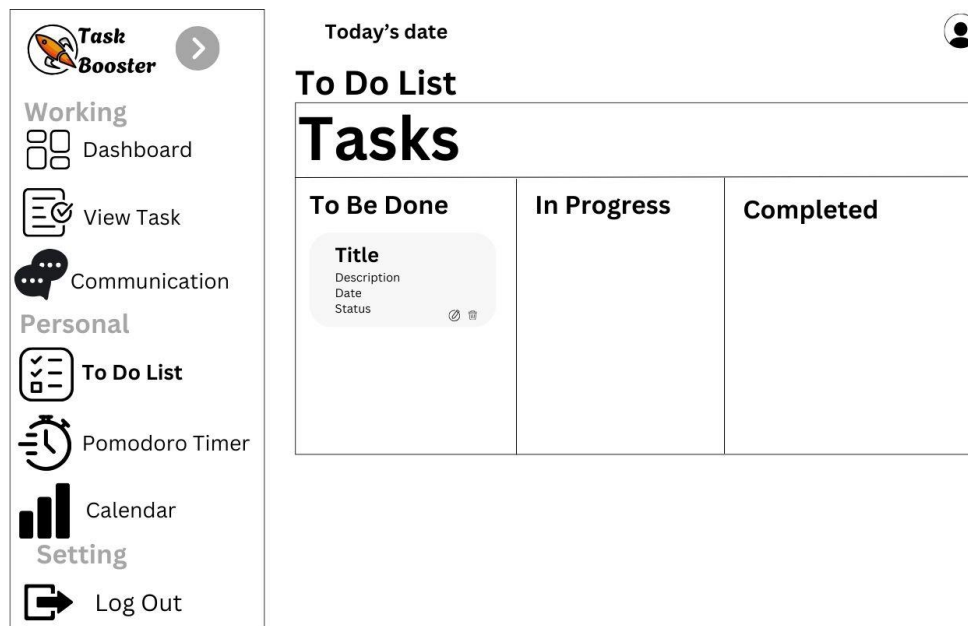
Figure 4.5.3.4 To Do List Page

Figure 4.5.3.4 above illustrates the wireframe prototype for the To-Do List page. The page is divided into three columns which are To Be Done, In Progress, and Completed. This page was providing a simple and organized way to manage tasks. In each column, tasks are displayed with placeholders for Title, Description, Date and Status. The To Be Done column shows tasks that have not been started while the In Progress column holds tasks that are currently being worked on and the Completed column lists tasks that have been finished.

Each task is represented by a box that can be edited as indicated by the small edit icon next to the task. This allows users to update task details or change their status. The page also includes a Today's date header at the top that can help users to keep track on current tasks.
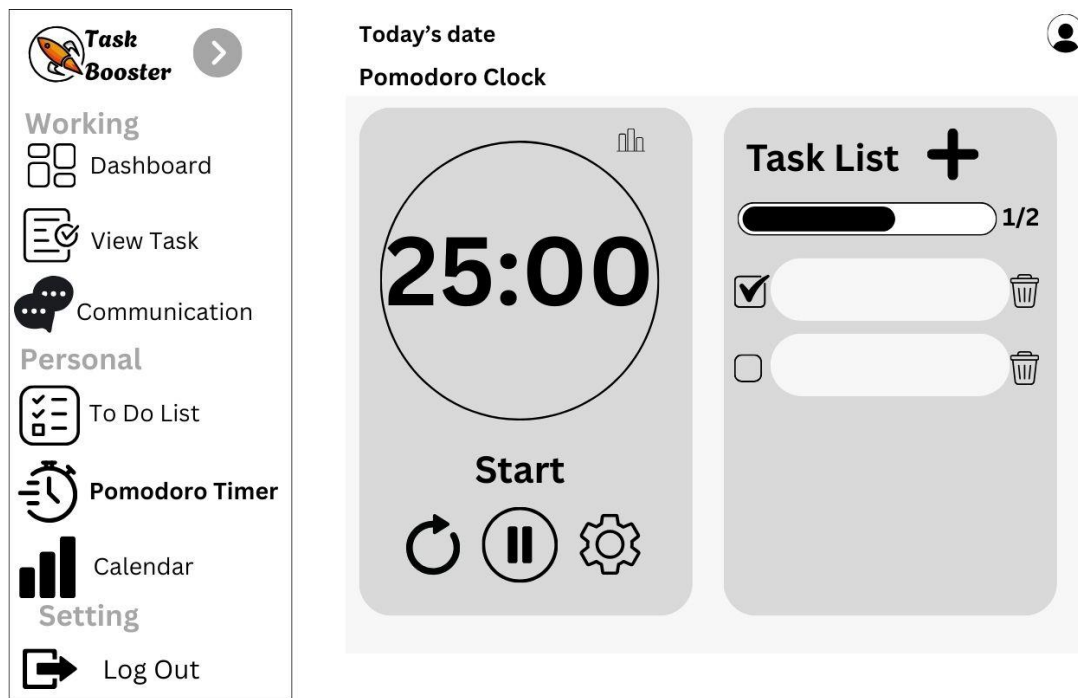
Figure 4.5.3.5 Pomodoro Timer Page

Figure 4.5.3.5 above represents the wireframe prototype for the Pomodoro Timer page. The layout includes a Pomodoro Clock on the left side, which is a timer set to 25 minutes by default. This feature is designed for users to focus on tasks in intervals. The Start button below the timer allows users to begin the countdown, while the Pause button allows them to stop the time. There are also buttons for resetting the time for customization.

To the right of the timer, there is a Task List section where users can add tasks related to the current Pomodoro session. The progress bar shows the completion status of the tasks, with a fraction indicating how many tasks are completed versus the total tasks. Each task is represented by a checkbox for marking completion and a trash icon to delete tasks.
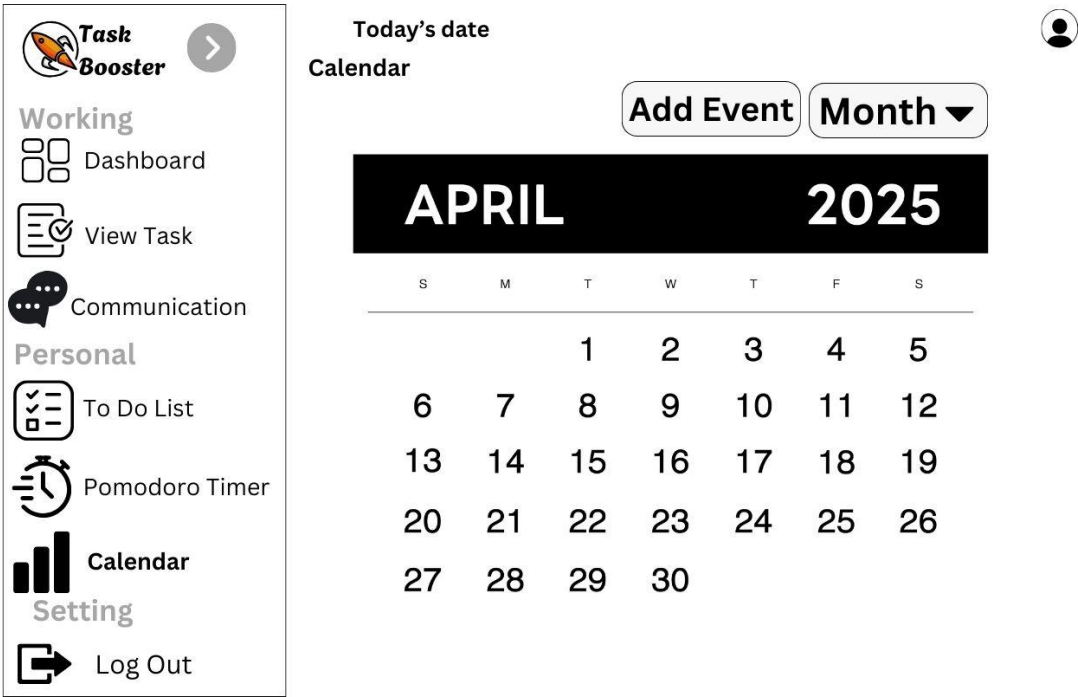
Figure 4.5.3.6 Calendar Page

Figure 4.5.3.6 above represents the wireframe prototype for the Calendar page. The calendar displays the current month by providing a clear overview of all the dates within it. The "Add Event" button allows users to easily add events or tasks to specific dates by helping them stay organized and on track. Additionally, the month is accompanied by a dropdown menu by allowing users to switch views between different months, weeks or days for more detailed planning.

4.5.4 Manager View

Figure 4.5.4.1 Manager Dashboard

The Figure 4.5.4.1 above represents the wireframe prototype for the Manager Dashboard page. The layout is divided into two primary sections which are the Sidebar and the Main Content Area. The Sidebar, located on the left displays various features' navigation links organized into categories such as Working, Personal, and Setting. The layout of manager dashboard and user's dashboard is quite similar but the only difference is the features under the Working section. Under Working, manager can access the Dashboard, Employee List, Assign Task and Communication options. The Personal section includes tools like the To-Do List, Pomodoro Timer and Calendar for better personal task management, and the Setting section has a Log Out button lets manager to sign out from their account.

In the Main Content Area, a summary view of tasks will be displayed by categorized into three sections which are To Be Done, In Progress and Completed. Additionally, a total focus timer will be shown and presented as a bar chart by allowing users to monitor their productivity levels. Below the task summary, the View Task section enables managers to view tasks assigned to the employee. On the right side of the screen, a calendar for the current month will be displayed, with Today's date. Below the calendar will display the ongoing tasks on that particular day.
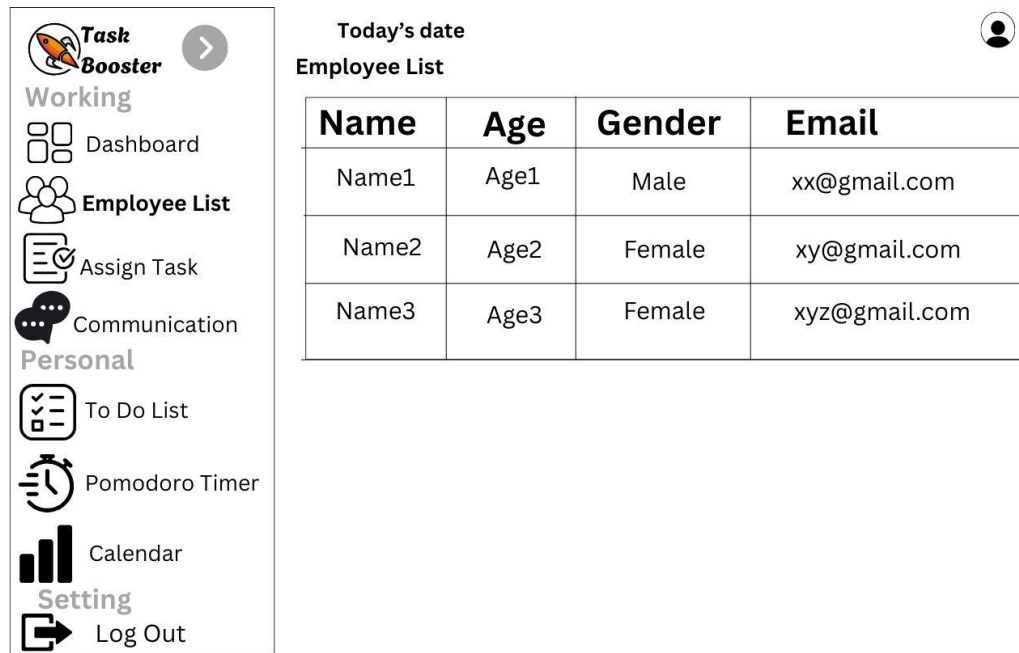
Figure 4.5.4.2 Employee List

Figure 4.5.4.2 above represents the wireframe prototype for the Employee List page. The page displays a table with a list of employees including columns for Name, Age, Gender and Email. Each row in the table represents an individual employee by allowing the manager to easily view key details about their team members.
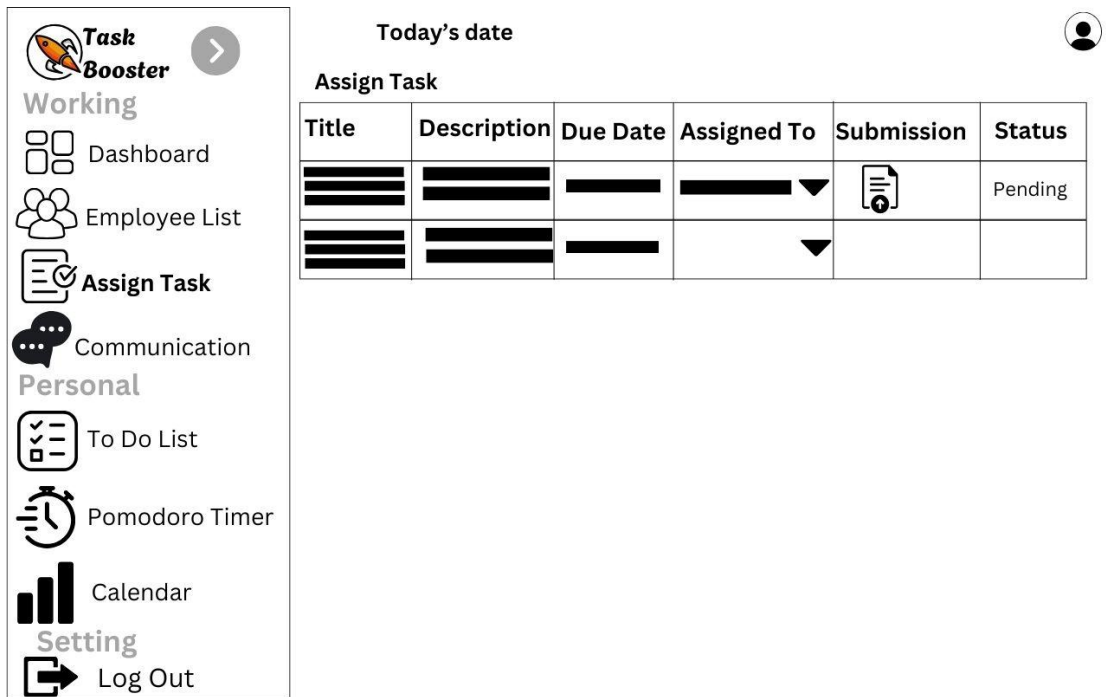
Figure 4.5.4.3 Assign Task

Figure 4.5.4.3 above represents the wireframe prototype for the Assign Task page of the "Task Booster" website. The page allows managers to create tasks and assign them to employees. Managers can enter the task details including the Title, Description, Due Date and then select the employee to whom the task will be assigned. The Assigned To column includes a dropdown menu, allowing the manager to choose from the list of available employees.

Once the employee completes the task, they can submit their work by uploading a file in the Submission column. The uploaded file will be visible to the manager, who can review the work and then update the Status column to either Completed or Rejected based on the quality of the submission.
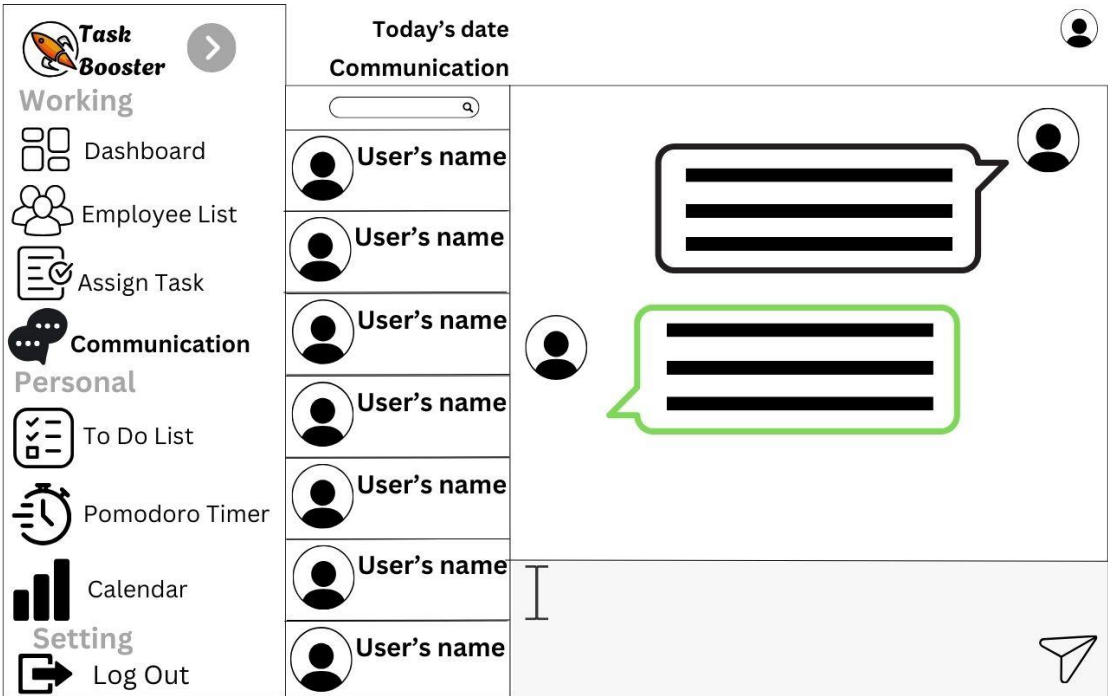
Figure 4.5.4.4 Communication Page

Figure 4.5.4.4 above represents the wireframe prototype for the Communication page. The functionality and layout will be the same as the Communication page for employees. The layout consists of two main sections which are the Sidebar on the left and the Main Content Area on the right. The Sidebar includes a list of users' names, possibly representing team members or users who are part of the communication feature. Each user's name is associated with their profile icon. In the Main Content Area, there is a messaging interface that allows users to engage in communication with

others. Two bubbles are shown, one in black and the other in green, representing messages sent between users.
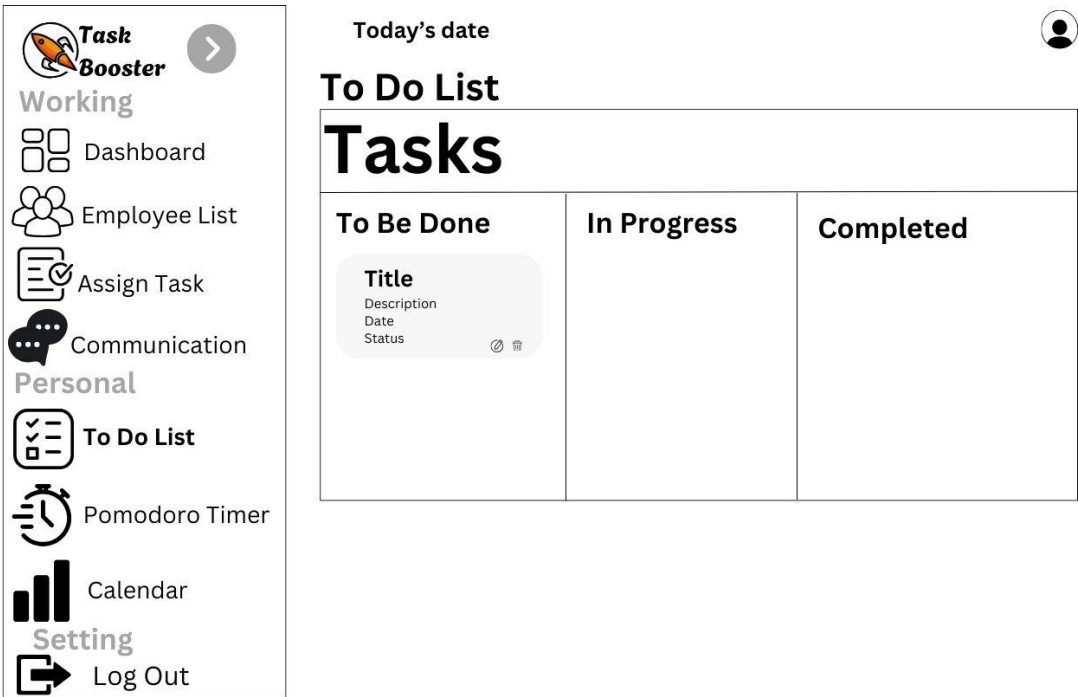
Figure 4.5.4.5 To Do List Page

Figure 4.5.4.5 above illustrates the wireframe prototype for the To-Do List page. The functionality and layout will be the same as the To Do List page for employees. The page is divided into three columns which are To Be Done, In Progress, and Completed by providing a simple and organized way to manage tasks. In each column, tasks are displayed with placeholders for Title, Description, Date and Status. The To Be Done column shows tasks that have not been started while the In Progress column holds tasks that are currently being worked on and the Completed column lists tasks that have been finished.

Each task is represented by a box that can be edited as indicated by the small edit icon next to the task. This allows users to update task details or change their status. The page also includes a Today's date header at the top that helps users to keep track of current tasks.
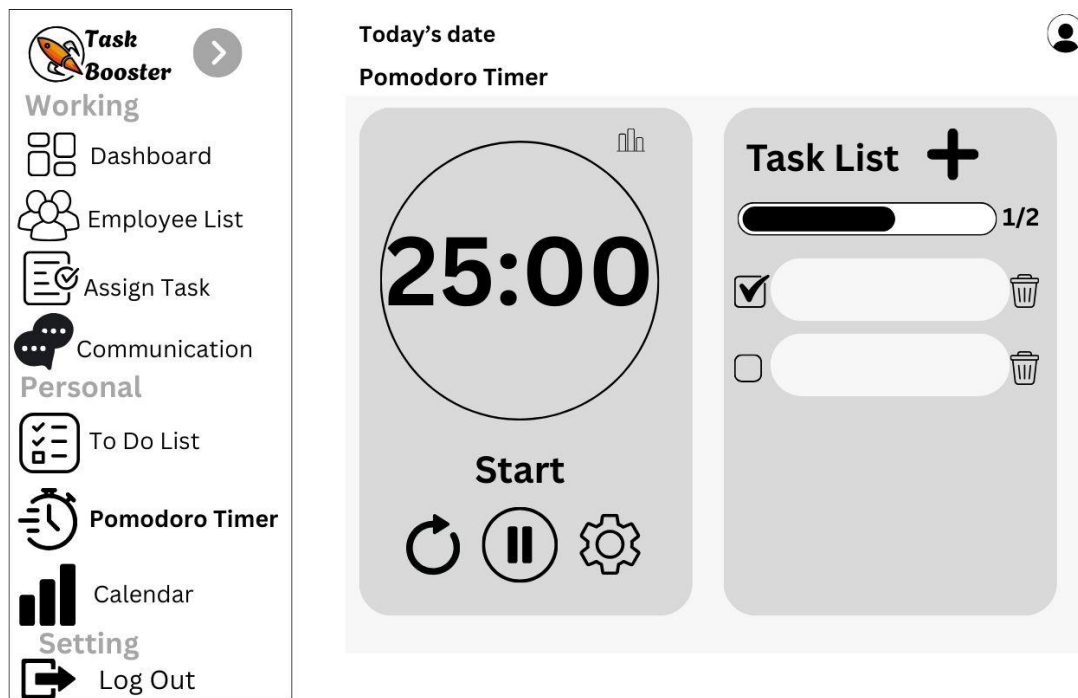
Figure 4.5.4.6 Pomodoro Timer Page

Figure 4.5.4.6 above represents the wireframe prototype for the Pomodoro Timer page. The functionality and layout will be the same as the Pomodoro Timer page for employees. The layout includes a Pomodoro Clock on the left side, which is a timer set to 25 minutes by default. This system is designed for users to focus on tasks in intervals. The Start button below the timer allows users to begin the countdown while the Pause button allows them to stop the timer if needed. There are also buttons for resetting the time according to their preference time.

To the right of the timer, there is a Task List section where users can add tasks related to the current Pomodoro session. The progress bar shows the completion status of the tasks with a fraction indicating how many tasks are completed versus the total tasks. Each task is represented by a checkbox for marking completion and a trash icon to delete tasks.
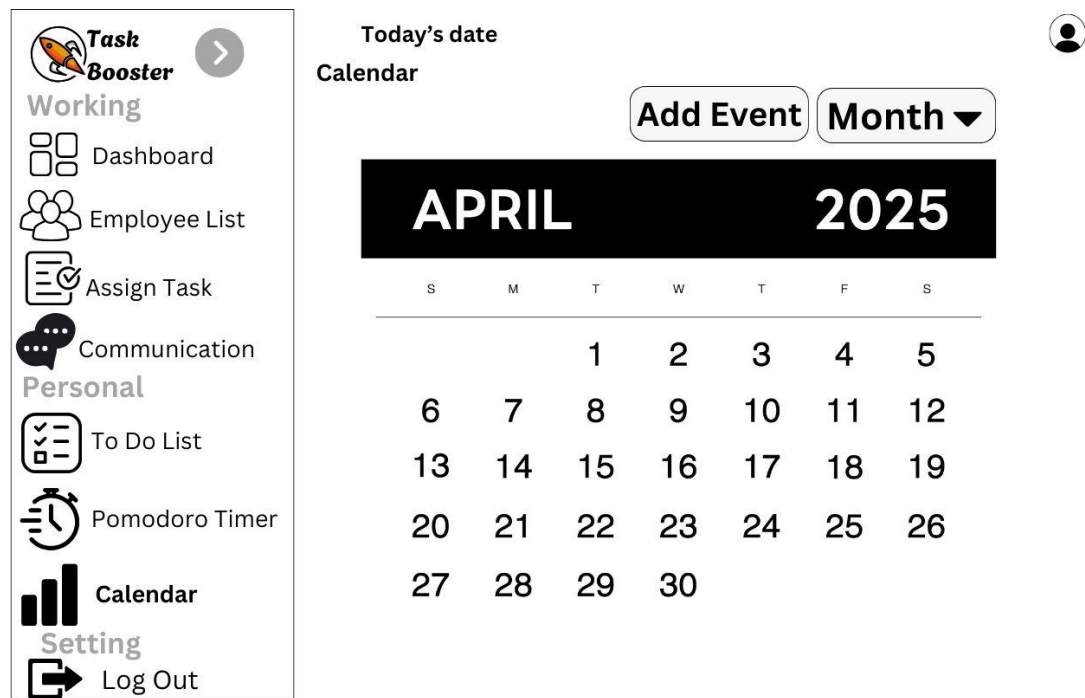
Figure 4.654.7 Calendar Page

Figure 4.5.3.6 above represents the wireframe prototype for the Calendar page. The functionality and layout will be the same as the Communication page for employees The calendar displays the current month by providing a clear overview of all the dates within it. The "Add Event" button allows users to easily add events or tasks to specific dates and help them to stay organized and on track. Additionally, the month is accompanied by a dropdown menu by allowing users to switch between different view options such as months, weeks or days for more detailed planning.

4.5.5 Admin View
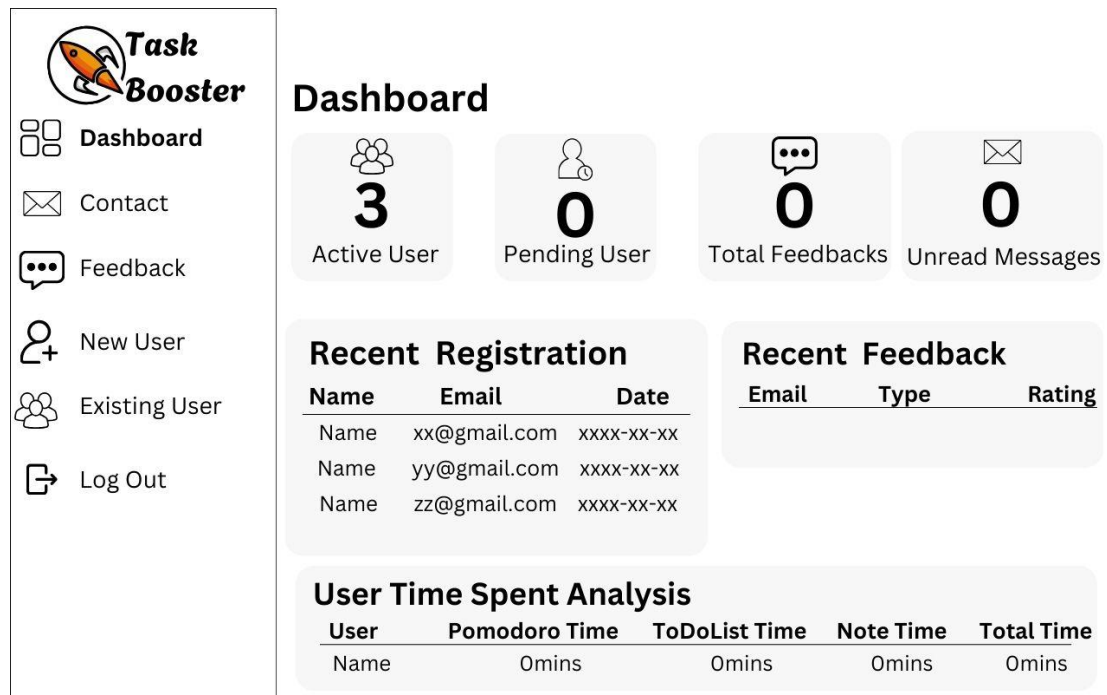
Figure 4.5.5.1 Admin Dashboard

Figure 4.5.5.1 represents the wireframe prototype for the Admin Dashboard page. At the top of the page, key metrics are displayed and include the number of Active Users, Pending Users, Total Feedbacks and Unread Messages by providing a summary of the platform's current status. Below these metrics, the Recent Registration section shows a list of newly registered users, displaying their Name, Email and Registration Date. Further down, the Recent Feedback section displays the most recent feedback submitted by users, including their Email, the Type of feedback and the Rating given. The User Time Spent Analysis section at the bottom tracks the time spent by users on each feature such as Pomodoro Time, Todo List Time, Note Time and the Total Time spent on the platform.

On the left, the Sidebar contains navigation options for the admin, such as Dashboard, Contact, Feedback, New User, Existing User, and Log Out, allowing easy access to other sections of the website. This wireframe is designed to help admins efficiently manage users, monitor platform usage, and track feedback, ensuring a streamlined and organized approach to managing the website.

Figure 4.5.5.2 Receive Contact Message Page

Figure 4.5.5.2 above represents the wireframe prototype for the Contact Messages page. The page is designed to display messages received from users or visitors by providing the admin with a clear overview of the contact information. The table includes columns for Date, Name, Email, Phone, Message, Status and Action. Each row in the table represents a contact message by showing the date the message was received, the sender's name, email, phone number and the content of the message.

In the Status column, the admin can see whether the message has been Read or is still unread. The Action column provides options to mark the message as Checked, indicating that the admin has reviewed it. The layout is simple and functional by allowing the admin to manage incoming contact messages efficiently and ensures for timely responses and follow-ups.
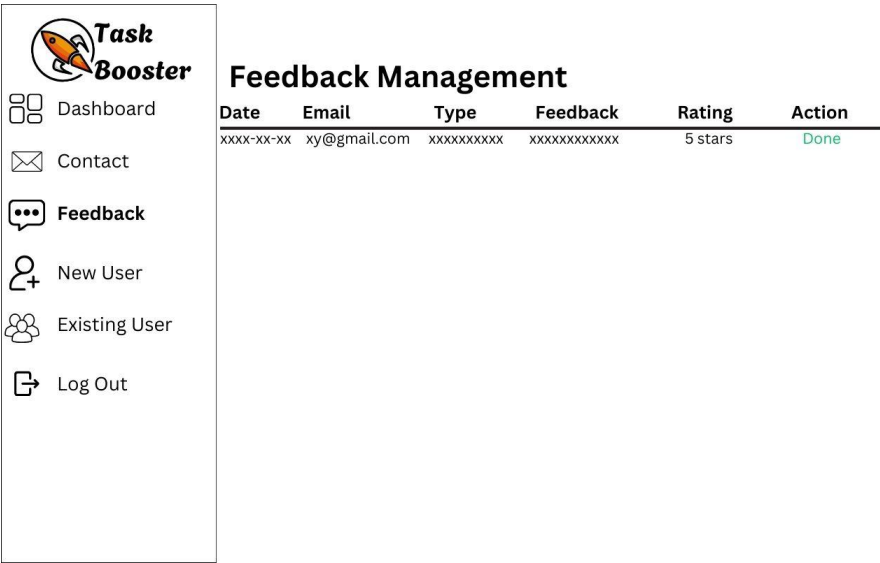
Figure 4.5.5.3 Receive Feedback Page

Figure 4.5.5.3 above represents the wireframe prototype for the Feedback Management page of the "Task Booster" website. The page is designed for the admin to manage and review feedback submitted by users. The table includes columns for Date, Email, Type, Feedback, Rating and Action. Each row represents a piece of feedback, showing the submission of date, user's email, the type of feedback, the feedback content and the Rating given by the user, which could range from 1 to 5 stars. In the Action column, the status of the feedback is indicated, such as Done, showing that the feedback has been reviewed or addressed. This table structure helps the admin keep track of all received feedback, categorize them accordingly and take necessary actions.
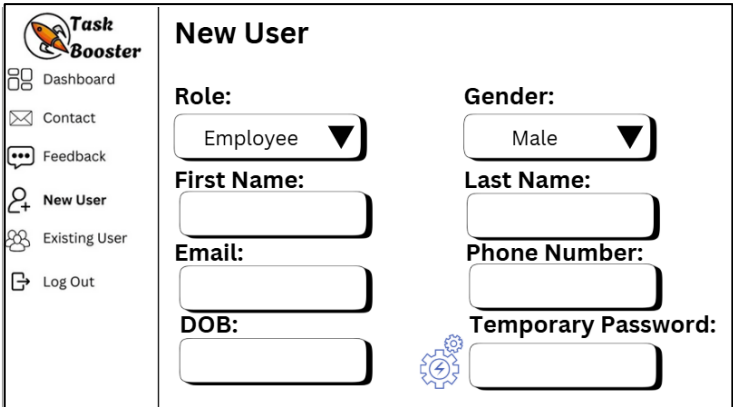
Figure 4.5.5.4 Registered User

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Figure 4.5.5.4 illustrates the wireframe prototype for the new user registration page. This page is designed to enable the admin to register a new user by entering the required personal details. The process begins with selecting the user role, either Employee or Manager, followed by filling in details such as Name, Email, Gender, Phone Number, and Date of Birth. A temporary password is also automatically generated when the button beside the temporary password field is clicked, ensuring a secure and efficient registration process.
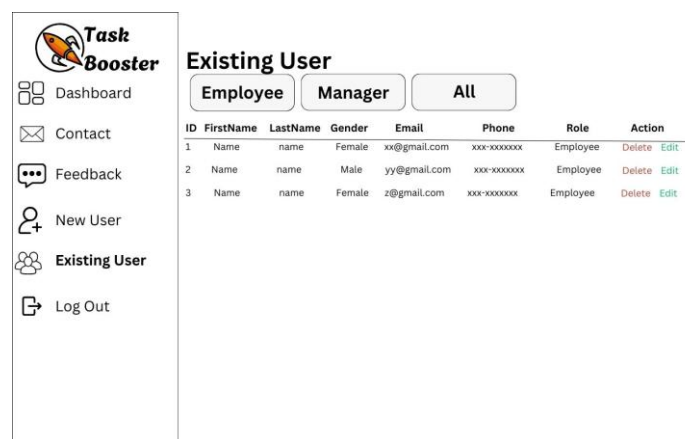
Figure 4.5.5.5 Existing User

Figure 4.5.5.5 above represents the wireframe prototype for the Existing User page of the "Task Booster" website. The page displays a list of users already registered in the system, with the ability to filter the list by Employee, Manager or All users. The table contains several columns including ID, FirstName, LastName, Gender, Email, Phone, Role and Action. Each row represents a user by showing their personal details and role within the organization.

The Action column provides two options which are Delete and Edit. The Delete button allows the admin to remove a user from the system, while the Edit button enables the admin to modify the user's information.

Chapter 5: Systems Implementation

Chapter 5 is Systems Implementation that includes hardware and software setup, setting and configuration of the development, system operation of the proposed system and issues and challenges that were faced during the implementation proposed systems.

5.1 Hardware and Software Setup

5.1.1 Hardware Setup

Table 5.1.1.1 below shows the specifications of the laptop used in this project.

Description	Specifications
Model	Lenovo IdeaPad Gaming 3 15ACH6
Processor	AMD Ryzen™ 5 5600H
Operating System	Windows 11
Graphic	NVIDIA® GeForce GTX 1650 4GB GDDR6
Memory	8GB
Storage	256GB SSD

Table 5.1.1.1 Specification of Laptop

5.1.2 Software Setup

The software required for this project is listed in Table 5.1.2.1 below.

Tools	Specification	Description
Visual Studio Code	Code editor supporting HTML, CSS, JavaScript, PHP	Used for writing and editing both front-end and back-end code for web applications.
MySQL	Relational database management system	Manages and organizes structured data like user information and tasks in tables, supporting complex queries.
Draw.io	Diagramming tool (Web-based)	Used to create visual diagrams such as flowcharts and system architecture diagrams for project design.

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Excel	A spreadsheet program	Used to draw timeline for FYP1 and FYP2
Canva	A graphic design platform	Used to draw prototypes of the proposed system and poster

Table 5.1.2.1 Specification of Software

5.2 Setting and Configuration

The development of TaskBooster which is a web-based task management system with the integration of collaborative and productivity features that requires setting up an appropriate development environment to ensure smooth implementation, testing and debugging. This system was developed using Visual Studio Code as the main code editor due to its wide extension of PHP, HTML, CSS and JavaScript. For the server-side scripting and database management, XAMPP is used for this system development.

At the beginning stage of the development process, XAMPP was installed as the main local web server. As shown in Figure 5.2.1 below, XAMPP was installed with an Apache server and MySQL database for hosting and managing databases. Apache server has a role in handling http requests and MySQL that serves as a backend database to store all the details and data of this system. Besides that, phpMyAdmin is a web-based interface that is provided by XAMPP. It is used to manage database records. Database connections were configured through a PHP configuration file to enable seamless communication between the web application and the backend.

Visual Studio Code has been installed as the main development environment. Standard web technologies such as HTML, CSS, and JavaScript were utilized, with the option of integrating frameworks like Bootstrap for a responsive interface. In addition, phpMyAdmin was used to manage and test database queries, while browsers such as Google Chrome were employed to test and debug the system.

Last but not least, this system also developed an automated email reminder and email verification, PHPMailer. It is an open-source PHP library for sending emails. This library was obtained from GitHub repository [37]. By implementing this library, the system is able to send email verification and reminders to the users. The library was integrated through Composer and configured with SMTP settings to enable secure and

reliable email delivery. Figure 5.2.2 below shows the installation and setup for PHPMailer while Figure 5.2.3 below shows the folder of the code used. Figure 5.2.4 below shows the mail configuration with the email address used as the sender.
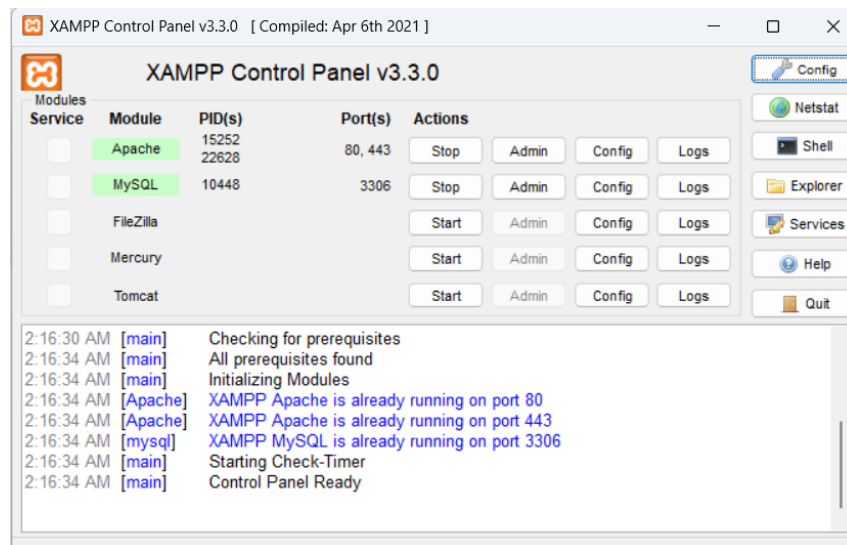
Figure 5.2.1 Xampp
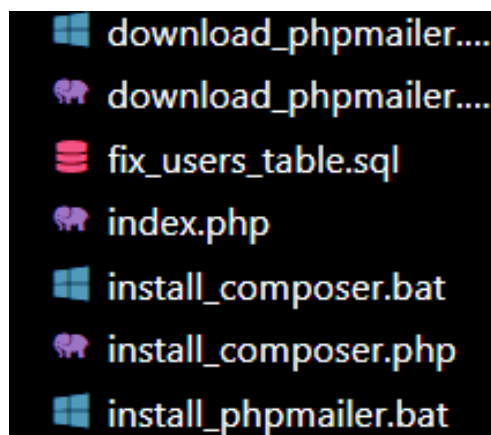
Figure 5.2.2 Installation PHPMailer
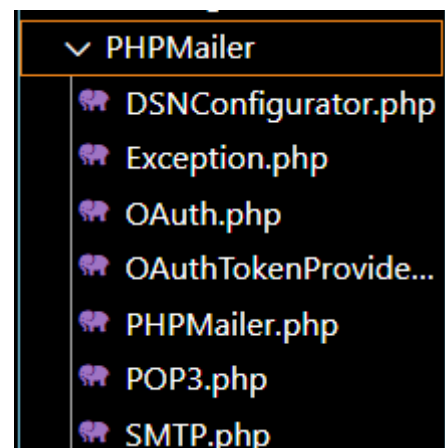
Figure 5.2.3 PHPMailer

```
try {
    // Server settings
    $mail->SMTPDebug = 0; // Disable debug output
    $mail->isSMTP();
    $mail->Host = 'smtp.gmail.com';
    $mail->SMTPAuth = true;
    $mail->Username = 'support@TaskBooster.com';
    $mail->Password = 'lspf qnnq klxe ekvm';
    $mail->SMTPSecure = PHPMailer::ENCRYPTION_STARTTLS;
    $mail->Port = 587;
```

Figure 5.2.4 Mail Configuration

5.3 Systems Operation

This proposed system is designed to support three types of users which are employees, managers, and administrators. Each user type has specific roles, responsibilities, and access restrictions, which define their operations within the system.

5.3.1 Main Page
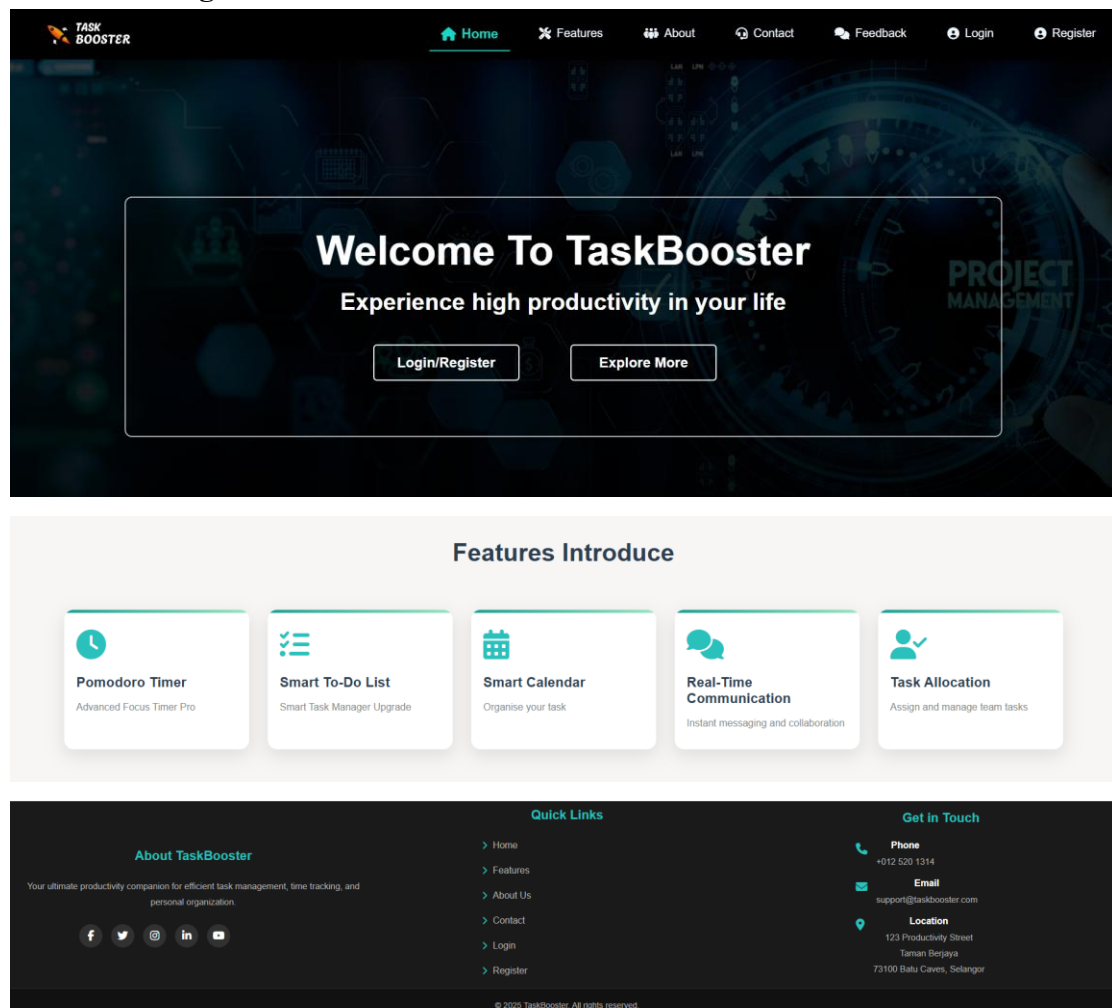
Figure 5.3.1.1 Main Page

Figure 5.3.1.1 shows the main page of TaskBooster, which is the first page users will encounter when they access the website. There is a navigation bar at the top that includes links to essential pages such as Home, Features, About, Contact, Feedback, Login and Register. At the below section, there are two buttons which are "Login/Register" and "Explore More". The "Login/Register" button will direct user to Register page while "Explore More" button will direct user to Features Page as shown in Figure 5.3.1.2 below. After that, this is followed by a brief summary of the key

features introduced, including the Pomodoro timer, smart to-do list, smart calendar, real-time communication, and task allocation. The lowest part is the footer of the system.
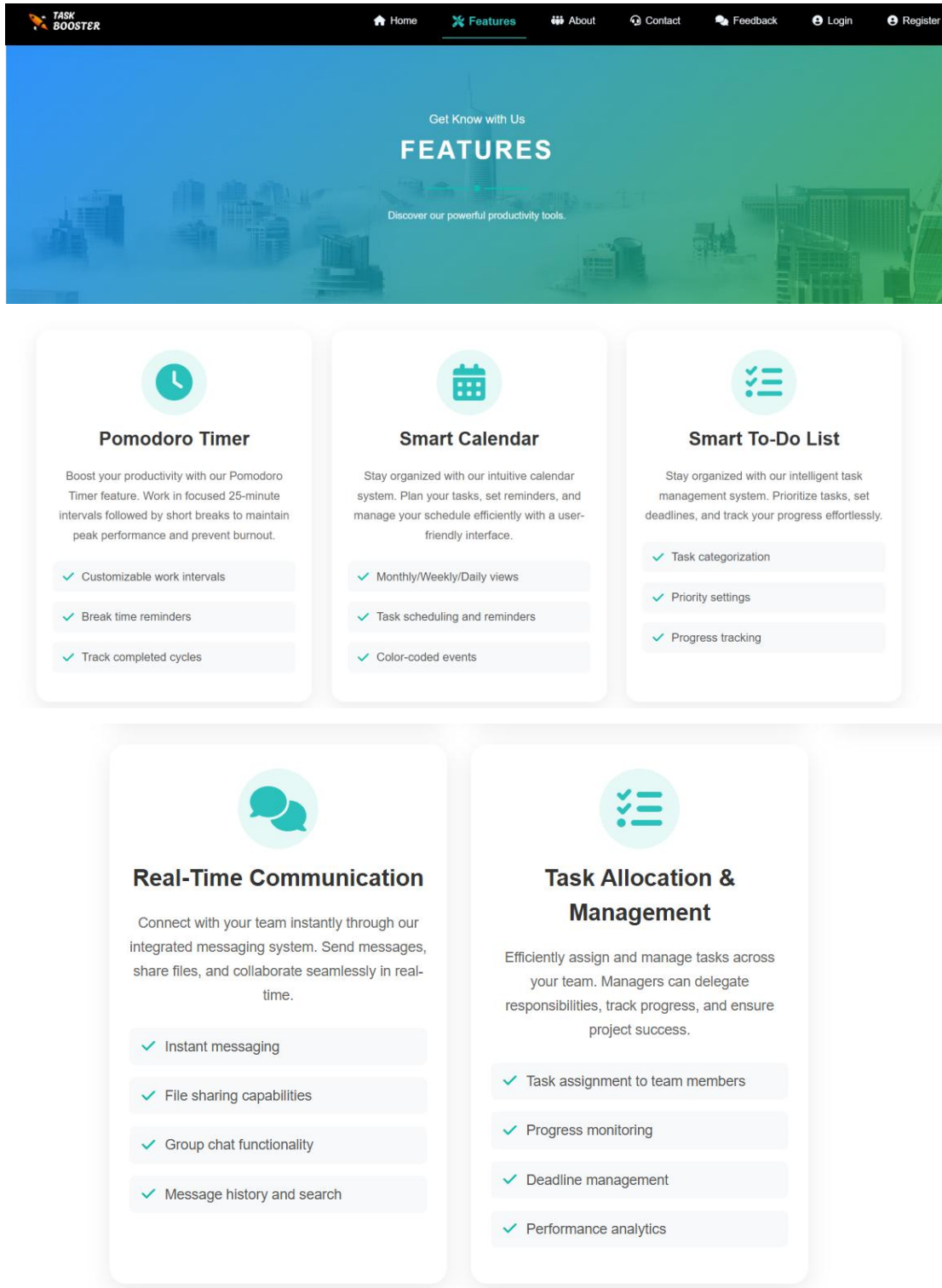
Figure 5.3.1.2 Features Page

Figure 5.3.1.2 above shows the Features Page of TaskBooster. On this page, users will learn about the various features that have been implemented in TaskBooster. The page serves as an informative section where users can explore all the functionalities the platform has implemented such as Pomodoro Timer, Calendar features, To Do List, Real-Time Communication and Task Allocation and Management feature.
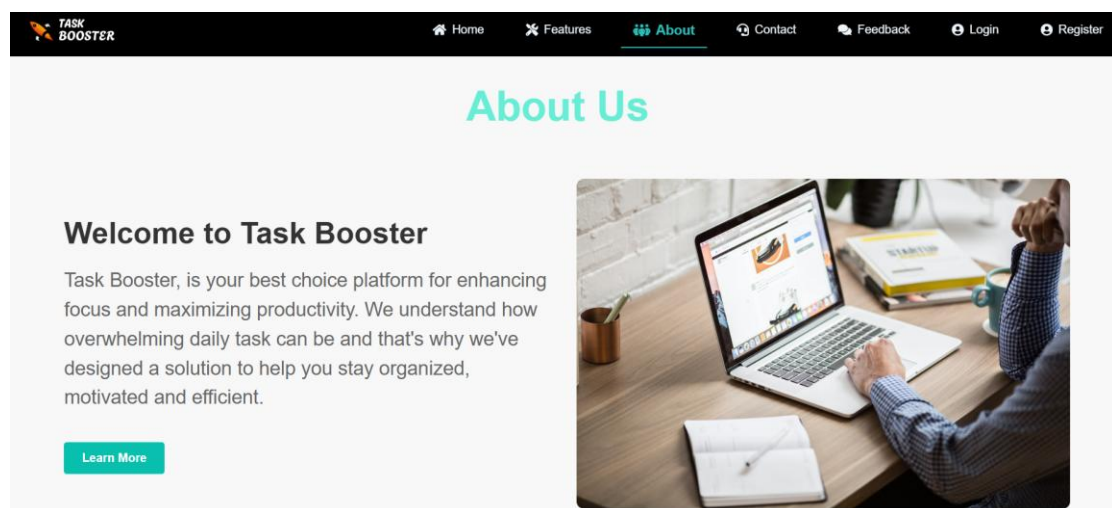
Figure 5.3.1.3 About Us Main Page

Figure 5.3.1.3 above shows the About Us page of TaskBooster. This page is designed to give users a clear understanding of the system and its purpose. Below the text, a "Learn More" button is provided to offer users the opportunity to explore further details about the platform's features and capabilities. When users click the Learn More button, they will be directed to Figure 5.3.1.4 below where they can gain a deeper insight into the vision, mission and value of the system.
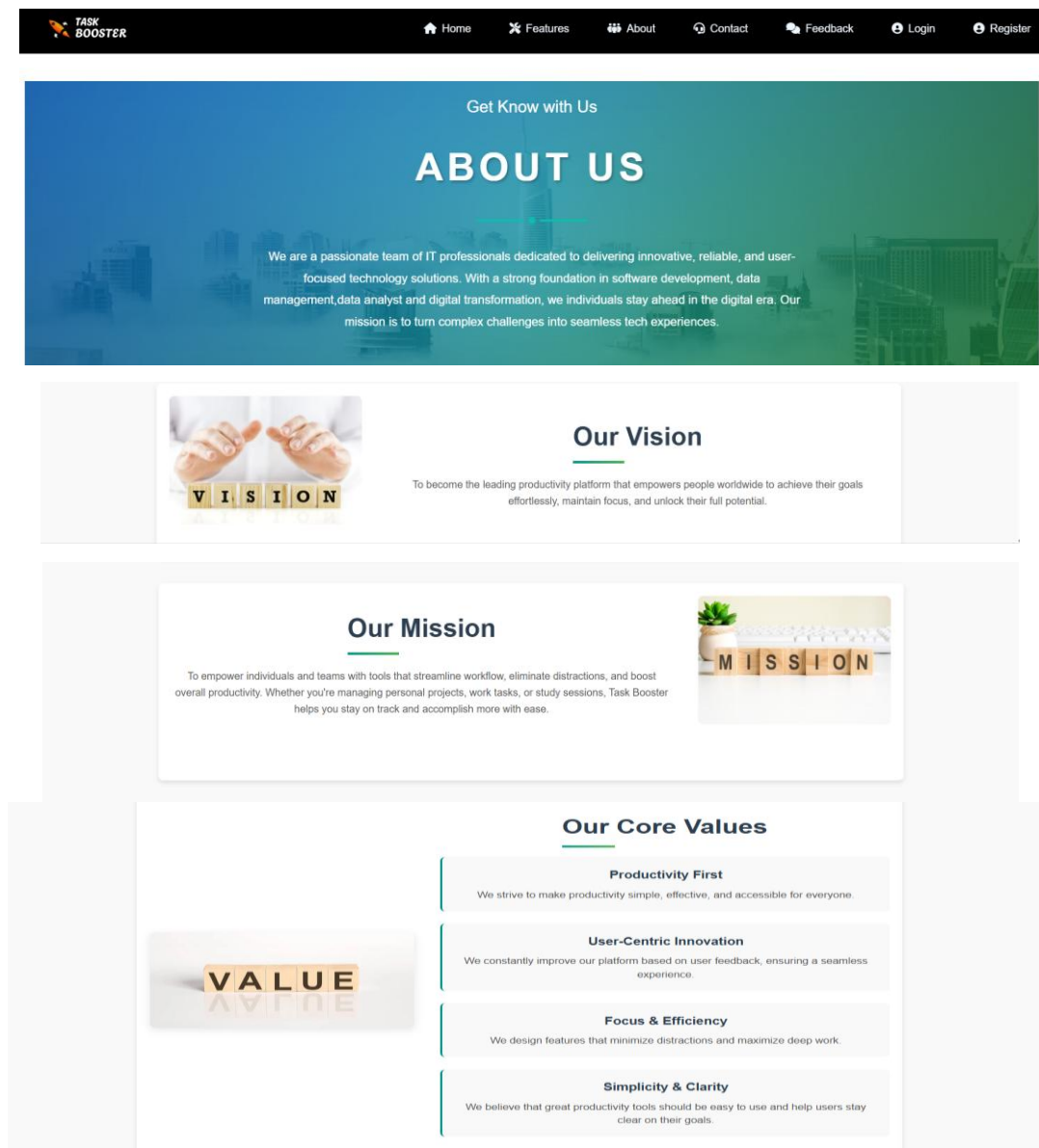
Figure 5.3.1.4 About Us Sub Page

When the user clicks on the "Learn More" button from the previous Figure 5.3.1.3, they will be directed to this page as shown in Figure 5.3.1.4 above, which provides detailed information about the system's vision, mission, and values.

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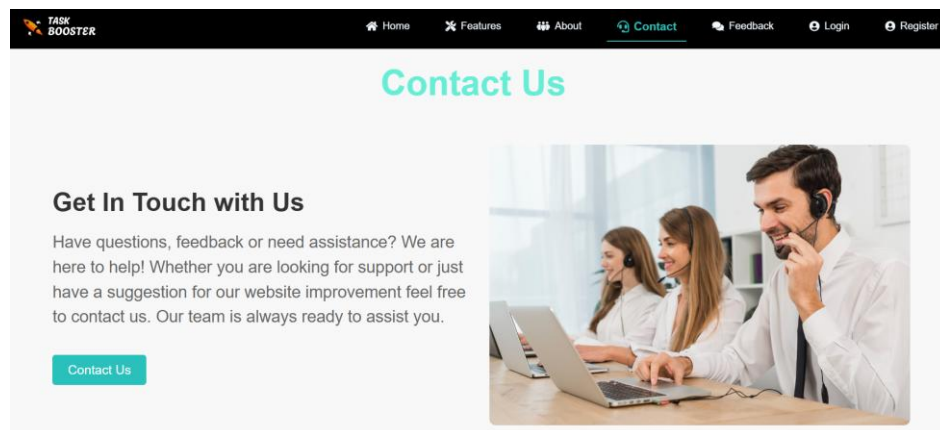
Figure 5.3.1.5 Contact Us Page

Figure 5.3.1.5 above shows the Contact Us page of TaskBooster. A Contact Us button is provided and when clicked on, it will direct to the page as shown in Figure 5.3.1.6 below.

Figure 5.3.1.6 Contact Us Sub Page

In this page, as shown in Figure 5.3.1.6 above, the necessary contact details will be provided. The page includes essential information such as the Phone Number, Email Address, and Physical Address of TaskBooster's office. The Phone Number and Email

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Address are provided for users to contact support directly, while the Address section shows the location of the company in Taman Berjaya, Batu Caves, Selangor. Additionally, the Opening Hours are clearly listed, indicating that the team is available from Monday to Friday, from 8:00 AM to 5:00 PM.

At the bottom of the page, there is a contact form where users can fill in their First Name, Last Name, Email, Phone and Message if they face any doubts while exploring the platform. Once the message is filled out, users can click the Send Message button to submit their inquiries or feedback.

Figure 5.3.1.7 Feedback Page

Figure 5.3.1.7 above represents the Feedback Submission page of TaskBooster. The page is designed to allow users to submit their feedback for the platform. At the top, users are prompted to enter their Email address to ensure that feedback can be linked to a specific user for further communication if needed. Below the email field, users can select the Feedback Type from a dropdown menu by choosing from various options to categorize their feedback.

The next section, Your Feedback, provides a large text box where users can enter their comments. After providing feedback, users are asked to rate their experience by selecting some stars in the Rating section, allowing them to provide a star rating from 1 to 5 stars for the platform. Finally, the Submit Feedback button allows users to send their feedback once all fields have been completed.
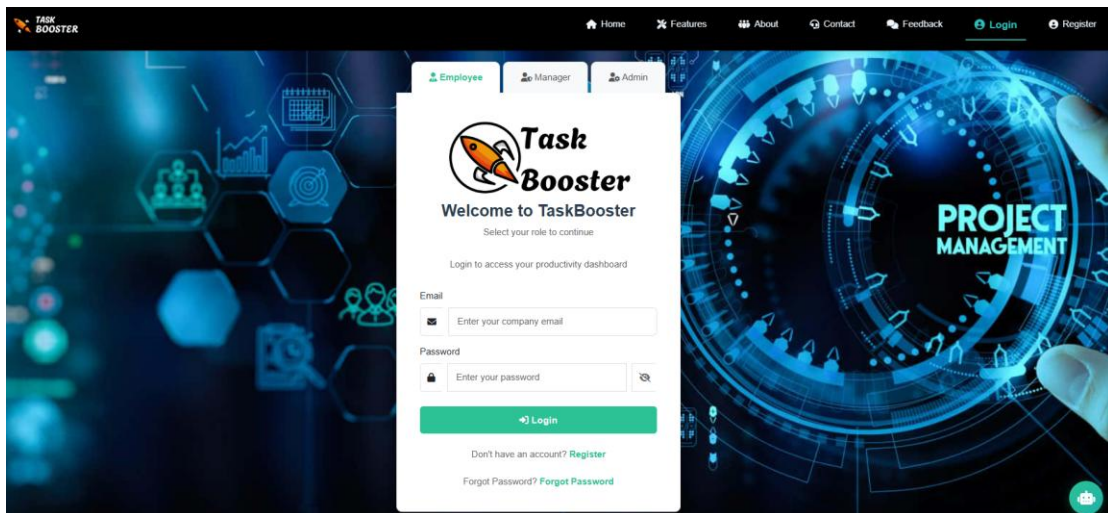
Figure 5.3.1.8 Login Page

Figure 5.3.1.8 is the Login Page of TaskBooster. Upon accessing the page, users are first prompted to select their role by choosing from Employee, Manager or Admin. After selecting their role, the system will ask users to enter their email and password to log in. If users do not have an account, they can click the Register link to create a new account. However, if users have forgotten their password, they can click the Forgot Password link to initiate the password recovery process. At the bottom right corner, there is an AI chatbot. Users can ask any inquiry in this AI chatbot as shown in Figure 5.3.1.10 below.
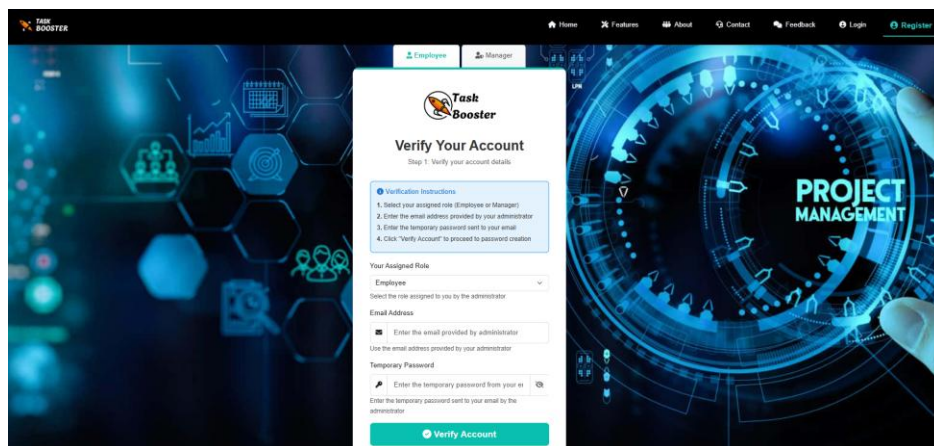
Figure 5.3.1.9 Register Page

Figure 5.3.1.9 above is the register page for new users. New users are required to select a role either employee or manager. After that, enter email address and temporary password. Finally, users can complete the verification process by clicking the Register button.
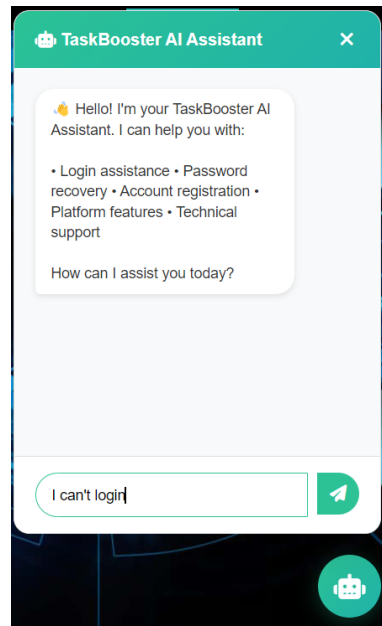
Figure 5.3.1.10 AI Chatbot

Figure 5.3.1.10 above presents the initial interaction screen of the TaskBooster AI Assistant. Through this AI-powered chatbot, users are able to ask any inquiries related about browsing or accessing the system. Upon initiation, the chatbot greets the user and provides a list of frequently asked questions, which typically include topics such as login assistance, password recovery, account registration, platform features, and technical support. For example, as shown in the image, the user ask about login issue.
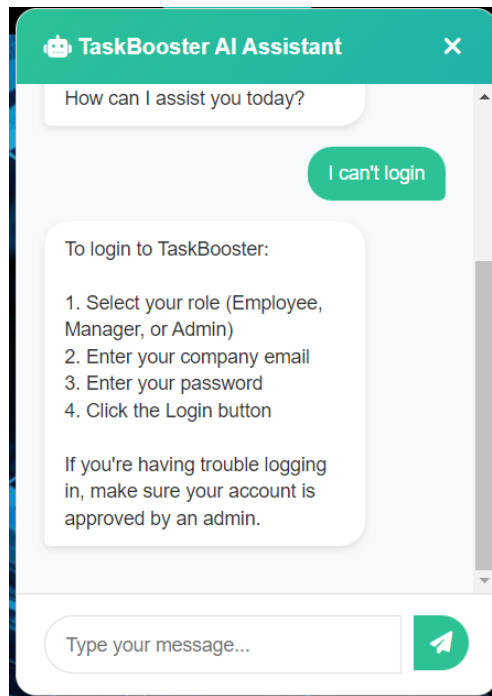
Figure 5.3.1.11 AI chatbot answer inquiry

Continuing from Figure 5.3.1.10, when a user asks a question related to login matters, the chatbot provides an appropriate response and guides the user through the necessary steps, as illustrated in Figure 5.3.1.11.
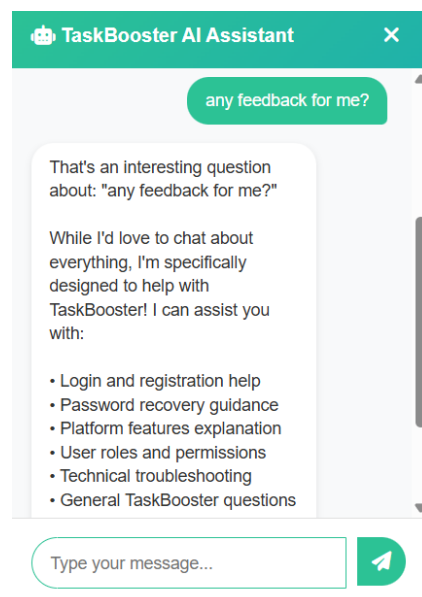
Figure 5.3.1.12 AI Chatbot Responding to Irrelevant Question

However, if a user asks a question that is irrelevant to the system, the AI chatbot will still provide a response, as shown in Figure 5.3.1.12

5.3.2 Register and Login Process

Figure 5.3.2.1 Create New User

As shown in Figure 5.3.2.1 above, for a new user, the admin is responsible for completing the registration process by entering all required personal details, including role, first name, last name, gender, phone number, date of birth, and email address. A temporary password will then be generated for the user. Once all details are verified and confirmed to be accurate, the admin clicks the 'Create User & Send Email' button to finalize the registration. Afterward, a verification email is automatically sent to the user's email account.
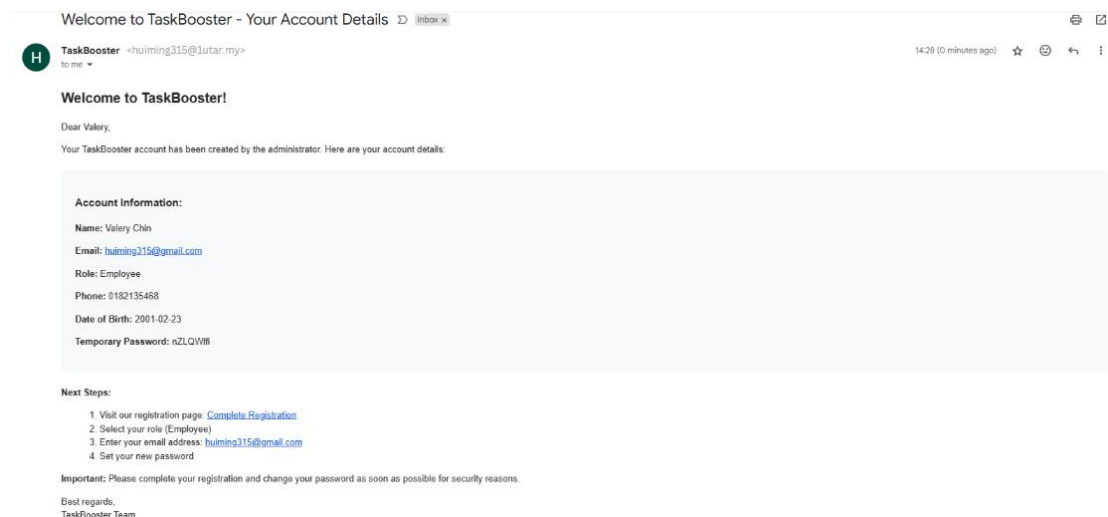
Figure 5.3.2.2 verification email

As shown in Figure 5.3.2.2, the new user receives a verification email containing the details registered by the admin, along with step-by-step guidance for completing the registration process.

Figure 5.3.2.3 Registration

As shown in Figure 5.3.2.3, the user navigates to the registration page to activate an account. The system prompts the user to select a role and enter their email address along with the temporary password for verification.

Figure 5.3.2.4 Set up new password
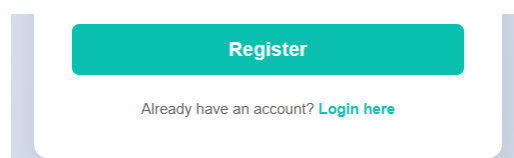
After successful verification, the user is prompted to set new password as shown in Figure 5.3.2.4 above. Once the 'Register' button is clicked, the process is completed and the system redirects the user to the login page

Figure 5.3.2.5 Login

On the login page, the user is prompted to select a role and enter their email address along with the newly created password. After clicking the 'Login' button, the system verifies the credentials and, if successful, directs the user to their respective dashboard.
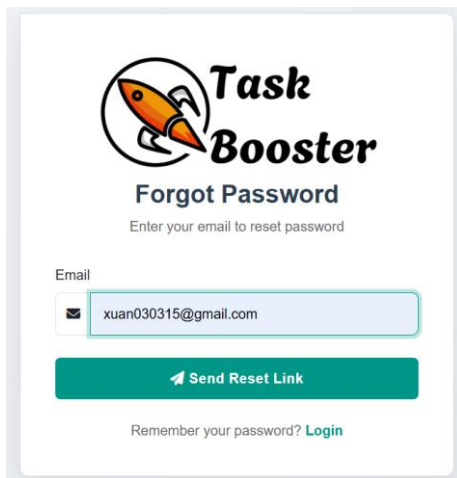
Figure 5.3.2.1 Register new user

To register as a new user, users must first select their role, either Employee or Manager. After choosing their role, they will be required to fill in their personal details, as shown in Figure 5.3.2.1 above. Next, click on the "Register" button. Once the register is successful, it will direct to Login Page and display a register successfully message as shown in Figure 5.3.2.2 below.

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5.3.3 Forgot Password and Reset Password
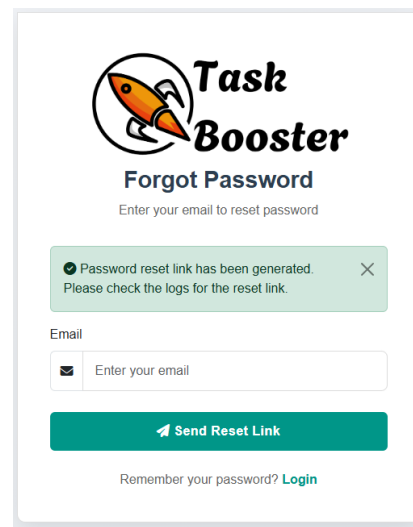
Figure 5.3.3.1 Enter Email

Figure 5.3.3.2 Email sent

Figure 5.3.3.3 Email received

Figure 5.3.3.4 Reset Password

Figure 5.3.3.1 above shows the Forgot Password page. The user will be prompted to enter their registered email. After clicking the "Send Reset Link" button, a success message will appear "Password reset link has been generated. Please check your logs for the reset link" as shown in Figure 5.3.3.2.

When the user checks their email, they will receive a message as shown in Figure 5.3.3.3 above. By clicking the "Reset Password" button, the system will redirect them to the Reset Password page, as shown in Figure 5.3.3.4 above. The user will need to enter their new password twice by ensuring it meets the following conditions such as at least 8 characters, contains a number, and includes a special character. Afterward, they can click the "Reset Password" button and the password will be successfully reset.

5.3.4 Employee Dashboard
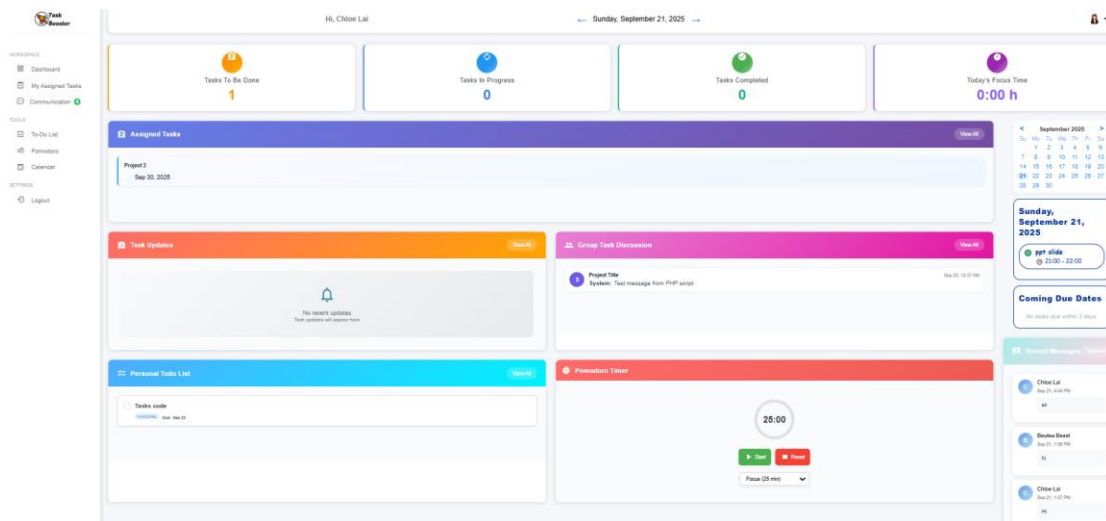
Figure 5.3.4.1 Employee Dashboard

Once the employee login successfully, the system will direct the employee to this dashboard as shown in Figure 5.3.4.1 above. The system will generate greeting messages with the first name and last name of the user with a personalized welcome message, such as "Hi, Chloe Lai". The top section of the dashboard displays the current date. A calendar widget on the right side enables users to navigate through the calendar to view events or tasks on that day, displays the events that have due date within three days and Recent Message presents messages received from private chats in the communication tab of the sidebar.

The central part of the dashboard shows key task metrics, including Tasks To Be Done, Tasks In Progress, Tasks Completed, and Total Focus Time. These metrics provide users with an overview of their productivity by showing the number of tasks in each category and tracking their total focus time in hours and minutes. Below the key task metrics, an Assigned Task summary showing tasks assigned by the manager, a Task Updates section listing all comments from the manager, a Group Task Discussion summary displaying the group chat related to tasks and a To-Do List summary outlining all tasks to be done or in progress for the day. Additionally, a Pomodoro Timer is provided to allow the employees to start the timer.

On the left side of the screen, the Workspace section provides navigation options for the user, including links to Dashboard, My Assigned Task, and Communication, which help employees to view assigned tasks and submit the assigned tasks as well as

communicate with others. Additionally, the Tools section offers access to the To-Do List, Pomodoro Timer, and Calendar for task management and time tracking. At the bottom, the Logout option is available for employees to sign out.

5.3.5 Manager Dashboard
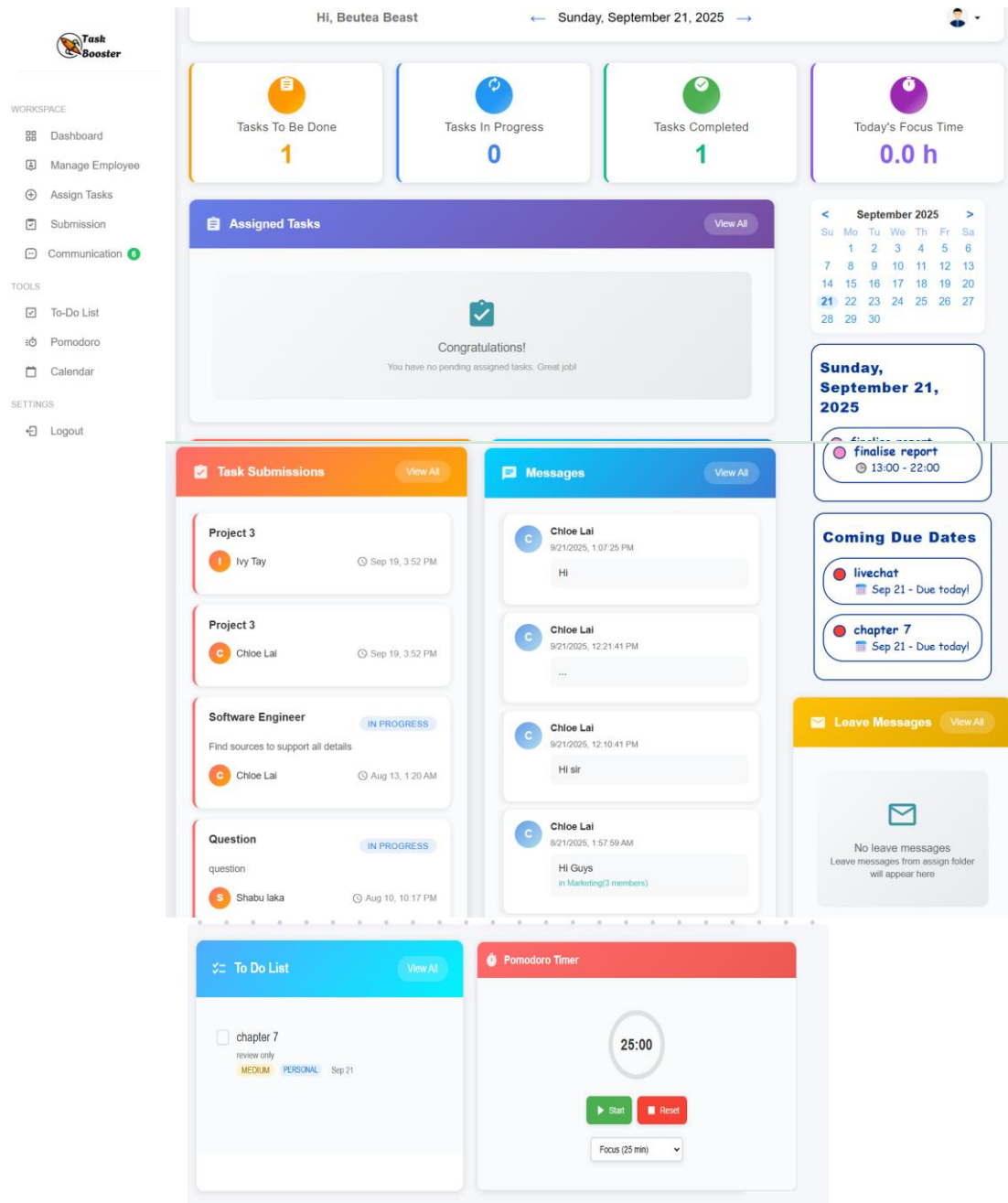
Figure 5.3.5.1 Manager Dashboard
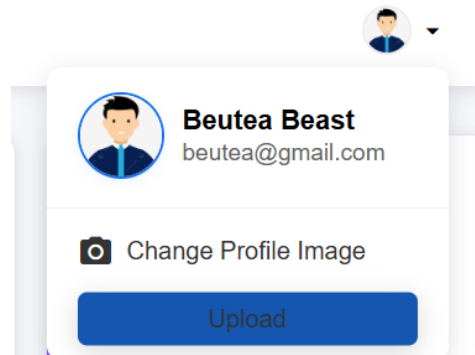
Figure 5.3.5.2 Profile

Once the manager login successfully, the system will direct the employee to this dashboard as shown in Figure 5.3.5.1. The system will generate greeting messages with first name and last name of the user with a personalized welcome message, such as "Hi, Beuty Beast". The top section of the dashboard displays today's date. On the right side, as shown in Figure 5.3.5.2, the user's profile is displayed along with their email address. The manager can update the profile picture by clicking the 'Upload' button and selecting a new image. A calendar widget on the right side allows users to navigate through the calendar to view events or tasks on that day, due date within three days and Leave Message that will display any updated message from the employee.

The central part of the dashboard shows key task metrics, including "Tasks To Be Done", "Tasks In Progress", "Tasks Completed" and "Total Focus Time". These metrics provide users with an overview of their productivity by showing the number of tasks in each category and tracking their total focus time in hours and minutes. Below the key task metrics, the system displays several summaries that are an Assigned Task summary showing tasks assigned to the employee, a Task Submission summary listing all submissions made by the employee, a Message summary presenting messages received from private chats in the communication tab of the sidebar, and a To-Do List summary outlining all tasks to be done or in progress for the day. Additionally, a Pomodoro Timer is provided to allow the employees to start the timer.

On the left side of the screen, the Workspace section provides navigation options for the user, including links to Dashboard, Manage User, Assign Task, Submission and Communication, which help users manage their tasks and communicate with others. Additionally, the Tools section offers access to the To-Do List, Pomodoro Timer, and

Calendar for task management and time tracking. At the bottom, the Logout option is available for the manager to sign out.

The manager dashboard includes an additional workspace section with features such as "Manager User", "Assign Tasks" and "View Submission" for better task management and user oversight.

Figure 5.3.5.3 Employee Management

Figure 5.3.5.4 Details of selected Employee

Figure 5.3.5.3 shows the list of employees in the system, which managers can view for reference. This feature makes task allocation easier, as managers may sometimes forget which employees are available. By navigating to the 'Manage Employee' tab from the sidebar, managers are directed to the employee management page. When the view icon button is clicked, a pop-up card appears displaying the selected employee's details, including Name, Email, Gender, and Joined Date, as illustrated in Figure 5.3.5.4. above.

5.3.6 Features

In the proposed system, several features have been successfully implemented. The first feature, as illustrated in Figure 5.3.6.1 below, is introduced in this system.
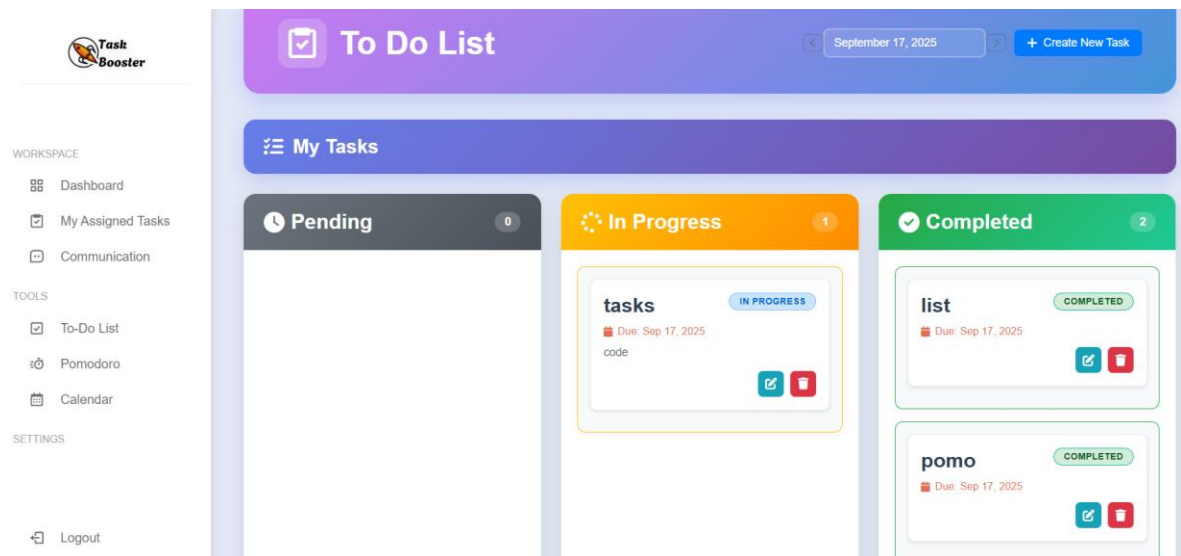
Figure 5.3.6.1 To Do List Page

This page is To-Do List page of TaskBooster. Upon accessing the page, the system will automatically display today's date, making it easier for users to track tasks for the current day. The page allows users to create new tasks using the "Create New Task" button located at the top right of the screen. Tasks are then organized and displayed in three categories which are Pending Tasks, In Progress, and Completed.

Each task is displayed with its title and status, providing users with an overview of their task progress. For example, the task "tasks" is shown in Figure 5.3.6.1 above in position under the In Progress category, with its due date and description of the task.

Figure 5.3.6.2 Edit Task

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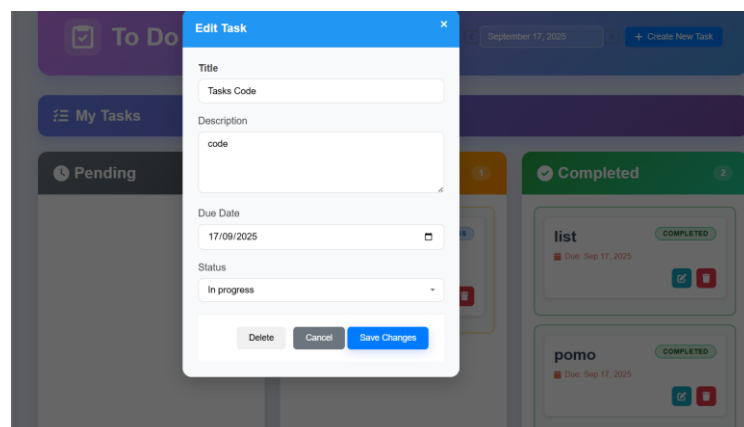
The Figure 5.3.6.1.2 above represents the Edit Task modal that appears when a user clicks the edit icon on a task on the To-Do List page. The modal allows users to modify the details of an existing task. It includes fields such as Title, Description, Due Date, and Status of the task.

In this example, the task titled "Tasks Code" has a description of "code" and its status is currently set to In Progress. The user can update the Due Date and change the Status to any other relevant category such as Pending or Completed. Once the changes are made, the user can either Save Changes to update the task, Cancel to exit without saving, or Delete the task entirely. When user clicked on the Save button, the modification will be updated as shown in Figure 5.3.6.3 below.
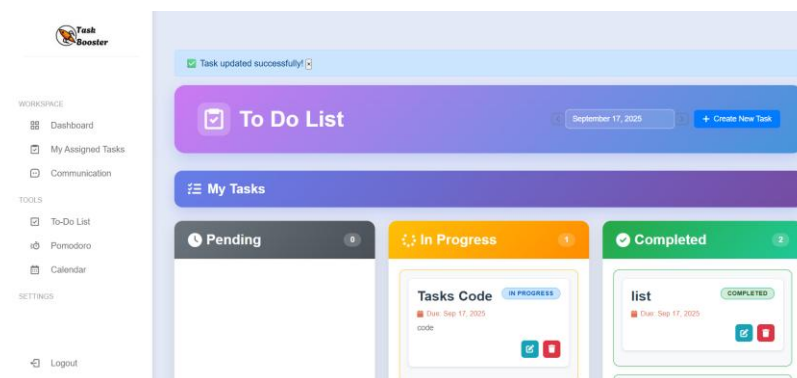
Figure 5.3.6.3 Updated Task

If any modifications are made, the system will display the message "Task updated successfully" as shown in Figure 5.3.6.3 above.

Secondly, the proposed system introduces a Pomodoro Timer feature integrated with an analysis graph as shown in Figure 5.3.6.4 below.
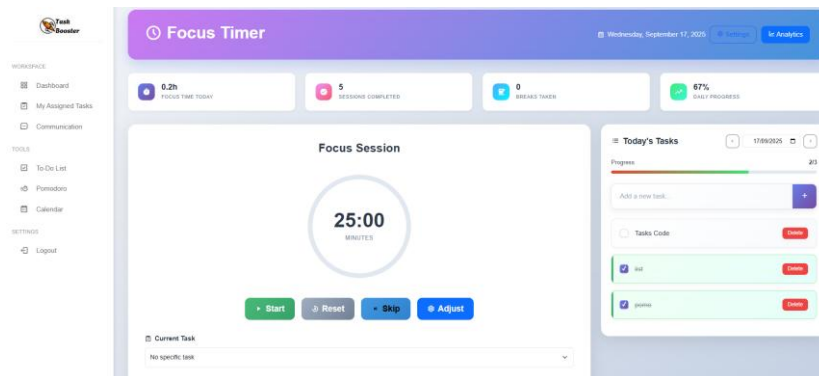
Figure 5.3.6.4 Pomodoro Timer

Figure 5.3.6.4 represents two main sections of the Pomodoro Timer and To-Do List that are designed to help users stay focused and organized. On top provides useful statistics, including total focus time for the day, number of sessions completed, breaks taken, and overall daily progress in percentage.

On the left, the Pomodoro Focus Timer allows users to manage their work in structured intervals, with a default setting of 25:00 minutes per session. Users can start the timer by clicking the 'Start' button, and they also have options to pause, reset, or adjust the time according to their preferences. In addition, short and long break options are available to support effective time management.

On the right, the To-Do List displays the current date and provides users with the ability to add, track, and manage tasks efficiently. New tasks can be added by typing in the task field and clicking the '+' button, while completed tasks can be marked off. A progress bar at the top of the list visually represents the completion status, enabling users to monitor their daily achievements easily.
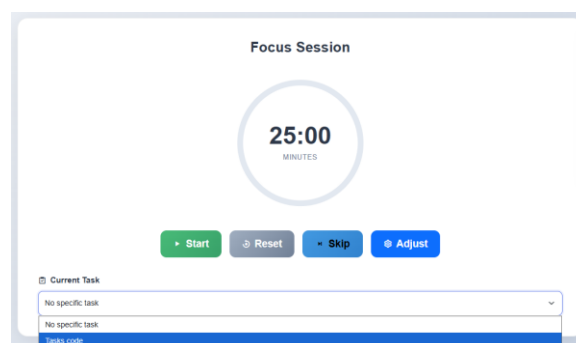
Figure 5.3.6.5 Specific Task

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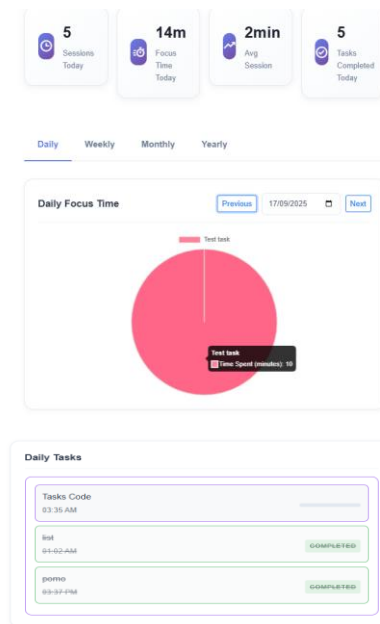
Figure 5.3.6.6 Daily Analytics View

By clicking the 'Analytics' button located in the header section, users can view analytics charts that display their progress on a daily, weekly, monthly, or yearly basis. At the top, four summary cards are displayed to show key information which are sessions for the day, focus time for the day, average session duration, and tasks completed today. These four cards will update dynamically when switching between daily, weekly, monthly, and yearly views. As shown in Figure 5.3.6.6, a daily pie chart is presented to illustrate task distribution. This chart only includes tasks for which the timer was started and linked to a specific task, as demonstrated in Figure 5.3.6.5. When the cursor hovers over a section of the pie chart, the system displays the total time spent on that task, providing users with a clear visualization of how their time is allocated.
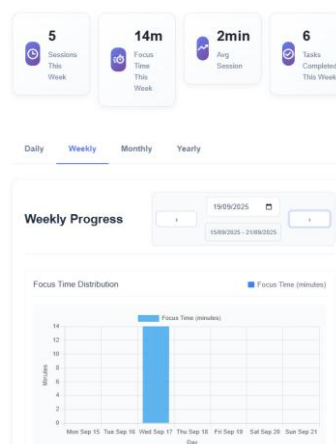
Figure 5.3.6.7 Weekly Analytics View

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Figure 5.3.6.7 illustrates the analytics displayed in the weekly view, represented using a histogram graph.
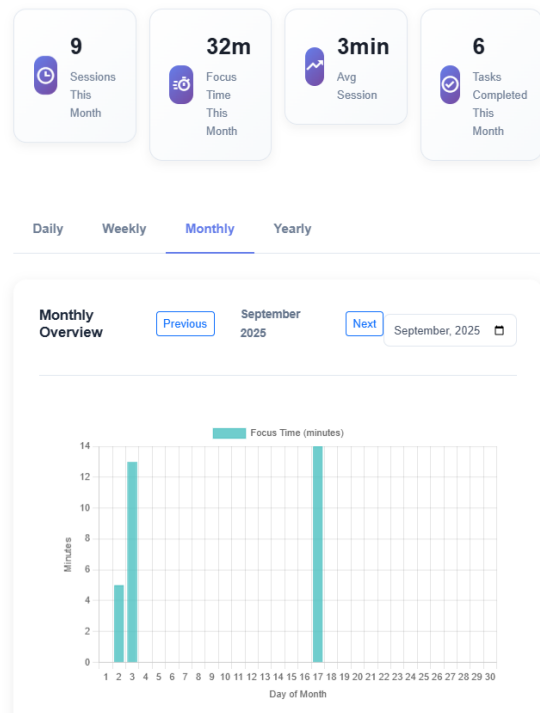
Figure 5.3.6.8 Monthly Analytics View

Figure 5.3.6.8 illustrates the analytics displayed in the weekly view, represented using histogram graph.
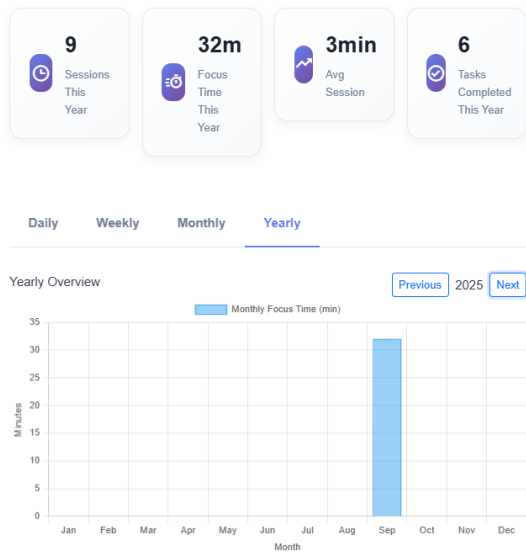
Figure 5.3.6.9 Yearly Analytics View

Figure 5.3.6.9 illustrates the analytics displayed in the yearly view, represented using histogram graph.

Thirdly, the proposed system introduces a calendar view feature that allows users to enter important event dates by helping them avoid forgetting crucial activities.
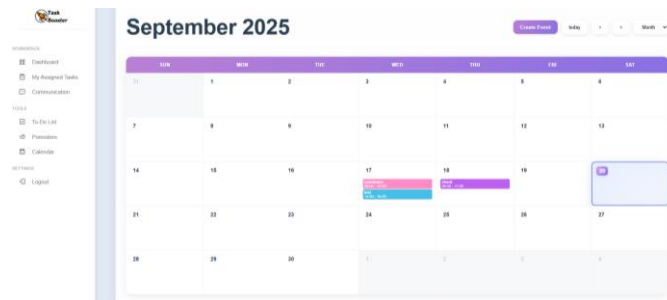
Figure 5.3.6.10 Month View

Figure 5.3.6.10 shows the Calendar page of TaskBooster. The calendar displays the current month, September 2025 and provides an overview of the month's events. Users can add events by clicking on any date and the event will be displayed in the calendar with details such as the event name and time. The calendar has a dropdown option that allows users to switch between different views such as the month, week or day view. This option offers flexibility to see user's events in the format that best suits their needs. Users can also click the Create Event button to add new events to the calendar
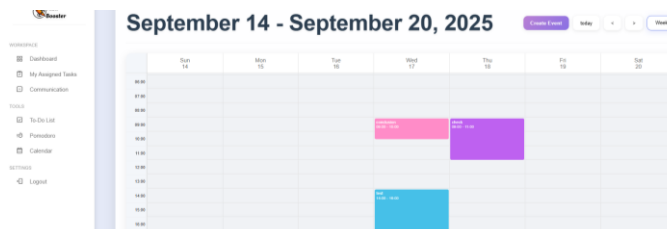
Figure 5.3.6.11 Week View

The calendar can be switched to week view as shown in Figure 5.3.6.11.
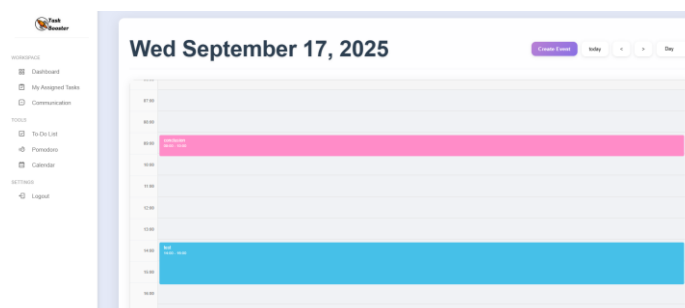
Figure 5.3.6.12 Day View

The calendar can be displayed in day view as shown in Figure 5.3.6.12.

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Fourthly, the proposed system introduces a communication feature that enables users to engage in private chats as shown in the figure 5.3.6.13 below.
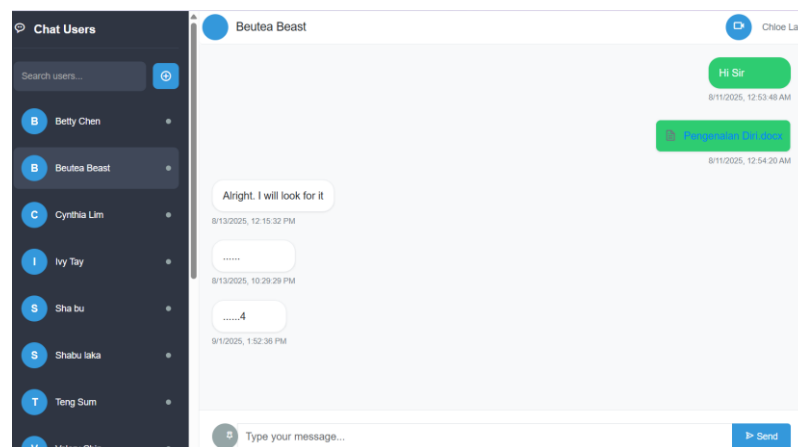
Figure 5.3.6.13 Communication feature

Figure 5.3.6.13 above shows the communication feature, which can be accessed from the Communication tab in the sidebar. This feature allows users to stay connected within the system by sending and receiving messages with one another. It provides a simple and convenient way for users to communicate directly, making collaboration and information sharing more efficient. By clicking the pin button, users can also upload documents to share. As shown in Figure 5.3.6.13, the file 'Pengenalan Diri.docx' was successfully uploaded, demonstrating the functionality of this feature.
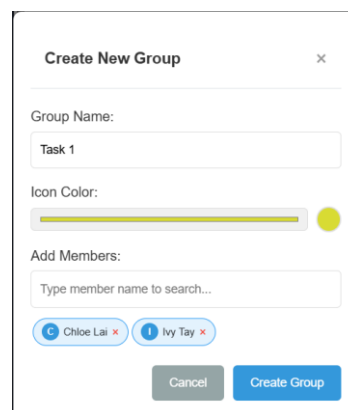
Figure 5.3.6.14 Group Creation

By clicking the add button located beside the search bar in Figure 5.3.6.14, a 'Create New Group' modal form appears, allowing users to easily create groups for discussion. This feature also supports file uploads for convenient sharing, enabling users to share documents with the entire group at once instead of sending them individually to each user.

Fifthly, as shown in Figure 5.3.6.15 below, the proposed system introduces a task allocation feature, where managers can assign tasks to employees. Once completed, employees can submit their work, and managers are able to take further action such as approving or rejecting the submission.
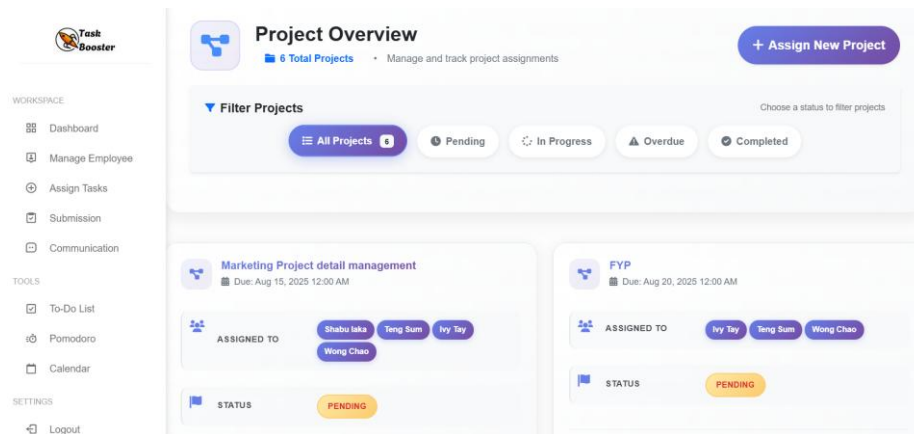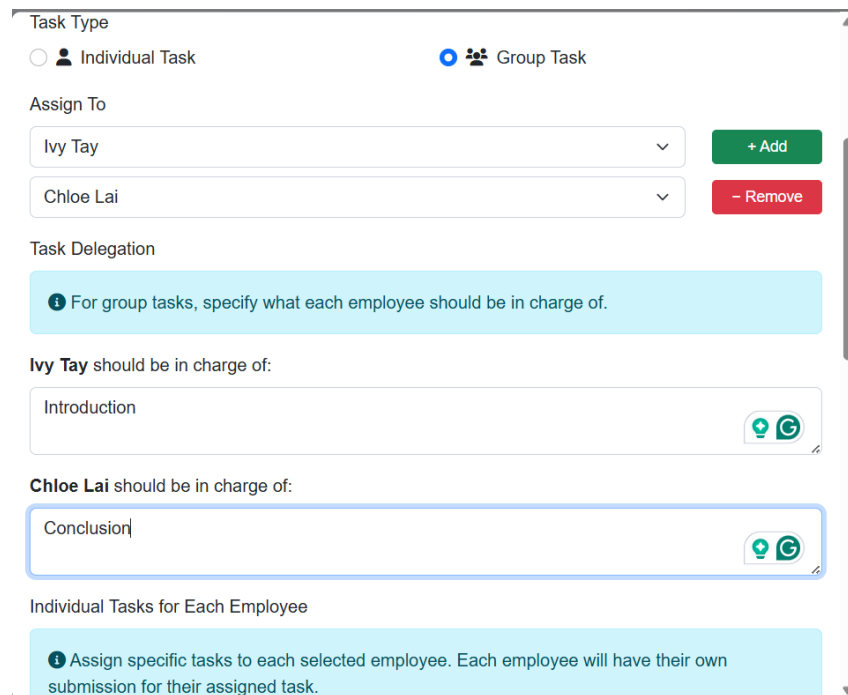
Figure 5.3.6.15 Project Overview

Figure 5.3.6.15 illustrates the Project Overview from manager dashboard, which is accessed by a manager when they select the "Assign Task" tab from the sidebar navigation. This central hub provides a comprehensive overview of all currently assigned tasks, allowing the manager to monitor their status and progress. Furthermore, the interface is designed for active task management, featuring the functionality to add new tasks and assign them to specific team members directly from this page, thereby streamlining the project delegation process.

Figure 5.3.6.16 Task Delegation
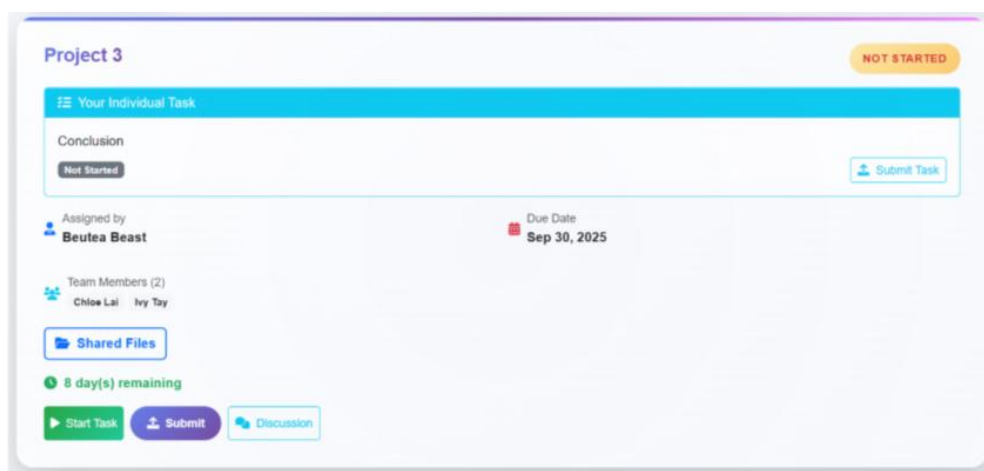
Figure 5.3.6.17 Task Delegation (employee)

When clicked on the "Assign New Project" button, a modal of Assign New Project will display as shown in Figure 5.3.6.16. Within this modal, the manager can define the new task by entering key details including a title, detailed instructions, a due date, and due time. The interface also provides a list of available employees, enabling the manager to select the specific individual or team responsible for the project. As shown in Figure 5.3.6.17, each employee can be assigned a unique and specific task within the broader project. To ensure the assignee has all necessary resources, the manager has the option to upload supporting documents for reference or additional guidance.

Figure 5.3.6.18 Task Delegation (group task)

Figure 5.3.6.19 Start task

As shown in Figure 5.3.6.18 above, any task assigned by the manager will automatically appear on the employee's dashboard under the My Assigned Tasks tab. This section provides a clear and detailed overview of the employee's responsibilities, including the task title, full instructions, and their specific assignment. For group tasks, additional features such as a Shared Files area and a Discussion area are provided to support collaboration. By default, each task will be marked with the status "Not Started". A Start button is available for the employee to update the task status to "In Progress". Once the button is clicked, it will disappear, and the status will automatically update to "In Progress", as shown in Figure 5.3.6.19 above.
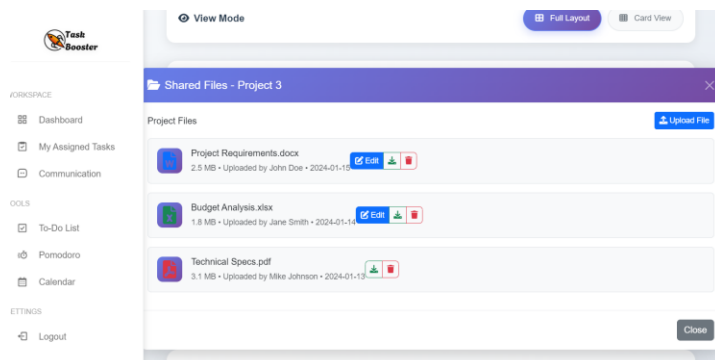
Figure 5.3.6.20 Shared File

Figure 5.3.6.20 above shows the Shared File modal, where users can upload files that are accessible to all group members by ensuring that the important documents and resources can be shared to the other members.

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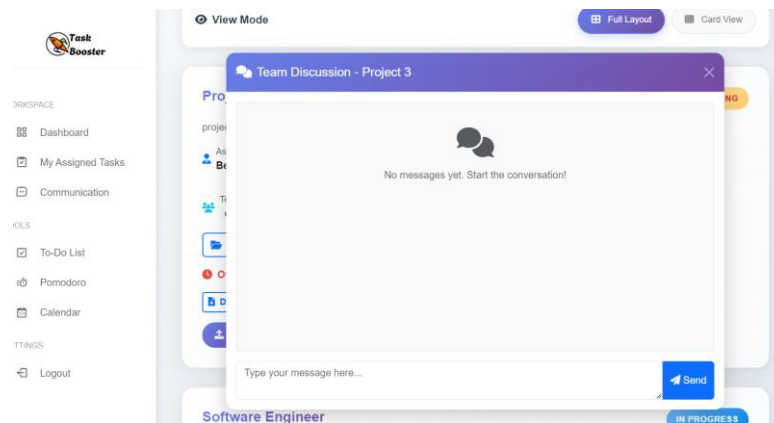
Figure 5.3.6.21 Group Discussion

Figure 5.3.6.21 illustrates the Group Discussion modal, where assigned employees can engage in discussions, while managers have the ability to view the chat to monitor ongoing conversations.
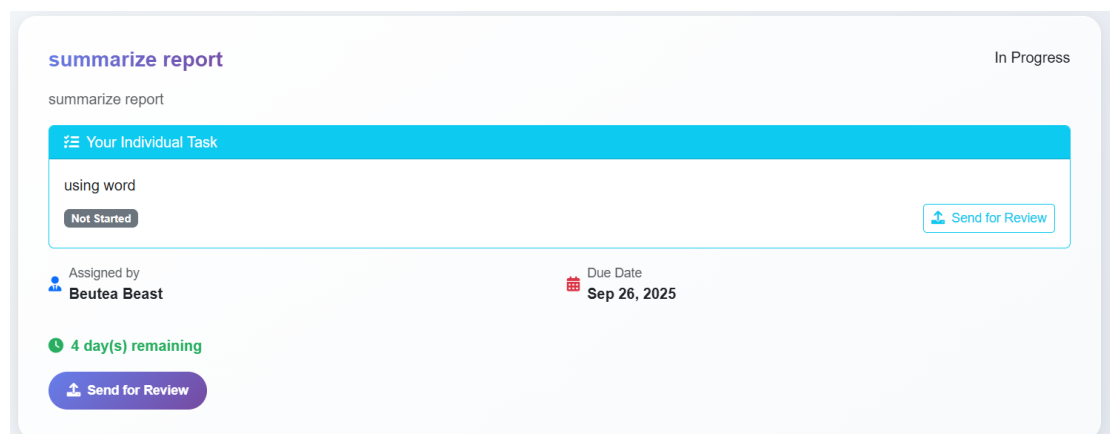
Figure 5.3.6.22 Task Delegation (individual)

Individual task delegation differs slightly from group task delegation, as it does not include the Shared Files or Discussion area as shown in Figure 5.3.6.22 above.
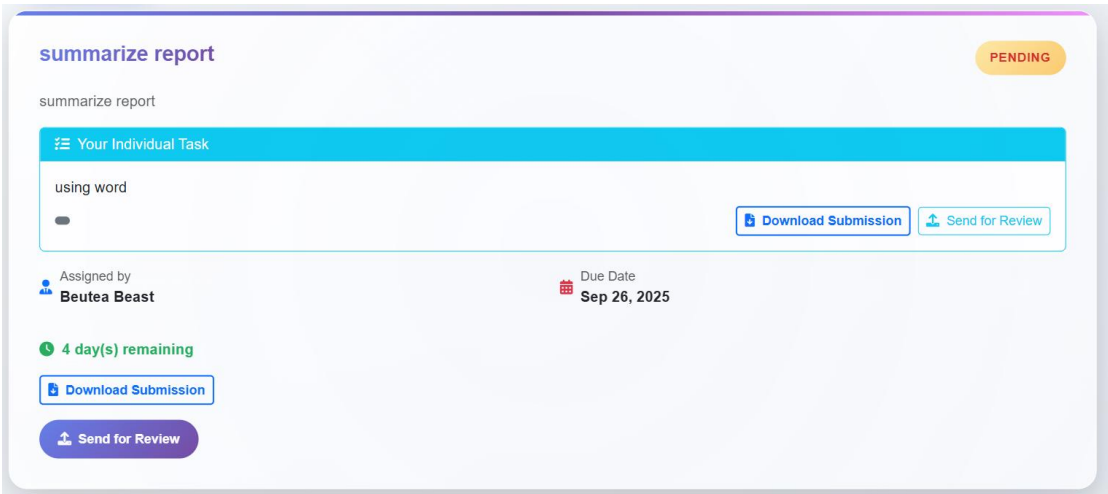
Figure 5.3.6.23 Submission Task

Figure 5.3.6.23 above demonstrates the employee submission process. Once the user uploads a submission file, the system will display it as Download Submission to confirm that the file has been successfully uploaded. In addition, the task status will automatically change from In Progress to Pending.
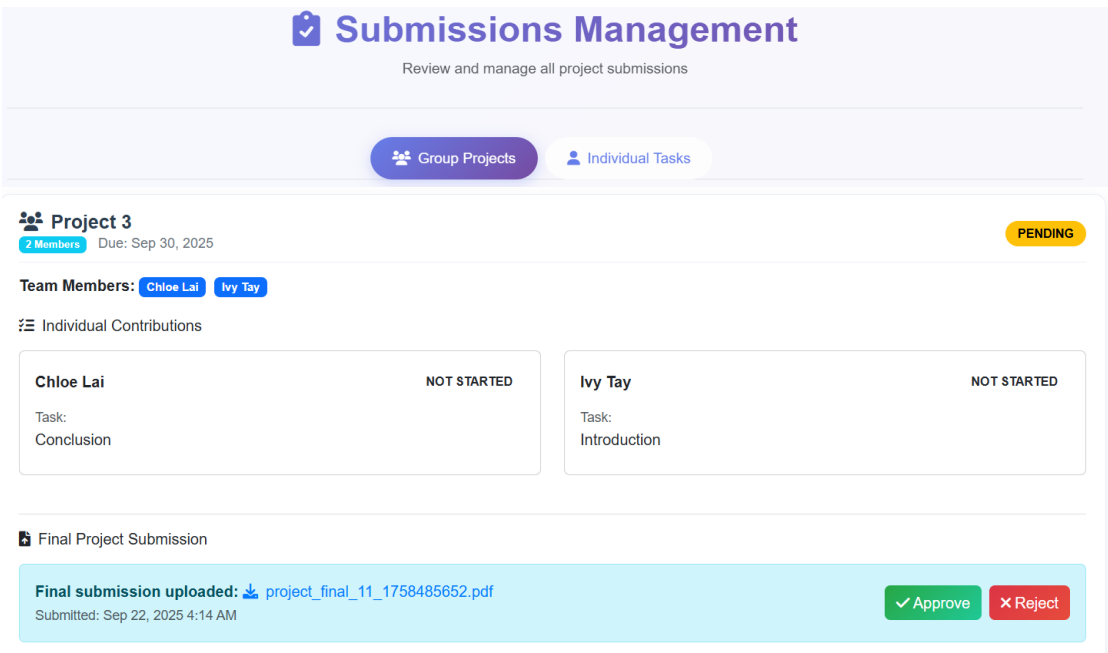
Figure 5.3.6.24 Submission

Figure 5.3.6.24 above illustrates the submission page from the manager's dashboard. When employees submit a task, its status is marked as 'Pending,' awaiting the manager's approval or rejection.

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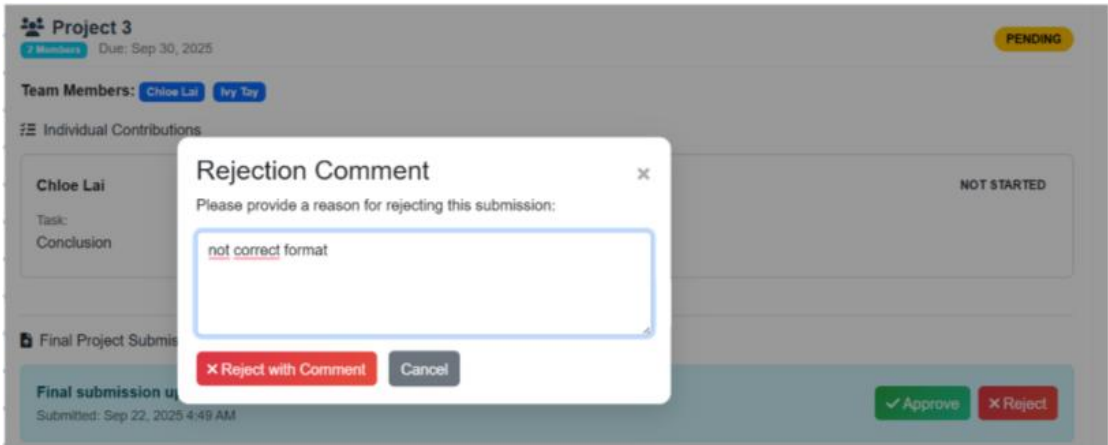
Figure 5.3.6.25 Reject Submission

If the manager rejects a submission, they must provide a comment explaining the reason, so that the employee understands why their submission was rejected as shown in Figure 5.3.6.25 above.
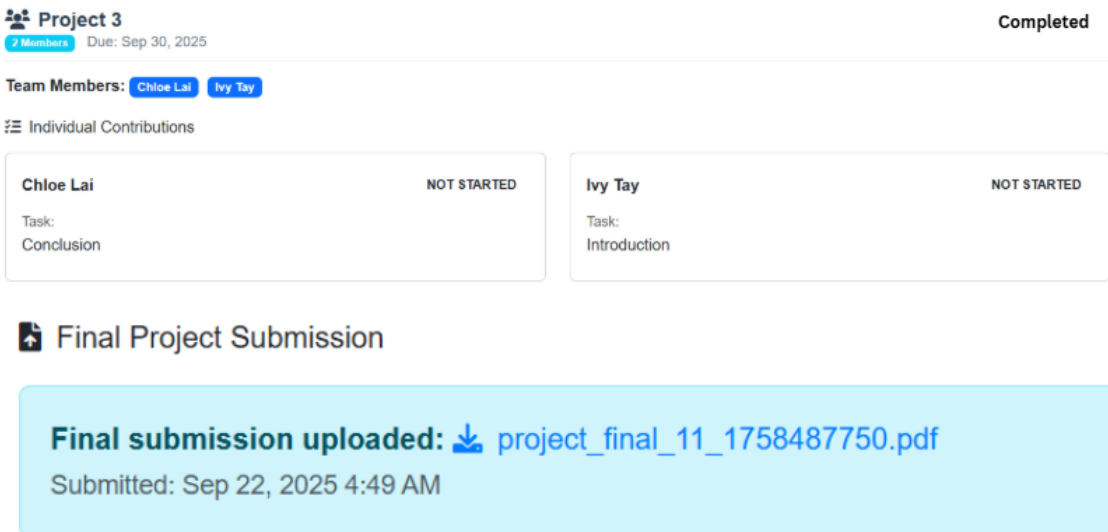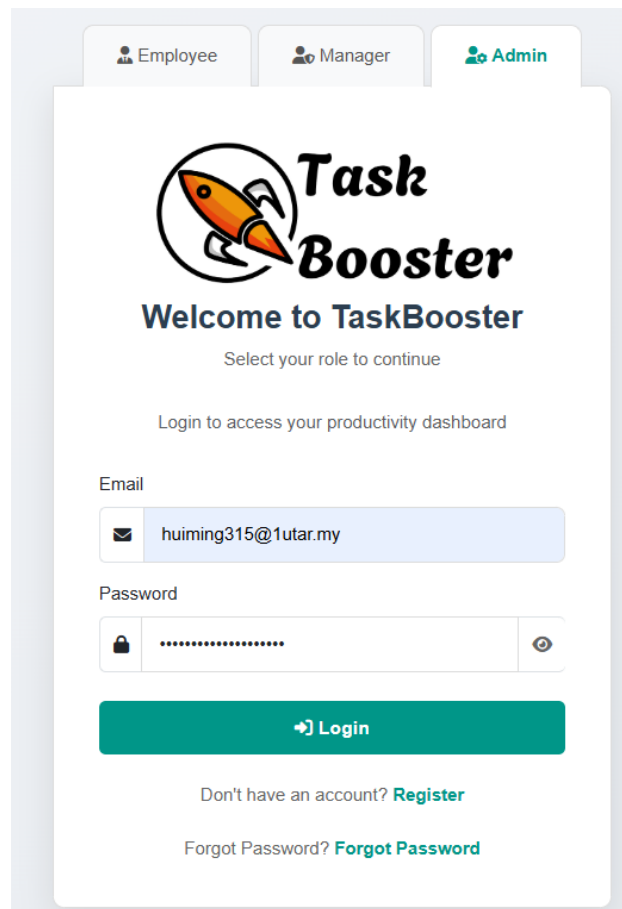
Figure 5.3.6.26 Approve Submission

If the manager approves a submission, the status of the task will update to "Completed" as shown in Figure 5.3.6.26 above.

5.3.7 Admin Dashboard

Figure 5.3.7.1 Admin Login

The admin can log in by selecting the "Admin" role to access the admin dashboard.

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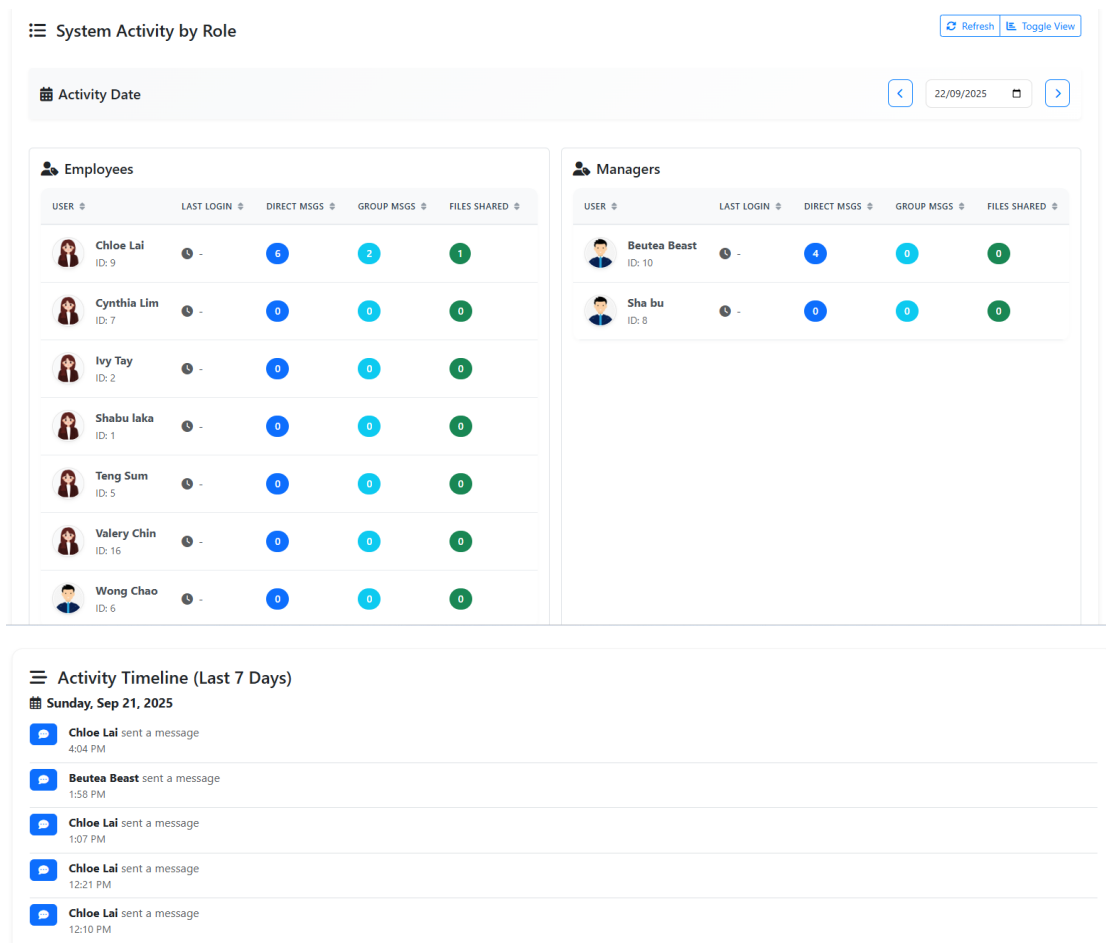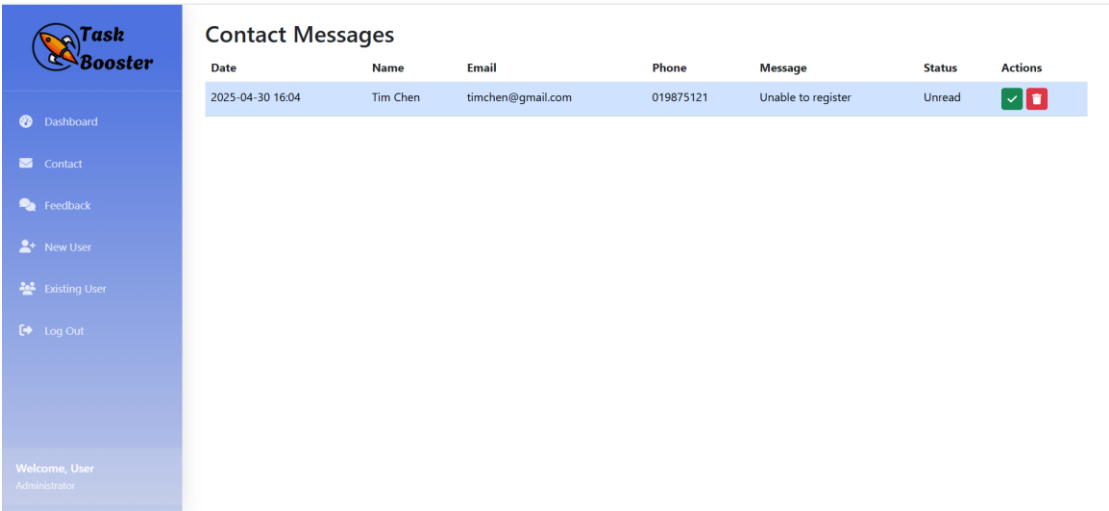Faculty of Information and Communication Technology (Kampar Campus), UTAR

Figure 5.3.7.2 Admin Dashboard

This is the admin dashboard. As an admin, admin can view a summary of active users, pending users, total feedback and unread messages. Active users refer to users who have successfully registered in the system, while pending users are new users awaiting approval. Total feedback displays the feedback received from users, and unread messages represent messages sent by users that typically contain inquiries or requests.
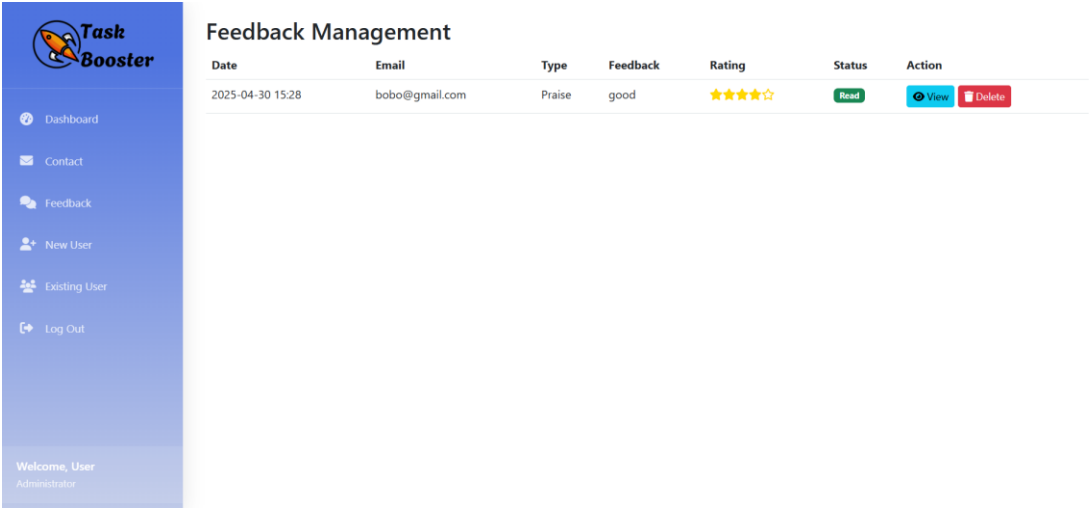
Below these metrics, the dashboard shows recently registered users, received feedback, System Activity by Role and Activity Timeline. The recent registrations section displays the details of users who have successfully logged in, while the feedback section shows the feedback provided by users which included the type of feedback and rating. In addition, the system provides an Activity by Role feature that displays detailed records of actions performed by users. Within the Activity Timeline, all user activities and actions can be viewed clearly.

Figure 5.3.7.3 Contact Message Page

The Contact Messages page gathers all the inquiries submitted by users. Each message is displayed with details such as the date, name, email, phone number, message content and status. If the admin has read a message, they can mark it as read by ticking the checkbox, which will automatically update the status. Admin also can delete the inquiries if the inquiries are not relevant.

Figure 5.3.7.3 Feedback Management Page

This Figure 5.3.7.3 above represents the Feedback Management page. This page displays the feedback collected from the feedback form submitted by users. Each feedback entry includes the date, email, type of feedback, the feedback content, rating, and the status of the feedback. The Status column shows whether the feedback has been

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marked as "Read" or "Unread". The Action column provides two options for the admin which are View and Delete. The View button allows the admin to update the status from "Unread" to "Read" status, while the Delete button allows the admin to remove the feedback from the system.

Figure 5.3.7.4 Register New User

This Figure 5.3.7.4 above shows the New User Request page. When a new user registers, their details are sent to the admin for approval. In this case, the user's information, such as Name, Email, Role, Gender, Phone, Date of Birth, and Registration Date were displayed. The admin can take action by either Approving or Rejecting the registration request.
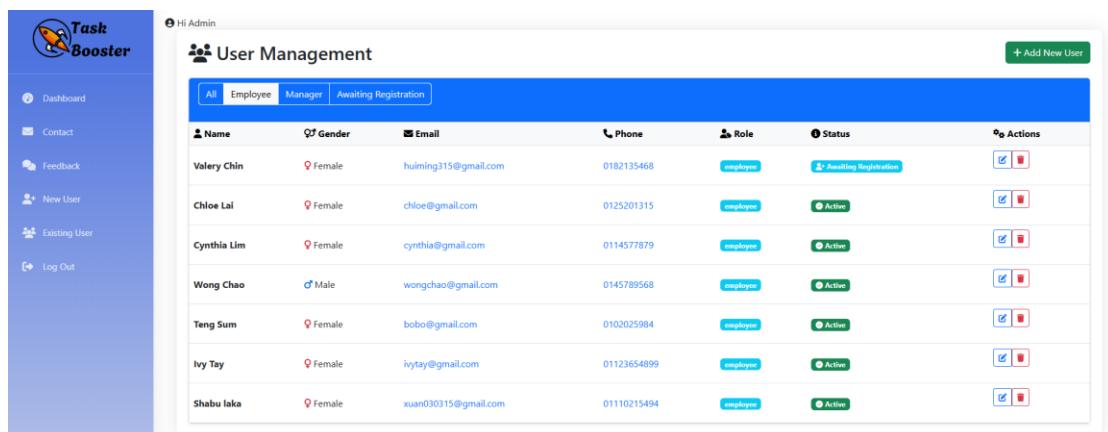
If the admin clicks Approve, the user will be granted access to their dashboard and will be able to log in. However, if the admin clicks Reject, the user will not be able to log in or access the system. This process ensures that only approved users are allowed to use TaskBooster, while unapproved users are denied to access.

Figure 5.3.7.5 All member List

Figure 5.3.7.6 Employee List

Figure 5.3.7.7 Manager List

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Figure 5.3.7.8 Awaiting Registration List

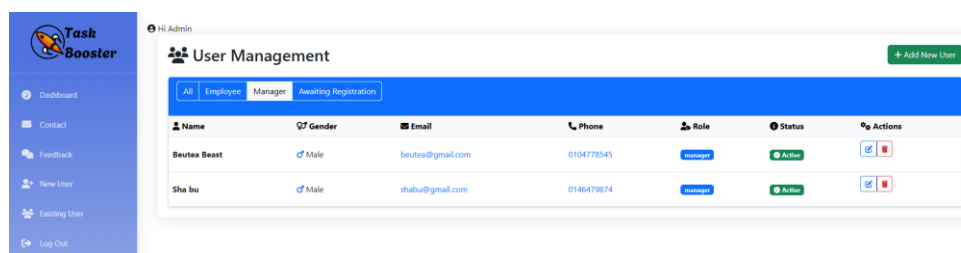The Existing Users page in TaskBooster allows admin to manage registered users with the option to view users based on their role. The page is divided into four categories which are All, Employee, Manager, and Awaiting Registration. By selecting the "All" tab, every registered user will display in the system, including both employees and managers as shown in Figure 5.3.7.5.

In the Employee tab, the admin can view all users with the Employee role as shown in Figure 5.3.7.6 above, displaying key information such as First Name, Last Name, Email, Phone, Role, Status and Action. Similarly, selecting the Manager tab will show users with the Manager role as shown in Figure 5.3.7.7, and the All tab will display every user in the system, including both employees and managers as shown in Figure 5.3.7.5. For the last tab, Awaiting Registration as shown in Figure 5.3.7.8 above will display the users who have received the verification email but haven't done the registration process.

Each user entry includes Edit and Delete actions. The Edit button allows the admin to update the details of the users while the Delete button allows the admin to remove the user from the system. If any updates are made, a success message "User updated successfully" is displayed at the top to show confirmation that the changes have been saved.

5.3.8 Error Handling

Figure 5.3.8.1 Register Error
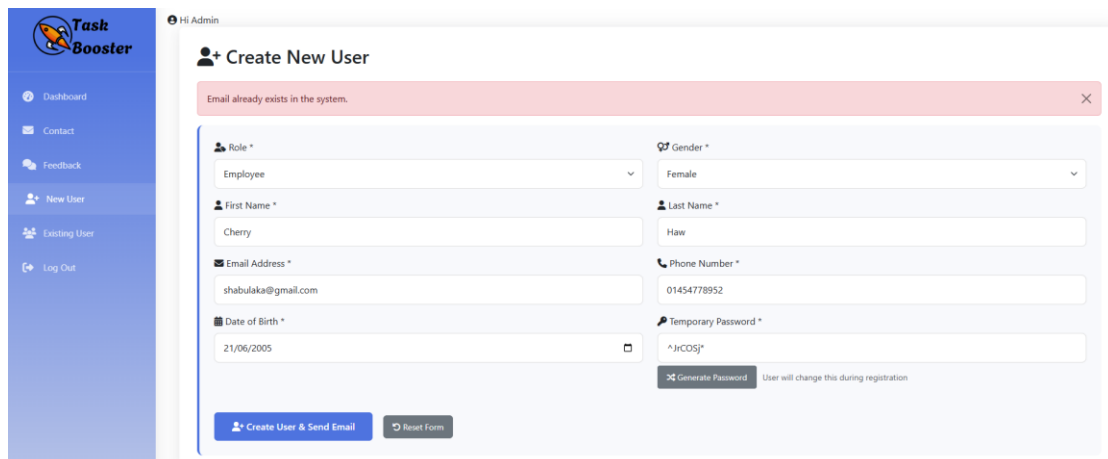
As shown in Figure 5.3.8.1, if a new user attempts to verify an account using an unregistered email, the system will display an alert message "Email not found or not authorized for registration. Please contact your administrator".

Figure 5.3.8.2 Login Error

If a user enters an incorrect email or password, it will displayed an error message as shown in Figure 5.3.8.2 above.

Figure 5.3.8.3 Duplicate Email Registration by Admin

As shown in Figure 5.3.8.3, when a duplicate email is registered, the system displays an error message to notify the admin that the email already exists.

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Figure 5.3.8.4 Not match Password

When users set up their password, if the 'New Password' and 'Confirm New Password' fields do not match, the system will display the message 'Passwords do not match', as shown in Figure 5.3.8.4.

5.4 Implementation Issues and Challenges

The development of TaskBooster which is web-based productivity and collaboration task management system presented several technical challenges, especially during the initial setup and configuration stages. One of the most frustrating issues involved XAMPP, where MySQL frequently failed to start due to connection errors. This often requires reinstalling XAMPP multiple times. This will significantly slow down the development process. As a result, the database tables had to be backed up before shutting down the computer, as connection errors could occur at any time. If the backup process is forgotten and MySQL is not functioning, requiring a reinstallation, it will be necessary to recreate the database tables. This process consumes valuable time and effort, as the system must be rebuilt from scratch, leading to delay in development process.

Furthermore, another major issue during the development process was the connection of foreign keys. At times, tables could not be linked properly through foreign keys, leading to errors. As a result, extra time had to spend on identifying and correcting issues related to both primary and foreign key constraints. These problems often cause repeated errors, making it necessary to repeatedly revisit, reanalyze table structures, and modify queries to ensure proper relational integrity.

The next challenge is setting up the functionality for the forgot and reset password features. The most difficult aspect is that emails are sometimes unable to be sent due to security issues and mail server configurations. This requires significant time and effort to troubleshoot and resolve bugs, particularly in ensuring that the email system is properly configured to send reset links and notifications. Identifying and fixing these issues often involves thorough testing and adjustments to the email service settings, security protocols, and server configurations to ensure smooth functionality.

In addition to backend issues, there were also problems related to frontend styling. Specifically, CSS styles would sometimes fail to apply in PHP files, even though the code was written correctly. This was often due to incorrect file paths or linking issues between the HTML structure and the CSS files. As a result, additional time had to be spent troubleshooting these issues by testing different path formats to ensure that the CSS files were properly loaded. These challenges highlighted the importance of attention to detail and thorough testing in every phase of development.

Last but not least, even after changes have been made within the system, the updates are not immediately visible to the developer. In order for the modifications to be detected, it is sometimes necessary to switch to another account before the changes are properly reflected. This limitation may cause the developer to mistakenly assume that the system has not been modified correctly. In reality, the changes may already be implemented, but since they are not displayed, the developer may continue troubleshooting and making additional modifications unnecessarily. This not only consumes more time but may also result in unintended errors or complications, ultimately making the system worse instead of improving it.
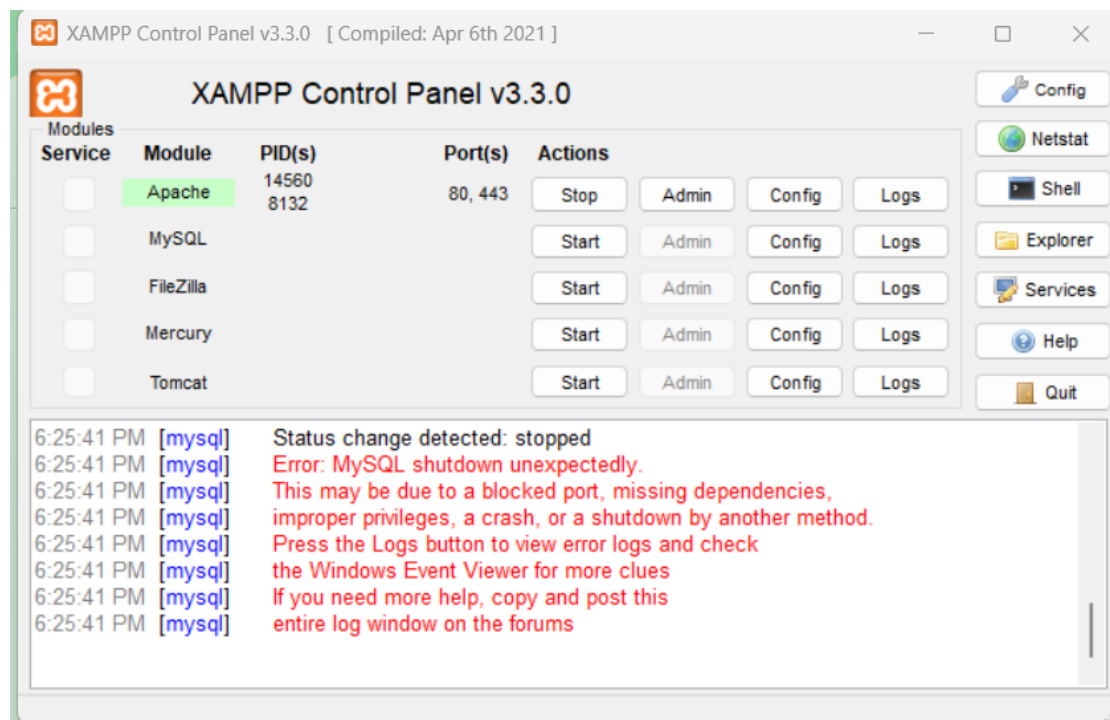
Figure 5.4.1 Problem of XAMPP

Chapter 6: Systems Evaluation and Discussion

Chapter 6 consists of the testing setup and test results for the employee perspective, manager perspective and admin perspective. This chapter also consists of the challenges when performing testing and objective evaluation.

6.1 Testing Setup and Test Result

6.1.1 Employee Site

No	Test Action	Test Result	Status
1	Register with a valid email assigned by admin	Employee is able to set their own password and complete registration	PASS
2	Register with an already registered email	Registration fails and an alert message is displayed	PASS
3	Login with correct credentials	Login is successful and the user is redirected to their dashboard	PASS
4	Login with incorrect credentials	Login fails and an alert message is displayed	PASS
5	Reset password with a registered email	The employee is directed to the "Forgot Password" page and prompted to enter their registered email for verification. Once the email is successfully verified, the system redirects the user to the "Reset Password" page, where they are prompted to create and confirm a new password.	PASS
6	Reset Password with unregistered email	System rejects the request and displays an error message indicating the email is not registered	PASS
7	Change profile photo	Employee is able to upload a new profile photo, and the updated photo is displayed in their account	PASS
8	View task assigned by manager	System displays a list of tasks assigned by the manager with details such as description, instruction, due date and status	PASS

CHAPTER 6

9	Submit task assigned by manager	Employee uploads or marks the task as complete, and the submission is recorded in the system	PASS
10	Update task status	Employee can update the task status to notify the manager who had noticed the assigned task	PASS
11	Communicate with other users in the system	Employee can send and receive messages within the system's communication module	PASS
12	Create a personal to-do list	Employee is able to add, edit, and delete to-do items, and the list is saved in their account	PASS
13	Use Pomodoro timer	Employee can start, pause, and reset the timer, and the system tracks focused work sessions	PASS
14	Add due dates to calendar	Employee can enter due dates for tasks/events, and the calendar displays them accordingly	PASS
15	Dashboard	Employee can view the dashboard	PASS
156	Log out	Employee session ends and the system redirects to the login page	PASS

Table 6.1.1.1: Employee Testing

6.1.2 Manager Site

No	Test Action	Test Result	Status
1	Register with a valid email assigned by admin	Manager is able to set their own password and complete registration	PASS
2	Register with an already registered email	Registration fails and an alert message is displayed	PASS
3	Login with correct credentials	Login is successful and the user is redirected to their dashboard	PASS
4	Login with incorrect credentials	Login fails and an alert message is displayed	PASS
5	Reset password with a registered email	The manager is directed to the "Forgot Password" page and prompted to enter	PASS

		their registered email for verification. Once the email is successfully verified, the system redirects the user to the "Reset Password" page, where they are prompted to create and confirm a new password.	
6	Reset Password with unregistered email	System rejects the request and displays an error message indicating the email is not registered	PASS
7	Change profile photo	Manager is able to upload a new profile photo, and the updated photo is displayed in their account	PASS
8	Assign tasks to employee	Manager is able to create a new task, assign it to a selected employee, and the employee receives a notification of the assignment	PASS
9.	View status of tasks assigned	Manager is able to view the status that update by the employee	PASS
10	View task submitted by employee	Manager can open and review the task submitted by the employee, with details such as submission time and status	PASS
11	Provide feedback on submitted task	Manager is able to leave comments or feedback on the employee's submitted task	PASS
12	Communicate with other users in the system	Manager can send and receive messages within the system's communication module	PASS
13	Create a personal to-do list	Manager is able to add, edit, and delete to-do items, and the list is saved in their account	PASS
14	Use Pomodoro timer	Manager can start, pause, and reset the timer, and the system tracks focused work sessions	PASS

15	Add due dates to calendar	Manager can enter due dates for tasks/events, and the calendar displays them accordingly	PASS
16	Dashboard	Manager can view dashboard	PASS
17	Log out	Manager session ends and the system redirects to the login page	PASS

Table 6.1.1.2: Employee Testing

6.1.3 Admin Site

No	Test Action	Test Result	Status
1	Login with correct credentials	Login is successful and the admin is redirected to their dashboard	PASS
2	Login with incorrect credentials	Login fails and an alert message is displayed	PASS
3	View dashboard	Admin dashboard is displayed with system overview including number of users and analysis of users	PASS
4	Visualize time spent on each user	Table to show the time spent by individual users with the features	PASS
5	Add new users	The admin enters all the required details, including the personal details and email address of the new user. Once the information is submitted, a verification email is automatically sent to the new user for account activation.	PASS
6	Read comments sent by users	Admin can view submitted feedback from users	PASS
7	Read comments sent by users	Admin can access and read user comments	PASS
8	View all registered users	A list of all registered users is displayed with relevant details	PASS
9	Log out	Admin session ends and the system redirects to the login page	PASS

Table 6.1.1.3: Admin Testing

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6.2 Project Challenges

During the development ok TaskBooster, there are several challenges that have been encountered. Based on technical perspective, one of the main dominant issue is that changes made in the code are not immediately detected by the system, forcing developers to switch user accounts before updates become visible. This creates confusion, wastes valuable time, and makes it difficult to determine whether the problem lies in the code itself or in the system's refresh mechanism. Additionally, database connectivity can be unstable at times, where the system fails to retrieve information properly, leading to interruptions in task management functions and testing processes. These problems make debugging and verifying new features more complex and time-consuming. On the design side, creating a user-friendly and responsive interface remains a key challenge. The system must balance clean layouts and intuitive navigation with productivity features such as task categorization, deadlines, and collaboration tools, without overwhelming the user. Ensuring consistency across different devices while handling technical difficulties behind the scenes makes the development process even more demanding.

Another major challenge lies in the system's communication features, where sending messages, filtering files, and managing links and images often fail to work as intended. These components frequently go undetected by the system, causing developers to spend more time troubleshooting and re-adjusting the code. In addition, database connectivity is sometimes unreliable by preventing the system from retrieving data properly and disrupting testing and usage. On the design side, building a clean and responsive interface is equally demanding. While features such as task categorization, deadlines, file attachments, and collaboration tools are necessary, incorporating them in a way that remains intuitive without overloading the user is a constant balancing act. Ensuring that the interface looks consistent across devices while maintaining usability under these technical constraints makes the development of TaskBooster even more challenging.

On the design side, the challenge lies in achieving the project's main objective which is to build an interface that is simple, easy to understand, yet visually attractive for users. Developers often keep modifying the layouts and styles because the results

do not fully meet expectations for user-friendliness. Striking the right balance between simplicity, clarity, and appealing visuals has proven difficult, but it is crucial to ensure that TaskBooster delivers a smooth and engaging user experience.

6.3 Objectives Evaluation

6.3.1 Implementation Task Allocation and Live Chat

The first objective is to integrate real-time collaboration features into the task management system to provide a more convenient platform for work arrangements and time-saving coordination. In this proposed system, a task allocation feature has been implemented whereby managers can assign tasks to employees by entering essential details such as the task title, description, due date, and the designated employee. This ensures that responsibilities are clearly distributed and prevents situations where certain employees might skip tasks and become free riders. Additionally, the system includes a live chat feature that enables private communication between users to enhance collaboration. By integrating these real-time collaboration tools, the system streamlines teamwork, improves communication, and enhances overall productivity.

6.3.2 Implementation of Pomodoro Technique Timer and To Do List feature

The second objective is to implement personalized productivity features within the task management system to help users maintain focus and manage their workload more effectively. This has been achieved through the integration of a Pomodoro technique timer, which enables users to structure their work into focused intervals with breaks in between, thereby supporting concentration. In addition, the system records the time spent on each task and generates visualization graphs by allowing users to monitor their productivity trends. A categorized to-do list feature has also been implemented, where tasks can be organized into pending, in-progress, and completed. This gives users a clear overview of their workload and progress. These features provide users with tools to plan, track, and evaluate their tasks more efficiently, ultimately helping them to improve focus, reduce stress, and develop more sustainable work habits.

6.3.3 Implementation of a User-Friendly Dashboard Layout

The third objective is to implement a simplified user interface that allows new users to quickly understand and navigate the platform with minimal learning effort. The implementation of a centralized dashboard that summarizes tasks, progress, and key

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features gives users quick access to essential functions without unnecessary complexity. Different dashboards were designed according to user roles. For example, the Admin Dashboard enables administrators to view and monitor the activity of logged-in users and also view the comments and feedback from users, while the Employee and Manager Dashboards provide a direct summary of tasks to be done, focus sessions, task updates and message received. Based on the feedback collected during usability testing, several users highlighted that the system is user-friendly and the layout is simple yet easy to navigate. This feedback demonstrates that the simplified user interface effectively reduces the learning curve for new users and allows them to become familiar with the platform in a short period of time. The positive responses also suggest that the clear layout and intuitive design enhance accessibility and minimize confusion. Overall, the positive responses and test results demonstrate that interface design meets the objective of enhancing user satisfaction and encouraging consistent use of the system.

CHAPTER 7: Conclusion

Chapter 7 contains the summary of the overall results of the project that are based on functionality and effectiveness of the implemented system. In addition, it also included some recommendations that can be applied to enhance the scalability and performance of the system in the future.

7.1 Conclusion

In conclusion, the implementation of a web-based productivity and collaboration task management system addresses key challenges such as lack of real-time collaboration, lack of integrated productivity tools with task management and complex and disorganized designs that hinder teamwork and efficiency. This project aims to overcome these issues by providing intuitive real-time collaborative features, implementing personalized productivity features, and a simple yet user-friendly interface to enhance overall productivity, user experience and performance.

The objectives of the proposed task management system have been successfully achieved through the integration of real-time collaboration features, personalized productivity tools, and a simplified user interface. The implementation of task allocation and live chat to provide a seamless platform for teamwork and communication. The incorporation of personalized productivity features, including the Pomodoro technique timer, categorized to-do lists, and visualization graphs, enables users to manage their workload more effectively, maintain focus, and develop sustainable work habits. Furthermore, the simplified user interface, particularly achieved through the implementation of well-structured dashboards to ensure that essential functions are presented clearly and intuitively. There are three types of dashboards which are Manager, Employee, and Admin that have been implemented in the proposed system. Each is tailored to the specific roles and responsibilities of the users. The dashboards provide a summarized view of key information by enabling users to quickly understand their tasks and priorities at a glance. This design not only helps new users navigate the system with ease but also allows them to perform tasks efficiently within a short period of time. Overall, the system addresses the gaps found in existing platforms by streamlining collaboration, improving focus and task management, and ensuring accessibility for diverse user groups.

At the end of the delivery project, several key features have been successfully implemented to achieve the objectives of the proposed system. The proposed system supports three types of users that are admin, manager and employee. Each role is assigned with different distinct roles and access levels. For new users, the admin is responsible for registering their details, including role, name, age, phone number, email, and a temporary password. Once registered, the new user receives a verification email and activates the account by entering the provided email and temporary password. After successful verification, the user can set a new password and proceed to log in. If the login is valid, the user will be directed to their respective dashboard. This process ensures secure access and prevents unauthorized users from entering the system.

In this proposed system, in the task allocation feature, managers are given the ability to assign tasks either in groups or to individuals. For a group task, the manager assigns the task directly to the designated group and monitors the contribution of each member in the group task. This is to ensure that each task is allocated specifically to an individual. To highlight that, employees must submit their own work using their account credentials. This strategy helps prevent situations where some members may attempt to avoid their responsibilities and act as free riders. Once the task is submitted, managers can review submissions and take action by approving or rejecting them.

The system also implemented common features such as a communication feature, to do list feature, a pomodoro timer feature and a calendar feature that are accessible for both managers and employees. The communication feature is a private communication channel for sending and receiving messages. Furthermore, the to-do list feature allows tasks to be categorized as pending, in progress, or completed by making progress tracking more straightforward. Moreover, a Pomodoro timer based on the Pomodoro technique helps users visualize and manage the time spent on each task more effectively. Lastly, a calendar feature is also available to help users set due dates and track important events by reducing the risk of missed deadlines.

Task	Status	Notes
Login module	Completed	Login, Register, Forgot Password and Reset Password
AI chatbot	Completed	Able to chat with Ai to ask for any inquiry that faced by users
Communication feature	Completed	Able to send and receive messages
Collaborative feature Assign tasks by manager to employee	Completed	Manager can assign a task to employee and delegate the task
Calendar features	Completed	Support event creation, editing, deleting and color to prioritize tasks
Pomodoro Timer	Completed	Include customizable work and break intervals
To-Do List	Completed	Tasks are categorized into To Be Done, In Progress, and Completed
Analysis Chart	Completed	Pie charts and bar charts are created to view the focus level of the users
Employee dashboard	Completed	Simple and general summary for employee
Manager dashboard	Completed	Simple and general summary for the manager
Admin dashboard	Completed	User management and monitoring

Table 7.1.1 Features Table

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7.2 Recommendations

The proposed web-based productivity and collaboration task management system has been successfully implemented in line with the planned prototype and requirements. It has also achieved its three key objectives including integrating real-time collaborative features, providing personalized productivity tools, and implementing user-friendly dashboards. Although features are fully implemented and sufficient for targeted small teams and newly established startups but their overall scope and potential remain limited when applied to larger organizations with bigger teams. Therefore, to further enhance its effectiveness and scalability, several recommendations for future improvements are suggested.

Firstly, the current system is primarily designed for a single company, with a specific focus on newly established organizations that usually have fewer employees and simpler structures. Although the features of the current system are fully implemented and sufficient for small teams and newly established startups, its overall scope and potential still have some limitations when applied to larger organizations with bigger teams. Therefore, in the future, the system can be expanded to support multiple departments within the same company. This enhancement would enable better coordination among teams, clearer task allocation, and more efficient collaboration across different business units. By improving its scalability in this way, the system would not only strengthen teamwork but also provide a more structured and comprehensive approach to manage tasks.

Secondly, the system can be further enhanced by introducing a super admin role, which would act as a centralized authority for managing the platform. With this feature, multiple companies could adopt and use the system under a single ecosystem, while still maintaining separation and security for their individual workspaces. This capability would significantly increase the system's scalability by extending its usability beyond one organization and making it suitable for a wider range of industries. Moreover, centralized management through a super admin would streamline onboarding, simplify monitoring, and improve resource allocation. In the long run, this enhancement would make the platform more versatile, impactful and sustainable to open more opportunities for broader adoption and integration with other tools or services.

Thirdly, for the task allocation module, the Shared Files feature could be further enhanced. Currently, the system only allows users to upload files that can be viewed by members who are assigned to the same task. While this is useful for sharing resources but it is still limited in terms of collaboration. In the future, this feature could be improved by enabling multiple users to open and edit the same file simultaneously. Any changes made by one user would be instantly visible to others and automatically saved by ensuring that all members are always working with the most up-to-date version of the document. This enhancement would not only reduce the inefficiencies caused by sending files back and forth but also foster better teamwork, streamline communication, and improve overall productivity within task management.

Last but not least, the communication feature could be further enhanced by integrating a video call function. While the current system supports basic messaging, incorporating video calls would provide a more dynamic and interactive platform for communication. This feature would enable employees and managers to conduct face-to-face discussions, which is particularly beneficial for clarifying complex tasks, holding quick meetings, or addressing urgent issues in real time. By reducing the need for third-party applications, the video call function would also improve convenience, streamline workflow and foster stronger collaboration among team members.

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APPENDIX

Code Sample

```php
<?php
// MySQLi connection (for existing functionality)
$conn = mysqli_connect("localhost", "root", "", "taskbooster_db");

// Check MySQLi connection
if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}

// PDO connection (for Pomodoro functionality)
try {
    $pdo = new
PDO("mysql:host=localhost;dbname=taskbooster_db;charset=utf8mb4", "root", "");
    $pdo->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
    $pdo->setAttribute(PDO::ATTR_DEFAULT_FETCH_MODE,
PDO::FETCH_ASSOC);
} catch(PDOException $e) {
    die("PDO Connection failed: " . $e->getMessage());
}
?>
```

Poster

APPENDIX