

# EMPLOYEE MANAGEMENT PLATFORM

STREAMLINING WORKFORCE ADMINISTRATION AND HR  
PROCESSES

# Introduction to Employee Management Platform

**Welcome Back**

Show

Login

## Comprehensive Web Application

The platform is a web-based application designed to efficiently manage employee and project data.

## RESTful API Architecture

It uses RESTful APIs to enable full CRUD operations for seamless data manipulation and retrieval.

## Backend Technology Stack

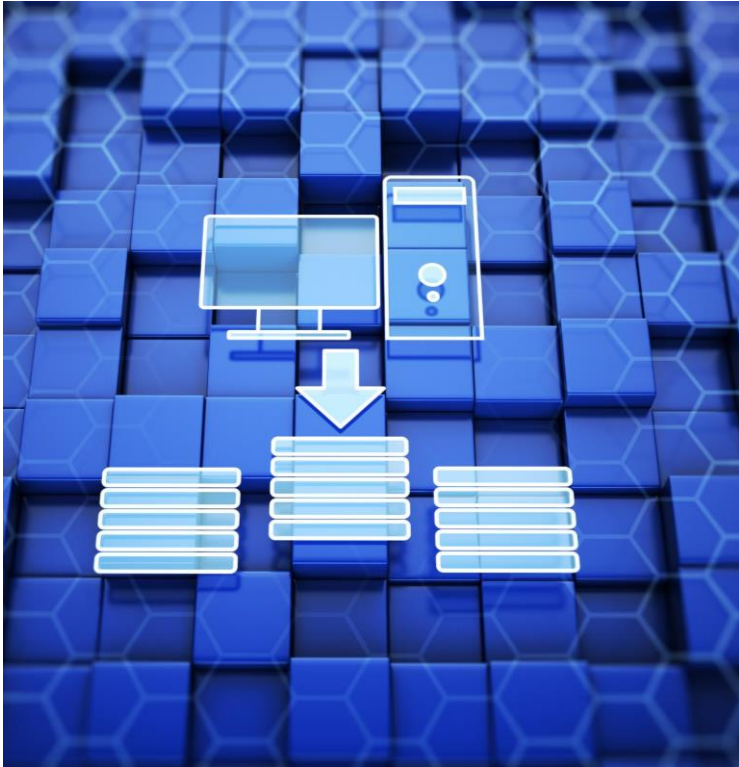
Spring Boot provides a robust backend framework, while PostgreSQL ensures reliable data storage.

## Security Features

Spring Security is integrated for authentication and authorization to enhance platform security.



# **TECHNICAL ARCHITECTURE**



# Architecture Overview

## Core Backend System

The Spring Boot backend processes business logic, data handling, and API endpoint management efficiently.

## REST Controllers

REST Controllers provide API endpoints to perform CRUD operations on Employee and Project entities.

## Data Persistence Layer

Data persistence is handled using JPA with PostgreSQL database, mapping entities to tables.

## Security Management

Spring Security enforces authentication, CORS, and CSRF protections to secure the platform.



# ENTITY DESIGN

# Employee and Project Entities

## Employee Entity Attributes

Employee entity includes ID, name, department, and other relevant details to represent staff members.

## Project Entity Attributes

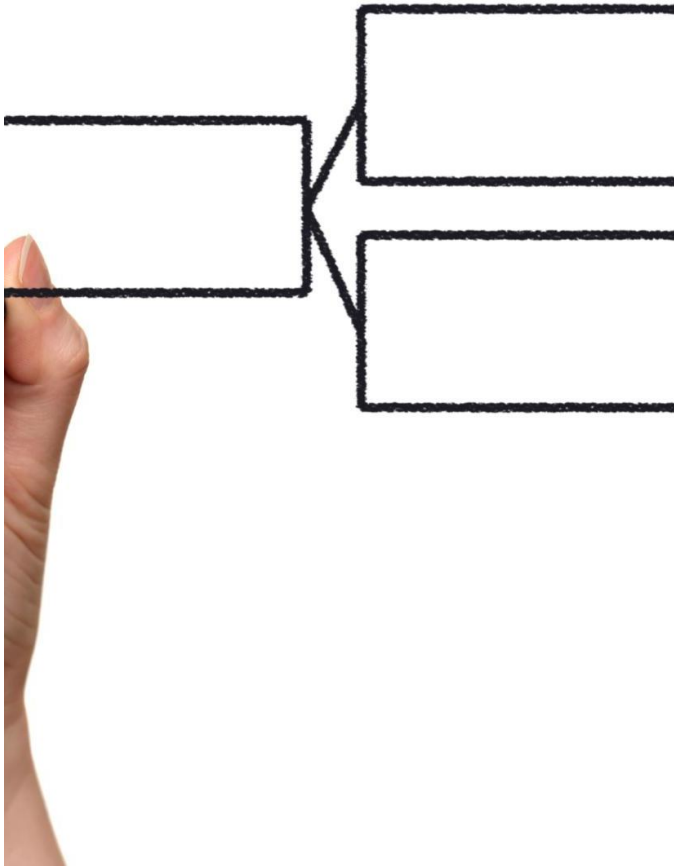
Project entity consists of project ID, name, description, and associated employees.

## Entity Relationships

Many-to-Many mappings connect employees to projects ensuring data integrity.

## Extensible Object-Oriented Design

Entity classes follow OOP best practices, allowing easy future extensions and integration.





# **DATABASE SCHEMA**



# PostgreSQL Integration

## **Relational Database Structure**

PostgreSQL stores data in tables with entities mapped via JPA annotations for structured relational management.

## **Entity Table Design**

Employee and Project tables include key attributes and are linked through foreign keys and join tables.

## **Data Access Abstraction**

Spring Data JPA repositories enable CRUD operations without explicit SQL, improving developer efficiency.

## **Performance and Features**

The integration supports large data volumes with advanced features like pagination and sorting for efficiency.



# Employee and Project Table

```
management=# select * from employee;
```

id	name	email	department	role	salary	joining_date
2	Meera Iyer	meera.iyer@example.com	Marketing	Marketing Manager	92000	2022-03-01
4	Sneha Kapoor	sneha.kapoor@example.com	HR	HR Executive	65000	2024-01-10
5	Vikram Menon	vikram.menon@example.com	Engineering	DevOps Engineer	87000	2023-09-05
6	Saniya Anjum M	saniyaanjum@gmail.com	CSE	Full stack developer	70000	2025-06-20
8	saqlain	saqlain@2006gmail.com	Engineering	Cloud Engineer	50000	2021-11-20

```
management=# select * from project;
```

id	description	end_date	project_name	start_date
2	Booking and Managing Hotel Digitally	2025-09-24	Hotel Managemennt	2025-09-11
1	Build an AI-powered chatbot for handling customers queries	2025-09-10	AI chatbot for customer support	2025-09-03
4	Create a project where patients can book appointment digitally and choose doctors accordingly	2025-10-02	Hospital Management System	2025-09-04



# **CONTROLLER OPERATIONS**

## Management Dashboard

Logout

Employees

Projects

Search by name

Search

Filter by department

Filter

### Add New Employee

Name

Enter name

Email

Enter email

Department

Enter department

Role

Enter role

Salary

Enter salary

JoiningDate

Enter joiningDate

Add Employee

# CRUD and Search Functionality

## Employee Data Management

Supports adding, retrieving, updating, deleting employees and searching by name or filtering by department.

## Project Data Management

Allows adding, updating, retrieving, and deleting project information using RESTful endpoints.

## REST API Design

Endpoints use standard HTTP methods and annotations for clean, intuitive URL and request handling.

Name	Email	Department	Role	Salary	Joining Date	Actions
Meera Iyer	meera.iyer@example.com	Marketing	Marketing Manager	92000	2022-03-01	<div>Edit</div> <div>Delete</div>
Sneha Kapoor	sneha.kapoor@example.com	HR	HR Executive	65000	2024-01-10	<div>Edit</div> <div>Delete</div>
Vikram Menon	vikram.menon@example.com	Engineering	DevOps Engineer	87000	2023-09-05	<div>Edit</div> <div>Delete</div>
Saniya Anjum M	saniyaanjum@gmail.com	CSE	Full stack developer	70000	2025-06-20	<div>Edit</div> <div>Delete</div>

# Employee List where you can Update or Delete the Employee Details

# Search and Filter Operations Screenshot

## Search Functionality

Users can quickly find employees by typing their name in the search bar, improving data retrieval speed.

## Filter by Department

Filtering employees by department allows users to segment data easily for better organization and management.

## Enhanced Usability

Search and filter features improve platform usability by enabling quick access to specific employee data subsets.

## Management Dashboard

Logout

Employees

Projects

Search by name

Search

Engineering

Filter

# Add Project

## Frontend Interface

Displays the form used to enter new project details for adding to the system.

### Add New Project

Project Name

Enter project name

Description

Enter description

Start Date

mm / dd / yyyy

End Date

mm / dd / yyyy

Assign Employees

Meera Iyer

Sneha Kapoor

Vikram Menon

Saniya Anjum M

esolain

Add Project

## Operation Confirmation

Shows the confirmation message or updated data view after adding an project and assigning to employee.

Project Name	Description	Start	End	Employees	Actions
Hotel Managemennt	Booking and Managing Hotel Digitally	2025-09-11	2025-09-24	Sneha Kapoor	<div>Edit</div> <div>Delete</div>
AI chatbot for customer support	Build an AI-powered chatbot for handling customers queries	2025-09-03	2025-09-10	Meera Iyer	<div>Edit</div> <div>Delete</div>
Hospital Management System	Create a project where patients can book appointment digitally and choose doctors accordingly	2025-09-04	2025-10-02	Vikram Menon	<div>Edit</div> <div>Delete</div>

# Add and Assign Project

## Project Creation Interface

The interface allows users to add new projects easily with input fields for project details.

## Employee Assignment Workflow

The workflow enables assigning employees to projects for clear resource tracking and allocation.

## Resource Management Importance

Tracking project involvement and allocation improves team productivity and project outcomes.

### Add New Project

Project Name

Hotel Managemennt

Description

Booking and Managing Hotel Digitally

Start Date

09/11/2025

End Date

09/24/2025

Assign Employees

Meera Iyer

Sneha Kapoor

Vikram Menon

Saniya Anjum M

saadain

Add Project

Project Name	Description	Start	End	Employees	Actions
Hotel Managemennt	Booking and Managing Hotel Digitally	2025-09-11	2025-09-24	Sneha Kapoor	<div>Edit</div> <div>Delete</div>



# **SECURITY CONFIGURATION**





# Spring Security Setup

## Authentication and Authorization

Spring Security manages user authentication and authorization to protect application resources from unauthorized access.

## Security Configuration Beans

SecurityConfig class defines SecurityFilterChain, PasswordEncoder with BCrypt, and AuthenticationManager beans for secure operations.

## CSRF and CORS Settings

CSRF protection is disabled during development; CORS is configured to allow frontend requests from localhost for testing.

## Login Handling and Security Context

AuthController authenticates user credentials and sets the security context to enable secure login functionality.

# JUnit Testing for Service Layer

## Validating Business Logic

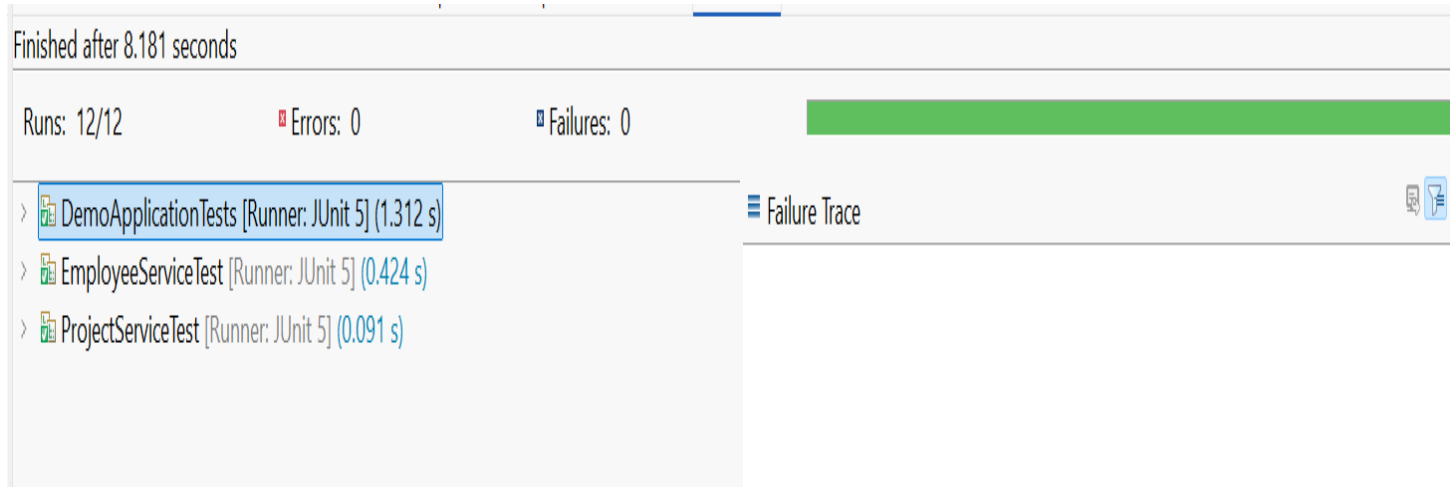
JUnit tests verify the correctness of business logic in adding, updating, and deleting employees or projects.

## Ensuring Code Reliability

Unit testing helps in maintaining code reliability and stability throughout the development lifecycle.

## Early Issue Identification

JUnit tests help identify bugs and issues early, reducing risks and improving software quality.



# CONCLUSION

The Employee Management Platform presents a robust, scalable, and secure solution for managing workforce and project data in modern enterprises.

Built on a Spring Boot and PostgreSQL foundation, it offers full CRUD capabilities, intuitive RESTful APIs, and a modular architecture that ensures maintainability and extensibility.

The platform's emphasis on security through Spring Security, along with its user-friendly frontend and efficient backend operations, makes it ideal for streamlining HR and administrative workflows.

With features like search and filter, entity relationships, and JUnit-tested service layers, the system is well-equipped to support dynamic organizational needs and future enhancements.

**THANK YOU**