# 1. Employee Onboarding (Admin)

**Features and Functionalities**

* **Add New Employee:**
  1. Fields: Name, Role, Department, Contact Info (used for Contact Directory), Emergency Contact, Salary, Joining Date, Employee ID.

○ Assign Default System Access.

○ Automatically populate the Contact Directory based on onboarding details.

* **Access Control Setup:**
  1. Define access levels for the system (e.g., Admin, Employee, Manager).
* **Welcome Notifications:**
  1. Automated email or message with company policies and login credentials.

**Access and Updates**

* **Admin:** Full access. Can add, update, or delete records.
* **Employee:** No access.

# 2. Profile Management (Employees)

**Features and Functionalities**

* **Personal Details:**
  1. View: Name, Contact Info, Emergency Contact, Employee ID.

○ Editable by Employee: Address, Phone Number, Emergency Contact.

* **Professional Details:**
  1. View: Role, Department, Joining Date, Salary (optional based on company policy).

○ Non-editable by Employee.

* **Profile Picture:**
  1. Employees can upload a profile picture.
* **Change Password:**
  1. Employees can update their system password.

**Access and Updates**

* **Admin:** View and edit all fields.
* **Employee:** View most fields, limited editing permissions.

# 3. Leave Management (Admin and Employees)

**Features and Functionalities**

* **Leave Applications:**
  1. Employee:

■ Fields: Leave Type, Start Date, End Date (dates before the current date are blurred), Reason for Leave, Approver (select from dropdown), Date Requested, Status.

■ Validation: Ensure leave start date is before the end date.

■ Automatically calculate the number of leave days for the specified period.

○ Admin:

■ Approve, reject, or request modifications to leave applications.

■ Specify additional notes or feedback.

* **Leave Balance:**
  1. Specify a fixed number of days available for each leave type (e.g., Sick Leave, Vacation Leave).

○ Automatically deduct from the balance when leave is approved.

* **Leave History:**
  1. View past leave applications, status, and leave balances.
* **Leave Policies:**
  1. Display leave entitlements and rules (read-only for employees).

**Access and Updates**

* **Admin:** Full access to view, approve, or edit leave records.
* **Employee:** Apply for leave, view personal leave balance, and leave history.

# 4. Task Management (Admin and Employees)

**Features and Functionalities**

* **Task Assignment:**
  1. Admin/Manager: Assign tasks to employees (fields: Task Name, Description, Due Date).

○ Employee: Accept/reject assigned tasks (with reasons).

* **Task Progress:**
  1. Employees can update task progress (Not Started, In Progress, Completed).
* **Feedback and Comments:**
  1. Admin/Manager: Provide feedback on tasks.

○ Both roles: Add comments for collaboration and discussions.

○ Flagging: Option to flag a task for urgent attention or review.

* **Task History:**
  1. View completed and pending tasks. ● **Task Notifications:**

○ Automated reminders for pending or overdue tasks.

**Access and Updates**

* **Admin:** Assign tasks, view status, provide feedback, and flag tasks.
* **Employee:** View, update task status, add comments, and flag tasks.

# 5. Finance Management (Requisitions and Claims)

**Features and Functionalities**

* **Requisitions:**
  1. Employee: Submit requisition requests (fields: Purpose, Amount, Supporting Documents).

○ Admin: Approve or reject requisitions.

* **Claims:**
  1. Employee: Submit claims (fields: Expense Type, Amount, Date, Supporting Documents).

○ Admin: Approve/reject claims and process reimbursements. ● **Finance History:**

○ Employee: View status of submitted requisitions and claims. ○ Admin: Maintain a comprehensive ledger.

**Access and Updates**

* **Admin:** View and process all requisitions and claims.
* **Employee:** Submit and track personal claims and requisitions.

# 6. Contact Directory (Admin and Employees)

**Features and Functionalities**

* **Directory:**
  1. Automatically populated from onboarding data.

○ List of all employees with details (Name, Role, Department, Contact Info).

○ Search and filter by department or role.

* **Emergency Contacts:**
  1. Admin: View and update.

○ Employee: View and update their own emergency contacts.

* **Company Contacts:**
  1. Shared contact details for key departments (e.g., HR, IT Support).

**Access and Updates**

* **Admin:** Full access to add, update, or delete contacts.
* **Employee:** View all contacts, edit personal emergency contacts.

# 7. Notifications (Admin and Employees)

**Features and Functionalities**

* **System Notifications:**
  1. Task updates, leave status changes, and finance approvals.
* **Broadcast Messages:**
  1. Admin: Send company-wide announcements.
* **Reminders:**
  1. Automated reminders for deadlines, tasks, and upcoming events.
* **Settings:**
  1. Employees can customize notification preferences (email, SMS, in-app).

**Access and Updates**

* **Admin:** Create and manage notifications.
* **Employee:** View notifications and customize preferences.

# 1. Requirements Analysis

## Functional Requirements

* **Onboarding**: Add employees, capture details, and assign roles.
* **Profile Management**: Employees can view and update limited personal details.
* **Leave Management**: Employees can apply for leave and track leave balances; Admins manage approvals.
* **Task Management**: Admins assign tasks, track progress, and provide feedback; Employees update statuses and add comments.
* **Finance Management**: Employees submit requisitions and claims; Admins process approvals.
* **Contact Directory**: Auto-populated with onboarding details, providing a searchable directory.
* **Notifications**: Notify employees about task updates, leave decisions, and finance status changes.

## Non-Functional Requirements

* Secure authentication and role-based access control.
* Scalability for large employee bases.
* Data integrity and robust relationships between modules.

## 2. Database DesignEntities and Tables

**Employee Table**

* employee\_id (PK)
* first\_name
* last\_name
* email
* phone\_number
* role
* department
* date\_of\_joining ● profile\_picture
* emergency\_contact\_name
* emergency\_contact\_phone

**Leave Table**

* leave\_id (PK)
* employee\_id (FK → Employee)
* leave\_type
* start\_date
* end\_date
* reason
* approver\_id (FK → Employee)
* date\_requested
* status (Pending, Approved, Rejected)
* days\_allocated (from policy)
* days\_taken

**Task Table**

* task\_id (PK)
* assigned\_to (FK → Employee)
* assigned\_by (FK → Employee)
* task\_name
* description
* due\_date
* status (Not Started, In Progress, Completed) ● progress\_percentage
* comments

**Task Comment Table**

* comment\_id (PK)
* task\_id (FK → Task)
* employee\_id (FK → Employee)
* comment\_text ● date\_commented
* flagged (Boolean)

**Finance Table**

* finance\_id (PK)
* employee\_id (FK → Employee)
* type (Requisition, Claim)
* amount
* description
* status (Pending, Approved, Rejected)
* date\_submitted
* supporting\_documents (URL or Path)

**Contact Table**

* contact\_id (PK)
* employee\_id (FK → Employee)
* name ● role
* department
* phone\_number
* email

**Notification Table**

* notification\_id (PK)
* recipient\_id (FK → Employee)
* message
* type (Task Update, Leave Status, Finance Update, Broadcast)
* date\_sent
* read\_status (Boolean)

## 3. Database Relationships

**Key Relationships**

* Employee → Leave: One-to-Many (An employee can have multiple leave records).
* Employee → Task: One-to-Many (Tasks assigned to an employee).
* Task → Task Comment: One-to-Many (Tasks can have multiple comments).
* Employee → Finance: One-to-Many (An employee can submit multiple claims/requisitions).
* Employee → Contact: One-to-One (Each employee's onboarding details populate the contact directory).
* Employee → Notification: One-to-Many (Notifications sent to employees).

# 5. User Role Permissions

**Admin**

* **Full Access**: Manage employees, leave, tasks, finance, notifications, and contacts.
* **Task-Specific Actions**: Assign tasks, approve leave and claims, send broadcast messages.

**Employee**

* **Limited Access**: Update profiles( only the following : first\_name, last\_name, phone\_number, profile\_picture), apply for leave, view tasks, add comments, and view notifications.
* **Task-Specific Actions**: Update task progress, add task feedback, flag tasks.

## Data Validation

* Ensure robust input validation for fields like phone numbers, email addresses, dates, etc.
* Prevent invalid leave requests (e.g., end date before start date, leave exceeding allocated balance).
* Enforce secure password policies for employees (e.g., minimum length, complexity).

## 2. Logging and Audit Trails

* Maintain logs for sensitive actions:

○ Profile updates (who updated which fields).

○ Task progress changes and comments.

○ Leave and finance approvals/rejections.

* Audit trails improve accountability and can be useful for resolving disputes or tracking system misuse.

## 3. Notifications System

* Implement a robust notification system for:

○ Leave application status updates.

○ New tasks assigned.

○ Task deadlines approaching.

○ Finance requisition/claim updates.

○ General broadcast messages (e.g., company announcements).

* Notifications can be email-based, in-app, or both.

## 4. Scalability

* **Database Optimization**:
  1. Use indexing for frequently queried fields like employee\_id, status, role.

○ Partition large tables (e.g., task comments) if needed.

* **Modular Design**:
  1. Separate APIs for onboarding, leave, tasks, finance, etc., for easy scaling and debugging.

## 5. Access Control

* Ensure strict role-based access:

○ Admin actions should be thoroughly authenticated and authorized.

○ Sensitive endpoints (e.g., updating leave allocation) must verify admin roles.

* Use role-based middleware in the backend to enforce these rules consistently.

## 6. User Experience

* **Employee Portal**:
  1. Clear and user-friendly interfaces for leave applications, task updates, and profile edits.

○ Intuitive dashboards summarizing pending tasks, leave balance, and notifications.

* **Admin Panel**:
  1. Comprehensive views for managing employees, reviewing approvals, and assigning tasks.

○ Advanced search and filters for handling large data sets.

## 7. Security

* **Authentication**:
  1. Use JWT or OAuth for secure session management.

○ Implement two-factor authentication (2FA) for admin accounts.

* **Data Encryption**:
  1. Encrypt sensitive data, such as profile information and finance details, in transit (TLS/HTTPS) and at rest.
* **Prevent Unauthorized Access**:
  1. Use rate-limiting and IP whitelisting for admin endpoints.

○ Regularly update and patch dependencies to protect against vulnerabilities.

## 8. Leave and Task Policies

* **Leave Policies**:
  1. Automate leave balance calculation based on company policies.

○ Allow carryover of unused leave (if applicable) or reset balances annually.

* **Task Progress Updates**:
  1. Define status categories (e.g., Not Started, In Progress, Completed). ○ Establish criteria for flagging tasks and handling flagged items.

## 9. Reporting and Analytics

● Create admin dashboards for:

○ Employee leave trends (e.g., most common leave types, peak leave periods).

○ Task completion metrics (e.g., overdue tasks, flagged tasks). ○ Finance data (e.g., average claim amounts, pending claims). ● Enable export features (e.g., CSV, PDF) for external analysis.

When the application is launched in IntelliJ, the **Login** page serves as the default screen, and user roles are determined based on the records stored in the database. By default, the **Admin** role is assigned to the administrator account, and upon login, the user is redirected to the **Admin Dashboard**. From this dashboard, admins have full access to the system and can perform tasks such as adding new employees by entering their details in the entity class (e.g., first name, last name, department, and phone number), which are automatically updated in the contact directory, and granting default system access. Admins can also update specific employee fields, including first name, last name, telephone, emergency contact name, and emergency contact phone number, to ensure records remain accurate. The deactivation functionality allows admins to restrict an employee's login access while retaining their details in the database with a "deactivated" status for record-keeping purposes. When creating an employee account, admins have the option to assign either the **Admin** or **Employee** role. Employees, upon login, are redirected to the **Employee Dashboard**, where they can view their personal and professional details, including name, contact info, emergency contact, employee ID, role, department, joining date, and, if applicable, salary. Employees can update specific personal fields, such as first name, last name, phone number, and emergency contact name and number. This role-based system ensures secure and efficient functionality tailored to each user's responsibilities while maintaining comprehensive record management.

The **Leave Management System** streamlines the management of employee leave requests by providing distinct functionalities for both employees and admins. Employees can submit leave applications by filling out a form with fields such as leave type (Sick, Vacation, Paternity/Maternity, or Compassionate, each with a balance of 21 days), start and end dates (with past dates restricted), reason for leave, approver selection, date requested, and status. The system validates the dates and automatically calculates the number of leave days.

Once submitted, the leave details are accessible to both the employee and the admin, allowing them to view the status and specifics of the leave request. Admins review these applications and can approve, reject, or request modifications, with any changes instantly reflected on both sides. The system automatically deducts approved leave days from the employee’s balance and maintains a leave history, allowing both employees and admins to view past applications, statuses, and remaining balances.

The Contact Directory for Admin and Employees is designed to ensure seamless communication and accurate data management. When the admin creates an employee, the contact module is automatically generated, populating the directory with key details such as name, department, contact information, email, and employee status (active or deactivated). If the admin deactivates an employee, their contact is automatically deactivated as well. Any updates made by the admin to an employee's name or contact information are reflected system-wide to maintain consistency across all records. Employees can view their own details and update only their name and contact information, while all other updates are centrally managed by the admin, ensuring an efficient and accurate system.

The Task Management module for Admin and Employees is designed to facilitate efficient task allocation, tracking, and collaboration. Admins or managers can assign tasks to employees, specifying the task name, description, and due date. Employees have the option to accept or reject tasks, providing reasons if rejected. Task progress can be updated by employees with statuses such as "Not Started," "In Progress," or "Completed." The module supports feedback and collaboration, allowing admins to provide feedback on tasks and enabling both roles to add comments for discussions. Tasks can be flagged for urgent attention or review to ensure timely action. A task history feature allows users to view completed and pending tasks, while automated notifications remind employees of pending or overdue tasks. Admins can fully manage tasks, including assigning, tracking progress, providing feedback, and flagging tasks, while employees can update task statuses, add comments, and flag tasks for further review.

The Finance Management module streamlines the handling of requisitions and claims, ensuring efficient financial processes. Employees can submit requisition requests by providing details such as the purpose, amount, and supporting documents. Requisitions are restricted to current and future dates, with past dates disallowed, ensuring accurate planning and processing. Similarly, employees can submit claims for reimbursement by specifying the expense type, amount, date, and attaching relevant documents. Claims are restricted to current and past dates, with future dates disallowed to maintain accuracy and accountability. Admins review and either approve or reject requisitions and claims, processing reimbursements as needed. A finance history feature allows employees to track the status of their submitted requisitions and claims, while admins maintain a comprehensive ledger of all financial transactions. Admins have full access to view and process all requisitions and claims, while employees can only submit and monitor their own requests, ensuring clarity and accountability in financial operations.

 **Login Page (Default Screen)**:

* When the application is launched in IntelliJ, the **Login Page** is the default screen where users enter their credentials.
* **User Roles** are determined based on database records. By default, the **Admin** role is assigned to the administrator account, and **Employee** roles are assigned to employee accounts.
* After entering login credentials, users are redirected based on their roles:
  + **Admin** is redirected to the **Admin Dashboard**.
  + **Employee** is redirected to the **Employee Dashboard**.

 **Admin Dashboard**:

* Upon login, the **Admin** can:
  + **Manage Employees**: Add new employees by entering their details such as first name, last name, department, and phone number. This automatically updates the **Contact Directory** with the new employee's contact details, role, and status.
  + **Edit Employee Information**: Update employee details like first name, last name, phone number, and emergency contact info.
  + **Deactivate Employees**: Restrict employee login access by deactivating their account while keeping the record in the database.
  + **Assign Roles**: When creating an employee, admins assign either the Admin or Employee role, ensuring proper access and functionality.

 **Employee Dashboard**:

* Upon login, **Employees** can:
  + **View Personal Details**: View their own information, such as name, contact info, emergency contact, employee ID, role, department, joining date, and salary (if applicable).
  + **Update Personal Information**: Modify only their first name, last name, phone number, and emergency contact details.

 **Leave Management**:

* **Employee**: Submit leave applications with required details (leave type, start and end dates, reason, approver selection, and status). The system restricts leave dates to current and future dates. The employee can track the status of their leave request.
* **Admin**: Review, approve, reject, or request modifications on leave applications. Admin actions are immediately reflected on both employee and admin sides, with leave balances updated accordingly.
* **System**: Automatically calculates leave days and maintains a **Leave History**, showing past requests, statuses, and remaining balances.

 **Contact Directory**:

* **Admin**: When creating an employee, the **Contact Directory** is automatically populated with employee details, including name, department, contact info, email, and status (active or deactivated). Admins can deactivate an employee's contact, reflecting the "deactivated" status.
* **Employee**: Employees can view their own contact details and update only their name and contact info. All other updates are handled by the admin.

 **Task Management**:

* **Admin/Manager**: Assign tasks to employees, specifying task name, description, and due date. Admins can also provide feedback, flag tasks for review, and manage task history.
* **Employee**: Employees can accept or reject tasks, update task progress (Not Started, In Progress, Completed), add comments for collaboration, and flag tasks for urgent attention. Employees can view past and pending tasks, and receive notifications about overdue tasks.

 **Finance Management**:

* **Employee**: Submit requisition requests and claims with details like amount, supporting documents, and purpose (for requisitions) or expense type and amount (for claims). Requisitions are restricted to current and future dates, while claims can include current and past dates.
* **Admin**: Review requisitions and claims, approve or reject them, and process reimbursements. Admins have full access to track all requisitions and claims in the finance ledger.
* **System**: Employees can track the status of their submitted requisitions and claims, while admins maintain a comprehensive ledger of all financial transactions.