

TASK MANAGEMENT MODULE

PROJECT REPORT

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*In partial fulfilment for the award of the degree
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BONAFIDE CERTIFICATE

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ABSTRACT

The Task Management Module is a comprehensive system designed to streamline task allocation, execution, and tracking to enhance productivity and workflow efficiency. Aimed at both administrators and users, the system provides a structured methodology to manage tasks effectively within any organization. Admins can create, assign, and schedule tasks with specified deadlines, ensuring that work is distributed efficiently across teams. Once assigned, users are notified of their tasks, allowing them to view, work on, and submit their progress in a timely manner. Upon task submission, admins review the work and update the task status (Pending, Approved, Rejected), offering feedback to ensure quality standards are met. This review mechanism ensures accountability and helps in maintaining consistent task quality. A real-time dashboard tracks the progress of each task, providing admins with full visibility of ongoing work, allowing for quick adjustments if needed. Transparency is further enhanced through automated notifications, which keep users informed about task updates, deadlines, and any changes in status. The system integrates a secure authentication mechanism, ensuring that only authorized users can access task data and perform administrative functions. This not only guarantees data security but also helps in controlling access within the platform. The Task Management Module's seamless integration of task creation, assignment, progress tracking, and real-time updates pro Overall, the Task Management Module offers a robust solution for optimizing task execution and fostering efficient collaboration, making it an essential tool for businesses seeking to improve workflow productivity and management.

Keywords—Task Management, Efficiency, Accountability, Collaboration, Real-time Tracking, Productivity.

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CHAPTER - I

INTRODUCTION

This introduction of a fast-paced work environment, managing tasks efficiently is crucial to ensuring productivity and meeting deadlines. The Task Management Module is a robust solution designed to streamline the entire task lifecycle, from creation and assignment to tracking and completion. This system provides a structured framework that enhances organizational efficiency, collaboration, and accountability by offering a seamless experience for both administrators and users. The module enables admins to create tasks, assign them to relevant team members, and set specific deadlines. By centralizing task management, admins can ensure that work is evenly distributed, priorities are clearly defined, and resources are allocated effectively. Once tasks are assigned, users receive notifications about their tasks and can view, work on, and submit their progress directly through the platform. This reduces the need for manual follow-ups and allows users to focus on completing tasks efficiently. Upon task submission, admins can review the work and provide feedback, ensuring that each task meets the required standards. The system allows admins to update task statuses (Pending, Approved, Rejected), providing real-time visibility of ongoing progress. A real-time dashboard tracks task completion, giving admins full control and transparency of the work being done. Automated notifications further ensure that users are constantly updated on task deadlines and status changes, maintaining continuous communication between admins and users. Additionally, the system integrates a secure authentication mechanism, ensuring that only authorized users can access and perform specific actions within the platform. This adds an extra layer of security and ensures that sensitive information remains protected. The Task Management Module simplifies the task execution process, promotes accountability, and enhances collaboration, making it an essential tool for businesses aiming to optimize their workflow and improve overall productivity.

1.1 BACKGROUND AND MOTIVATION

Effective task management is fundamental to the success of any organization. In an increasingly fast-paced and interconnected world, the need for systems that streamline and optimize task execution is more critical than ever. Traditional methods of task management, such as manual assignment, tracking, and communication, are often inefficient and prone to errors, leading to delays, miscommunication, and missed deadlines. These challenges hinder productivity and impact the overall performance of teams and organizations. The growing complexity of projects and the expansion of remote work have made it even more difficult for teams to stay aligned and on track. Without a structured system in place, task delegation can become disorganized, resulting in wasted resources and lack of accountability. Managers are often burdened with the task of manually checking on progress, which consumes valuable time and energy. Users, on the other hand, may struggle to manage multiple tasks, especially when they lack clear visibility on priorities or deadlines. This is where the **Task Management Module** comes in. By centralizing the entire task management process within a single platform, the module offers a solution to these common challenges. The system helps automate task assignment, progress tracking, and deadline management, providing both admins and users with real-time updates and full visibility into the status of tasks. It empowers admins to efficiently allocate resources, while users can focus on executing their tasks without distraction. The motivation behind the Task Management Module is to foster a more organized, transparent, and efficient workflow, promoting collaboration and accountability within teams. By automating routine processes and enhancing communication, the module seeks to improve productivity, reduce human error, and enable organizations to achieve their goals more effectively.

1.2 PROBLEM STATEMENT

In this business environment, managing tasks efficiently has become a significant challenge for organizations of all sizes. Traditional methods of task management, which often rely on spreadsheets, emails, or manual tracking, are inefficient and prone to errors. These methods lack real-time visibility, leading to miscommunication, delayed task completion, and an overall decrease in productivity. The absence of a centralized system to manage tasks means that administrators struggle with assigning the right tasks to the right individuals, which can lead to overburdened employees or unbalanced workloads. Furthermore, users may not have a clear understanding of priorities, deadlines, or task statuses, resulting in confusion and missed deadlines. Admins are left manually tracking task progress and following up with users, which consumes valuable time and resources. In addition, without effective communication tools within the task management system, teams may struggle to collaborate effectively. This lack of interaction can lead to delays in decision-making, lack of feedback, and decreased accountability. Furthermore, organizations often face issues related to security and access control when using disparate task management tools, increasing the risk of unauthorized access and data breaches. The key problem is that without an integrated task management system, task allocation, progress tracking, feedback loops, and communication become disjointed and inefficient. These inefficiencies affect not only individual productivity but also the overall performance of the organization, making it difficult to meet deadlines and achieve business objectives. The **Task Management Module** addresses these challenges by providing a unified, secure platform for task creation, assignment, tracking, and collaboration. It enables administrators to manage tasks efficiently, provides users with clear visibility into their work, and promotes accountability and timely completion through automated notifications and real-time updates.

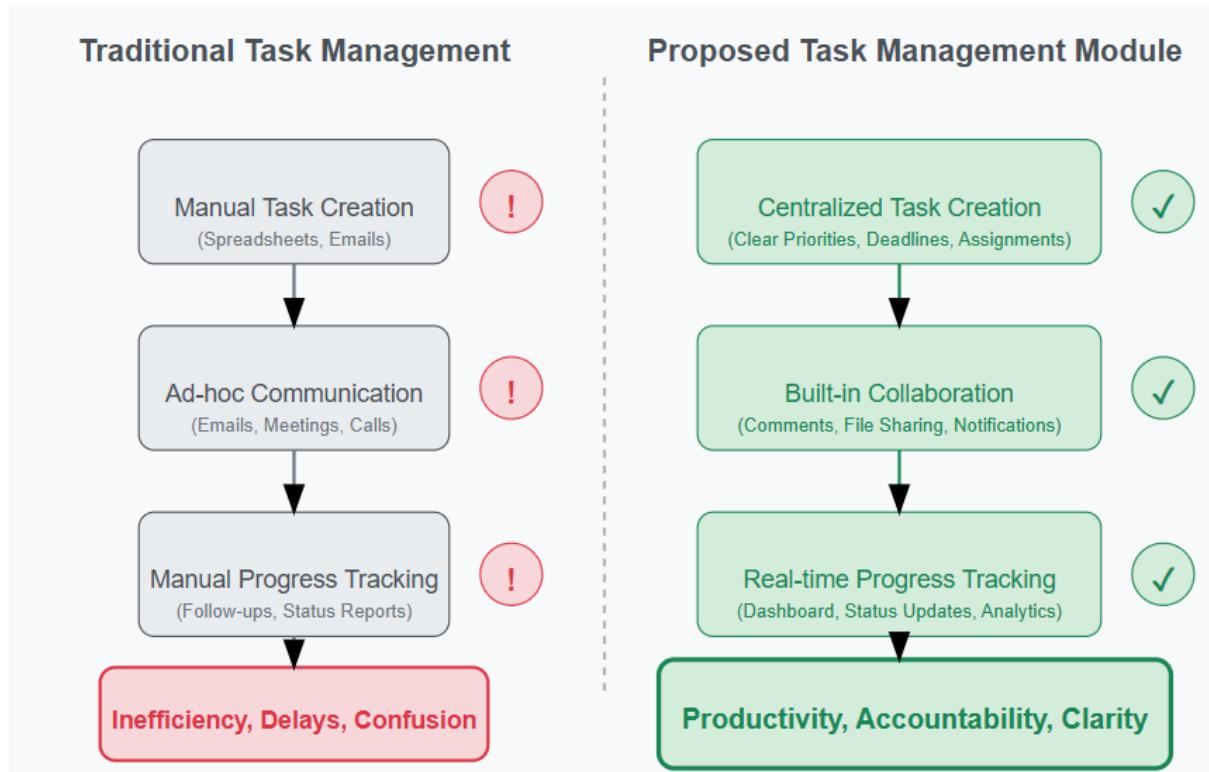


Figure 1.1 (Traditional and Proposed Task Management Module)

1.3 APPLICATION OF OBJECT

The **Task Management Module** is a versatile tool that can be applied across various sectors and industries to optimize task execution, enhance productivity, and ensure timely completion of projects. Its applications span multiple domains, from business organizations and educational institutions to project management and team collaboration environments. In **business organizations**, the Task Management Module provides a centralized platform for assigning, tracking, and managing tasks across teams. It helps project managers allocate resources efficiently, set clear deadlines, and monitor task progress in real time. With automated notifications and reminders, employees are constantly updated on their tasks, reducing the risk of missed deadlines. Additionally, managers can easily review the status of tasks, update their progress, and provide feedback, fostering a culture of accountability and transparency. In the **education**

sector, the Task Management Module can be used by teachers and administrators to manage assignments, track student progress, and facilitate communication between educators and students. Teachers can assign tasks based on student performance and areas that need improvement, while students receive timely reminders and feedback on their work. This system ensures that students stay on top of their assignments, promotes accountability, and enhances the overall learning experience. For **freelancers and remote teams**, the module offers a streamlined way to collaborate on projects without the need for multiple communication tools. Freelancers can track their tasks, manage deadlines, and communicate with clients in real-time. With task assignment and status tracking, clients can monitor progress, provide feedback, and ensure that their requirements are met. In **non-profit organizations**, the Task Management Module aids in coordinating tasks for volunteers, tracking donations, managing event planning, and overseeing outreach programs. The system enhances organizational efficiency and ensures that tasks are completed within time constraints, enabling the organization to fulfill its mission effectively.

1.4 CHALLENGES

While the **Task Management Module** offers several benefits in streamlining task allocation, tracking, and completion, it also faces certain challenges that can impact its effectiveness and implementation. Understanding and addressing these challenges is essential to maximize the module's potential. One of the primary challenges is ensuring user adoption. Employees, especially those accustomed to traditional methods, may resist transitioning to a new system. Comprehensive training and continuous support are essential to ease this transition and ensure that users fully understand the platform's functionalities and how to use it effectively. Different teams and organizations may have varying task management requirements. The Task Management Module must be highly customizable to accommodate diverse workflows, task types, and reporting

preferences. If the module lacks this flexibility, it may not meet the specific needs of all users, limiting its overall effectiveness. Many organizations already use various tools for project management, communication, and file-sharing. Ensuring smooth integration between the Task Management Module and these existing systems can be complex. Without proper integration, users may struggle with data synchronization and have to switch between multiple platforms, which can reduce productivity and hinder task completion. Since task management systems often contain sensitive organizational data, ensuring robust data security is crucial. If the system is not well-secured, it could be vulnerable to breaches or unauthorized access, putting both organizational and user data at risk. Proper encryption, user authentication, and access control measures must be implemented to protect sensitive information. Keeping users engaged with the system is another challenge. Over time, users may become disengaged if the task management system is not intuitive or lacks motivating features, such as gamification or personalized progress tracking. Constant updates, enhancements, and a user-friendly interface are necessary to maintain interest and engagement.

1.5 OBJECTIVE OF THE PROJECT

The primary objective of the **Task Management Module** is to streamline and optimize the process of task creation, assignment, tracking, and completion, ensuring higher productivity and efficiency within organizations. The module aims to address the key challenges associated with traditional task management methods, such as miscommunication, missed deadlines, and inefficient task allocation. One of the main goals is to **automate task management**, eliminating manual intervention and reducing the time spent on tracking and updating task statuses. By automating notifications, reminders, and task tracking, the module ensures that users stay informed about their responsibilities, reducing the need for constant follow-ups. This leads to more efficient workflows and helps employees focus on task execution rather than administrative overhead. Another objective is

to **enhance collaboration** among team members. The Task Management Module fosters teamwork by providing a central platform where users can share updates, provide feedback, and communicate about tasks in real time. This centralized communication promotes transparency and ensures that everyone involved in a task is aligned and aware of progress. The module also aims to **improve accountability** by assigning specific tasks to individuals and tracking their progress. This level of responsibility ensures that team members stay on task and complete assignments on time. Administrators can easily monitor task completion and provide feedback, making sure that all tasks meet the expected quality standards. A further objective is to **provide clear visibility and reporting**. The system's real-time dashboard allows both users and administrators to track task progress, deadlines, and statuses, enhancing transparency across the organization. Additionally, the system can generate reports that provide insights into task completion rates, team performance, and resource allocation. Ultimately, the Task Management Module seeks to improve operational efficiency, reduce task delays, foster collaboration, and ensure tasks are completed within deadlines, contributing to the overall success and productivity of the organization.

1.6 SCOPE OF THE PROJECT

The **Task Management Module** is designed to enhance the overall efficiency and productivity of organizations by streamlining the entire process of task creation, allocation, tracking, and completion. In today's fast-paced work environment, managing tasks manually can lead to inefficiencies, miscommunication, and missed deadlines. The task management system addresses these challenges by offering a structured, centralized platform where tasks can be easily managed and monitored. The **core function** of the module is to allow administrators to **create and assign tasks**, define deadlines, and track progress in real time. This process helps ensure that employees have a clear

understanding of their responsibilities and can prioritize tasks effectively. Automated notifications and reminders help keep everyone on track, ensuring tasks are completed on time and deadlines are not missed. Another key feature of the **Task Management Module** is its ability to **enhance collaboration** among team members. With all tasks centralized in one system, communication becomes more transparent, enabling teams to collaborate seamlessly and share updates instantly. Feedback can be provided by admins on task submissions, ensuring that the quality of work is maintained throughout the process. The module also focuses on **accountability and visibility**. Admins have full access to task progress and can view real-time updates on completion, allowing them to intervene if tasks are falling behind schedule. Task statuses, such as "Pending," "Approved," or "Rejected," are updated automatically, keeping all stakeholders informed. By ensuring streamlined processes and providing clear visibility into task progress, the **Task Management Module** boosts productivity, reduces errors, and enhances teamwork. It fosters an organized work environment where task completion is on schedule, resources are effectively managed, and performance can be tracked and analysed, ultimately driving the success of projects and organizations.

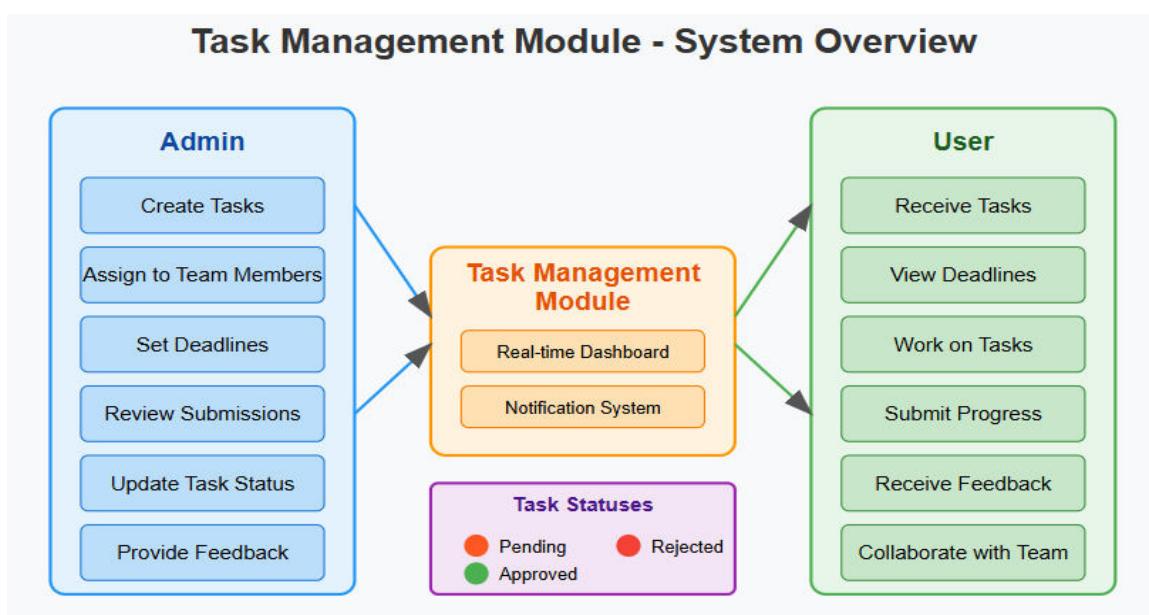


Figure 1.2 (System Overview)

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING WORKS

1. Hayawi et al. (2025) proposed a web-based task offloading system for workload management in cloud environments. The system integrates Digital Twin technology to predict and allocate computing tasks efficiently. Compared to traditional reinforcement learning-based task distribution models, the approach demonstrated improved execution efficiency in high-traffic conditions.
2. Rivera & Chen et al. (2023) developed a comprehensive task management module using the MERN stack (MongoDB, Express.js, React, Node.js) that incorporates real-time collaboration features. Their implementation leverages WebSockets for instant task updates and ReactDnD for intuitive drag-and-drop task organization across different project boards, demonstrating significant improvements in team productivity.
3. Wu et al. (2021) developed a cloud-based test information management system for monitoring and automating workflow processes. The system employs a hybrid B/S and C/S architecture to manage resources, test data, and operational procedures, ensuring efficient task handling in enterprise applications.
4. Johnson et al. (2024) explored the integration of MEVN stack (MongoDB, Express.js, Vue.js, Node.js) for developing responsive task management interfaces with adaptive UI components. Their research demonstrated how Vue.js's reactive data binding capabilities enhanced task tracking visualization while maintaining lightweight performance on mobile devices, particularly beneficial for distributed teams.
5. Hu & Zhuo et al. (2024) investigated multi-task scheduling in web-based project management platforms using a reinforcement learning framework. Their model decomposes complex workflows into manageable sub-tasks, improving adaptability and response time in real-time project tracking applications.
6. Gupta & Sharma et al. (2023) implemented a LAMP stack (Linux, Apache, MySQL,

PHP) task management solution focusing on enterprise-level security and scalability. Their system introduced role-based access control frameworks for task assignment permissions and utilized MySQL's transaction management capabilities to maintain data integrity during concurrent task updates.

7. Silvestri et al. (2022) proposed enhancements to task priority management in GNU OpenMP for web applications requiring multi-threaded execution. Their implementation improved CPU utilization and responsiveness in high-load task processing scenarios, demonstrating efficiency in task-heavy web applications.
8. Fernandez & Kim et al. (2024) proposed a microservices architecture for task management using the MEAN stack (MongoDB, Express.js, Angular, Node.js). Their implementation decoupled task creation, assignment, notification, and reporting services, allowing independent scaling of system components based on usage patterns during peak periods.
9. Zhang et al. (2022) investigated task prioritization in collaborative web-based project management tools. Their system integrates machine learning to assess task dependencies and urgency, ensuring optimal scheduling in workflow automation platforms.
10. Patel & Nguyen et al. (2023) developed a PostgreSQL-backed task management system using the Django framework that emphasizes data integrity and audit capabilities. Their implementation introduced custom middleware for tracking task state changes and generating comprehensive activity logs, providing improved accountability in enterprise environments.
11. Chen et al. (2021) introduced a dynamic task scheduling system for LAMP-based web applications. Their approach minimizes response latency and optimizes server-side task execution by dynamically allocating workloads based on real-time user demand.
12. Malik & Orozco et al. (2024) created a Flutter-based cross-platform task management application with a Firebase backend. Their architecture demonstrated how BLoC pattern implementation enables efficient state management across mobile and web interfaces

while maintaining consistent task synchronization through Cloud Firestore's real-time database capabilities.

13. Yuan et al. (2022) developed an intelligent task scheduling system for MERN-based applications using deep reinforcement learning. Their approach adapts task allocation dynamically based on workload fluctuations, improving efficiency in collaborative web applications.
14. Kowalski & Yamamoto et al.(2023) examined the implementation of GraphQL for task management APIs within Ruby on Rails applications. Their comparative analysis against traditional REST approaches showed significant reductions in over-fetching and under-fetching issues, improving performance for complex task querying operations in enterprise project management platforms.
15. Almeida et al. (2021) proposed a cloud-edge hybrid task management framework for distributed applications. Their model improves task execution efficiency by balancing workloads between cloud and on-premise web servers, ensuring real-time task synchronization.
16. Lee & Tan et al. (2022) investigated graph-based task assignment in enterprise workflow management applications. Their algorithm optimizes resource allocation and task dependencies, improving execution efficiency in large-scale web-based project tracking systems.
17. Ghosh et al. (2024) developed a reinforcement learning-based task prioritization module for real-time web dashboards. Their system improves decision-making in time-sensitive applications by dynamically adjusting task priority based on system workload.
18. Martinez et al. (2023) explored intelligent task allocation in SaaS-based project management platforms. Their model balances server load while minimizing execution delays, ensuring seamless collaboration in multi-user environments.
19. Hoffman & Lin et al. (2024) designed a task management solution utilizing the JAMstack architecture with Next.js and Supabase. Their implementation demonstrated how serverless functions combined with PostgreSQL's row-level security enables highly

scalable, secure task management systems that maintain performance under variable load conditions while reducing infrastructure complexity

20. Huang et al. (2023) introduced a federated learning-based task execution model for privacy-preserving web applications. Their approach optimizes task distribution across multiple servers while maintaining data security, making it suitable for cloud-based task management systems.

2.2 CONSTRUCTIVE CRITICISM AND GAP IDENTIFICATION

From the reviewed literature, several gaps and limitations have been identified in existing web-based task management systems. One major issue is the lack of real-world deployment, as many studies focus on theoretical models or simulations without validation in live applications with actual user interactions. Scalability remains a concern, as current research often assumes optimal resource availability, which may not hold true under unpredictable traffic surges, necessitating more robust scaling techniques. Security and transparency issues persist, with existing frameworks addressing access control but often failing to provide comprehensive auditing and data integrity measures. Task prioritization and automation models often lack explainability, making it difficult for users to understand why certain tasks are ranked higher, emphasizing the need for more user-friendly scheduling mechanisms. Additionally, many studies focus on optimizing task allocation based on system efficiency while neglecting user experience, calling for more user-centric evaluations. Moreover, there is limited integration of emerging technologies such as cloud computing, microservices, and advanced database optimization, which could enhance system flexibility and performance. Furthermore, real-time collaboration tools and interactive interfaces such as drag-and-drop task assignment and visual workflow tracking are rarely incorporated into task management platforms, despite their potential to improve user engagement and efficiency. Addressing these gaps by incorporating dynamic workload distribution, hybrid security frameworks, and real-world validation studies could significantly enhance the effectiveness, scalability, and user adaptability of future web-based task management systems.

CHAPTER 3

OBJECTIVE AND METHODOLOGY

The **Task Management Module** aims to enhance productivity and workflow efficiency within organizations by providing a centralized platform for creating, assigning, tracking, and completing tasks. The primary objectives are to automate task management, ensure clear task allocation, and foster effective communication among team members. This system intends to improve the overall organization of tasks, reduce delays, and increase accountability, ensuring that teams meet deadlines and achieve their goals more effectively. The system ensures that tasks are assigned accurately to the right individuals or teams, with clear deadlines and priorities, to optimize resource utilization. The module provides real-time task status tracking, giving both admins and users visibility into the progress of each task, ensuring transparency and preventing bottlenecks. By assigning clear responsibilities and tracking progress, the module ensures each task is completed on time and to the required standard, holding team members accountable for their work. Admins create tasks with clear objectives, deadlines, and priorities. Tasks are then assigned to the appropriate users or teams based on expertise and availability. Users receive notifications of their assigned tasks, along with automated reminders of upcoming deadlines, ensuring that nothing is overlooked. Both users and admins can track task progress through a live dashboard, providing instant insights into completion status. Users can communicate, share documents, and collaborate directly on tasks, enhancing team interaction. Upon task completion, admins review submissions, update task statuses (Pending, Approved, Rejected), and provide feedback, ensuring that every task meets the required standards.

3.1 OBJECTIVES

3.1.1 To Enable Admins to Create, Assign, and Schedule Tasks Efficiently

A well-structured task management system empowers administrators by providing an intuitive interface to create tasks with clear descriptions, deadlines, and priority levels. With customizable templates and predefined workflows, admins can streamline task creation, reducing redundancy and ensuring consistency across projects. The ability to assign tasks based on skill sets and availability enhances productivity while minimizing bottlenecks in project execution. Scheduling is a critical component of task management, allowing admins to allocate resources efficiently. Integrated calendar views and automated notifications help prevent overlapping deadlines and ensure timely task completion. With role-based access controls, only authorized personnel can modify tasks, maintaining data security and preventing unauthorized changes to assignments.

Contribution: The **Project Developer** takes charge of implementing the admin panel, ensuring smooth task creation, assignment, and scheduling. They design role-based access controls, integrate scheduling features, and optimize workflows to enhance efficiency for administrators.

3.1.2 To Allow Users to View, Complete, and Submit Tasks Seamlessly

Users need a simplified yet powerful interface to track their assigned tasks without confusion. A well-designed dashboard should display pending, in-progress, and completed tasks with clear deadlines and priority indicators. Filters and search functionalities further enhance accessibility, allowing users to retrieve relevant tasks quickly. Additionally, automated reminders and progress trackers ensure that users stay on schedule.

The submission process should be intuitive, supporting file uploads, comments, and feedback mechanisms. Once a task is marked as complete, the system should allow admins or team leads to review and approve submissions efficiently. This streamlined

approach minimizes miscommunication and enhances productivity while ensuring that all submissions meet predefined quality standards.

Contribution: The **Project Developer** is responsible for creating a user-friendly interface that enables smooth task viewing, submission, and tracking. They design interactive dashboards, enhance the layout for better navigation, and ensure the overall user experience remains seamless and engaging.

3.1.3 To Track Task Progress and Provide Real-Time Status Updates

Real-time tracking enables transparency and accountability within the task management system. Progress indicators, status labels, and percentage completion bars provide admins and team members with instant insights into ongoing tasks. These visual indicators help identify potential delays, allowing for prompt intervention and resource reallocation to maintain workflow efficiency. Integration with automated reporting tools ensures that admins can generate performance analytics without manual intervention. These reports provide detailed insights into individual and team productivity, helping managers make data-driven decisions. Automated notifications inform stakeholders of task updates, reducing dependency on manual follow-ups and email chains.

Contribution: The **Project Developer** implements the logic for tracking task progress and updating statuses in real time. They develop APIs for fetching and updating task data, integrate automated reporting tools, and ensure system scalability and performance optimization.

3.1.4 To Enhance Collaboration, Accountability, and Workflow Automation

A robust task management system fosters seamless collaboration by allowing team members to communicate within tasks using comments, file sharing, and tagging features. Real-time notifications ensure that everyone stays informed about updates, changes, and deadlines. This enhances teamwork and prevents miscommunication, leading to smoother project execution.

Accountability is reinforced through detailed activity logs, which document task progress, modifications, and user interactions. Automated workflow triggers further optimize task execution by assigning follow-up tasks upon completion of previous ones. These automation features reduce administrative workload and ensure a structured approach to task completion.

Contribution: The Testing, Deployment & Documentation Specialist ensures the system functions flawlessly by conducting thorough testing, identifying bugs, and verifying workflow automation. They handle deployment, maintain system documentation, and provide user guidelines to facilitate collaboration and proper usage of the system.

3.2 PROPOSED METHODOLOGY

The proposed methodology for the **Task Management Module** is designed to enhance efficiency, accountability, and transparency in handling tasks from creation to completion. The system follows a structured workflow, ensuring that each task progresses systematically through various stages. The process begins with the **admin authentication**, where the admin can either log in if already registered or complete the registration process. Once authenticated, the admin proceeds with **task creation and assignment**, defining task details and allocating them to the appropriate users. To ensure timely updates, **automated notifications** are triggered, informing users about new task assignments. This notification system eliminates delays and ensures that all stakeholders are aware of their responsibilities.

Following task assignment, users can log in to view their tasks and proceed with **task execution**. Throughout the execution phase, the system enables **real-time progress tracking**, allowing both users and administrators to monitor ongoing work. Upon completion, the user submits the task for **admin review**, where it undergoes evaluation. The task can either be **approved or rejected** based on quality standards. If approved, the user is notified, and the task moves to **completion**. In case of rejection, users receive

feedback and must make necessary revisions before resubmission. This structured methodology ensures seamless task handling, reduces manual inefficiencies, and enhances overall project management by incorporating automated tracking, notifications, and review mechanisms.

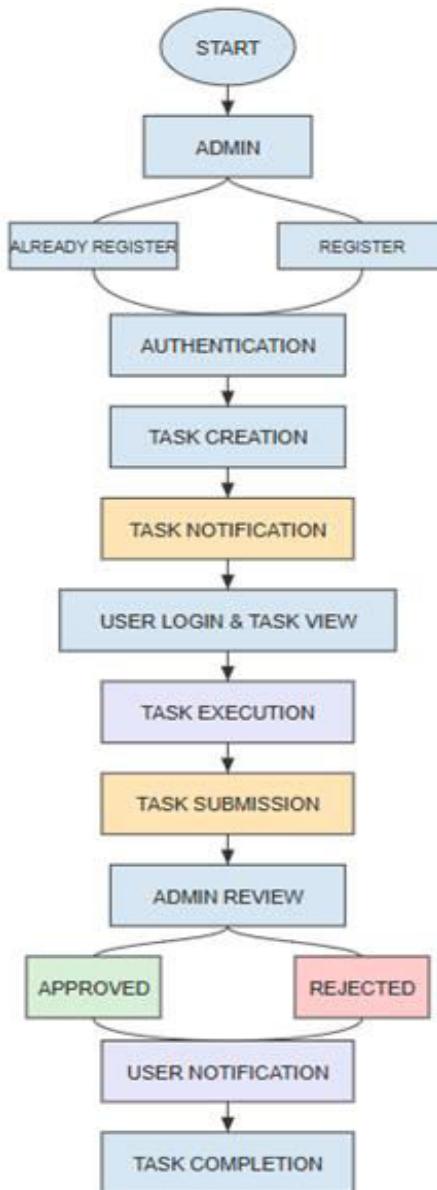


Figure 3.1 (Flow Diagram)

3.2.1 Task Creation & Assignment

The process of task creation and assignment is crucial for ensuring efficient workload distribution. Admins initiate this process by defining clear objectives for each task,

outlining the expected outcomes to prevent misunderstandings. Well-defined objectives provide clarity to assignees and help streamline execution. Additionally, setting deadlines ensures timely completion, while prioritization helps teams focus on the most urgent or critical tasks first. Assigning tasks effectively requires careful consideration of team members' expertise, workload, and availability. By distributing tasks based on skill sets and capacity, the system prevents bottlenecks and ensures balanced work allocation. Additionally, categorizing tasks based on departments, functions, or project phases enhances organization and simplifies tracking.

Another key factor is dependency management, which ensures that interdependent tasks are executed in the correct sequence. Identifying these dependencies early minimizes delays and allows teams to plan accordingly. This structured approach to task creation and assignment aligns work with organizational goals and enhances overall efficiency.

3.2.2 Automated Notifications

Automated notifications play a vital role in keeping team members informed and proactive. When a task is assigned, users receive instant alerts, ensuring that no assignment goes unnoticed. These real-time notifications enhance accountability and help employees prioritize tasks effectively.

Deadline reminders are another essential feature, sending periodic alerts before due dates to prevent last-minute rushes or missed deadlines. By keeping teams aware of upcoming deadlines, the system helps maintain a smooth workflow. Additionally, task status updates notify users about changes such as approvals, rejections, or modifications, keeping them in sync with project developments.

For high-priority tasks, escalation alerts ensure that delays are addressed promptly. If a task remains overdue, the system automatically notifies higher management, prompting necessary interventions. Customizable notification settings further allow users to adjust alert preferences, ensuring a personalized and effective communication system.

3.2.3 Real-Time Progress Tracking

A real-time tracking dashboard provides complete visibility into task progress, enabling better management and quick decision-making. For individual users, it offers a personalized view displaying pending tasks, completed assignments, and upcoming deadlines. This helps team members stay organized and track their contributions effectively.

For administrators, the dashboard provides a broader perspective on team performance. It highlights overall completion rates, identifies bottlenecks, and helps managers allocate resources efficiently. Performance metrics such as task completion rate and turnaround time offer valuable insights for process optimization.

To make tracking intuitive, visual analytics like charts and graphs depict task distribution, workload trends, and progress over time. A log of task modifications also ensures transparency by recording reassignment details, deadline extensions, and status changes. This comprehensive tracking system enables proactive problem-solving and enhances productivity.

3.2.4 Collaboration & Feedback

Seamless collaboration is essential for efficient task execution. The module incorporates an integrated messaging system, allowing team members to communicate within the platform without relying on external tools. This centralization of discussions ensures that all relevant information is easily accessible and reduces communication gaps.

Document sharing is another critical feature, enabling users to upload and access files directly within the task module. Having relevant documents linked to tasks improves efficiency and eliminates the need for multiple email exchanges. Additionally, a commenting feature allows users to provide updates, seek clarifications, and leave important notes related to tasks.

To enhance coordination, version control is implemented to maintain different document iterations, preventing data loss or confusion. A peer review system also encourages collaboration by allowing team members to provide feedback before an admin's final approval. This structured feedback loop ensures quality control and continuous improvement.

3.2.5 Task Review & Status Updates

Once a task is completed, it undergoes a structured review process to ensure quality and accuracy. Admins evaluate submissions based on predefined criteria such as correctness, completeness, and relevance to project goals. This systematic assessment minimizes errors and ensures high standards of work. Users receive constructive feedback, which may include suggestions for improvement or direct approval for completion. Transparent feedback mechanisms help employees refine their work and enhance their skills over time. The system automatically updates task statuses to indicate whether a submission is pending, approved, or requires revisions, keeping all stakeholders informed.

Additionally, performance review reports provide insights into individual and team efficiency. These reports help managers identify areas for improvement and recognize high performers. Completed tasks are archived systematically for future reference, ensuring that past work remains accessible for audits and learning purposes.

3.2.6 The Search and Filter Capabilities

The Task Management Module is designed to help users quickly locate and manage tasks by applying specific criteria. The search function allows for full-text searches across task titles, descriptions, comments, and attached documents, with results ranked by relevance. Advanced search features support complex queries, including boolean operators and phrase matching, enabling precise task retrieval. The filtering system allows users to narrow down tasks by status, priority, deadline, assignee, or custom tags, helping them focus on specific task subsets based on their operational needs.

Additionally, users can save frequently used search queries and filter configurations for quick access, and customizable views can be created for tasks such as “High Priority Tasks” or “Tasks Due Soon.” These features enhance the task management experience by streamlining access to relevant information and enabling efficient task tracking. With intuitive controls and visual feedback, the search and filter tools ensure that users can navigate large volumes of task data with ease, improving decision-making and operational efficiency.

3.3 SELECTION OF COMPONENTS, TOOLS, AND TECHNIQUES

The development of the Task Management Module was carried out using the MERN stack, a powerful combination of technologies that ensure scalability, flexibility, and efficient performance. The MERN stack consists of MongoDB, Express.js, React.js, and Node.js, each playing a crucial role in the system’s architecture.

3.3.1 Technology Stack Selection

- **MongoDB (Database):** A NoSQL database was chosen to handle structured and semi-structured data efficiently. MongoDB provides flexibility in storing task-related information, including user roles, task dependencies, and notifications. Its scalability makes it ideal for handling large volumes of tasks across multiple users.
- **Express.js (Backend Framework):** Express.js was selected to build a robust backend with RESTful API endpoints. It ensures seamless communication between the front end and the database, handling task operations such as creation, assignment, updates, and notifications.
- **React.js (Frontend Framework):** The frontend was developed using React.js to create a dynamic and interactive user interface. React’s component-based architecture allows for reusable UI elements, making the task dashboard, notifications, and reports visually appealing and responsive.
- **Node.js (Server Environment):** Node.js powers the backend server, enabling asynchronous operations and handling multiple concurrent user requests

efficiently. It plays a critical role in ensuring the system remains fast and responsive.

3.3.2 Tools and Libraries Used

- **Frontend Libraries:**
 - react-select: Provides customizable dropdowns for task assignment and filtering.
 - lucide-react & react-icons: Used for intuitive and visually appealing icons.
 - recharts, react-chartjs-2, chart.js: Integrated for visualizing task analytics and reports.
 - Material-UI / CSS: Used for styling and enhancing the user experience with modern UI components.
- **Backend Libraries:**
 - express: Facilitates server-side logic and API development.
 - cors: Ensures smooth API communication by handling cross-origin requests.
 - body-parser: Enables parsing of incoming request bodies.
 - multer: Handles file uploads for task attachments.
- **State Management & Database Interaction:**
 - Redux: Used for efficient state management, allowing seamless handling of task status updates and notifications.
 - Mongoose: A MongoDB object modeling tool that simplifies database interactions.
- **Security & Authentication:**
 - JWT (JSON Web Token): Implemented for secure user authentication and role-based access control.
 - **Data Encryption:** Ensures the protection of sensitive task-related information.

3.3.3 Techniques Implemented

- **RESTful API Development:** APIs were designed to handle all CRUD (Create, Read, Update, Delete) operations for tasks, users, and notifications.
- **Task Prioritization Algorithm:** A logic-based approach was implemented to categorize tasks based on urgency and deadlines, ensuring high-priority tasks receive immediate attention.
- **Optimized Query Performance:** Indexing and query optimization techniques were applied in MongoDB to improve data retrieval speed.
- **Security Measures:** JWT authentication, role-based access control, and data encryption were used to protect sensitive task information.

By strategically selecting the MERN stack and additional tools, the Task Management Module was developed to ensure high performance, scalability, and user-friendly interactions.

3.4 TESTING AND EVALUATION

To ensure the **Task Management Module** functions optimally, a structured testing and evaluation process was conducted. Various testing methodologies were applied to verify the system's reliability, usability, and performance. These tests were designed to address potential issues early in the development cycle, ensuring a seamless and efficient user experience. Testing covered different aspects of the system, including individual components, module interactions, functionality, performance under load, security vulnerabilities, and user feedback.

3.4.1 Unit Testing

Unit testing focused on validating the functionality of individual components and modules. Critical features such as task creation, status updates, and notifications were tested in isolation to ensure they performed as expected. Automated tests were implemented using **Jest** and **Mocha**, allowing for rapid and consistent validation of

backend API responses. This approach helped detect bugs early in development, reducing the likelihood of errors in later stages. By verifying each module separately, unit testing ensured that foundational system components were reliable and functioned independently before integrating them into the complete system.

3.4.2 Integration Testing

Integration testing was conducted to assess how different system modules interacted with each other. The smooth communication between the **frontend, backend, and database** was a key focus, ensuring that features like **task assignment, user authentication, and notifications** worked seamlessly together. By simulating real-world workflows, this testing phase helped identify any inconsistencies or disruptions in data flow. Special attention was given to API calls and data exchanges between components, verifying that responses were correctly formatted and processed. Any detected mismatches or errors were promptly addressed, ensuring uninterrupted functionality across all integrated features.

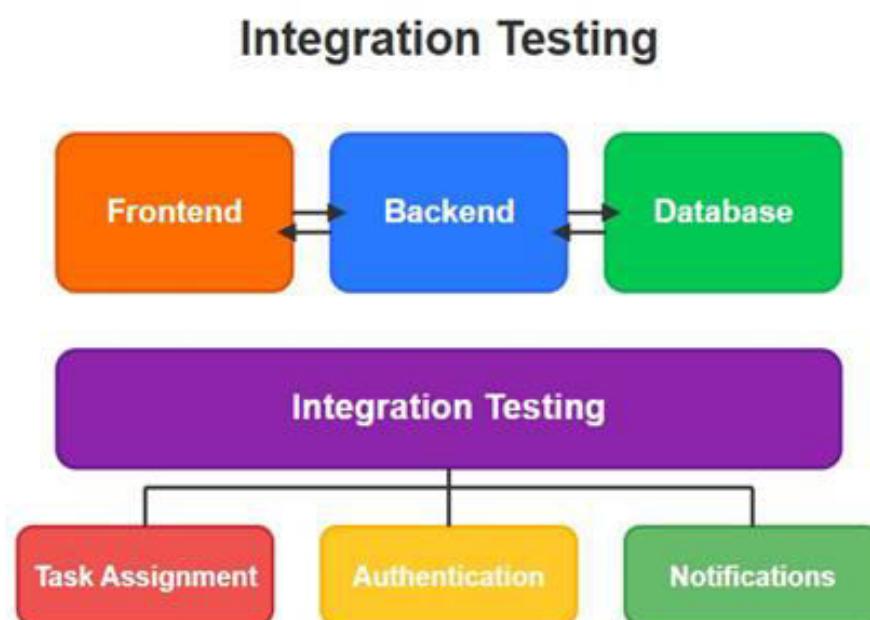


Figure 3.2 (Integration Testing)

3.4.3 Functional Testing

Functional testing aimed to confirm that all features of the **Task Management Module** operated as expected. Key functionalities such as task assignment, priority settings, and dependency management were rigorously tested to validate their correctness. Each action, from creating and assigning tasks to updating statuses and setting deadlines, was verified for accuracy. **Postman** was used to test API endpoints, ensuring that requests and responses aligned with the expected behavior.

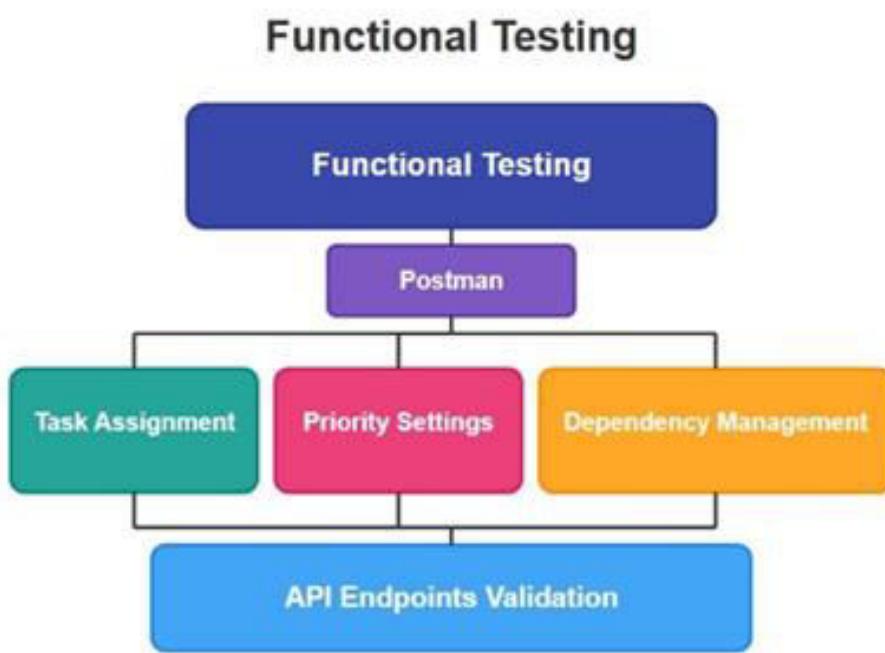


Figure 3.3 (Functional Testing)

3.4.4 Performance Testing

Performance testing was conducted to measure how well the system handled various user loads. Using **JMeter**, load testing was performed to evaluate the response time and system behaviour under high traffic conditions. This ensured that the platform could efficiently process a large number of simultaneous task operations without delays. The database was also optimized to handle high query volumes, ensuring fast retrieval and

updates of task data. Performance benchmarks were established, and any slow-performing areas were optimized to maintain a **high-speed, lag-free experience** for users.



Figure 3.4 (Performance Testing)

3.4.5 Security Testing

Security was a primary concern, and comprehensive security testing was carried out to identify and mitigate vulnerabilities. The system was examined for threats such as **SQL injection, Cross-Site Scripting (XSS), and Cross-Site Request Forgery (CSRF)** to prevent unauthorized data access and manipulation. Role-based access control was thoroughly tested to ensure that users only had permissions relevant to their roles, preventing unauthorized modifications. Encryption and authentication mechanisms were validated to protect sensitive user information, ensuring compliance with **security best practices**. These security measures reinforced the system's integrity and safeguarded task-related data against potential threats.

3.4.6 User Acceptance Testing (UAT)

User Acceptance Testing (UAT) was conducted to assess the overall user experience and system usability. Potential end-users were invited to interact with the platform, providing

valuable feedback on the interface, navigation, and functionality. The feedback collected helped in identifying areas where improvements were needed, leading to refinements in UI components and workflow efficiency. Adjustments were made to enhance ease of use, ensuring that the system was intuitive and user-friendly. By incorporating real user insights, UAT ensured that the final product aligned with user expectations and delivered an optimal task management experience.

3.4.7 Evaluation Metrics

1. **Accuracy:** Verified correct task assignments, updates, and prioritization.
2. **System Responsiveness:** Ensured fast page loads and API response times.
3. **User Satisfaction:** Collected feedback through user testing sessions.
4. **Error Rate:** Monitored the system for any failed task operations or bugs.

3.5 CHALLENGES AND CONSIDERATIONS

Despite the advantages of the Task Management Module, several challenges must be considered. Scalability is a key concern, as the system must efficiently handle increasing task volumes without compromising performance. As organizations grow, maintaining responsiveness and optimizing resource allocation become crucial.

User adaptation is another factor, as employees may require training to fully utilize the platform's features. Ensuring smooth onboarding through tutorials, guides, and support systems helps maximize user engagement. Additionally, integration with existing tools and software must be seamless to prevent workflow disruptions.

Security is a top priority, given the sensitivity of task-related data. The system must implement robust access controls, encryption, and authentication mechanisms to safeguard information from unauthorized access. Customization capabilities are also essential to tailor the module to specific business needs.

3.6 APPLICATION AND PROPOSED SYSTEM

The Task Management Module is designed to streamline task assignment, tracking, and completion across teams and projects. It enhances productivity, collaboration, and efficiency, making it applicable across various industries and organizational needs.

3.6.1 Corporate and Enterprise Task Management

Organizations and enterprises can use the system to manage projects efficiently by planning, delegating, and monitoring tasks. Managers can assign tasks based on priority, track progress, and ensure deadlines are met. The role-based access control enhances transparency and accountability, ensuring that only authorized users can access or modify sensitive information.

3.6.2 Software Development and Agile Workflows

The system supports Agile development methodologies by facilitating sprint planning, backlog management, and real-time task updates. It integrates seamlessly with DevOps tools, ensuring smooth workflow execution in software development projects. Additionally, the analytics dashboards provide insights into team performance, helping developers optimize processes and improve efficiency.

3.6.3 Educational Institutions

Educational institutions can utilize the system to manage assignments, projects, and deadlines for both students and educators. Teachers can assign coursework, track student progress, and collaborate with peers on academic projects. The system also sends automated reminders for upcoming submissions and evaluations, reducing missed deadlines and enhancing productivity.

3.6.4 Healthcare and Hospital Management

Hospitals and healthcare facilities can benefit from the system by efficiently managing patient appointments, treatment schedules, and follow-ups. Medical staff can track assigned tasks, ensuring timely medical care and improved patient outcomes. With secure role-based access, sensitive patient information remains protected while enabling authorized personnel to handle necessary tasks.

3.6.5 Small and Medium Enterprises (SMEs)

SMEs can use the system to allocate tasks, track business operations, and ensure smooth workflow execution. By integrating notifications and collaboration tools, businesses can minimize miscommunication and improve coordination among teams. The real-time task updates and prioritization features help in managing resources effectively, leading to better business outcomes.

3.6.6 Freelancers and Remote Work Management

Freelancers and remote teams can leverage the system to organize tasks, set deadlines, and manage project milestones efficiently. The platform improves collaboration by providing real-time updates, ensuring that team members stay aligned despite working from different locations. Features like time tracking and progress monitoring help freelancers optimize their work schedules and enhance productivity.

3.6.7 Government and Public Sector Applications

Government offices and public sector organizations can utilize the system to manage administrative tasks and citizen services effectively. Departments can coordinate better by tracking assigned responsibilities and ensuring projects are executed on time. The centralized task management platform enables streamlined operations and improves service delivery for public welfare initiatives.

3.6.8 Event Planning and Management

Event organizers can use the system to plan and manage various event-related tasks such as scheduling, venue booking, and resource allocation. The platform helps teams collaborate efficiently, ensuring all tasks are executed seamlessly. Real-time updates enable organizers to track progress, resolve issues promptly, and deliver successful events with minimal disruptions.

3.7 CONCLUSION

This chapter outlined the objectives and methodology of the Task Management Module, detailing its core functionalities and structured workflow. By automating task management, enhancing communication, and enabling real-time tracking, the module ensures improved efficiency, accountability, and collaboration within teams. The next chapter will focus on the implementation aspects, covering system architecture, database design, and user interface development.

CHAPTER 4

PROPOSED WORK MODULE

This section reviews new ways to make task management better for software teams. It looks at adding data analysis and live updates to a central Task Management Module. This combines everything in one place to fix problems with old systems. Good task management is key for projects, teamwork, and using resources well. Current systems often lack openness, clear roles, and easy team communication. This can slow down work and cause issues. To solve these problems, the new module has live status, chat tools, and data analysis. It helps teams focus on what matters most. Team members can easily see their work and how the project is going. Later parts will explain how the new system works. First, we discuss old task management limits. Then, we show how new features fix them. Next, we outline how we designed, built, and set up the system.

Also, this section shares results from tests. Task completion, user happiness, and system speed all got better. By the end, you'll see how data and live updates improve task management. This leads to better work and results. The module fixes current issues and prepares for future task management changes. This helps teams stay competitive.

4.1. PROPOSED METHODOLOGY

The proposed methodology is designed to fundamentally enhance the productivity and efficiency of task management within organizations through the integration of advanced features in a centralized Task Management Module. The approach employs cutting-edge technologies to overcome the weaknesses of traditional task management systems that are largely plagued by transparency shortages, poor communication, and resource wastage. Through the integration of real-time tracking, advanced analytics, and in-built communication

capabilities, the proposed module is aimed at fundamentally transforming task planning and execution at the team and project levels.

Conventional task management systems may not always be equipped with the tools necessary for efficient collaboration and accountability, resulting in project delays and inefficiency. The solution presented here offers a comprehensive solution that not only simplifies task management procedures but also increases productivity among team members and project deliverables. Solving some of the most essential areas, like task generation, real-time updates, and performance monitoring, the module offers team members obvious visibility into their tasks and project progress.

4.2 METHODOLOGY OF THE PROPOSED WORK

4.2.1 Preprocessing and Data Acquisition

Data collection and preprocessing are critical components of the Task Management Module to ensure the smooth and efficient operation of the system. The operation of the module is heavily dependent on the quality and consistency of the data that it processes. The data collection is performed by gathering data on tasks, team performance, and project progress from various sources, including existing databases, project management tools, and user inputs. The data collected is pre-processed to make it uniform and accurate to produce credible insights and reports.

Preprocessing involves data cleaning, normalization, and transformation. Data cleaning removes all inconsistencies, duplicates, or errors from the data to maintain its integrity. Normalization is done to normalize the data such that it is compatible with the analytical tools of the module. This is done to ensure that the data is consistent in its format such that proper analysis and reporting are done.

Besides, data transformation methods are used to transform raw data into a structured format that is easily processed by the algorithms of the module.

Permission	Admin	Staff	Student
Create Tasks	✓	✓	X
Assign Tasks	✓	✓	X
Edit Tasks	✓	✓	Limited
Approve Tasks	✓	✓	X
Access Reports	✓	✓	Limited
System Settings	✓	Limited	X

Table 4.1 (Roles and Permissions Matrix)

4.2.2 System Design and Development

The design and development phase is the central part of the Task Management Module, in which the system architecture and the functionalities are created with utmost care to meet organizational requirements. The process involves specification of the system requirements, design of the user interface, and development of the core features of the module. The system is user-friendly and easy to use so that the users can work on the platform and gain the advantages of the platform effectively.

The development process follows agile methodologies, allowing for the flexibility and responsiveness to user feedback. The process involves iterative development, testing, and refinement cycles to ensure that the module matures to

fit changing requirements and user expectations. Key features such as task creation, real-time tracking, and in-built communication features are designed and tested to ensure they harmonize together and provide value to users.

4.2.3 Real-Time Tracking and Status Updates

Real-time status tracking feature is a central part of the Task Management Module, providing real-time status updates of the project and task progress. It enables the team members to monitor the tasks in real-time, providing transparency and accountability within the team. Through real-time reporting of the task statuses, the module helps the team to detect potential bottlenecks and resolve them in a timely fashion, keeping projects on track.

The real-time tracking system is designed to be highly responsive, with updates and status changes handled at low latency. This delivers the latest information to users, allowing them to make informed decision-making and make adjustments accordingly. The system also has automated notifications and alerts, ensuring that team members remain informed of significant changes and deadlines.

4.2.4 Integrated Communication Tools

Integrated communication features are a central component of the Task Management Module, enabling smooth coordination between team members. The features enable users to communicate and share information directly on the platform, minimizing the use of third-party communication channels and the phenomenon of information silos. By containing communication in a single place, the module maximizes coordination between teams and keeps all team members on the same page in terms of project objectives and milestones.

The communication features are incorporated to facilitate various modes of communication like messaging, file transfer, and video conferencing. This allows the team to pick the most appropriate mode of communication that is appropriate

for their needs, be it a quick message for acceptance of an activity or a video conference to talk about project details. Communication is effective and efficient with the features incorporated into the module, which helps in improved project results.

4.2.5 Advanced Reporting and Analytics

The advanced reporting and analytics capabilities of the Task Management Module provide organizations with a clearer image of team performance and project efficiency. The features track important performance indicators such as the percentage of task completion, resource utilization, and project schedules, enabling managers to make informed decisions and grasp areas of improvement. With patterns and trends in task management analysis, the module enables strategic planning and resource deployment for efficient organizational objectives.

The tools of analytics are easy to use, and the managers are able to easily generate detailed reports and visualizations. The reports provide a comprehensive summary of team performance and identify the strengths and weaknesses. The managers are able to introduce targeted strategies to increase productivity and efficiency through the ability to access and analyze this information.

4.2.6 Security and Customization

Security and personalization are fundamental elements of the Task Management Module, ensuring that the system is customized to suit the specific needs of every organization while protecting confidential data. The module is engineered with advanced security mechanisms, including encryption technology and access controls, to ensure data privacy and integrity. These ensure that only legitimate staff members can access specific information, providing organizations with reassurance.

Customization features allow organizations to tailor the module to their individual workflows and processes. This allows the module to be integrated into existing systems and to grow with changing needs. By addressing the unique needs of users with a tailored task management solution, the module enhances user satisfaction and adoption, ultimately leading to its success.

4.2.7 Deployment and Integration

The deployment and integration stage ensures successful implementation of the Task Management Module in organizations and integration with currently installed systems. This stage necessitates planning and coordination to eliminate disruptions and make it compatible with currently installed IT infrastructures. The module can be easily deployed, with support and training made available to make the transition a smooth one.

Compatibility with the current systems is an important factor because it enables organizations to unleash the highest potential of the module. Through ensuring compatibility of the module with other platforms and tools, organizations are in a position to get the highest value from it and attain their task management objectives better.

4.2.8 Validation and Testing

Testing and validation are important components of the Task Management Module to ensure that the system is stable and provides what the company needs. This is a stage characterized by rigorous testing of the functionalities and features of the module like user interface, real-time monitoring, communication functionality, and analytics. The testing is done under various conditions to ensure that the module runs smoothly under various environments and conditions. User feedback is a critical component of the validation process, with the feedback pointing out the usability and functionality of the module. The feedback is utilized

in the improvement process to ensure that the module is up to the users' expectations and organizational work processes. Through proactive engagement with users and utilization of their feedback, the development team can create an even more user-friendly and beneficial task management system.

4.3 SYSTEM REQUIREMENT

1.Core I3(above 7th generation) / AMD Ryzen 3 or above.

2.GTX 1060 or above.

4.4 IMPLEMENTATION AND DEVELOPMENT

The **Task Management Module** is designed to streamline task creation, tracking, assignment, and completion for organizations. Its implementation involves several stages, including designing the architecture, selecting appropriate technologies, and ensuring the integration of various components for seamless functionality. The development process is aimed at creating a system that enhances team productivity, promotes collaboration, and ensures efficient task oversight.

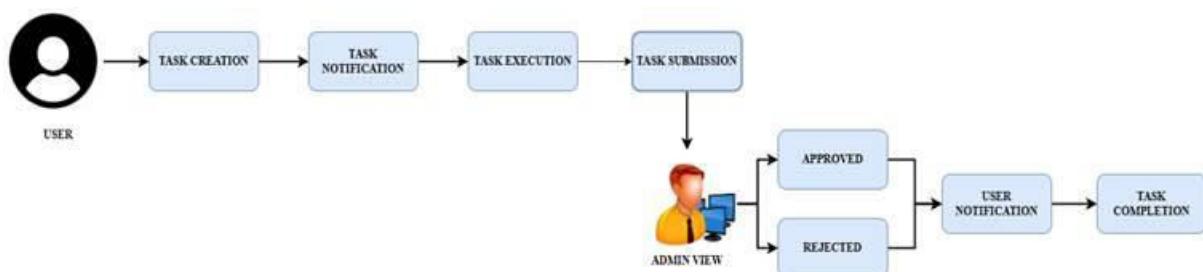


Figure 4.1 (Architecture and Design)

4.4.1 Requirements Gathering and Analysis

Before starting the development, it is essential to gather the requirements for the task management system. The first step involves identifying the needs of various stakeholders, including **admins**, **managers**, and **users**. Key requirements include the ability to create tasks, assign them to appropriate users, track progress, set

priorities, define deadlines, and provide feedback. Once the requirements are gathered, the development team can define the scope of the system, ensuring it meets the needs of all users.

4.4.2 System Architecture Design

The **architecture design** of the Task Management Module plays a critical role in ensuring the scalability, security, and overall performance of the system. The system follows a **three-layer architecture**: the **frontend**, **backend**, and **database layer**.

Frontend: The user interface (UI) is designed for ease of use and to provide clear task management features such as task creation, real-time progress tracking, priority setting, and collaboration tools. Modern frontend technologies like **Mernstack** (React or Angular) are used to create a responsive and intuitive UI.

Backend: The backend is responsible for processing data, handling business logic, and communicating with the database. **Node.js** can be used to build a robust backend that supports real-time updates, notifications, and status tracking. APIs are designed to handle requests such as task creation, task assignment, status updates, and feedback submission.

Database: A **relational database** such as **MySQL** is used to store user data, task details, progress updates, feedback, and reports. The database design includes tables for users, tasks, task assignments, comments, and status logs to ensure efficient data storage and retrieval.

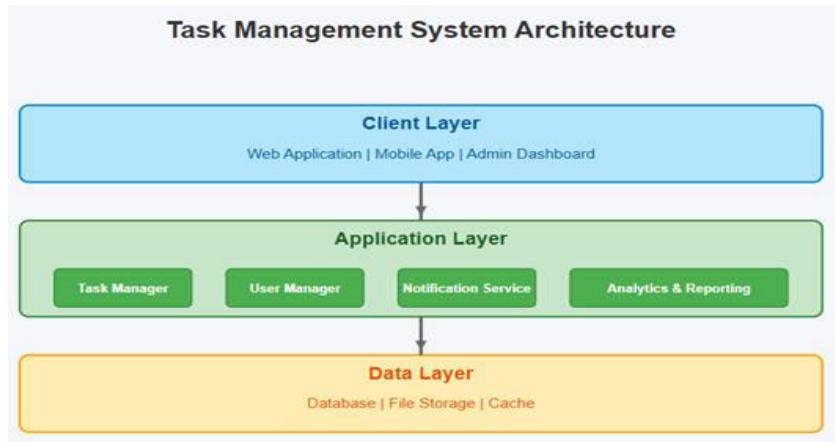


Figure 4.1 (System Architecture)

4.4.3 Core Functionalities Implementation

The core features of the Task Management Module are implemented as follows:

Task Creation and Assignment: Admins and managers can create tasks by specifying task names, descriptions, priorities, deadlines, and assigned team members. Once created, tasks are stored in the database and are visible to the users assigned to them. The system will automatically notify users of new tasks, allowing them to begin work immediately.

Priority and Deadline Management: Each task is assigned a priority (low, medium, high) and a deadline. Automated reminders are set to alert users of impending deadlines, helping them stay focused on the most critical tasks.

Real-Time Progress Tracking: Users update their progress as they complete parts of their tasks. The system reflects these changes in real-time, ensuring that both admins and users can monitor task completion. The **dashboard** shows task progress, percentage completed, and upcoming deadlines.

Collaboration and Feedback: The system enables communication through comments and file sharing within each task. Users can leave feedback on task progress, and admins can review and approve or reject tasks based on the

provided feedback. All interactions are tracked in the database, ensuring transparency.

Notifications and Alerts: **Automated notifications** are essential for keeping users informed about task updates, approaching deadlines, and feedback provided. These notifications are implemented using tools like **Web Sockets** for real-time updates or **cron jobs** for scheduled reminders.

4.4.4 System Integration

The Task Management Module integrates with other tools such as calendar applications, email systems, and **CRM platforms**. This integration allows seamless synchronization of task deadlines, user availability, and project progress across multiple tools. APIs are developed to facilitate data sharing between systems, ensuring that users don't have to manually enter information into multiple platforms.

4.4.5 Testing and Quality Assurance

Before the module is deployed, rigorous **testing** is conducted to ensure all features function as expected. Testing involves unit tests, integration tests, and end-to-end tests to validate the functionality of task creation, assignment, tracking, and notifications. Performance testing is done to ensure the system can handle a high volume of users and data.

4.4.6 Deployment and Maintenance

Once the system is fully developed and tested, it is deployed to a production environment. The module is hosted on cloud platforms for scalability and reliability. After deployment, regular **maintenance** is performed to update features, address bugs, and improve the system based on user feedback.

CHAPTER 5

RESULT AND DISCUSSION

5.1 RESULT

The **Task Management Module** offers significant improvements in productivity, accountability, and collaboration within organizations. After implementation, the system brings measurable results in the way tasks are created, tracked, and completed, leading to enhanced operational efficiency. One of the primary outcomes is **improved task management**. Admins can create and assign tasks with clear objectives, priorities, and deadlines, ensuring that work is evenly distributed across teams. The system's automated notifications and reminders ensure that users stay on track and complete their tasks within the set timeframes, significantly reducing the risk of missed deadlines. This leads to a **reduction in delays** and ensures that tasks are completed in a timely manner. The **real-time progress tracking** feature ensures that admins and managers have visibility into ongoing tasks. This transparent tracking allows quick intervention when a task is falling behind schedule, helping to prevent bottlenecks. Additionally, this visibility leads to **better resource allocation** since managers can assess the workload and make adjustments as necessary. Another key result is **enhanced collaboration** within teams. The built-in communication and feedback mechanisms allow team members to share updates, ask questions, and provide feedback directly within the platform. This centralized communication improves **team interaction**, reduces confusion, and ensures that everyone is aligned on the task's goals and progress .Furthermore, the **performance analytics and reports** feature enables admins to monitor task completion rates and team productivity.

These insights drive better decision-making, helping to optimize workflows and improve future task allocation. Ultimately, the **Task Management Module** leads to more organized, efficient, and productive teams, enabling organizations to achieve their goals faster and more effectively.

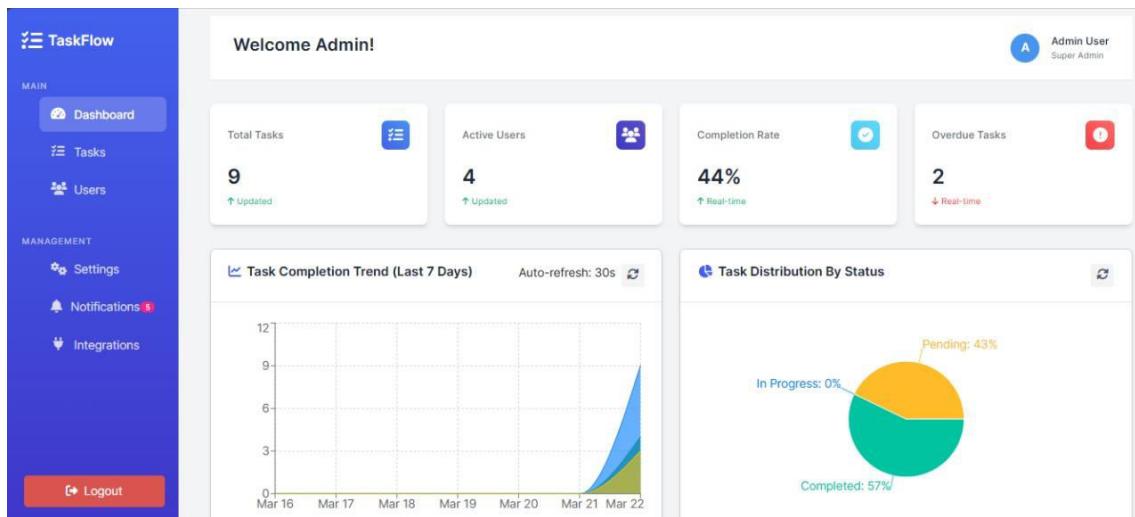


Figure 5.1 (Admin Dashboard)

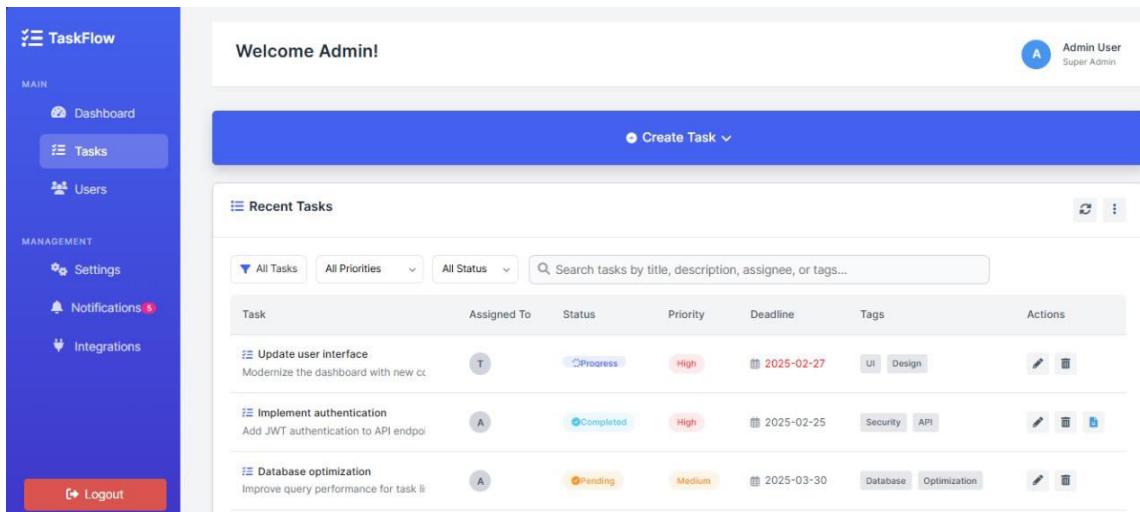


Figure 5.2 (View/Create tasks)

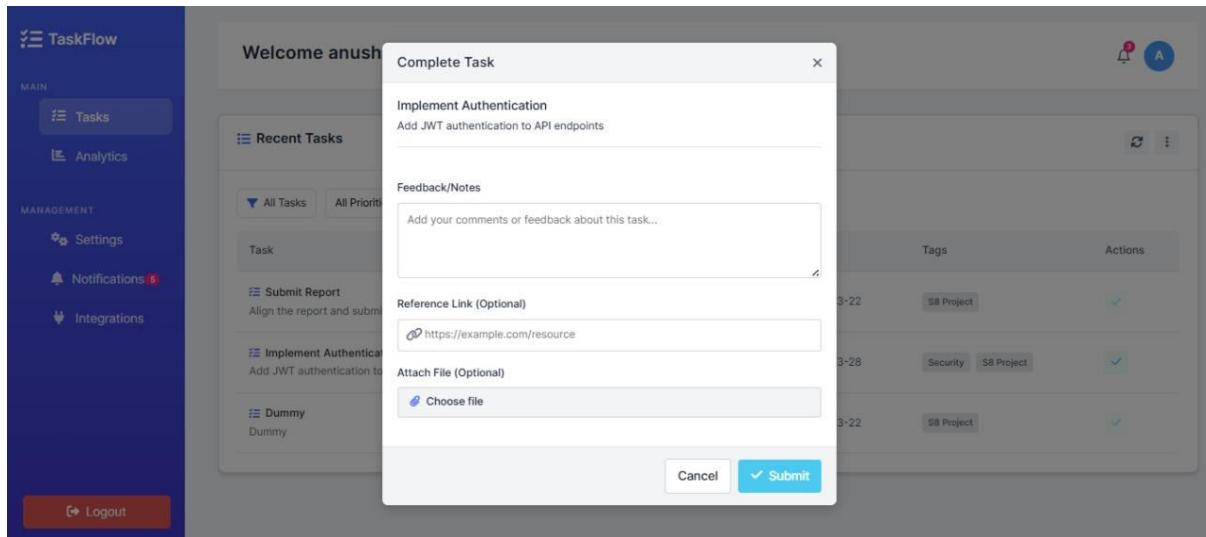


Figure 5.3 (Staff Task Submission)

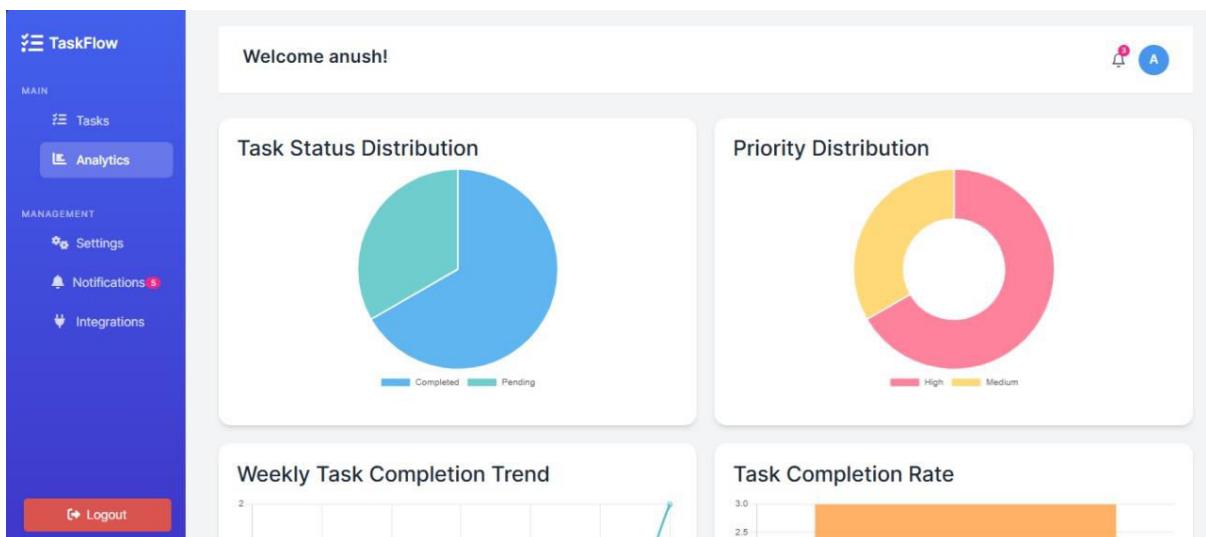


Figure 5.4 (Staff Analytics)

5.2 DISCUSSION

The **Task Management Module** has the potential to significantly improve the way organizations manage tasks across teams. By automating key processes like task creation, assignment, and tracking, the system enhances workflow efficiency and fosters better collaboration.

However, while the module offers numerous benefits, its successful implementation depends on several factors, including system integration, user adoption, and continuous improvement. One of the key advantages of the module is its ability to **reduce human error** and ensure **timely task completion**. With automated notifications and reminders, users are less likely to forget important deadlines or updates. The integration of priority levels and deadlines ensures that the most important tasks are completed first, aligning efforts with organizational goals. This results in higher productivity and less time spent on follow-ups or manual tracking. Additionally, the **real-time progress tracking** feature offers transparency, allowing both admins and team members to monitor task status in real time. This level of visibility promotes accountability and ensures that resources are being allocated effectively. However, this level of transparency could lead to micromanagement if not handled properly. Admins must balance overseeing progress with giving team members the autonomy to manage their tasks. The **collaboration and feedback features** foster a more interactive work environment, ensuring that communication happens within the task platform itself. While this centralizes communication and reduces external tools like email, it may also require users to adapt to new ways of collaborating, which could initially slow down the adoption process.

Moreover, the module's **integration with other systems** like CRMs or calendars provides a seamless workflow, but it also requires technical expertise for setup. Compatibility issues and proper configuration must be carefully considered during implementation to avoid disruptions. In conclusion, the Task Management Module can greatly enhance organizational efficiency, but successful implementation hinges on proper setup, user engagement, and ongoing system optimisation.

CHAPTER 6

CONCLUSION AND SUGGESTIONS FOR FUTURE WORK

6.1 CONCLUSION

The Task Management Module is an essential tool for organizations looking to streamline their task allocation, tracking, and completion processes. By providing a centralized platform for creating, assigning, and monitoring tasks, it helps organizations improve productivity, accountability, and overall efficiency. With features like automated notifications, real-time progress tracking, and priority management, the module ensures that tasks are completed on time and aligned with organizational goals. One of the primary benefits of the system is its ability to enhance team collaboration. By enabling communication and feedback directly within the platform, the module reduces reliance on external tools like email, fostering a more organized and cohesive work environment. Real-time updates ensure transparency, allowing both team members and admins to monitor task progress and address potential delays before they affect the workflow. This transparency boosts accountability and ensures that tasks are handled by the right people at the right time. Moreover, the integration capabilities of the Task Management Module ensure that it seamlessly works with other systems like CRMs, calendars, and project management tools, creating a unified workflow. This integration minimizes the need for manual data entry and keeps all systems synchronized, leading to improved data accuracy and reduced redundancy. However, the successful implementation of the module requires careful planning, particularly regarding system integration and user adoption. It is essential to train users and ensure that the module is aligned with the organization's specific needs. While the module offers numerous benefits, its success hinges on proper execution, continuous feedback, and adaptability to evolving business requirements. In conclusion, the Task Management Module offers a robust solution for managing tasks efficiently, fostering collaboration, and ensuring timely task completion. With proper integration and user engagement, organizations can leverage its full potential to enhance productivity and achieve their objectives more effectively.

6.2 SUGGESTIONS FOR FUTURE WORK

6.2.1 AI Integration for Smart Task Assignment: One potential area for future development is the integration of Artificial Intelligence (AI) to optimize task assignments. By analyzing historical task data, the system could predict the best-suited team members based on their workload, skills, and past performance. This would automate the task allocation process, ensuring that resources are optimally utilized and tasks are assigned more effectively.

6.2.2 Advanced Analytics and Predictive Insights: Future iterations of the module could include predictive analytics to forecast potential delays, bottlenecks, or overburdened team members. By analyzing task completion rates and patterns, the system could suggest adjustments or alert admins about potential issues before they become critical. This would enable better proactive management of projects and tasks.

6.2.3 Mobile App Integration: To improve accessibility and flexibility, the development of a dedicated mobile app for the Task Management Module could allow users to access and update tasks on-the-go. This would make it easier for remote teams or field workers to stay connected with task progress, submit updates, and communicate with colleagues in real-time, even when they are away from their desks.

6.2.4 Enhanced Collaboration Tools: While the current version supports basic communication and feedback, future work could include more sophisticated collaboration tools like video conferencing integration, task brainstorming boards, and live document editing. These features would further improve real-time collaboration, making it easier for teams to work together seamlessly, regardless of location.

6.2.5 Integration with Emerging Technologies: Future development could focus on integrating the Task Management Module with emerging technologies like Internet of Things (IoT) or Blockchain. For example, IoT devices could track real-time data related to task completion, providing additional insights for managers. Blockchain could enhance security, making task data tamper-proof and ensuring transparency.

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APPENDICES

I. Bill of Materials: Not Applicable

II. Coding: <https://github.com/Theternos/TaskFlow>

III. Standard tables/graphs that are not mentioned in the report: Not Applicable

IV. Presentation Certificate: <https://tinyurl.com/ICMCCT-Certificates>

V. Publication Proof: Not Applicable

VI. Work Contribution

Batch Member 1 (Kavinkumar B):

- Designed the database schema with well-defined relationships and constraints for efficient data management.
- Built core and advanced UI components with a focus on clean design and user experience.
- Developed and integrated backend APIs with business logic to ensure reliable task operations.
- Led frontend-backend integration and performed full functional testing to validate system workflows.

Batch Member 2 (Allwin G B):

- Implemented security features like user roles, access controls, and encryption to protect data.
- Integrated dynamic content on the frontend and optimized state management for better responsiveness.
- Conducted backend testing and fine-tuned API performance for faster communication.
- Resolved system bugs and ensured stability across all connected modules.

Batch Member 3 (Anusuya J):

- Created stored procedures, triggers, and functions to automate backend processes efficiently.
- Integrated frontend with backend systems and implemented input validation for accurate data handling.
- Developed optimized queries to support complex task scenarios and improve database performance.

- Conducted unit testing and resolved bugs to enhance the reliability and performance of the system.

Batch Member 4 (Saaivignesh S):

- Tested database backup and recovery processes to ensure data reliability during failures.
- Verified frontend-backend integration and enhanced UI responsiveness across devices.
- Validated API functionality and monitored overall system performance for consistency.
- Reviewed test coverage and documented results to confirm readiness for deployment.

VII. Plagiarism for Project Report:

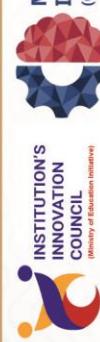
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.....held during March 26.03.2025 & 27.03.2025 organized by the Department of Scientific Computing, Institute of CSE, SIMATS Engineering, SIMATS, Thandalam, Chennai.



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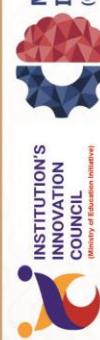
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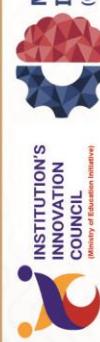
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