Development of Human Resource Internal Application

Software Requirements Specification

Rowy Hardware

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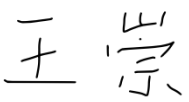
Wang Chong	Team Member		10 Oct 2024
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1. Introduction

The software to be developed is an Employee Performance Management System (EPMS) designed to streamline the process of tracking employee performance, managing leave applications, and providing feedback. This system will enable HR departments and managers to efficiently monitor employee achievements and identify areas for improvement, thereby fostering a culture of continuous development and accountability within the organization. The software will include features such as performance metrics visualization, leave management functionality, user dashboards, and real-time notifications.

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a comprehensive overview of the requirements for the Employee Performance Management System. It outlines the system's functionalities, features, and interface requirements in a manner that ensures clarity for all stakeholders involved in the development process. This document serves as a guide for software developers, project managers, and quality assurance teams to understand what is expected from the final product. It also facilitates communication among stakeholders, ensuring that everyone has a clear understanding of the system's objectives and capabilities.

1.2 Scope

The project will develop the Employee Performance Management System (EPMS), a website-based platform designed to automate and streamline different HR processes. The platform will focus on employee performance tracking, leave application management, announcement management, and performance-related insights generation, which all aimed to boost overall productivity,

What the EPMS will accomplish:

- **Performance tracking:** The system will automate the tracking of Key Performance Indicators (KPIs) and employee achievements. Managers will be able to monitor employee performance in real-time.
- **Leave management:** Employees will be able to apply for leave using the system, and managers and HR will review and approve them digitally.
- **User Dashboards:** The system will provide a dashboard for the employees, which allows them to view the status of their tasks in real-time.
- **Leaderboards:** The system will display employee rankings within their own departments.The ranking is based on total points earned for task completion.

- **Reward System:** Employees can view available rewards and claim them using earned points. Managers will have the ability to create new rewards and manage existing rewards.
- **Survey system:** Department managers can evaluate the performance of the employees through questionnaires, fostering a culture of continuous improvement.
- **Announcement:** The system will feature an announcement center, where announcements and updates are announced to everyone. Additionally, the system will also support birthday announcements.

What the EPMS will not accomplish:

- **Mobile App Development:** The system will be available via mobile web browsers and no mobile applications will be developed as part of this project.

Applications/Uses of the Software and Benefits

The EPMS will be used by HR, department managers, and employees within organizations to streamline HR processes, especially in performance management, KPI tracking, and leave management. The benefits include reduced manual efforts, increased accuracy in performance tracking, a more competitive environment, and improved overall productivity and employee engagement.

1.3 Definitions, Acronyms and Abbreviations

- **API:** Application Programming Interface (API) is a set of tools or protocols that allow communication between different software applications. This allows website-based services to connect to external databases and software through the use of APIs. (IBM, 2024)
- **ORM:** Object-Relational Mapping is a programming technique for converting data between incompatible systems (like databases and objects in programming languages). (Abba, 2022)
- **CAPTCHA:** CAPTCHA stands for Completely Automated Public Turing, which is a tool that is used to determine whether the user is human or bot. (Learning Center, 2023)
- **OAuth 2.0:** OAuth 2.0 stands for Open Authorization. It is an authorization framework that allows third-party websites or applications to safely access a user's account without exposing the password. (Bello, 2023)
- **SQL:** Structured Query Language (SQL) is a programming language that is used to manage and manipulate relational databases. It includes querying

data, updating records, and managing databases. (Amazon Web Services, Inc., 2022)

- **UI:** User Interface (UI) is the interface that the users interact with the software. This includes the design and layout of the software. (Hashemi-Pour and Churchville, 2024)
- **CPU:** CPU stands for Central Processing Unit, which acts as the brain of a computer. It is a primary component that is responsible for executing instructions and carrying out tasks inside the computer, such as basic arithmetic, logic, control, and input/output operations. (Lenovo.com, 2021)
- **RAM:** RAM, which stands for Random Access Memory, is a type of temporary storage that allows a computer to store and quickly access data that is being actively used or processed. (Crucial, 2024)
- **HTTPS:** HTTPS stands for HyperText Transfer Protocols secure, which is a secure version of HTTP. It is a computer communication protocol that is used to transfer information between the client (web browsers) and the server. (Cloudflare.com, 2024)
- **SMTP:** Simple Mail Transfer Protocol (SMTP), which is a protocol used for sending email across the Internet. (Cloudflare.com, 2022)

2. Overall Description

This program is a management system for internal use of Rowy Hardware. It allows managers, HR or admin to effectively manage staff.

2.1. Product Features

This system mainly including functions below：

- **KPI tracking management**
    - For the manager's side, it allows managers to check staff's KPI, and department status.
    - For the admin side, the system allows the admin to check all department's KPI status including personnel.
    - For personnel, it allows the current person to check he-self's KPI status.
- **Leave application management**

  The leave application system allows users to send a form to their manager and HR to request for leave. It also allows both user and manager or admin to check the leave histories.

- **Department management**

  This function allows the admin to manage the departments in the current system.

- **Authorization management**

  This function allows the admin to assign a user to different roles or authorities. By doing that, the user can access different functions

- **Staff evaluation management**

  This function allows the admin to create an evaluation form for the manager to evaluate the staff's performance in the current department. It also allows admin or staff to check the history forms .

- **Notification management**

  This function allows the admin or manager to publish the notification to all users. It also allows the admin or manager to check histories notifications

- **Point Redeem System**

  This function allows users to use the points collected from KPI jobs to change rewards. It also allows the user and manager to check the reward history.

- **System log**

  This function allows the admin to check the system log. The log including any sensitive operaction information such as current login user or operation log.

2.2. System Requirements

To make sure the system can run fluently, the minimum requirements for hardware are below.

- CPU core: 2
- Disk memory: 50 GB and above
- RAM: 4 GB

2.3. Acceptance Criteria

- **KPI Tracking Management**
  - Managers can view real-time KPI data for their teams and departments.
  - Admins can access and review KPIs for all departments and individual employees.

    - Employees can check their personal KPI data and performance status.
    - KPI data should be accurate, up-to-date, and easy to navigate.
- **Leave Application Management**
    - Employees can submit leave requests, and managers/HR can approve, reject, or request changes to the application.
    - Both employees and managers can access leave history with relevant details (e.g., type of leave, duration, approval status).
    - System should send notifications to managers/HR when new leave requests are submitted.
    - Leave balance should automatically update after approval.
- **Department Management**
    - Admins can create, edit, or delete departments.
    - Admins can assign staff to departments, ensuring each employee is linked to the correct department.
    - Changes to department structure should reflect immediately across the system.
- **Authorization Management**
    - Admins can assign and modify user roles (e.g., manager, HR, staff, admin).
    - Role-based access control must be enforced to ensure users can only access authorized functions.
    - Changes to roles should take immediate effect, and the system should log all authorization changes.
- **Staff Evaluation Management**
    - Admins can create and distribute evaluation forms for managers to assess staff performance.
    - Evaluation forms should be customizable, allowing different questions for different roles.
    - Admins and employees should have access to view historical evaluation forms.
    - Evaluation results should be confidential and visible only to relevant parties (e.g., the employee and their manager).
- **Notification Management**
    - Admins and managers can create and publish notifications visible to relevant staff members.

    - Notifications should be delivered to users' dashboards and through email if necessary.
    - The system should maintain a history of all notifications, including who created them and who received them.
- **Point Redeem System**
    - Employees can view and redeem points earned from KPI achievements for rewards.
    - Admins or managers should be able to approve or reject point redemptions.
    - System should track and display the history of point accumulations and redemptions.
    - Points should update automatically based on KPI performance, and redemptions should be processed without errors.
- **System Log**
    - Admins can view a system log that records sensitive operations, such as user logins, role changes, and critical system actions.
    - System log entries must be detailed, timestamped, and easy to filter by operation type, user, or date range.
    - Logs should be stored securely and protected against unauthorized access or tampering.
- **Documentation**
    - User manual
    - Software installation manual

3. Functional Requirements

3.1. Point Redeem System

The system being developed is designed to support a points-based task management and reward redemption process for employees. The key stakeholders include employees, HR, and managers. The figure shown below is the use case analysis of it. The Point Redeem System aims to facilitate a points-based task management process where employees can earn points by completing tasks and redeem them for rewards.

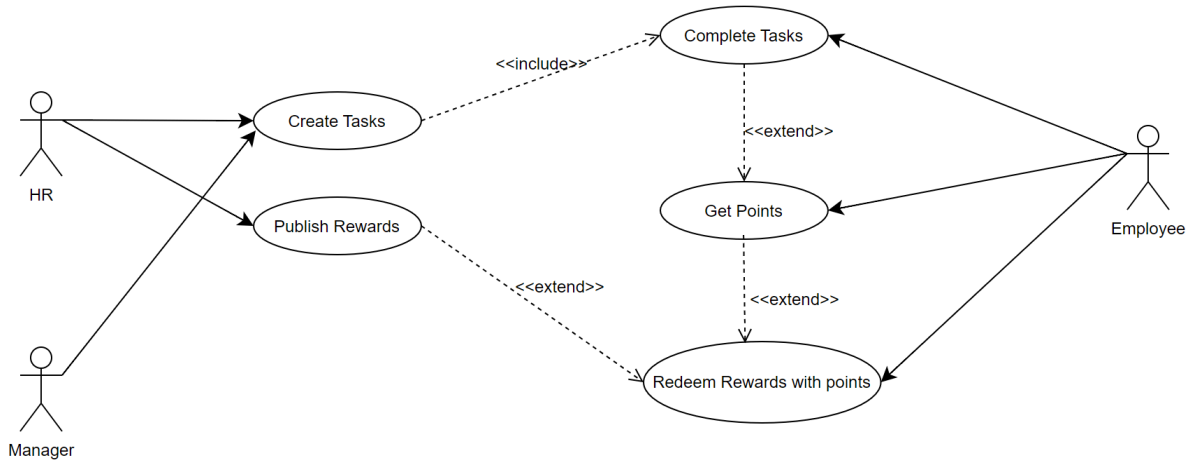


Figure 3.1.1 Point Redeem System Use Case Analysis

Task and Support Approach

a. Completing Tasks

- Support:
  - Task descriptions with clear deadlines and point values.
  - An easy-to-use interface for tracking task completion progress.

b. Getting Points

- Support:
  - A transparent view of how many points an employee has earned.
  - Automatic point updates upon task completion.

c. Redeeming Rewards

- Support:
  - A rewards catalog that shows all available rewards and point requirements.
  - An intuitive interface for employees to redeem rewards.

d. Managing Tasks and Rewards (For HR and Managers)

- Support:
  - Tools for creating and assigning tasks to employees.
  - A dashboard for publishing rewards and monitoring task progress.

e. Leaderboard Update:

- After the points are gained, the leaderboard will be updated every week if necessary.

3.2. Leave Application System

The Leave Application System is designed to make the process for workers to take time off more easily while giving managers and HR the resources they need to properly evaluate and handle these requests.

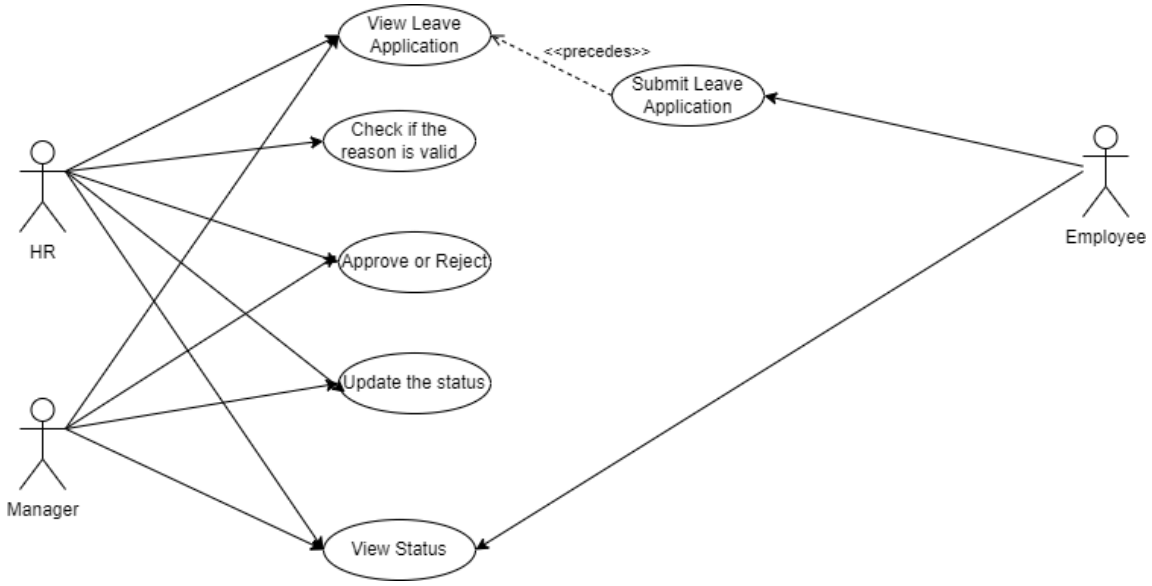


Figure 3.2.1 Leave Application System Use Case Analysis

Task And Support

a. **Submit Leave Application:** Employees need to request time off.
   - Support:
     - Provide an intuitive form for leave requests
     - Include fields for leave type, dates, and reason
     - Implement validation to ensure all required information is provided
     - Allow attachment of supporting documents with the format JPEG/JPG, PNG, PDF, DOCX

b. **View Leave Application:** HR, managers, and employees need to review submitted leave requests.
   - Support:

    - Create a dashboard showing pending applications
    - Implement filters for different leave types and status
    - Provide detailed views of individual applications
    - For employees, show their own application history

c. **Check if the reason is valid:** HR and managers need to assess the validity of leave reasons.
    - Support:
        - Implement a leave balance tracking system that automatically flags when Annual Leave (AL) is no longer available
        - When AL is exhausted, provide HR with options to change the leave type to either unpaid leave or paid leave
        - Include a notification system to alert HR when an employee's leave request exceeds their available AL balance
        - Offer an interface for HR to easily modify the leave type and adjust pay calculations accordingly
        - Allow access to employee leave history for context
d. **Approve or Reject:** HR and managers need to make decisions on leave requests.
    - Support:
        - Create clear approve/reject buttons on the application view
        - Require comments for rejections to provide feedback
        - Implement an approval workflow for requests needing multiple approvals
        - Send notifications to employees about the decision
e. **Update the status:** HR and managers need to modify the status of leave applications.
    - Support:
        - Provide a simple interface to change application status
        - Include options like "Pending," "Approved," "Rejected," "Cancelled"
        - Automatically update status based on approvals/rejections
        - Log all status changes for auditing purposes
f. **View Status:** All users need to check the current status of leave applications.
    - Support:
        - Design a clear status indicator on the application view
        - Create a summary page showing status of all applications for HR/managers

- For employees, provide a personal leave dashboard with application statuses
- Implement email or for status changes

3.3. KPI Management

The system focuses on an efficient management of the metrics generation and distribution, metrics assignment and monitoring, as well as metrics performance appraisal in an organization. It involves three main actors: HR, Managers, and Employees with different roles and permissions in managing KPIs.

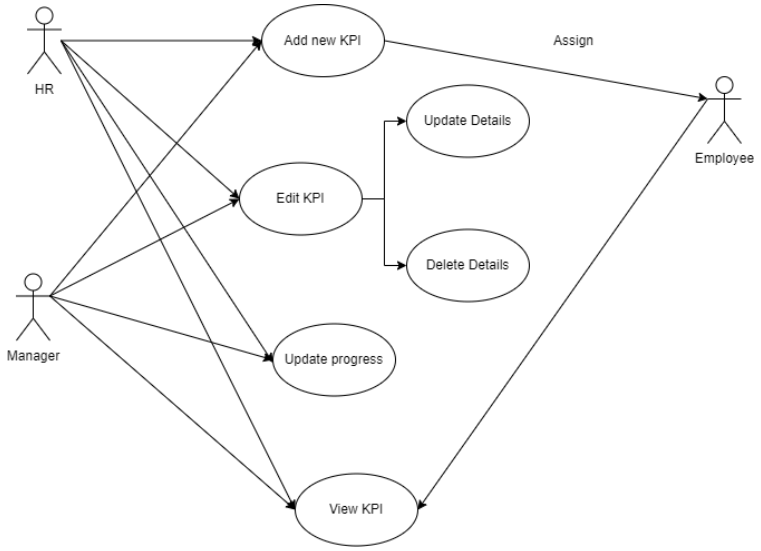


Figure 3.3.1 KPI Use Case Analysis

Task And Support Approach

a) **Create and Define KPIs Task:** HR and managers need to establish new performance indicators.
   - Support:
     - Provide a guided KPI creation wizard
     - Offer templates for common KPI types
     - Include fields for name, description, measurement criteria, target values, and timeframes
     - Implement validation to ensure KPI definitions are complete and meaningful

b) **Assign KPIs to Employees Task:** HR needs to link KPIs to specific employees.
   - Support:

    - Offer a user-friendly interface to match KPIs with employee profiles
    - Allow bulk assignments for team or department-wide KPIs
    - Provide confirmation and summary of assignments

c) **Update KPI Progress Task:** Managers and potentially employees need to input current status of KPI achievement
    - Support:
        - Create intuitive progress update forms
        - Implement data validation to prevent errors
        - Provide visual feedback such as charts and progress bars on progress

d) **Monitor and Review KPIs Task:** All users need to view and analyze KPI data relevant to their role.
    - Support:
        - Design role-specific dashboards with key information at a glance
        - Implement filtering and sorting options for KPI lists
        - Create detailed view pages for individual KPIs

e) **Modify Existing KPIs Task:** HR and managers may need to adjust KPI details or targets.
    - Support:
        - Allow easy access to edit functions from KPI view pages
        - Provide options to update or delete specific details
        - Include confirmation steps for significant changes

3.4. User Management

This system ensures the registration, management, and authentication of users within the organization. It allows HR to efficiently manage employee accounts, including password resets, user details, and account removal. The system involves two actors: HR (Admin) and Users (New and Existing)

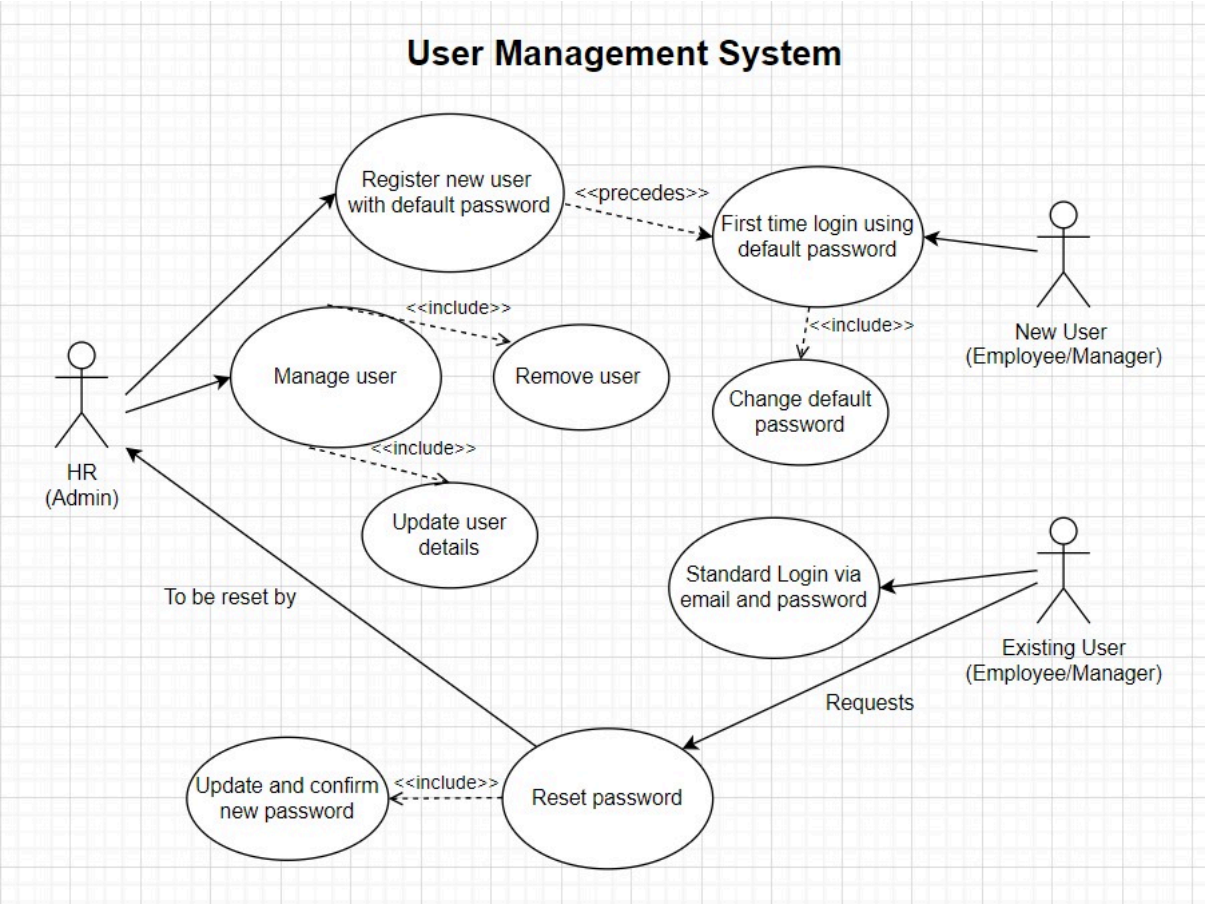


Figure 3.4.1 User Management System Use Case Analysis

Task And Support Approach

f) **Register New User Task:** HR (Admin) needs to create accounts for new employees or managers.

- Support:

- Provide a simple form for HR to enter user details (e.g., name, email, role) and automatically assign a default password.
- Ensure that the default password is temporary and requires updating upon first login.

g) **First Time Login Task:** New users need to log in for the first time using the default password provided by HR.

- Support:
  - Provide a login page for new users to enter their default credentials.
  - Implement a prompt that forces users to change their default password after the first successful login.
  - Display clear instructions and validation checks to ensure the new password meets security criteria.

h) **Change Default Password Task:** New users must update their default password after logging in for the first time.

- Support:
  - Provide a password change interface that enforces password complexity (minimum length, special characters)
  - Implement password confirmation field to ensure users correctly enter the new password.
  - Include confirmation or error messages to inform users of successful password changes or required adjustments.

i) **Standard Login Task:** Existing users need to log in using their email and the updated password.

- Support:
  - Ensure there is a login page for existing users to enter their credentials.
  - Implement multi-factor authentication (MFA) for enhanced security if required by company policy.

j) **Manage User Task:** HR needs to manage existing users, including updates to user roles or account information.

- Support:
  - Provide an easy-to-use interface for HR to view, search, and manage user accounts.
  - Allow HR to update user details such as job role, department, or contact information.

k) **Remove User Task:** HR may need to deactivate or remove user accounts for employees who have left the company.
   - Support:
     - Include a process for HR to deactivate or permanently delete user accounts.
     - Ensure that removed accounts are archived or logged for compliance or future reference.
     - Provide confirmation steps to prevent accidental removal of user accounts.

l) **Reset Password Task:** Existing users may request password resets due to forgotten credentials or security concerns.
   - Support:
     - Provide "Forgot Password" functionality to assist users who have forgotten their login details.
     - Ensure a secure process, for example where a reset link is emailed to the user with a time-limited validity period.
     - Notify users of successful password updates or errors encountered during the reset process.

3.5. Announcement Management

This system handles company announcements, including their creation, posting, updating, removal, and viewing. It is designed to support the Admin in managing announcements and ensure that employees and managers can easily access important company announcements. The system includes two main actors - HR (Admin) and Users (Employees/Managers)

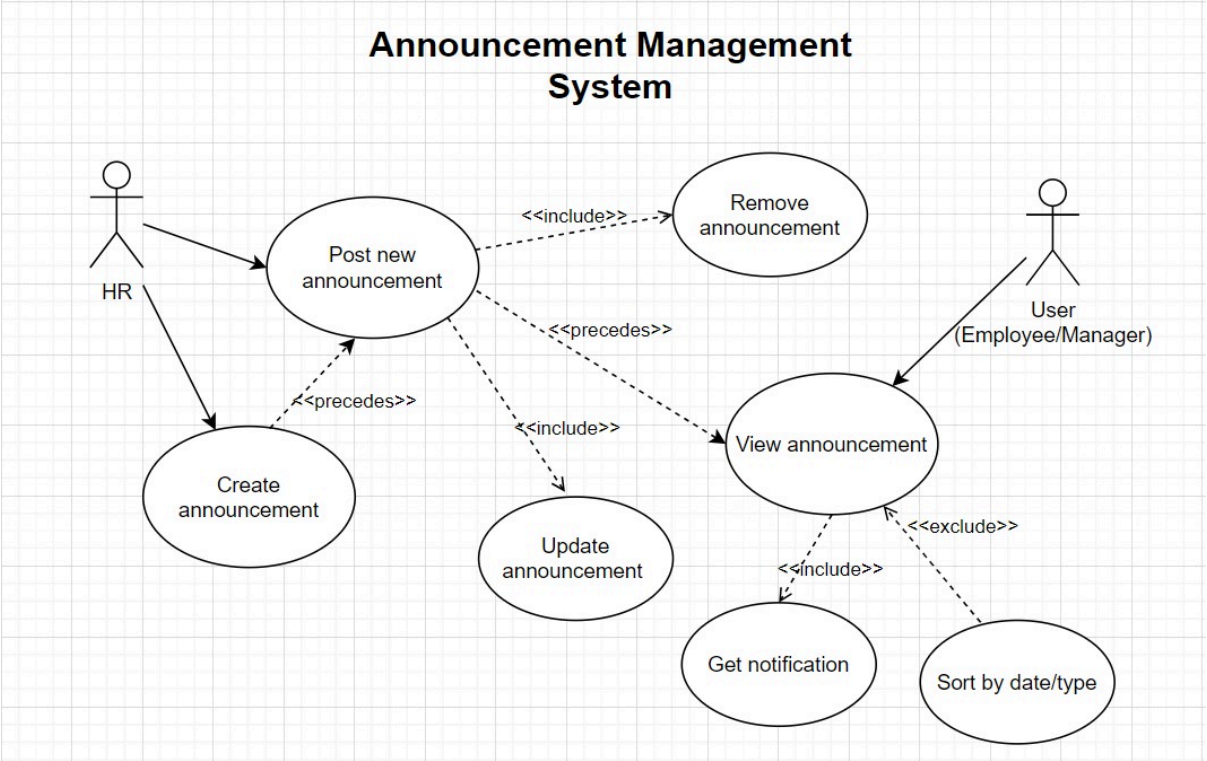


Figure 3.5.1 Announcement System Use Case Analysis

Task And Support Approach

m) **Create Announcement Task:** HR (Admin) needs to draft and prepare a new announcement for the organization.
- Support:
  - Provide a form-based interface to enter announcement details (title, content, and publication date).
  - Include validation checks to ensure required fields are filled in and the content is appropriately formatted.

n) **Post New Announcement Task:** HR needs to publish the created announcement for employees and managers to view.
- Support:

- Admin should be able to choose the recepients of the announcement.
- Implement scheduling functionality to allow HR to set a future date for the announcement.
- Provide a notification feature to inform users when a new announcement is posted.

o) **Update Announcement Task:** HR may need to make changes to an existing announcement due to updated information or errors.

- Support:
  - Offer an easy-to-use interface to modify announcement details.
  - Include options for HR to notify users of any major updates or corrections to the announcement.
  - Provide confirmation before saving changes to prevent accidental edits.

p) **Remove Announcement Task:** HR needs to remove announcements that are outdated or no longer relevant

- Support:
  - Implement a removal function with a confirmation step to avoid accidental deletions.
  - Allow HR to archive removed announcements for record-keeping purposes rather than deleting them permanently.

q) **View Announcement Task:** Employees and managers need to view relevant announcements posted by HR.

- Support:
  - Design a user-friendly interface where users can quickly see all active announcements.
  - Implement filtering and sorting options based on date/type of announcement.
  - Provide a notification system to inform users of new or updated announcements.

4. Non-Functional (Quality) Requirements

a. Usability

- The system should be user-friendly, allowing new users to complete basic tasks for example, logging in and applying for leave without additional training.
- Standards for accessibility should be followed by user interface components, which should be clear and consistent.

b. Security

- To prevent unwanted access, user data must be encrypted both during transmission and while it is at rest.
- Role-based access control should be implemented by the system to limit user permissions according to their roles (e.g., Employee, Manager, HR).

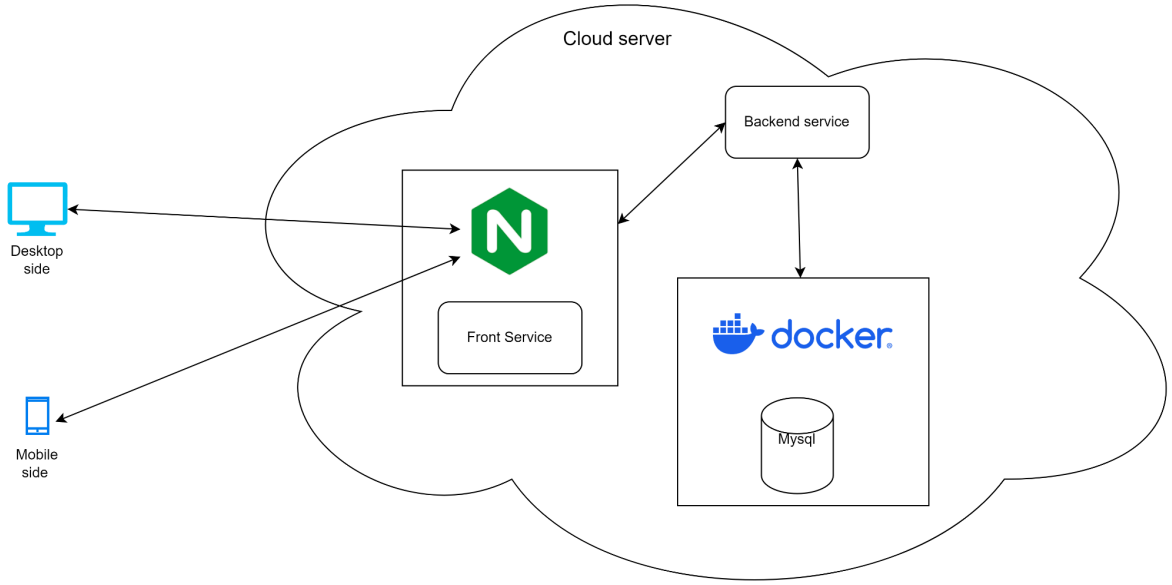
c. Performance

- The system should be able to handle multiple simultaneous users without a noticeable degradation in speed or responsiveness.
- Key operations such as login and data retrieval should be completed without serious delay under normal load conditions.

d. Testability

- The system should be built in a way that makes the code organized clearly, allows for automated testing, and each part of the system can be tested on its own or together with other parts.
- Error messages and logs during development to be documented to make it easier to identify and fix issues during testing.

5. High–Level System Architecture



6. Interface Requirements

This section details how the software system interacts with external entities, including users, hardware components, other software systems, and communication protocols. A clear understanding of these interfaces is essential for ensuring smooth integration and functionality within the broader ecosystem.

6.1. User Interfaces

The user interface (UI) is designed to provide an intuitive and efficient experience for various user roles, including HR administrators, department managers, and employees. The UI will be web-based and optimized for both desktop and mobile devices.

Key UI Components:

- **Login Screen:**
  - **Functionality:** Users will enter their credentials (email and password) to access the system.
  - **Security Features:** The login will incorporate features such as CAPTCHA, password strength indicators, and a "forgot password" option for recovery.
- **Dashboard:**

- **Role-Based Access:** The dashboard will be customized based on user roles.
    1. **HR Administrators:** Will see an overview of employee performance metrics, pending leave requests, and company announcements.
    2. **Managers:** Will access team performance data, employee contributions, and a summary of leave requests for their direct reports.
    3. **Employees:** Will view their personal performance indicators, recent achievements, pending leave applications, and relevant notifications.

- **Performance Tracking System:**
    - **Visualization:** Graphical displays (charts, graphs) will showcase KPIs, task completion rates, and other performance metrics.
    - **Feedback Mechanism:** Employees can receive instant feedback on their performance through pop-up notifications and updates.
- **Leave Application Form:**
    - **User-Friendly Design:** A straightforward form that allows employees to select leave type, duration, and reason.
    - **Document Upload:** Employees can attach necessary documents (e.g., medical certificates).
    - **Application Status Tracking:** Users can monitor the status of their leave requests through the dashboard.
- **Leaderboard:**
    - **Dynamic Updates:** A leaderboard displaying top performers, which updates in real time based on KPI achievements.
    - **Filters:** Users can filter results by department, timeframe, and performance metrics.
- **Mobile Interface:**
    - **Responsive Design:** The mobile version will be fully responsive, ensuring usability across various screen sizes.
    - **Touch-Friendly Controls:** Buttons and controls will be optimized for touch interaction.

6.2. Hardware Interfaces

The software will interface with the following hardware components:

- **Client devices:** The system will be accessible through devices such as laptops, desktops, and smartphones connected to the internet. It will be available via web browsers that support HTML5, CSS3, and JavaScript. The UI will be adjusted for different screen sizes. Communication between the client and server will take place over the secure HTTPS protocol.
- **Cloud computing server:** The system will use a cloud server with a static IP address. The server should have a minimum of 4GB RAM, 2 CPU cores, and 20GB of disk space. Data transmission between the system and the server will be secured using HTTPS protocols.

6.3. Software Interfaces

The system will integrate with various software components to ensure functionality and data consistency:

- **Database System:**
  - **Database Management System:** PostgreSQL will be used to manage and store employee data, performance metrics, leave applications, and historical records.
  - **Data Access Layer:** The application will utilize an ORM (Object-Relational Mapping) framework to interact with the database efficiently.
- **Email System:**
  - **Integration:** The system will integrate with an SMTP email server for sending notifications and updates regarding leave requests, performance assessments, and company announcements.
  - **Templates:** Email templates will be used to maintain a consistent communication style.
- **Authentication System:**
  - **Third-Party Integration:** OAuth 2.0 will be implemented for secure user authentication, enabling users to log in using existing accounts (e.g., Google, Microsoft).
  - **Token Management:** The system will generate and manage tokens for session persistence.
- **Web Server:**

    - **Framework:** The Django framework will be employed to handle HTTP requests, manage routing, and serve web pages.
    - **API Development:** RESTful APIs will be developed to facilitate communication between the frontend and backend components.
- **Frontend Framework (Vue.js):**
    - **Dynamic User Interface:** Vue.js will be utilized to create a responsive and interactive user interface that communicates with the backend through API calls.
    - **State Management:** Vuex will be used for state management to ensure data consistency across the application.

6.4. Communication Interfaces

In this section, all the communication interfaces that the software will utilize are outlined below.

- **HTTPS:** All communication between the clients (both web and mobile interfaces) and the server will occur over HTTPS protocols. HTTPS will be used to ensure secure communication, handling requests and responses between the front-end and back-end systems.
- **SMTP:** The system will utilise SMTP to send automated email notifications to the users from Rowy Hardware. These notifications will notify the users including updates about the leave application system, announcements, and other critical system alerts.

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