1. **Spring Data JPA - Quick Example**

**Sql Code:**

use ormlearn;

create table country(

co\_code varchar(2) PRIMARY KEY,

co\_name varchar(50)

);

INSERT INTO country VALUES ('IN', 'India');

INSERT INTO country VALUES ('US', 'United States of America');

select \* from country

**Country.java:**

package com.cognizant.orm\_learn.model;  
import jakarta.persistence.\*;  
  
@Entity  
@Table(name = "country")  
public class Country {  
  
@Id  
@Column(name = "co\_code")  
 private String code;  
  
@Column(name = "co\_name")  
 private String name;  
  
 public Country() {}

public Country(String code, String name) {  
 this.code = code;  
 this.name = name;  
}

public String getCode() {  
 return code;  
 }  
  
 public void setCode(String code) {  
 this.code = code;  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }

@Override  
 public String toString() {  
 return "Country{" +  
 "code='" + code + '\'' +  
 ", name='" + name + '\'' +  
 '}';  
 }  
}

**CountryRepository.java:**

package com.cognizant.orm\_learn.repository;  
import com.cognizant.orm\_learn.model.Country;  
import org.springframework.data.jpa.repository.JpaRepository;  
import org.springframework.stereotype.Repository;  
  
@Repository  
public interface CountryRepository extends JpaRepository<Country, String> {}

**CountryService.java:**

package com.cognizant.orm\_learn.service;  
import com.cognizant.orm\_learn.model.Country;  
import com.cognizant.orm\_learn.repository.CountryRepository;  
import jakarta.transaction.Transactional;  
import org.springframework.beans.factory.annotation.Autowired;  
import org.springframework.stereotype.Service;  
import java.util.List;

@Service  
public class CountryService {  
 @Autowired  
 private CountryRepository countryRepository;  
  
 @Transactional  
 public List<Country> getAllCountries(){  
 return countryRepository.findAll();  
 }  
}

**OrlLearnApplication.java:**

package com.cognizant.orm\_learn;  
import com.cognizant.orm\_learn.model.Country;  
import com.cognizant.orm\_learn.service.CountryService;  
import org.slf4j.Logger;  
import org.slf4j.LoggerFactory;  
import org.springframework.boot.SpringApplication;  
import org.springframework.boot.autoconfigure.SpringBootApplication;  
import org.springframework.context.ApplicationContext;  
import java.util.List;  
  
@SpringBootApplication  
public class OrmLearnApplication {  
  
 private static final Logger *LOGGER* = LoggerFactory.*getLogger*(OrmLearnApplication.class);  
 private static CountryService *countryService*;  
  
  
 public static void main(String[] args) {  
 ApplicationContext context = SpringApplication.*run*(OrmLearnApplication.class, args);  
 *LOGGER*.info("Inside main");  
  
 *countryService* = context.getBean(CountryService.class);  
 *testGetAllCountries*();  
 }  
  
 private static void testGetAllCountries(){  
 *LOGGER*.info("Start");  
 List<Country> countries = *countryService*.getAllCountries();  
 *LOGGER*.debug("countries={}", countries);  
 *LOGGER*.info("END");  
 }  
}

**OUTPUT:**

countries=[Country{code='IN', name='India'}, Country{code='US', name='United States of America'}]

1. **Difference between JPA, Hibernate and Spring Data JPA**

**EmployeeAppApplication.java:**

package com.example.employee\_app;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

public class EmployeeAppApplication {

public static void main(String[] args) {

SpringApplication.run(EmployeeAppApplication.class, args);

}

}

**EmployeeController.java:**

package com.example.employee\_app.controller;

import com.example.employee\_app.model.Employee;

import com.example.employee\_app.service.EmployeeService;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.stereotype.Controller;

import org.springframework.ui.Model;

import org.springframework.web.bind.annotation.GetMapping;

import org.springframework.web.bind.annotation.PostMapping;

import org.springframework.web.bind.annotation.ModelAttribute;

import java.util.List;

@Controller

public class EmployeeController {

@Autowired

private EmployeeService employeeService;

@GetMapping("/")

public String viewHomePage(Model model) {

List<Employee> listEmployees = employeeService.getAllEmployees();

model.addAttribute("listEmployees", listEmployees);

return "index"; // Assumes index.html in templates

}

@GetMapping("/showNewEmployeeForm")

public String showNewEmployeeForm(Model model) {

Employee employee = new Employee();

model.addAttribute("employee", employee);

return "new\_employee"; // Assumes new\_employee.html in templates

}

@PostMapping("/saveEmployee")

public String saveEmployee(@ModelAttribute("employee") Employee employee) {

employeeService.saveEmployee(employee);

return "redirect:/";

}

}

Employee.java:

package com.example.employee\_app.model;

import jakarta.persistence.\*;

@Entity

public class Employee {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private int id;

private String name;

private String department;

private float salary;

public Employee() {}

public Employee(String name, String department, float salary) {

this.name = name;

this.department = department;

this.salary = salary;

}

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getName() { return name; }

public void setName(String name) { this.name = name; }

public String getDepartment() { return department; }

public void setDepartment(String department) { this.department = department; }

public float getSalary() { return salary; }

public void setSalary(float salary) { this.salary = salary; }

}

**EmployeeRepository.java:**

package com.example.employee\_app.repository;

import com.example.employee\_app.model.Employee;

import org.springframework.data.jpa.repository.JpaRepository;

public interface EmployeeRepository extends JpaRepository<Employee, Integer> {

}

**EmployeeService.java:**

package com.example.employee\_app.service;

import com.example.employee\_app.model.Employee;

import com.example.employee\_app.repository.EmployeeRepository;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.stereotype.Service;

import java.util.List;

@Service

public class EmployeeService {

@Autowired

private EmployeeRepository employeeRepository;

public List<Employee> getAllEmployees() {

return employeeRepository.findAll();

}

public Employee saveEmployee(Employee employee) {

return employeeRepository.save(employee);

}

}

**Index.html:**

<!DOCTYPE html>

<html xmlns:th="http://www.thymeleaf.org">

<head>

<title>Employee List</title>

</head>

<body>

<h2>Employee List</h2>

<table border="1">

<thead>

<tr>

<th>ID</th>

<th>Name</th>

<th>Department</th>

<th>Salary</th>

</tr>

</thead>

<tbody>

<tr th:each="employee : ${listEmployees}">

<td th:text="${employee.id}">1</td>

<td th:text="${employee.name}">John</td>

<td th:text="${employee.department}">IT</td>

<td th:text="${employee.salary}">50000</td>

</tr>

</tbody>

</table>

</body>

</html>

**Code Comparison:**

**Hibernate:**

Session session = factory.openSession();

Transaction tx = session.beginTransaction();

session.save(employee);

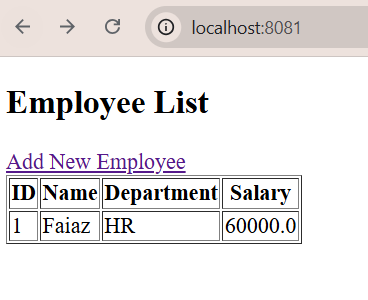
tx.commit();

session.close();

**Spring Data JPA:**

employeeRepository.save(employee);

**OUTPUT:**

****