

## **HR Connect (HR Management System)**



**Submitted by**

**Ali Arshad**

**Muhammad Ihtisham**

**Roll. No**

**0265-BSCS-19**

**0269-BSCS-19**

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**Supervised by**

**Muhammad Hafeez**

**(Lecturer)**

**BS(HONS)**

**IN**

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**DEPARTMENT OF COMPUTER SCIENCE**

**GC UNIVERSITY LAHORE**

## **HR Connect**

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of the requirements for the award of degree of**

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IN  
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<b>Submitted by</b>	<b>Ali Arshad</b>
	<b>Muhammad Ihtisham</b>
<b>Roll. No</b>	<b>0265-BSCS-19</b>
	<b>0269-BSCS-19</b>
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<b>Supervised by</b>	<b>Muhammad Hafeez</b>
	<b>(Lecturer)</b>

**DEPARTMENT OF COMPUTER SCIENCE  
GC UNIVERSITY LAHORE**

## **Declaration**

We, Ali Arshad and Muhammad Ihtisham student of **BS(Hons)** in the subject of **Computer Science** session **2019-2023**, hereby declare that the matter printed in this documentation titled, **HR Connect** is our own work and has not been printed, published and submitted as documentation, thesis or publication in any form in any University, Research Institution etc in Pakistan or abroad.

Date: \_\_\_\_\_

**Signatures of Deponent**

# **Research Completion Certificate**

It is certified that the research work contained in this thesis titled **HR Connect** has been carried out by **Ali Arshad and Muhammad Ihtisham** Roll. No **0265-BSCS-19** and **0269-BSCS-19** under my supervision.

---

**Muhammad Hafeez**  
**Lecturer**

**Date:** \_\_\_\_\_

**Submitted Through**

---

**Prof Dr. M. Waqas Anwar**  
**Chairperson**  
**Department of Computer Science**  
**GC University Lahore**

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**Controller of Examination**  
**GC University Lahore**

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## **Dedication**

*“We dedicate our final year project to our parents, whose unwavering love, constant support, and constant encouragement have been our guiding light in our educational journey. It is our sincere hope that this success echoes the aspirations they had for us.”*

## *Abstract*

"In today's contemporary corporate environment, "HR Connect" is revolutionizing the way we handle human resources. Businesses grapple with a multitude of intricate HR tasks, from the intricate processes of recruitment and seamless onboarding to adeptly managing employees and diligently tracking their performance. "HR Connect" emerges as a comprehensive digital solution tailored to a company overseeing substantial workforces, streamlining these intricate processes and driving operational efficiency to new heights. This sophisticated software boasts a user-friendly interface, and a GUI-oriented design that effortlessly melds with your current systems, streamlining the transition. It optimizes system performance, effectively obliterating the limitations that have long plagued traditional HR management practices. Experience the future of HR management with "HR Connect" as we modernize HR processes, empower workforce, and fundamentally redefine HR management for today's ever-evolving business landscape.."

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# **Chapter 1**

## **Introduction**

### **1.1 Introduction**

The field of Human Resources (HR) has a storied history. Initially viewed as merely administrative, HR departments of the past were primarily tasked with record-keeping and ensuring compliance with labor laws. As businesses evolved, especially post World War II, so did the understanding of the importance of human capital. The late 20th century saw HR transitioning from being just an administrative function to a strategic partner, contributing to organizations' growth and direction. In the era of globalization that dawned in the 1990s, the value of talent acquisition, retention, and management became more evident, further elevating HR's role. In today's modern business world, characterized by rapid changes and intense competition, the role of HR is more crucial than ever. It's not just a department; it's the backbone ensuring that companies and organizations operate efficiently, effectively, and harmoniously. Dedicated professionals in this sector handle tasks such as hiring talent, assimilating them into the company culture, monitoring their performance, addressing grievances, and ensuring overall employee satisfaction. However, the manual management of these processes can be demanding. Picture sifting through hundreds of resumes, tracking employee leave, managing appraisals, and so forth without technological aid. Such manual

tasks are not only time-consuming but prone to human error, leading to potential consequences like hiring an unsuitable candidate or missing an employee's achievements. Recognizing these challenges, the push for an automated Human Resources Management System (HRMS) became inevitable. An HRMS would centralize all HR-related tasks, offering efficiency and streamlining. This results in quicker hiring processes, precise performance evaluations, and timely grievance resolutions. The primary objective of our project (HR Connect) is to develop a comprehensive HRMS catering to diverse HR processes like recruitment, onboarding, and continuous employee performance monitoring. A standout feature we plan to integrate is an 'employee self-service' module, enabling employees to manage specific aspects of their profiles independently. In summary, our vision encompasses an innovative HR management system addressing today's HR challenges and further empowering organizations. Through our system, businesses can conserve time, minimize errors, and focus more on core functions. Essentially, our aim is to transform how organizations handle their most treasured asset – their human resources.

## 1.2 Problem Statement

In the dynamic landscape of the contemporary business world, Human Resources (HR) stands as the linchpin ensuring organizational efficiency, harmony, and growth. Yet, despite its significance, HR management often grapples with time-consuming manual processes, potential human errors, and inefficiencies. From the cumbersome task of manually sifting through stacks of resumes to the challenges in tracking each employee's attendance, performance, and grievances, the traditional ways of HR management are becoming increasingly untenable. The inefficiencies inherent in such manual processes not only hinder HR professionals in executing their duties but also increase the potential for oversights. These oversights, whether it be in recruitment or performance assessment, can have cascading effects on the organization's productivity and morale. Furthermore, without a centralized, technology-driven system, HR processes often operate in silos, leading to redundancies and communication gaps. There's a palpable need for a comprehensive,

integrated, and automated Human Resources Management System (HRMS). Such a system would centralize and streamline HR tasks, making them more efficient, reducing the possibility of errors, and improving the overall experience for both HR professionals and the broader employee base. The overarching problem this project addresses is: "How can organizations revolutionize their HR processes to be more efficient, error-free, and aligned with the needs of both HR professionals and the employees, thereby enhancing overall organizational productivity and employee satisfaction?" To solve this, our solution, 'HR Connect,' envisions an all-encompassing HRMS that not only automates routine tasks but also introduces innovative features like 'employee self-service', making HR management more holistic, efficient, and user-centric.

### 1.3 Project Overview

"HR Connect" is a sophisticated web-based software designed to streamline daily work-related tasks for HR professionals and employees alike. This software encompasses two primary modules: one tailored for HR personnel and the other dedicated to employees. Each module is equipped with a distinct dashboard, providing essential work-related information for HR and employees, respectively. The core objective of this project is to enhance operational efficiency, reducing manual labor for HR staff and making HR management more accessible to employees. HR Connect offers a user-friendly web-based platform that benefits both parties, encompassing functionalities such as recruitment, interview scheduling, employee progress tracking, and application management for HR. On the employee side, it streamlines tasks such as managing attendance, submitting leave requests, and provides salary-related information. One notable feature of HR Connect is the 'Apply for a Job' function, enabling candidates to apply online. These applications are seamlessly routed to the HR dashboard for streamlined management, incorporating the features mentioned above.

## 1.4 Project Scope

The forthcoming HR management system is poised to be a cutting-edge solution, crafted using the most advanced and contemporary technological tools available in the market. Recognizing the diverse needs of organizations of various sizes, from start-ups and small businesses to multi-national corporations, the project is grounded in the principle of adaptability. Its design will ensure scalability, allowing it to cater to the dynamic demands of small, medium, and large enterprises alike. The system will be a medley of several meticulously designed modules, each serving a distinct purpose:

### 1.4.1 Hiring Management

At its core, this module aims to streamline the recruitment process. Prospective candidates can conveniently submit their applications, detailing pertinent information such as their skills, educational details, prior experience, and professional resume. Once submitted, these applications are directed to the HR manager's desk for scrutiny. Based on the evaluation, the HR manager has the discretion to either accept or reject the application. Accepted candidates can then be scheduled for an interview. Post-interview, based on performance, candidates can either be extended an offer or declined. Those who accept the offer transition to being employees, while those who decline or are rejected are removed from the process.

### 1.4.2 Job Portal

This module shows the available jobs in a company in explore jobs page where all the jobs show with all the information like job title, experience required, location, description, last date to apply etc.

### **1.4.3 On-boarding**

This module will allow HR administrators to add new employee to the system by filling his/her details like designation, department etc.

### **1.4.4 Employee Management**

This module will enable HR managers to load and access each and every information related to employee like attendance, applications and salaries etc. and HR can edit anything related to employee.

### **1.4.5 Employee's Performance**

This module will enable employee to manage and access his/her attendance and also provide the option to register applications for leaves, etc.

### **1.4.6 Payroll Management**

This module will allow HR administrators to manage employee compensation and benefits. It will include features such as salary calculation, tax management and bonus etc.

# **Chapter 2**

## **Requirement Specification**

### **2.1 Functional Requirements**

Functional Requirements are very important part of software development. They define working functions and features which the project should must have in order to fulfil the user requirements and expectations. These requirements must be there and clearly defined probably in a printed material prior to starting of a development phase. They must be documented and recorded as granted access before the design and planning phase. Now, Let's discuss functional requirements of our project which are following :-

#### **2.1.1 User Management**

##### **2.1.1.1 User Registration**

HR manager can register new accounts for employees while on-boarding them. HR manager uses contact information and professional information for registration purposes of employees.

### **2.1.1.2 User Authentication**

Both HR manager and Employee are able to login to their accounts with credentials like registered username and password.

### **2.1.1.3 User Role Management**

Software should be able to distinguish between HR Manager and employee, grant access and permissions to them for respective functions on the basis of their respective roles

### **2.1.1.4 User Password Management**

Employee has the option to update or reset password after logging in to the account with the provided credentials.

## **2.1.2 Hiring Management**

### **2.1.2.1 Job Posting**

HR Manager can create and post a new job to the Jobs listing Page with a details like job title, job description, requirements, experience required, last date etc.

### **2.1.2.2 Application for Job**

Job seekers can visit and search for the jobs in which they are interested by reading details of the job. Job seekers can apply to the job by filling out an application form in which they can enter their contact details and can attach resume.

### **2.1.2.3 Application Review and Management**

HR Manager can view job Applications and can manage them by filtering them according to the need of a job like filter by Job Title, filter by experience, filter by quickly viewing resumes.

### **2.1.2.4 Interview Scheduling**

After reviewing and analyzing the applications. Now, HR manager has the options to schedule an interview with the candidate or reject the application. In both cases, an automated email will be sent to the candidate with the information about the decision of HR manager. After interview, HR Manager can send offer letter to the Employee and then add candidate as an employee in the system.

## **2.1.3 Employee Management**

### **2.1.3.1 Dashboard**

Both HR Manager and Employee have a Dashboard full of necessary information like Total Employees, today's presents, today's absents, schedule interviews in case of HR's Dashboard. Monthly presents and absents etc in case of Employee's Dashboard.

### **2.1.3.2 Profile Management**

Employee can see his/her profile details and information and also able to edit some personal information but unable to edit professional information.

### **2.1.3.3 Information Management**

HR manager can view and handle all the information and record related to Employee like Employee's name, department, designation, salary etc. and other features like Adding an Employee, Removing an Employee, issuance of Experience letter to the Employee etc.

## **2.1.4 Attendance Management**

### **2.1.4.1 Attendance Marking**

Employee can mark attendance in between the specific time allowed for attendance. Otherwise, employee will be considered absent.

### **2.1.4.2 Attendance Record**

HR Manager can see today's presents and absents as well as past attendance record of any employee by filtering them by name, by date, by month etc. Employee can also see his/her attendance record same as HR manager to track presents and absents.

## **2.1.5 Leave Management**

### **2.1.5.1 Request for Leave**

Employee has the option to apply for a leave for one day or multiple days. Employee can submit leave application by filling out details like subject and reason for a leave.

### **2.1.5.2 Leave Approval**

After Employee submit a leave request. HR manager can view the application and perform the actions on it like approve or reject. In both cases, Employee will be notified about it.

### **2.1.5.3 Leave Application Tracking**

Employee can view and track the status of submitted leave requests like whether the application request has been accepted or not.

## **2.1.6 Payroll Management**

### **2.1.6.1 Attendance and Leave Integration**

The system must be integrated with the attendance and leave management modules to accurately calculate employee salaries based on attendance records of the month.

### **2.1.6.2 Salary Calculation**

The system should perform precise salary calculations for all employees according to the predefined salary structure, taking into consideration factors such as days worked and bonus addition if eligible.

### **2.1.6.3 Increment**

There should be an option to add increment in an existing salary of an employee to appreciate the employee for the hard work towards the success of a company.

#### **2.1.6.4 Bonus**

There should be a criteria to add bonus in an existing salary of an employee based on the percentage of attendance in a specific time.

#### **2.1.7 Data Privacy and Security**

##### **2.1.7.1 Access Control**

Access Control is implemented on the basis of role. So only HR Manager has a right to access sensitive data related to Employees.

## **2.2 Non-functional Requirements**

Non-functional requirements, often referred to as quality attributes which describe how a software system or application performs, other than its specific functionalities. These requirements play a pivotal role in evaluating the overall quality and performance of a software system. Non-functional requirements includes various aspects including system performance, security, usability, and scalability. They are essential in determining how well a system meets user needs and performs in its designated environment. The following are our project's non-functional requirements :-

### **2.2.1 User-friendly Interface**

System should have an interface that prioritize user-friendliness. Everything should be easy to navigate with proper naming Conventions.

### **2.2.2 Security and Privacy**

System should be able to provide protection and security to user data. The system incorporates robust security measures to ensure this.

### **2.2.3 Smooth Login/Logout Experience**

System should be quick and efficient in terms of login/logout to enhance the User Experience.

### **2.2.4 Rapid Responsiveness**

System should be responsive, provides quick response time for user actions and requests.

### **2.2.5 Reliable**

System should operate with consistent reliability. It should focus on minimizing downtime and ensure performance without any interruption.

### **2.2.6 Scalable**

System should be scalable, can handle growing number of employees, applications and data volumes with consistent efficiency.

## 2.3 System Specification

### 2.3.1 Software Requirements

#### 2.3.1.1 Frontend:

- React.js
- Bootstrap

#### 2.3.1.2 Backend:

- Node.js
- Express.js

#### 2.3.1.3 Development tool and Database:

- Visual Studio Code (VSCode)
- MySQL

### 2.3.2 Hardware Requirements

#### 2.3.2.1 Client Hardware

- Desktop or laptop computers for executing software.
- Compatibility with web browsers like Chrome, Firefox, and Safari.

#### 2.3.2.2 Server Hardware

- Reliable network connectivity with a high-speed internet connection.
- Sufficient RAM (e.g., 8GB or more) to ensure smooth system operation.

# **Chapter 3**

## **Project Design**

### **3.1 Methodology**

The development of "HR Connect" is deeply rooted in an Iterative and Incremental approach, strategically chosen to harmonize with the ever-evolving landscape of HR processes. This selection is underpinned by the inherent dynamism of the HR domain, which necessitates a responsive feedback mechanism at each module's conclusion. By embedding this iterative approach into our project, we have fortified our capacity to swiftly respond to emerging requirements and elevate our existing capabilities.

In order to methodically implement this approach, we meticulously divided the project into a multitude of distinct modules and components. This segmentation allowed us to dissect and refine each element in isolation, enhancing its functionality and robustness before seamlessly integrating it into the holistic system. The project progression unfolds within a structured framework that revolves around a series of iterative steps, ensuring that each phase contributes to the project's overall success:

### **3.1.1 Requirements Gathering**

In this step, a thorough research and analysis of HR work processes, functions and features to be included was done to gather project's initial requirements. This includes, analysis of previous conventional HR related functions and discussions with relevant people facing issues to collect their insights and suggestions.

### **3.1.2 Design and Planning**

In this step, all the requirements and user needs were understood and finalized. After finalizing the requirements, requirements were converted into detailed designs like modeling of data, entity-relationship diagrams, prototype of user interface etc. Then scheduling of time to give for each individual modules/components with the help of proper planning.

### **3.1.3 Implementation**

In this step, after proper designing and planning we commenced the implementation of requirements through development of first module and then we proceeded from one to other after completing subsequent modules.

### **3.1.4 Testing and Validation**

After implementation, In this step we started testing the software on different test cases to ensure the alignment of results with the expectations and integration among different components. This also includes user-acceptance testing with stake-holders.

### 3.1.5 Feedback and Reviews

After testing, we reviewed the project for further enhancements or improvements and also collected the feedback from stake-holders to know about their reviews regarding fulfilment of their expectations and requirements.

## 3.2 Architecture Overview

”HR Connect” is based on modular architecture which helps in efficient management of HR processes and daily work tasks. HR processes includes posting new jobs, job application management, scheduling interviews for potential candidates, converting a job candidate to a company’s employee. After that, Employee management like Employee’s attendance management, employee’s leave management, employee’s information management and Payroll Management. This architecture assist HR to streamline their day to day tasks efficiently and also ensures smooth integration between different modules.

## 3.3 Design Description

The design phase of the HR Connect project serves as the cornerstone upon which the entire system is crafted. It represents the pivotal stage where the project team make strategies and design the system’s architectural framework, comprehensive feature set, and intuitive user interface. The paramount objective here is to engineer a comprehensive design that focuses seamlessly with the project’s overarching objectives and user requisites.

In the context of HR Connect, the design phase assumes an important role in making an interface that caters effortlessly to the requirements of HR manager and employees. This entails the creation of purpose-driven screens for user registration, login, and profile management, with a keen emphasis on facilitating a frictionless onboarding experience for new employees. The user interface is meticulously honed

to afford intuitive navigation, streamlined data entry, and an overall user experience that is both efficient and gratifying. Furthermore, the design phase delves deeply into the intricacies of the system's data architecture, dictating how user data, job postings, attendance records, and other critical information are methodically stored, accessed, and processed. It is during this phase that data privacy and security measures are instituted, ensuring the safeguarding of sensitive HR data. The design phase assumes a pivotal role in sculpting HR Connect into a resilient, user-centric HR management system. It forges the visual blueprint that efficaciously guides the project forward, harmoniously aligning the project team's vision with the discerning needs and expectations of HR Manager and employees.

### 3.3.1 Use Cases

#### 3.3.1.1 User Login

TABLE 3.1: Employee Login

<b>Name</b>	Employee Login
<b>Actors</b>	Employee
<b>Description</b>	Employees must log in to access the HR Connect features.
<b>Precondition</b>	Employee is registered and has valid login credentials.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) Employee enters their username and password.</li> <li>2) Clicks on the login button.</li> <li>3) If the credentials are correct, the employee is logged in.</li> <li>4) If the credentials are incorrect, it generates an error message.</li> </ol>
<b>Post Condition</b>	Employee is logged into the system and can access their HR-related information.
<b>Exception</b>	If credentials are incorrect, login will not be successful.

### 3.3.1.2 Employee Dashboard

TABLE 3.2: Employee Dashboard

<b>Name</b>	Employee Dashboard
<b>Actors</b>	Employee
<b>Description</b>	The Employee's dashboard provides essential information for employees, including their monthly attendance, leave balances, and personal information.
<b>Precondition</b>	Employee is logged into the system.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) Employee logs in and is directed to the dashboard.</li> <li>2) Dashboard displays information such as monthly presents, monthly absents, and leave records.</li> <li>3) Employee can click on specific sections for more details (e.g., view the leave history, attendance).</li> <li>4) Data is automatically updated in real-time or on a regular basis.</li> </ol>
<b>Post Condition</b>	Employee has access to essential personal and daily work-related information.
<b>Exception</b>	If there are issues with data retrieval or presentation, the dashboard may not display accurate information.

### 3.3.1.3 HR Manager Dashboard

TABLE 3.3: HR Manager Dashboard

<b>Name</b>	HR Manager Dashboard
<b>Actors</b>	HR Manager
<b>Description</b>	The HR Manager's dashboard provides an overview of essential HR-related information, including the total number of employees, today's attendance, total job applications received.
<b>Precondition</b>	HR Manager is logged into the system.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) HR Manager logs in and is directed to the dashboard.</li> <li>2) Dashboard displays information such as total employees, today's presents, today's absents, and upcoming interviews.</li> <li>3) HR Manager can click on specific sections for more details or actions (e.g., view the list of present/absent employees).</li> <li>4) Data is automatically updated in real-time or on a regular basis.</li> </ol>
<b>Post Condition</b>	HR Manager has an overview of HR-related information.
<b>Exception</b>	If there are issues with data retrieval or presentation, the dashboard may not display accurate information.

### 3.3.1.4 Job Posting

TABLE 3.4: Job Posting

<b>Name</b>	Job Posting
<b>Actors</b>	HR Manager
<b>Description</b>	HR Manager can create and post new job listings with job details such as title, description, requirements, and more.
<b>Precondition</b>	HR Manager is logged into the system.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) HR Manager enters job details.</li> <li>2) Clicks on the post job button.</li> <li>3) If the job is posted successfully, it appears in the job listings.</li> <li>4) If there are any errors in the input, it generates an error message.</li> </ol>
<b>Post Condition</b>	Job is posted and visible in the job listings.
<b>Exception</b>	If there are input errors, job posting will not be successful.

### 3.3.1.5 Apply for a Job

TABLE 3.5: Apply for a Job

<b>Name</b>	Apply for a Job
<b>Actors</b>	Job Seeker
<b>Description</b>	Job seekers can apply for job positions posted in the system by providing their contact information and attaching their resume.
<b>Precondition</b>	Job seeker access the website and views a job listing.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) Job seeker views a job posting and clicks on the "Apply" button.</li> <li>2) Fills out an application form with contact details.</li> <li>3) Attaches their resume to the application.</li> <li>4) Submits the application.</li> <li>5) Receives a confirmation message upon successful submission.</li> </ol>
<b>Post Condition</b>	Job seeker's application is submitted for the selected job.
<b>Exception</b>	If there are issues with the application submission, an error message is displayed.

### 3.3.1.6 Job Application Review

TABLE 3.6: Job Application Review

<b>Name</b>	Job Application Review
<b>Actors</b>	HR Manager
<b>Description</b>	HR Manager can view and manage job applications submitted by job seekers for a specific job posting.
<b>Precondition</b>	HR Manager is logged into the system and navigates to the job application review section.
<b>Scenario</b>	<ul style="list-style-type: none"> <li>1) HR Manager selects a specific job posting to review applications.</li> <li>2) Reviews the applications submitted by job seekers, including their resumes and contact details.</li> <li>3) Takes action on each application (e.g., schedule an interview or reject).</li> <li>4) Generates automated email notifications to candidates about the decision.</li> </ul>
<b>Post Condition</b>	Job applications are reviewed and managed for a specific job posting.
<b>Exception</b>	If there are issues with the review process or notifications, it may not be successful.

### 3.3.1.7 Interview Scheduling

TABLE 3.7: Interview Scheduling

<b>Name</b>	Interview Scheduling
<b>Actors</b>	HR Manager
<b>Description</b>	After reviewing job applications, HR Manager has the option to schedule interviews with candidates and send automated email notifications about interview details.
<b>Precondition</b>	HR Manager is logged into the system and has reviewed job applications.
<b>Scenario</b>	<ul style="list-style-type: none"> <li>1) HR Manager selects a candidate for an interview.</li> <li>2) Specifies interview details (e.g., date, time).</li> <li>3) Schedules the interview.</li> <li>4) An automated email is sent to the candidate with interview details.</li> <li>5) HR Manager can view the scheduled interviews in the system.</li> </ul>
<b>Post Condition</b>	Interviews are scheduled, and candidates are notified.
<b>Exception</b>	If there are issues with scheduling or sending notifications, it may not be successful.

### 3.3.1.8 Offer Letter

TABLE 3.8: Offer Letter

<b>Name</b>	Offer Letter
<b>Actors</b>	HR Manager
<b>Description</b>	HR Manager can send an offer letter to a candidate who has successfully passed the interview process via email.
<b>Precondition</b>	Candidate has passed the interview process, and HR Manager is logged into HR Connect.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) HR Manager selects the candidate to whom the offer letter will be sent.</li> <li>2) Click send offer letter button.</li> <li>3) Sends the email to the candidate's registered email address with relevant details</li> </ol>
<b>Post Condition</b>	The offer letter is sent to the candidate's email address for review and acceptance.
<b>Exception</b>	If there are issues with sending the email, HR Manager may need to resend e-mail or troubleshoot the system.

### 3.3.1.9 Employee Registration

TABLE 3.9: Employee Registration

<b>Name</b>	Employee Registration
<b>Actors</b>	HR Manager
<b>Description</b>	Employee must be registered to use HR Connect services.
<b>Precondition</b>	HR Manager accept Job applicant as an employee, Then redirected to registration page.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) HR Manager enters all required fields.</li> <li>2) Clicks on the register button.</li> <li>3) If the details are correct, then registration is successful.</li> <li>4) If details are incorrect or the Employee already exists, then it generates an error message.</li> </ol>
<b>Post Condition</b>	Employee is registered, and can login through login page.
<b>Exception</b>	If details are incorrect, then registration will not be successful.

### 3.3.1.10 Employee Profile Management

TABLE 3.10: Employee Profile Management

<b>Name</b>	Employee Profile Management
<b>Actors</b>	Employee
<b>Description</b>	Employees can view and edit their personal information within HR Connect, but they cannot edit professional information.
<b>Precondition</b>	Employee is logged into HR Connect.
<b>Scenario</b>	1) Employee navigates to the profile section. 2) Views their personal information (e.g., contact details). 3) Edits some personal information if needed (e.g., phone number). 4) Saves the changes.
<b>Post Condition</b>	Employee's personal information is updated.
<b>Exception</b>	If there are issues with updating the profile, the changes may not be saved.

### 3.3.1.11 Employee Password Reset

TABLE 3.11: Reset Password

<b>Name</b>	Reset Password
<b>Actors</b>	Employee
<b>Description</b>	Employees can reset their passwords if they forget their current ones. This feature allows them to regain access to their accounts.
<b>Precondition</b>	Employee wants to reset his/her password.
<b>Scenario</b>	1) Employee clicks on the "reset password" button on the Profile page. 2) Enters their registered email address in the provided field. 3) Enters current Password. 5) Enters a new password twice (for confirmation). 6) Submits the new password.
<b>Post Condition</b>	Employee successfully resets their password and can log in with the new password.
<b>Exception</b>	If there are issues with resetting the password, the process may not be successful, and the employee will need to contact admin for assistance.

### 3.3.1.12 Employee Termination

TABLE 3.12: Employee Termination

<b>Name</b>	Employee Termination
<b>Actors</b>	HR Manager
<b>Description</b>	HR Manager can initiate the termination process for an employee, which includes handling administrative tasks such as issuing an experience letter and updating employee records.
<b>Precondition</b>	HR Manager is logged into the system and selects an employee for termination.
<b>Scenario</b>	1) HR Manager selects an employee for termination. 2) Initiates the termination process. 3) Generates and issues an experience letter to the terminated employee. 4) Updates employee records to reflect the termination status.
<b>Post Condition</b>	Employee is terminated, and records are updated. An experience letter is issued to the employee.
<b>Exception</b>	If there are issues with generating an experience letter or updating records, the termination process may not be successful.

### 3.3.1.13 Employee Attendance Marking

TABLE 3.13: Employee Attendance Marking

<b>Name</b>	Employee Attendance Marking
<b>Actors</b>	Employee
<b>Description</b>	Employees can mark their attendance within a specific time frame allowed for attendance. If they fail to do so, they will be considered absent for the day.
<b>Precondition</b>	Employee is logged into the system and is within the attendance time frame.
<b>Scenario</b>	1) Employee navigates to the attendance marking page. 2) Employee Marks attendance within the allowed time frame. 3) If attendance is marked successfully, the employee is considered present for the day. 4) If attendance is not marked within the allowed time, the employee is marked absent.
<b>Post Condition</b>	Employee's attendance status is recorded for the day.
<b>Exception</b>	If the employee misses marking attendance within the allowed time frame, they are marked absent for the day.

### 3.3.1.14 Attendance Record Management

TABLE 3.14: Attendance Record Management

<b>Name</b>	Attendance Record Management
<b>Actors</b>	HR Manager
<b>Description</b>	HR Manager can view today's attendance status and past attendance records of any employee, filtering them by name, date, month, and other criteria.
<b>Precondition</b>	HR Manager is logged into the system and has access to attendance data.
<b>Scenario</b>	1) HR Manager navigates to the attendance record management section. 2) Filters attendance records by criteria such as employee name, date, or month. 3) Views any employee's attendance record 4) Takes action based on attendance data (e.g., address attendance issues with employees).
<b>Post Condition</b>	Attendance records are managed and can be used for reporting and analysis.
<b>Exception</b>	If there are issues with accessing attendance records, the management process may not be successful.

### 3.3.1.15 Request for Leave

TABLE 3.15: Request for Leave

<b>Name</b>	Request for Leave
<b>Actors</b>	Employee
<b>Description</b>	Employees have the option to apply for leave for one or multiple days by submitting a leave application with details like subject and reason for the leave.
<b>Precondition</b>	Employee is logged into the system.
<b>Scenario</b>	1) Employee navigates to the leave request page. 2) Fills out a leave application with details (e.g., leave type, date, reason). 3) Submits the leave application. 4) Receives a confirmation message upon successful submission.
<b>Post Condition</b>	Leave request is submitted for approval.
<b>Exception</b>	If there are issues with the application submission, an error message is displayed.

### 3.3.1.16 Leave Approval

TABLE 3.16: Leave Approval

<b>Name</b>	Leave Approval
<b>Actors</b>	HR Manager
<b>Description</b>	After an employee submits a leave request, HR Manager can view the application, review it, and perform actions such as approving or rejecting the request.
<b>Precondition</b>	HR Manager is logged into the system and has pending leave requests to review.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) HR Manager navigates to the leave section.</li> <li>2) Views pending leave requests with details (e.g., employee name, leave type).</li> <li>3) Reviews the request and takes action (e.g., approve or reject).</li> </ol>
<b>Post Condition</b>	Leave request is either approved or rejected, and the employee is notified.
<b>Exception</b>	If there are issues with the approval process or notifications, it may not be successful.

### 3.3.1.17 Leave Application Tracking

TABLE 3.17: Leave Application Tracking

<b>Name</b>	Leave Application Tracking
<b>Actors</b>	Employee
<b>Description</b>	Employees can view and track the status of their submitted leave requests, including whether the application has been accepted or rejected.
<b>Precondition</b>	Employee is logged into the system and has submitted leave requests.
<b>Scenario</b>	<ol style="list-style-type: none"> <li>1) Employee navigates to the leave application tracking section.</li> <li>2) Views a list of submitted leave requests with details (e.g., date, status).</li> <li>3) Checks the status of each request (e.g., approved, pending, rejected).</li> </ol>
<b>Post Condition</b>	Employee can track the status of their leave requests.
<b>Exception</b>	If there are issues with tracking or notifications, the process may not be successful.

### 3.3.2 Payroll Management

TABLE 3.18: Payroll Management

<b>Name</b>	Payroll Management
<b>Actors</b>	HR Manager
<b>Description</b>	The HR Manager can manage and oversee the payroll process for employees, ensuring timely and accurate salary disbursements.
<b>Precondition</b>	HR Manager is logged into the system and has access to payroll management functions.
<b>Scenario</b>	1) HR Manager navigates to the payroll management section. 2) Reviews and verifies employee salary details and deductions. 3) Approves or initiates the payroll processing for a specific period. 4) Resolves payroll-related issues or discrepancies as needed.
<b>Post Condition</b>	Payroll for employees is successfully managed and processed.
<b>Exception</b>	If there are issues with payroll calculations or disbursements, the HR Manager takes appropriate actions to address and rectify them.

### 3.3.3 Use Case Diagram

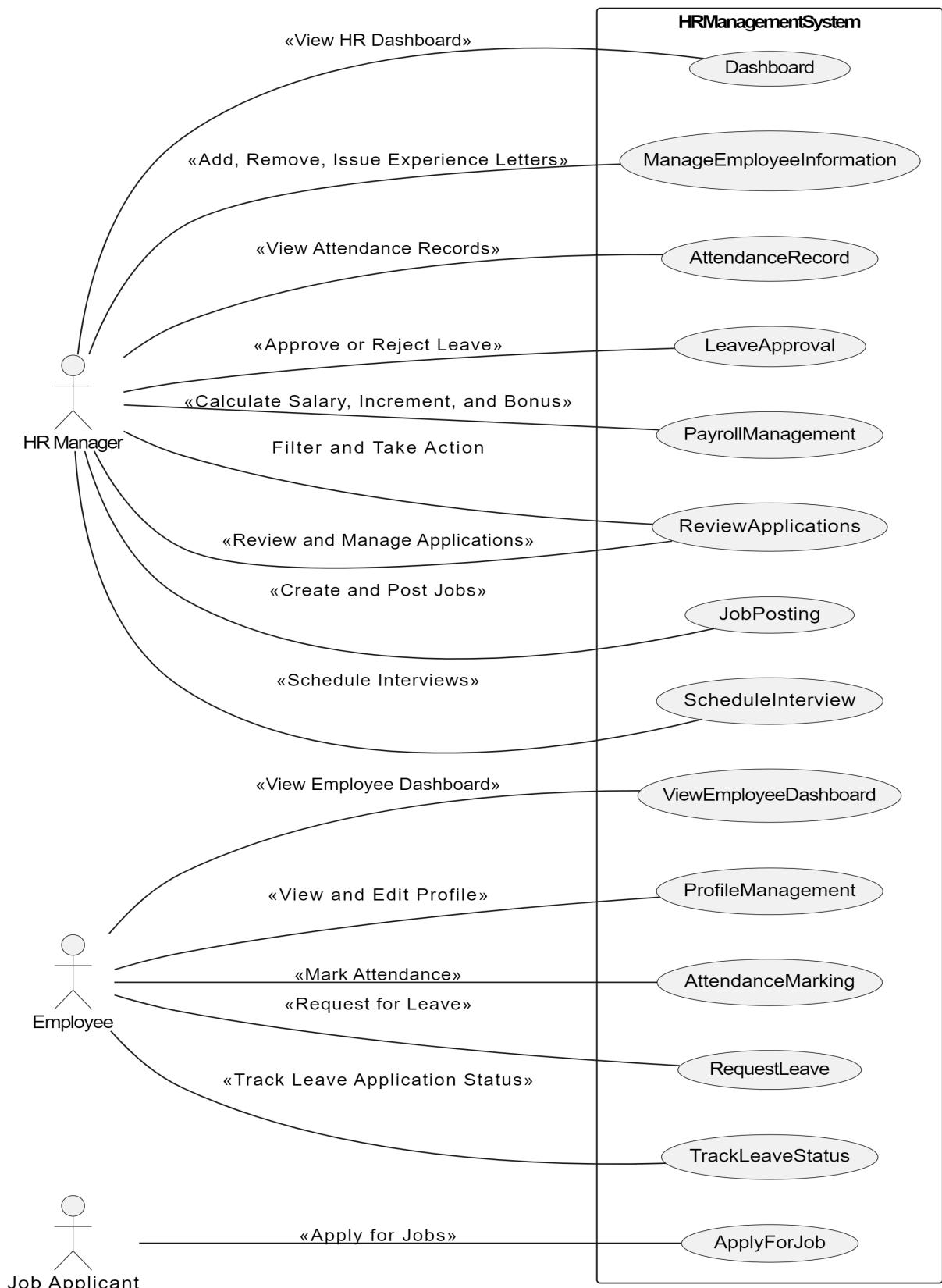


FIGURE 3.1: Use Case Diagram

### 3.3.4 Class Diagram

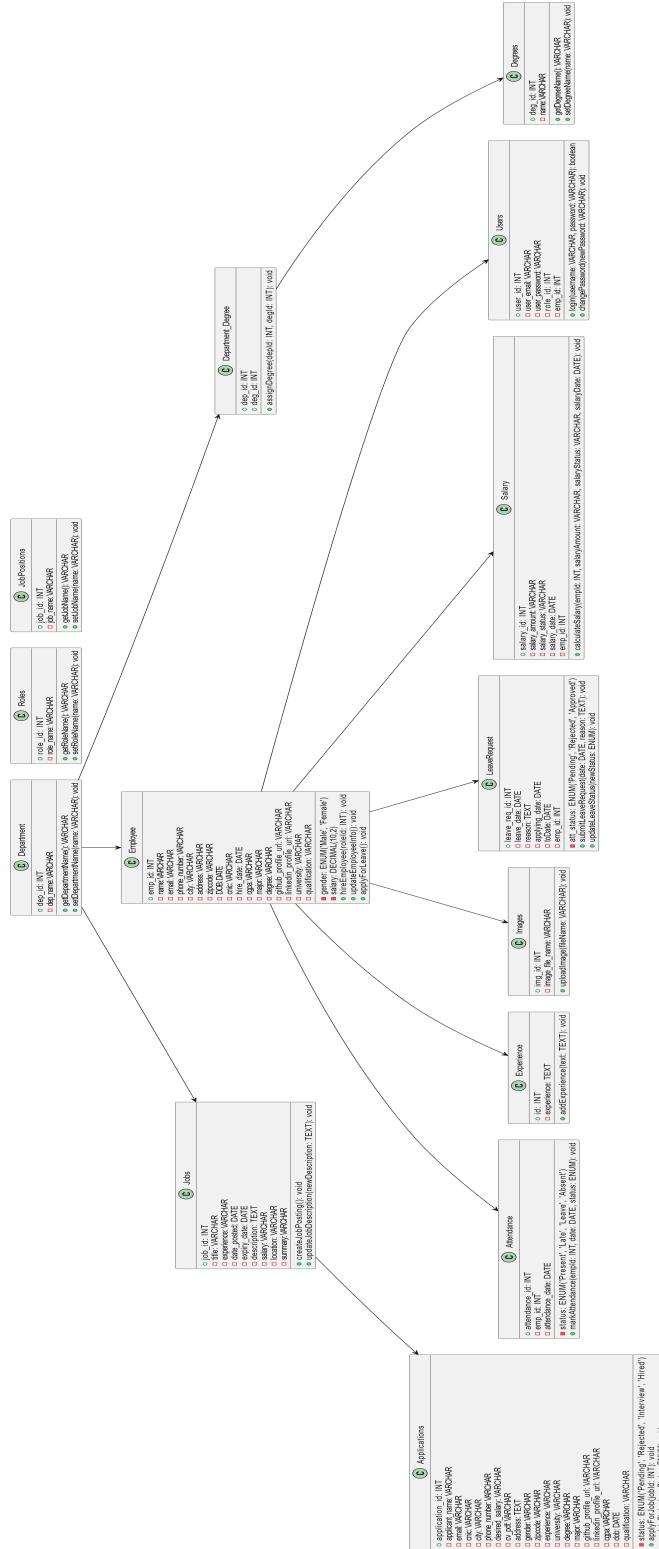


FIGURE 3.2: Class Diagram

### 3.3.5 Entity-Relationship Diagram

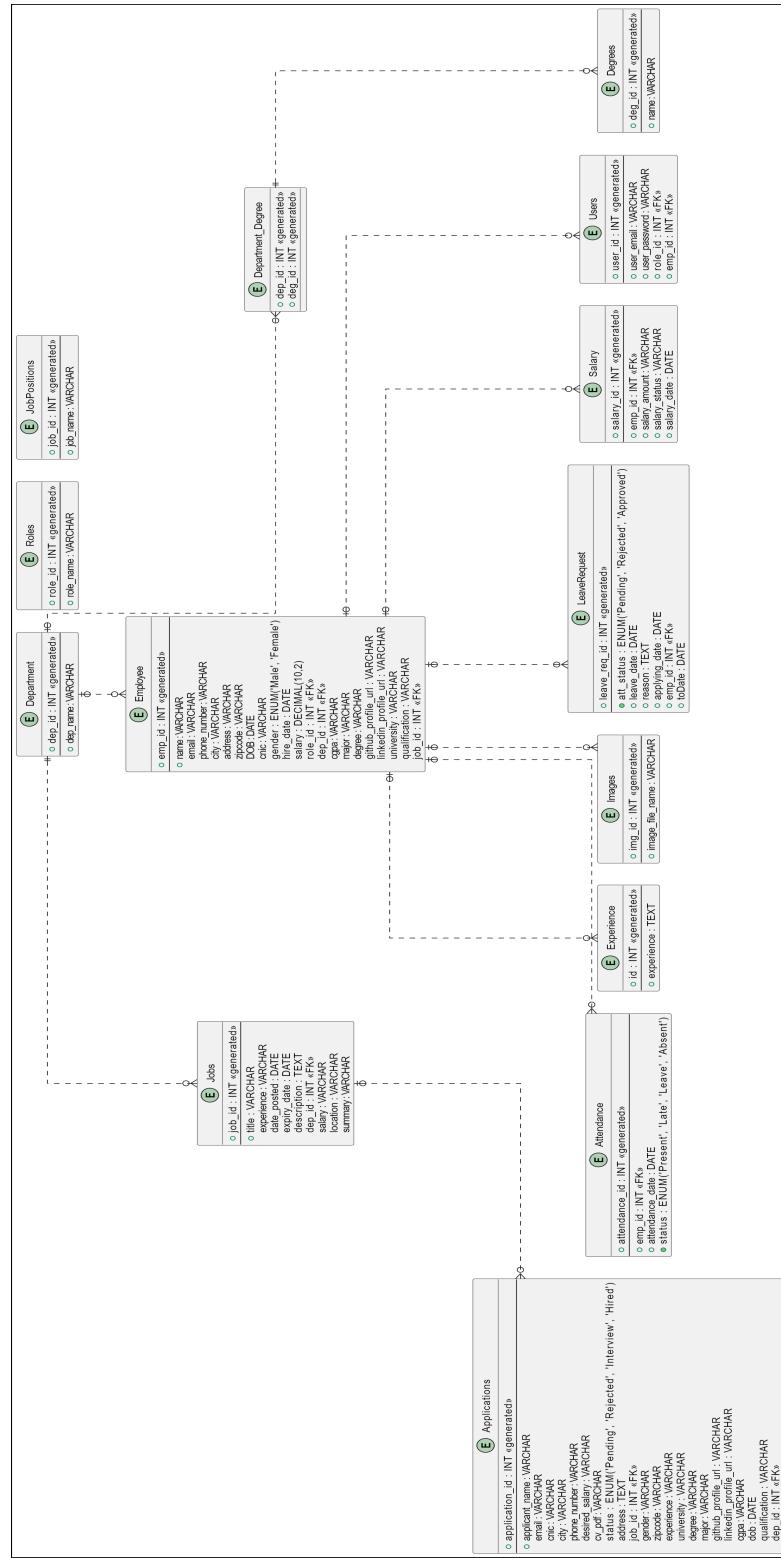


FIGURE 3.3: Entity-Relationship Diagram

# **Chapter 4**

## **Implementation, Evaluation and Testing**

### **4.1 Development Stages**

#### **4.1.1 Planning and Project Initiation (Phase1)**

##### **4.1.1.1 Project Initiation**

Identifying the purpose and need for HR Connect and project goals and objectives.

##### **4.1.1.2 Scope Definition**

Clearly defining the scope of HR Connect, including its functionalities and features

##### **4.1.1.3 Resource Allocation**

Allocating required resources, such as hardware, software, and development tools for the project.

## 4.1.2 System Designing (Phase2)

### 4.1.2.1 Requirements Documentation

Documenting the Project's gathered requirements in a clear and structured manner.

### 4.1.2.2 Architecture Design

Designing the architecture and structure of HR Connect, including components, modules, and flow of data.

### 4.1.2.3 Database Design

Designing the database schema to store employee information, job postings, attendance records, leave records, and other relevant data.

### 4.1.2.4 User-Interface Design

Creating prototypes and wireframes for the HR Connect user interface to ensure a user-friendly experience.

## 4.1.3 Implementation and Testing (Phase3)

### 4.1.3.1 Front-end Development

Building the front-end of HR Connect, including login screen, dashboards, user profile pages, information and record management pages etc.

#### **4.1.3.2 Back-end Development**

Developing the logic for back-end and functionality, including user management, job posting, applications handling and attendance tracking etc.

#### **4.1.3.3 Integration**

Integrating HR Connect with other systems or services, such as email servers for sending emails.

#### **4.1.3.4 Testing**

Conducting extensive testing, including unit testing, integration testing, and user acceptance testing.

### **4.1.4 Deployment (Phase4)**

Executing the project's deployment and making HR Connect easily accessible to HR manager and employees. Also ensure that HR Manager and Employees can use HR Connect Effectively.

## **4.2 System Integration**

In our HR Connect project, the system integration is designed to harness the strengths of each component, creating a unified and efficient HR management application. Our system is built on a robust technology stack that includes MySQL for data storage, Express.js for server-side operations, React for the front-end, and Node.js for server runtime. This stack allows us to provide a extensive solution for HR management. At the core of our system, Express.js and Node.js handle server-side operations flawlessly, enabling efficient data management and seamless

communication with the database. MySQL serves as the database layer, excelling in data storage and retrieval, which is vital for managing employee information, job listings, and other HR-related data.

On the frontend, React's component-based architecture empowers us to create a dynamic and responsive user interface. This architecture facilitates real-time content rendering, ensuring that users can interact with the application smoothly. The integration of React enhances the overall user experience, making HR Connect user-friendly and visually appealing. The communication between front-end and back-end components is achieved through APIs, promoting standardized integration and data exchange. This approach streamlines the flow of information and exchange of information.

Authentication processes and essential HR management tasks are smoothly integrated with each other. In summary, our system integration in HR Connect delivers a unified, scalable, and user-centric HR management application. It leverages the strengths of each technology component to provide a seamless and efficient solution for HR processes. The standardized interfaces used in the application ensure consistent data exchange and smooth operation across all modules.

## 4.3 User Interface

### 4.3.1 Login

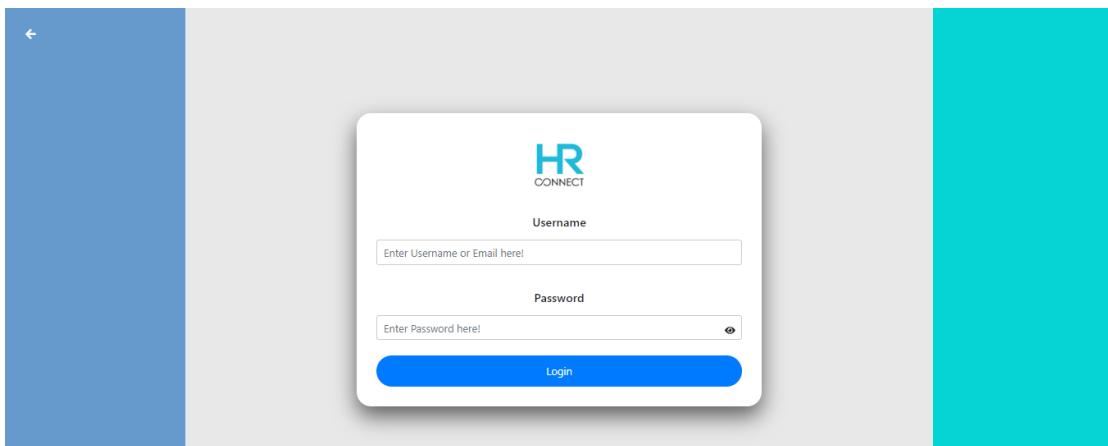


FIGURE 4.1: login

### 4.3.2 Home

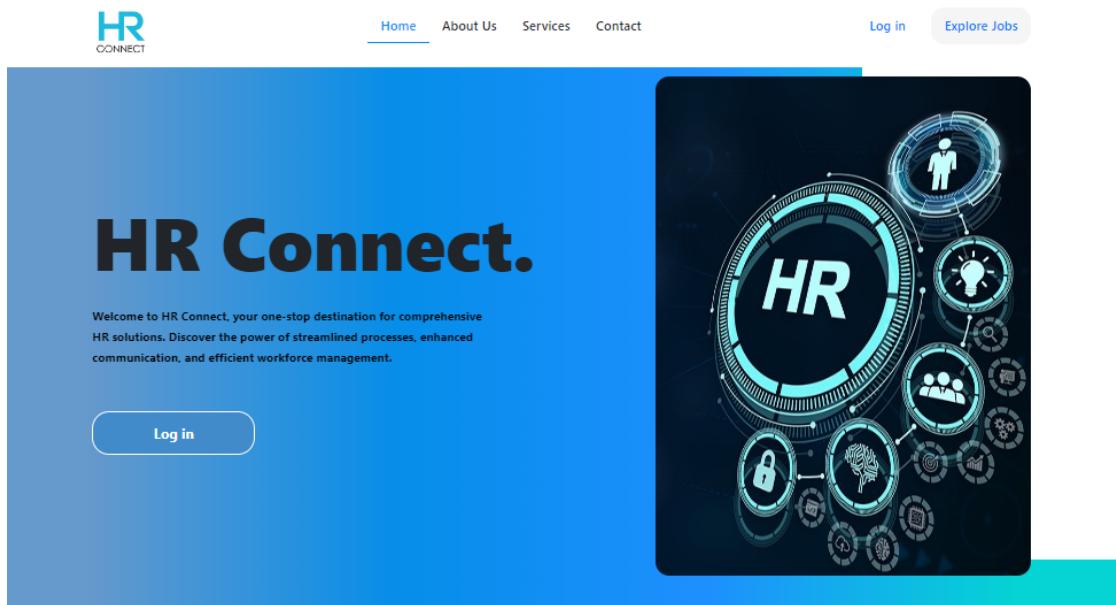


FIGURE 4.2: Home

### 4.3.3 Services



FIGURE 4.3: Services

#### 4.3.4 About us



FIGURE 4.4: About Us

#### 4.3.5 Jobs Portal

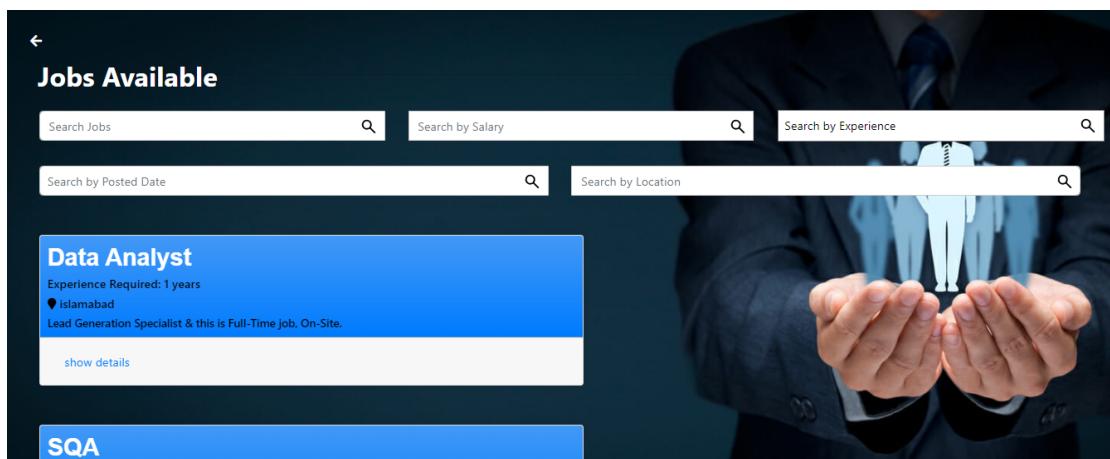


FIGURE 4.5: Jobs Portal

### 4.3.6 HR Dashboard

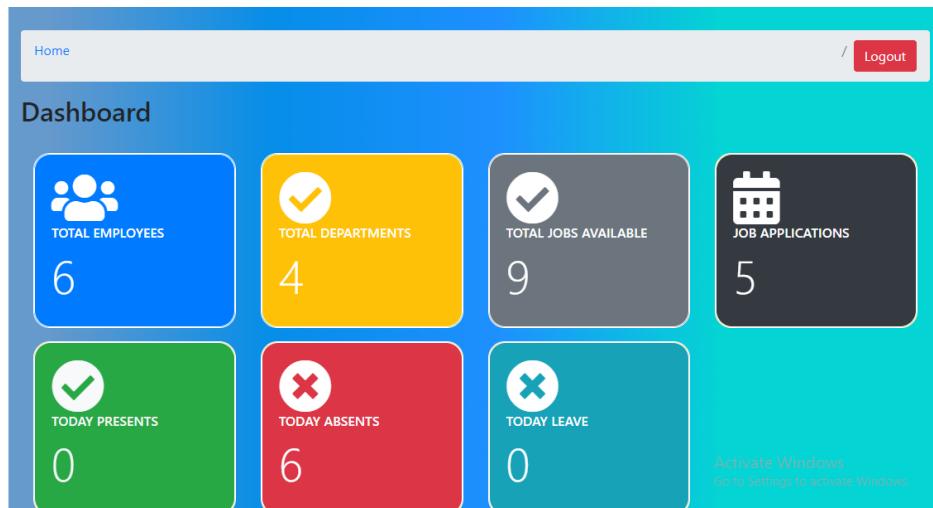


FIGURE 4.6: HR Dashboard

### 4.3.7 Employee Dashboard

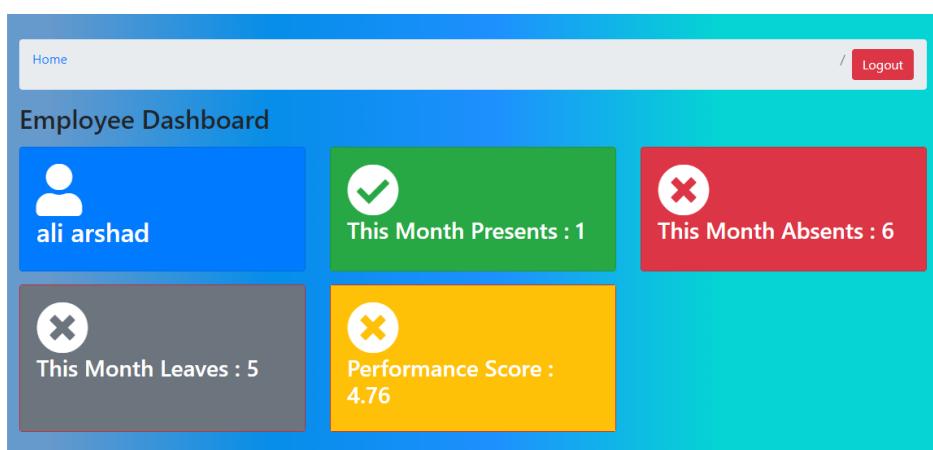


FIGURE 4.7: Employee Dashboard

### 4.3.8 Add Employee

The screenshot shows the 'Basic Information' section of the HR Connect application. On the left, there is a sidebar with various navigation options: Dashboard, Employee (selected), Attendance, Departments, Leave, Hiring, and Pay-Roll. The main area is titled 'Basic Information' and contains a form with the following fields:

Name	Address
Employee's name	Employee's address
Email Address	Zipcode
Employee's email address	Zip code
Phone Number	Date of Birth
Employee's phone number	mm/dd/yyyy
City	CNIC
Employee's city	XXXXX-XXXXXX-X

FIGURE 4.8: Add Employee

### 4.3.9 Manage Employee

The screenshot shows the 'Manage Employee' section of the HR Connect application. On the left, there is a sidebar with various navigation options: Dashboard, Employee (selected), Attendance, Departments, Leave, Hiring, and Pay-Roll. The main area is titled 'Manage Employee' and displays a table of employee records. At the top of the table are dropdown menus for 'Department', 'Gender', and 'Job Position'. Below the table are two buttons: 'Experience Letter' and 'Terminate'. The table has columns for Emp ID, Name, Job Position, Department, Gender, and Actions.

Emp ID	Name	Job Position	Department	Gender	Actions
2	ali arshad	Mern Developer	Project Management Team	Male	<button>Experience Letter</button> <button>Terminate</button>
24	hafiz islam	Data Analyst	Project Management Team	Female	<button>Experience Letter</button> <button>Terminate</button>
27	AbdurRafay Nasir	Data Analyst	Project Management Team	Male	<button>Experience Letter</button> <button>Terminate</button>

FIGURE 4.9: Manage Employee

### 4.3.10 Today's Attendance

Employee ID	Full Name	Email Address	Gender	Department	Phone Number	Status
2	ali arshad	aliarshad@gmail.com	Male	Project Management Team	03021055932	Absent
24	hafiz islam	hmhc828@gmail.com	Female	Project Management Team	30232334244	Absent
25	Zeeshan Ali	zeeshanalico24@gmail.com	Male	Development Team	30221055932	Absent

FIGURE 4.10: Today's Attendance

### 4.3.11 Employee Attendance History

Employee ID	Employee Name	Attendance Date	Status
1	ihtishm	2023-09-24	Absent
1	ihtishm	2023-09-25	Absent
1	ihtishm	2023-09-26	Absent
1	ihtishm	2023-10-03	Absent
1	ihtishm	2023-10-04	Absent

FIGURE 4.11: Employee Attendance History

### 4.3.12 Leave Applications

The screenshot shows the 'Leave Applications' section of the HR Connect software. The interface includes a sidebar with navigation links like Dashboard, Employee, Attendance, Departments, Leave, Hiring, and Pay-Roll. The main area has a title 'Leave Applications' and search/filter fields for Employee Name, Department, and Status. A table lists five leave applications for employee 'ali arshad' from the 'Project Management Team'. The applications are all pending, with 'Status' showing 'Pending' and 'Action' buttons for 'Approve' and 'Reject'. The last application listed is approved.

Emp ID	Employee Name	Department	Applying Date	Status	Action
2	ali arshad	Project Management Team	2023-10-03	Pending	<button>Approve</button> <button>Reject</button>
2	ali arshad	Project Management Team	2023-10-03	Pending	<button>Approve</button> <button>Reject</button>
2	ali arshad	Project Management Team	2023-10-03	Pending	<button>Approve</button> <button>Reject</button>
2	ali arshad	Project Management Team	2023-10-03	Pending	<button>Approve</button> <button>Reject</button>
2	ali arshad	Project Management Team	2023-10-01	Approved	

FIGURE 4.12: Leave Applications

### 4.3.13 Job Applications

The screenshot shows the 'Job Applications' section of the HR Connect software. The interface includes a sidebar with navigation links like Dashboard, Employee, Attendance, Departments, Leave, Hiring, and Pay-Roll. The main area has a title 'Job Applications' and search/filter fields for Applicant Name, Job Title, Experience, Desired Salary, Status, Gender, and Department. A table lists five job applications for applicants Subhan Rasheed, Hadia Hashmi, Hurmat Zahra, and Anas Swati. The applications are categorized by status: Interview (Subhan Rasheed, Hadia Hashmi), Pending (Hurmat Zahra), and Pending (Anas Swati). Action buttons include 'Accept for job', 'Reject', and 'Send Offer Letter' for interviews, and 'Call for Interview' and 'Reject' for pending applications.

Select	ID	Applicant Name	Department	Status	Action
	30	Subhan Rasheed	Development Team	Interview	<button>Accept for job</button> <button>Reject</button> <button>Send Offer Letter</button>
	31	Hadia Hashmi	Project Management Team	Interview	<button>Accept for job</button> <button>Reject</button> <button>Send Offer Letter</button>
<input type="checkbox"/>	32	Hurmat Zahra	Project Management Team	Pending	<button>Call for Interview</button> <button>Reject</button>
<input type="checkbox"/>	33	Anas Swati	Project Management	Pending	<button>Call for Interview</button> <button>Reject</button>

FIGURE 4.13: Job Applications

#### 4.3.14 Departments

The screenshot shows the 'View Departments' page of the HR Connect application. On the left is a sidebar with a blue header 'HR CONNECT' and a white background containing navigation links: Dashboard, Employee, Attendance, Departments (selected), Leave, Hiring, and Pay-Roll. The main content area has a blue gradient header 'View Departments'. Below it is a table with the following data:

ID	Name	Number of Employees	Action
1	Project Management Team	4	Edit Remove
3	Development Team	1	Edit Remove
12	CA	0	Edit Remove
13	Sales and Marketing	0	Edit Remove

At the bottom left of the main content area is a blue button labeled 'Add New Department'.

FIGURE 4.14: Departments

#### 4.3.15 Add Department

The screenshot shows the 'Add New Department' dialog box. The background is dark teal, and the dialog box has a white background. At the top is the title 'Add New Department'. Below it is a form field labeled 'Department Name' with an empty input field. Underneath is a section labeled 'Add Degrees' with a dropdown menu labeled 'Degree' and a red 'Remove' button next to it. Below the dropdown is a blue 'Add Degree' button. At the bottom right of the dialog box are two buttons: 'Cancel' and 'Add'.

FIGURE 4.15: Add Department

### 4.3.16 Jobs Posting

Job Title	Department	Experience Required	Date Posted	Expiry Date	Action
Mern Developer	Project Management Team	0 experience	2023-09-17	2023-10-03	<button>Remove</button>
Data Analyst	Project Management Team	1 years	2023-09-18	2023-10-30	<button>Remove</button>
SQA	Project Management Team	2 years	2023-09-18	2023-12-28	<button>Remove</button>
Mern intern	Project Management Team	3 years	2023-09-18	2023-10-30	<button>Remove</button>

FIGURE 4.16: Jobs Posting

### 4.3.17 Payroll

Name	Department	Job Position	Basic Salary	Performance Score (%)	Bonus	Net Salary	Status	Actions
ali arshad	Project Management Team	Mern Developer	12355877 PKR	4.7619	N/A	12355877 PKR	Paid	<button>Increase Salary</button>
hafiz islam	Project Management Team	Data Analyst	1000 PKR	4.7619	N/A	1000 PKR	Not Paid	<button>Increase Salary</button>
Zeeshan Ali	Development Team	SQA	23532 PKR	4.7619	N/A	23532 PKR	Not Paid	<button>Increase Salary</button>

FIGURE 4.17: Payroll

### 4.3.18 Offer Letter

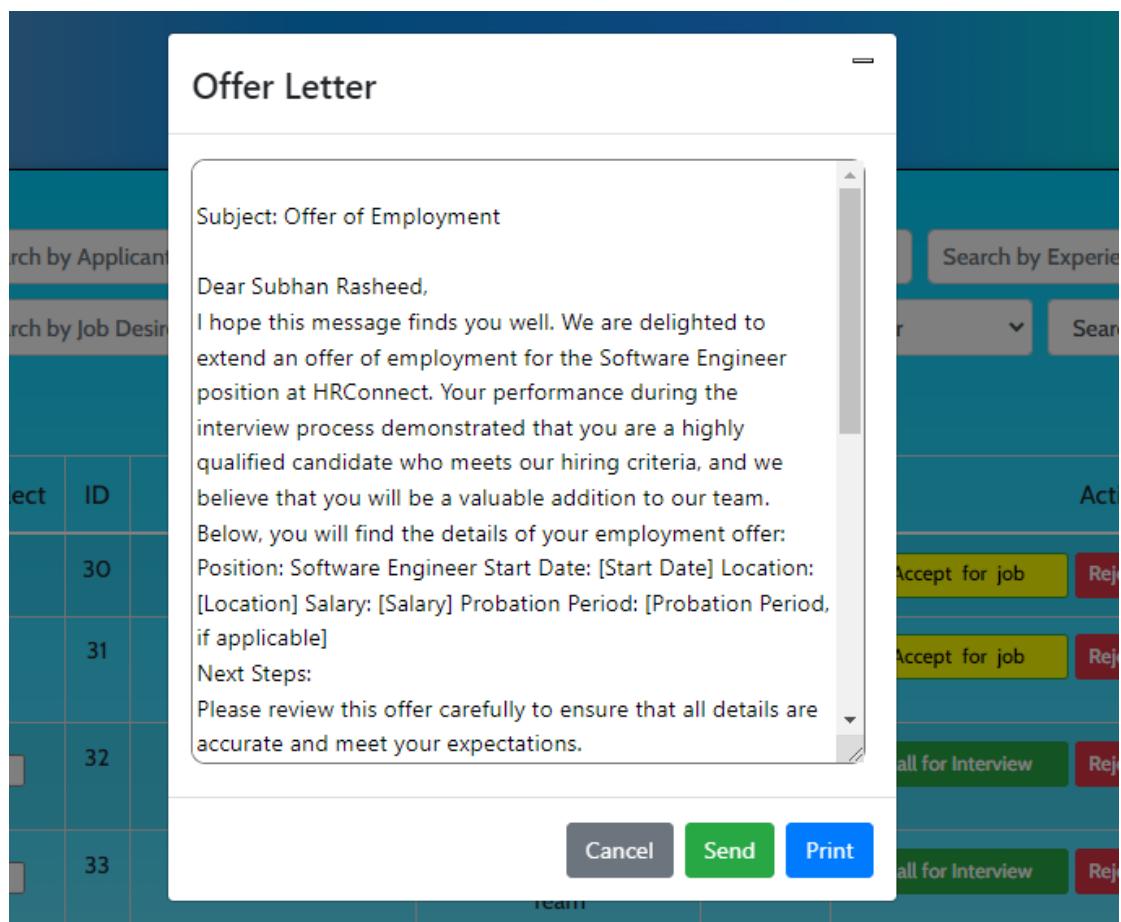


FIGURE 4.18: Offer Letter

#### 4.3.19 Experience Letter

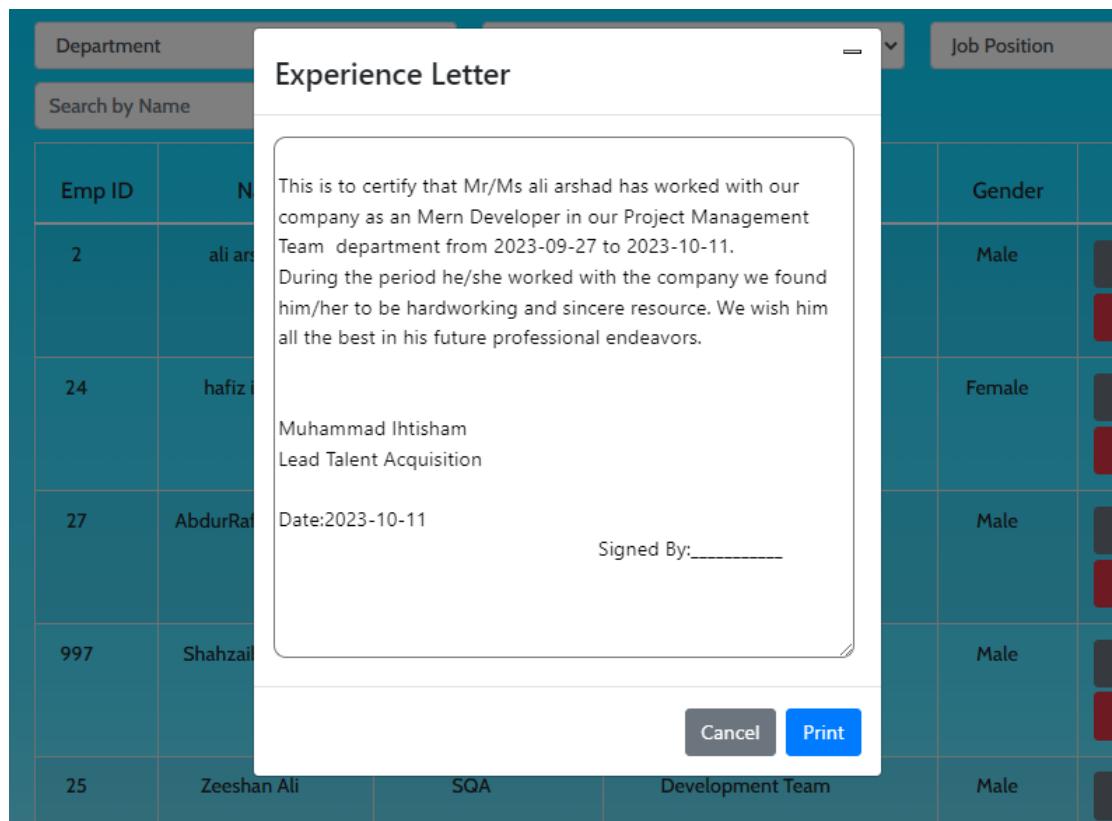


FIGURE 4.19: Experience Letter

### 4.3.20 Salary Increment

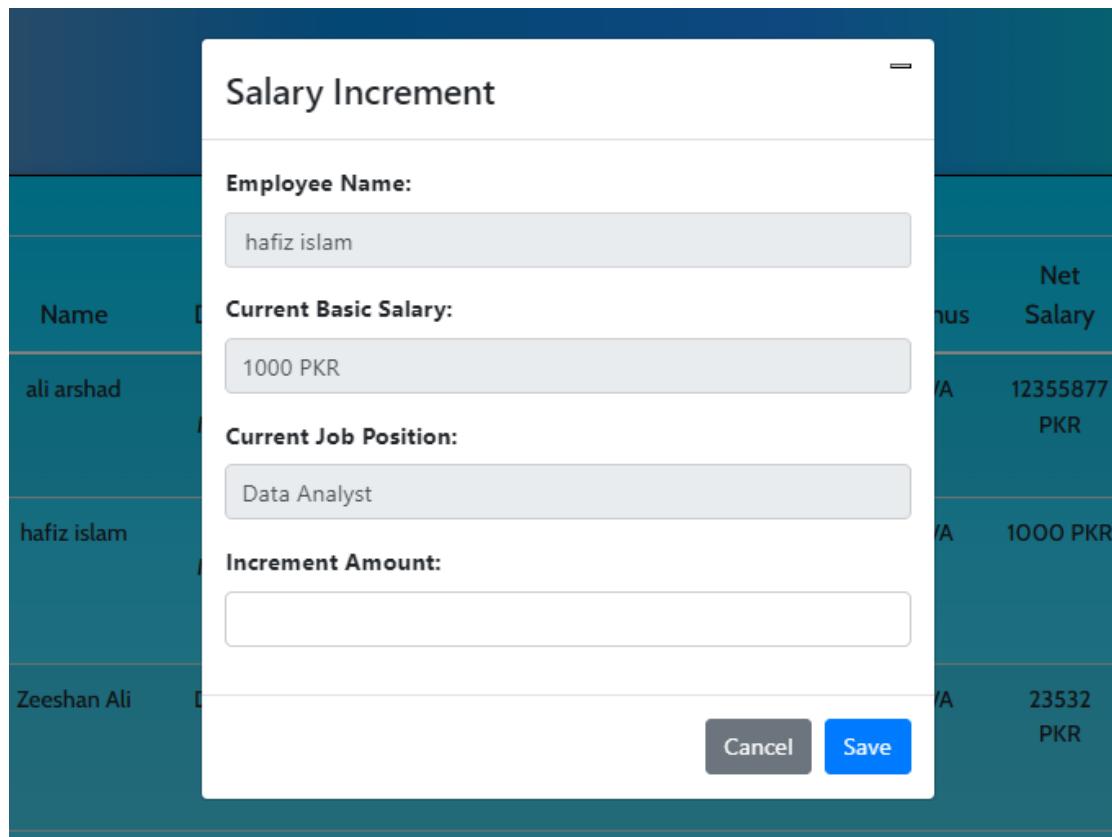


FIGURE 4.20: Salary Increment

### 4.3.21 Mark Attendance

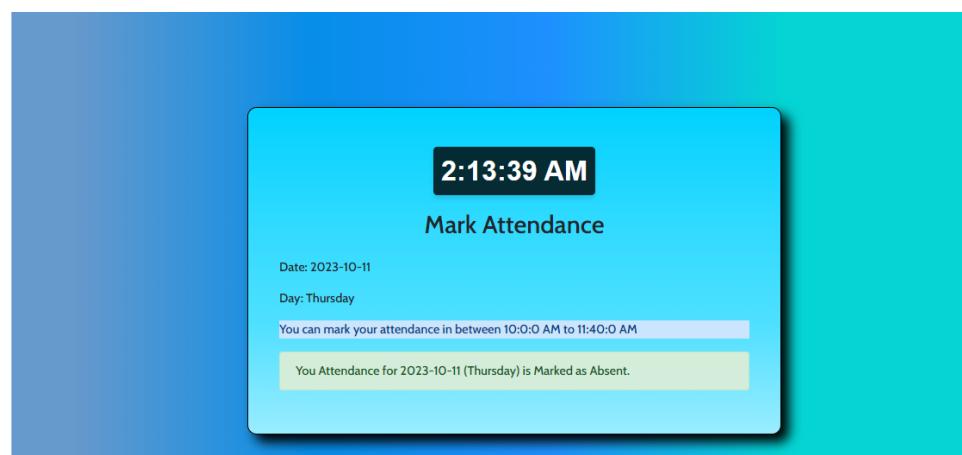
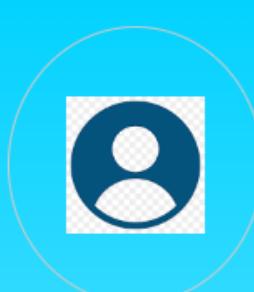


FIGURE 4.21: Mark Attendance

#### 4.3.22 View Profile

### Profile



ID No.	2	CNIC	2342222323232
Full Name	ali arshad	Hire Date	2023-09-27
Email	aliarshad@gmail.com	Date of Birth	2023-03-03
Ph. #	03021055932	Salary	12355877 PKR
City	lahore city	Department	Project Management Team
Zip-Code	12343	My Job as a	Mern Developer
Address	Xyz Colony A Block, Iqbal Town Lahore	Gender	Male

[Edit Profile](#)[Reset Password](#)

Choose File

No file chosen

Upload Image

Only PNG format is allowed for image uploads.

FIGURE 4.22: View Profile

### 4.3.23 Edit Profile

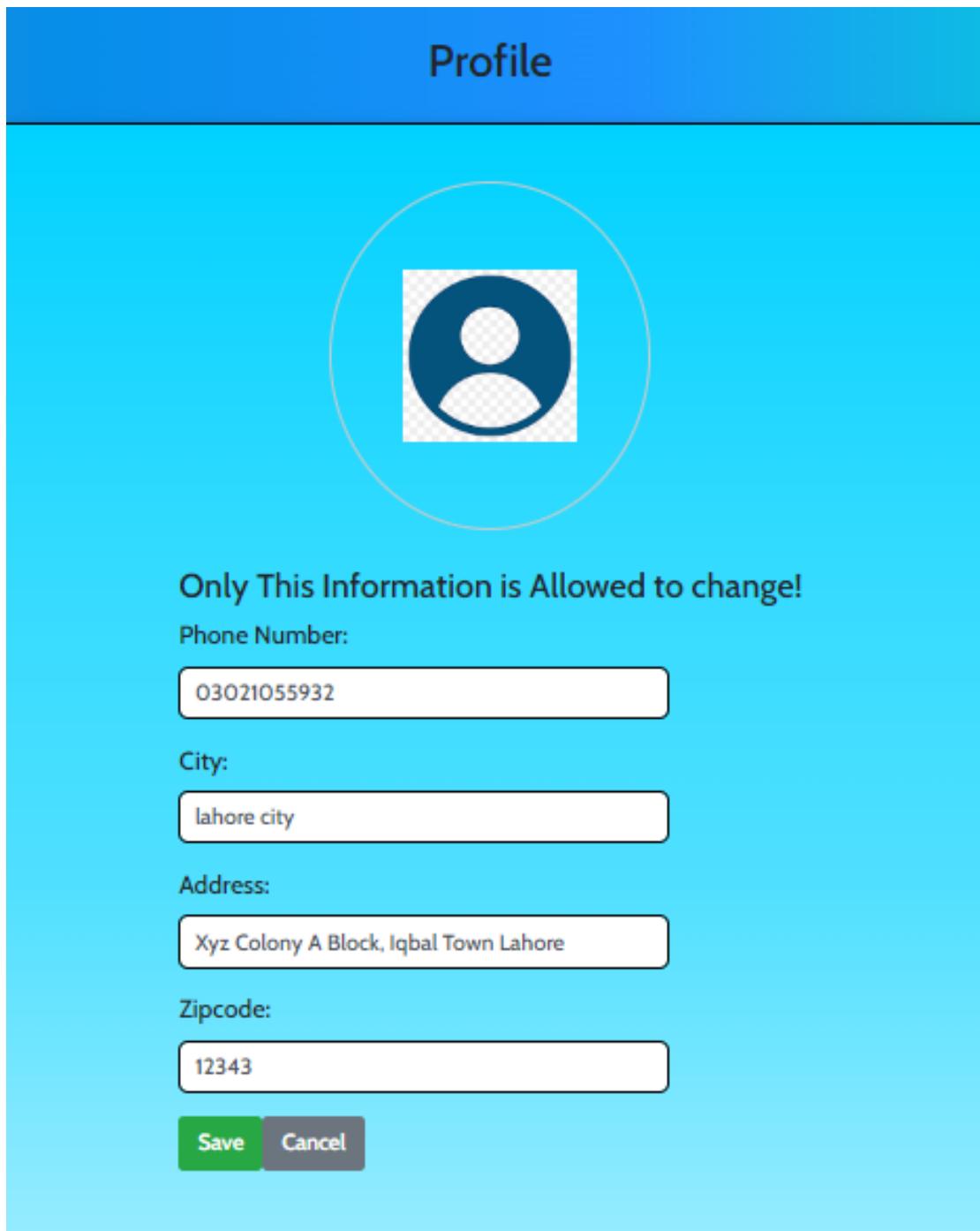


FIGURE 4.23: Edit Profile

### 4.3.24 Submit Leave



The screenshot shows the 'Submit Leave' form within the HR Connect application. The form has a blue header and a white input area. It includes fields for 'From Date' (mm/dd/yyyy), 'To Date' (mm/dd/yyyy), and 'Reason'. A 'Submit' button is at the bottom. On the right side of the input area, there is a small blue button labeled 'Apply for One Day Leave'.

FIGURE 4.24: Submit Leave

### 4.3.25 Leave Application History



The screenshot shows the 'Leave Application History' table within the HR Connect application. The table has a blue header and a white body. It contains columns for Applying Date, Leave Date/From Date, To Date, Reason, and Status. The data is as follows:

Applying Date	Leave Date/From Date	To Date	Reason	Status
2023-10-03	2023-11-11	2023-11-15	sd	Pending
2023-10-01	2023-11-09	2023-11-11	no	Approved
2023-10-01	2023-11-09	N/A	sick leave	Rejected
2023-10-03	2023-10-12	N/A	sdasdsdas	Pending
2023-09-29	2023-10-08	N/A	8	Approved
2023-10-03	2023-10-08	N/A	we	Pending
2023-09-29	2023-10-07	N/A	oneDayLeave	Approved

FIGURE 4.25: Leave Application History

## 4.4 Evaluation

The HR Connect platform has been meticulously developed with a strong focus on user-centric design and functionality. Our approach to evaluation draws inspiration from the principles of Human-Computer Interaction (HCI) and extensive research conducted with HR managers and employees. This research encompasses a wide range of criteria, including technical proficiency, ease of comprehension,

and user satisfaction. Throughout the development process, paramount attention has been given to ensuring a seamless and intuitive user experience. Prior to the platform's release, rigorous testing is conducted to validate its performance and functionality. Every tab, button, and feature is scrutinized to guarantee visibility and operational integrity. Any identified issues or discrepancies are promptly addressed, ensuring that the platform is user-friendly, error-free, and easy to understand. In summary, the HR Connect platform is the result of careful evaluation and adherence to user-centered design principles. It aims to provide HR managers and employees with a robust, user-friendly, and unambiguous tool that enhances their HR management experience. This approach ensures that the platform effectively meets the needs and expectations of its users while maintaining a high standard of quality and usability.

## 4.5 Unit Testing

Unit testing stands as an essential pillar in HR Connect's development lifecycle, playing a vital role in verifying the precision, dependability, and correctness of individual software units and components. Within HR Connect, this meticulous evaluation extends its reach to encompass every module and feature, covering an extensive scope of HR management functionalities. For instance, in the user registration module, unit tests validate the creation of new employee accounts, verifying that user data is correctly stored in the database and authentication mechanisms function as expected. In the leave management module, unit tests confirm that leave requests are processed accurately, and employee records are updated accordingly. Upholding the highest industry standards, HR Connect's unit testing rigorously examines software units, subjecting them to diverse real-world test cases and scenarios. This comprehensive approach not only assures functional integrity but also fortifies the overall reliability of the HR management platform. By seamlessly integrating unit testing throughout the development cycle, HR Connect proactively identifies and addresses potential issues, mitigating the likelihood

of costly errors and reinforcing our unwavering commitment to delivering a robust and trustworthy HR management solution.

## 4.6 Functional Testing

Functional testing serves as a cornerstone in ensuring the seamless operation and adherence to requirements within "HR Connect". This vital testing phase focuses on evaluating the software's functionality, features, and capabilities against the defined functional requirements. Throughout the functional testing process, HR Connect undergoes a rigorous examination to verify that each component and feature performs as intended, meeting the expectations of both HR manager and employees. Functional testing encompasses various facets of HR Connect's functionalities:

### 4.6.1 User Management

The registration and authentication processes are meticulously tested to guarantee that HR manager can effortlessly create employee accounts and that both HR manager and employees can securely log in using their credentials.

### 4.6.2 User Role Management

HR Connect's capability to distinguish between HR manager and employees, granting role-based access and permissions, is rigorously verified to ensure the system's integrity and security.

### 4.6.3 User Password Management

Employee-initiated password updates and resets are thoroughly examined to validate that employees can securely manage their account passwords.

#### **4.6.4 Hiring Management**

Key functionalities such as job posting, job application submission, and application review are analyzed to ensure that HR manager and job seekers can efficiently interact with the platform.

#### **4.6.5 Attendance Management**

HR Connect's attendance marking and record-keeping capabilities are examined to ensure accurate attendance tracking and reporting.

#### **4.6.6 Leave Management**

The leave request, approval, and tracking processes are inspected to guarantee that employees can conveniently request leave, HR manager can efficiently manage leave requests, and employees can track the status of their requests.

#### **4.6.7 Payroll Management**

Functional testing extends to the integrated attendance and leave management modules, ensuring precise salary calculations, increments, and bonus additions in accordance with predefined criteria.

By conducting comprehensive functional testing, HR Connect strives to deliver a robust, reliable, and user-friendly HR management solution that aligns seamlessly with the defined functional requirements. This meticulous approach not only validates the software's performance but also instills confidence in users, promoting a productive and efficient HR management experience.

### 4.6.8 Testing Requirements

Testing requirements for HR Connect encompass a comprehensive strategy aimed at ensuring the application's functionality, reliability, and security. The primary objective is to validate that HR Connect meets its intended objectives while providing users with a seamless experience. This involves rigorous functional testing to confirm the proper operation of features like user registration, authentication, role management, and password management. Performance testing is conducted to assess system responsiveness and scalability, while usability testing evaluates the user interface's intuitiveness. Compatibility testing ensures that HR Connect functions smoothly across various browsers and devices. Security testing is essential for identifying and addressing vulnerabilities, and integration testing verifies seamless communication between components. Regression testing is performed to maintain feature integrity, while load testing assesses system stability under heavy loads. Data integrity, user acceptance, documentation, and compliance testing round out the requirements, ensuring a robust and compliant HR Connect application.

## 4.7 Test Cases

### 4.7.1 Employee Registration

TABLE 4.1: Test Case TC01: Employee Registration

<b>Test Case ID</b>	TC01
<b>Test Case Description</b>	Employee Registration
<b>Purpose</b>	To verify that an account for new employee can be successfully registered.
<b>Test Data</b>	Employee's registration information (name, email, password, etc.).
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager initiates the registration process.</li> <li>2. HR Manager enters registration information and click on save.</li> </ol>
<b>Expected Result</b>	New employee account created successfully.
<b>Actual Status</b>	Pass

### 4.7.2 User Login

TABLE 4.2: Test Case TC02: User Authentication

<b>Test Case ID</b>	TC02
<b>Test Case Description</b>	User Authentication
<b>Purpose</b>	To verify that both HR Manager and Employee can successfully log in to their accounts using valid credentials.
<b>Test Data</b>	Valid username and password for HR Manager and Employee.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager enters valid username and password and clicks "Log In".</li> <li>2. Employee enters valid username and password and clicks "Log In".</li> </ol>
<b>Expected Result</b>	Successful login for both HR Manager and Employee.
<b>Actual Status</b>	Pass

### 4.7.3 User Role Management

TABLE 4.3: Test Case TC03: User Role Management

<b>Test Case ID</b>	TC03
<b>Test Case Description</b>	User Role Management
<b>Purpose</b>	To verify that the software correctly distinguishes between HR Manager and Employee roles and grants appropriate access and permissions.
<b>Test Data</b>	User accounts with different roles (HR Manager and Employee).
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in and accesses HR-specific functions.</li> <li>2. Employee logs in and accesses Employee-specific functions.</li> </ol>
<b>Expected Result</b>	HR Manager has access to HR functions, and Employee has access to Employee functions.
<b>Actual Status</b>	Pass

#### 4.7.4 User Password Management

TABLE 4.4: Test Case TC04: User Password Management

<b>Test Case ID</b>	TC04
<b>Test Case Description</b>	User Password Management
<b>Purpose</b>	To ensure that employees can update their passwords successfully.
<b>Test Data</b>	Employee's current and new passwords.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Employee logs in.</li> <li>2. Employee goes to the password update section and enters a new password.</li> <li>3. Employee saves the new password.</li> </ol>
<b>Expected Result</b>	Employee's password is updated successfully.
<b>Actual Status</b>	Pass

#### 4.7.5 Job Posting

TABLE 4.5: Test Case TC05: Job Posting

<b>Test Case ID</b>	TC05
<b>Test Case Description</b>	Job Posting
<b>Purpose</b>	To verify that HR Managers can successfully create and post new job listings.
<b>Test Data</b>	Job details such as title, description, requirements, and deadline.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager goes to the job posting section and enters job details.</li> <li>3. HR Manager posts the job.</li> </ol>
<b>Expected Result</b>	The job is posted successfully and appears in the job listings.
<b>Actual Status</b>	Pass

#### 4.7.6 Application for Job

TABLE 4.6: Test Case TC06: Application for Job

<b>Test Case ID</b>	TC06
<b>Test Case Description</b>	Application for Job
<b>Purpose</b>	To ensure that job seekers can apply for job listings.
<b>Test Data</b>	Job seeker's contact information and resume.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Job seeker visits Job Listing Page.</li> <li>2. Job seeker searches for a job and clicks "Apply."</li> <li>3. Job seeker fills out the application form and attaches a resume.</li> <li>4. Job seeker submits the application.</li> </ol>
<b>Expected Result</b>	The application is submitted successfully.
<b>Actual Status</b>	Pass

#### 4.7.7 Application Review

TABLE 4.7: Test Case TC07: Application Review

<b>Test Case ID</b>	TC07
<b>Test Case Description</b>	Application Review
<b>Purpose</b>	To ensure that HR Managers can review job applications and manage them effectively.
<b>Test Data</b>	Job applications submitted by job seekers.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager accesses the job applications section.</li> <li>3. HR Manager reviews and filters job applications.</li> </ol>
<b>Expected Result</b>	HR Manager can review and manage job applications as needed.
<b>Actual Status</b>	Pass

#### 4.7.8 Interview Scheduling

TABLE 4.8: Test Case TC08: Interview Scheduling

<b>Test Case ID</b>	TC08
<b>Test Case Description</b>	Interview Scheduling
<b>Purpose</b>	To verify that HR Managers can schedule interviews with job candidates and notify them of the decision.
<b>Test Data</b>	Job candidates' application information and interview scheduling details.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager selects a job application and schedules an interview.</li> <li>3. HR Manager notifies the candidate of the decision.</li> </ol>
<b>Expected Result</b>	The interview is scheduled, and the candidate is notified of the decision through email.
<b>Actual Status</b>	Pass

#### 4.7.9 Dashboard

TABLE 4.9: Test Case TC09: Dashboard for HR Manager and Employee

<b>Test Case ID</b>	TC09
<b>Test Case Description</b>	Dashboard for HR Manager and Employee
<b>Purpose</b>	To ensure that the dashboard functions correctly for both HR Manager and Employee, displaying relevant information based on user roles.
<b>Test Data</b>	User accounts with HR Manager and Employee roles.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in and accesses the dashboard.</li> <li>2. Employee logs in and accesses the dashboard.</li> </ol>
<b>Expected Result</b>	<ul style="list-style-type: none"> <li>- For HR Manager: The dashboard displays HR-specific information such as total employees, today's presents, today's absents etc.</li> <li>- For Employee: The dashboard displays Employee-specific information such as monthly presents, monthly absents, etc.</li> </ul>
<b>Actual Status</b>	Pass

#### 4.7.10 Employee's Profile Management

TABLE 4.10: Test Case TC10: Profile Management (Employee)

<b>Test Case ID</b>	TC10
<b>Test Case Description</b>	Profile Management for Employee
<b>Purpose</b>	To verify that employees can view and edit their profile details.
<b>Test Data</b>	Employee account with profile information.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Employee logs in and accesses their profile.</li> <li>2. Employee edits personal information (e.g., picture, contact details).</li> </ol>
<b>Expected Result</b>	Employee can view and edit their personal information successfully.
<b>Actual Status</b>	Pass

#### 4.7.11 Employee's attendance marking

TABLE 4.11: Test Case TC12: Employee's Attendance Marking

<b>Test Case ID</b>	TC12
<b>Test Case Description</b>	Attendance Marking by Employee
<b>Purpose</b>	To verify that employees can mark their attendance within the allowed time.
<b>Test Data</b>	Employee account with attendance marking option.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Employee logs in during the allowed attendance time.</li> <li>2. Employee marks attendance.</li> </ol>
<b>Expected Result</b>	Employee can mark attendance successfully.
<b>Actual Status</b>	Pass

#### 4.7.12 Attendance Record

TABLE 4.12: Test Case TC13: Attendance Record

<b>Test Case ID</b>	TC13
<b>Test Case Description</b>	Viewing Attendance Records by HR Manager
<b>Purpose</b>	To verify that HR Managers can view attendance records of employees.
<b>Test Data</b>	HR Manager account with access to attendance records.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager accesses attendance records and filters by name, date, or month.</li> </ol>
<b>Expected Result</b>	HR Manager can view attendance records successfully.
<b>Actual Status</b>	Pass

### 4.7.13 Leave Request

TABLE 4.13: Test Case TC14: Leave Request (Employee)

<b>Test Case ID</b>	TC14
<b>Test Case Description</b>	Leave Request Submission by Employee
<b>Purpose</b>	To verify that employees can submit leave requests.
<b>Test Data</b>	Employee account with leave request submission option.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Employee logs in.</li> <li>2. Employee submits a leave request with subject and reason.</li> </ol>
<b>Expected Result</b>	Leave request is submitted successfully.
<b>Actual Status</b>	Pass

### 4.7.14 Leave Request Response

TABLE 4.14: Test Case TC15: Leave Request Response(HR Manager)

<b>Test Case ID</b>	TC15
<b>Test Case Description</b>	Leave Request Response by HR Manager
<b>Purpose</b>	To verify that HR Managers can approve leave requests.
<b>Test Data</b>	HR Manager account with access to leave requests.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager accesses leave requests and approves/rejects one.</li> </ol>
<b>Expected Result</b>	Leave request is approved/rejected successfully.
<b>Actual Status</b>	Pass

### 4.7.15 Leave Application Tracking

TABLE 4.15: Test Case TC16: Leave Application Tracking (Employee)

<b>Test Case ID</b>	TC16
<b>Test Case Description</b>	Leave Application Tracking by Employee
<b>Purpose</b>	To verify that employees can track the status of their leave requests.
<b>Test Data</b>	Employee account with access to leave application tracking.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. Employee logs in.</li> <li>2. Employee tracks the status of a submitted leave request.</li> </ol>
<b>Expected Result</b>	Employee can track the status of leave requests successfully.
<b>Actual Status</b>	Pass

#### 4.7.16 Payroll - Salary Calculation

TABLE 4.16: Test Case TC17: Payroll 3- Salary Calculation (System)

<b>Test Case ID</b>	TC17
<b>Test Case Description</b>	Salary Calculation by the System
<b>Purpose</b>	To verify that the system accurately calculates employee salaries based on attendance records and predefined salary structures.
<b>Test Data</b>	Employee attendance records, predefined salary structures.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. System initiates the salary calculation process.</li> <li>2. System calculates salaries for all employees based on attendance and salary structure.</li> </ol>
<b>Expected Result</b>	Salaries are accurately calculated for all employees.
<b>Actual Status</b>	Pass

#### 4.7.17 Payroll - Increment

TABLE 4.17: Test Case TC18: Payroll Management - Increment (HR Manager)

<b>Test Case ID</b>	TC18
<b>Test Case Description</b>	Adding Increment by HR Manager
<b>Purpose</b>	To verify that HR Managers can add increments to employee salaries.
<b>Test Data</b>	HR Manager account with access to salary management.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager adds an increment to an employee's salary.</li> </ol>
<b>Expected Result</b>	Increment is added to the employee's salary successfully.
<b>Actual Status</b>	Pass

#### 4.7.18 Performance Score

TABLE 4.18: Test Case TC22: Performance Score Calculation

<b>Test Case ID</b>	TC22
<b>Test Case Description</b>	Performance Score Calculation
<b>Purpose</b>	To verify that the system accurately calculates employee performance scores based on attendance percentages.
<b>Test Data</b>	Employee performance data, predefined scoring criteria.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. System initiates the performance score calculation process.</li> <li>2. System calculates performance scores for all employees based on attendance percentages.</li> </ol>
<b>Expected Result</b>	Performance scores are accurately calculated for all employees.
<b>Actual Status</b>	Pass

#### 4.7.19 Bonus on Performance Score

TABLE 4.19: Test Case TC19: Bonus on Performance Score (HR Manager)

<b>Test Case ID</b>	TC19
<b>Test Case Description</b>	Bonus addition by System.
<b>Purpose</b>	To verify that System correctly add bonuses to employee salaries based on performance score.
<b>Test Data</b>	HR Manager account with access to salary management.
<b>Test Steps</b>	<ol style="list-style-type: none"> <li>1. HR Manager logs in.</li> <li>2. HR Manager checks a bonus addition to an employee's salary based on performance score.</li> </ol>
<b>Expected Result</b>	Bonus is added to the employee's salary successfully.
<b>Actual Status</b>	Pass

# **Chapter 5**

## **Conclusion & Future Work**

### **5.1 Conclusion**

In conclusion, HR Connect represents a comprehensive and user-centric solution for streamlining human resources management within organization. This software application, developed with meticulous attention to detail and functionality, addresses a wide range of HR processes and functions. From user registration to leave management, job posting to payroll calculations, HR Connect offers a versatile and efficient platform for both HR manager and employees. Throughout the development process, we have placed a strong emphasis on user experience, security, and data privacy. The application's intuitive interface, coupled with features such as role-based access control, ensures that users can easily navigate and perform their tasks while maintaining the confidentiality of sensitive HR data.

The development of HR Connect has followed a systematic approach, incorporating multiple development stages and rigorous testing processes. This approach has led to a robust and reliable system that fulfills the functional requirements outlined by stakeholders. As HR Connect moves forward, we remain committed to continuous improvement, addressing user feedback, and staying up-to-date with evolving HR practices and technologies. Our goal is to provide organization with

an indispensable tool for managing their HR operations efficiently and effectively, ultimately contributing to their overall success.

In essence, HR Connect is committed to revolutionize the way organizations manage their human resources, fostering a more streamlined, transparent, and data-driven approach to HR management. We look forward to supporting organizations in their HR endeavors and helping them achieve their goals.

## 5.2 Future Work

In the future, HR Connect can focus on several key enhancements to provide an even more robust and user-friendly system:

### 5.2.1 User-Interface Refinement

Continuously refine the user interface to ensure it remains intuitive and visually appealing. Prioritize user experience (UX) improvements to streamline navigation and enhance overall usability.

### 5.2.2 Mobile Accessibility

Develop a dedicated mobile application to cater to users who prefer to access HR Connect on their smartphones and tablets, ensuring a seamless and responsive mobile experience.

### 5.2.3 Enhanced Data Analytics

Implement advanced data analytics and visualization tools to empower HR managers with deeper insights into workforce trends, helping them make informed decisions.

### 5.2.4 Chatbots

Integrate AI-powered chatbots to provide immediate assistance to users, answering common queries and facilitating HR-related interactions in real-time.

# Bibliography

# Index

Computer Science, [i](#)