**WEEK 3**

**Hands on 1**

**Spring Data JPA - Quick Example**

**ormlearn/pom.xml**  
  
<?xml version="1.0" encoding="UTF-8"?>

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<parent>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-parent</artifactId>

<version>3.5.3</version>

<relativePath/> <!-- lookup parent from repository -->

</parent>

<groupId>com.cognizant</groupId>

<artifactId>orm-learn</artifactId>

<version>0.0.1-SNAPSHOT</version>

<name>orm-learn</name>

<description>Demo project for Spring JPA and Hibernate</description>

<url/>

<licenses>

<license/>

</licenses>

<developers>

<developer/>

</developers>

<scm>

<connection/>

<developerConnection/>

<tag/>

<url/>

</scm>

<properties>

<java.version>17</java.version>

</properties>

<dependencies>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-devtools</artifactId>

<scope>runtime</scope>

<optional>true</optional>

</dependency>

<dependency>

<groupId>com.mysql</groupId>

<artifactId>mysql-connector-j</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-test</artifactId>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<plugin>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-maven-plugin</artifactId>

</plugin>

</plugins>

</build>

</project>

**application.properties**

# Application log levels

logging.level.org.springframework=info

logging.level.com.cognizant=debug

# Hibernate logs for SQL

logging.level.org.hibernate.SQL=trace

logging.level.org.hibernate.type.descriptor.sql=trace

# Console log pattern

logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger**{25}** %25M %4L %m%n

# MySQL connection

spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver

spring.datasource.url=jdbc:mysql://localhost:3306/ormlearn

spring.datasource.username=root

spring.datasource.password=Damini@22

# Hibernate config

spring.jpa.hibernate.ddl-auto=validate

spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQLDialect

**Country.java**

**package** com.cognizant.ormlearn.model;

**import** jakarta.persistence.Column;

**import** jakarta.persistence.Entity;

**import** jakarta.persistence.Id;

**import** jakarta.persistence.Table;

@Entity

@Table(name="country")

**public** **class** Country {

@Id

@Column(name="co\_code")

**private** String code;

@Column(name="co\_name")

**private** String name;

// Getters and Setters

**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.ormlearn.repository;

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

**import** org.springframework.stereotype.Repository;

**import** com.cognizant.ormlearn.model.Country;

@Repository

**public** **interface** CountryRepository **extends** JpaRepository<Country, String> {

}

**CountryService.java**

**package** com.cognizant.ormlearn.service;

**import** com.cognizant.ormlearn.model.Country;

**import** com.cognizant.ormlearn.repository.CountryRepository;

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

**import** org.springframework.stereotype.Service;

**import** org.springframework.transaction.annotation.Transactional;

**import** java.util.List;

@Service

**public** **class** CountryService {

@Autowired

**private** CountryRepository countryRepository;

@Transactional

**public** List<Country> getAllCountries() {

**return** countryRepository.findAll();

}

}

**OrmLearnApplication.java**

**package** com.cognizant.ormlearn;

**import** com.cognizant.ormlearn.model.Country;

**import** com.cognizant.ormlearn.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);

*countryService* = context.getBean(CountryService.**class**);

***LOGGER***.info("Inside main");

*testGetAllCountries*();

}

**private** **static** **void** testGetAllCountries() {

***LOGGER***.info("Start");

List<Country> countries = *countryService*.getAllCountries();

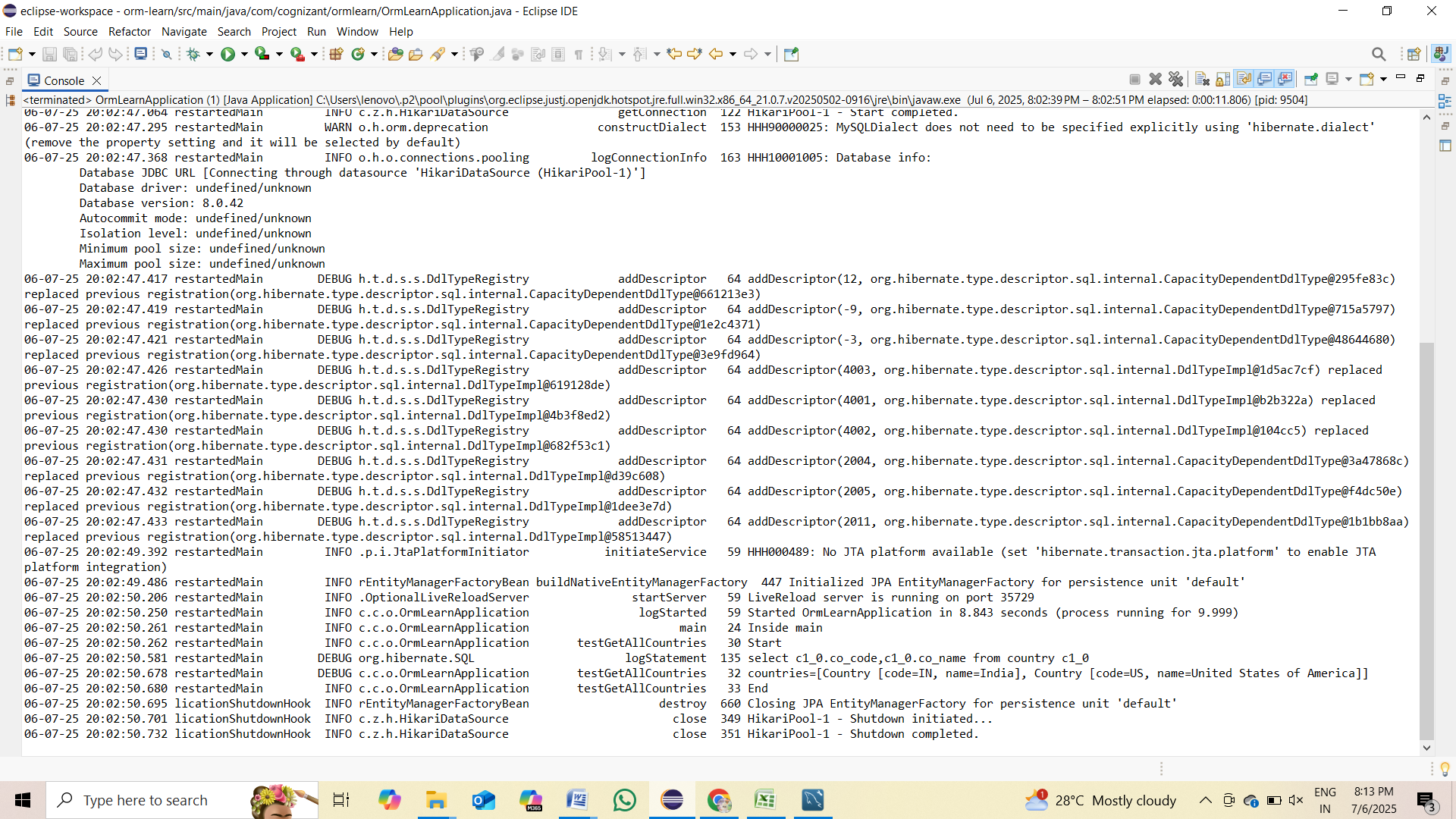
***LOGGER***.debug("countries={}", countries);

***LOGGER***.info("End");

}

}

**OUTPUT**

****

**Hands on 4**

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

**employeeapp/pom.xml**

<?xml version="1.0" encoding="UTF-8"?>

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<parent>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-parent</artifactId>

<version>3.5.3</version>

<relativePath/> <!-- lookup parent from repository -->

</parent>

<groupId>com.example</groupId>

<artifactId>employeeapp</artifactId>

<version>0.0.1-SNAPSHOT</version>

<name>employeeapp</name>

<description>Demo project for Spring Boot</description>

<url/>

<licenses>

<license/>

</licenses>

<developers>

<developer/>

</developers>

<scm>

<connection/>

<developerConnection/>

<tag/>

<url/>

</scm>

<properties>

<java.version>17</java.version>

</properties>

<dependencies>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-web</artifactId>

</dependency>

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-test</artifactId>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<plugin>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-maven-plugin</artifactId>

</plugin>

</plugins>

</build>

</project>

**application.properties**

spring.datasource.url=jdbc:h2:mem:testdb

spring.datasource.driverClassName=org.h2.Driver

spring.datasource.username=sa

spring.datasource.password=

spring.jpa.database-platform=org.hibernate.dialect.H2Dialect

spring.jpa.hibernate.ddl-auto=update

spring.h2.console.enabled=true

**Employee.java**

**package** com.example.employeeapp.entity;

**import** jakarta.persistence.Entity;

**import** jakarta.persistence.GeneratedValue;

**import** jakarta.persistence.GenerationType;

**import** jakarta.persistence.Id;

@Entity

**public** **class** Employee {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**private** Integer id;

**private** String name;

**private** String department;

**private** Double salary;

// Getters and setters

}

**EmployeeRepository.jaya**

**package** com.example.employeeapp.repository;

**import** com.example.employeeapp.entity.Employee;

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

**public** **interface** EmployeeRepository **extends** JpaRepository<Employee, Integer> {

}

**EmployeeService.java**

**package** com.example.employeeapp.service;

**import** com.example.employeeapp.entity.Employee;

**import** com.example.employeeapp.repository.EmployeeRepository;

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

**import** org.springframework.stereotype.Service;

**import** org.springframework.transaction.annotation.Transactional;

**import** java.util.List;

@Service

**public** **class** EmployeeService {

@Autowired

**private** EmployeeRepository employeeRepository;

@Transactional

**public** Employee addEmployee(Employee employee) {

**return** employeeRepository.save(employee);

}

**public** List<Employee> getAllEmployees() {

**return** employeeRepository.findAll();

}

}

**EmployeeController.java**

**package** com.example.employeeapp.controller;

**import** com.example.employeeapp.entity.Employee;

**import** com.example.employeeapp.service.EmployeeService;

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

**import** org.springframework.web.bind.annotation.\*;

**import** java.util.List;

@RestController

@RequestMapping("/employees")

**public** **class** EmployeeController {

@Autowired

**private** EmployeeService employeeService;

@PostMapping

**public** Employee addEmployee(@RequestBody Employee employee) {

**return** employeeService.addEmployee(employee);

}

@GetMapping

**public** List<Employee> getAllEmployees() {

**return** employeeService.getAllEmployees();

}

}

**EmployeeappApplication.java**

**package** com.example.employeeapp;

**import** org.springframework.boot.SpringApplication;

**import** org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

**public** **class** EmployeeappApplication {

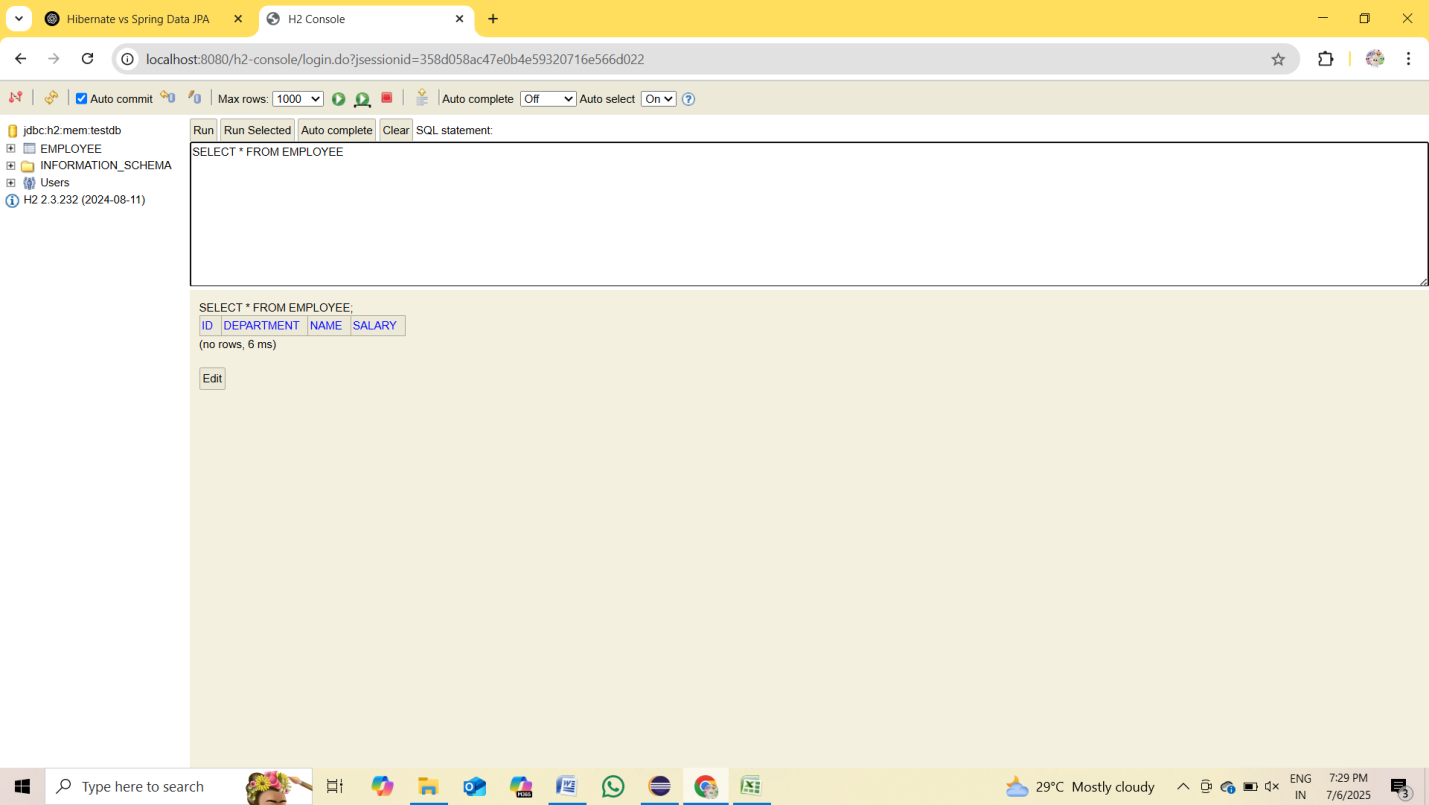
**public** **static** **void** main(String[] args) {

SpringApplication.*run*(EmployeeappApplication.**class**, args);

}

}

**OUTPUT**

****