

## Week - 3

# Spring Data JPA - Quick Example

### Code :

#### application.properties :

```
spring.application.name=orm-learn
logging.level.org.springframework=info
logging.level.com.cognizant=debug
logging.level.org.hibernate.SQL=trace
logging.level.org.hibernate.type.descriptor.sql=trace
logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-
25.25logger{25} %25M %4L %m%n
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=Aathira@14
spring.jpa.hibernate.ddl-auto=update
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL8Dialect
```

#### Country.java :

```
package com.cognizant.orm_learn.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 = "code")
    private String code;

    @Column(name = "name")
    private String 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 org.springframework.data.jpa.repository.JpaRepository;
```

```
import org.springframework.stereotype.Repository;
```

```
import com.cognizant.orm_learn.model.Country;
```

```
@Repository
```

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

```
}
```

### **CountryService.java :**

```
package com.cognizant.orm_learn.service;
```

```
import java.util.List;
```

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

```
import org.springframework.stereotype.Service;
```

```
import com.cognizant.orm_learn.model.Country;
```

```
import com.cognizant.orm_learn.repository.CountryRepository;
```

```
import jakarta.transaction.Transactional;
```

```
@Service
```

```
public class CountryService {
```

```
    @Autowired
```

```

private CountryRepository countryRepository;

@Transactional

public List<Country> getAllCountries() {
    return countryRepository.findAll();
}
}

```

### **OrmLearnApplication.java :**

```

package com.cognizant.orm_learn;

import java.util.List;

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 com.cognizant.orm_learn.model.Country;
import com.cognizant.orm_learn.service.CountryService;

@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();
```

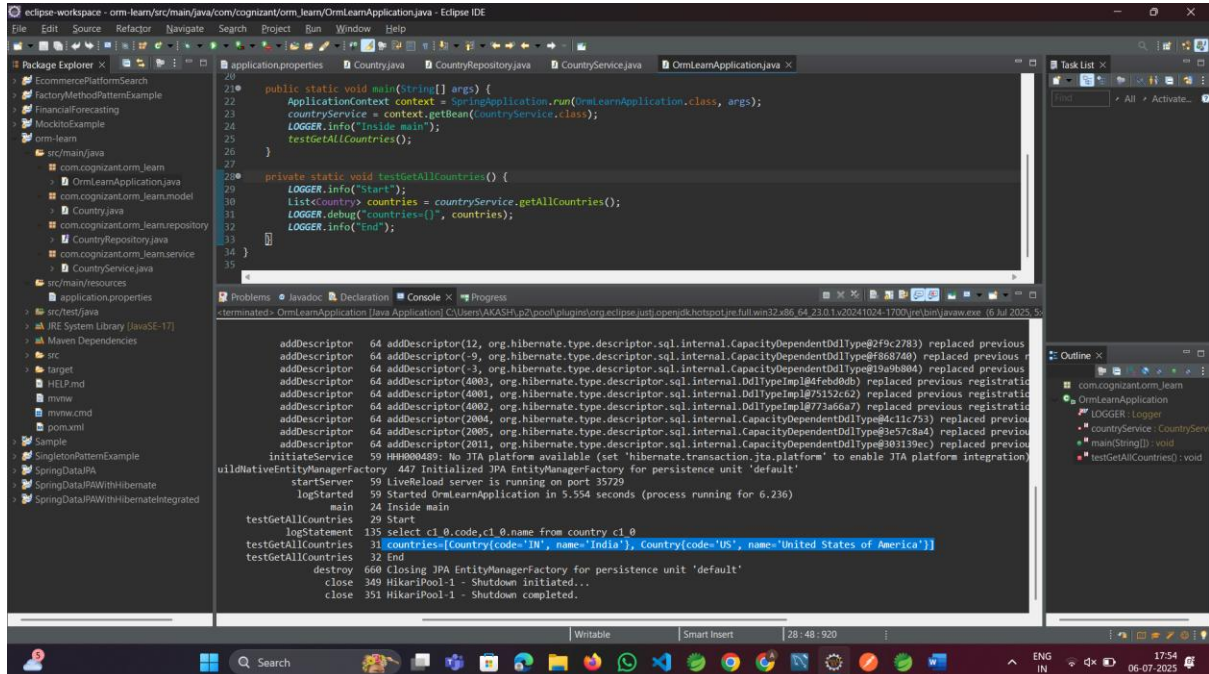
```
    LOGGER.debug("countries={}", countries);
```

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

```
}
```

```
}
```

**Output :**



The screenshot shows the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with packages like `com.cognizant.orm_learn` and `com.cognizant.orm_learn.model`.
- Editor:** Displays the `OrmLearnApplication.java` file with the code from the previous blocks. The `testGetAllCountries()` method is highlighted.
- Console:** Shows the output of the application. It includes logs for the start, the retrieved countries (India and US), and the end of the test. The output is as follows:

```
addDescriptor 64 addDescriptor(12, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@2f9c2783) replaced previous r
addDescriptor 64 addDescriptor(-9, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@868748) replaced previous r
addDescriptor 64 addDescriptor(-3, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@18a98384) replaced previous
addDescriptor 64 addDescriptor(4003, org.hibernate.type.descriptor.sql.internal.DdlTypeImpl@4f6b0d0b) replaced previous registrati
addDescriptor 64 addDescriptor(4001, org.hibernate.type.descriptor.sql.internal.DdlTypeImpl@75152c62) replaced previous registrati
addDescriptor 64 addDescriptor(4002, org.hibernate.type.descriptor.sql.internal.DdlTypeImpl@773a66a7) replaced previous registrati
addDescriptor 64 addDescriptor(2004, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@411c753) replaced previous
addDescriptor 64 addDescriptor(2005, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@3e37c8a4) replaced previous
addDescriptor 64 addDescriptor(2011, org.hibernate.type.descriptor.sql.internal.CapacityDependentDdlType@303139ec) replaced previous
59 HH000489: No JTA platform available (set 'hibernate.transaction.jta.platform' to enable JTA platform integration)
uidNativeEntityManagerFactory 447 Initialized JPA EntityManagerFactory for persistence unit 'default'
startServer 59 LiveReload server is running on port 35729
logStarted 59 Started OrmLearnApplication in 5.354 seconds (process running for 6.236)
main 24 Inside main
testGetAllCountries 29 Start
logStatement 135 select c1_0.code,c1_0.name from country c1_0
testGetAllCountries 31 countries=[Country(code='IN', name='India'), Country(code='US', name='United States of America')]
testGetAllCountries 32 End
destroy 660 Closing JPA EntityManagerFactory for persistence unit 'default'
close 349 HikariPool-1 - Shutdown initiated...
close 351 HikariPool-1 - Shutdown completed.
```
- Outline:** Shows the class structure with `OrmLearnApplication` as the main class.

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- akash
- amazon
- appdb
- appdev
- cc1
- cc2
- crud\_box
- edubasedth
- employees
- it
- model\_lab
- mypro
- omileam
- Tables
  - country
  - Views
  - Stored Procedures
  - Functions
- prodemo
- product\_database
- sample
- skct
- springdataqa
- storage\_container

Administration Schemas

country - Table

country

SQL File 3\* SQL File 9\* SQL File 4\* SQL File 6\* SQL File 11\* SQL File 8\* SQL File 11\* SQL File 24\* SQL File 12\* SQL File 13\* country - Table country

1 • insert into country values ('IN', 'India'), ('US', 'United States of America');

2 • SELECT \* FROM omileam.country;

Limit to 1000 rows

Result Grid

code	name
IN	India
US	United States of America
62338	62338

country 1 x

Apply Revert Context Help Snippets

Information

Schema: springdatajpa

Output

#	Time	Action	Message	Duration / Fetch
6	16:00:37	SELECT * FROM springdataqa.employee LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
7	16:08:47	SELECT * FROM springdataqa.employee LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
8	16:39:24	create schema hibernate	1 row(s) affected	0.000 sec
9	16:39:31	use hibernate	0 row(s) affected	0.016 sec
10	17:56:03	SELECT * FROM omileam.country LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

Query Completed

ENG IN 18:00 06-07-2023

# Difference between JPA, Hibernate and Spring Data JPA

**For Hibernate :**

**Code :**

**application.properties :**

```
spring.application.name=hibernate
spring.datasource.url=jdbc:mysql://localhost:3306/hibernate
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
spring.datasource.username=root
spring.datasource.password=Aathira@14
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL8Dialect
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
debug=true
```

**AssetVendor.java :**

```
package com.hibernate.hibernate.entity;

import jakarta.persistence.Column;
import jakarta.persistence.Entity;
import jakarta.persistence.GeneratedValue;
import jakarta.persistence.GenerationType;
import jakarta.persistence.Id;
import jakarta.persistence.Table;
import jakarta.validation.constraints.Size;

@Entity
```

```
@Table(name = "assetvendor")

public class AssetVendor {

    @Id
    @GeneratedValue(strategy = GenerationType.UUID)
    @Column(name = "vendor_Id", nullable = false, updatable = false)
    private java.util.UUID id;

    @Column(name = "vendor_Name")
    private String vendorName;

    @Column(name = "vendor_Number")
    @Size(min = 10, max = 10)
    private String vendorNumber;

    @Column(name = "vendor_Brand")
    private String vendorBrand;

    @Column(name = "vendor_Address")
    private String vendorAddress;

    public AssetVendor() {
    }

    public java.util.UUID getId() {
        return id;
    }

    public void setId(java.util.UUID id) {
        this.id = id;
    }
}
```



```
}
```

```
public String getVendorName() {  
    return vendorName;  
}
```

```
public void setVendorName(String vendorName) {  
    this.vendorName = vendorName;  
}
```

```
public String getVendorNumber() {  
    return vendorNumber;  
}
```

```
public void setVendorNumber(String vendorNumber) {  
    this.vendorNumber = vendorNumber;  
}
```

```
public String getVendorBrand() {  
    return vendorBrand;  
}
```

```
public void setVendorBrand(String vendorBrand) {  
    this.vendorBrand = vendorBrand;  
}
```

```
public String getVendorAddress() {  
    return vendorAddress;  
}
```

```

        public void setVendorAddress(String vendorAddress) {
            this.vendorAddress = vendorAddress;
        }
    }
}

```

### **AssetVendorConfig.java :**

```

package com.hibernate.hibernate.config;

import java.util.Properties;

import javax.sql.DataSource;

import org.hibernate.SessionFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.context.annotation.*;
import org.springframework.core.env.Environment;
import org.springframework.jdbc.datasource.DriverManagerDataSource;
import org.springframework.orm.hibernate5.HibernateTransactionManager;
import org.springframework.orm.hibernate5.LocalSessionFactoryBean;
import org.springframework.transaction.annotation.EnableTransactionManagement;

@Configuration
@EnableTransactionManagement
@PropertySource("classpath:application.properties")
public class AssetVendorConfig {

    @Autowired
    private Environment env;

    @Bean
    public DataSource dataSource() {

```

```

    DriverManagerDataSource ds = new DriverManagerDataSource();
    ds.setDriverClassName(env.getRequiredProperty("spring.datasource.driver-class-name"));
    ds.setUrl(env.getRequiredProperty("spring.datasource.url"));
    ds.setUsername(env.getRequiredProperty("spring.datasource.username"));
    ds.setPassword(env.getRequiredProperty("spring.datasource.password"));
    return ds;
}

```

@Bean

```

public LocalSessionFactoryBean sessionFactory() {
    LocalSessionFactoryBean factoryBean = new LocalSessionFactoryBean();
    factoryBean.setDataSource(dataSource());
    factoryBean.setPackagesToScan("com.hibernate.hibernate.entity");
    factoryBean.setHibernateProperties(hibernateProperties());
    return factoryBean;
}

```

```

private Properties hibernateProperties() {
    Properties props = new Properties();
    props.put("hibernate.dialect", "org.hibernate.dialect.PostgreSQLDialect");
    props.put("hibernate.hbm2ddl.auto", "update");
    props.put("hibernate.show_sql", "true");
    return props;
}

```

@Bean

```

public HibernateTransactionManager transactionManager(SessionFactory sessionFactory)
{
    HibernateTransactionManager txManager = new HibernateTransactionManager();
    txManager.setSessionFactory(sessionFactory);
}

```

```
        return txManager;
    }
}
```

### **AssetVendorDAOImpl :**

```
package com.hibernate.hibernate.dao.daoimpl;

import java.util.List;
import java.util.UUID;

import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Repository;

import com.hibernate.hibernate.dao.AssetVendorDAO;
import com.hibernate.hibernate.entity.AssetVendor;

import jakarta.persistence.criteria.CriteriaBuilder;
import jakarta.persistence.criteria.CriteriaQuery;
import jakarta.persistence.criteria.Root;
import jakarta.transaction.Transactional;

@Repository
@Transactional
public class AssetVendorDAOImpl implements AssetVendorDAO {

    private static final Logger logger =
        LoggerFactory.getLogger(AssetVendorDAO.class);
```

@Autowired

```
private SessionFactory sessionFactory;
```

```
public Session getSession() {  
    return sessionFactory.getCurrentSession();  
}
```

@Override

```
public AssetVendor saveVendor(AssetVendor assetVendor) {  
    getSession().persist(assetVendor);  
    return assetVendor;  
}
```

@Override

```
public List<AssetVendor> getAllVendor(AssetVendor assetVendor) {  
    Session session = getSession();  
    CriteriaBuilder cb = session.getCriteriaBuilder();  
    CriteriaQuery<AssetVendor> cq = cb.createQuery(AssetVendor.class);  
    Root<AssetVendor> root = cq.from(AssetVendor.class);  
  
    cq.orderBy(cb.asc(root.get("vendorName")));  
  
    return session.createQuery(cq).getResultList();  
}
```

@Override

```
public void deleteAssetVendor(AssetVendor assetVendor, UUID vendorId) {  
    Session session = getSession();  
    AssetVendor vendor = session.get(AssetVendor.class, vendorId);
```

```
        if (vendor != null) {  
            getSession().remove(vendor);  
        }  
    }  
}
```

@Override

```
public AssetVendor updateVendor(AssetVendor assetVendor, UUID vendorId) {  
    Session session = getSession();  
    AssetVendor updateVendor = session.get(AssetVendor.class, vendorId);  
  
    if (updateVendor != null) {  
  
        if (assetVendor.getVendorName() != null) {  
  
updateVendor.setVendorName(assetVendor.getVendorName());  
        }  
  
        if (assetVendor.getVendorNumber() != null) {  
  
updateVendor.setVendorNumber(assetVendor.getVendorNumber());  
        }  
  
        if (assetVendor.getVendorBrand() != null) {  
  
updateVendor.setVendorBrand(assetVendor.getVendorBrand());  
        }  
  
        if (assetVendor.getVendorAddress() != null) {  
  
updateVendor.setVendorAddress(assetVendor.getVendorAddress());  
        }  
    }  
}
```

```

        session.merge(updateVendor);
        logger.info("Vendor Updated Successfully");
    } else {
        logger.warn("Vendor is not found");
    }
    return updateVendor;
}
}

```

### **AssetVendorController :**

```

package com.hibernate.hibernate.controller;

import java.util.List;
import java.util.UUID;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.DeleteMapping;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.PutMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import com.hibernate.hibernate.dao.AssetVendorDAO;
import com.hibernate.hibernate.entity.AssetVendor;
import com.hibernate.hibernate.service.AssetVendorService;

```

```

@RestController

@RequestMapping("/assetvendor")

public class AssetVendorController {

    private static final Logger logger =
LoggerFactory.getLogger(AssetVendorController.class);

    @Autowired

    private AssetVendorService assetVendorService;

    @Autowired

    private AssetVendorDAO assetVendorDAO;

    //    @PostMapping("/savevendor")
    //    public String saveVendor(@Valid AssetVendor vendor) {
    //        assetVendorService.saveVendor(vendor);
    //        return "Vendor Saved Successfully";
    //    }

    @PostMapping("/persistvendor")
    public String saveVendor(@RequestBody AssetVendor assetVendor) {
        AssetVendor assetVendorObj = null;
        AssetVendor saveVendor = convertToEntity(assetVendor);
        try {
            logger.debug("Created Vendor Details");
            assetVendorObj = assetVendorDAO.saveVendor(assetVendor);
            logger.debug("Created Vendor Successfully");
        } catch (Exception e) {
            logger.debug("Error while creating Vendor : " + e.getMessage());
        }
        return "Vendor Successfully Created";
    }

```



```
}
```

```
private AssetVendor convertToEntity(AssetVendor assetVendor) {  
    AssetVendor entity = new AssetVendor();  
    entity.setVendorName(assetVendor.getVendorName());  
    entity.setVendorBrand(assetVendor.getVendorBrand());  
    entity.setVendorNumber(assetVendor.getVendorNumber());  
    entity.setVendorAddress(assetVendor.getVendorAddress());  
    return entity;  
}
```

```
@GetMapping("/getallvendor")
```

```
public List<AssetVendor> getAllVendor(AssetVendor assetVendor) {  
    List<AssetVendor> assetVendorList = null;  
    try {  
        logger.debug("Successfully got the Vendors");  
        assetVendorList = assetVendorDAO.getAllVendor(assetVendor);  
    } catch (Exception e) {  
        logger.debug("Error while getting All Vendor : " + e.getMessage());  
    }  
    return assetVendorList;  
}
```

```
@DeleteMapping("/deletevendor/{vendorId}")
```

```
public String deleteVendor(AssetVendor assetVendor, @PathVariable UUID  
vendorId) {  
    try {  
        assetVendorDAO.deleteAssetVendor(assetVendor, vendorId);  
        return "Vendor Deleted Successfully";  
    } catch (Exception e) {  
        logger.debug("Cannot find the Vendor : " + e.getMessage());  
    }  
}
```

```

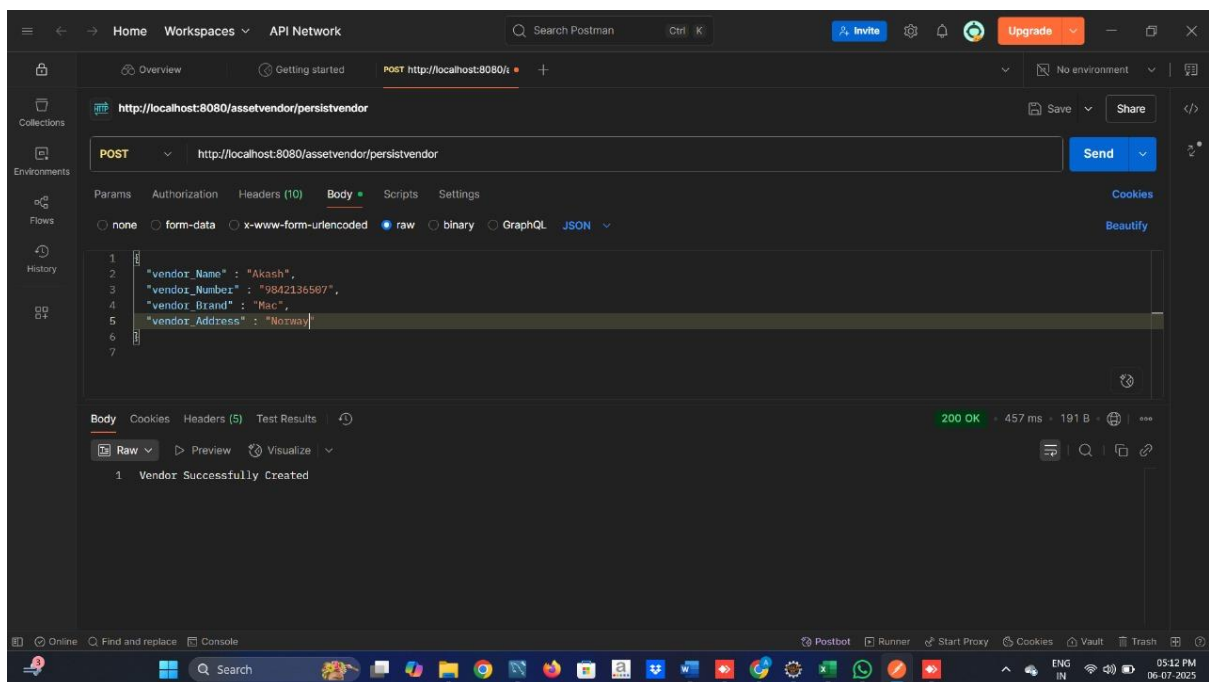
        return "Cannot Delete the Vendor";
    }
}

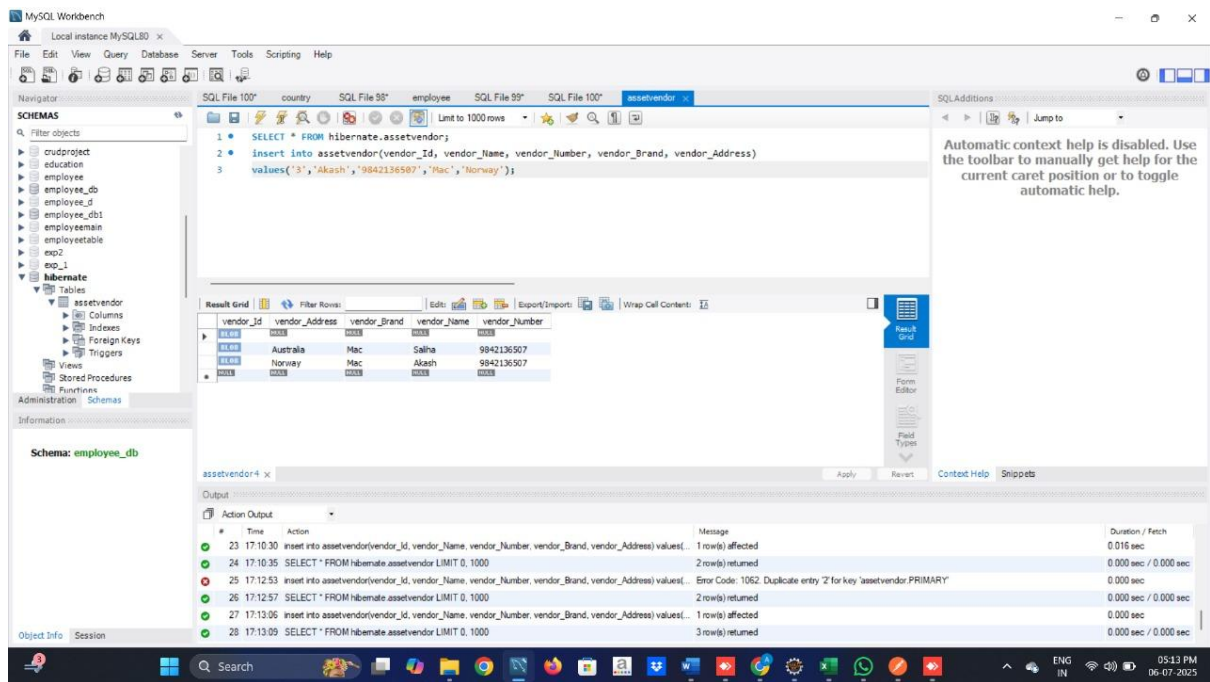
@PostMapping("/updatevendor/{vendorId}")
public AssetVendor updateVendor(@RequestBody AssetVendor assetVendor,
                                @PathVariable UUID vendorId) {
    try {
        AssetVendor updatedVendor =
assetVendorDAO.updateVendor(assetVendor, vendorId);

        return updatedVendor;
    } catch (Exception e) {
        logger.debug("Cannot Update the Vendor");
        return assetVendor;
    }
}
}
}

```

## Output :





## For Spring Data JPA :

### Code :

#### application.properties :

```
spring.application.name=SpringDataJPA
spring.datasource.url=jdbc:mysql://localhost:3306/springdatajpa
spring.datasource.username=root
spring.datasource.password=Aathira@14
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL8Dialect
```

#### Employee.java :

```
package com.SpringDataJPA.SpringDataJPA.model;

import jakarta.persistence.*;

@Entity
@Table(name = "employee")
public class Employee {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Integer id;
    private String name;
    private String department;
    public Integer getId() {
        return id;
    }
    public void setId(Integer 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;
    }
}

```

### **EmployeeRepository.java :**

```

package com.SpringDataJPA.SpringDataJPA.repository;

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

import com.SpringDataJPA.SpringDataJPA.model.Employee;

public interface EmployeeRepository extends JpaRepository<Employee, Integer>{

}

```

### **EmployeeService.java :**

```

package com.SpringDataJPA.SpringDataJPA.service;

```

```

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

import com.SpringDataJPA.SpringDataJPA.model.Employee;
import com.SpringDataJPA.SpringDataJPA.repository.EmployeeRepository;

import jakarta.transaction.Transactional;

@Service
public class EmployeeService {

    @Autowired
    private EmployeeRepository employeeRepository;

    @Transactional
    public void addEmployee(Employee employee) {
        employeeRepository.save(employee);
    }

}

```

### **EmployeeController.java :**

```

package com.SpringDataJPA.SpringDataJPA.controller;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import com.SpringDataJPA.SpringDataJPA.model.Employee;

```

```
import com.SpringDataJPA.SpringDataJPA.service.EmployeeService;
```

```
@RestController
```

```
@RequestMapping("employee")
```

```
public class EmployeeController {
```

```
    @Autowired
```

```
    private EmployeeService employeeService;
```

```
    @PostMapping("/addemployee")
```

```
    public String addEmployee(@RequestBody Employee employee) {
```

```
        employeeService.addEmployee(employee);
```

```
        return "Successfully Added the Employee";
```

```
    }
```

```
}
```

## Output :

