Software Requirements Specification

for

Human Resource Management System

Version 2.0

Prepared by Group 10

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to outline the software product that our startup team is developing, namely, a Human Resource Management System (HRMS) tailored to meet the specific needs of our client, Jupiter Apparels. This SRS defines the scope of the HRMS, its functionality, and the requirements for successful implementation. It serves as a foundational document for designing and developing the HRMS.

1.2 Product Scope

This SRS outlines the development of an HRMS software product, initially focused on Personal Information Management (PIM) and Absence Management, for Jupiter Apparels. The HRMS aims to simplify HR processes, reduce reliance on complex ERP systems like SAP, and improve user-friendliness. It is intended to support one specific organization (Jupiter Apparels) but is designed with future scalability to serve other companies.

The HRMS will store employee data, including personal information, job-related details, and custom attributes. It will facilitate leave management with configurable leave types and entitlements. Additionally, the HRMS will support report generation for informed decision-making and user access control for data security.

1.3 Intended Audience and Reading Suggestions

This Software Requirements Specification (SRS) document is intended to cater to a diverse range of stakeholders involved in the development, implementation, and use of the Human Resource Management System (HRMS) for Jupiter Apparels. The primary audience and their respective reading suggestions are as follows:

1. **Developers:**
   Developers are encouraged to read this document thoroughly as it serves as a foundational guide for understanding the system's functional and non-functional requirements. This will assist them in designing, coding, and testing the HRMS software. Developers should pay special attention to sections related to system functions, database design, and performance requirements (Sections 2.2, 2.5, 5.2).

2. **Project Managers:**
   Project managers should refer to this document to gain a comprehensive understanding of the project's scope, constraints, and key features. It will aid in project planning, task allocation, and setting realistic timelines. They should focus on sections related to project scope, constraints, and dependencies (Sections 1.2, 2.5, 2.7).

3. **HR Managers and Administrators:**
   HR managers and administrators play a critical role in the implementation and ongoing use of HRMS. They should consult this document to gain insights into the system's capabilities, user management, and leave management features. Additionally, they should pay attention to sections describing employee information management, leave management, and user roles (Sections 4.1, 4.3, 4.4).

4. **Quality Assurance Teams:**
   Quality assurance teams should use this document as a reference for designing test cases and ensuring that the HRMS meets its functional and non-functional requirements. They should focus on sections describing system functions, security requirements, and performance expectations (Sections 2.2, 5.1, 5.2).

5. **System Administrators:**
   System administrators will be responsible for configuring and maintaining the HRMS in the organization. They should refer to this document to understand the system's configuration requirements and permissions management. System administrators should closely examine sections related to permission management and organizational information management (Sections 4.2, 4.4).

6. **End Users (Employees):**
   While not directly involved in the system's development, employees will be end users of the HRMS. They should be made aware of the system's functionalities relevant to them, such as leave management and reporting. End users should be provided with training and user documentation for effective system utilization (Sections 4.3, 4.5, 2.6).

This SRS document is a crucial reference for all stakeholders involved in the HRMS project, ensuring a common understanding of the system's requirements and objectives, and facilitating a smooth development and implementation process.

1.4 Document Conventions

The IEEE Standard 830-1998 for software requirements specification is followed by this software requirement specification. The document uses the following typographic conventions.

- Important product-related themes are **bold** throughout the text.
- *Italic text* indicates references to other documents or web addresses.
- <Text in angle brackets> indicates a placeholder that should be replaced by specific information.
- [Text in square brackets] indicates an optional or conditional part of a requirement.

2. Overall Description

2.1 Product Perspective

The HRM (Human Resource Management) product is a comprehensive software solution designed to support the management of employee-related information and absence tracking within an organization. It serves as a centralized system for personal information management (PIM) and absence management. The system is intended for use by a specific organization and provides tools for efficiently managing employee data, leave requests, and generating reports.

In this section, we will provide an overview of the product's perspective, including its context, origin, and external interfaces.

2.1.1 Context

The HRMS (Human Resource Management System) is designed to operate within the context of Jupiter Apparels, a specific organization that requires efficient management of employee-related information and absence tracking. It serves as a centralized system for personal information management (PIM) and absence management within the organization. The HRMS aims to streamline HR processes, reduce reliance on complex ERP systems like SAP, and enhance user-friendliness. While initially tailored to meet the specific needs of Jupiter Apparels, the HRMS is designed with future scalability in mind to potentially serve other companies.

2.1.2 Origin

The development of the HRMS is initiated by a startup team working in collaboration with Jupiter Apparels. The origin of this project is rooted in the organizational needs of Jupiter Apparels, which seeks a more user-centric and efficient solution for HR management. The HRMS project is a response to these specific organizational requirements and is being developed to address them comprehensively.

2.1.3 External Interfaces

The HRMS will interact with various external interfaces to support its functionalities and integration with other systems. These external interfaces include:

- **User Interfaces:**
  The system will have user interfaces accessible via web browsers, allowing users to interact with the HRMS. These interfaces will be designed to be user-friendly and responsive, enabling access from different devices, including desktop computers, tablets, and smartphones.

- **Database Systems:**
  The HRMS will connect to a database system to store and retrieve employee information, leave records, and other relevant data. The database will play a critical role in data management and reporting.

- **Authentication Systems:**
  To ensure security, the HRMS will interface with authentication systems, enabling user authentication and authorization. This will include secure login processes and role-based access control.

- **External Reporting Tools:**
  The system will support the generation of reports, and as such, it may interface with external reporting tools or libraries to facilitate report generation in various formats.

- **Future Integrations:**
  While not currently defined, HRMS is designed with the potential for future integration with other systems, such as payroll systems or external HR software.

These external interfaces are essential components that contribute to the HRMS's functionality, usability, and interoperability within the organization's IT ecosystem.

2.2 Product Functions

2.2.1 Personal Information Management (PIM)

- Store and manage extensive employee information, including name, birthdate, marital status, and more.
- Capture dependent information required for payroll functions.
- Record emergency contact details for each employee.
- Define organizational attributes such as job title, pay grade, and employment status independently from employee records.
- Support hierarchical relationships between employees, including supervisors and subordinates.
- Allow customization of employee attributes to accommodate future needs.

2.2.2 Absence Management

- Implement a static leave structure with four leave types (Annual, Casual, Maternity, No-pay).
- Configure the number of leaves for each category based on pay grade.
- Enforce 50 mandatory no-pay leaves for every employee.
- Enable employees to request leaves through the system.
- Require supervisor approval for leave requests.
- Deduct approved leaves from the employee's leave balance.

2.2.3 Reporting Module

- Develop a reporting module for generating essential reports, including employees by department and total leaves in a given period by department.
- Create reports grouped by job title, department, pay grade, and custom fields.
- Generate a report for the employee records based on the salary (pay grade) of each employee.
- Generate reports based on the Supervisor and Subordinate relationship in the company.
- Provide the flexibility to define custom fields for reporting purposes.

2.2.4 User Management and Authorization

- Implement fine-grained authorization, restricting user access to specific modules and sub-modules based on roles.
- Assign roles such as admin user and HR manager for user account management.
- Bind each user to an employee record, allowing for user-less employee records.

2.3 User Classes and Characteristics

The primary user classes for the HRM product include:

* Admin User: Responsible for initial setup, user management, and system configuration.

* HR Manager: Manages employee data and reporting.

* Supervisor: Manages the leave requests of their subordinates.

* Employee: Access their personal information and submit leave requests.

2.4 Operating Environment

2.4.1 Hardware Requirements

The product should be deployed on hardware capable of running the selected software stack, including web servers, databases, and application servers.

2.4.2 Software Requirements

The product is designed to run on a web-based platform, utilizing web browsers as the primary user interface. It should be compatible with modern web browsers and adhere to web standards.

2.5 Design and Implementation Constraints

2.5.1 Database Design

The database design must accommodate the storage of extensive employee information, customizable attributes, and hierarchical relationships between employees and supervisors.

2.5.2 Web Design

The HRM product will follow modern web design principles to ensure an intuitive and user-friendly interface. The UI will be responsive, allowing users to access the system on various devices, including desktops, tablets, and smartphones.

2.5.3 Modularization

The system should be modular, allowing for the addition of new modules or functionality in the future.

2.6 User Documentation

Comprehensive user documentation will be provided to assist users in understanding how to use the product. This documentation will include instructions for system administrators, HR managers, and regular employees.

2.7 Assumptions and Dependencies

- The organization's HR processes are relatively static, with only occasional changes to employee attributes.
- Hardware used by the organization is assumed to support new technologies used to develop this system.
- Organization has a stable and secure network infrastructure for access.
- Users are assumed to be proficient in the English language.

3. External Interface Requirements

3.1 User Interfaces

- **GUI Standards:** The software will adhere to established GUI standards, such as the use of a consistent color scheme, fonts, and layout.

- **Screen Layout Constraints:** All screens should be designed with a responsive layout to fit various screen sizes and orientations.

- **Standard Buttons and Functions**: Every screen will include standard buttons for actions like "Save," "Cancel," and "Help." A navigation menu will be available for easy access to different sections of the software.

- Keyboard shortcuts will be provided for common actions to enhance user efficiency.
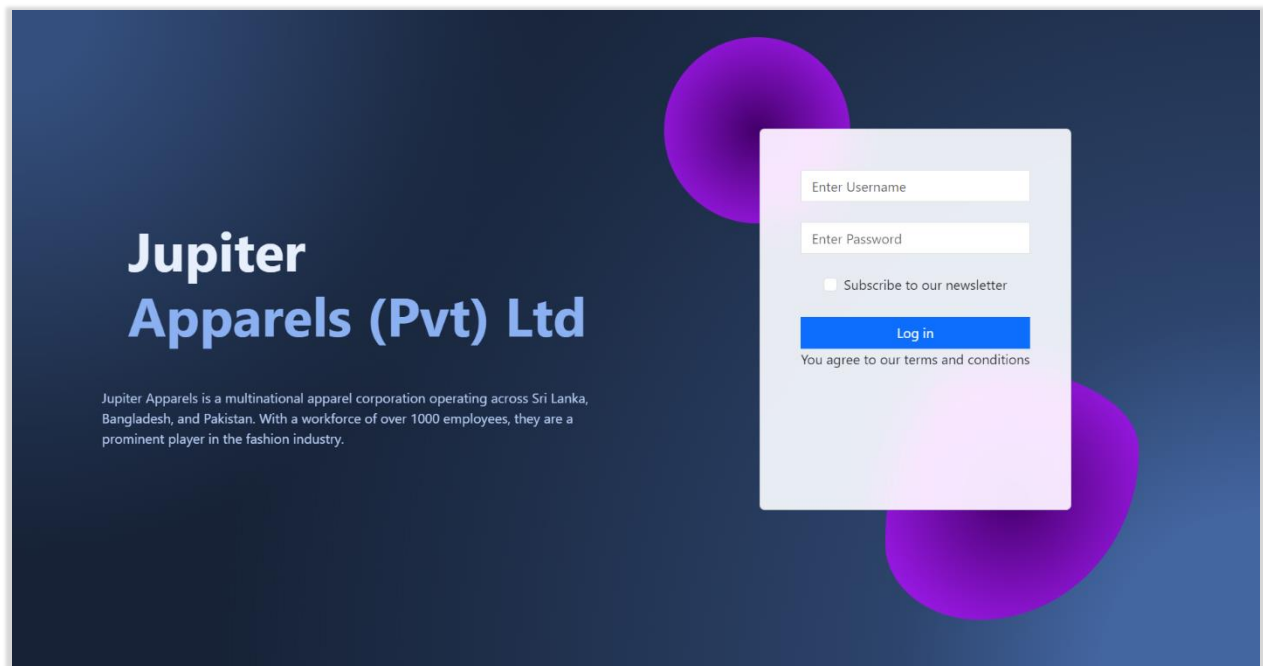

Fig. 1. Sample user interface of HRMS

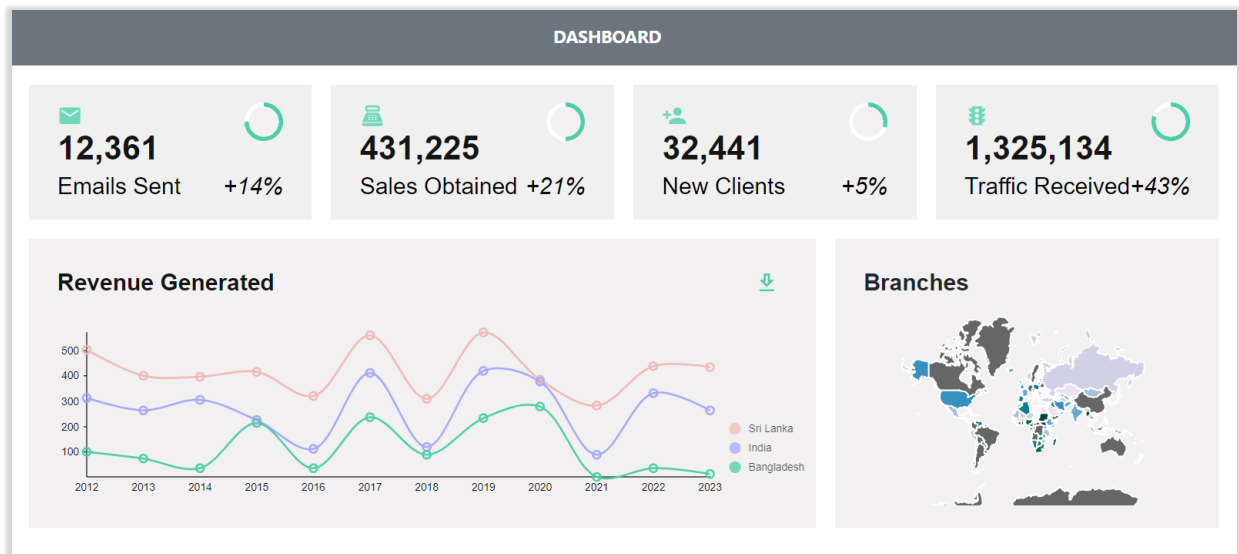Fig. 2. Sample user interface of HRMS

Fig. 3. Sample user interface of HRMS

3.2 Hardware Interfaces

- The software will support various device types, including desktop computers, laptops, tablets, and smartphones.
- The software will utilize standard communication protocols (e.g., USB, Bluetooth, Wi-Fi) for hardware interactions.

3.3 Software Interfaces

- The software will interact with the MySQL database management system for data storage and retrieval.
- It will run on windows, Linux, and Mac operating systems.

3.4 Communications Interfaces

- The software will support email notifications for user actions. SMTP (Simple Mail Transfer Protocol) will be used for sending emails.
- The product will be accessible through standard web browsers (e.g., Chrome, Firefox, Safari).
- All communication will be encrypted using TLS/SSL protocols to ensure data security.
- The software will implement a real-time synchronization mechanism for data consistency across multiple users and devices.

4. System Features

4.1 Employee Information Management

4.1.1 Description and Priority

The system will have an administrator account to manage the entire system. The administrator has permission to login to the system and create an account for the HR manager. The HR manager will be able to add employee records and create employee accounts associated with these records.

Note - The HR manager will be able to add new custom fields for employee records as per the request of the company.

Priority: High

4.1.2 Stimulus/Response Sequences

Stimulus: Create an admin account for the system.

Response: Systems checks for already created admin accounts and if there are none, system creates a new admin account.

Stimulus: Admin requests to create an HR manager account.

Response: The system will authenticate the admin and create the HR manager account.

Stimulus: HR manager requests to add an employee data record to the system.

Response: The system will check the permissions and if valid it will add the new employee record to the database.

Stimulus: HR manager requests to edit an already existing employee data record.

Response: The system will check submitter's permissions and if allowed it will update the employee record.

Stimulus: HR account requests to add a custom field for employee records in the database.

Response: The system will check the permissions and if authorized and if the custom attribute does not already exist in the system, system will validate this process and add custom fields for employee records in the database.

Stimulus: HR account requests to create an employee account associated with an employee data record in the database.

Response: The system will check the permissions and if allowed and valid creates an employee associated with the referenced record.

4.1.3 Functional Requirements

Functional Requirement	Description
Administrator Account	The system can have only one administrator account with default credentials.
Create HR Manager account	The system must allow the administrator to create an account for the HR manager.
Add new employee record	The system should allow the HR manager to add employee records which contain employee's name, birth date, marital status, dependent information, emergency contact information, pay grade, job title, employment status, department, and supervisor. Pay grades, job titles, and employment status should be extensible.
Edit employee record	The system shall allow the HR manager account to update employee records.
Add custom field	The system should allow the admin to add custom fields to employee records.
Create employee account	The system should allow the HR manager to create employee accounts associated with employee records.

4.2 Organizational Information Management

4.2.1 Description and Priority

The system will store information such as the name, address, and identification number of the organization in the database. Users of the system should be able to view this data based on their permissions.

Priority – Medium

4.2.2 Stimulus/Response Sequences

Stimulus: Admin account requests to add organization information to the system.

Response: The system checks user permissions and adds the information to the database.

Stimulus: Admin account requests to update the organization information.

Response: The system authenticates the administrator and updates organizational information.

Stimulus: User requests to view organization information.

Response: The system checks user permissions and displays the organization information

4.2.3 Functional Requirements

Functional Requirement	Description
View organization information	The system should allow the employees, HR, and admin to view organization information based on the permissions.
Update organization information	The system should allow the admin user to update the previous values of organization information with the provided values.

4.3 Leave Management

4.3.1 Description and Priority

The Absence Module relates to Leave Management. The employees can request a leave of absence and the request should be approved/declined by the supervisor of each employee. There are 4 types of leaves: Annual, Casual, Maternity and No-pay. Every employee has a mandatory number of no-pay leaves. As well the number of leaves of each category differs according to the pay grade. Once a leave is approved only by the supervisor, that leave would be deducted from the employee's leave count.

Priority: High

4.3.2 Stimulus/ Responses Sequences

Stimulus: Employee request for a leave of absence.

Response: The system verifies the user and sends the request to the related supervisor.

Stimulus: Supervisor requests to accept/reject a subordinate's request for a leave of absence.

Response: The system verifies the supervisor and changes the status of the leave request, updates employee's leave count and informs the employee.

Stimulus: HR manager requests to update the number of mandatory no-pay leaves.

Response: The system verifies the HR manager and updates the number of mandatory no-pay leave count.

Stimulus: HR manager requests to update the number of leaves of a specific category of each pay grade.

Response: The system verifies the HR manager and updates the number of leaves that related employees have.

4.3.3 Functional Requirements

Functional Requirement	Description
Apply a leave	The system should facilitate employees to submit their leave application to their supervisor via the system.
Approve/Reject a leave request	The system should allow supervisors to see their subordinate's leave requests and approve/reject those requests. And the system should inform the response status to the related employee.
Configure the leave count	The system should allow the HR manager to set up the leave counts for each leave category in each pay grade and configure the mandatory no pay leave count.

4.4 Permission Management

4.4.1 Description and Priority

The system will have a set of permissions for every module and sub-module of the system. These permissions will be approved/rejected to other user types by the administrator. There higher level (managerial) employees can be given editing access to the PIM module but no access to the Absence module.

Priority: High

4.4.2 Stimulus/ Responses Sequences

Stimulus: Admin requests to give permission to a user type.

Response: The system verifies the admin and the related user. Then the system approves the requested permissions.

Stimulus: Admin requests to reject permission to a user type.

Response: The system verifies the admin and the related user. Then the system rejects the requested permissions of user.

4.4.3 Functional Requirements

Functional Requirements	Description
Approve Permission	The system should allow the admin to provide the access to user.
Reject Permission	The system should allow the admin to block the access to user.

4.5 Report Generation

4.5.1 Description and Priority

The system will be able to generate the following reports,

- Employee by department
- Employee reports grouped by job title, department, pay grade, etc.
- Total leaves in a given period by department.
- Reports based on custom fields.

Priority: High

4.5.2 Stimulus/Response Sequences

Stimulus: The user, typically an authorized HR manager or admin, initiates a request for generating a specific report.

Response: The system validates permissions and displays the requested report. This may involve querying the database for relevant data and processing it into a readable format.

4.5.3 Functional Requirements

Functional Requirement	Description

Generate Report	❖ The system shall allow the HR manager to generate the following reports,
	    • Employee by department
	    • Total leaves in given period by department.
	    • Employee reports grouped by job title, department, pay grade etc.
	    • Reports based on custom fields.
	❖ Reports should be generated in a readable and organized manner, presenting information logically.
	❖ Reports should be available in multiple formats (e.g., PDF, Excel) to accommodate different user preferences.

5. Non-Functional Requirements

5.1 Security Requirements

- Sensitive employee information is securely stored and accessed only by authorized users.
- Including secure password policies and multi-factor authentication to protect user accounts.
- Give the user the option to reset their password by emailing them a verification code if they forget it.
- Only the HR manager is able to create employee accounts.

5.2 Performance Requirements

- Optimize system performance to define acceptable response times for various system operations.
- When updating records, the system can be used concurrently.
- The system must be accessible to multiple users.
- Performance needs to be consistent across operating systems.

5.3 Safety Requirements

- Only workers with higher authority are allowed to change sensitive information about the company.
- Develop an incident response plan to address security breaches, data leaks, or unauthorized access.
- The current state of the system should be automatically saved in case of an emergency.

### 5.4 Software Quality Attributes

- The system should have an intuitive and user-friendly interface for ease of use by employees and administrators.
- Implement auditing features to track user activities.
- Enable traceability to understand the history of data modifications and system actions.
- The system should be designed with high maintainability and easy extensibility and modifiability.

5.5 Business Rules

- Business rules for the Human Resource Management System encompass a set of guidelines and constraints governing various aspects of the software's operation.
- These rules dictate the storage and management of organization information, including configurable details, comprehensive employee records, and the ability to define custom employee attributes.
- They specify the roles and permissions of system users, allowing fine-grained authorization control. Additionally, business rules outline the handling of leave-related functions, including types of leave, their allocation based on pay grades, and the approval process.

Analysis Models

Entity-Relationship Diagram:
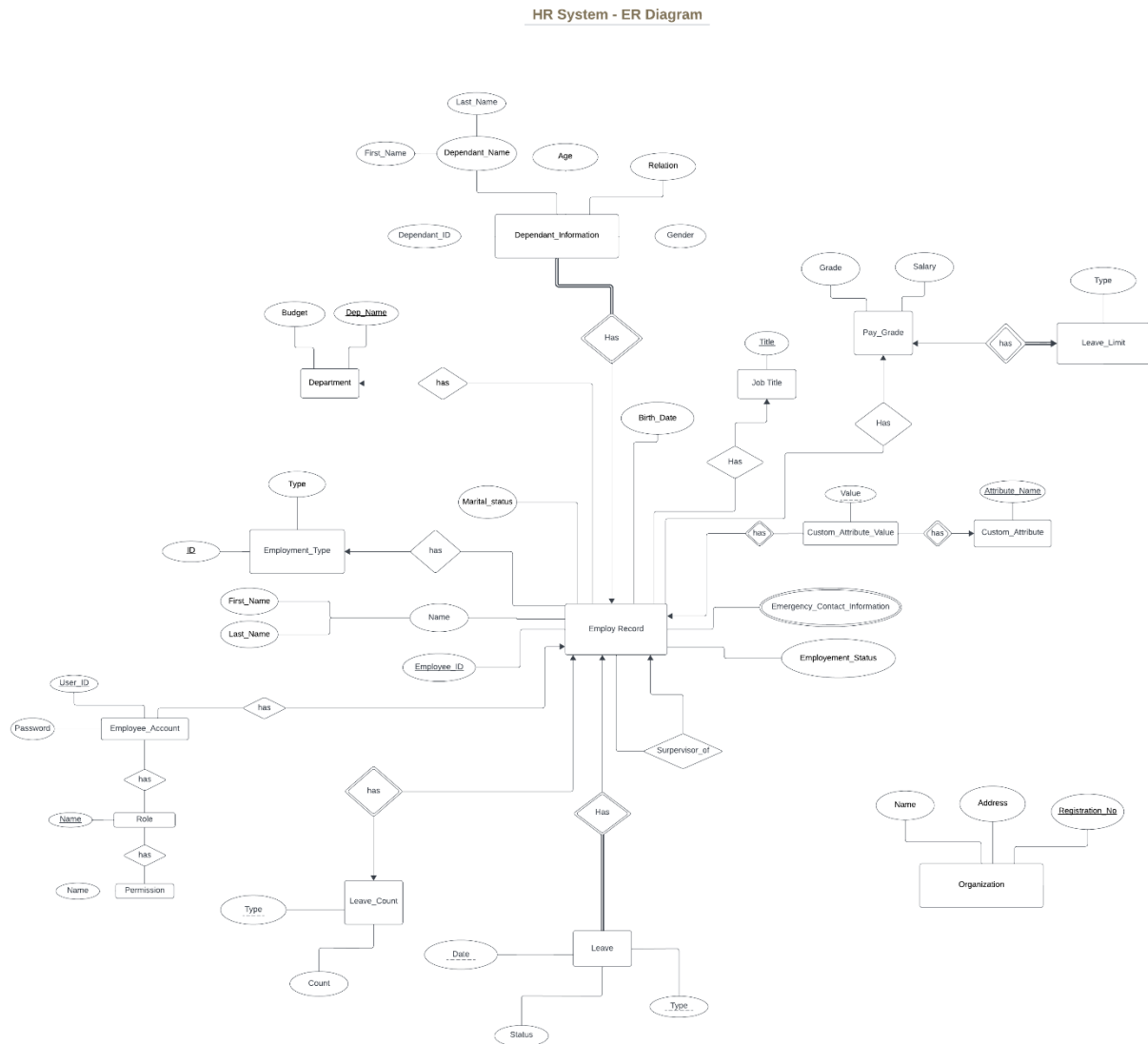
- The Entity-Relationship Diagram (ERD) depicted here may undergo future modifications. For the up-to-date ERD, please refer to the following link:

  https://admin.lucid.app/lucidchart/19966884-b7a4-4a64-a3b6-8650d36f1bf5/edit?viewport_loc=-1017%2C-633%2C3225%2C1514%2C0_0&invitationId=inv_049758b2-862b-4778-b79e-c2cec1987866

Glossary

Term	Definition
Personal Information Management (PIM)	The module within the HRMS that stores and manages extensive employee information, including personal details, job-related information, and custom attributes.
ERP Systems	Enterprise Resource Planning systems like SAP, often used by organizations for comprehensive management of business processes.
User Access Control	The functionality that determines and restricts user access to specific modules and features within the HRMS based on their roles and permissions.
Admin User	The user class responsible for initial system setup, user management, and configuration of the HRMS.
HR Manager	The user class responsible for managing employee data, leave requests, and reporting within the HRMS.
Modularization	The system's design approach that allows for the addition of new modules or functionality in the future.
Stimulus/Response Sequences	The expected interactions and responses between users and the HRMS for specific functionalities.

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