

WEB-BASED TIME AND PRODUCTIVITY ANALYSIS

A PROJECT REPORT

Submitted by,

**VARSHA. G - 20201CSE0755
GAGANASHREE. D -20201CSE0754**

Under the guidance of,

Dr. S Prakash

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PRESIDENCY UNIVERSITY
SCHOOL OF COMPUTER SCIENCE ENGINEERING

CERTIFICATE

This is to certify that the Project report **“WEB-BASED TIME AND PRODUCTIVITY ANALYSIS”** being submitted by **“VARSHA.G and GAGANASHREE.D”** bearing roll number(s) **“20201CSE0755 and 20201CSE0754”** in partial fulfilment of requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering is a bonafide work carried out under my supervision.

Dr. S PRAKASH
Assistant Professor
School of CSE
Presidency University

Dr. PALLAVI R
Associate Professor & HoD
School of CSE
Presidency University

Dr. C. KALAIARASAN
Associate Dean
School of CSE
Presidency University

Dr. L. SHAKKEERA
Associate Dean
School of CSE
Presidency University

Dr. SAMEERUDDIN KHAN
Dean
School of CSE
Presidency University

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **WEB-BASED TIME AND PRODUCTIVITY ANALYSIS** in partial fulfilment for the award of Degree of **Bachelor of Technology in Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Dr. S. PRAKASH, Assistant Professor, School of Computer Science Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

Name	Roll-no	Signature
VARSHA.G	20201CSE0755	
GAGANASHREE D	20201CSE0754	

ABSTRACT

Effective time management is crucial for the success of software development projects. This article proposes a comprehensive method designed to optimize the allocation and tracking of time resources throughout the software development life cycle. The increasing complexity and scale of modern projects necessitate robust project management systems to streamline processes, enhance collaboration, and ensure successful project delivery. This abstract provides an overview of our proposed project management system, designed to address the challenges faced by organizations in managing diverse projects. The proposed method aims to calculate and manage time spent on various project activities, ensuring efficient programming of tasks and activities. The method presented in these abstracts addresses the unique challenges faced in software development projects by providing a structured framework for time allocation. By systematically tracking and managing time, development teams can gain insights into resource utilization, identify potential bottlenecks, and make informed decisions to enhance overall project efficiency. For the successful project management and its success, many studies have been done but still, many of the software projects cannot end up well. One of the main reasons behind it is time management and also analyzing the productivity. So, the time tracking software is being developed, this will collect and analyses the insights to improve overall efficiencies, like Identifying inefficiencies, Resource Allocation, enhancing team efficiency, task management, performance measurement and ensuring the successful project outcomes. By applying these insights, organizations can unlock their full potential and achieve their goals effectively.

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VARSHA.G

GAGANASHREE.D

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CHAPTER-1

INTRODUCTION

1.1 IN GENERAL

The modern business landscape is dynamic and fast-paced, requiring organizations to efficiently manage their tasks and projects to stay competitive. A robust Project Management System (PMS) plays a crucial role in enhancing productivity by providing a structured approach to task allocation, monitoring, and completion. This project centres around the creation of a dynamic web application that will serve as a comprehensive tool for organizations to measure, analyse, and improve their time management and productivity. It will not only provide real-time insights into how time is allocated across various tasks but also offer valuable performance metrics to help teams and individuals achieve their goals more effectively. This report aims to analyze the significance of implementing a Task Management System to improve productivity within an organization. This project centres around the creation of a dynamic web application that will serve as a comprehensive tool for organizations to measure, analyse, and improve their time management and productivity. It will not only provide real-time insights into how time is allocated across various tasks but also offer valuable performance metrics to help teams and individuals achieve their goals more effectively. The Essence of Time: In the grand symphony of existence, time stands as an invaluable asset, both finite and irreplaceable. Its scarcity prompts us to contemplate its optimal utilization, instigating a compelling need for effective time management. As we navigate the intricate tapestry woven by our commitments, aspirations, and obligations, the ability to harness time emerges as a linchpin for success and fulfilment. Each moment becomes a precious resource, waiting to be channelled with purpose and intentionality.

1.2 IN SPECIFIC

Time and productivity analysis can be defined as the process of systematically examining how time is utilized and how it affects the overall productivity of individuals, teams, or organizations. Time Management refers to the practice of allocating and using time wisely to accomplish tasks and achieve objectives efficiently. Effective time management helps reduce stress, increase work-life balance, and boost individual and team performance. Productivity is a measure of how efficiently resources, including time, are used to produce desired results. Improved productivity leads to higher outputs with the same or fewer resources. It is essential for competitiveness and profitability in business and overall personal effectiveness. The main objectives of time and productivity analysis are to optimize resource allocation, improve efficiency, and enhance overall productivity. Analyzing time and productivity is crucial for organizations as it allows them to identify bottlenecks, streamline processes, and make informed decisions to achieve better outcomes. The goal of this web-based software project is to create a comprehensive tool to track and analyze resource activity in order to improve time management and productivity in businesses. Users of the system can track time spent on a variety of tasks, such as coding, writing documentation, using SQL, and using the internet.

As we embark on this exploration of time management, the journey calls us to delve into the principles, strategies, and real-world applications that empower us to master the flow of time. This expedition invites us to cultivate a harmonious relationship with time, providing the tools to navigate the sands of our days with purpose, resilience, and the unwavering assurance that each moment is a canvas awaiting the strokes of intention and accomplishment. Together, let us unravel the mysteries of time, transforming it from an abstract concept into a tangible force that propels us toward a future defined by our deliberate choices and meaningful achievements.

CHAPTER-2

LITERATURE SURVEY

2.1 TIME MANAGEMENT PERCEPTIONS IN SOFTWARE TEAMS :

In software development environments, the effective management of the time in the context of perceptions within teams has emerged as a critical challenge. Software teams, driven by the dynamic nature of the industry and evolving user expectations, often struggle to balance efficient time utilization with the need to maintain a comprehensive and accurate perception of the product under development. The confluence of rapid technological advancements, shifting market demands, and the inherent complexity of software projects present a multifaceted problem that demands immediate attention.

- Ensure a more accurate alignment of internal team perceptions with external stakeholder expectations by implementing transparent communication channels and regular feedback mechanisms.
- Develop and implement a prioritization matrix that aids teams in setting clear goals and prioritizing tasks based on their impact on product perception and overall project success.
- Improve the accuracy of time estimates for project tasks by implementing reliable time estimation techniques, fostering collaboration among team members, and continuously refining estimation processes.
- Implement transparent communication protocols, including regular stand-up meetings, sprint reviews, and retrospectives, to ensure that all team members have a shared understanding of project goals, timelines, and challenges

2.2 OPTIMIZATION AND THE TIME MANAGEMENT OF WEEKLY CLASS SCHEDULE:

Many students face challenges in optimizing and effectively managing their weekly class and schedules, leading to the issues such as a missed deadlines, a increased stress, and reduced the overall productivity. The lack of a structured approach to the time management often results in a suboptimal balance between academic commitments, also extracurricular activities, and a personal well-being.

2.3 LINEAR PROGRAMMING AND ITS APPLICATION TO THE SCHEDULING AND TIME MANAGEMENT:

Linear programming (LP) optimization has been known to be applied in many different fields, such as in the manufacturing, food distribution, and the renewable energy among other systems. This case is successfully compared to the conventional approaches to the proposed approach of LP. Moving forward, it can be seen how LP can benefit many operations such as concerned with the scheduling optimization. Therefore, it may be initially inferred that the LP can also benefit personal scheduling for academic time management and productivity.

- **Prioritization and Task Management:**
 - Students to identify and prioritize Enable tasks effectively.
- **Effective Schedule Planning:**
 - Assist students in creating well-balanced weekly schedules that include dedicated study sessions, breaks, and extracurricular activities.
- **Digital Tools and Technology Integration:**
 - Encourage the use of digital planners, calendar apps, and productivity tools to streamline workflow and enhance organization.
- **Optimized Productivity:**
 - Educate students on the detrimental effects of multitasking and promote strategies for focused work.

2.4 EVOLVING TIME-MANAGEMENT-BASED PREDICTION FOR QUALITY CRITERIA IN A MULTI-STAGE PRODUCTION PROCESS:

In a complex multi-stage production process, maintaining high-quality output is the crucial for meeting customer expectations and the industry standards. One of the key challenges in this context is predicting and managing the time required for each stage of production to ensure the final product's quality.

- Enhance Production Efficiency
- Optimize Resource Utilization
- Improve Quality Criteria Prediction
- Mitigate Production Delays
- Adapt to Dynamic Environmental Factors

- Facilitate Cross-Stage Collaboration
- Enable Real-Time Monitoring and Feedback

2.5 TIME MANAGEMENT METHOD FOR THE SOFTWARE DEVELOPMENT PROJECTS:

The article aims to propose the method that calculates the time spent on the specific software development project and provides effective programming of activities.

- The objectives of the article are to propose a method for project time estimation and effective management in software development projects.
- The article aims to define inputs, activities, tools, roles, and output artifacts for each phase, allowing for the calculation of time in each phase.
- The article emphasizes the importance of effective project management in achieving project objectives within budget and estimated time.

2.6 IMPROVED MANAGEMENT OF ISSUE DEPENDENCIES IN A ISSUE TRACKERS OF LARGE COLLABORATIVE PROJECTS:

The problem statement of this article is to provide solutions for the better management of the dependent issues in issue trackers, this specifically in the context of the large collaborative of projects. The study aims to the address this challenges faced by a software project stakeholder in the managing issue dependencies over the development life cycle and to provide the concrete examples and theoretical models for the practical application of features that support the issue management tasks. The article presents three objectives for the proposed solution to the improve dependency in management in issue trackers:

- Users gain a better understanding of the existing issue dependency network of the issues.
- Users can search for missing dependencies and unidentified duplicate issues.
- Users can check the correct release assignments and priorities of the issue dependency network of issues and receive suggestions for resolving inconsistencies.

CHAPTER-3

RESEARCH GAPS OF EXISTING METHODS

- Using time-tracking tools in software development enhances productivity by emphasizing efficient time utilization, supported by real-world cases. However, limitations include a potential lack of a broader perspective on time management beyond software development. While effective within its context, organizations should be mindful of these limitations when evaluating the suitability of time-tracking tools for a balanced and contextually relevant approach to enhance overall productivity [10].
- Incorporating time-tracking tools in software development focuses on enhancing productivity, emphasizing efficient time utilization with real-world cases showcasing positive impacts. However, limitations include a potential narrow view of time management beyond software development. While effective in this context, organizations should be mindful of these limitations for a balanced and contextually relevant approach to overall productivity [6].
- Examining time management literature across domains offers a comprehensive overview and theoretical foundation. However, its generalized approach lacks specificity to software development or corporate productivity. While valuable, the theoretical concepts may need additional considerations for practical application in specific contexts [4].
- Examining web usage and productivity provides insights for optimizing online tasks, relevant for understanding internet-related activities. However, a limitation exists in its potential lack of a comprehensive analysis of overall time allocation, leaving gaps in understanding broader aspects of time management beyond web-specific tasks. Consideration of these factors is essential for effective productivity in the digital realm [1].
- Focusing on time management and productivity in Agile software development, this approach offers insights into the unique challenges and opportunities within Agile environments. However, its specificity to Agile may limit its applicability to other development methodologies. Organizations using different approaches may need to supplement their strategies with methodologies tailored to their specific frameworks [2].

- Exploring web-based tools for productivity in a research context offers insights into leveraging technology for improved outcomes. However, its primary focus on research may limit its relevance for broader organizational productivity. Organizations aiming for comprehensive strategies across diverse domains may need to supplement this approach with broader methodologies [12].
- Looking at how people manage time in different areas gives us a broad understanding and theoretical basis. However, it's not very specific to tasks like software development or corporate work. Even though the ideas are helpful, we might need to think about how to use them practically in specific situations [7].

CHAPTER-4

PROPOSED METHODOLOGY

The proposed system is a web-based application designed to capture and analyze the time spent by resources on various activities, such as coding, documentation, SQL etc. It offers a user-friendly interface for resource input and centralizes this data in a secure database. The system allows for customization of activity categories, providing flexibility for different organizational needs. One of the key features is its robust analytics and reporting tools that generate insights into resource productivity and time allocation patterns. Integration with organizational calendars and project management tools ensures seamless data input. Role-based access control safeguards sensitive data, while data visualization aids in interpreting productivity trends. Overall, the system aims to enhance resource productivity, optimize resource allocation, and facilitate data-driven decision-making. It offers transparency, accountability, and improved collaboration within the organization, making it an essential tool for productivity analysis.

Effective web-based time productivity analysis involves the use of various methods and tools to ensure that tasks are completed on time and within the allocated resources. Here are some proposed methods used in web-based time productivity analysis:

4.1 WORK BREAKDOWN STRUCTURE (WBS):

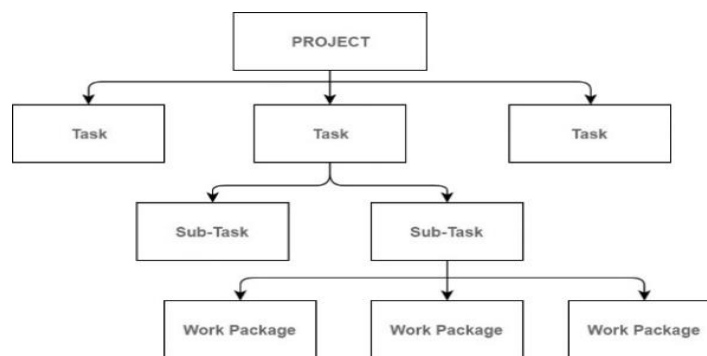


Fig. 4.1 Work Breakdown Structure

The Work Breakdown Structure (WBS) is a hierarchical decomposition of the total scope of work to be carried out by the project team. It breaks down the project into smaller, more manageable components, making it easier to plan, execute, and control.

- **Task Identification:** Break down the entire project into distinct tasks and sub-tasks. This process involves identifying all the work that needs to be accomplished to complete the project.
- **Hierarchy Creation:** Organize tasks in a hierarchical structure. The highest level represents the overall project, and subsequent levels break down tasks into more detailed components.
- **Resource Allocation:** Assign resources (human, financial, and material) to each task. This step helps in understanding the resources required for each component of the project.
- **Time Estimation:** Estimate the time required to complete each task. This involves forecasting the duration for each component based on historical data, expert judgment, or other estimation techniques.
- **Dependency Identification:** Determine the dependencies between tasks. Understand which tasks are dependent on others and establish the sequence in which they need to be completed.
- **Milestone Definition:** Identify key milestones within the WBS. Milestones mark significant points in the project timeline and help in tracking progress.
- **Task Ownership and Responsibility:** Assign ownership and responsibility for each task. Clearly define who is responsible for the completion of specific components.
- **Scope Verification:** Use the WBS to verify that all project requirements are addressed. This ensures that nothing is overlooked during the planning phase.
- **Project Visualization:** Provide a visual representation of the project structure. This visualization aids in communication and understanding among team members, stakeholders, and project managers.
- **Change Management:** Use the WBS as a reference point for change management. When changes occur, assess their impact on the WBS and adjust accordingly.
- **Monitoring and Reporting:** Use the WBS as a basis for monitoring and reporting project progress. Regularly review completed tasks and assess their impact on the overall project timeline.
- **Continuous Improvement:** Learn from the project experience and continuously improve the WBS for future projects. Lessons learned during the execution phase can inform adjustments to the WBS structure for enhanced efficiency in subsequent projects.

CHAPTER-5

OBJECTIVES

A Project Management System (PMS) is designed to help organizations plan, execute, and control projects effectively. The objectives of implementing a Project Management System include:

1. Project Planning:

- **Define Objectives:** Clearly outline project goals, scope, and objectives.
- **Resource Planning:** Allocate resources efficiently, including personnel, time, and budget.
- **Task Scheduling:** Develop a realistic and achievable timeline for project tasks.

2. Project Execution:

- **Task Assignment:** Assign responsibilities and tasks to team members based on their skills and expertise.
- **Communication:** Facilitate effective communication within the project team and stakeholders.
- **Progress Tracking:** Monitor project progress to ensure it aligns with the established schedule and milestones.

3. Resource Management:

- **Resource Allocation:** Allocate resources optimally to prevent overloading or underutilization of team members.
- **Risk Management:** Identify and mitigate potential risks that may impact the project's success.

4. Quality Management:

- **Quality Assurance:** Implement processes and standards to ensure the quality of project deliverables.
- **Testing and Validation:** Conduct thorough testing and validation of project components to meet quality standards.

5. Documentation and Reporting:

- **Document Management:** Maintain accurate and up-to-date project documentation.
- **Reporting:** Generate and distribute regular reports on project status, progress.

6. Change Management:

- **Change Control:** Implement a process for managing changes to project scope, schedule, or requirements.
- **Adaptability:** Respond effectively to changes in project requirements/external factors.

7. Closure and Evaluation:

- **Project Closure:** Ensure a smooth and orderly closure of the project, including documentation and handover.
- **Post-Project Evaluation:** Conduct a post-project review to identify lessons learned and areas for improvement in future projects.

8. Continuous Improvement:

- **Process Improvement:** Identify opportunities for process optimization and implement improvements.
- **Learning from Experience:** Apply lessons learned from past projects to enhance future project management practices.

By aligning with these objectives, a Project Management System can contribute to the successful completion of projects within scope, time, and budget constraints while meeting or exceeding quality expectations.

CHAPTER-6

SYSTEM DESIGN & IMPLEMENTATION

The design procedure for the time tracking and productivity analysis web application involves a systematic and iterative process, encompassing various stages from conceptualization to implementation.

6.1 ARCHITECTURE DIAGRAM: -

An architectural diagram is the visual representation of the project that maps out the physical implementation for components of the software system. It shows the general structure of the software system and the associations, limitations, and boundaries between each of element.

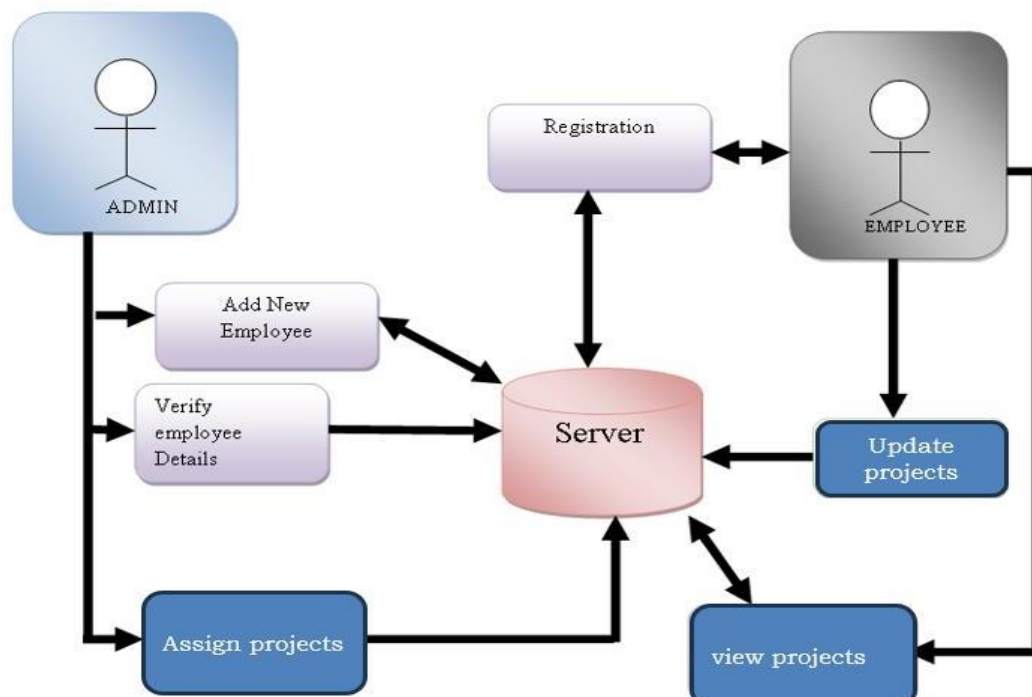


Fig. 6.1 Architecture diagram for project management system

Above figure (Fig 6.1) is an example of an architecture diagram for such a system, along with explanation of each component:

- **User Interface (UI):** This is the front-end part of the system that users interact with. It includes web pages or mobile app screens where users can log in, view project details, and manage project timelines.

- **User Authentication:** Responsible for user authentication and authorization. Validates user credentials and ensures that only authorized users have access to the system.
- **Project Management Module:** This module handles the core functionalities related to project management. Includes features such as creating and editing projects, defining project timelines, and assigning tasks to team members.
- **Task Tracking:** Manages the individual tasks within a project. Allows users to create, update, and mark tasks as complete, providing real-time progress tracking.
- **Collaboration Tools:** Includes features like document sharing, comments, and discussion forums. Facilitates communication and collaboration among team members working on the same project.
- **Reporting and Analytics:** Gathers data from the system to generate reports and analytics on project progress. Provides insights into project timelines, resource allocation, and team performance.
- **Database:** Stores project data, user information, and other relevant information. Enables data retrieval and manipulation to support the various functionalities of the system.
- **Application Server:** Hosts the business logic of the application. Processes user requests, communicates with the database, and orchestrates the flow of data between different components.
- **Security Layer:** Ensures the security of the system by implementing measures such as encryption, access controls, and secure communication protocols.
- **API Gateway:** Manages and routes requests between different microservices and external APIs. Acts as a single-entry point for client applications to interact with the backend services.
- **External APIs:** Integrates with third-party services or tools that complement the project time management system, such as project management tools, cloud services, or external data sources.
- **Monitoring and Logging:** Monitors the health and performance of the system. Logs events and errors for troubleshooting and auditing purposes.

This architecture diagram provides a high-level overview of the components and their interactions in time management system. Keep in mind that the specific implementation details vary based on the technology stack and requirements of the project.

6.2 ER DIAGRAM:

In the database management systems, ER diagrams provide the graphical interface for the designing a databases. This simplifies the process of the creating the tables, defining the relationships, and establishing constraints, offering an intuitive approach to dbs.

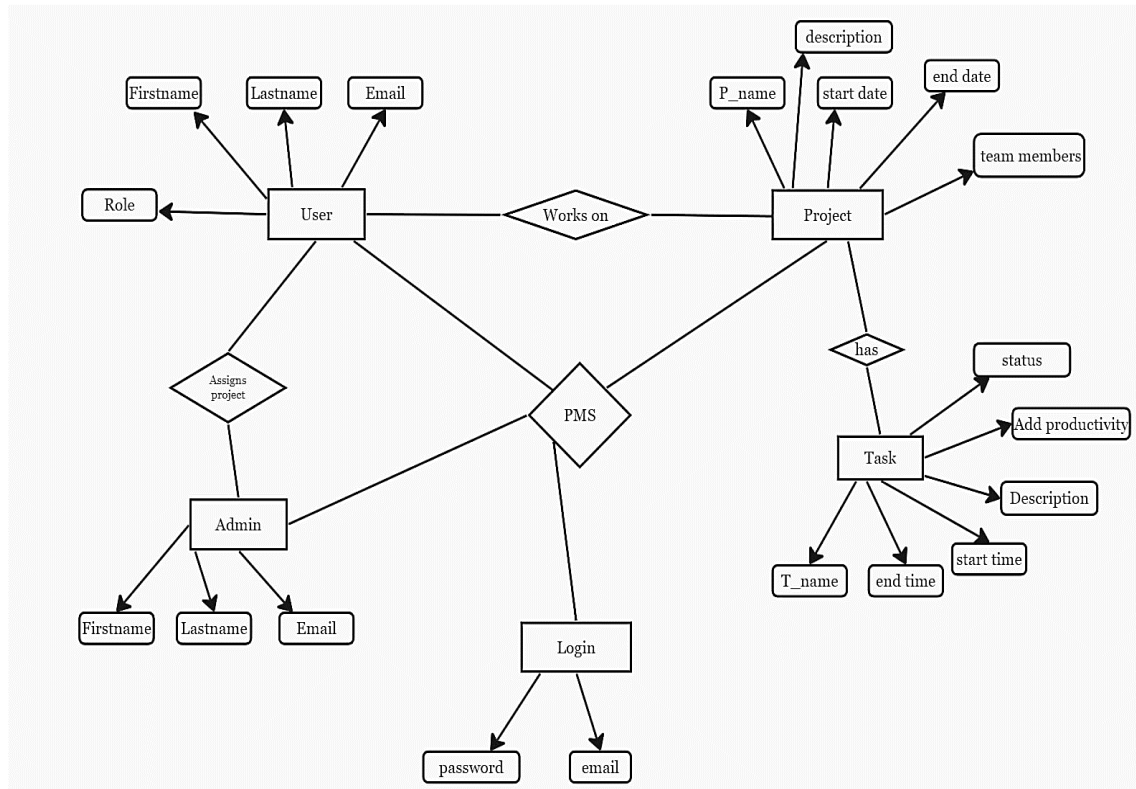


Fig. 6.2 ER Diagram for project management system

From the above figure (Fig 6.2), Creating an Entity-Relationship (ER) diagram for a time management system involves identifying and representing key entities, their attributes, and the relationships between them. Here's a basic explanation of an ER diagram for an online project time management system:

- **Entities:**

- **User:**

- **Attributes:** User ID (Primary Key), Username, Password, Email, FirstName, LastName, etc.

- **Project:**

- **Attributes:** Project ID (Primary Key), Project Name, Description, StartDate, EndDate, Status, etc.

- **Task:**
 - **Attributes:** TaskID (Primary Key), TaskName, Description, StartDate, EndDate, Status, Priority, etc.
- **Time Entry:**
 - **Attributes:** EntryID (Primary Key), UserID (Foreign Key referencing User), TaskID (Foreign Key referencing Task), StartTime, EndTime, Date, Duration, Comments, etc.
- **Relationships:**
 - **Manages:** Relates User to Project. One User can manage multiple projects, but each project is managed by one user.
 - **Participates:** Relates User to Project. One User can participate in multiple projects, and each project has multiple participants.
 - **Belongs To** Relates Task to Project. Each task belongs to one project, but a project can have multiple tasks.
 - **Logs Time:** Relates User to Task through Time Entry. Each time entry logs the time spent by a user on a specific task.

This ER diagram captures the basic structure of an online project time management system. Users can manage projects, participate in multiple projects, and log time entries for various tasks within those projects. The relationships between entities help maintain data integrity and ensure that information is organized and accessible. The attributes provide additional details for each entity, allowing for a comprehensive representation of the system. Keep in mind that the actual requirements of your system may dictate additional entities and relationships.

6.3 USE CASE DIAGRAM:

A use case diagram, a visual representation in UML, illustrates how a system interacts with external actors to achieve specific goals. Actors, representing external entities, interact with the system through use cases, each denoting a particular functionality. Associations between actors and use cases show how external entities engage with the system. The system boundary encloses all use cases, distinguishing the system from its external environment. Use case diagrams provide a clear and concise overview of a system's functionality from the user's perspective, aiding in the communication of functional requirements in software development. This graphical tool is valuable for understanding and visualizing the dynamic interaction

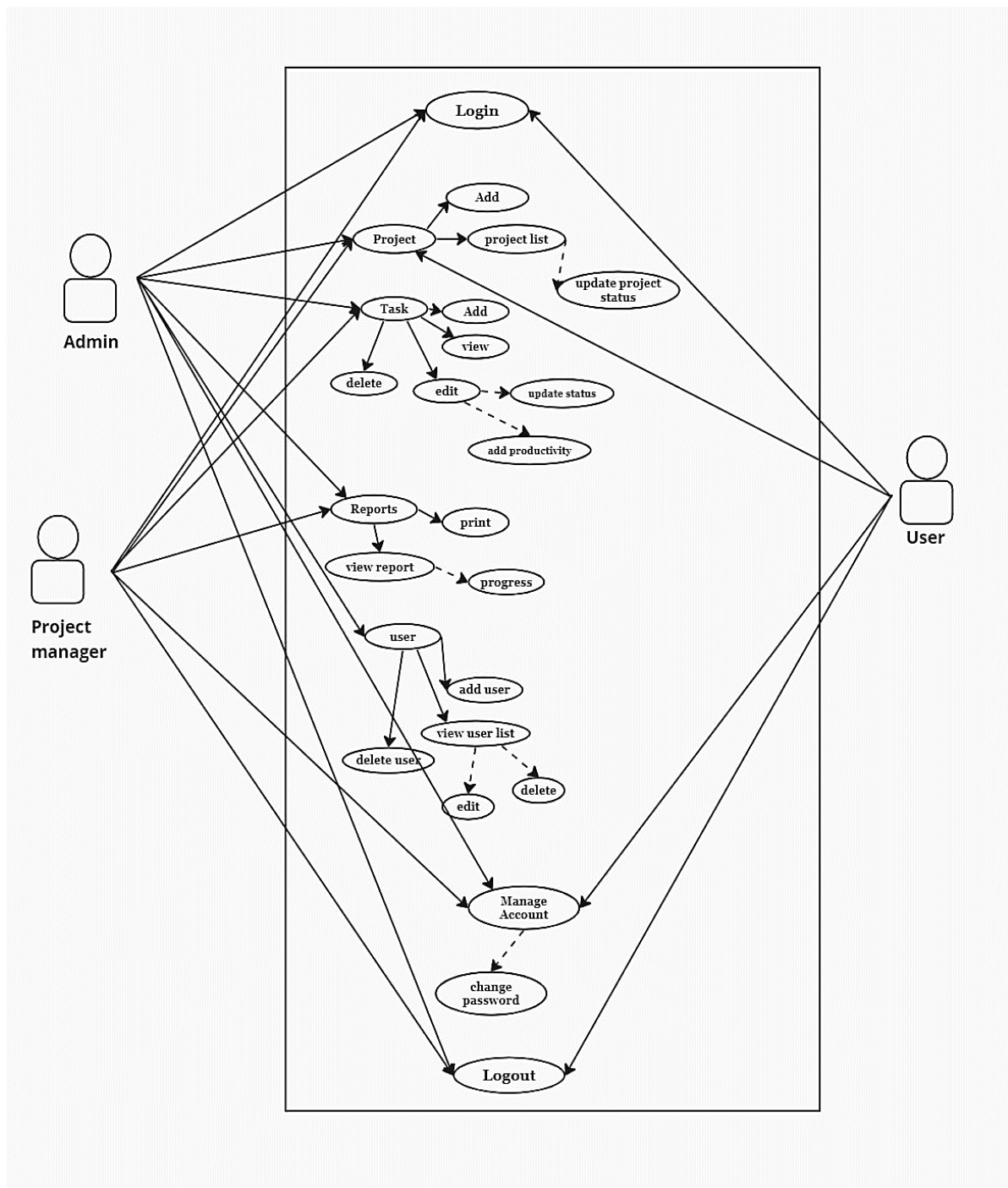


Fig. 6.3 Use Case Diagram for project management system

From above figure (Fig 6.3) use case diagram is a visual representation of the functional requirements of a system from the perspective of its users. It illustrates how users interact with a system and the various ways the system responds to those interactions. In the context of online project time management, a use case diagram could include actors, use cases, and their relationships. Here's an explanation:

- **Actors:**
 - **Project Manager:** The individual responsible for overseeing and managing the overall project.
 - **Team Member:** Any person involved in the project tasks and responsible for updating their task progress.
 - **Administrator:** Someone who has the authority to configure and manage system settings.
 - **System:** Represents the online project time management system itself.
- **Use Cases:**
 - **Login:**
 - **Actors:** Project Manager, Team Member, Administrator
 - **Description:** Users need to log in to access the online project time management system.
 - **View Project Dashboard:**
 - **Actors:** Project Manager, Team Member
 - **Description:** Users can view an overview of the project status, timelines, and key metrics on the dashboard.
 - **Create Project:**
 - **Actors:** Project Manager
 - **Description:** Project Managers can create a new project, define its parameters, and set up initial configurations.
 - **Assign Tasks:**
 - **Actors:** Project Manager
 - **Description:** Project Managers can assign tasks to team members and set deadlines for completion.
 - **Update Task Progress:**
 - **Actors:** Team Member
 - **Description:** Team Members can update the progress of their assigned tasks, mark them as complete, or indicate any delays.
 - **Generate Reports:**
 - **Actors:** Project Manager
 - **Description:** Project Managers can generate reports on project progress, time spent on tasks, and other relevant metrics.

- **Configure System Settings:**
 - **Actors:** Administrator
 - **Description:** Administrators can configure and manage system settings, user roles, and other parameters.
- **Receive Notifications:**
 - **Actors:** Project Manager, Team Member
 - **Description:** Users receive notifications about upcoming deadlines, task assignments, or other important updates.
- **Logout:**
 - **Actors:** Project Manager, Team Member, Administrator
 - **Description:** Users can log out of the system when their session is complete.
- **Relationships:**
 - **Association:** Connects actors with the relevant use cases to show who interacts with each use case.
 - **Include:** Demonstrates that one use case includes the functionality of another use case. For example, updating task progress is included in the overall task management process.
 - **Extend:** Represents optional or alternative behavior that can extend a base use case. For instance, generating advanced project reports could extend the basic report generation use case.

In summary, the use case diagram for time management helps to visualize the interactions between different actors and the system, showcasing the essential functionalities required for effective project management.

6.4 DATA FLOW DIAGRAM:

A Data Flow Diagram (DFD) is a visual representation depicting the flow of data within a system. Processes, presented as circles, signify activities or transformations, while rectangles represent data stores like databases. Data flows, indicated by arrows, illustrate the movement of data between processes, data stores, and external entities. External entities, portrayed as rectangles, serve as the points where data enters or exits the system. DFDs help us understand how information moves in a system, providing a clear picture of data flow in processes or systems.

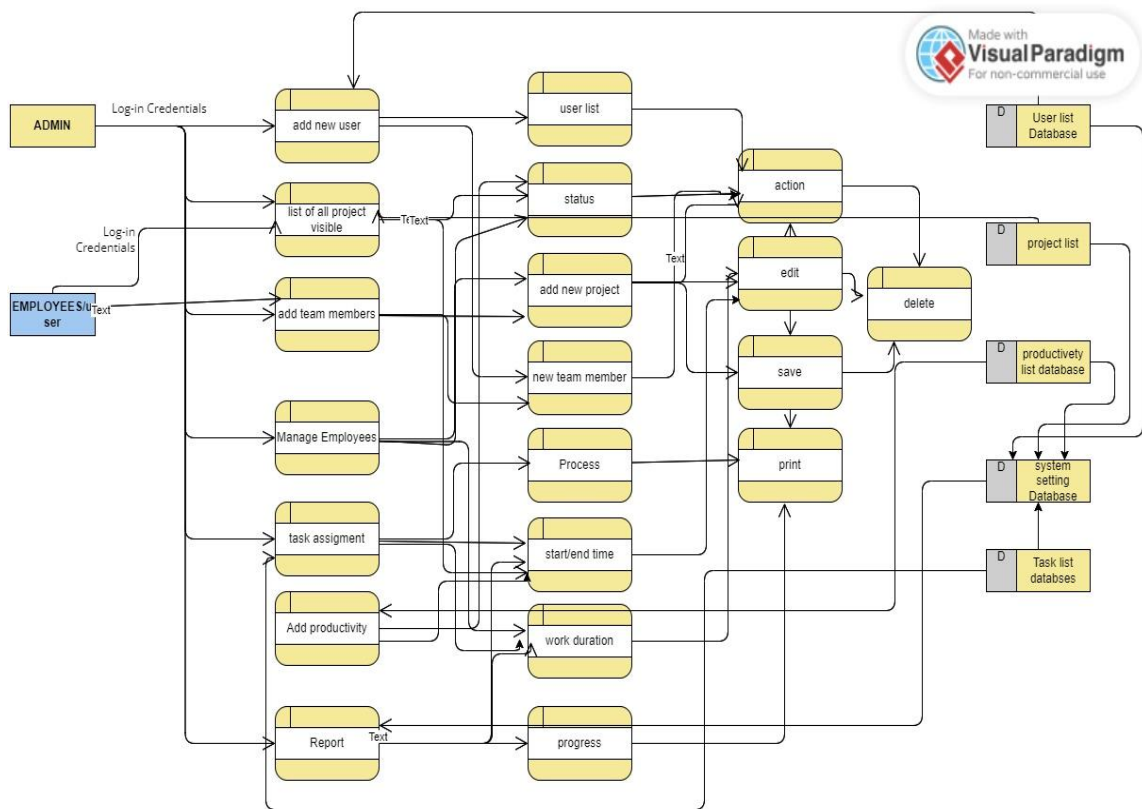


Fig.6.4 Data Flow diagram for project management system

From the above figure (Fig 6.4), the Data Flow Diagram (DFD) is a graphical representation of how data flows through a system, showcasing processes, data stores, and data movement. For an online project time management system, a DFD can help illustrate how information is processed and exchanged within the system. Here's a simplified explanation:

- **External Entities:**

- **Project Managers/Users:** These are external entities who interact with the system. They provide input, such as project details and updates, and receive output, such as reports and notifications.

- **Processes:**

- **Login/Authentication:** This process ensures that only authorized users can access the system. It involves validating usernames and passwords.
- **Create Project:** Users initiate the creation of a new project by providing essential details such as project name, description, and start/end dates.
- **Task Management:** This process involves creating, updating, and deleting tasks within a project. It manages the assignment of tasks to team members.

- **Time Tracking:** Users log the time spent on tasks or update the system with the progress made on a task. This process may involve validation to ensure the entered data is accurate.
- **Reporting:** This process generates various reports such as project timelines, task progress, and resource utilization. It may involve aggregating and analyzing data.
- **Data Stores:**
 - **Project Database:** This stores information about projects, tasks, users, and their relationships. It serves as a central repository for project-related data.
 - **User Profiles:** Information about users, including their roles, permissions, and login credentials, is stored in this data store.
 - **Time Logs:** Records of time spent on tasks are stored here, facilitating accurate tracking and reporting.
- **Data Flows:**
 - **Project Details:** Data flow from the 'Create Project' process to the 'Project Database,' updating it with the new project information.
 - **Task Updates:** Data flow from 'Task Management' processes to the 'Project Database,' updating task details.
 - **Time Logs:** Data flow from 'Time Tracking' processes to the 'Time Logs' data store, recording the time spent on tasks.
 - **Reports:** Processed data flows from the 'Reporting' process to external entities (Project Managers/Users), providing them with relevant project insights.
 - **Data Flow Diagram Levels:**
 - Level 0 DFD: Provides a high-level overview of the entire system, showing the main processes and external entities.
 - Level 1 DFDs: Break down each process into sub-processes, offering a more detailed view.
 - Level 2 DFDs: Further details specific sub-processes, making it even more granular.

By creating a Data Flow Diagram for a project time management system, you can visualize the flow of information, making it easier to understand, analyze, and improve the efficiency of the system.

6.5 CLASS DIAGRAM:

A class diagram is one type of UML diagram that represents the static view of the software system. The class diagram is used to visualize, describe, and document various aspects of the system, and also to create executable software code. It illustrates the types of the objects present in a system and the different types of relationships that exist between them.

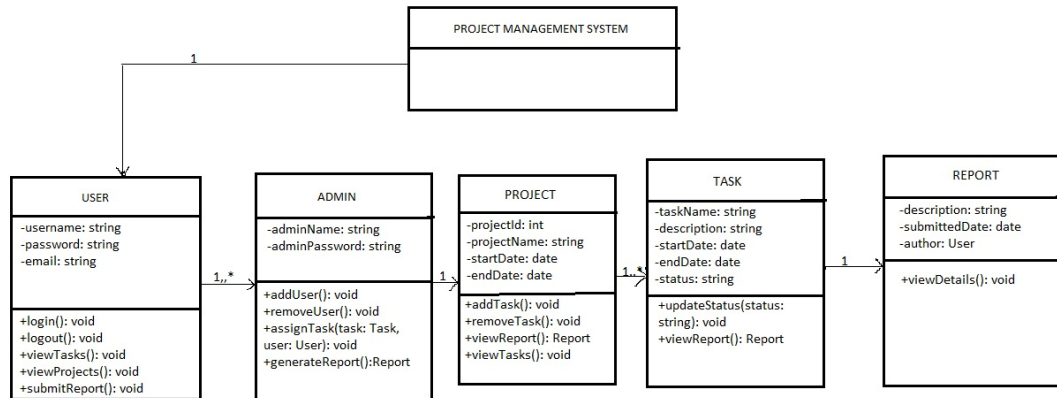


Fig.6.5 class diagram for project management system

In the given figure (Fig 6.5), the class diagram stands out as a structural diagram, offering a visual representation of a system's architecture. This type of diagram articulates the system's structure by revealing classes, their attributes, methods, and the relationships between them. Specifically applied to an online project time management system, the class diagram becomes a valuable tool for illustrating fundamental entities and their interactions. It provides a simplified yet insightful depiction of the system's essential components, offering a clear understanding of how classes collaborate and contribute to the overall functionality of the online project time management system.

- **User Class:**
 - **Attributes:** userID, username, password, email, role
 - **Methods:** login(), logout(), view projects(), manage tasks()
- **Project Class:**
 - **Attributes:** projectID, projectName, start Date, end Date, projectManager
 - **Methods:** createProject(), updateProjectDetails(), viewProjectDetails()

- **Task Class:**
 - **Attributes:** taskID, taskName, description, startDate, endDate, assignedTo, status
 - **Methods:** createTask(), updateTaskDetails(), assignTask(), completeTask().
- **Team Member Class:**
 - **Attributes:** memberID, memberName, email, role
 - **Methods:** viewAssignedTasks(), updateProfile()
- **TimeEntry Class:**
 - **Attributes:** entryID, taskID, memberID, date, hoursWorked
 - **Methods:** logTime(), viewTimeSheet()
- **Report Class:**
 - **Attributes:** reportID, projectID, startDate, endDate, generatedBy
 - **Methods:** generateProjectReport(), viewReports()
- **Role Class:**
 - **Attributes:** roleID, roleName
 - **Methods:** definePermissions(), assignRole()
- **Relationships**
 - Users can be associated with Projects (projectManager, team members).
 - Projects have Tasks (tasks are assigned to team members).
 - Team Members log Time Entries for Tasks.
 - Notifications are sent to Users.
 - Reports are associated with Projects and generated by Users.
 - Roles have Permissions.
 - Scheduler is associated with Tasks.

This class diagram presents a comprehensive view of the primary entities within an online project time management system, showcasing their interrelationships. The focal points include user management, project and task tracking, time logging, as well as notifications and reporting features. These entities collectively contribute to the effective functioning of the system, facilitating organized and efficient project time management.

CHAPTER-7

TIMELINE FOR EXECUTION OF PROJECT (GANTT CHART)

TASK	Duration	START	END
Requirement Analysis	2 weeks	10/9/23	24/9/2023
System Architecture Design	3 weeks	24/9/2023	14/10/2023
database design	2 weeks	14/10/2023	29/10/2023
backend development	4 weeks	29/10/2023	11/11/23
Frontend development	3 weeks	11/11/2023	3/12/2023
Security information	0.5 weeks	3/12/2023	9/12/2023
Testing	2 weeks	9/12/2023	19/12/2023
Documentation	1 weeks	19/12/2023	26/12/2023
Deployment	2 weeks	27/12/2023	7/1/2024

Table 7.1 Timeline of project

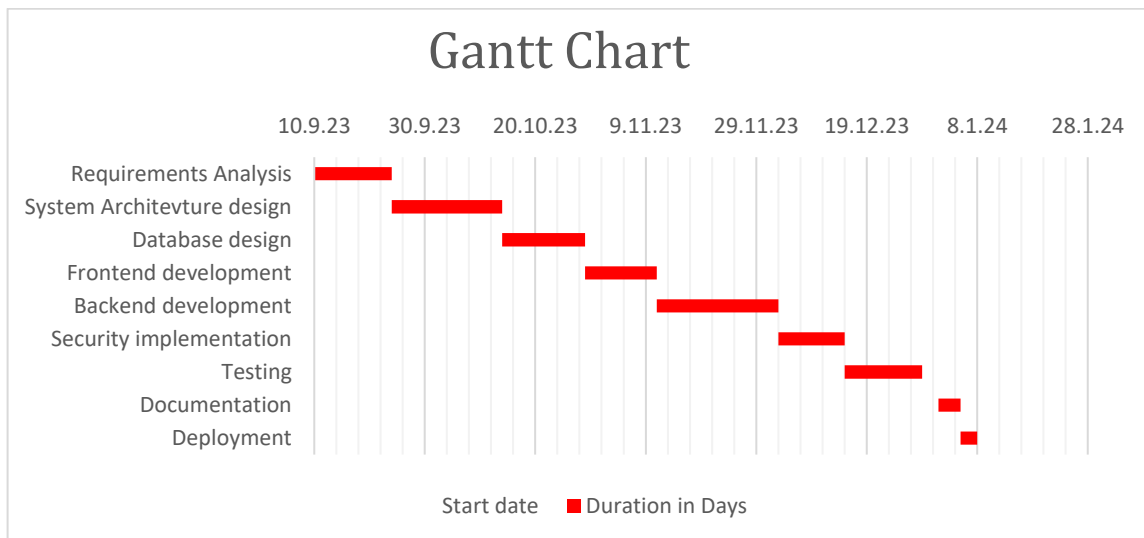


Table 7.2 Gantt chart

CHAPTER-8

OUTCOMES

Project Management Systems (PMS) play a crucial role in ensuring successful planning, execution, and completion of projects. The objectives of a Project Management System are typically aimed at improving efficiency, collaboration, and overall project success. Here are some common objectives and the corresponding outcomes:

1. Efficient Resource Allocation:

- Outcome: Proper allocation of resources ensures that tasks are completed on time and within budget. It minimizes resource wastage and enhances overall project efficiency

2. Document and Information Management:

- Outcome: Efficient document and information management streamline access to project-related data. This reduces the chances of data loss, improves accountability, and facilitates knowledge sharing among team members.

3. Improved Decision Making:

- Outcome: Access to real-time project data and analytics enables better decision-making. Project managers can make informed choices, leading to more effective problem-solving and strategic planning.

4. Continuous Improvement:

- Outcome: Regular evaluation of project performance and feedback leads to continuous improvement. Lessons learned from one project can be applied to future projects, increasing overall organizational efficiency.

5. Accurate Planning and Scheduling:

- Outcome: Detailed planning and scheduling result in a realistic timeline for project completion. It helps identify potential bottlenecks and allows for timely adjustments to keep the project on track.

6. Risk Management:

- Outcome: A proactive approach to identifying, assessing, and mitigating risks helps in minimizing the impact of unforeseen events. This leads to a more resilient project that can adapt to changes without significant disruptions.

7. Foster Effective Communication

- Outcome: Improved communication leads to better collaboration among team members, stakeholders, and project managers, reducing the likelihood of misunderstandings and enhancing overall project efficiency.

8. Monitor and Evaluate Progress

- Outcome: Continuous monitoring allows for real-time assessment of project progress, making it easier to identify and address any deviations from the plan promptly.

In summary, the implementation of a Project Management System with these objectives results in streamlined processes, improved collaboration, reduced risks, and ultimately, successful project delivery.

CHAPTER-9

RESULTS AND DISCUSSIONS

9.1 PROBLEM DISCUSSION:

Offline time and productivity analysis methods come with their own set of challenges:

- **Delayed Reporting:** Offline methods often involve manual data collection, leading to delays in generating productivity reports. This lag can hinder timely decision-making and responsiveness to emerging issues.
- **Limited Accessibility:** Accessing productivity data offline can be restrictive, especially for remote teams or employees working from different locations. This limitation may hinder collaboration and real-time adjustments.
- **Error-Prone Manual Processes:** Reliance on manual data entry increases the likelihood of errors, impacting the accuracy of productivity analysis. Inconsistencies in data can lead to flawed insights and decision-making.
- **Inefficiency in Data Aggregation:** Compiling and aggregating data from various sources manually can be time-consuming and prone to oversights. This inefficiency may hinder a comprehensive understanding of overall productivity.
- **Lack of Real-Time Monitoring:** Offline methods lack the ability to provide real-time monitoring of tasks and projects. This absence of immediacy can result in missed opportunities to address issues promptly.
- **Difficulty in Scaling:** As organizations grow, the manual effort required for offline analysis becomes increasingly challenging to scale. This can lead to a lack of adaptability to changing workloads and complexities.
- **Limited Collaboration:** Offline analysis may impede effective collaboration, as team members may not have simultaneous access to productivity data. This can hinder collective problem-solving and hinder teamwork.
- **Data Security Risks:** Storing productivity data offline may pose security risks, especially if physical records are not adequately protected. Loss, theft, or damage to records could compromise sensitive information.

9.2 RESULT/SOLUTION:

An online platform for productivity analysis and time management offers several advantages:

- **Real-time Data Access:** Online platforms provide instant access to real-time data, enabling users to monitor productivity metrics and time usage promptly.
- **Remote Accessibility:** With the rise of remote work, online platforms facilitate tracking and management of productivity regardless of geographical location, ensuring consistent monitoring.
- **Automation and Integration:** Integrating with other tools and automating certain processes enhances efficiency, reducing manual effort in data collection and analysis.
- **Customization and Scalability:** Online platforms often offer customizable features to adapt to the unique needs of different organizations, ensuring scalability as businesses grow.
- **Data Security and Backup:** Reliable online platforms prioritize data security, implementing measures such as encryption and regular backups to safeguard sensitive information.
- **Reporting and Insights:** These platforms often provide detailed reports and insights, helping organizations identify trends, assess performance, and make informed decisions to improve productivity.

In summary, an online platform for productivity analysis and time management offers flexibility, collaboration, and automation, making it a valuable tool for modern organizations striving to optimize their workflows.

CHAPTER-10

CONCLUSION

In conclusion, web-based time and productivity analysis tools have become invaluable assets in today's dynamic work environments. These tools offer a range of features and functionalities designed to empower individuals and teams to better understand, manage, and optimize their use of time. The ability to monitor digital activities, track tasks, and analyze productivity trends provides a wealth of insights that contribute to enhanced efficiency and effectiveness. Web-based time and productivity analysis tools not only assist in identifying time sinks and bottlenecks but also foster a culture of accountability and continuous improvement. The real-time data and visualizations offered by these tools enable informed decision-making, allowing individuals and organizations to adapt swiftly to changing priorities and demands.

By cultivating a harmonious relationship with time through these tools, users can transform the abstract concept of time into a tangible and strategic resource. Whether through the use of sophisticated analytics or intuitive interfaces, these tools aid in the cultivation of intentional choices, purposeful work, and meaningful achievements. They act as digital companions on the journey of productivity, offering actionable insights that propel individuals toward a future defined by their deliberate decisions and accomplishments. As the workplace continues to evolve, the importance of web-based time and productivity analysis tools is likely to grow, providing individuals and teams with the means to navigate the complexities of modern work life while fostering a proactive and empowered approach to time management.

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APPENDIX-A

PSUEDOCODE

```
<!DOCTYPE html>
<html lang="en">
<?php session_start() ?>
<?php
    if(!isset($_SESSION['login_id']))
        header('location:login.php');
    include 'db_connect.php';
    ob_start();
    if(!isset($_SESSION['system'])) {

        $system = $conn->query("SELECT * FROM system_settings")->fetch_array();
        foreach($system as $k => $v){
            $_SESSION['system'][$k] = $v;
        }
    }
    ob_end_flush();

    include 'header.php'
?>
<body class="hold-transition sidebar-mini layout-fixed layout-navbar-fixed layout-footer-
fixed">
<div class="wrapper">
    <?php include 'topbar.php' ?>
    <?php include 'sidebar.php' ?>
    <!-- Content Wrapper. Contains page content -->
    <div class="content-wrapper">
        <div class="toast" id="alert_toast" role="alert" aria-live="assertive" aria-atomic="true">
            <div class="toast-body text-white">
                </div>
            </div>
        </div>
    </div>
```

```

<div id="toastsContainerTopRight" class="toasts-top-right fixed"></div>
<!-- Content Header (Page header) -->
<div class="content-header">
  <div class="container-fluid">
    <div class="row mb-2">
      <div class="col-sm-6">
        <h1 class="m-0"><?php echo $title ?></h1>
      </div><!-- /.col -->
    </div><!-- /.row -->
    <hr class="border-primary">
  </div><!-- /.container-fluid -->
</div>
<!-- /.content-header -->

<!-- Main content -->
<section class="content">
  <div class="container-fluid">
    <?php
      $page = isset($_GET['page']) ? $_GET['page'] : 'home';
      if(!file_exists($page.".php")){
        include '404.html';
      }else{
        include $page.'.php';
      }
    ?>
  </div><!-- /. container-fluid -->
</section>
<!-- /.content -->
<div class="modal fade" id="confirm_modal" role='dialog'>
<div class="modal-dialog modal-md" role="document">
  <div class="modal-content">
    <div class="modal-header">
      <h5 class="modal-title">Confirmation</h5>

```



```

</div>
<div class="modal-body">
  <div id="delete_content"></div>
</div>
<div class="modal-footer">
  <button type="button" class="btn btn-primary" id='confirm'
onclick="">Continue</button>
  <button type="button" class="btn btn-secondary" data-
dismiss="modal">Close</button>
</div>
</div>
</div>
</div>
<div class="modal fade" id="uni_modal" role='dialog'>
  <div class="modal-dialog modal-md" role="document">
    <div class="modal-content">
      <div class="modal-header">
        <h5 class="modal-title"></h5>
      </div>
      <div class="modal-body">
      </div>
      <div class="modal-footer">
        <button type="button" class="btn btn-primary" id='submit' onclick="$('#uni_modal
form').submit()">Save</button>
        <button type="button" class="btn btn-secondary" data-
dismiss="modal">Cancel</button>
      </div>
    </div>
  </div>
</div>
<div class="modal fade" id="uni_modal_right" role='dialog'>
  <div class="modal-dialog modal-full-height modal-md" role="document">
    <div class="modal-content">
      <div class="modal-header">

```

```

    <h5 class="modal-title"></h5>
    <button type="button" class="close" data-dismiss="modal" aria-label="Close">
      <span class="fa fa-arrow-right"></span>
    </button>
  </div>
  <div class="modal-body">
  </div>
</div>
</div>
</div>
<div class="modal fade" id="viewer_modal" role='dialog'>
  <div class="modal-dialog modal-md" role="document">
    <div class="modal-content">
      <button type="button" class="btn-close" data-dismiss="modal"><span class="fa fa-
times"></span></button>
      <img src="" alt="">
    </div>
  </div>
</div>
</div>
</div>
<!-- /.content-wrapper -->

<!-- Control Sidebar -->
<aside class="control-sidebar control-sidebar-dark">
  <!-- Control sidebar content goes here -->
</aside>
<!-- /.control-sidebar -->

<!-- Main Footer -->
<footer class="main-footer">
  <strong></a></strong>
  <div class="float-right d-none d-sm-inline-block">
    <b><?php echo $_SESSION['system']['name'] ?></b>
  </div>

```

```
</footer>
</div>
<!-- ./wrapper -->
<!-- REQUIRED SCRIPTS -->
<!-- jQuery -->
<!-- Bootstrap -->
<?php include 'footer.php' ?>
</body>
</html>
```

APPENDIX-B

SCREENSHOTS

LOGIN PAGE

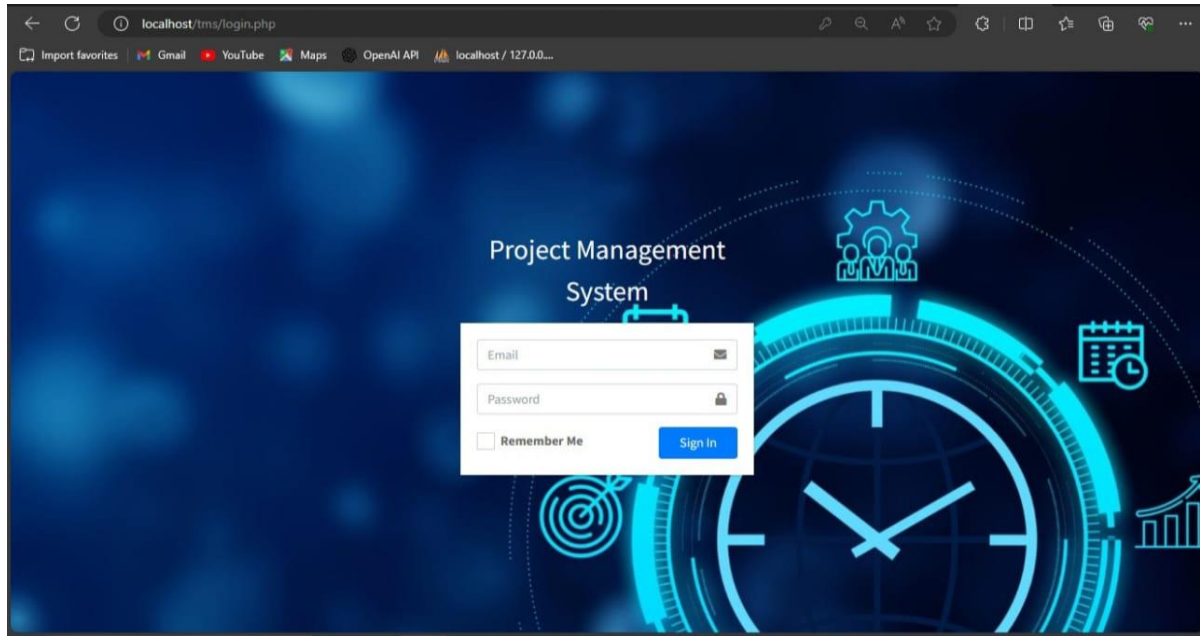


Fig.1

DASHBOARD(ADMIN-SIDE)

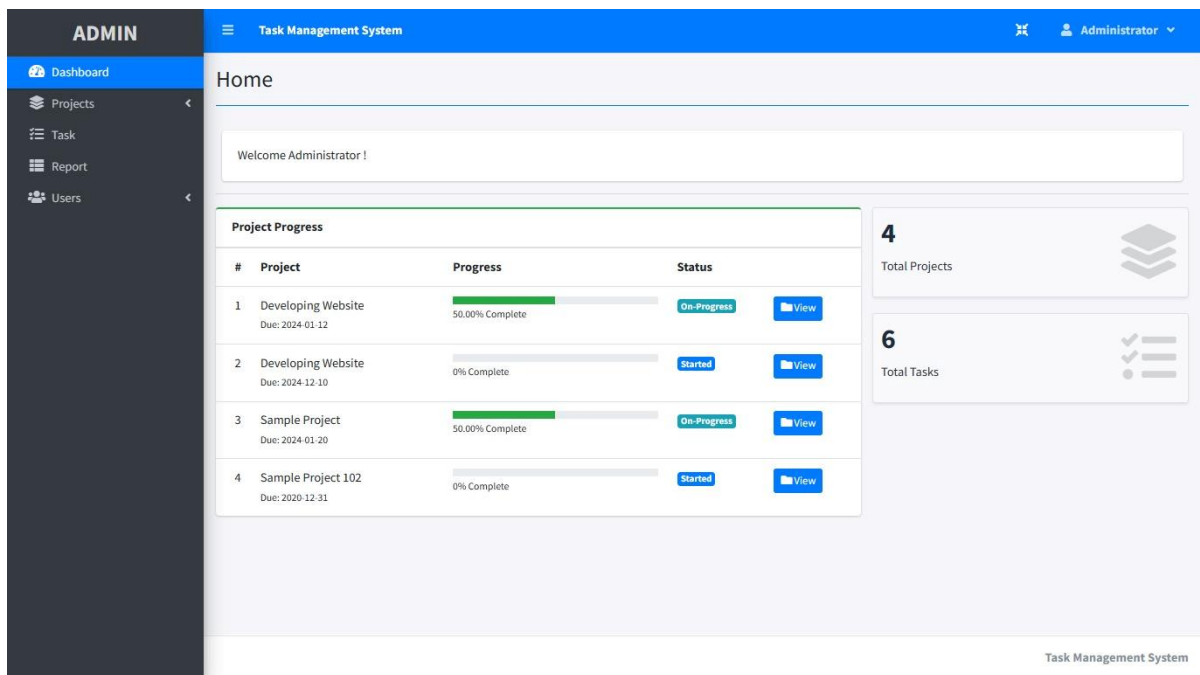


Fig.2

ADD NEW USER

ADMIN

Project Management System

Administrator

Home

First Name
Vaishnavi

Last Name
R

User Role
Employee

Avatar
Choose file Browse

Email
admin@admin.com

Password

Confirm Password

Password Matched.

Save Cancel

Project Management System

Fig.3

LIST OF USERS

ADMIN

Project Management System

Administrator

Home

+ Add New User

Show 10 entries Search:

#	Name	Email	Role	Action
1	Administrator	admin@admin.com	Admin	Action
2	Claire Blake	cblake@sample.com	Employee	Action
3	George Wilson	gwilson@sample.com	Employee	Action
4	John Smith	jsmith@sample.com	Project Manager	Action
5	Mike Williams	mwilliams@sample.com	Employee	Action
6	Vaishnavi R	vaishnaviravindra2020@gmail.com	Employee	Action

Showing 1 to 6 of 6 entries

Previous 1 Next

Project Management System

Fig.4

ADD NEW PROJECT

ADMIN

Project Management System

Administrator

Home

Name

Restaurant Mangement System

Status

Pending

Start Date

01-01-2024

End Date

02-02-2024

Project Manager

John Smith

Project Team Members

Claire Blake x George Wilson x Mike Williams x Vaishnavi R x

Description

Source Sans Pro 16

Project Management System

Fig.5

ADD NEW TASK

ADMIN

Project Management System

Administrator

Home

New Task For Restaurant Mangement System

Task

Task 1

Description

understand the problem [statement](#)

Status

Pending

Save Cancel

Project Management System

Fig.6

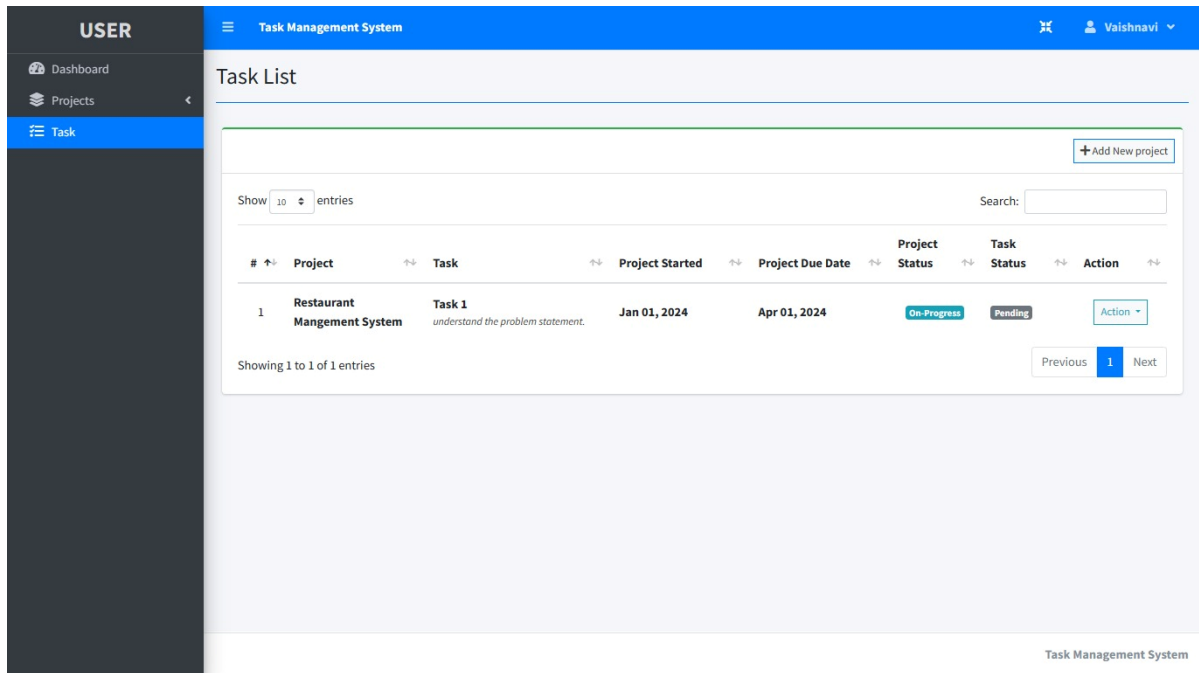
(EMPLOYEE SIDE)**EMPLOYEE WILL BE ASSIGNED TASK**

Fig. 7

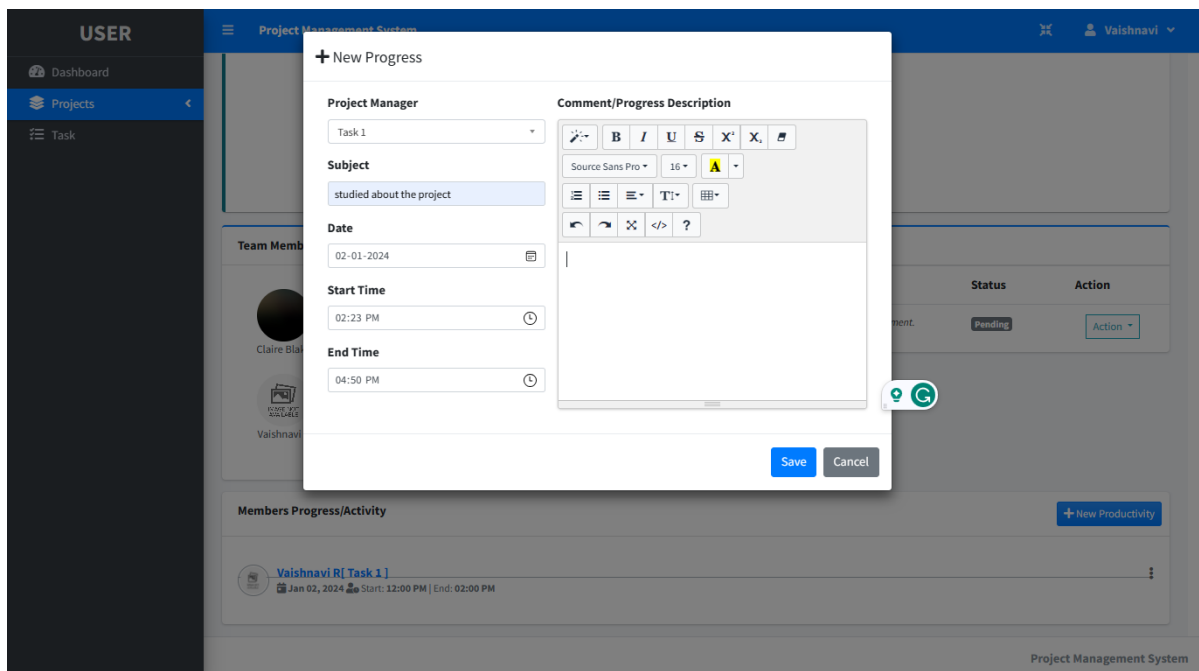
USER ADD PRODUCTIVITY

Fig.8

ADMIN VIEW PRODUCTIVITY OF USER AND UPDATE STATUS

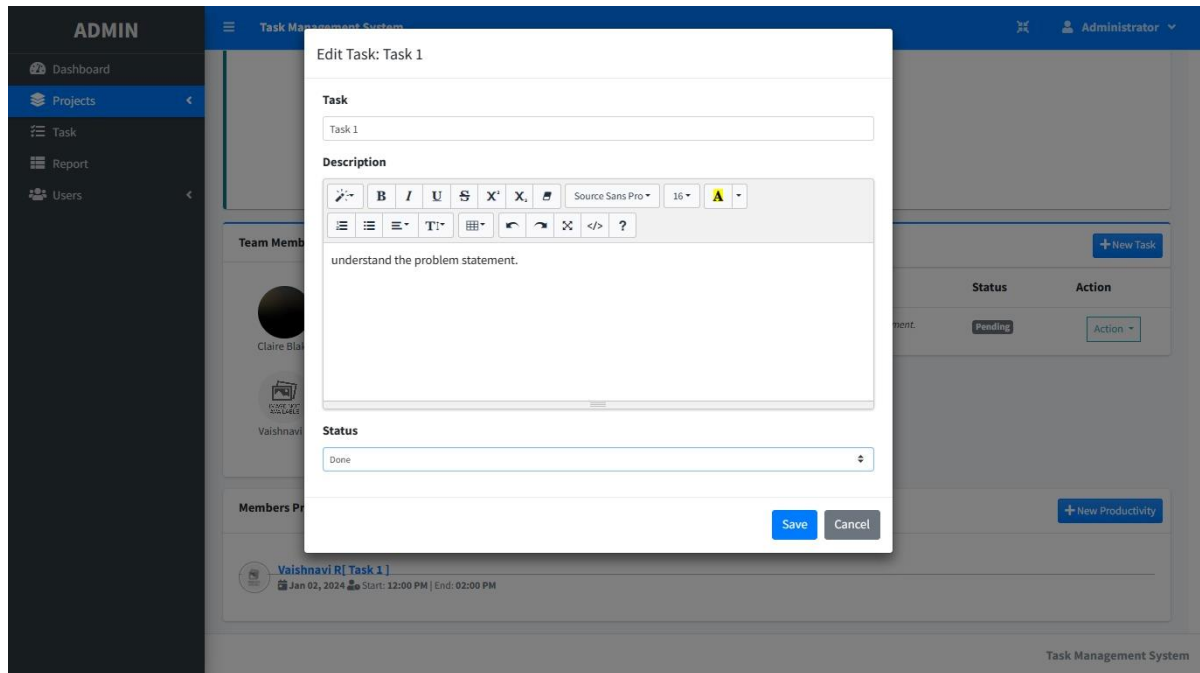


Fig.9

REPORT

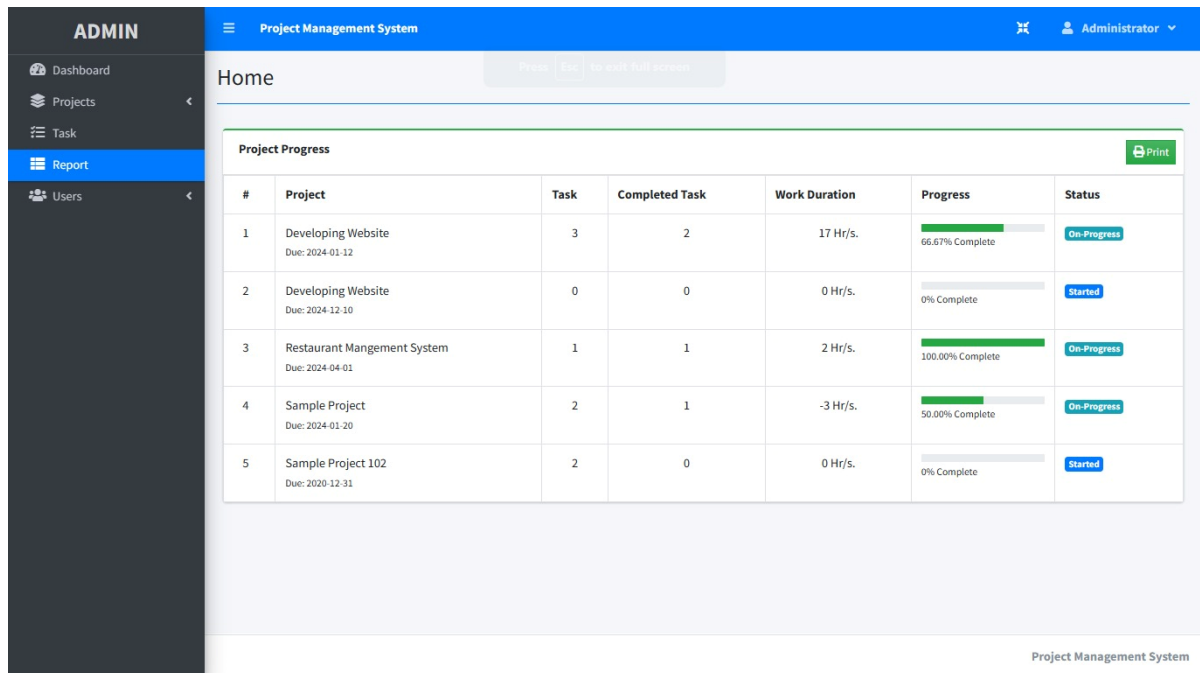


Fig.10

APPENDIX-C

ENCLOSURES

Paper Status :

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Paper Status: Paper Accepted

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SUSTAINABLE DEVELOPMENT GOALS



Sustainable Development Goal 9: Industry, Innovation, and Infrastructure

SDG 9 focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation. In the context of a project management system, here's how it aligns:

Infrastructure Development: The project management system contributes to the development of digital infrastructure, enabling efficient collaboration and communication among team members. This supports the goal of building resilient and sustainable infrastructure.

Inclusive Industrialization: The system can facilitate inclusive project development by providing a platform for diverse team members, stakeholders, and communities to participate and collaborate in project activities.

Innovation: The project management system itself represents a form of innovation, streamlining project processes and improving efficiency. It supports the SDG 9 target of fostering innovation in various sectors.

Technology Access: By leveraging digital tools and technologies, the project management system contributes to improved access to technology, fostering a more technologically advanced and connected environment.