

23CCE284

DATABASE MANAGEMENT SYSTEM

PROJECT REPORT

Smart HR Management System

Submitted by

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❖ **Abstract:** -

The Smart HR management system is a digital solution designed to automate and streamline key human resource functions within an organization. It integrates critical HR processes such as recruitment, payroll management, training, performance tracking, employee records management, compliance, leave requests, and off boarding into a centralized, database-driven system. By leveraging a scalable backend (Node.js) and an intuitive frontend (HTML, CSS, JavaScript), the system ensures seamless interaction and efficient workflow management. The solution reduces manual effort, enhances data accuracy, and provides actionable insights through analytics and reporting. With a modular design, Smart HR is adaptable for future enhancements, such as AI-driven decision-making, self-service portals, and role-based access control. Designed for enterprises and institutions, this system addresses the pressing need for efficient HR operations, offering a sustainable and intelligent approach to human resource management.

❖ **Introduction:** -

Human resource management is a crucial function in any organization, responsible for handling employee lifecycle processes, maintaining compliance, and fostering a productive work environment. However, traditional HR management often involves manual paperwork, inefficient workflows, and data redundancy, leading to administrative burdens and reduced efficiency. To address these challenges, the Smart HR management system provides a centralized, automated, and database-driven platform that optimizes various HR operations.

Relevance in the Real World:

In today's fast-paced business environment, organizations must manage large workforces efficiently while ensuring compliance with labour laws and company policies. The increasing adoption of remote and hybrid work models has further complicated HR processes, making automation and real-time data access essential. Organizations relying on traditional, manual HR methods often struggle with delayed payroll processing, inefficient recruitment, compliance risks, and lack of performance tracking, leading to decreased productivity and employee dissatisfaction.

By integrating data-driven decision-making, automation, and secure access, the Smart HR system helps businesses streamline critical HR functions, reduce administrative overhead, eliminate human errors, and improve overall workforce management. Companies that leverage

such digital HR solutions can enhance employee engagement, optimize resource allocation, and improve operational efficiency, making the system a vital tool in modern workplaces.

❖ Motivation: -

- **Inefficiencies in Traditional HR**

Manual processes in HR management are often prone to errors, delays, and inefficiencies. Tasks such as record-keeping, payroll processing, and performance tracking require significant manual effort, leading to operational bottlenecks and reduced productivity.

- **Need for Automation**

Automation of repetitive tasks like payroll calculations, employee records management, and on boarding can greatly enhance accuracy, minimize errors, and save considerable time. This ensures that HR professionals can focus on more strategic tasks.

- **Enhancing Employee Experience**

By centralizing access to essential HR services such as records, benefits, and performance tracking, a digital HR system can improve the overall employee experience. Employees can interact with the system seamlessly, fostering a positive work environment.

- **Compliance & Legal Adherence**

Adherence to labour laws and internal policies is critical for organizations. A digital HR system helps ensure that processes are compliant with legal standards, minimizing risks associated with non-compliance.

- **Data-Driven Decision Making**

HR analytics provide organizations with insights into employee performance, training requirements, and retention strategies. By leveraging these data-driven insights, organizations can make informed decisions that align with their goals.

- **Scalability for Future Growth**

As companies expand, traditional HR systems may struggle to keep up with increasing administrative demands. A scalable digital HR system can adapt to

organizational growth, ensuring smooth operations and reducing the administrative burden.

❖ **Objectives:** -

- **Centralized Employee Management**

To develop a unified platform that stores and manages all employee-related data, including personal details, job history, performance metrics, and payroll records. This centralization ensures accessibility and accuracy.

- **Automation of HR Processes**

To automate key HR functions such as recruitment, on boarding, payroll processing, and leave management. Automation reduces manual intervention, increasing operational efficiency and accuracy.

- **Improved Workforce Coordination**

To create a structured and transparent flow of information between HR departments and employees. This objective aims to enhance collaboration, resolve queries efficiently, and maintain clear communication.

- **Enhanced Data Security**

To implement robust measures for the protection of sensitive employee data. The system will comply with organizational policies and legal regulations to ensure confidentiality and prevent data breaches.

- **Scalable and Efficient System**

To design an HR solution that is scalable and can accommodate organizational growth. The system should seamlessly integrate with other business tools and technologies to support the evolving needs of the organization.

- **Optimized Employee Lifecycle Management**

To manage the entire employee lifecycle efficiently, from recruitment and on boarding to performance evaluations and exit processes. The system will ensure smooth transitions and comprehensive documentation at every stage.

❖ Project Functionalities:

The Smart HR management system integrates the following functionalities to enhance HR efficiency:

- **Recruitment** – Streamlines job postings, applicant evaluations, and on boarding.
- **Employee Relations** – Facilitates engagement, grievance handling, and internal communications.
- **Payroll Management** – Automates salary processing, tax deductions, and payslip generation.
- **Training & Development** – Manages employee learning programs, certifications, and skill tracking.
- **Performance Management** – Tracks KPIs, conducts performance reviews, and assists in promotions.
- **Employee Records Management** – Stores and organizes employee profiles, history, and documents.
- **Compliance Management** – Ensures adherence to labour laws, organizational policies, and reporting standards.
- **Leave Requests** – Simplifies the leave application, approval, and tracking process.
- **Off boarding** – Manages resignations.

❖ Methodology: -

The development of the Smart HR management system follows a structured approach to ensure efficient system design, implementation, and deployment. The methodology consists of multiple phases, including Requirement Analysis, Database Design, System Architecture, Implementation, Testing, and Deployment.

1. Requirement Analysis

This phase involves identifying the essential components of the Smart HR system and their interactions. Key entities include: Employees, Recruitment, Payroll Management, Leave Requests, Training & Development, Performance Management, Employee Records

Management, Compliance, Off boarding, Notification Tracking. At this stage, the system focuses on admin-level access, with potential future expansion to include employees.

2. Database Design

The database is structured using MySQL and designed to ensure efficiency and data integrity. An ER Diagram is created to model relationships between entities. The database follows normalization to avoid redundancy. Primary keys (such as Employee ID, Applicant ID, and Department ID) are unique. Foreign keys establish relationships between employees, payroll, performance, and leave records. Constraints ensure data validity, including required fields and referential integrity.

3. System Architecture

The Smart HR system follows a three-tier architecture for better scalability and maintainability:

- **Presentation Layer (Frontend)** – Built using HTML, CSS, JavaScript, and Embedded JS (EJS) for dynamic content rendering.
- **Application Layer (Backend)** – Developed using Node.js to handle business logic and API requests.
- **Database Layer** – MySQL is used for structured data storage and optimized query execution.

4. Implementation

The implementation phase involves developing different components of the system:

- **Frontend Development:** Uses EJS for dynamic page rendering, HTML, CSS, and JavaScript for UI interactions.
- **Backend Development:** Node.js handles user authentication, payroll processing, and leave request tracking.
- **Database Integration:** MySQL is connected using appropriate drivers for efficient CRUD (Create, Read, Update, and Delete) operations.
- **Authentication:** Secure login functionality is implemented for administrators, with role-based access planned for future expansions.

5. Testing & Validation

To ensure system reliability and performance, the following testing approaches are applied:

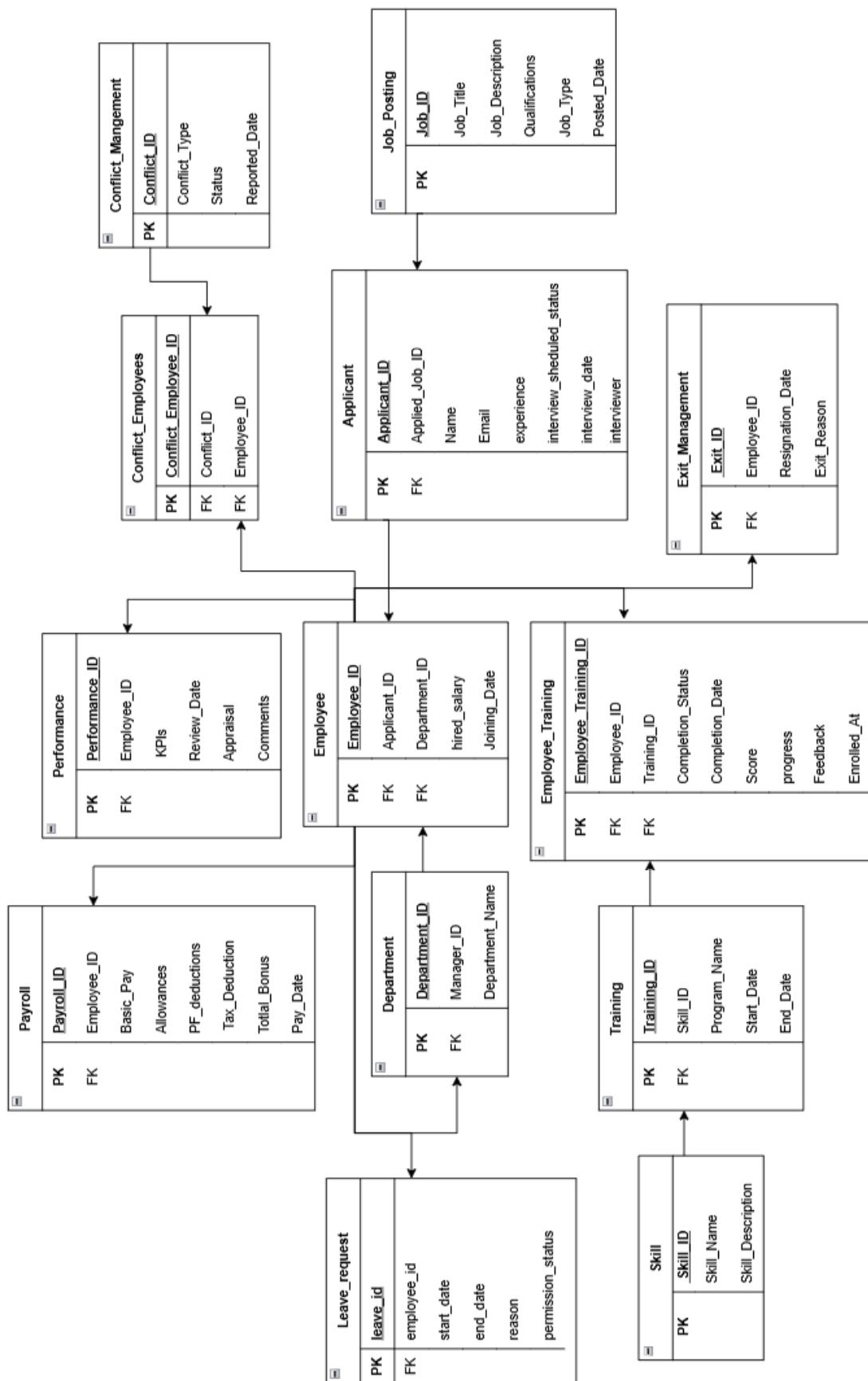
- **Unit Testing** – Verifies individual components such as employee record creation, payroll calculation, and leave approval.
- **Integration Testing** – Ensures smooth interactions between different modules, such as recruitment and employee records.
- **User Acceptance Testing (UAT)** – Admins review system functionality to ensure ease of use and correctness of operations.
- **Security Testing** – Verifies authentication mechanisms and ensures secure data access.

6. Deployment & Maintenance

- The system is planned to be hosted on Vercel and Render, ensuring easy deployment and accessibility.
- Regular maintenance updates will be conducted to incorporate future enhancements, such as AI-based analytics and self-service portals.
- Scalability measures include modular development to accommodate role-based access expansion.

By following this structured methodology, Smart HR ensures efficiency, security, and scalability, transforming HR management into a streamlined, data-driven process.

❖ Schema diagram: -



Engagement_Activities		Compliance_Policies		Courses	
PK	Activity_ID	PK	Policy_ID	PK	Course_ID
	Activity_name		Policy_Title		Course_Title
	Description		Description		Course_Description
	Activity_Type		Effective_Date		Instructor
	Activity_Date		Created_At		Category
	Status				Duration
	Created_At				Created_Date

Surveys		Users		Goal	
PK	Survey_ID	PK	ID	PK	Goal_ID
	Survey_Title		UserName		Title
	Description		Password		Description
	Survey_Type		Name		Deadline
	Expiry_Date		Email		Status
	Status		Role		Created_At
	Created_At		Department		
			Created_At		
			Updated_At		

Fig.1: Schema Diagram

SCHEMA DIAGRAM DESCRIPTION:

The schema diagram represents the relational structure of the Smart HR Management System, outlining tables, attributes, and relationships. Each entity in the system is represented as a table, and its primary key uniquely identifies each record.

- Employee (Employee_ID - Primary Key)
- Department (Department_ID - Primary Key)
- Applicant (Applicant_ID - Primary Key)
- Job_Posting (Job_ID - Primary Key)
- Training (Training_ID - Primary Key)
- Skill (Skill_ID - Primary Key)
- Employee_Training (Employee_Training_ID - Primary Key)
- Exit_Management (Exit_ID - Primary Key)

- Leave_request (leave_ID - Primary Key)
- Conflict_Management (Conflict_ID - Primary Key)
- Conflict_Employees (Conflict_Employee_ID - Primary Key)
- Performance (Performance_ID - Primary Key)
- Payroll (Payroll_ID - Primary Key)
- Engagement_Activities (Activity_ID - Primary Key)
- Complaince_Policies (Policy_ID - Primary Key)
- Courses (Course_ID - Primary Key)
- Surveys (Survey_ID - Primary Key)
- Users (ID - Primary Key)
- Goal (Goal_ID - Primary Key)

Each table serves a specific function in the database.

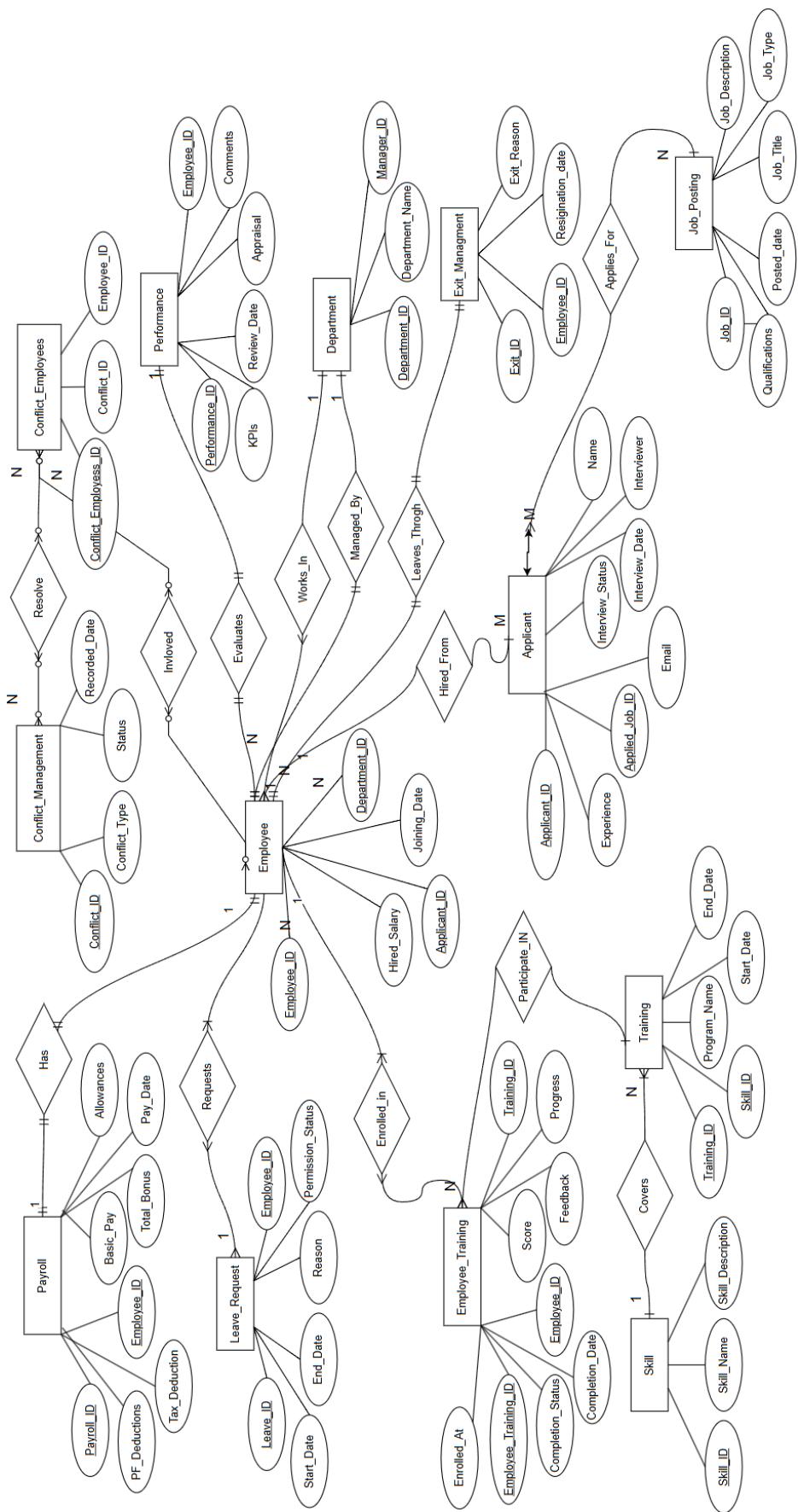
- Employee Table → Stores relevant information about employees.
- Department Table → Stores department name and its manager id.
- Doctors Table → Stores relevant information about applicants who have applied for interviews.
- Job_Posting → Stores information about the available jobs.
- Training → Stores training details.
- Skill → Stores information about corresponding skills offered by each training course.
- Employee_Training → Stores information about employees who have enrolled for the training courses.
- Exit_Management → Stores the off boarding information about employees.
- Leave_request → Stores information about the leave requests submitted by employees.
- Conflict_Management → Stores information about conflicts happened.
- Conflict_Employees → Stores information about employees involved in conflicts.
- Performance → Stores information about performance analysis of employees.
- Payroll → Stores payroll information of the employees.
- Engagement_Activities → Stores relevant information about the activities conducted by the organization.
- Complaince_Policies → Stores existing government policies adhered by the organization.
- Courses → Stores information about the training courses offered.

- Surveys → Stores information about the surveys conducted by the organization.
- Users → Stores users login credentials.
- Goal → Stores information goals need to be achieved by the organization.

Tables are connected using foreign keys to establish relationships.

- Employee (Employee_ID) → Linked to:
 - Employee_Training (Employee_ID)
 - Exit_Management (Employee_ID)
 - Conflict_Employees (Employee_ID)
 - Perfomance (Employee_ID)
 - Payroll (Employee_ID)
 - Leave_request (Employee_ID)
 - Department (Manager_ID)
- Applicant (Applicant_ID) → Linked to:
 - Employee (Applicant_ID)
- Job_Posting (Job_ID) → Linked to:
 - Applicant (Applicant_Job_ID)
- Conflict_Management (Conflict_ID) → Linked to:
 - Conflict_Employee (Conflict_ID)
- Department (Department_ID) → Linked to:
 - Employee (Deparment_ID)
- Training (Training_ID) → Linked to:
 - Employee_Training (Training_ID)
- Skill (Skill_ID) → Linked to:
 - Training (Skill_ID)

❖ ER diagram: -



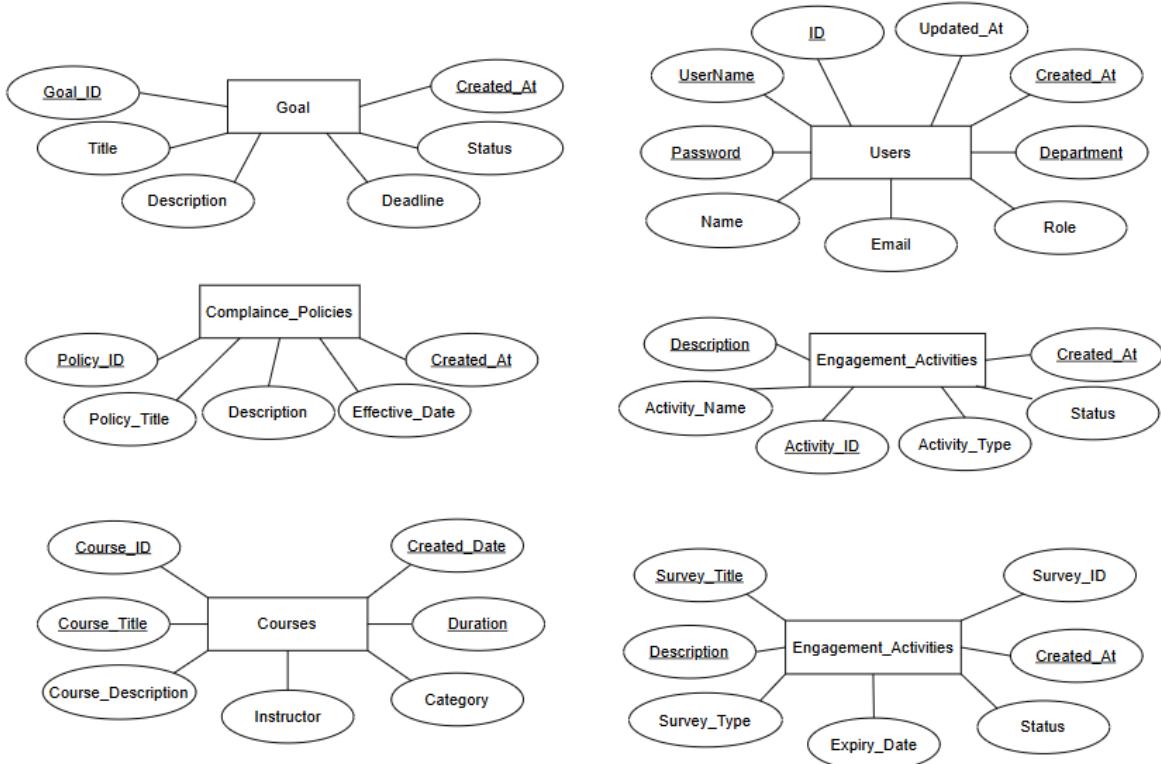


Fig.2: ER Diagram

Entities and Attributes:

1 Employee

- Primary Key: Employee_ID
- Attributes: Hired_Salary, Joining_Date, Applicant_ID, Department_ID
- Relationships:
 - Works_In → Department (An employee belongs to a department)
 - Managed_By → Department (A department is managed by an employee)
 - Evaluates → Performance (An employee undergoes performance evaluation)
 - Requests → Leave_Request (An employee requests leave)
 - Involved → Conflict_Employees (An employee is involved in conflicts)
 - Leaves_Through → Exit_Management (An employee exits through exit management)
 - Has → Payroll (An employee has a payroll)

- Enrolled_In → Employee_Training (An employee enrolls in training)
- Hired_From → Applicant (An employee might have an applicant)

2 Department

- Primary Key: Department_ID
- Attributes: Manager_ID, Department_Name
- Relationships:
 - Managed_By → Employee (A department is managed by an employee)
 - Works_In → Employee (A department has employees working in it)

3 Applicant

- Primary Key: Applicant_ID
- Attributes: Name, Email, Experience, Applied_Job_ID, Interview_Status, Interview_Date, Interviewer
- Relationships:
 - Applies_For → Job_Posting (An applicant applies for job postings)
 - Hired_From → Employee (An applicant may become an employee)

4 Job_Posting

- Primary Key: Job_ID
- Attributes: Job_Title, Job_Description, Job_Type, Posted_Date, Qualifications
- Relationships:
 - Applies_For → Applicant (A job posting is applied for by applicants)

5 Performance

- Primary Key: Performance_ID
- Attributes: KPIs, Review_Date, Appraisal, Comments, Employee_ID
- Relationships:
 - Evaluates → Employee (A performance review is linked to an employee)

6 Payroll

- Primary Key: Payroll_ID
- Attributes: Employee_ID, Basic_Pay, Total_Bonus, Pay_Date, PF_Deductions, Tax_Deduction, Allowances
- Relationships:
 - Has → Employee (Payroll belongs to an employee)

7 Leave_Request

- Primary Key: Leave_ID
- Attributes: Employee_ID, Start_Date, End_Date, Reason, Permission_Status
- Relationships:
 - Requests → Employee (A leave request is made by an employee)

8 Employee_Training

- Primary Key: Employee_Training_ID
- Attributes: Employee_ID, Training_ID, Score, Completion_Status, Completion_Date, Feedback, Progress, Enrolled_At
- Relationships:
 - Enrolled_In → Employee (An employee enrolls in training)
 - Participate_IN → Training (An employee can participate in training)

9 Training

- Primary Key: Training_ID
- Attributes: Program_Name, Start_Date, End_Date, Skill_ID
- Relationships:
 - Covers → Skill (A training covers skills)
 - Participate_IN → Applicant (An applicant can participate in training)

10 Skill

- Primary Key: Skill_ID
- Attributes: Skill_Name, Skill_Description
- Relationships:
 - Covers → Training (A skill is covered by training)

11 Conflict_Management

- Primary Key: Conflict_ID
- Attributes: Conflict_Type, Status, Recorded_Date
- Relationships:
 - Resolve → Conflict_Employees (A conflict involves multiple employees)

12 Conflict_Employees

- Primary Key: Conflict_Employees_ID
- Attributes: Conflict_ID, Employee_ID
- Relationships:
 - Resolve → Conflict_Management (A conflict involves multiple employees)
 - Involved → Employee (An employee is involved in conflicts)

13 Exit_Management

- Primary Key: Exit_ID
- Attributes: Employee_ID, Resignation_Date, Exit_Reason
- Relationships:
 - Leaves_Through → Employee (An employee exits through this entity)

14 Goal

- Primary Key: Goal_ID
- Attributes: Title, Description, Deadline, Status, Created_At

15 Users

- Primary Key: ID
- Attributes: UserName, Password, Name, Email, Department, Role, Created_At, Updated_At

16 Compliance_Policies

- Primary Key: Policy_ID
- Attributes: Policy_Title, Description, Effective_Date, Created_At

17 Engagement_Activities

- Primary Key: Activity_ID
- Attributes: Activity_Name, Activity_Type, Description, Status, Created_At

18 Courses

- Primary Key: Course_ID
- Attributes: Course_Title, Course_Description, Instructor, Duration, Category, Created_Date

19 Surveys

- Primary Key: Survey_ID
- Attributes: Survey_Title, Description, Survey_Type, Expiry_Date, Status, Created_At

Relationships and Cardinality:

1 One-to-One (1:1) Relationships

- Payroll → Employee (1:1) → An employee has one payroll record and a payroll belongs to a single employee.
- Employee → Exit_Management (1:1) → An employee can have one exit record upon leaving.
- Department → Manager (1:1) → A department is managed by one manager.
- Applicant → Employee (1:1) → An applicant can be hired as an employee.

2 One-to-Many (1:N) Relationships

- Employee → Leave_Request (1:N) → An employee can make multiple leave requests.
- Employee → Performance (1:N) → An employee can have multiple performance evaluations.
- Department → Employee (1:N) → A department can have multiple employees whereas an employee works in one department.
- Training → Skill (1:N) → A training session can cover multiple skills.

3 Many-to-Many (M:N) Relationships

- Employee & Training via Employee_Training → An employee can enrol in multiple training sessions, and a training session can have multiple employees.
- Applicant & Job_Posting via Applies_For → An applicant can apply for multiple job postings, and a job posting can have multiple applicants.
- Employee & Conflict_Management via Conflict_Employees → An employee can be involved in multiple conflicts, and a conflict can involve multiple employees.

❖ User Interface Flowchart: -

1. Log - In:

The login flowchart represents the authentication mechanism for the Smart HR Management System, which is exclusively designed for administrator access. The login process ensures secure entry into the system, where the administrator must input valid credentials. If authentication is successful, access is granted to the admin dashboard, where they can manage HR functions such as employee records, payroll, and compliance. If validation fails, the administrator is prompted to re-enter correct login details. This structured process ensures security and restricted access to authorized personnel only.

Log In

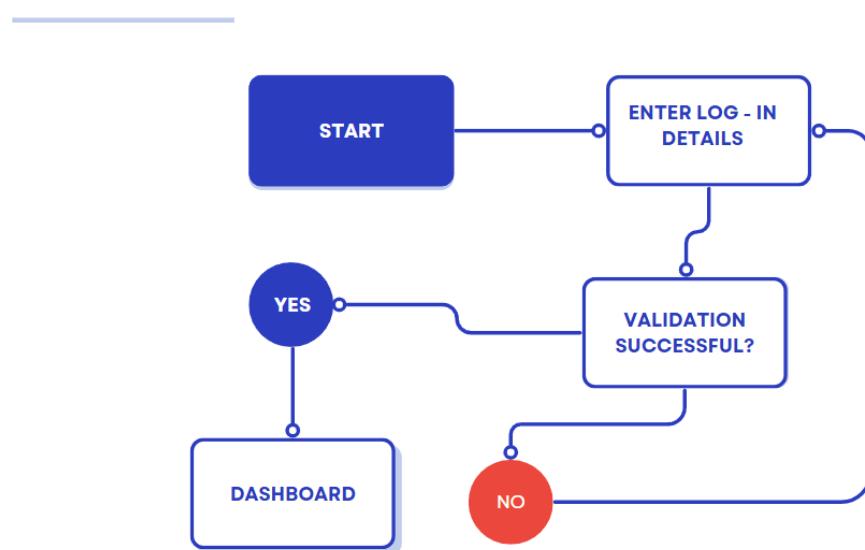


Fig.3: Log – In Flowchart

2. Dashboard:

The dashboard serves as the central hub of the Smart HR Management System, providing the administrator with access to various HR functionalities. It includes modules such as Recruitment, Payroll, Training, Performance, Records, and Compliance, allowing the admin to manage employee data and operations efficiently. The Leave Request and off boarding sections facilitate employee lifecycle management. Relations helps in maintaining employee engagement, while Analytics provides real-time insights into workforce statistics, including the number of current

employees. The About Us section explains the HR management process, and the Logout option ensures secure session termination.

Dashboard

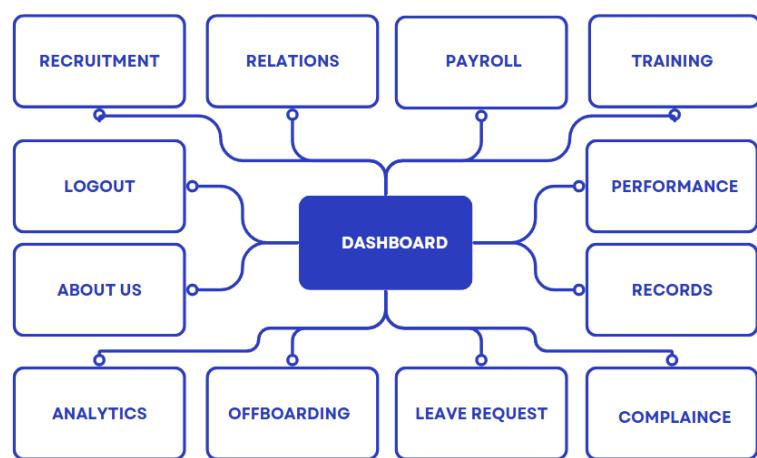


Fig.4: Dashboard Flowchart

Recruitment

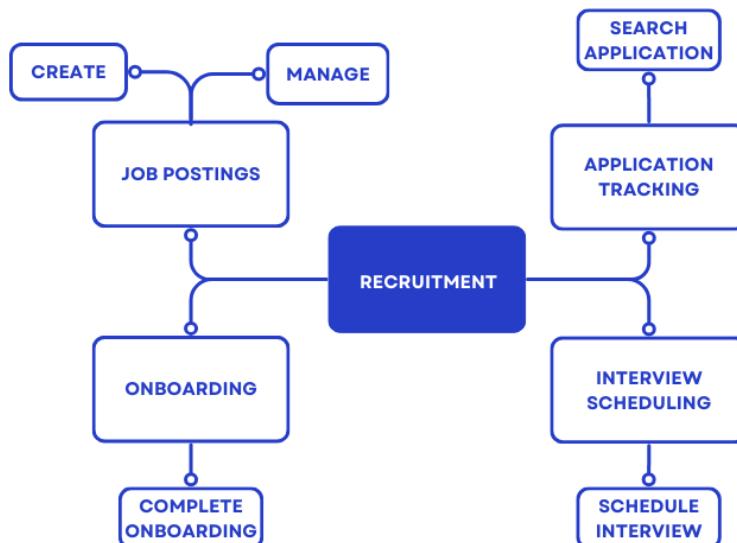


Fig.5: Recruitment Flowchart

3. Recruitment:

The Recruitment module in the Smart HR Management System streamlines the hiring process by managing job postings, application tracking, and onboarding. It allows the administrator to create and manage job postings, ensuring vacancies are efficiently listed. The application tracking system enables searching and monitoring of applications, facilitating smooth candidate evaluation. The module also includes interview scheduling, allowing the admin to set up and manage interview sessions. Once a candidate is selected, the onboarding process ensures a seamless transition, concluding with the completion of onboarding to integrate new hires into the organization.

4. Relations:

The Relations module in the Smart HR Management System focuses on fostering a positive workplace environment by managing conflict resolution, engagement activities, and surveys. It includes Conflict Management, allowing HR to filter, update statuses, and delete conflict cases for effective resolution; Engagement Activities, enabling the creation and management of employee engagement events with options to filter, update statuses, and delete records; and Surveys, facilitating survey creation, management, and status updates to gather employee feedback. This module ensures HR can proactively address employee concerns while maintaining a structured and efficient engagement process.

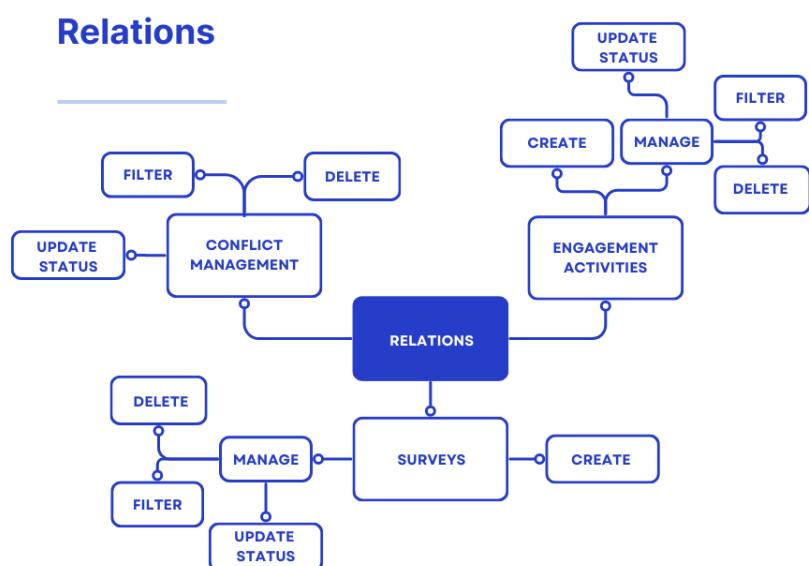


Fig.6: Relations Flowchart

5. Payroll:

The payroll module in the Smart HR Management System streamlines salary processing, tax management, and employee compensation. It includes Salary Structure, which allows HR to update payslips and calculate salaries accurately; Payslip Management, enabling employees to view their detailed payslips; Bonus & Incentives, where HR can update employee bonuses to ensure fair rewards; and Tax Management, which calculates applicable taxes for compliance and transparency. This module ensures efficient and accurate payroll processing, minimizing errors while enhancing employee satisfaction.

Payroll

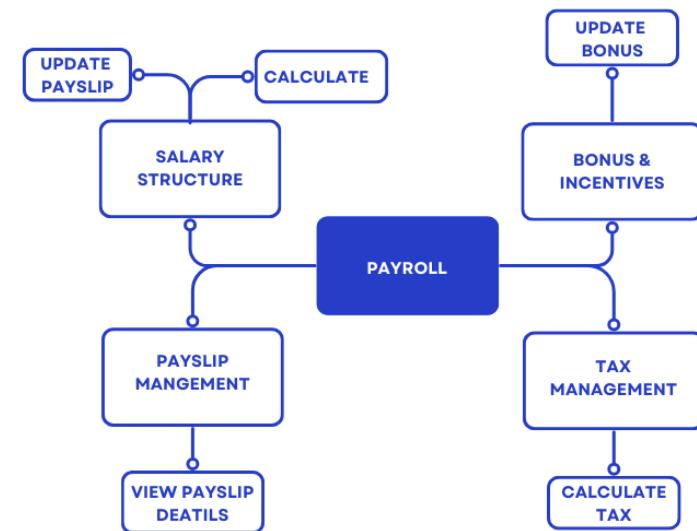


Fig.7: Payroll Flowchart

6. Training:

The Training module in the Smart HR Management System facilitates employee skill development by allowing HR to create training programs, manage ongoing sessions, and delete outdated or irrelevant training modules. This ensures a structured learning environment, helping employees enhance their skills while enabling HR to maintain an up-to-date and efficient training system.

Training

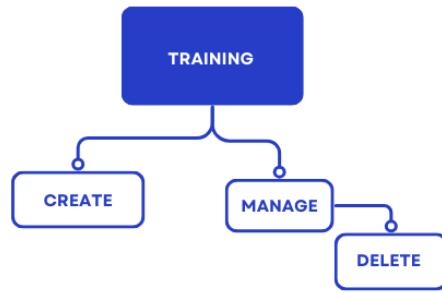


Fig.8: Training Flowchart

7. Performance:

The Performance module in the Smart HR Management System enables organizations to set and track employee goals through the Create Goal feature, which integrates with the Appraisal Manager to review past performance records. The Goal Tracking system allows HR to update statuses and delete irrelevant objectives, ensuring streamlined performance evaluations. Additionally, the Appraisal System facilitates employees in submitting appraisals, creating a structured and transparent assessment process for continuous growth and development.

Performance

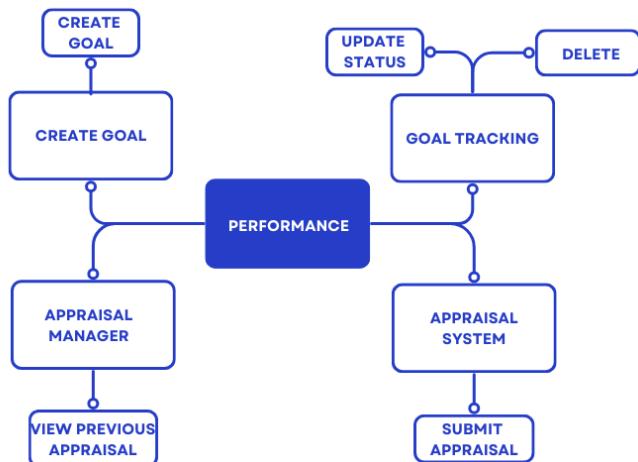


Fig.9: Performance Flowchart

8. Records:

The Records module in the Smart HR Management System provides an efficient way to manage employee information by allowing users to search for employees and access their details seamlessly. This feature ensures quick retrieval of essential employee data, streamlining HR operations and improving record-keeping accuracy.

Records



Fig.10: Records Flowchart

Compliance

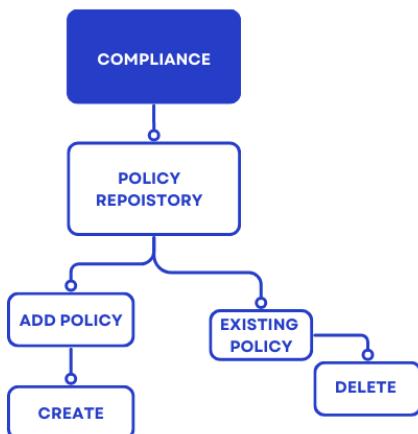


Fig.11: Compliance Flowchart

9. Compliance:

The Compliance module in the Smart HR Management System facilitates efficient policy management through a Policy Repository, allowing users to add new policies by creating them and manage existing policies with options to delete outdated or unnecessary policies. This ensures that organizations maintain up-to-date compliance regulations while streamlining policy administration.

10. Leave Request:

The Leave Request module in the Smart HR Management System streamlines the leave approval process by providing options to approve or reject leave requests, ensuring efficient decision-making and workflow management within the organization.

Leave Request

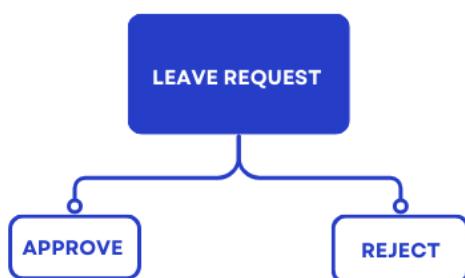


Fig.12: Leave Request Flowchart

Employee Offboarding

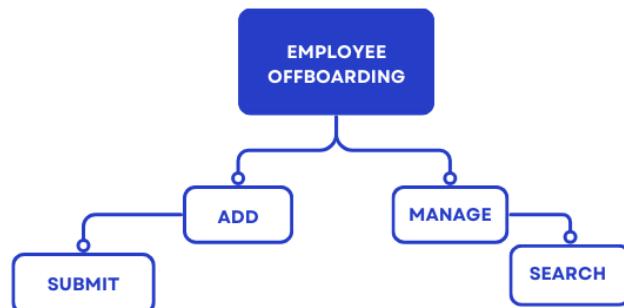


Fig.13: Off boarding Flowchart

11. Off boarding:

The Employee Offboarding module in the Smart HR Management System facilitates a structured exit process by allowing HR to add offboarding requests, submit necessary details, manage existing records, and search for specific employee offboarding data, ensuring a seamless and organized transition for departing employees.

❖ Outcomes: -

This section presents the key outcomes of the Smart HR Management System, showcasing how various functionalities have been implemented. The images illustrate the user experience for administrators, highlighting essential features such as employee onboarding, payroll management, performance evaluation, and leave management. These visuals provide a clear representation of the system's workflow, demonstrating its usability and effectiveness in streamlining HR processes, enhancing decision-making, and improving workforce management.

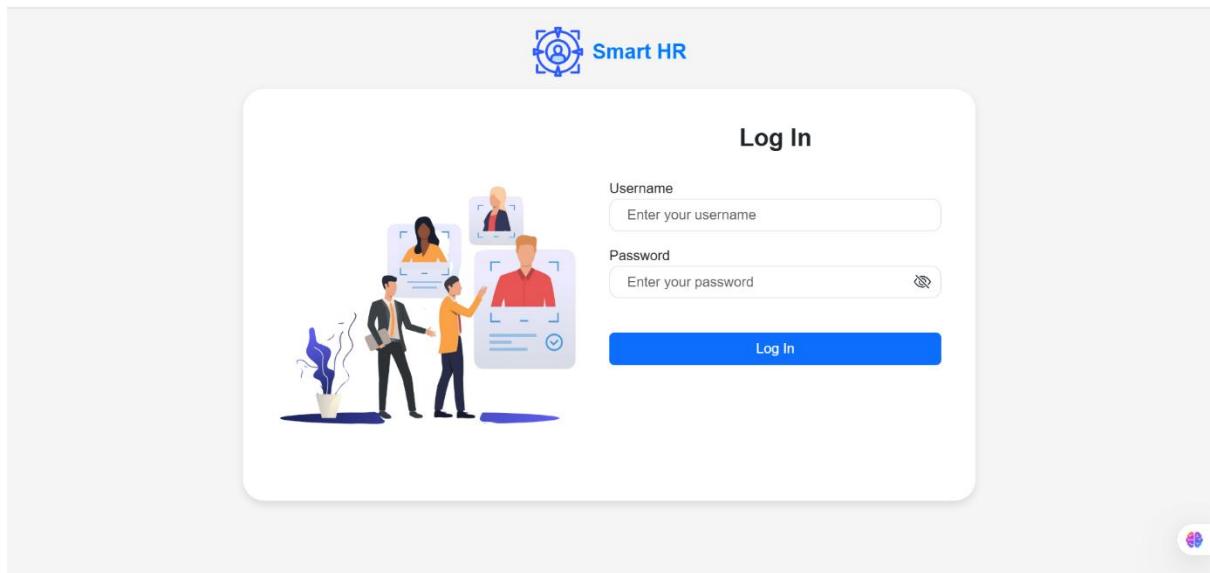


Fig.14: Log – In Page

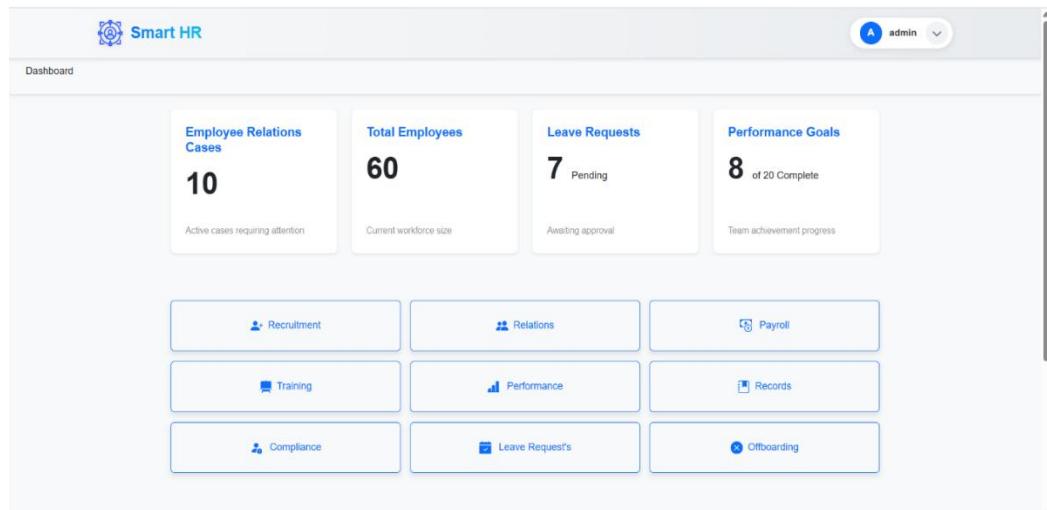


Fig.15: Dashboard Page

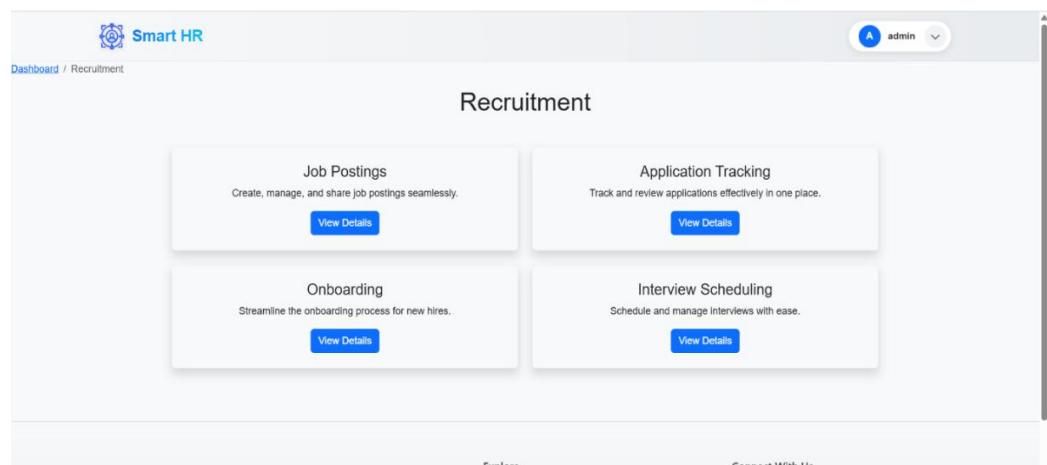


Fig.16: Recruitment Page

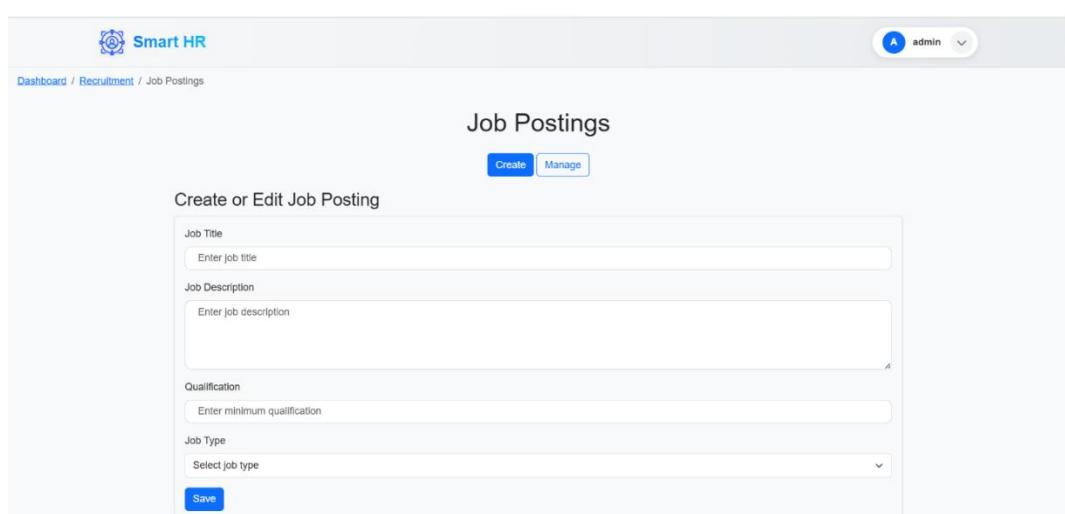
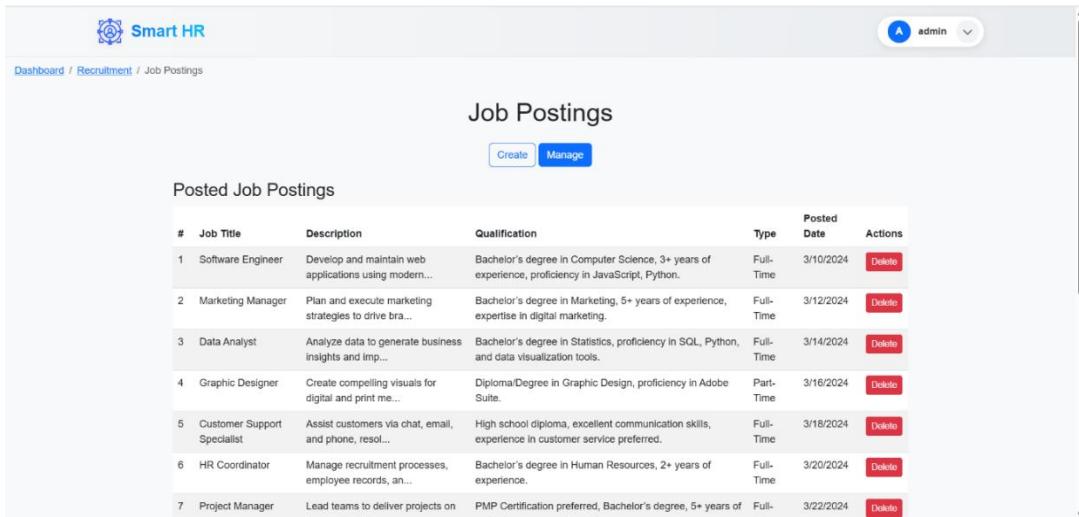


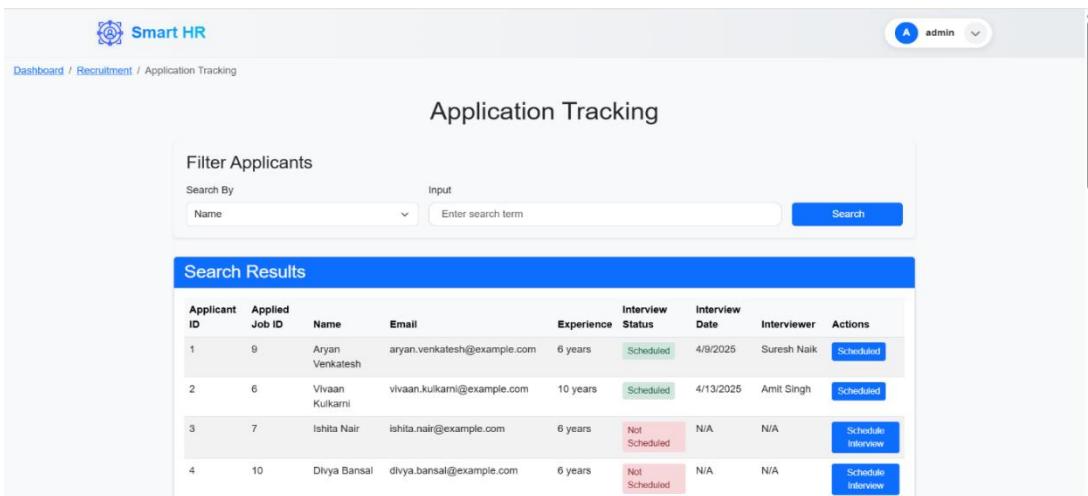
Fig.17: Job Postings Page (Create Section)



The screenshot shows the 'Job Postings' section of the Smart HR application. At the top, there are 'Create' and 'Manage' buttons. Below is a table titled 'Posted Job Postings' with columns: #, Job Title, Description, Qualification, Type, Posted Date, and Actions. The table lists seven job postings with details like job title, description, required qualifications, work type, posting date, and a 'Delete' button for each.

#	Job Title	Description	Qualification	Type	Posted Date	Actions
1	Software Engineer	Develop and maintain web applications using modern...	Bachelor's degree in Computer Science, 3+ years of experience, proficiency in JavaScript, Python.	Full-Time	3/10/2024	<button>Delete</button>
2	Marketing Manager	Plan and execute marketing strategies to drive bra...	Bachelor's degree in Marketing, 5+ years of experience, expertise in digital marketing.	Full-Time	3/12/2024	<button>Delete</button>
3	Data Analyst	Analyze data to generate business insights and imp...	Bachelor's degree in Statistics, proficiency in SQL, Python, and data visualization tools.	Full-Time	3/14/2024	<button>Delete</button>
4	Graphic Designer	Create compelling visuals for digital and print me...	Diploma/Degree in Graphic Design, proficiency in Adobe Suite.	Part-Time	3/16/2024	<button>Delete</button>
5	Customer Support Specialist	Assist customers via chat, email, and phone, resol...	High school diploma, excellent communication skills, experience in customer service preferred.	Full-Time	3/18/2024	<button>Delete</button>
6	HR Coordinator	Manage recruitment processes, employee records, an...	Bachelor's degree in Human Resources, 2+ years of experience.	Full-Time	3/20/2024	<button>Delete</button>
7	Project Manager	Lead teams to deliver projects on time and budget.	PMP Certification preferred, Bachelor's degree, 5+ years of experience.	Full-Time	3/22/2024	<button>Delete</button>

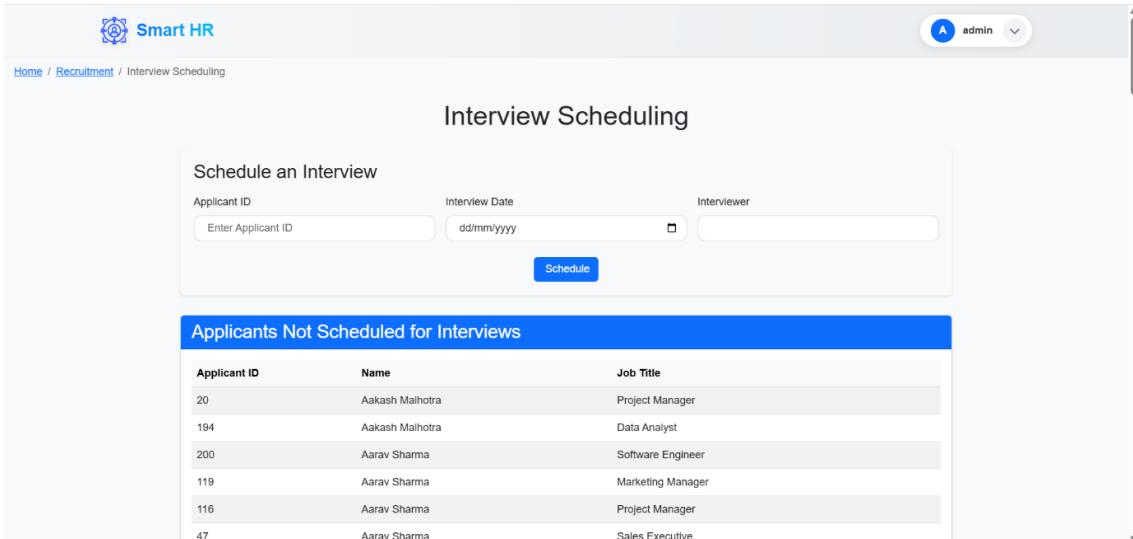
Fig.18: Job Postings Page (Manage Section)



The screenshot shows the 'Application Tracking' section of the Smart HR application. At the top, there is a 'Filter Applicants' search bar with 'Search By' dropdown (set to 'Name') and a 'Search' button. Below is a table titled 'Search Results' with columns: Applicant ID, Applied Job ID, Name, Email, Experience, Interview Status, Interview Date, Interviewer, and Actions. The table lists four applicants with details like name, email, experience, interview status, and interviewer, along with a 'Schedule Interview' button for each.

Applicant ID	Applied Job ID	Name	Email	Experience	Interview Status	Interview Date	Interviewer	Actions
1	9	Aryan Venkatesh	aryan.venkatesh@example.com	6 years	Scheduled	4/9/2025	Suresh Naik	<button>Scheduled</button>
2	6	Vivaan Kulkarni	vivaan.kulkarni@example.com	10 years	Scheduled	4/13/2025	Amit Singh	<button>Scheduled</button>
3	7	Ishita Nair	ishita.nair@example.com	6 years	Not Scheduled	N/A	N/A	<button>Schedule Interview</button>
4	10	Divya Bansal	divya.bansal@example.com	6 years	Not Scheduled	N/A	N/A	<button>Schedule Interview</button>

Fig.19: Application Tracking Page



The screenshot shows the 'Interview Scheduling' section of the Smart HR application. At the top, there is a 'Schedule an Interview' form with fields for 'Applicant ID' (input: 'Enter Applicant ID'), 'Interview Date' (input: 'dd/mm/yyyy'), and 'Interviewer' (input: 'Enter Interviewer'). Below is a table titled 'Applicants Not Scheduled for Interviews' with columns: Applicant ID, Name, and Job Title. The table lists five applicants with their names and job titles.

Applicant ID	Name	Job Title
20	Aakash Malhotra	Project Manager
194	Aakash Malhotra	Data Analyst
200	Aarav Sharma	Software Engineer
119	Aarav Sharma	Marketing Manager
116	Aarav Sharma	Project Manager
47	Aarav Sharma	Sales Executive

Fig.20: Interview Scheduling Page

The screenshot shows the 'Employee Onboarding' section of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the breadcrumb navigation shows 'Dashboard / Recruitment / Onboarding'. The main title 'Employee Onboarding' is centered above a 'Recent Onboardings' table. The table has columns for 'Applicant ID', 'Name', 'Joining Date', and 'Status'. It lists five recent onboarding entries. Below the table, there is a section titled 'Onboard New Employee' with a form for 'Applicant ID' and a 'Complete Onboarding' button.

Applicant ID	Name	Joining Date	Status
1	Aryan Venkatesh	1/1/2023	Completed
2	Vivaan Kulkarni	2/20/2023	Completed
3	Ishita Nair	1/1/1970	Pending
4	Divya Bansal	1/1/1970	Pending
5	Divya Bansal	1/1/1970	Pending

Fig.21: Onboarding Page

The screenshot shows the 'Employee Relations' section of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the breadcrumb navigation shows 'Dashboard / Relations'. The main title 'Employee Relations' is centered above three cards: 'Conflict Management', 'Engagement Activities', and 'Surveys'. Each card has a 'View Details' button. At the bottom, there are links for 'Explore', 'About Us', and 'Connect With Us' (Facebook, LinkedIn, GitHub).

Fig.22: Relations Page

The screenshot shows the 'Conflict Management' section of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the breadcrumb navigation shows 'Dashboard / Relations / Conflict Management'. The main title 'Conflict Management' is centered above a table. The table has columns for 'Conflict ID', 'Employee IDs', 'Type of Conflict', 'Status', and 'Action'. It lists ten conflict entries. Each entry has a 'Delete' button in the 'Action' column.

Conflict ID	Employee IDs	Type of Conflict	Status	Action
1	72, 89	Workplace Harassment	Resolved	<button>Delete</button>
2	85, 93	Project Deadline Dispute	Ongoing	<button>Delete</button>
3	98, 114	Salary Delay Issue	Pending	<button>Delete</button>
4	127	Unfair Workload Distribution	Pending	<button>Delete</button>
5	101	Miscommunication Between Teams	Resolved	<button>Delete</button>
6	105	Manager-Employee Conflict	Ongoing	<button>Delete</button>
7	110	Office Politics Issue	Pending	<button>Delete</button>
8	115, 118	Inappropriate Behavior in Meetings	Resolved	<button>Delete</button>
9	120	Equipment Misuse Conflict	Ongoing	<button>Delete</button>
10	125, 130	Promotion Disagreement	...	<button>Delete</button>

Fig.23: Conflict Management Page

The screenshot shows the 'Engagement Activities' page in the Smart HR application. The title 'Engagement Activities' is at the top, with 'Create' and 'Manage' buttons. Below is a form titled 'Create a New Engagement Activity' with fields for 'Activity Name', 'Description', 'Type' (set to 'Workshop'), 'Date' (dd/mm/yyyy format), and a 'Submit' button.

Fig.24: Engagement Activities Page (Create Section)

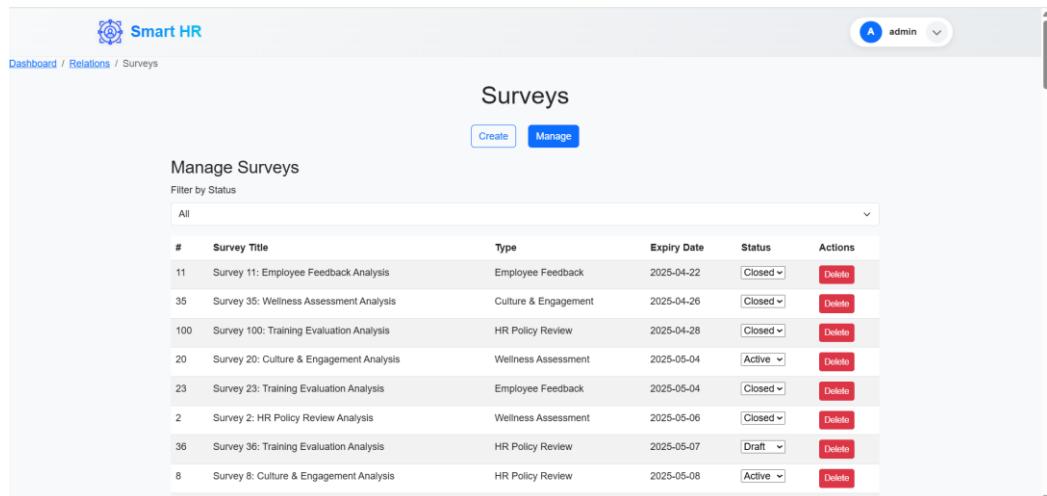
The screenshot shows the 'Engagement Activities' page in the Smart HR application, showing a list of activities. The title 'Engagement Activities' is at the top, with 'Create' and 'Manage' buttons. Below is a table titled 'Manage Activities' with columns: #, Activity Name, Type, Date, Status, and Actions. The table lists various activities with their details and status (e.g., Cancelled, Conducted, Yet to be Conducted).

#	Activity Name	Type	Date	Status	Actions
5	Diversity & Inclusion Seminar	Workshop	2024-03-29	Cancelled	<button>Delete</button>
1	Team Building Retreat	Team Building	2024-04-09	Conducted	<button>Delete</button>
9	Leadership Development Training	Training Program	2024-04-14	Conducted	<button>Delete</button>
4	Agile Methodology Training	Training Program	2024-04-19	Conducted	<button>Delete</button>
2	Mindfulness Workshop	Wellness Session	2024-05-14	Yet to be Conducted	<button>Delete</button>
8	Blood Donation Camp	CSR Activity	2024-05-24	Conducted	<button>Delete</button>
3	CSR Tree Plantation	CSR Activity	2024-06-04	Yet to be Conducted	<button>Delete</button>
14	Public Speaking Training	Training Program	2024-06-11	Conducted	<button>Delete</button>

Fig.25: Engagement Activities Page (Manage Section)

The screenshot shows the 'Surveys' page in the Smart HR application. The title 'Surveys' is at the top, with 'Create' and 'Manage' buttons. Below is a form titled 'Create a New Survey' with fields for 'Survey Title', 'Description', 'Type' (set to 'Employee Feedback'), 'Expiry Date' (dd/mm/yyyy format), and a 'Submit' button.

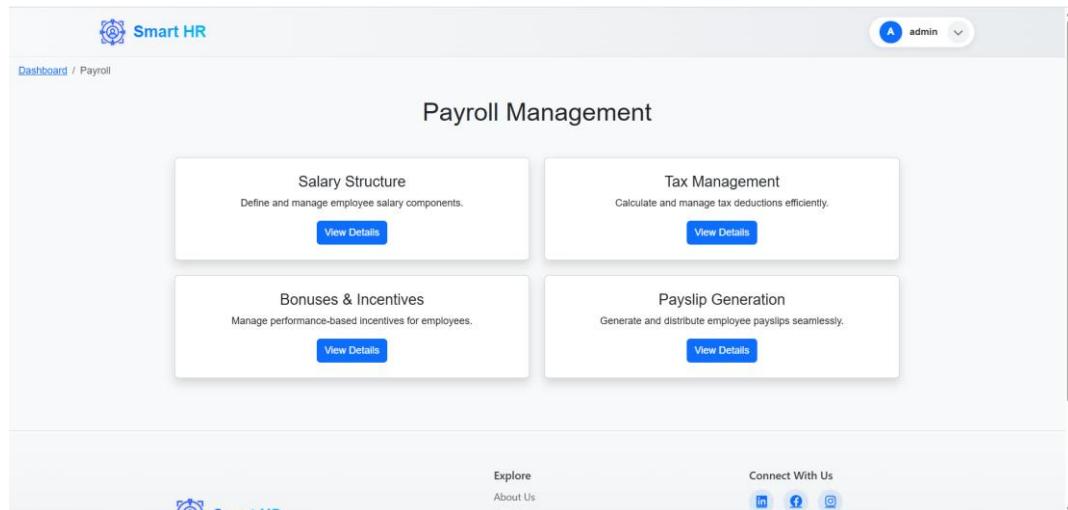
Fig.26: Surveys Page (Create Section)



The screenshot shows the 'Surveys' page in the Smart HR application. At the top, there are 'Create' and 'Manage' buttons. Below is a table titled 'Manage Surveys' with columns: #, Survey Title, Type, Expiry Date, Status, and Actions. The table lists several surveys with their details and status (e.g., Closed, Active, Draft). The 'Actions' column contains 'Delete' buttons for each row.

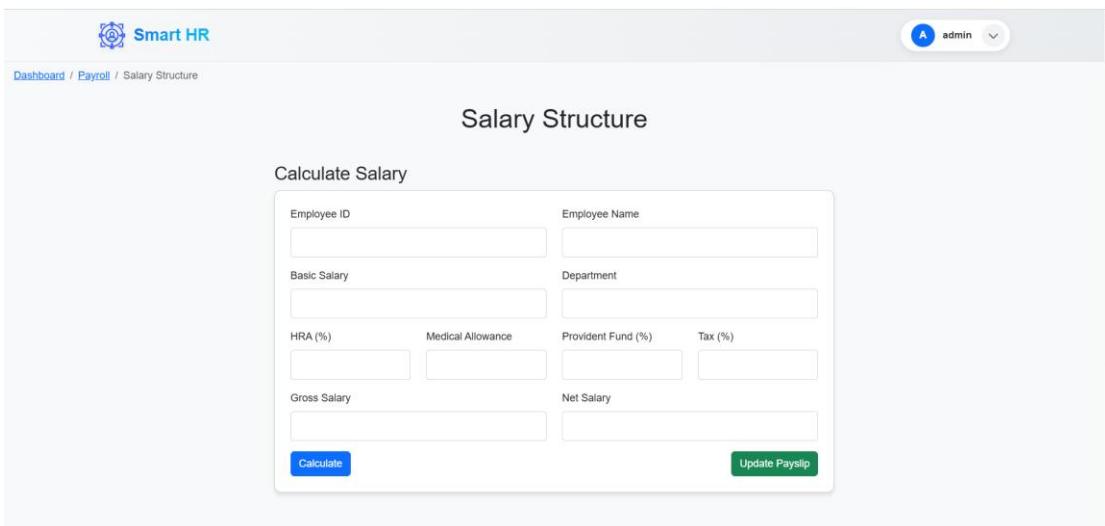
#	Survey Title	Type	Expiry Date	Status	Actions
11	Survey 11: Employee Feedback Analysis	Employee Feedback	2025-04-22	Closed	<button>Delete</button>
35	Survey 35: Wellness Assessment Analysis	Culture & Engagement	2025-04-26	Closed	<button>Delete</button>
100	Survey 100: Training Evaluation Analysis	HR Policy Review	2025-04-28	Closed	<button>Delete</button>
20	Survey 20: Culture & Engagement Analysis	Wellness Assessment	2025-05-04	Active	<button>Delete</button>
23	Survey 23: Training Evaluation Analysis	Employee Feedback	2025-05-04	Closed	<button>Delete</button>
2	Survey 2: HR Policy Review Analysis	Wellness Assessment	2025-05-06	Closed	<button>Delete</button>
36	Survey 36: Training Evaluation Analysis	HR Policy Review	2025-05-07	Draft	<button>Delete</button>
8	Survey 8: Culture & Engagement Analysis	HR Policy Review	2025-05-08	Active	<button>Delete</button>

Fig.27: Surveys Page (Manage Section)



The screenshot shows the 'Payroll Management' page. It features four main sections: 'Salary Structure' (View Details), 'Tax Management' (View Details), 'Bonuses & Incentives' (View Details), and 'Payslip Generation' (View Details). At the bottom, there are links for 'Explore', 'About Us', and 'Connect With Us' (LinkedIn, Facebook, Instagram).

Fig.28: Payroll Page



The screenshot shows the 'Salary Structure' page. It has a 'Calculate Salary' form with fields for Employee ID, Employee Name, Basic Salary, Department, HRA (%), Medical Allowance, Provident Fund (%), Tax (%), Gross Salary, and Net Salary. It includes 'Calculate' and 'Update Payslip' buttons.

Fig.29: Salary Calculation Page

The screenshot shows the 'Income Tax Calculator' page of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the page title 'Income Tax Calculator' is displayed. A main form titled 'Calculate Your Tax' contains fields for 'Annual Salary (₹)' and 'Select Tax Regime', with a 'Calculate Tax' button. At the bottom of the page, there is a footer with the Smart HR logo, copyright information (© 2025 Smart HR. All rights reserved.), and links for 'Explore', 'About Us', 'Our Team', 'Connect With Us' (social media icons), and a newsletter sign-up form.

Fig.30: Tax Calculation Page

The screenshot shows the 'Update Employee Bonus' page of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the page title 'Update Employee Bonus' is displayed. A main form titled 'Update Bonus' contains fields for 'Employee ID' and 'Bonus Amount', with a 'Update Bonus' button. At the bottom of the page, there is a footer with the Smart HR logo, copyright information (© 2025 Smart HR. All rights reserved.), and links for 'Explore', 'About Us', 'Our Team', 'Connect With Us' (social media icons), and a newsletter sign-up form.

Fig.31: Employee Bonus Updating Page

The screenshot shows the 'Payslip Management' page of the Smart HR application. At the top, there is a header with the Smart HR logo and a user dropdown for 'admin'. Below the header, the page title 'Payslip Management' is displayed. A main table titled 'Employee Salary Details' lists employee salaries with columns for #, Employee ID, Employee Name, Basic Salary, Allowance, Bonus, PF Deductions, Tax Deduction, and Net Salary. The table contains 9 rows of data. At the bottom of the page, there is a footer with the Smart HR logo, copyright information (© 2025 Smart HR. All rights reserved.), and links for 'Explore', 'About Us', 'Our Team', 'Connect With Us' (social media icons), and a newsletter sign-up form.

#	Employee ID	Employee Name	Basic Salary	Allowance	Bonus	PF Deductions	Tax Deduction	Net Salary
1	71	Aryan Venkatesh	35000.00	7000.00	1750.00	4200.00	3500.00	36050.00
2	72	Vivaan Kulkarni	50000.00	10000.00	2500.00	6000.00	5000.00	51500.00
3	73	Aditi Choudhury	65000.00	13000.00	3250.00	7800.00	6500.00	66950.00
4	74	Aakanksha Shetty	48000.00	9600.00	2400.00	5760.00	4800.00	49440.00
5	75	Deepak Mahajan	72000.00	14400.00	3600.00	8640.00	7200.00	74160.00
6	76	Aditya Deshmukh	43000.00	8600.00	2150.00	5160.00	4300.00	44290.00
7	77	Tanvi Ghosh	53000.00	10600.00	2650.00	6360.00	5300.00	54590.00
8	78	Aakash Malhotra	38000.00	7600.00	1900.00	4560.00	3800.00	39140.00
9	79	Ritika Joshi	90000.00	18000.00	4500.00	10800.00	9000.00	92700.00

Fig.32: Payslip Management Page

Smart HR

Dashboard / Training

Training Courses

[Create](#) [Manage](#)

Create a New Training Course

Course Title **Instructor Name**

Description

Category **Duration**

[Add Course](#)

Fig.33: Training Page (Create Section)

Smart HR

Dashboard / Training

Training Courses

[Create](#) [Manage](#)

Manage Training Courses

Introduction to Python Instructor: John Smith Category: Programming Duration: 6 Weeks Delete	Advanced Java Programming Instructor: Alice Johnson Category: Programming Duration: 8 Weeks Delete	Data Science with Python Instructor: Michael Lee Category: Data Science Duration: 10 Weeks Delete
Web Development with React Instructor: Sarah Wilson Category: Web Development Duration: 6 Weeks Delete	Cybersecurity Fundamentals Instructor: Robert Brown Category: Security Duration: 8 Weeks Delete	Machine Learning Basics Instructor: Emma Davis Category: Data Science Duration: 9 Weeks Delete

Fig.34: Training Page (Manage Section)

Smart HR

Dashboard / Performance

Performance Management

[Create Goal](#) [View Details](#)

Establish clear objectives to align employee efforts with organizational goals.

[Goal Tracking](#) [View Details](#)

Track and manage employee progress towards achieving set goals.

[Appraisal System](#) [View Details](#)

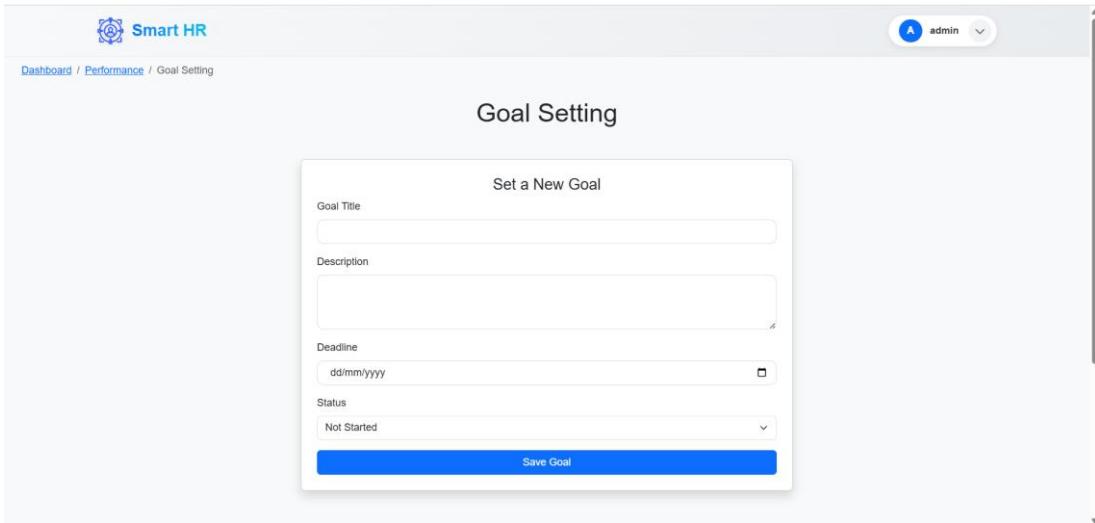
Evaluate employee performance to provide feedback and recognition.

[Appraisal Manager](#) [View Details](#)

Manage previously recorded appraisals efficiently.

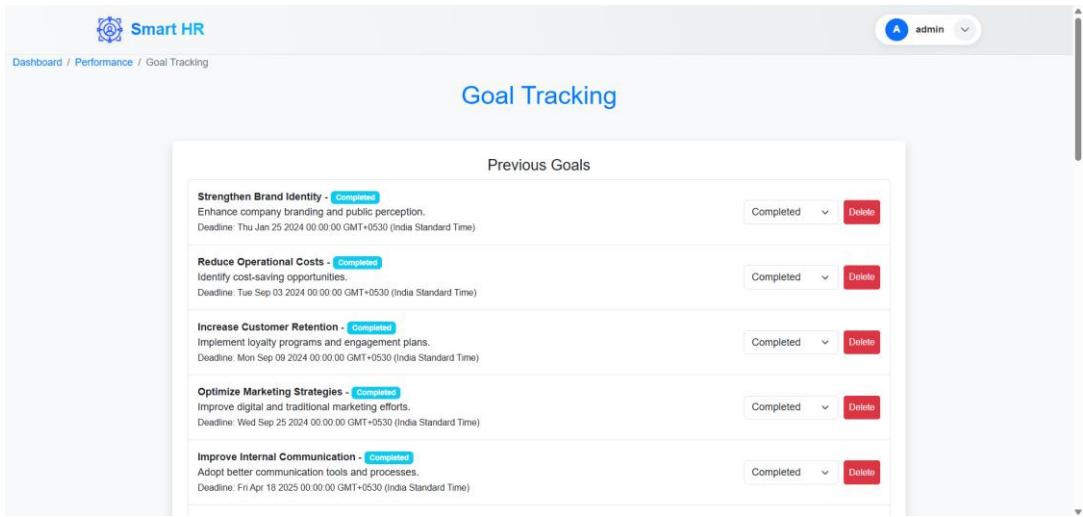
Explore [About Us](#) Connect With Us

Fig.35: Performance Page



The screenshot shows the 'Goal Setting' page of the Smart HR application. The header includes the logo and the text 'Smart HR'. The top navigation bar shows 'Dashboard / Performance / Goal Setting'. The main title 'Goal Setting' is centered above a form. The form is titled 'Set a New Goal' and contains the following fields: 'Goal Title' (input field), 'Description' (input field), 'Deadline' (input field with placeholder 'dd/mm/yyyy'), 'Status' (dropdown menu with 'Not Started' selected), and a 'Save Goal' button at the bottom.

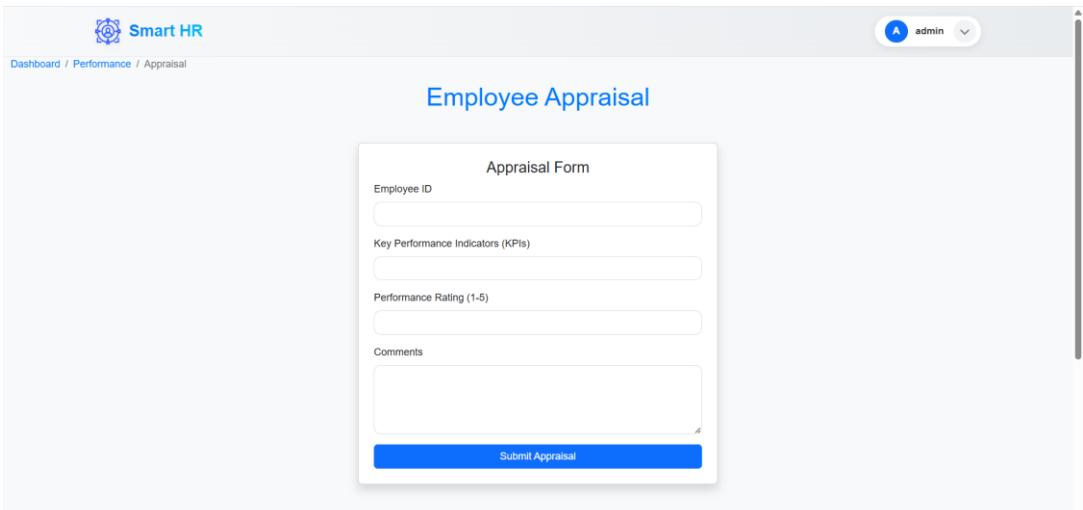
Fig.36: Goal Setting Page



The screenshot shows the 'Goal Tracking' page of the Smart HR application. The header includes the logo and the text 'Smart HR'. The top navigation bar shows 'Dashboard / Performance / Goal Tracking'. The main title 'Goal Tracking' is centered above a section titled 'Previous Goals'. This section lists five completed goals with their details and delete buttons:

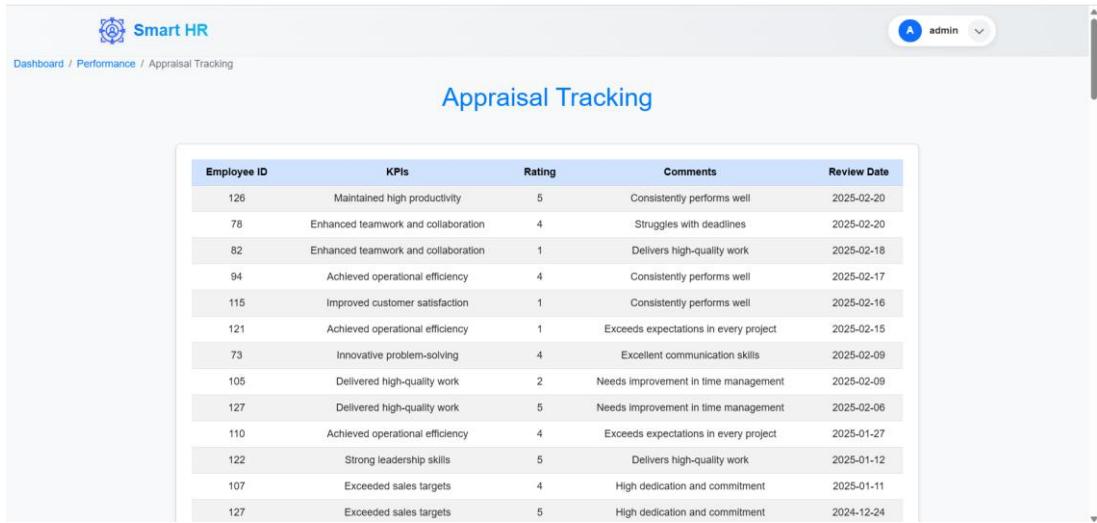
- Strengthen Brand Identity** - Completed
Enhance company branding and public perception.
Deadline: Thu Jan 25 2024 00:00:00 GMT+0530 (India Standard Time)
- Reduce Operational Costs** - Completed
Identify cost-saving opportunities.
Deadline: Tue Sep 03 2024 00:00:00 GMT+0530 (India Standard Time)
- Increase Customer Retention** - Completed
Implement loyalty programs and engagement plans.
Deadline: Mon Sep 09 2024 00:00:00 GMT+0530 (India Standard Time)
- Optimize Marketing Strategies** - Completed
Improve digital and traditional marketing efforts.
Deadline: Wed Sep 25 2024 00:00:00 GMT+0530 (India Standard Time)
- Improve Internal Communication** - Completed
Adopt better communication tools and processes.
Deadline: Fri Apr 18 2025 00:00:00 GMT+0530 (India Standard Time)

Fig.37: Goal Tracking Page



The screenshot shows the 'Employee Appraisal' page of the Smart HR application. The header includes the logo and the text 'Smart HR'. The top navigation bar shows 'Dashboard / Performance / Appraisal'. The main title 'Employee Appraisal' is centered above a form titled 'Appraisal Form'. The form contains the following fields: 'Employee ID' (input field), 'Key Performance Indicators (KPIs)' (input field), 'Performance Rating (1-5)' (input field), 'Comments' (input field), and a 'Submit Appraisal' button at the bottom.

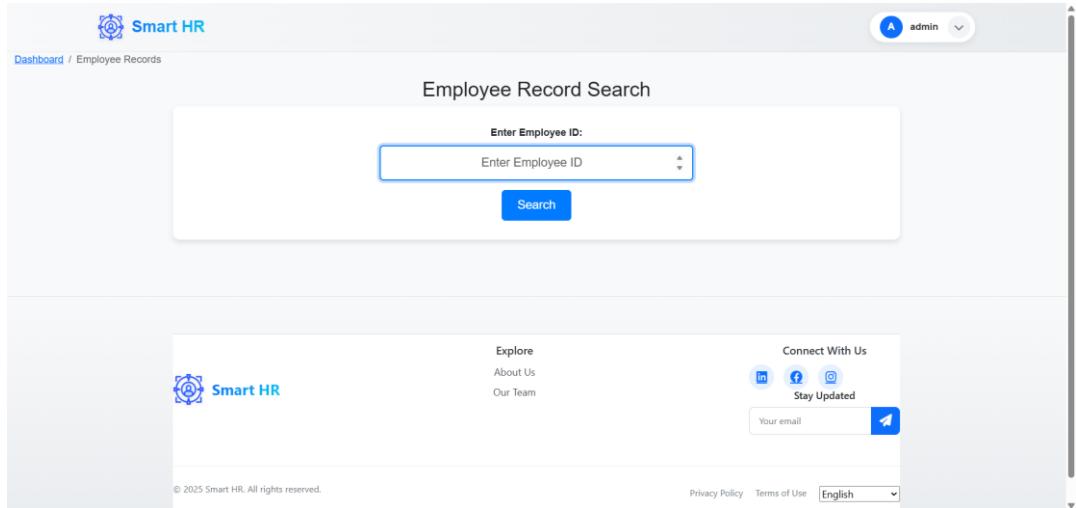
Fig.38: Appraisal Form Page



The screenshot shows the 'Appraisal Tracking' section of the Smart HR application. At the top, there is a navigation bar with the 'Smart HR' logo, a user icon labeled 'admin', and a dropdown menu. Below the navigation is a title 'Appraisal Tracking'. A table follows, with columns: 'Employee ID', 'KPIs', 'Rating', 'Comments', and 'Review Date'. The table contains 15 rows of data, each representing an appraisal entry with details like employee ID, KPI achieved, rating given, a comment, and the date of review.

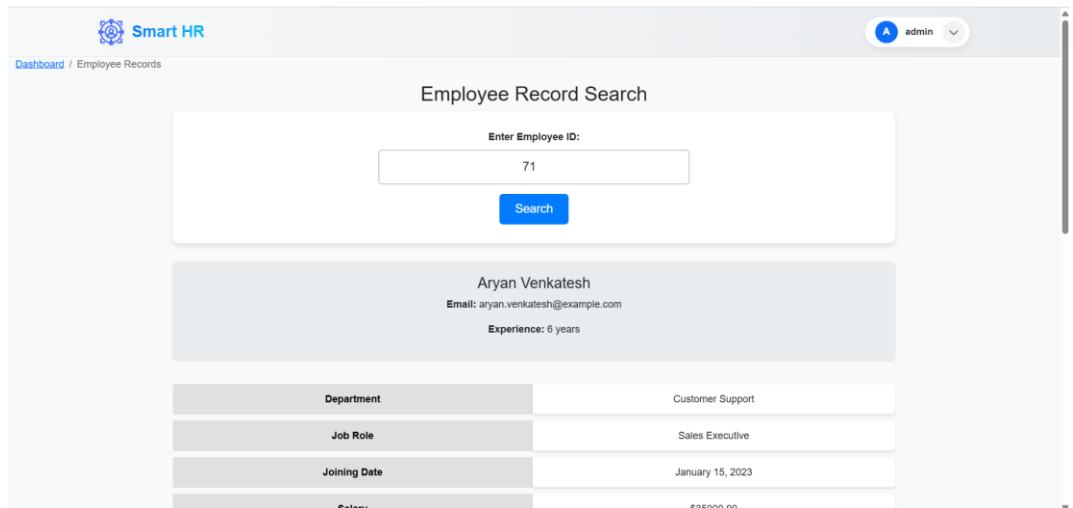
Employee ID	KPIs	Rating	Comments	Review Date
126	Maintained high productivity	5	Consistently performs well	2025-02-20
78	Enhanced teamwork and collaboration	4	Struggles with deadlines	2025-02-20
82	Enhanced teamwork and collaboration	1	Delivers high-quality work	2025-02-18
94	Achieved operational efficiency	4	Consistently performs well	2025-02-17
115	Improved customer satisfaction	1	Consistently performs well	2025-02-16
121	Achieved operational efficiency	1	Exceeds expectations in every project	2025-02-15
73	Innovative problem-solving	4	Excellent communication skills	2025-02-09
105	Delivered high-quality work	2	Needs improvement in time management	2025-02-09
127	Delivered high-quality work	5	Needs improvement in time management	2025-02-06
110	Achieved operational efficiency	4	Exceeds expectations in every project	2025-01-27
122	Strong leadership skills	5	Delivers high-quality work	2025-01-12
107	Exceeded sales targets	4	High dedication and commitment	2025-01-11
127	Exceeded sales targets	5	High dedication and commitment	2024-12-24

Fig.39: Appraisal Tracking Page



The screenshot shows the 'Employee Record Search' section of the Smart HR application. At the top, there is a navigation bar with the 'Smart HR' logo, a user icon labeled 'admin', and a dropdown menu. Below the navigation is a title 'Employee Record Search'. A search form is present, with a text input field labeled 'Enter Employee ID:' and a 'Search' button. The main content area features the 'Smart HR' logo and navigation links for 'Explore', 'About Us', and 'Our Team'. On the right, there is a 'Connect With Us' section with social media icons for LinkedIn, Facebook, and Instagram, and a 'Stay Updated' newsletter sign-up form. At the bottom, there is a copyright notice, a language selection dropdown set to 'English', and links for 'Privacy Policy' and 'Terms of Use'.

Fig.40: Records Page (Search)



The screenshot shows the 'Employee Record Result' section of the Smart HR application. At the top, there is a navigation bar with the 'Smart HR' logo, a user icon labeled 'admin', and a dropdown menu. Below the navigation is a title 'Employee Record Search'. A search form is present, with a text input field containing the value '71' and a 'Search' button. The main content area displays the results for employee ID 71, showing the employee's name 'Aryan Venkatesh', email 'aryan.venkatesh@example.com', and experience '6 years'. Below this, there is a table with four rows: 'Department' (Customer Support), 'Job Role' (Sales Executive), 'Joining Date' (January 15, 2023), and 'Salary' (\$35000.00).

Fig.41: Records Page (Result)

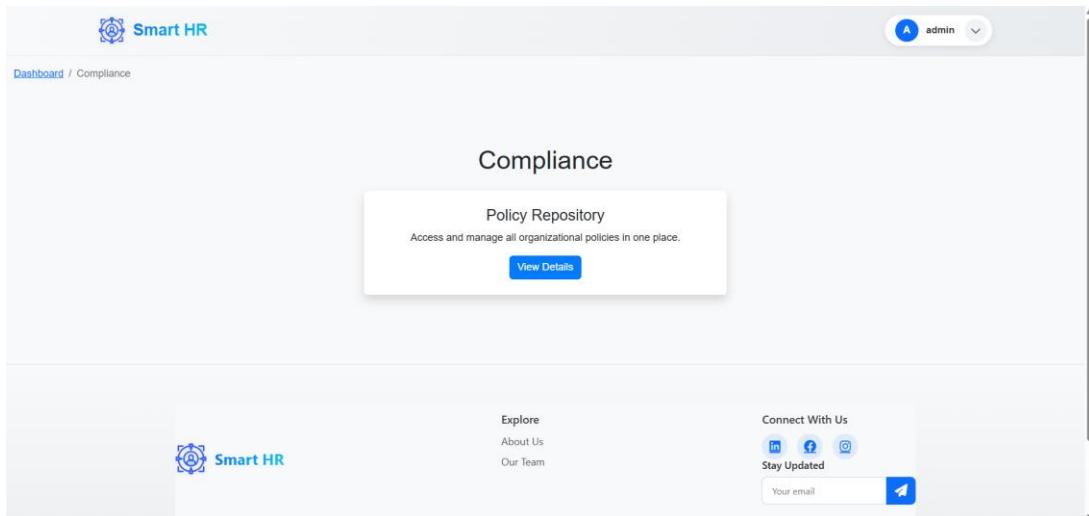


Fig.42: Compliance Page

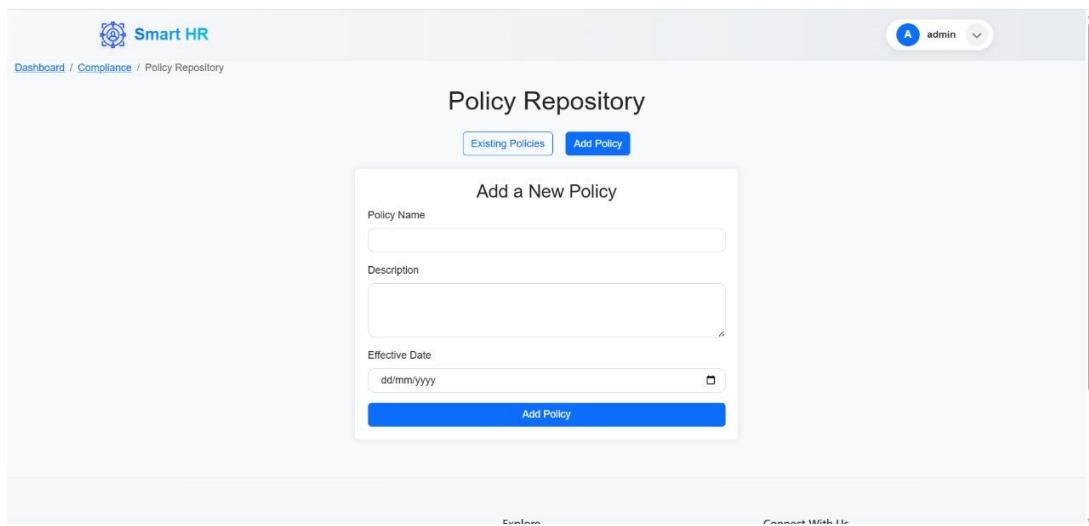


Fig.43: Policy Repository Page (Add Section)

ID	Policy Name	Description	Actions
1	Data Protection Policy	Ensures the protection of sensitive company and customer data.	<button>Delete</button>
2	Anti-Bribery Policy	Prevents bribery and corruption within the organization.	<button>Delete</button>
3	Workplace Harassment Policy	Defines acceptable workplace behavior and prevents harassment.	<button>Delete</button>
4	Equal Employment Opportunity Policy	Ensures fair hiring and employment practices.	<button>Delete</button>
5	Remote Work Policy	Guidelines for employees working remotely.	<button>Delete</button>
6	Cybersecurity Policy	Establishes security protocols to protect company data and systems.	<button>Delete</button>
7	Code of Conduct	Outlines ethical behavior expectations for employees.	<button>Delete</button>
8	Whistleblower Protection Policy	Ensures protection for employees reporting misconduct.	<button>Delete</button>
9	Health and Safety Policy	Ensures workplace safety and compliance with health regulations.	<button>Delete</button>
10	Conflict of Interest Policy	Guidelines to prevent personal interests from influencing business decisions.	<button>Delete</button>
11	Social Media Policy	Defines appropriate use of social media by employees.	<button>Delete</button>

Fig.44: Policy Repository Page (Manage Section)

#	Employee ID	Employee Name	Leave Start Date	Leave End Date	Reason	Status	Action
1	110	Aditya Deshmukh	2026-01-04	2026-01-09	Personal work	Pending	<button>Approve</button> <button>Reject</button>
2	76	Aditya Deshmukh	2025-09-29	2025-10-03	Sick leave	Pending	<button>Approve</button> <button>Reject</button>
3	94	Ayesha Nanda	2025-05-17	2025-05-24	Medical treatment	Pending	<button>Approve</button> <button>Reject</button>
4	118	Niharika Basu	2025-02-09	2025-02-14	Parental leave	Pending	<button>Approve</button> <button>Reject</button>
5	86	Saurabh Venkatesh	2024-11-19	2024-11-24	Personal reasons	Pending	<button>Approve</button> <button>Reject</button>
6	72	Vivaan Kulkarni	2024-08-13	2024-08-17	Vacation	Pending	<button>Approve</button> <button>Reject</button>
7	81	Rajeev Subramaniam	2024-02-14	2024-02-19	Medical emergency	Pending	<button>Approve</button> <button>Reject</button>

Fig.45: Leave Request Page

Employee Offboarding

Add Manage

Offboard Employee

Employee ID
Enter Employee ID

Resignation Date
dd/mm/yyyy

Exit Reason

Submit

Fig.46: Offboarding Page (Add Section)

Employee Offboarding

Add Manage

Offboarded Employees

Search by Employee ID dd/mm/yyyy Search

#	Employee ID	Resignation Date	Exit Reason
1	72	2024-12-14	Accepted a higher-paying job offer at another company.
2	79	2025-01-09	Left to start a personal business venture.
3	85	2025-01-19	Relocating to a different city for personal reasons.
4	93	2025-02-04	Seeking a career shift to a different industry.
5	98	2025-02-09	Pursuing further studies in a specialized field.
6	114	2025-03-04	Retiring after completing a long tenure with the company.
7	120	2025-03-11	Health issues leading to early retirement.
8	129	2025-03-17	Looking for a better work-life balance and flexible work options.

Fig.47: Offboarding Page (Manage Section)



Fig.48: About Us Page (Part 1)

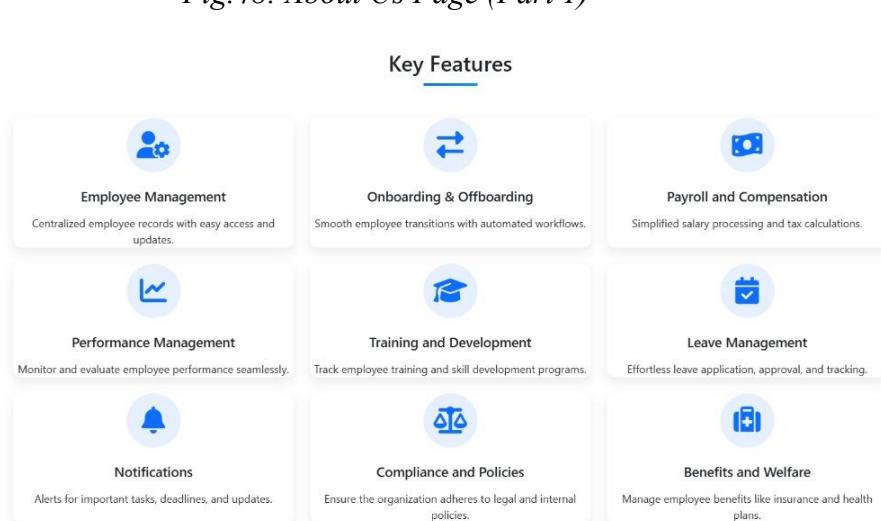


Fig.49: About Us Page (Part 2)



Fig.50: About Us Page (Part 3)

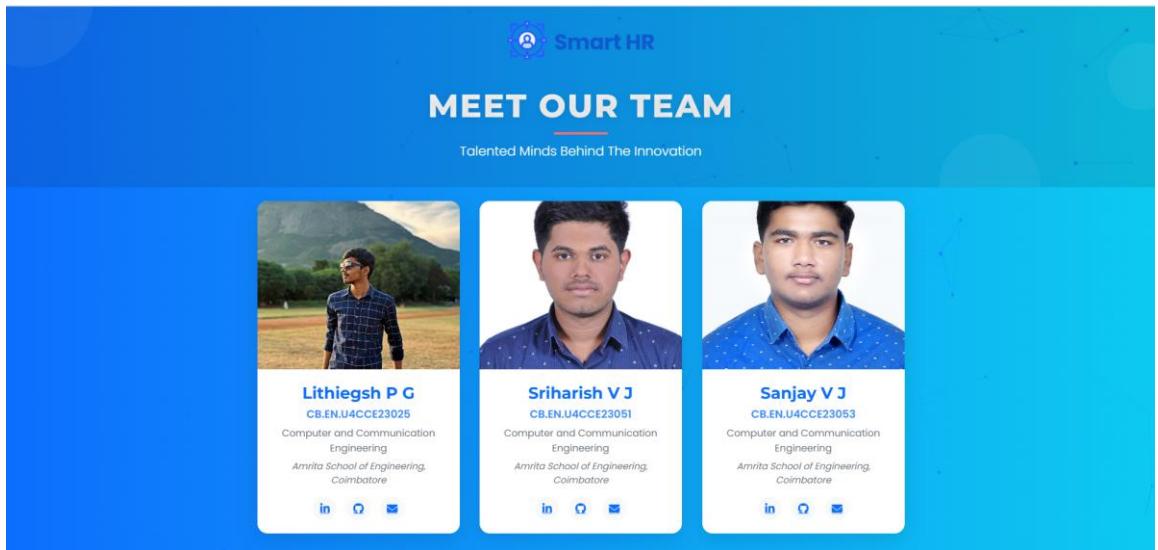


Fig.51: Team Members Page

❖ Conclusion: -

The Smart HR Management System provides a robust and efficient solution for streamlining human resource processes. By integrating MySQL and Node.js, the system ensures secure storage, retrieval, and management of employee records, payroll, performance evaluations, and leave tracking. The implementation of data validation constraints, and automated reporting mechanisms enhances system reliability, security, and efficiency. Additionally, the use of RESTful APIs enables seamless interaction between the database and external applications, ensuring a scalable and modular architecture. This project highlights the significance of a well-structured database and an optimized backend in facilitating effective HR management, improving decision-making, and enhancing workforce productivity.

AI-powered analytics for employee performance evaluation and talent retention strategies. Automated chatbot assistance for handling employee queries and HR-related requests. Integration with biometric attendance systems for enhanced accuracy and security. Machine learning-based predictive analytics for workforce planning and attrition prediction. Cloud-based deployment for improved accessibility and scalability. By incorporating these advancements, the Smart HR Management System can further revolutionize HR operations, making them more data-driven, intelligent, and efficient.