Darshan University

A Project Report on

"Employee Management System"

Under the subject

Software Engineering (2301CS405)

B. Tech, Semester – V

Computer Science & Engineering Department

Submitted By

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Academic Year

(2024-2025)

Internal Guide	Dean-DIET
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Darshan University	Darshan University

Computer Science & Engineering Department
Darshan University

DECLARATION

We hereby declare that the SRS, submitted along with the **Software Engineering (2301CS405)** for entitled **"Employee Management System"** submitted in partial fulfilment for the Semester-5 of **Bachelor Technology (B. Tech)** in **Computer Science and Engineering (CSE)** Department to Darshan University, Rajkot, is a record of the work carried out at **Darshan University, Rajkot** under the supervision of R.B.Gondaliya and that no part of any of report has been directly copied from any students' reports, without providing due reference.

Hensi Doshi

Student's Signature

Date: _____

Computer Science & Engineering Department
Darshan University

CERTIFICATE

This is to certify that the SRS on **"Employee Management System" has** been satisfactorily prepared by **Doshi Hensi Vipulbhai** (**23010101617**) under my guidance in the fulfillment of the course **Software Engineering (2301CS405)** work during the academic year 2024-2025.

Internal Guide   Dean-DIET
Prof., R.B.Gondaliya   Dr. Gopi Sanghani
Darshan University   Darshan University

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to my project guide Prof. **R.B.Gondaliya** and all the faculty members for helping me through my project by giving me the necessary suggestions and advices along with their valuable co-ordination in completing this work.

I also thank my parents, friends and all the members of the family for their precious support and encouragement which they had provided in completion of my work. In addition to that, I would also like to mention the Darshan University personals who gave me the permission to use and experience the valuable resources required for the project from the University premises.

Thus, in conclusion to the above said, I once again thank the faculties and members of **Darshan University** for their valuable support in completion of the project.

Thanking You
Hensi Doshi

ABSTRACT

An Employee Management System (EMS) is an integrated solution designed to facilitate the comprehensive management of employee information and streamline various HR processes. This system is vital for modern organizations seeking to enhance operational efficiency, improve data accuracy, and foster a productive work environment. The EMS encompasses a wide range of functionalities, including employee data management, attendance and leave tracking, payroll processing, performance evaluation, and robust reporting and analytics.

Overall, the EMS serves as a crucial tool for HR management, promoting efficiency, accuracy, and strategic decision-making within an organization. It helps in reducing administrative burdens, ensuring regulatory compliance, and enhancing overall employee satisfaction and productivity.

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1 Introduction

1.1 Product perspective

This project aims to transform a traditional, manual employee management system into a web-based application. The system will provide an integrated platform that facilitates the management of employee records, departments, and associated workflows efficiently. It allows employees and administrators to handle various HR-related tasks, like personal information management, attendance tracking, payroll management, and leave applications, in a streamlined manner.

1.2 Product features

1.2.1 There are four different users who will be using this product:
- Admin who will be acting as the administrator.
- HR Manager who will be accessing the Employee.
- Team Leader who will be assign the task to Employee.
- Employee who will perform all given tasks.

1.2.2 The features that are required for the Admin are:
- Admin should be able to add employee accounts as per requirements.
- Configure system settings and workflows.
- Generate and review system reports .
- Create or update employee roles and permission .
- Maintain data backup and recovery processes.

1.2.3 The features that are required for the HR Manager are:
- Assign employee jobs.
- Generate HR report.
- Approve and reject leave requests.
- Employee Salary maintain.
- Conducts interviews of employee.

1.2.4 The features that are required for the Team Leader are:
- Assign tasks and track progress.
- Add team member as per requirements.
- Solves problems of employees.
- Set performance goals for team members.
- Distribute workload among team members.

1.2.5 The features that are required for the Employee are:
- Employee should be able to login.
- Employee should be apply for leave.
- Set personal goal.
- Access health and safety training.
- Access and upload necessary documents.

1.3   Functional Requirement

1.3.1   Admin

- Add employee: Admin should be able to add employee accounts
- Update employee: Admin should be able to update employee accounts
- Delete employee: Admin should be able to delete employee accounts
- Configure system: Configure system settings and workflows
- Generate reports: Generate and review system reports
- System Administration: Maintain data backup and recovery processes
- Employee Authentication: Create or update employee roles and permission
- Notification: Setup notifications and alerts
- Access control: Maintain access levels for different roles
- Security settings: Admin should be able to Reset passwords
- Data protection: Ensure data encryption with data protection
- Employee Activity Monitoring: Track employee activities

1.3.2   HR Manager

- Employee Registration: Add new employee
- Employee Profile Update: Edit employee personal information
- Assign job: Assign employee jobs
- Generate report: Generate HR report
- Handle sessions: Handle employee interview and feedback sessions
- Salary Maintain: Employee Salary maintain
- Leave approvals: Approve and reject leave requests
- Attendance: Generate Attendance reports
- Job update: Update employee job
- Performance Reviews: Conduct performance reviews
- Conduct interviews: Conducts interviews of employee
- Policy: Create or update HR policies

1.3.3   Team Leader

- Update team structure: Update team structure and job description
- Task Assignment: Assign tasks and track progress
- Add team member: Add team member
- Update team member: Update team member
- Delete team member: Delete team member
- Solve employee problem: Solves problems of employees
- Leave Approvals: Approve or reject leave requests from team members
- Project and task maintain: Assign and track projects
- Training Development: Training for team members
- Collect feedback: Gather team members feedback
- Schedule and shift maintain: Create a shift schedules
- Workload Distribution: Distribute workload among team members
- Set Performance: Set performance goals for team members

1.3.4   Employee
- Login: Employee should be able to login
- Registration: Employee should be able to registration
- Update information: Update your personal information and profiles
- View attendance: View attendance records
- View feedback: Vciew performance feedback
- Apply leave : Employee should be apply for leave
- Set performance: Set personal goal
- Maintain health and safety: Access health and safety training
- Swift maintain: Swap or change shift request
- Workforce planning: Participate in workforce planning activities
- Succession planning: Succession on goals
- Feedback Submission: Provide feedback to managers and peers.
- Document Access: Access and upload necessary documents.

1.4   Non-Functional Requirement

1.4.1   Usability:
- The UI should be simple enough for everyone to understand and get the relevant information without any special training. Different languages can be provided based on the requirements.

1.4.2   Accuracy:
- The data stored about the books and the fines calculated should be correct, consistent, and reliable.

1.4.3   Availability:
- The System should be available for the duration when the library operates and must be recovered within an hour or less if it fails. The system should respond to the requests within two seconds or less.

1.4.4   Maintainability:
- The software should be easily maintainable and adding new features and making changes to the software must be as simple as possible. In addition to this, the software must also be portable.

2 Design and Implementation Constraints

2.1 Use case diagram
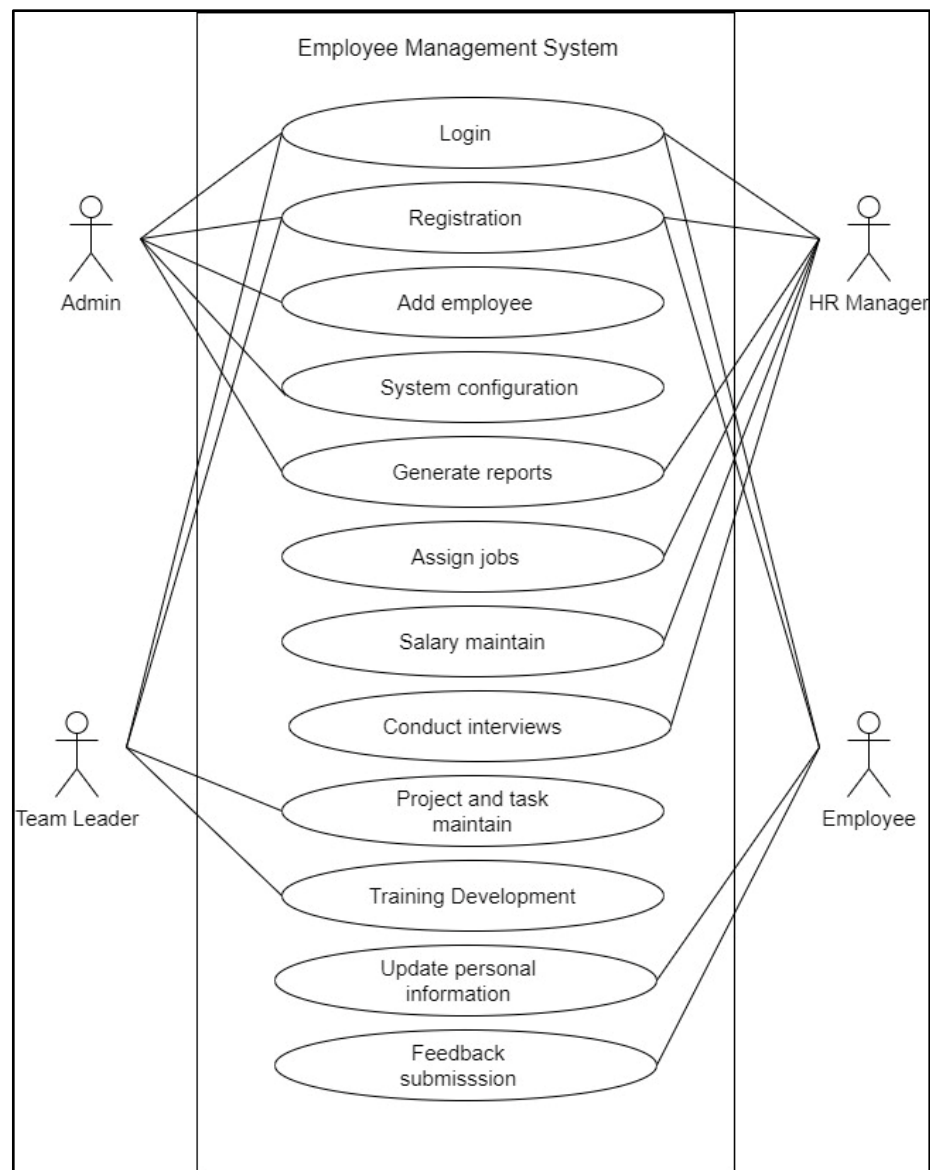
Figure 2.1-1 Use case diagram for employee management system

2.2 Activity diagram and Swimlane diagram
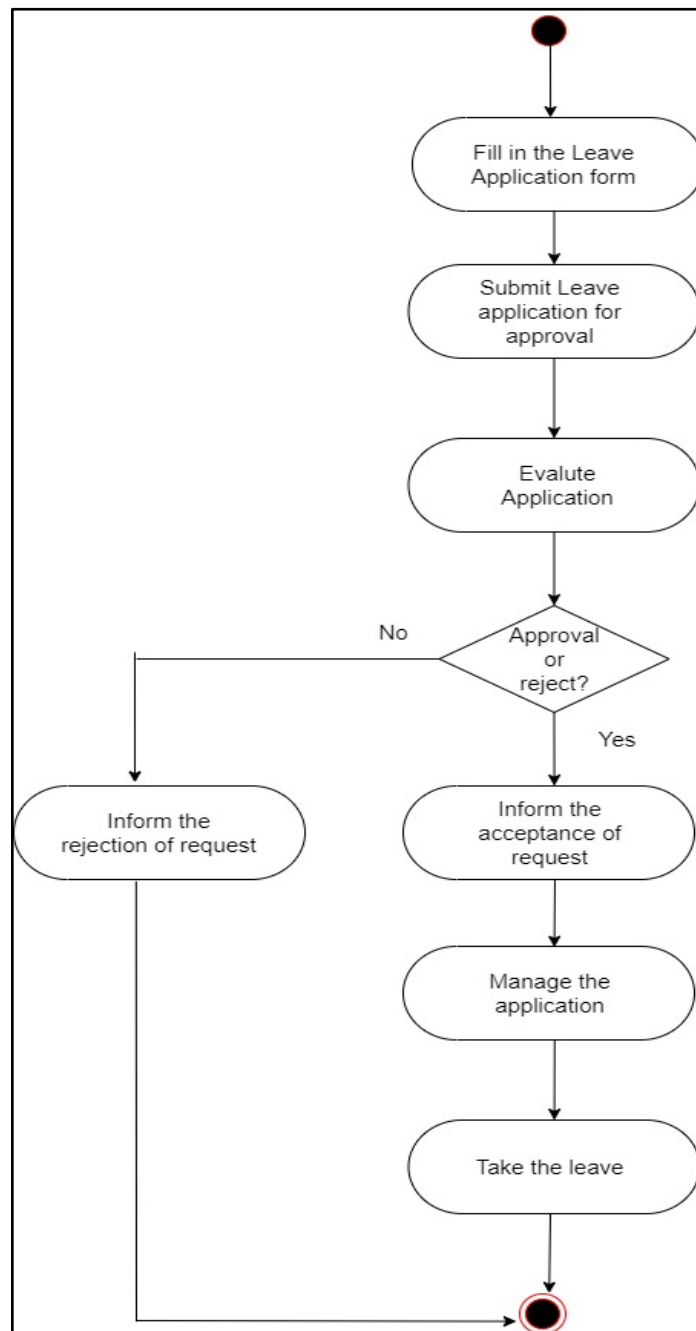
Figure 2.2-1 Activity diagram for Leave request
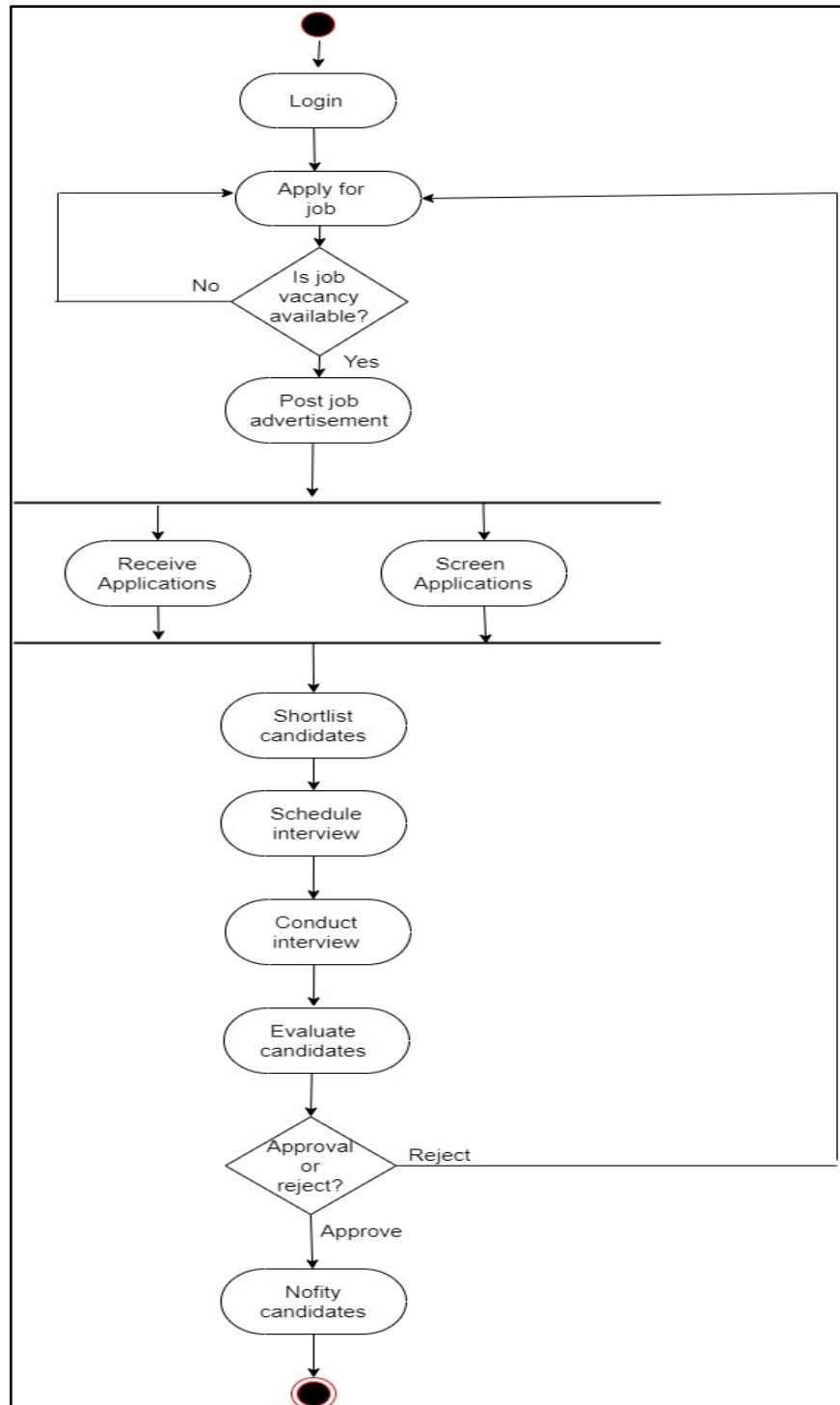
Figure 2.2-2 Activity diagram for Conduct interview
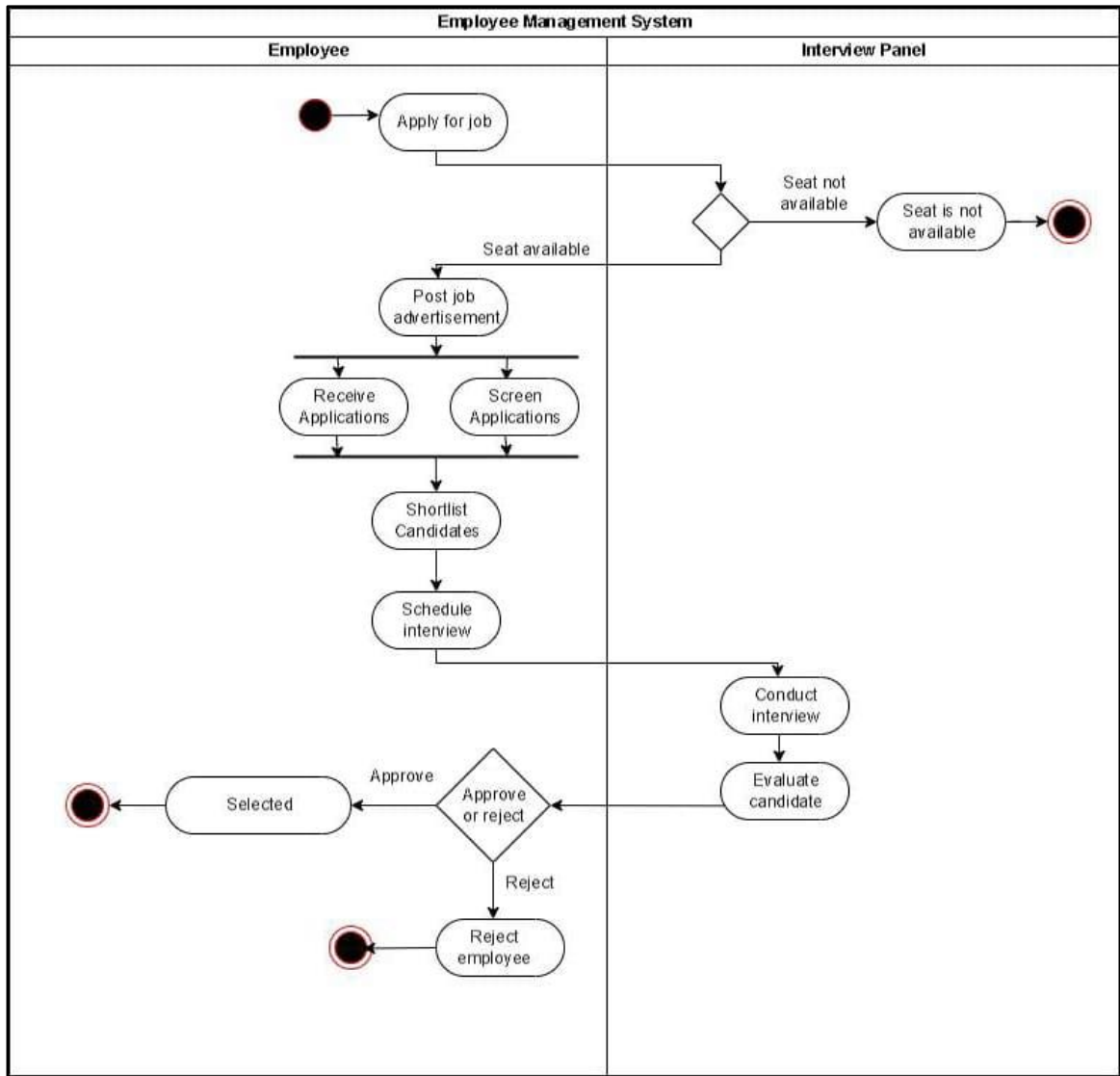
Figure 2.2-2 Swimlane diagram for conduct interview

2.3 Sequence diagram
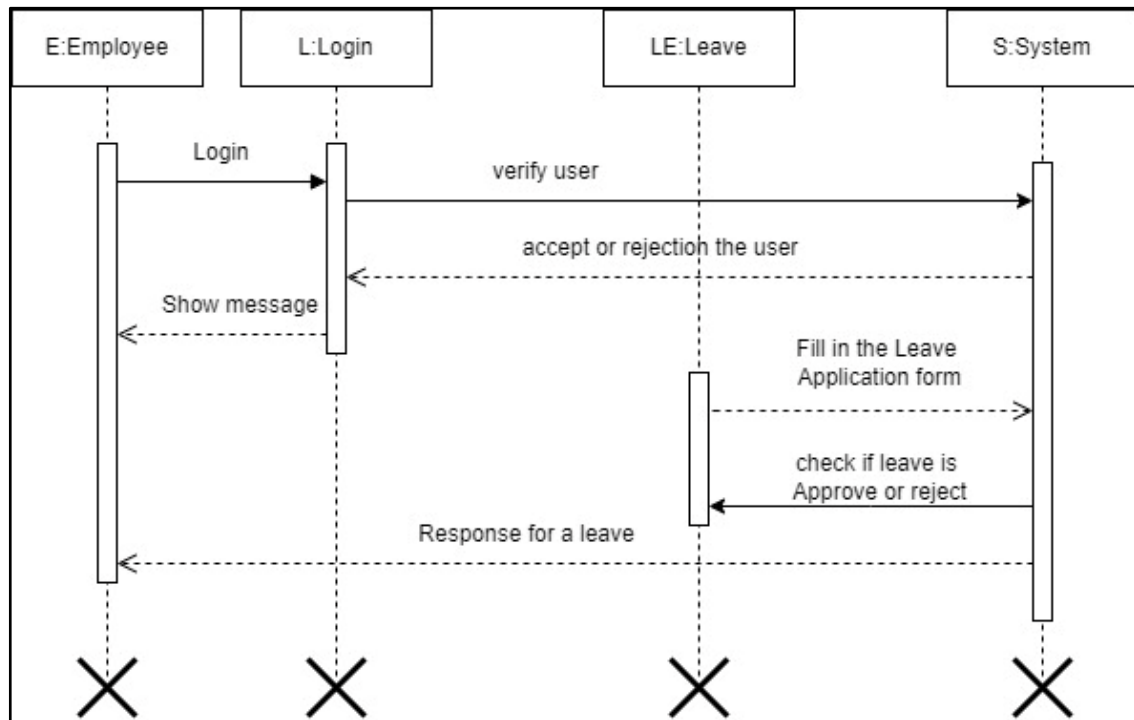
Figure 2.3-1 Sequence diagram for Leave request
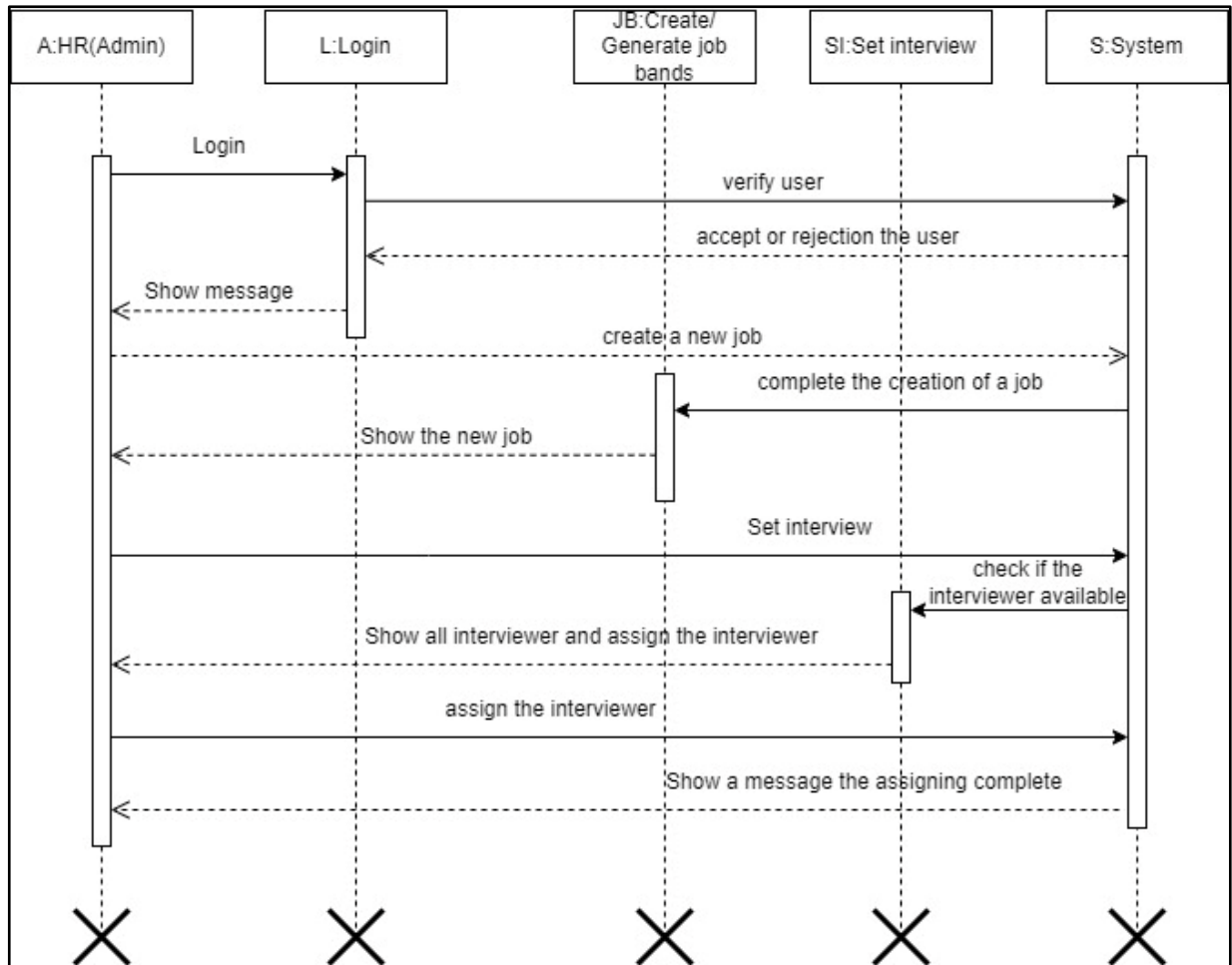
Figure 2.3-2Sequence diagram for conduct interview

2.4 State diagram
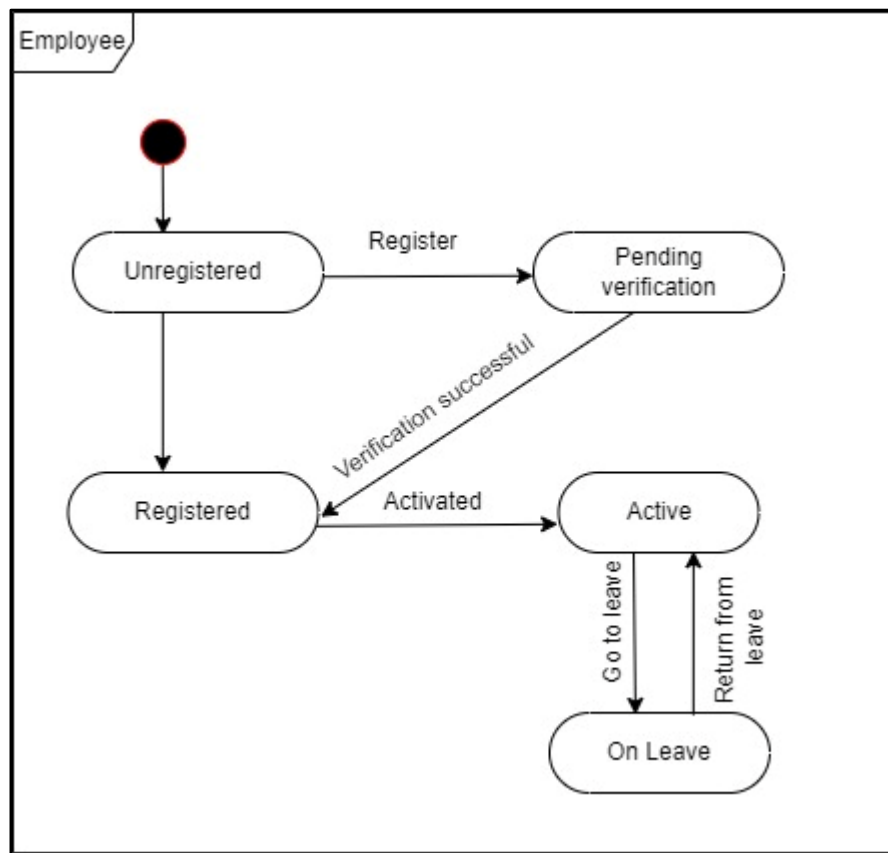
Figure 2.4-1 State diagram of Employee

2.5 Class diagram
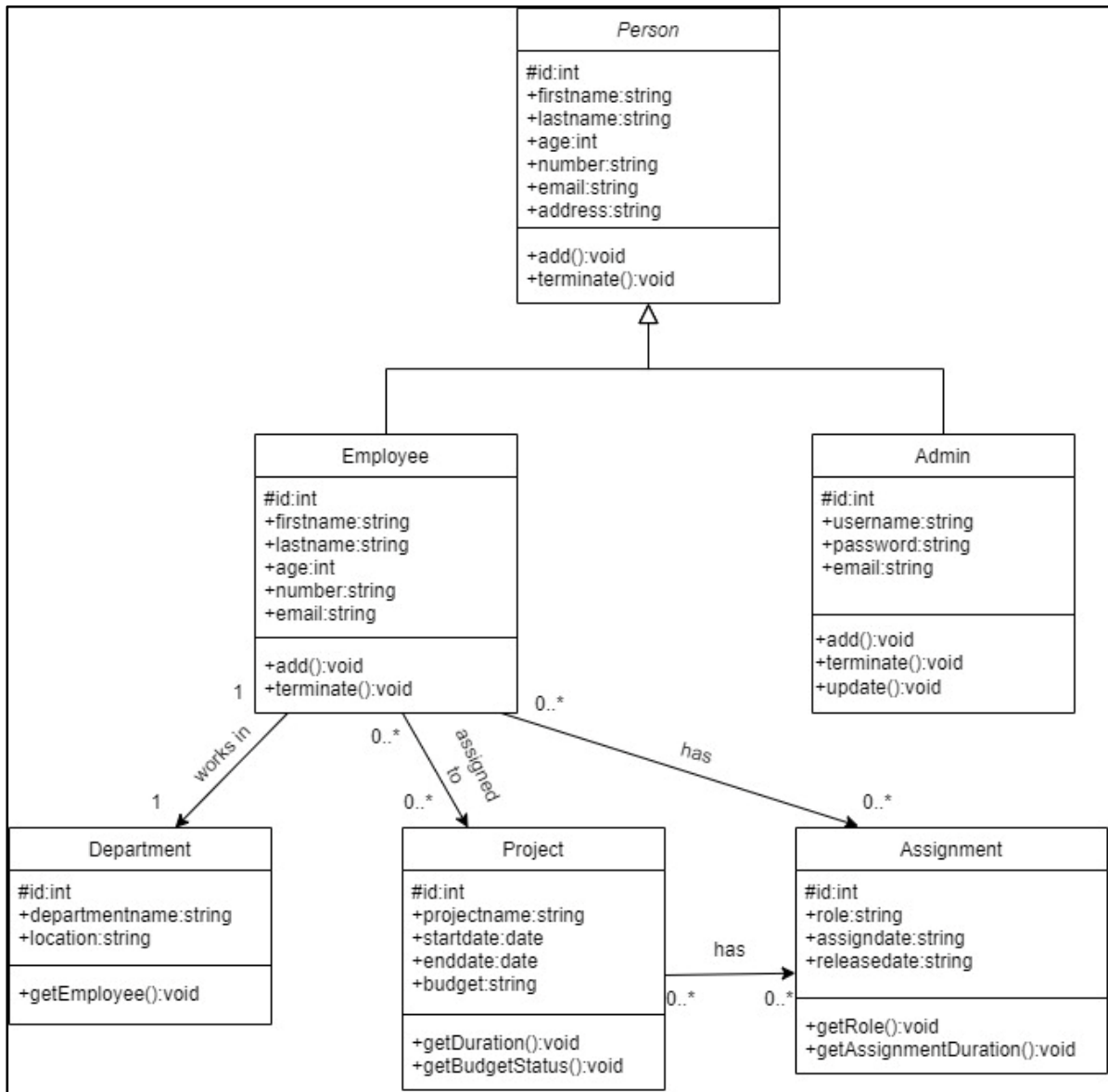
Figure 2.5-1 Class diagram for Employee management system

2.6 Data flow diagram
2.6.1 Context diagram (level-0)
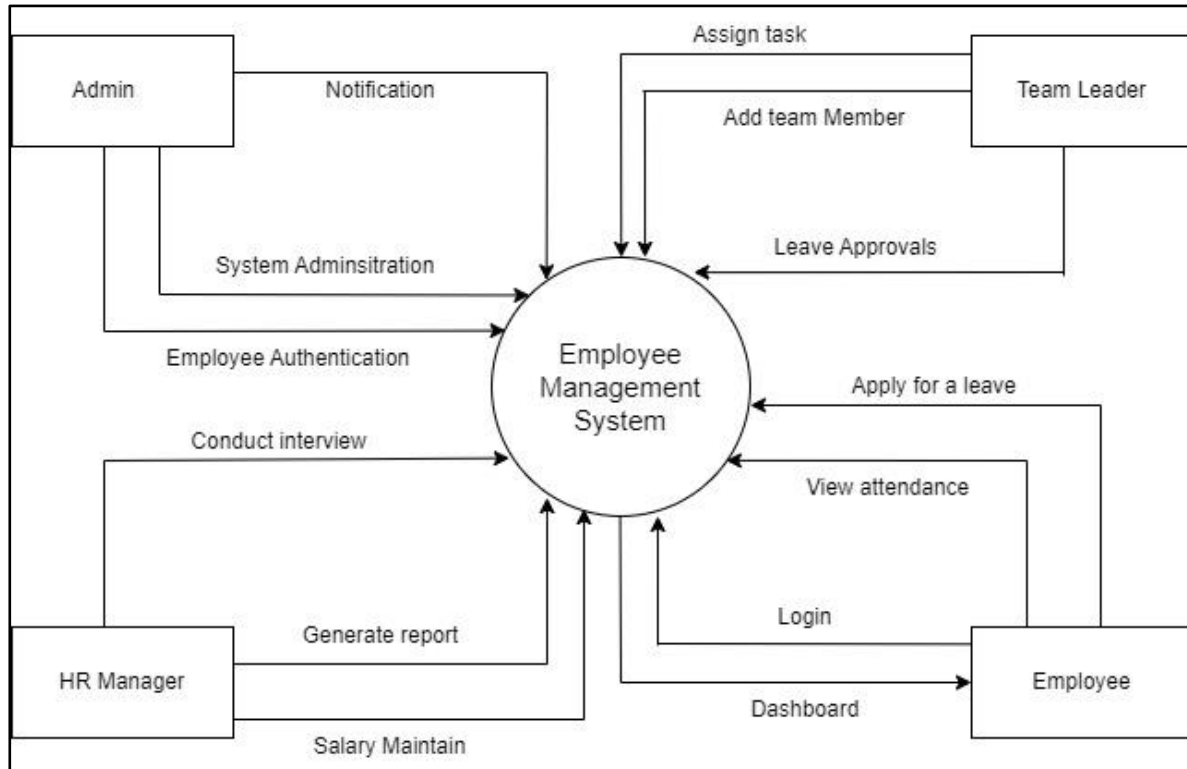
Figure 2.6-1 Context diagram for Employee management system

2.6.2 DFD Level-1
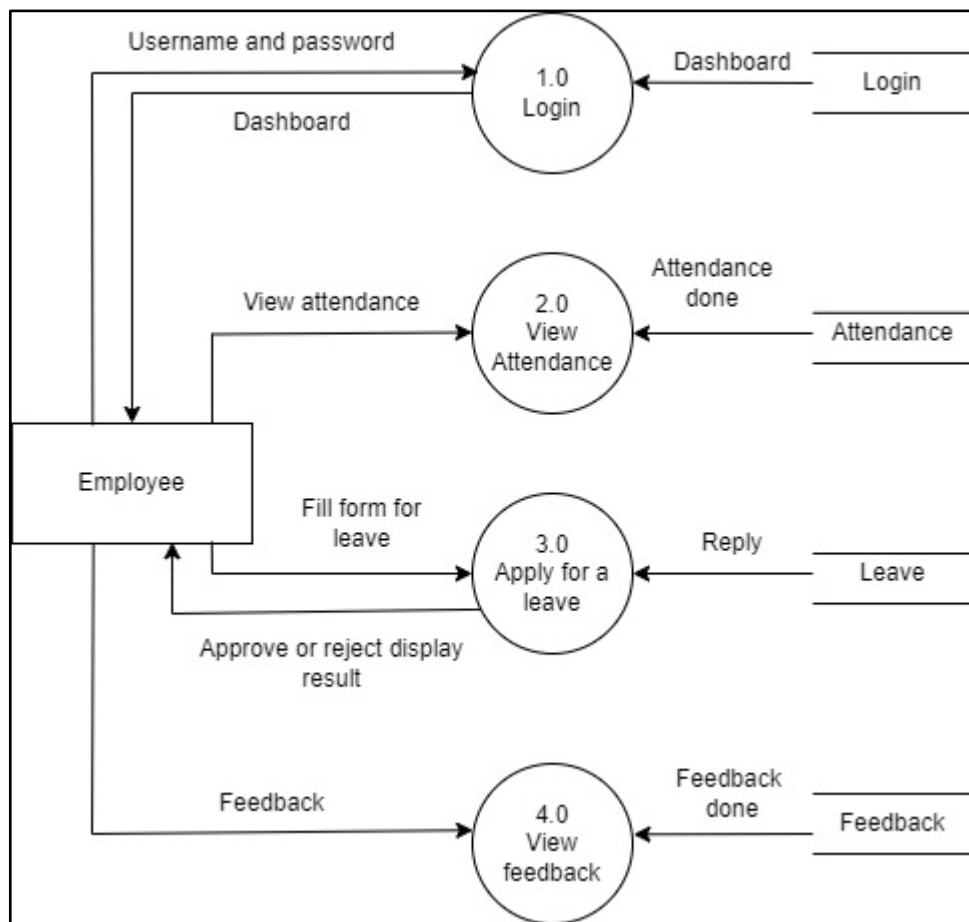
Figure 2.6-2 DFD level-1 for Employee management system

3 External interface requirement (Screens)

3.1 Screen-1: Registration Form

Figure 3.2-1 Screen-1: registration

Purpose: This form will allow the target end-users to register in the system. To register , the following information will be encoded in the system.

Table 3.1-1 Screen element of Registration form

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	FirstName	Textbox	M	1	Firstname field should be editable and accept the Firstname.
2	LastName	Textbox	M	1	Lastname field should be editable and accept the Lastname.
3	Email address	Email	M	1	Email address field should be editable and accept the Email address.
4	Company	Textbox	O	1	Enter your company name (if applicable).

5	Address	Textbox	M	1	Address field should be editable and accept the full residential address, including street name, city, state, and postal code.
6	Date of birth	Dropdown	M	1	Enter your date of birth in the format DD/MM/YYYY. This information helps us to verify your identity and ensure compliance with age-related regulations.
7	Register Button	Button	M	1	Submits the registration form with the provided information.

3.2 Screen-2: DashBoard
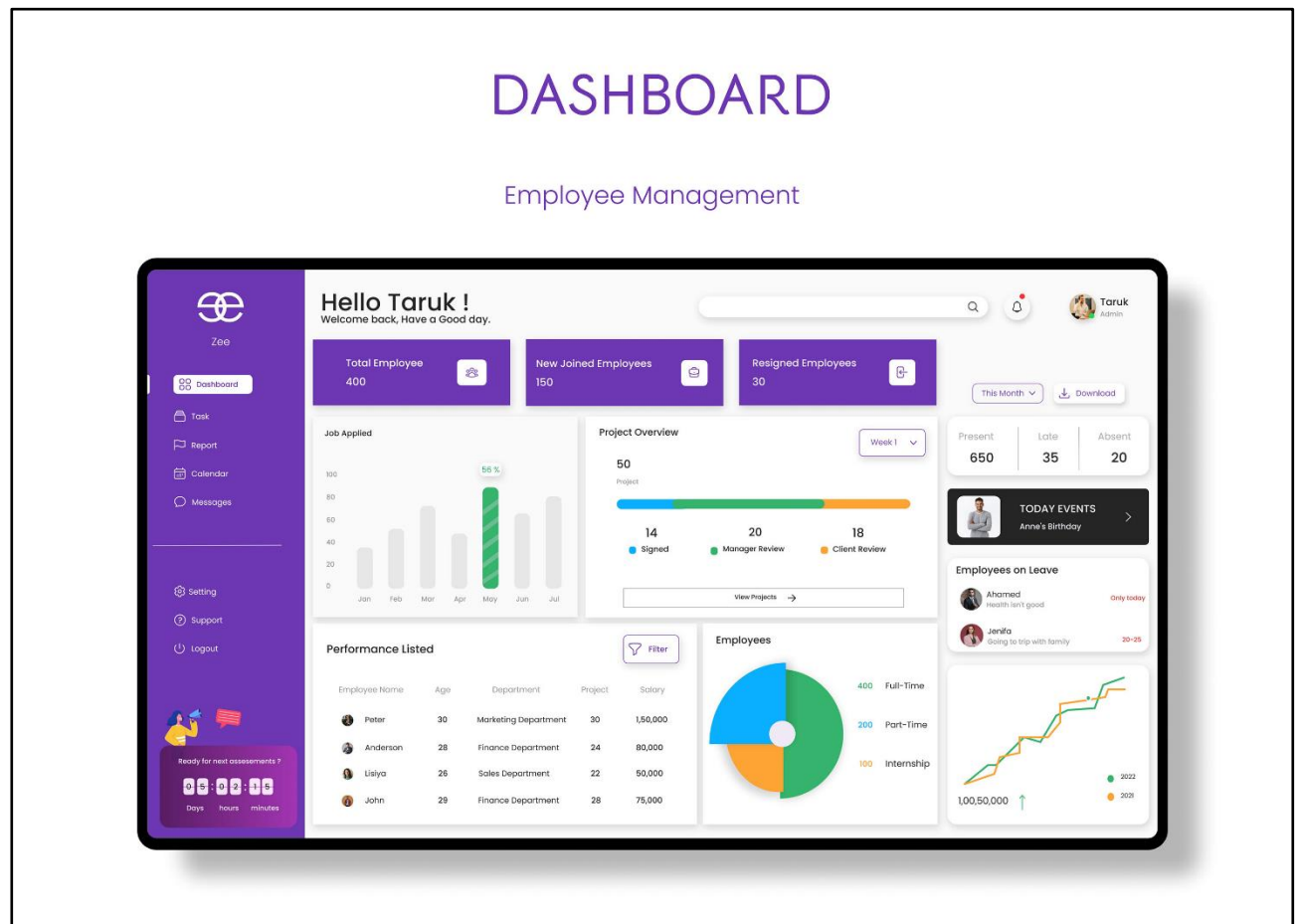
Figure 3.2-1 Screen-2: dashboard

Purpose: The purpose of the Employee Management Dashboard is to provide a comprehensive overview of the organization's workforce and key performance indicators related to employee management. It serves as a centralized hub where administrators and managers can quickly access critical information, monitor employee-related activities, and make data-driven decisions.

Table 3.2-1 Screen element of dashboard

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Sidebar Menu	Navigation Links	------	------	Provides access to different sections of the employee management system.
2	Welcome Message	Text Display	M	1	Displays a personalized greeting to the user.
3	Total Employee	Info Card	M	1	Displays the total number of employees.
4	New Joined Employees	Info Card	M	1	Displays the number of newly joined employees.
5	Resigned Employees	Info Card	M	1	Displays the number of employees who resigned.
6	Job Applied	Bar Chart	M	1	Shows the number of job applications received per month, highlighting a specific month's percentage.
7	Project Overview	Horizontal Bar	M	1	Displays the status of projects over the selected week, broken into signed, manager review, client review.
8	Performance Listed	Table	M	1	Lists employee performance details including name, age, department, project, and salary.
9	Employees Chart	Pie Chart	M	1	Displays the distribution of employees across different job types (Full-Time, Part-Time, Internship).
10	Attendance Overview	Info Card	M	1	Displays key attendance metrics (Present, Late, Absent) for the current month.
11	Today's Events	Info Card	M	1	Highlights specific events for the day, e.g., birthdays.
12	Employees on Leave	Info Card	M	1	Displays employees currently on leave, including their leave reasons and duration.
13	Revenue Graph	Line Chart	M	1	Compares revenue data for 2022 and 2023, showing the total revenue amount.

3.3 Screen-3: Details
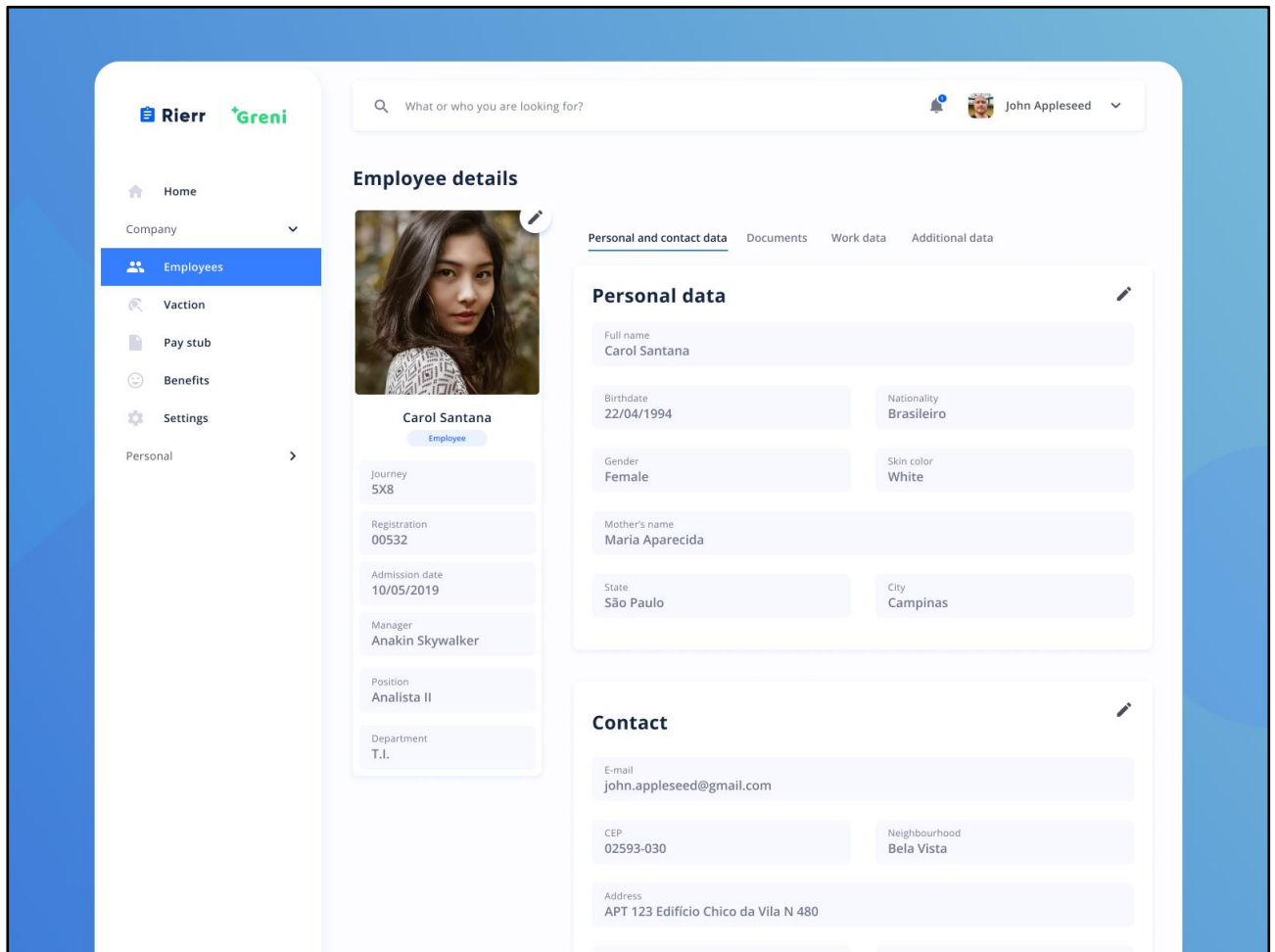
Figure 3.3-1 Screen-3: details

Purpose: The purpose of the "Employee Details" screen, as depicted in the image, is to provide a comprehensive overview of an individual employee's information within a company's HR or employee management system.

Table 3.3-1 Screen element of dashboard

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Employee Image	Image	M	1	Displays the employee's profile picture.
2	Name	Text	M	1	Displays the employee's full name.
3	Position	Label	M	1	Displays the employee's job position or role.
4	Journey	Text	M	1	Employee's journey or ID number.
5	Registration	Text	M	1	Employee's registration number.
6	Admission Date	Date	M	1	Date when the employee was admitted to the company.
7	Manager	Text	M	1	Name of the employee's manager.
8	Position	Text	M	1	Employee's current job title.

9	Department	Text	M	1	Department the employee is associated with.
10	Personal Data Section	Section Header	M	1	Header for personal data section.
11	Full Name	Text	M	1	Full name of the employee.
12	Birthdate	Date	M	1	Employee's birthdate.
13	Nationality	Text	M	1	Employee's nationality.
14	Gender	Text	M	1	Employee's gender.
15	Skin Color	Text	O	1	Employee's skin color.
16	Mother's Name	Text	O	1	Employee's mother's name.
17	State	Text	M	1	Employee's state of residence.
18	City	Text	M	1	Employee's city of residence.
19	Contact Section	Section Header	M	1	Header for contact information section.
20	Email	Email	M	1	Employee's email address.
21	CEP	Text	M	1	Employee's postal code
22	Neighbourhood	Text	M	1	Employee's neighborhood.
23	Address	Text	M	1	Employee's full address.
24	Search Bar	Text	M	1	Search bar for finding employees or other data.
25	Menu	Navigation	M	1	Navigation menu for accessing different sections.
26	User Profile	Profile	M	1	Displays the logged-in user's profile and options.

3.4 Screen-4: Pay Invoice

Figure 3.4-1 Screen-4: Pay Invoice

Purpose: Pay Invoice is to enable users to easily and securely complete the payment of their invoices using a credit or debit card.

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Payment amount	Textbox	M	1	Displays the total amount due for payment. Click 'Edit' to modify the amount if necessary
2	Edit	Button	M	1	Click here to modify the payment amount if the displayed amount is incorrect.
3	Name on card	Textbox	M	1	Please enter the name exactly as it appears on your credit or debit card.
4	Card number	Textbox	M	1	Enter your credit or debit card number without any spaces or dashes.
5	Expiry Date	Textbox	M	1	Enter the expiry date of your card in the format MM/YY (Month/Year).
6	Security Code	Textbox	M	1	Enter the three- or four-digit security code found on the back or front of your card.
7	ZIP/Postal Code	Textbox	M	1	Enter the ZIP or postal code associated with your billing address.
8	Pay Button	Button	M	1	Click here to submit your payment. The button shows the total amount that will be charged.

3.5 Screen-5: Profile
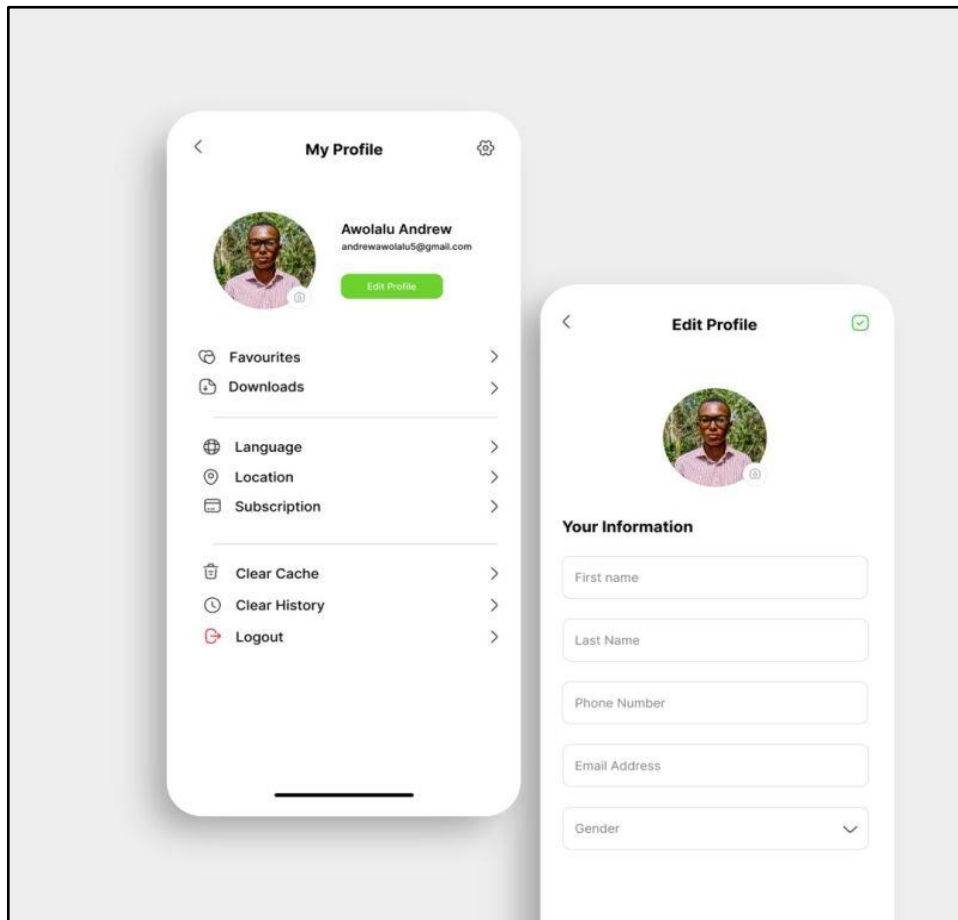
Figure 3.5-1 Screen-5: profile

Purpose: This Form is to gather essential information from guests prior to their arrival at the hotel and collects details necessary for confirming reservations, personalizing services, and complying with hotel policies.

Table 3.5-1 Screen element of profile

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Profile Picture and Name	Image and Text	Optional (Profile Picture), Mandatory (Name)	1	Displays the user's profile picture and name. This information helps personalize the user's experience.
2	Email	Text	M	1	Displays the user's email address. This is used for account identification and communication.
3	Edit Profile	Button	----------	-----	Allows the user to navigate to the Edit Profile screen to update their personal information.

4	Navigation Menu Items	Navigation Links	-----------	-----	Provides quick access to different sections of the user's account and settings.
5	Clear Cache	Button	---------	----	Allows the user to clear cached data to free up storage and refresh app performance.
6	Clear History	Button	----------	-----	Allows the user to clear their browsing or activity history within the app.
7	Logout	Button	-----------	-----	Logs the user out of their account, requiring them to re-enter credentials to access the app again.

Table 3.5-2 Screen element of edit profile

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Profile Picture	Image	M	1	Allows the user to upload or change their profile picture for personalization.
2	First Name	Text	M	1	Enter your first name.
3	Last Name	Text	M	1	Enter your last name.
4	Phone Number	Text	M	1	Enter your contact phone number.
5	Email Address	Text	M	1	Enter your email address.
6	Gender	Dropdown	M	1	Select your gender.

4 Database design

4.1 List of Tables

- Employee
- Department
- Project
- Leave
- Salary

Table 4.1-1 Table: Employee

Column	Data Type	Null	Keys & Constrains	Default Value & Description
EmployeeID	int	NN	PK (Auto Increment)	
FirstName	varchar(100)	AN		
LastName	varchar(100)	AN		
Age	int	AN		
Email	varchar(50)	AN		
MobileNo.	varchar(50)	AN		
DepartmentID	int	NN	FK	Reference of Department Table

Table 4.1-2 Table: Department

Column	Data Type	Null	Keys & Constrains	Default Value & Description
DepartmentID	int	NN	PK (Auto Increment)	
DepartmentName	varchar(100)	AN		
Location	varchar(100)	AN		

Table 4.1-3 Table: Project

Column	Data Type	Null	Keys & Constrains	Default Value & Description
ProjectID	int	NN	PK (Auto Increment)	
ProjectName	varchar(100)	AN		
StartDate	DateTime	AN		
EndDate	DateTime	AN		
Budget	varchar(50)	AN		
DepartmentID	int	NN	FK	Reference of Department Table

Table 4.1-4 Table: Leave

Column	Data Type	Null	Keys & Constrains	Default Value & Description
LeaveID	int	NN	PK (Auto Increment)	
EmployeeID	int	NN	FK	Reference of Employee Table
LeaveType	varchar(100)	AN		
StartDate	DateTime	AN		
EndDate	DateTime	AN		
Reason	varchar(100)	AN		

Table 4.1-5 Table: Salary

Column	Data Type	Null	Keys & Constrains	Default Value & Description
SalaryID	int	NN	PK (Auto Increment)	
EmployeeID	int	NN	FK	Reference of Employee Table
SalaryAmount	int	AN		
Date	DateTime	AN		

5 Stories and Scenario

5.1 Story-1: Add New Employee

Story # S1	:	**As a** HR Manager, **I want** to add a new employee to the system **So that** I can keep track of all employees' details in one place.
Priority	:	High
Estimate	:	XL
Reason	:	This is a fundamental feature that enables the addition of new employees to the system, which is crucial for managing the workforce.

5.1.1 Scenario# S1.1

Scenario# S1.1	:	Adding a New Employee with Valid Information
Prerequisite	:	The HR Manager is logged in to the Employee Management System.
Acceptance Criteria	:	**Given:** The HR Manager is navigated to the employee management page. Valid employee information, including name, department, job title, start date, and other relevant details, is added. **When:** The HR Manager selects the "Add New Employee" option. The HR Manager enters valid employee details. The HR Manager clicks the "Save" button to add the employee to the system. **Then** The system successfully adds the employee to the database. The HR Manager receives a confirmation message with the employee's identification number.

5.2 Story-2: Update Employee Information

Story # S2	:	**As a** HR Manager, **I want to** update an existing employee's information **So that** the employee records remain accurate and up-to-date
Priority	:	High
Estimate	:	XL
Reason	:	Keeping employee information accurate is essential for operations.

5.2.1 Scenario# S2.1

Scenario# S2.1	:	Update a Employee Information
Prerequisite	:	The employee must already exist in the system.
Acceptance Criteria	:	**Given:** I am on the "Employee Details" page **When:** I modify fields such as Department, Designation, or Salary And click on the "Update" button

	Then The employee's information should be updated in the system	
	And a confirmation message should be displayed	

5.3   Story-3: View Employee List

Story # **S3**	:	**As** HR Manager, **I want to** view a list of all employees **So that** I can easily manage and access employee information
Priority	:	Medium
Estimate	:	M
Reason	:	Viewing the employee list is crucial but not as critical as adding or updating.

5.3.1   Scenario# S3.1

Scenario# **S3.1**	:	View Employee List
Prerequisite	:	Employees should already be present in the system.
Acceptance Criteria	:	**Given:** I am on the "Employee List" page **When:** I open the page **Then** I should see a list of all employees with their Name, Department, and Designation

5.4   Story-4: Assign Employee to Project

Story # **S3**	:	**As** Project Manager, **I want to** assign an employee to a project **So that** the employee can start working on the assigned tasks
Priority	:	Medium
Estimate	:	M
Reason	:	Assigning employees to projects is essential for resource management.

5.4.1   Scenario# S4.1

Scenario# **S4.1**	:	Assign a project to each Employee
Prerequisite	:	Both the employee and project must exist in the system.
Acceptance Criteria	:	**Given:** I am on the "Assign Employee" page **When:** I select an employee and a project And click on the "Assign" button **Then T**he employee should be assigned to the project And a confirmation message should be displayed

5.5 Story-5: Generate Employee Reports

Story # *S3*	:	**As** HR Manager, **I want to** generate reports on employee performance and attendance **So that** I can evaluate employee productivity and compliance
Priority	:	Low
Estimate	:	XS
Reason	:	Reports are important but not critical for the initial system deployment.

5.5.1 Scenario# S5.1

Scenario# *S5.1*	:	Generate a report based on attendance and performance
Prerequisite	:	The system must have historical data on performance and attendance.
Acceptance Criteria	:	**Given:** I am on the "Generate Reports" page **When:** I select the criteria (e.g., date range, department) And click on the "Generate" button **Then** a report should be generated based on the selected criteria

6 Test cases

Project Name:	Employee Management System	Test Designed by:	Hensi Doshi
Module Name:	Employee Creation	Test Designed date:	22-08-2024
Release Version:	1.0	Test Executed by:	Hensi Doshi
		Test Execution date:	22-08-2024

Pre-condition: The customer's profile should be pre-registered in the system

Test Case ID	Test Title	Test Type	Description	Test Case ID
TC_001	Create Employee with Valid Data	Functional	Test that an employee can be created successfully using valid data in all required fields.	TC_001
TC_002	Create Employee with Missing Required Fields	Functional	Test that the system prevents employee creation when required fields (e.g., name, email) are left blank.	TC_002
TC_003	Create Employee with Invalid Email Format	Functional	Test that the system does not allow employee creation if the email format is invalid.	TC_003
TC_004	Create Employee with Duplicate Email	Functional	Test that the system prevents the creation of an employee if the email address is already in use by another employee.	TC_004

Test Case Title	Create Employee with Valid Data
Test Type	Functional
Test Priority	High
Pre-condition	The customer's profile should be pre-registered in the system

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	BUG ID
1	Navigate to the Employee creation page	The Employee Creation page opens	The Employee Creation page opened successfully	Pass			
2	Enter valid data in all required fields	Data is entered correctly	Data was entered correctly	Pass		Valid data set for an employee	
3	Click on the "Create" button	Employee is successfully created	Employee was created successfully	Pass			

4	Verify the employee is listed in the system	Employee appears in the listing	Employee appeared in the listing	Pass			

Test Case Title	Create Employee with Missing Required Fields
Test Type	Functional
Test Priority	High
Pre-condition	The customer's profile should be pre-registered in the system

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	Bug ID
1	Navigate to the Employee Creation page	The Employee Creation page opens	The Employee Creation page opened successfully	Pass			
2	Attempt to submit the form without entering required fields	Error messages appear for all required fields that are missing	Error messages appeared for missing fields	Pass		Fields like "Name," "Email," "Role" left empty	
3	Verify that the "Create" button remains disabled	The "Create" button should be disabled	The "Create" button was disabled	Pass			
4	Attempt to submit the form by clicking the "Create" button	The form should not submit, and no employee	The form did not submit, and no employee	Pass			
5	Verify that no new employee is added to the system	No new employee should appear in the system.	No new employee appeared in the system	Pass			

Test Case Title	Create Employee with Invalid Email Format
Test Type	Functional
Test Priority	High
Pre-condition	The customer's profile should be pre-registered in the system

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	Bug ID
1	Navigate to the Employee Creation page	The Employee Creation page opens	The Employee Creation page opened successfully	Pass			
2	Enter invalid email format (e.g., "john.doe @domain") in the email field	An error message should appear indicating an invalid email format	Error message appeared for the invalid email	Pass		Email: "john.doe@domain"	
3	Attempt to submit the form with the invalid email	The form should not submit, and the employee should not be created	Form submission was blocked due to the invalid email	Pass			
4	Verify that the "Create" button is disabled or triggers validation	The "Create" button should either be disabled or trigger an error message	The "Create" button triggered an error message	Pass			
5	Verify that no new employee is added to the system	No new employee should appear in the system	No new employee appeared in the system	Pass			

Test Case Title	Create Employee with Duplicate Email
Test Type	Functional
Test Priority	High
Pre-condition	The customer's profile should be pre-registered in the system

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	Bug ID
1	Navigate to the Employee Creation page	The Employee Creation page opens	The Employee Creation page opened successfully	Pass			
2	Enter valid data in all required fields, including an existing email	An error message should appear indicating the email is already in use	Error message appeared for duplicate email	Pass		Email: "john.doe@domain"	
3	Attempt to submit the form with the duplicate email	The form should not submit, and the employee should not be created	Form submission was blocked due to duplicate email	Pass			
4	Verify that the "Create" button is disabled or triggers validation	The "Create" button should either be disabled or trigger an error message	The "Create" button triggered an error message	Pass			
5	Verify that no new employee is added to the system	No new employee should appear in the system	No new employee appeared in the system	Pass			

7 References

- https://itsourcecode.com/uml/employee-management-system-uml-diagrams/
- https://www.w3schools.com/html/html_intro.asp
- https://www.javatpoint.com/uml