Employee Management System

SPRING BOOT + JPA + H2 + REACT IMPLEMENTATION

RAKSHA PAHARIYA

AGENDA

- Project Overview
- Learning Objectives
- JPA & H2 Database
- CRUD Operations
- REST vs SOAP APIs
- Results & Demo Output

PROJECT OVERVIEW

- **Purpose:**
  - Build a working project to explore Spring ecosystem.

- **Learning Goals:**
  - Understand Spring Boot project structure.
  - Practice REST API development.
  - Apply JPA for database mapping.
  - Use H2 DB for testing CRUD features.
  - React UI integration with backend APIs.

- **Scope:**
  - Small HR-style application managing employee data.

JPA & H2 DATABASE

JPA (Java Persistence API):

- Maps Java classes → DB tables.
- Eliminates raw SQL queries.
- Works with Hibernate under the hood.

H2 Database:

- In-memory DB, resets each run.
- Auto-configured with Spring Boot.
- Ideal for learning & testing without external setup.

Key Relationship Between Them

- JPA defines how to interact with data (objects → tables).
- H2 acts as the storage engine where the data is actually stored.
- Together, they allow rapid development and testing without complex setup.

CRUD OPERATIONS

- **Create (POST):**
  - Add new employee.
- **Read (GET):**
  - Fetch all employees or one by ID.
- **Update (PUT):**
  - Modify existing employee details.
- **Delete (DELETE):**
  - Remove an employee record.

- **Implementation:**
  - Controller: Handles REST endpoints.
  - Service: Business logic.
  - Repository: DB operations via JPA.

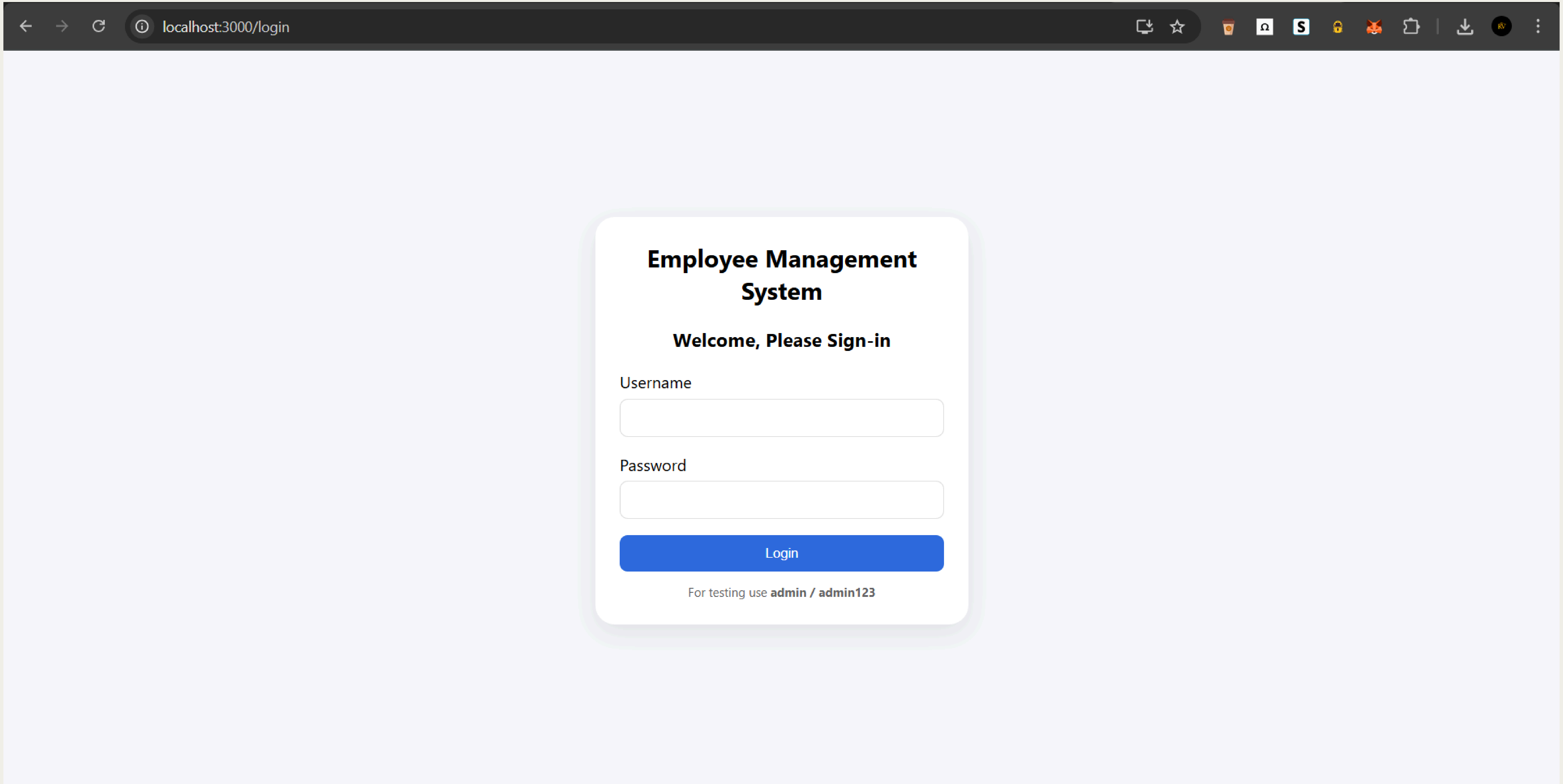
REST VS SOAP API

- **REST (Implemented):**
  - Simple, lightweight, JSON-based.
  - Follows HTTP verbs (GET, POST, PUT, DELETE).
  - Easy to integrate & modern standard.

- **SOAP (For comparison):**
  - XML-based, uses WSDL.
  - Heavier but more secure.
  - Suitable for enterprise contracts

DEMO

LOGIN SCREEN



Employee Management System

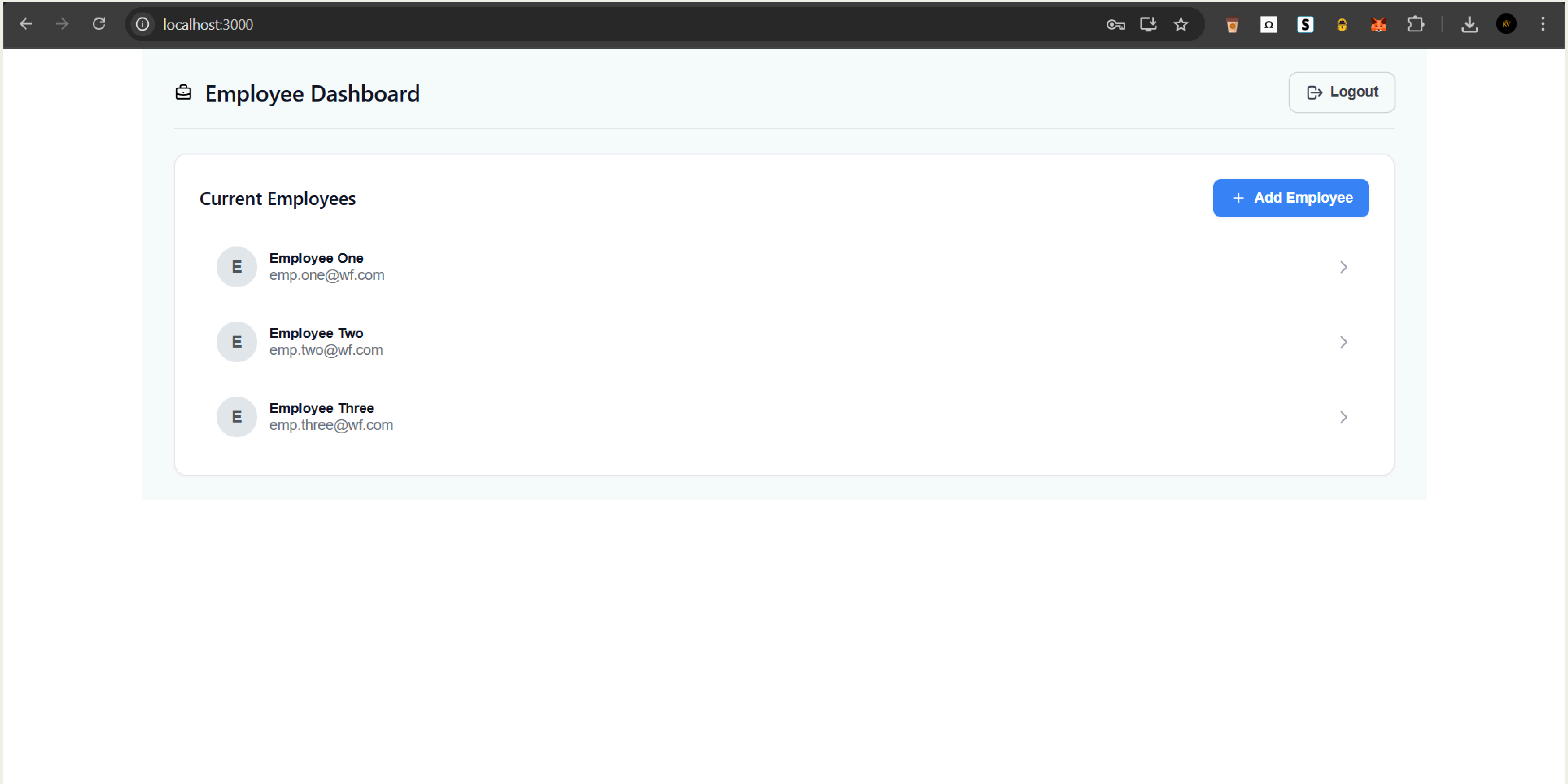
Welcome, Please Sign-in

Username

Password

For testing use **admin / admin123**

DASHBOARD



Employee Dashboard

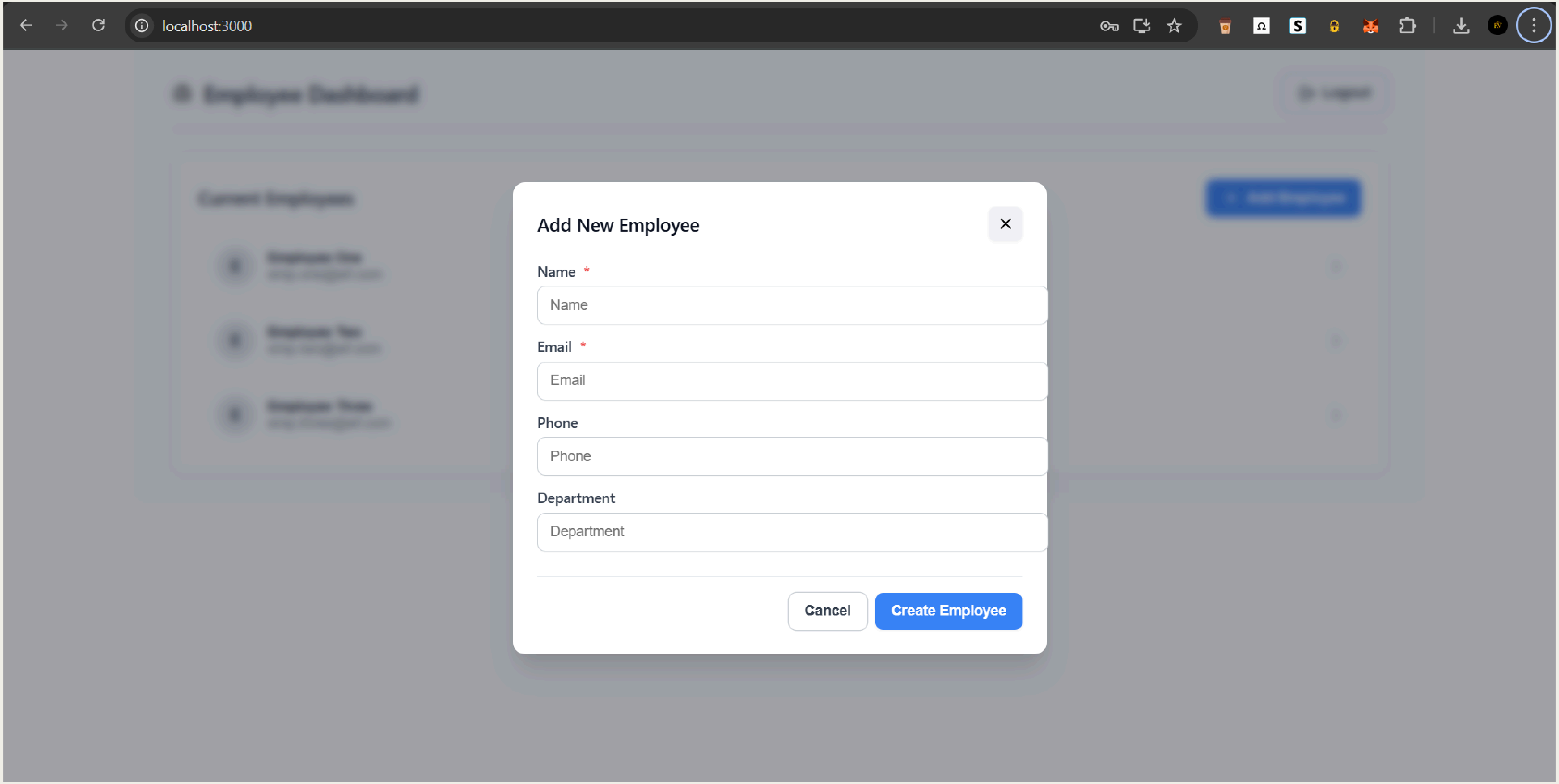
Current Employees

E **Employee One**
emp.one@wf.com

E **Employee Two**
emp.two@wf.com

E **Employee Three**
emp.three@wf.com

ADD EMPLOYEE



Add New Employee

Name *

Name

Email *

Email

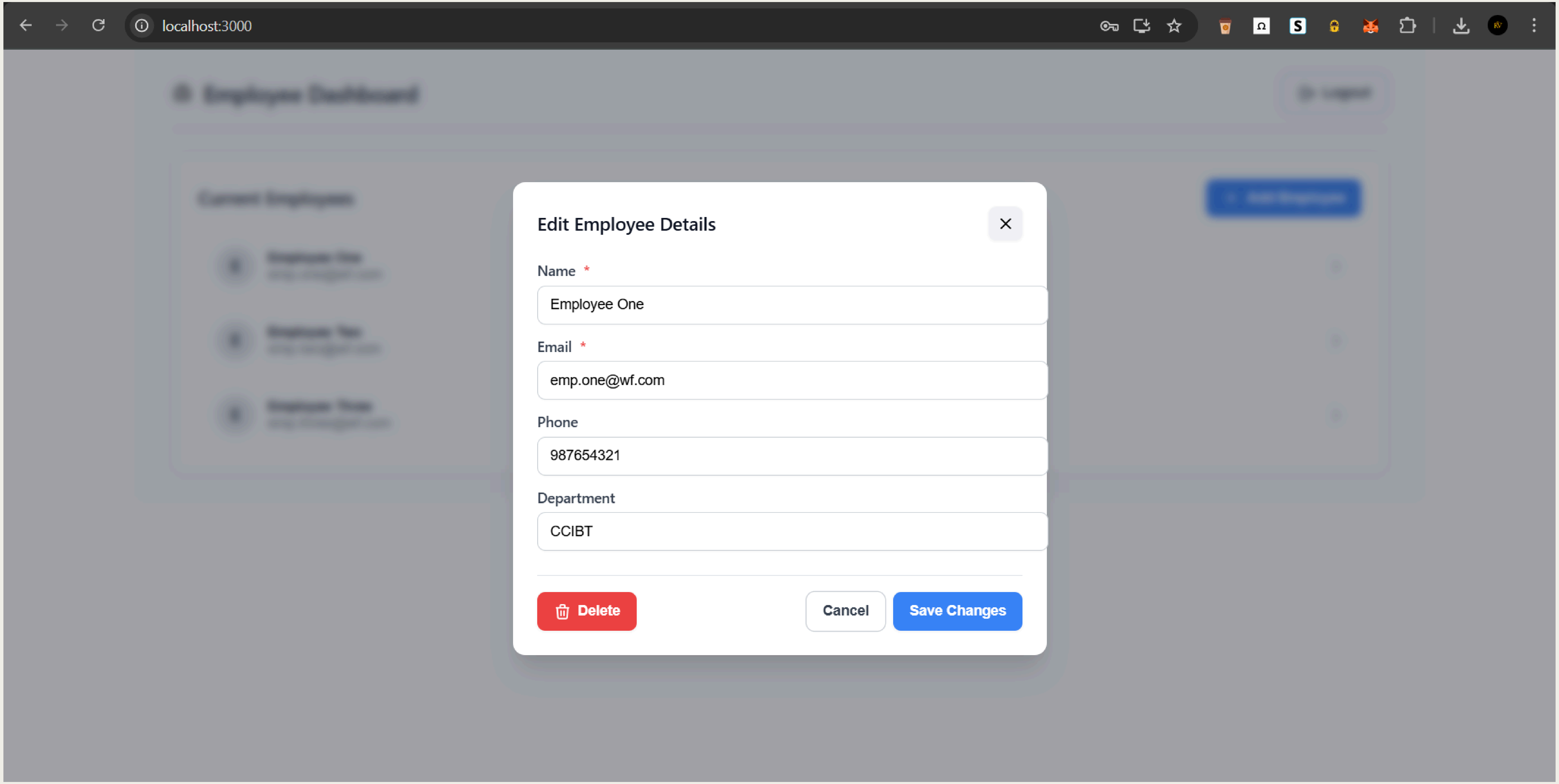
Phone

Phone

Department

Department

UPDATE/DELETE EMPLOYEE



Edit Employee Details

Name *

Employee One

Email *

emp.one@wf.com

Phone

987654321

Department

CCIBT

RESULTS & CONCLUSION

Results:

- Full-stack CRUD app with React frontend & Spring backend.
- Tested via React UI + Postman + H2 Console.
- Learnt how to connect frontend ↔ backend ↔ database.

Key Takeaways:

- Gained practical knowledge of Spring Boot, REST, JPA, H2, and React.
- Built layered architecture with real UI integration.

Thank you!

RAKSHA PAHARIYA