

CERTIFIED BLOCKCHAIN ARCHITECT
COURSE REPORT

Submitted by:

SNEHA P

to

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SNEHA P

ABSTRACT

This project introduces a leave request management system, streamlining leave requests for employees and managers. The system is a web-based application built with Express.js for the backend and MongoDB for data storage, while the frontend is crafted using HTML, Tailwind CSS, and Docker for deploying the application. The project includes changes that transform how organisations manage leave requests. This app makes it easy for employees and managers to request leave and for managers and administrators to quickly review and approve requests. Traditional methods, like using paper forms or scattered digital files, can cause problems like delays and confusion. Detailed reports make administrative tasks easier while keeping data safe. The system caters to three user types: admin, employee, and manager. Admin users have a broad range of features at their disposal, including adding, updating, deleting employee and manager details, and seeing employee and manager details separately. When admins add an employee and manager, a mail is sent to their mail ID, and the login details for employees and managers are contained in that mail. The employee dashboard contains a leave letter that is sent to the manager. A leave history view page, a leave count page, and a logout section. The manager dashboard contains the employee leaves view page, and the manager can accept or reject them. The manager is also an employee, so the manager wants to apply for leave. The leave letter page, leave history page, and employee details page are present.

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INTRODUCTION

Managing leave requests is difficult with old methods like paper forms and scattered digital files. The project introduces a complete leave request management app to fix these issues, and make requesting leave easier. Here, the employees and managers can easily ask for time off by saying what type of leave they need, how long, and why, and administrators can quickly check, and approve or reject the requests. The project includes changes that transform how organisations manage leave requests. This system is built with a modern web technology stack, including a backend developed in Express.js and a frontend designed with HTML and Tailwind CSS, ensuring a responsive and user-friendly interface. MongoDB is utilized for data storage, offering a scalable and flexible solution., and Docker for deploying the application. The system caters to three primary user roles: Admin, Manager and Employee. Admin users have full control over the system. Employees and managers can be added, updated, and deleted by administrators. examining manager and employee details independently. Upon adding an employee or manager, a message is sent to their email ID containing the employee's or manager's login credentials. The employees and managers accessed their dashboards by using these details. The employee dashboard contains a leave letter that is sent to the manager. A leave history view page, a leave count page, and a logout section. The manager dashboard contains the employee leaves view page, and the manager can accept or reject them. The manager is also an employee, so the manager wants to apply for leave. The leave letter page, leave history page, and employee details page are present.

1.1 Key Features and Functionalities:

- **Admin Dashboard :** Admins can add, update, and delete employees and managers. When admins add an employee and manager, a mail is sent to their mail ID, and the login details for employees and managers are contained in that mail. See employee and manager details separately.
- **Employee Dashboard :** The employee dashboard contains a leave letter that is sent to the manager. A leave history view page, a leave count page, and a logout section.
- **Manager Dashboard :** The manager dashboard contains the employee leaves view page, and the manager can accept or reject them. The manager is also an employee, so the manager wants to apply for leave. The leave letter page, leave history page, and employee details page are present.
- **Leave Request Approval and Rejection :** The manager can approve or reject the employee leave letter, and the administrator can approve or reject the manager's leave request.
- **Leave Count :** The Employees dashboard contains a leave count page that contains the count of leaves for that specific user. Here are the three types of leaves mentioned: sick leave, casual leave, and annual leave. Here, these leave counts are displayed.
- **Authentication and Authorization:** – Secure login functionality to restrict access to authorized users. – Role-based access control Only the admin-added employees and managers can access their dashboard.

SYSTEM ARCHITECTURE

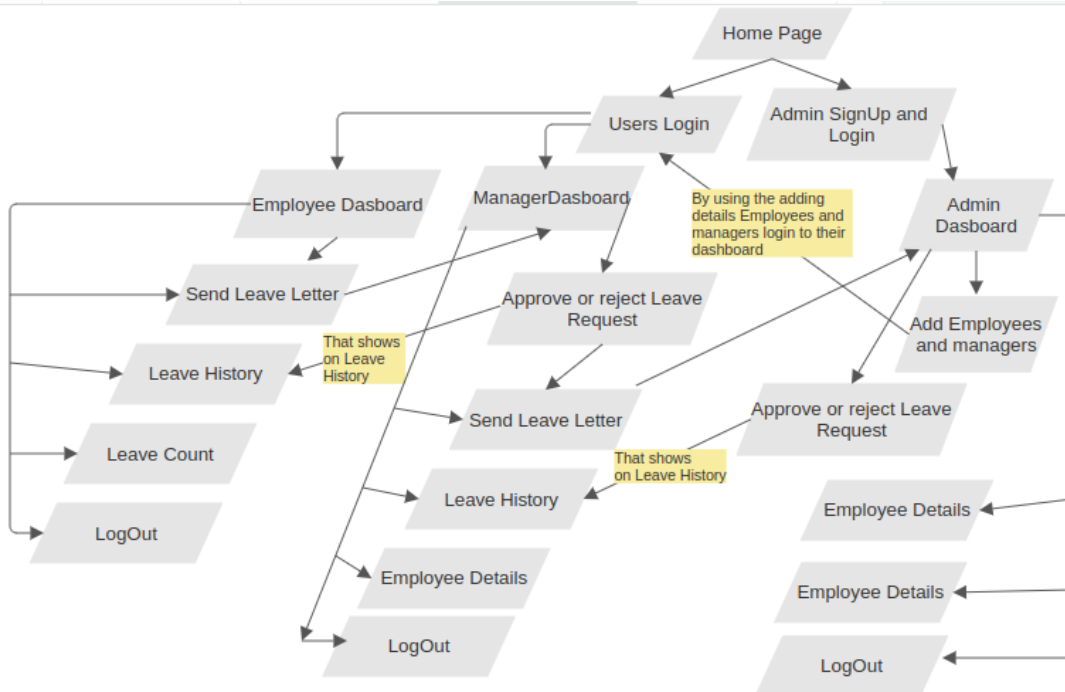


Figure 2.1: Work Flow Diagram

Signup and Login

The admins have both signup and login pages; they have access to their dashboard by logging in using their registered email address and password. Admin can add employees or managers; a message is sent to their email ID containing the employee's or manager's login credentials. The employees and managers accessed their dashboards by using these details. The system verifies the credentials and grants access based on the user's role.

- The system checks credentials and grants access based on the role (Admin, Employee or Manager)
- If the login is successful and the user is an Admin, they are redirected to the Admin Dashboard. If the login is successful and the user is an Employee, they are redirected to the Employee Dashboard. If the login is successful and the user is a Manager, they are redirected to the Manager Dashboard.
- If the login fails, the user is prompted to retry.

Admin Dashboard

Once logged in, Admin are directed to the Admin Dashboard.

- **Leave approval or reject:** The manager's leave is approved or rejected by the manager.
- **Add employees and managers :** Admins can add, update, and delete employees and managers. When admins add an employee and manager, a mail is sent to their mail ID, and the login details for employees and managers are contained in that mail. See employee and manager details separately.

Employee Dashboard

Once logged in, Employee are directed to the Employee Dashboard.

- **Leave Request send:** The employee can send a leave request to the manager, who will either approve or reject the request.
- **Leave History:** That specific employee's leave request history is seen on the leave history page. When the request is approved or rejected by the manager, the action is shown on that page.
- **Leave Count:** The Employees dashboard contains a leave count page that contains the count of leaves for that specific user. Here are the three types of leaves mentioned: sick leave, casual leave, and annual leave. Here, these leave counts are displayed.

Manager Dashboard

Once logged in, Manager are directed to the Manager Dashboard.

- **Leave Request send:** The manager can send a leave request to the admin, who will either approve or reject the request.
- **Leave History:** That specific manager's leave request history is seen on the leave history page. When the request is approved or rejected by the admin, the action is shown on that page.
- **Leave approval or reject:** The employee's leave is approved or rejected by the manager.

USE CASES AND USER STORIES

3.1 Use Cases

3.1.1 Use Case 1: Employee Requests Leave

- **Actors:** Employee.
- **Preconditions:** The employee is logged into the system.
- **Description:**
 1. Admin navigates to the login page.
 2. They select the type of leave (e.g., annual leave, casual leave, sick leave).
 3. They specify the start and end dates and provide a reason for the leave.
 4. The employee submits the leave request.
- **Postconditions:** The leave request is saved in the system and sent to the respective manager for approval.

3.1.2 Use Case 2: Manager Reviews and Approves/Rejects Leave Request

- **Actors:** Manager.
- **Preconditions:** The manager has received a leave request notification.
- **Description:**
 1. The manager logs into the system and accesses the "Pending Requests" section.
 2. They review the details of the leave request, including the type, dates, and reason.
 3. The manager decides whether to approve or reject the request.
 4. The manager updates the status of the leave request accordingly.
- **Postconditions:** The employee is notified of the decision, and the leave request status is updated in the system.

3.1.3 Use Case 3: Admin Manages Users

- **Actors:** Admin.
- **Preconditions:** The admin is logged into the system.
- **Description:**
 1. The admin accesses the "User Management" section.
 2. The admin can add new employees or managers.
 3. The admin can update or delete existing users.
 4. The admin can view details of all employees and managers.
- **Postconditions:** User information is updated in the system, and any changes are reflected in the database.

3.1.4 Use Case 4: Employee Checks Leave Balance

- **Actors:** Employee.
- **Preconditions:** The employee is logged into the system.
- **Description:**
 1. The employee navigates to the "Leave Balance" section.
 2. The employee views their current leave balance and usage history.
- **Postconditions:** The employee has up-to-date information about their leave balance.

3.2 User Stories

3.2.1 User Story 1: As an Admin, I want to add new employees and managers so that they can access the system and submit leave requests.

- **User Role:** Admin.
- **Acceptance Criteria :** Log into the system to manage IT assets.
- **Acceptance Criteria:**
 - The admin can navigate to the user management section.
 - The admin can fill out a form to add new users.
 - The system saves the new user details in the database.
 - The system sends an email to the new user with their login credentials.

3.2.2 User Story 2: As an Employee, I want to submit a leave request so that I can take time off from work.

- **User Role:** Employee.
- **Acceptance Criteria:**
 - The employee can navigate to the leave request section.
 - The employee can fill out and submit a leave request form.
 - The system saves the leave request in the database.
 - The system notifies the manager of the new leave request.

3.2.3 User Story 3: As a Manager, I want to review and approve or reject leave requests so that I can manage my team's leave.

- **Title:** View assigned assets.
- **User Role:** Manager.
- **Acceptance Criteria:**
 - The manager can navigate to the leave request section.
 - The manager can view pending leave requests.
 - The manager can approve or reject leave requests.
 - The system updates the leave request status and notifies the employee.

3.2.4 User Story 4: As an Employee, I want to view my leave history so that I can keep track of my leave.

- **User Role:** Employee.
- **Acceptance Criteria:**
 - The employee can navigate to the leave history section.
 - The system retrieves and displays the employee's leave history.

3.2.5 User Story 4: As an Admin, I want to view details of employees and managers separately so that I can manage user information effectively.

- **User Role:** Admin.
- **Acceptance Criteria:**

- The admin can navigate to the user management section.
- The admin can select to view employee or manager details.
- The system retrieves and displays the relevant user details.

CONCLUSION

The Leave Request Management App is a robust solution designed to streamline the leave management process for organizations. By leveraging modern web technologies such as Express.js, MongoDB, HTML, Tailwind CSS, and Docker, the application provides a responsive and user-friendly interface that enhances productivity and efficiency. The system supports distinct roles for admins, employees, and managers, allowing for comprehensive management of leave requests. Employees can easily submit leave requests, managers can promptly review and approve them, and admins can effectively manage user details. This application replaces outdated methods, reduces administrative burdens, and ensures secure data handling, ultimately transforming the way organizations handle leave requests. This application replaces outdated methods, reduces administrative burdens, and ensures secure data handling, ultimately transforming the way organizations handle leave requests. Detailed reports and tracking features offer valuable insights into leave patterns, helping in resource planning and decision-making. The automated email notifications for new user credentials and leave request statuses further streamline communication within the organization. By adopting this system, organizations can foster a more organized and transparent leave management process, contributing to overall employee satisfaction and operational efficiency.

FUTURE SCOPE

Leave Balance Tracking

Implementing a detailed leave balance tracking system that allows employees and managers to easily view and manage their leave balances. This feature will enable tracking of different types of leaves (e.g., casual, sick, annual) and display the remaining balance for each leave type. Employees will be able to plan their leaves better by seeing their available leave balance in real-time. Managers and admins can also monitor leave balances to ensure fair and accurate leave allocation.

Chat System for Communication

Introducing an integrated chat system within the application to facilitate seamless communication between employees, managers, and admins. This feature will allow users to discuss leave requests, provide updates, and resolve queries in real-time. The chat system can include features such as direct messaging, group chats, and notifications to enhance collaboration and ensure that all parties are promptly informed about leave-related matters.

REFERENCES

- [1] Express.js, <https://expressjs.com/>
- [2] MongoDB, <https://www.mongodb.com/>
- [3] Tailwind CSS, <https://tailwindcss.com/>
- [4] Node.js, <https://nodejs.org/>
- [5] Docker, <https://www.docker.com/>
- [6] GitHub Repository for the project, <https://github.com/keralablockchainacademy/pmajay-b1>