Mid Semester Project Progress Report I

On

BrightHuman Web Application

Submitted in partial fulfilment for award of

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Degree

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Project Progress Report

1. Course : Bachelor of Technology
2. Semester : VIIth
3. Branch : Computer Science & Engineering
4. Project Title : Bright Human Web Application
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SYNOPSIS

Bright Human – Task Management and Performance Tracking System

Effective task management and performance tracking are critical for organizations to streamline operations and boost productivity. Bright Human addresses these needs by offering a centralized system where administrators can efficiently allocate tasks, monitor their progress, and evaluate employee performance through comprehensive dashboards. By leveraging modern technologies, Bright Human aims to improve collaboration, enhance accountability, and support data-driven decision-making.

Objective

The main objective of Bright Human is to create a task management and performance tracking application using a modern technology stack. The system will allow seamless task assignments, real-time progress tracking, and detailed performance evaluation with graphical insights.

Scope of the Project

Bright Human is designed for teams in small to medium-sized organizations. The application will offer:

- Task assignment and status updates.
- Task prioritization (High/Low).
- Real-time notifications for deadlines and updates.
- Proof submission for completed tasks.
- Performance tracking through interactive dashboards.

By simplifying task allocation and tracking workflows, the system ensures higher productivity and accountability.

System Features

The following features will be included in Bright Human:

Admin Module:

- Create, assign, and prioritize tasks for employees.

- Monitor task progress and generate performance reports.

Employee Module:

- View assigned tasks and deadlines.
- Update task status and upload proof of completion.
- Receive notifications for task assignments and updates.

Performance Dashboard:

- Weekly, Monthly, and Yearly performance analytics using graphs.
- A comparison of employee productivity and task efficiency.

Notifications:

- Alerts for task assignments, changes, and upcoming deadlines.

Methodology

Requirement Analysis:

- Identify user needs and functional specifications.
- Gather requirements for performance metrics and task workflows.

System Design:

- Data Flow Diagrams (DFD) to define system processes.
- Entity-Relationship Diagram (ERD) for database structure.

Development:

- Front-End: React, HTML, CSS, and JavaScript to build a responsive interface.
- Back-End: Node.js for managing the application logic and APIs.
- Database: MongoDB for storing task data and performance metrics.
- Version Control: Git for collaborative development.

Testing:

- Conduct unit, integration, and system testing to validate functionality.

Deployment:

- Deploy on cloud platforms such as AWS or Azure for scalability and availability.

Expected Outcomes

- A user-friendly application for efficient task management.
- Improved task prioritization and status tracking.
- Accurate performance evaluation through real-time dashboards.
- Enhanced team collaboration and accountability.

Tools and Technologies

- Front-End: React.js, HTML, CSS, JavaScript
- Back-End: Node.js
- Database: MongoDB
- Version Control: Git
- Hosting: Docker, AWS, or Azure

Conclusion

Bright Human will transform how organizations manage tasks and evaluate performance. By utilizing a modern technology stack, the application ensures a seamless and intuitive experience for both administrators and employees, fostering a productive and accountable work environment.

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CHAPTER 1

INTRODUCTION

1.1 Background and Motivation

Task management is a crucial aspect of personal and professional life, involving the planning, organization, and tracking of tasks to achieve specific goals. Traditionally, task management relied on physical tools like paper planners, whiteboards, or basic digital solutions. However, with the advent of remote work, globalization, and the increasing complexity of team dynamics, these methods have become inadequate.

1.2 Problem Statement

Organizations and individuals face challenges in managing tasks effectively due to fragmented communication, lack of real-time collaboration, and difficulty in tracking progress. This often leads to missed deadlines, inefficient resource utilization, and reduced productivity. The existing task management solutions are often device-dependent, lack scalability, or fail to integrate seamlessly with collaborative tools, making them unsuitable for teams with diverse needs.

1.3 Objective

The primary objective of the BrightHuman Application is to create a productivity and goal-setting app that helps individuals—such as students, professionals, and team leaders—achieve their personal and professional goals by providing tailored schedules, tracking task completion, and offering performance analytics. The app will focus on enhancing users' productivity by analyzing their routines, goals, and interests to suggest optimized schedules that are personalized to their specific needs.

1.4 Scope

The scope of the BrightHuman Application encompasses a wide range of functionalities and features that cater to different user segments, including students, employees, team leaders, and anyone seeking a personalized approach to task management and goal achievement.

1.4.1 User Profiles: The app will allow users to create detailed profiles that include their name, bio, interests, daily routines, and goals. This will serve as the foundation for generating personalized schedules

CHAPTER 2

BACKGROUND AND RELATED WORK

Sr no.	Paper no.	Author	Year	Methodology
1	Personalized Task Scheduling and Monitoring Using Machine Learning	Liu, X., Zhang, Y., & Wang, L.	2023	This paper explores the use of machine learning for personal task scheduling and monitoring, which is relevant to the personalized scheduling features of our application.
2	Behavioral Analysis and Prediction of User Productivity in Task Management Applications	Singh, A., & Gupta, R.	2022	This research examines how user behavior can be analyzed and predicted to enhance productivity in task management applications, relevant to goal tracking and performance analysis.
3	Enhancing Goal Achievement through Adaptive Scheduling Algorithms	Kim, J., & Park, H.	2023	Focuses on adaptive scheduling algorithms that adjust based on user progress and changing goals, aligning with your application's scheduling and goal-setting features.
4	A Comprehensive Review of Productivity Tools and Their Impact on Goal Achievement	Brown, T., & Johnson, M.	2024	This review paper discusses various productivity tools and their effectiveness in helping users achieve their goals, providing context for our application's goal management features.
5	Secure and Scalable Personal Data Management with MongoDB and Node.js"	Patel, N., & Lee, A.	2023	Explores the use of MongoDB and Node.js for secure and scalable personal data management, relevant to the technology stack used in our project.

Liu, X., Zhang, Y., & Wang, L. propose on Personalized Task Scheduling and Monitoring Using Machine Learning. This paper explores the use of machine learning for personal task scheduling and monitoring, which is relevant to the personalized scheduling features of our application.

Singh, A., & Gupta, R. propose on Behavioral Analysis and Prediction of User Productivity in Task Management Applications. This research examines how user behavior can be analyzed and predicted to enhance productivity in task management applications, relevant to goal tracking and performance analysis.

Kim, J., & Park, H. propose on Enhancing Goal Achievement through Adaptive Scheduling Algorithms. Focuses on adaptive scheduling algorithms that adjust based on user progress and changing goals, aligning with your application’s scheduling and goal-setting features.

Brown, T., & Johnson, M. propose on A Comprehensive Review of Productivity Tools and Their Impact on Goal Achievement. This review paper discusses various productivity tools and their effectiveness in helping users achieve their goals, providing context for our application's goal management features.

Patel, N., & Lee, A. propose on Secure and Scalable Personal Data Management with MongoDB and Node.js". Explores the use of MongoDB and Node.js for secure and scalable personal data management, relevant to the technology stack used in our project.

CHAPTER 3

HARDWARE AND SOFTWARE REQUIREMENT

3.1 Hardware Technologies

Development Hardware

- **Development Machines**:
    - **PCs or Laptops**: Equipped with modern processors (e.g., Intel Core i5/i7 or AMD Ryzen), at least 8GB of RAM, and sufficient storage (SSD recommended for speed) to handle development tasks and software tools.
    - **Operating System**: Windows, macOS, or Linux, depending on developer preference and compatibility with development tools.
- **Server Hardware** (for Deployment):
    - **Web Servers**: Hosted on cloud-based virtual machines or physical servers with appropriate resources (e.g., AWS EC2 instances, DigitalOcean Droplets) to handle application traffic.
    - **Database Servers**: Servers with adequate processing power and memory to manage the MongoDB database efficiently.

3.2 Software Technologies

Development Tools and Frameworks

Front-End Technologies:

- **React**: JavaScript library for building the user interface and handling dynamic content.
- **HTML/CSS**: Core technologies for structuring and styling web pages.
- **JavaScript**: Programming language used in conjunction with React for creating interactive web features.

Back-End Technologies:

- **Node.js**: JavaScript runtime for server-side development, enabling asynchronous processing and real-time capabilities.
- **Express.js**: Web application framework for Node.js to handle routing, middleware, and server-side logic.

- **Database**:
  - **MongoDB**: NoSQL database for storing user profiles, tasks, schedules, and performance metrics. MongoDB Atlas can be used for cloud-based database management.

- **Development and Deployment Tools**:
  - **Integrated Development Environment (IDE)**:
    - **Visual Studio Code**: IDE used for coding in JavaScript, HTML, CSS, and Node.js.
  - **Version Control**:
    - **Git**: Version control system for managing code changes and collaboration.
    - **GitHub/GitLab**: Platforms for hosting repositories and facilitating team collaboration.

- **Communication and Collaboration Tools**:
  - **Zoom** or **Google Meet**: For virtual meetings and discussions.

CHAPTER 4

SDLC METHODOLOGIES

The **BrightHuman Application** aims to provide users, such as students, employees, or team leaders, with a tool for managing tasks and achieving their goals. The development process follows a structured approach, utilizing modern technologies for both front-end and back-end development. Below is a detailed overview of the technologies, languages, and tools used in the project.

4.1. Technologies and Tools

Front-End Development

- **Framework**:
    - **React**: A powerful JavaScript library used for building dynamic and responsive user interfaces. React's component-based architecture enables the creation of reusable UI elements, enhancing the application's interactivity and efficiency.
- **Languages**:
    - **JavaScript**: The main language used to build interactive features on the front end with React.
    - **HTML/CSS**: Used for structuring and styling web pages to ensure a clean and user-friendly design.

Back-End Development

- **Framework**:
    - **Node.js**: A JavaScript runtime that allows for efficient server-side development. Node.js is well-suited for building scalable and high-performance applications due to its event-driven architecture and non-blocking I/O model.
- **Libraries**:

- **Express.js**: A lightweight web application framework for Node.js. Express handles routing, middleware, and request handling, enabling smooth interaction between the front-end and back-end systems.

- **Languages**:
  - **JavaScript**: Used for server-side logic with Node.js, allowing for consistent development across the front end and back end.

Database

- **NoSQL Database**:
  - **MongoDB**: A NoSQL database chosen for its flexibility in managing unstructured data. MongoDB is ideal for storing user profiles, tasks, schedules, and performance analytics, offering a schema-less structure that allows for dynamic and scalable data storage.
  - MongoDB's JSON-like document structure is well-suited for handling the varied data types that the application processes, such as user goals, task details, and proof submissions (like images or videos).

4.2 Development Tools

- **Version Control**:
  - **Git**: Used for version control, enabling multiple developers to collaborate and track changes in the codebase. Repositories are hosted on platforms like **GitHub** or **GitLab** for efficient team collaboration.
- **Integrated Development Environment (IDE)**:
  - **Visual Studio Code**: A versatile IDE used for coding the front end (React) and back end (Node.js). It offers features like debugging, code completion, and extensions that streamline development.

4.3 Implementation Approach

- **Development Cycle**:
    - The project follows an **Agile methodology** to ensure flexibility and adaptability. The development process is broken down into smaller, manageable sprints, allowing for continuous improvement and iteration based on feedback.
    - **Core features**: Development starts with basic features like user profile creation, task management, and scheduling. Advanced features such as proof submission, performance tracking, and analytics will be added in later stages.
- **Technological Workflow**:
    - **React** handles the front-end UI, offering users a seamless experience for managing tasks and goals.
    - **Node.js** with **Express.js** manages server-side operations, handling user requests and providing communication between the front end and the database.
    - **MongoDB** stores and retrieves data, such as user profiles, tasks, schedules, and performance metrics. Its flexibility and scalability ensure efficient handling of large volumes of user-generated data.
- **API Design**:
    - RESTful APIs are designed using **Express.js** to handle requests between the client (React front-end) and the server (Node.js back-end). The APIs enable actions like creating user profiles, scheduling tasks, marking tasks as complete, and generating performance reports.

4.4 Testing

- **Unit Testing**:
    - Individual components and modules are tested to ensure each piece of functionality works as expected.
- **Integration Testing**:
    - Integration testing ensures smooth interaction between the front-end (React), back-end (Node.js), and database (MongoDB).

- **User Acceptance Testing (UAT)**:
    - Engage users to test the application's functionality, performance, and ease of use. Based on the feedback, adjustments are made to improve the user experience and overall performance.

CHAPTER 5

DFD DIAGRAM AND ER DIAGRAM

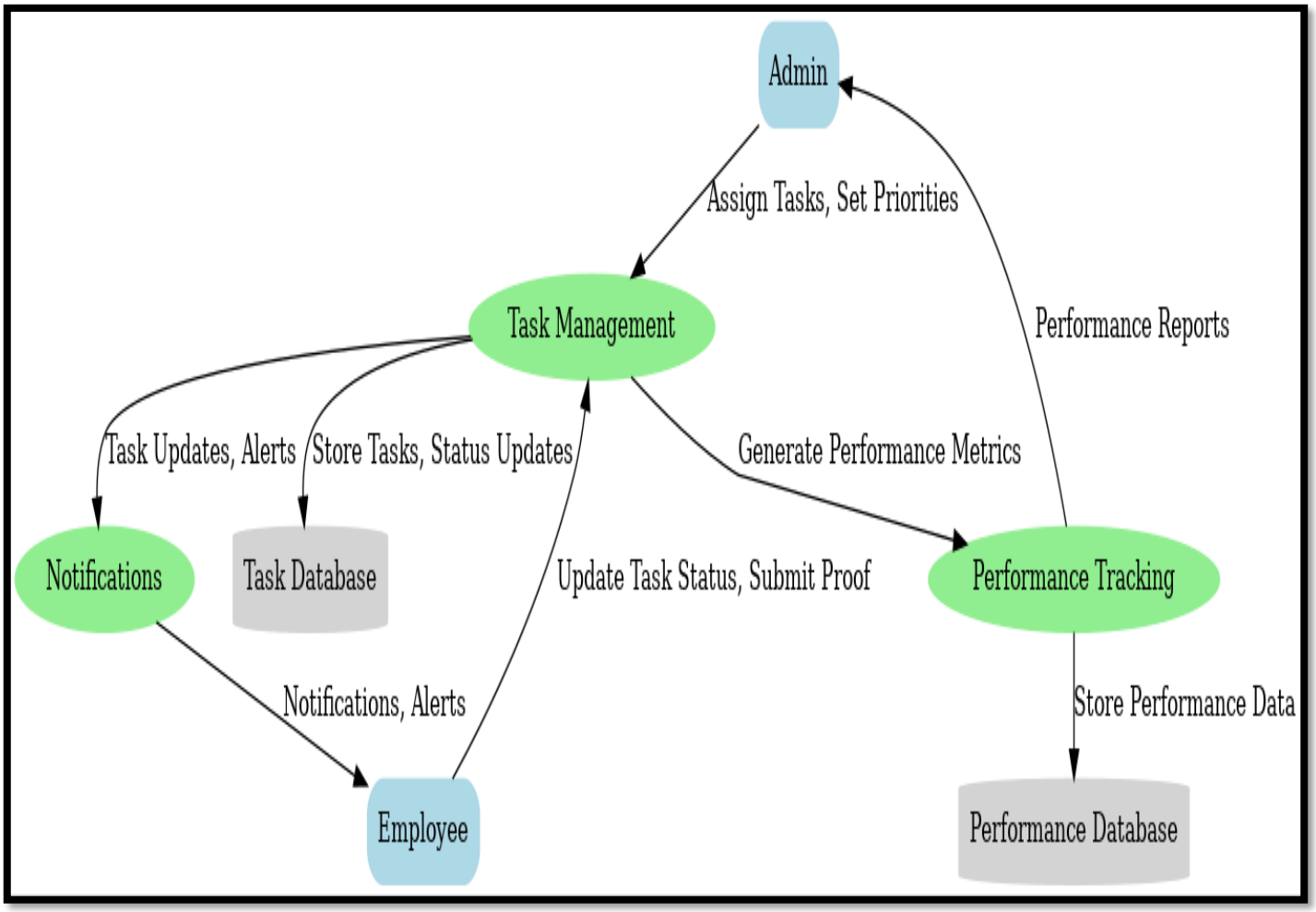


Fig. no. 5.1 Data Flow Diagram

Level 0 - Context Diagram

This level shows the interaction between the system and external entities:

- Admin: Assigns tasks, sets priorities, and reviews performance reports.
- Employee: Updates task status, submits proofs, and receives notifications.

Level 1 - Detailed Diagram

Entities:

1. **Admin:**

- Creates tasks and assigns them to employees.
- Defines task priorities (High/Low).
- Receives performance reports to monitor employee efficiency.

2. **Employee:**
   - Updates task progress (Complete, In Progress, Rejected).
   - Submits proof of task completion.
   - Receives notifications about assigned tasks and deadlines.

Processes:

1. **Task Management:**
   - Manages tasks assigned to employees.
   - Tracks task progress and status updates.
   - Stores task-related data in the Task Database.
2. **Performance Tracking:**
   - Uses task data to calculate performance metrics.
   - Generates graphical reports (weekly, monthly, yearly) for the admin.
   - Stores performance metrics in the Performance Database.
3. **Notifications:**
   - Sends alerts and updates to employees about tasks, deadlines, and changes.

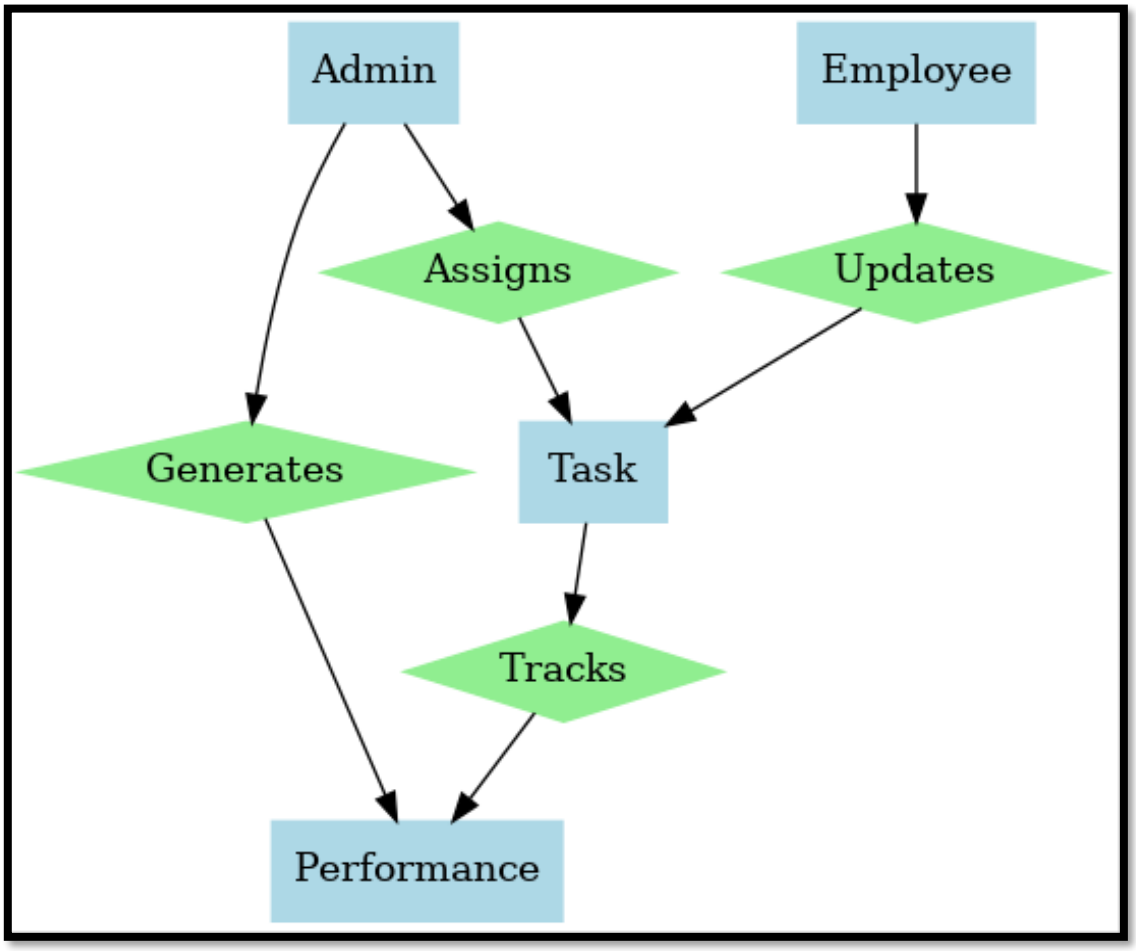
Data Stores:

1. **Task Database:**
   - Contains all task-related information such as assigned tasks, priorities, status updates, and proof submissions.
2. **Performance Database:**
   - Stores metrics derived from task completion data to evaluate individual and team performance.

Data Flow

1. **Admin to Task Management:**
    - Admin assigns tasks and sets priorities.
    - Task details are stored in the Task Database.
2. **Employee to Task Management:**
    - Employees update task status and submit proofs.
    - These updates are stored in the Task Database.
3. **Task Management to Notifications:**
    - Sends notifications to employees about new tasks, updates, or deadlines.
4. **Task Management to Performance Tracking:**
    - Shares task completion data to calculate performance metrics.
5. **Performance Tracking to Admin:**
    - Generates performance reports and shares them with the admin for review.
6. **Performance Tracking to Performance Database:**
    - Stores calculated performance metrics for future analysis.

Fig. no. 5.2 ER Diagram



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