



Employee Management System

— by Team 11

Team members:

Mukul Shekhar: 22BCE7270

Sonali Singh: 22BCE8614

Abhik Das: 22BCE8616

Himanshu Sekhar Sahoo: 22BCE9113

Rudrika Singh: 22BCE9127



1. Introduction

1.1 Purpose

The purpose of this SRS document is to outline the requirements and specifications for developing an Employee Management System. The system is intended to automate and streamline employee management tasks, including attendance tracking, payroll management, leave requests, and personal record maintenance.

1.2 Scope

The Employee Management System will be designed to meet the needs of small to medium-sized organizations. It will include modules for employee data management, attendance tracking, payroll processing, and leave management. The system will be accessible to HR personnel, managers, and employees through a secure, web-based interface.

1.3 Overview

The Employee Management System will provide a centralized platform for managing all aspects of employee administration. The system will be modular, allowing for easy integration with existing HR systems and the potential for future expansion. It will include user-friendly interfaces for different types of users (HR personnel, managers, and employees) and will ensure secure handling of sensitive employee data.

1.4 Business Context

In today's competitive business environment, efficient management of human resources is crucial for organizational success. The Employee Management System will enable the organization to automate routine HR tasks, reduce administrative overhead, and ensure compliance with legal and regulatory requirements. By providing real-time access to employee data and streamlining processes like payroll and leave management, the system will contribute to better decision-making and improved employee satisfaction.

2. General Description

2.1 Product Perspective

The Employee Management System is a standalone application designed to manage all aspects of employee administration. It will integrate with existing HR systems and databases as needed.

2.2 Product Functions

- **User Authentication:** Secure user registration and login functionality, allowing employees, HR personnel, and managers to access the system with appropriate permissions.
- **Employee Management:** Manage personal details, job details, and contact information.
- **Attendance Tracking:** Record and monitor employee attendance.
- **Payroll Management:** Calculate and process employee salaries, deductions, and bonuses.
- **Leave Management:** Manage leave requests, approvals, and balances.

2.3 User Characteristics

- **HR Personnel:** Responsible for managing employee records, payroll, and leave requests.
- **Managers:** Approve leave requests and monitor team attendance.
- **Employees:** Access personal records, submit leave requests, and view payroll information.

2.4 User Problem Statement

Current HR processes are inefficient, involving manual data entry that is time-consuming and error-prone. This inefficiency causes delays in payroll processing, attendance tracking, and leave approvals.

2.5 User Objectives

Users require a system that automates data management tasks, reduces administrative time, and improves accuracy. The system should also facilitate easy access to records and allow for data export for reporting purposes.

2.4 Constraints

- The system must be web-based and accessible from standard web browsers.

- Data must be stored securely to comply with data protection regulations.
 - The interface should be user-friendly, requiring minimal training, and support Excel data import/export.
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3. Functional Requirements

3.1 User Authentication

- **User Registration:**
 - Users can register using their email address, password, and basic personal details (e.g., name, and contact number).
 - Social media login options (e.g., Google, Facebook) are available for quick registration.
 - After successful registration, a confirmation email is sent to the user, requiring verification to activate the account.
- **Login/Logout:**
 - Users can log in using their registered credentials (email and password) or via social media accounts.
 - Secure session management is implemented using JWT (JSON Web Tokens) to maintain authenticated sessions.
 - Users can log out from individual sessions or all active sessions across different devices.
- **Password Recovery:**
 - Users can request a password reset link to be sent to their registered email address.
 - The password reset process involves a secure, one-time link, which is valid for 24 hours.
- **Authentication will be managed by the system as an internal activity, not requiring a separate class or module. The system will ensure secure login, session management, and user access control for all users (Employees, HR Managers, and Admins).**

3.2 Employee Records Management

- **Secure Storage of Employee Data:** Employee data shall be stored in a secure database, ensuring confidentiality and integrity. The database must be protected against unauthorized access and data breaches.
- **Comprehensive Record Maintenance:** Employee records, including personal details (e.g., name, address, contact information), job-related information (e.g., position, department, salary), and other relevant data, shall be maintained with all required fields fully completed.
- **Offline Capabilities and Data Synchronization:** To ensure continuity in case of network issues, the system should offer offline capabilities where possible, allowing data entry and modifications even when offline. Once the network is available, the system should automatically sync the offline data with the central database.
- **Foundation for Other Functionalities:** This requirement is critical as accurate and accessible employee records are foundational to the functionality of other system components like attendance tracking, payroll management, and leave management.

3.3 Attendance Tracking

- **Daily Attendance Recording:** The system shall record and store daily attendance data for all employees, capturing essential details such as check-in/check-out times, overtime, and any absences.
- **Report Generation and Data Queries:** Users, especially HR personnel and managers, should be able to generate detailed attendance reports and run queries to access specific attendance data, such as employee punctuality, absenteeism trends, or department-wide attendance statistics.
- **Dependency on Employee Records Management:** The success of attendance tracking depends on accurate and up-to-date employee records, ensuring that attendance data is linked to the correct employee profiles.

3.4 Payroll Management

- **Salary Calculation and Processing:** The system shall calculate and process employee salaries, taking into account attendance records, deductions (e.g., taxes, benefits), and bonuses. The system must ensure accuracy in payroll calculations, reflecting the correct payment amounts for each employee.
- **Data Entry and Updates through Forms:** HR personnel should be able to enter and update payroll data through intuitive forms within the system, ensuring ease of use and efficiency in managing payroll processes.
- **Mitigation Measures:** To minimize errors, provide adequate training to HR personnel responsible for payroll management. Additionally, implement validation checks within the system to flag any discrepancies or errors in payroll data.

- **Reliance on Attendance and Employee Records:** Accurate payroll processing relies heavily on the proper functioning of attendance tracking and the accuracy of employee records, ensuring that all calculations are based on reliable data.

3.5 Leave Management

- **Leave Request Submission:** The system shall allow employees to submit leave requests through a user-friendly interface. The requests will be stored in the database and associated with the respective employee's records.
- **Managerial Review and Approval/Rejection:** Managers should have the ability to review leave requests, with options to approve or reject them directly within the system. The process should be streamlined to ensure timely decision-making.
- **Automated Notifications and Reminders:** To facilitate prompt handling of leave requests, the system should send automated notifications to managers about pending approvals and reminders for any requests that have not been addressed.
- **Dependency on Employee Records and Attendance:** Effective leave management is dependent on accurate employee records and attendance tracking, ensuring that leave requests are processed in the context of the employee's work history and current attendance status.

3.6 System Interaction

- The system will act as the central control unit managing the interaction between different functionalities like employee records, attendance, leave requests, and payroll. This ensures that all processes are properly authenticated and that each activity is securely managed within the system.

4. Interface Requirements

4.1 User Interfaces

- The system shall provide a web-based GUI accessible via common web browsers.
- The GUI shall include login, dashboard, employee management, attendance, payroll, and leave management screens.

4.2 Hardware Interfaces

- The system shall be compatible with standard office hardware, including desktop computers, laptops, and tablets.

4.3 Communications Interfaces

- The system shall support secure communication protocols, such as HTTPS, for data transmission.

4.4 Software Interfaces

- The system shall integrate with existing HR software and databases, where applicable.
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5. Performance Requirements

The Employee Management System (EMS) is designed to be a web-based application, accessible via standard web browsers on a variety of devices. As a result, the system's performance is dependent on the client's hardware and network capabilities.

Minimum System Requirements:

- Processor: 1 GHz or higher
- RAM: 2GB or higher
- Available Hard Drive Space: 500MB for system files and logs
- Operating System: Windows 10 or later, macOS Catalina or later
- Browser Compatibility: Google Chrome, Mozilla Firefox, Microsoft Edge (latest versions)

Recommended System Requirements:

- Processor: 2 GHz dual-core or higher
 - RAM: 4GB or higher
 - Available Hard Drive Space: 1GB
 - Operating System: Windows 11 or the latest macOS
 - High-speed internet connection (at least 5 Mbps) for optimal performance
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6. Non-functional Attributes

6.1 Security

The system will implement encryption for sensitive employee data and may include password protection based on client requirements.

6.2 Binary Compatibility

The system will be compatible with Windows 10 or later and macOS Catalina or later, functioning efficiently on desktops, laptops, and tablets.

6.3 Reliability

Regular data backups and thorough testing will ensure system reliability, minimizing data loss and ensuring stable operation.

6.4 Maintainability

The system will be maintained by the IT department or a designated employee, with provided documentation to facilitate updates and fixes.

6.5 Portability

The system is designed to be portable across different devices and platforms, maintaining functionality on both Windows and macOS.

6.6 Extensibility

The system will be designed for easy future enhancements, with well-documented code to support additional functionality.


6.7 Reusability

Key components will be reusable in other projects or system updates, ensuring the system's adaptability.

6.8 Application Affinity/Compatibility

The system requires modern web browsers and will integrate smoothly with existing HR tools for seamless data management.

6.9 Resource Utilization



The system will utilize existing IT resources efficiently, with minimal impact on the organization's infrastructure.

6.10 Serviceability

Basic IT staff can manage system maintenance, with built-in tools for troubleshooting and performance monitoring.

7. Operational Scenarios

Scenario A: Employee Registration and Login

- **Action:** An employee registers for the system using their email address and creates a password. After receiving a confirmation email and verifying their account, they can log in using their credentials.
- **Result:** The employee is granted access to the Employee Management System, where they can view and update their details.

Scenario B: Employee Onboarding

- **Action:** An HR Manager inputs a new employee's details, including their personal information, job title, and contact details. The data is stored securely in the system.
- **Result:** The new employee's record is successfully added to the database and can be accessed or updated by authorized personnel.

Scenario C: Attendance Tracking

- **Action:** Employees check in and out of work each day using the system. The HR Manager generates a weekly attendance report to review employee punctuality.
- **Result:** The system accurately records attendance data, and the HR Manager can easily generate and review attendance reports.

Scenario D: Payroll Processing

- **Action:** At the end of the month, the HR Manager processes payroll based on the recorded attendance, applying any deductions or bonuses.
- **Result:** Employee salaries are calculated, and payroll is processed efficiently. The data is stored for future reference and auditing.

Scenario E: Leave Management

- **Action:** An employee submits a leave request through the system. The HR Manager reviews the request and approves it. The employee is notified of the approval.
 - **Result:** The leave request is processed, and the employee's attendance record is updated accordingly. Notifications ensure both the employee and manager are informed throughout the process.
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8. Use Case Diagram

Actors:

1. **Employee**
2. **HR Manager**

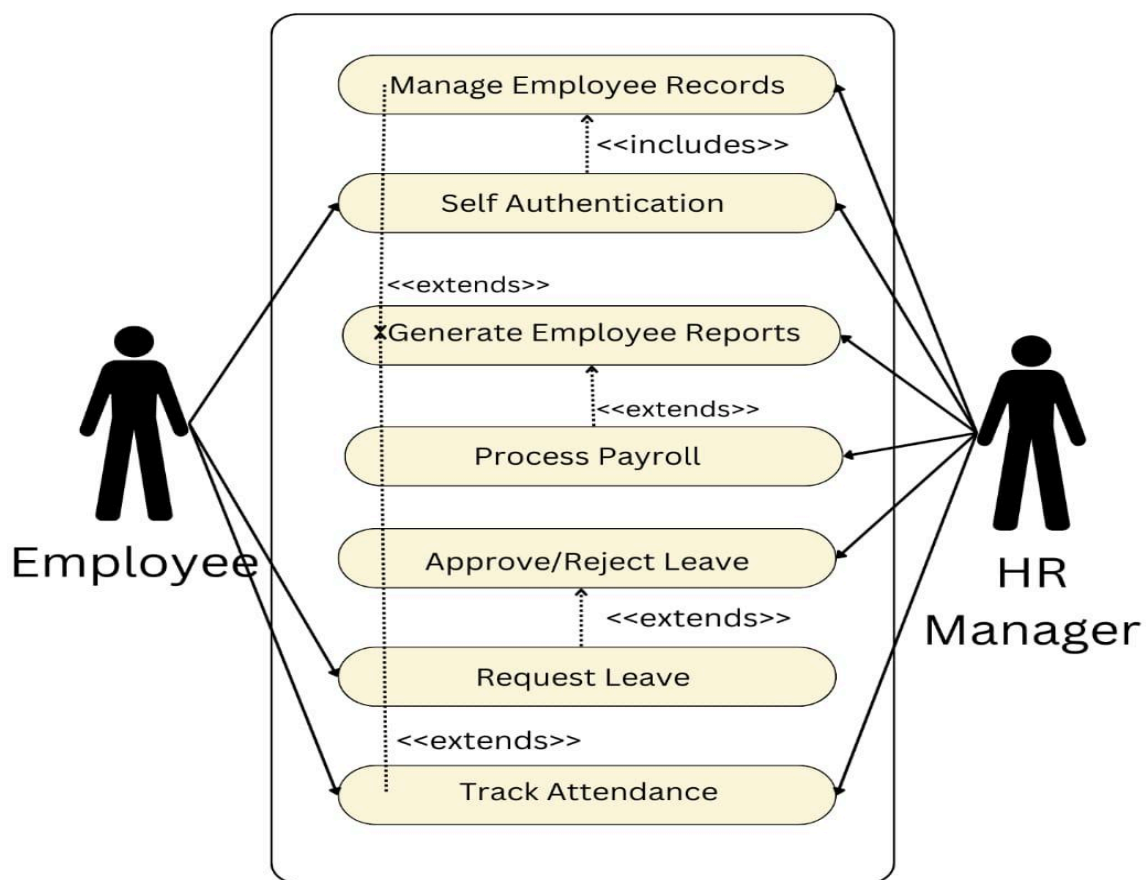
Use Cases:

1. **User authentication**
2. **Manage Employee Records**
3. **Track Attendance**
4. **Process Payroll**
5. **Request Leave**
6. **Approve/Reject Leave**
7. **Generate Reports**

Relationships:

- **Employee** interacts with:
 - User authentication
 - Track Attendance
 - Request Leave
- **HR Manager** interacts with:
 - User authentication
 - Manage Employee Records
 - Track Attendance
 - Approve/Reject Leave
 - Process Payroll
 - Generate Reports

USE CASE DIAGRAM:



9. Class Diagram

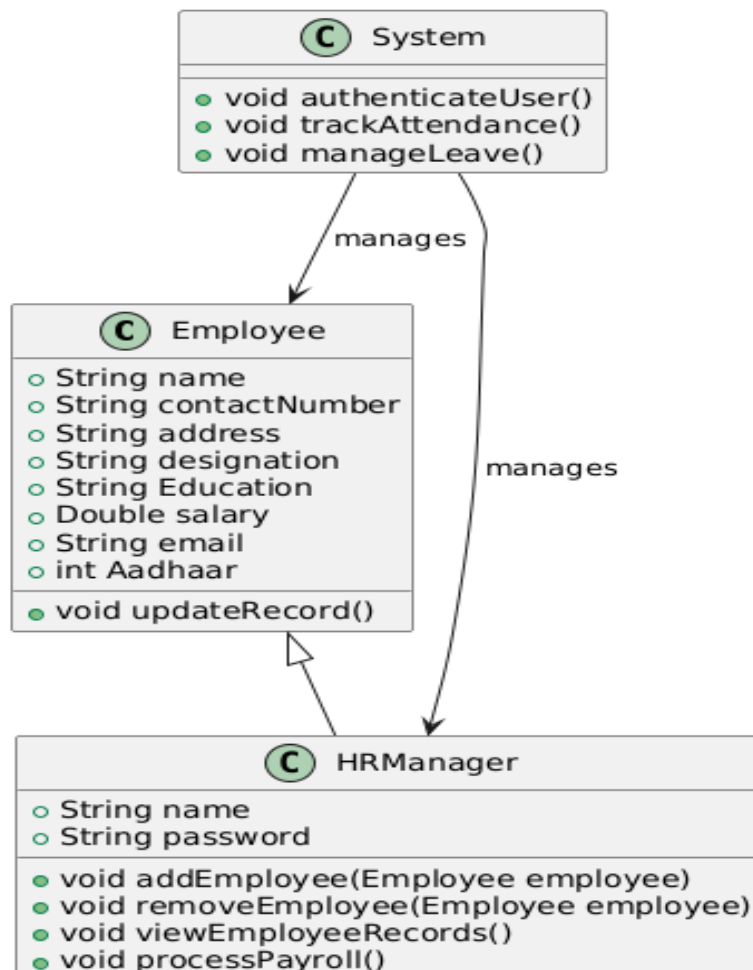
Inheritance:

- **HRManager** and **Admin** inherit from **Employee**, so they have a generalization relationship with **Employee**.

Relationships:

- **System to Employee:** A **System** instance manages multiple **Employee** instances (0..*), indicating a one-to-many relationship.
- **System to HRManager:** A **System** instance manages multiple **HRManager** instances (0..*), indicating a one-to-many relationship.
- **System to Admin:** A **System** instance manages multiple **Admin** instances (0..*), indicating a one-to-many relationship.
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CLASS DIAGRAM:



10. Sequence Diagram

1. Employee Authentication

- **Purpose:** Allows an employee to log into the system.
- **Process:**
 - The Employee sends their login credentials to the System.
 - Both the Employee and System lifelines are activated during this interaction.
 - The System validates the credentials and sends an authentication success message back to the Employee.
 - After the interaction, the Employee and System are deactivated.

2. Mark Attendance

- **Purpose:** Records the attendance of an employee.
- **Process:**
 - The Employee marks their attendance by sending a request to the System.
 - Both the Employee and the System are activated during this interaction.
 - The System records the attendance and responds to the Employee with a confirmation that attendance has been successfully recorded.
 - The interaction ends, and both are deactivated.

3. HR Manager Authentication

- **Purpose:** Allows the HR Manager to log into the system.
- **Process:**
 - The HRManager sends their login credentials to the System.
 - Both the HRManager and the System are activated during this interaction.
 - The System validates the credentials and sends an authentication success message back to the HRManager.
 - The interaction ends, and both are deactivated.

4. Employee Onboarding

- **Purpose:** Allows the HR Manager to add a new employee to the system.
- **Process:**
 - The HRManager sends a request to the System to add a new employee.
 - Both the HRManager and the System are activated.
 - The System processes the request and confirms that the new employee has been added.
 - The interaction ends with both deactivating.

5. Employee Removal

- **Purpose:** Allows the HR Manager to remove an existing employee from the system.
- **Process:**
 - The HRManager sends a request to the System to remove an employee.
 - Both the HRManager and the System are activated during this interaction.
 - The System removes the employee and confirms the removal to the HRManager.
 - The interaction ends, and both lifelines are deactivated.

6. Employee Records

- **Purpose:** Allows the HR Manager to view employee records.
- **Process:**
 - The HRManager requests employee records from the System.
 - The System processes the request and sends back the records to the HRManager.
 - After the interaction is complete, both the HRManager and the System are deactivated.

7. Generate Payroll

- **Purpose:** Generates payroll and updates employee salary details.
- **Process:**
 - The HRManager requests the System to generate payroll.
 - The System processes the request and confirms that the payroll has been generated.

- The System then updates the salary for the respective employees.

SEQUENCE DIAGRAM:

