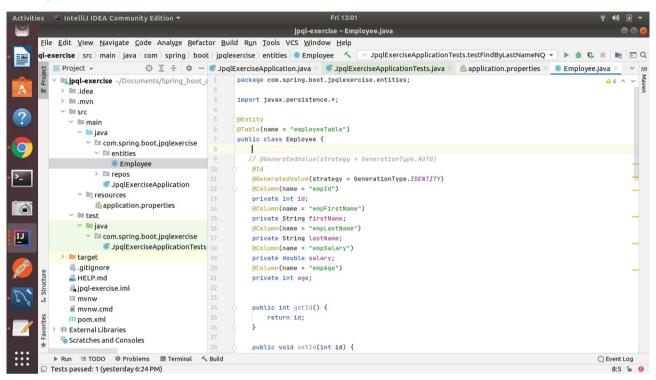
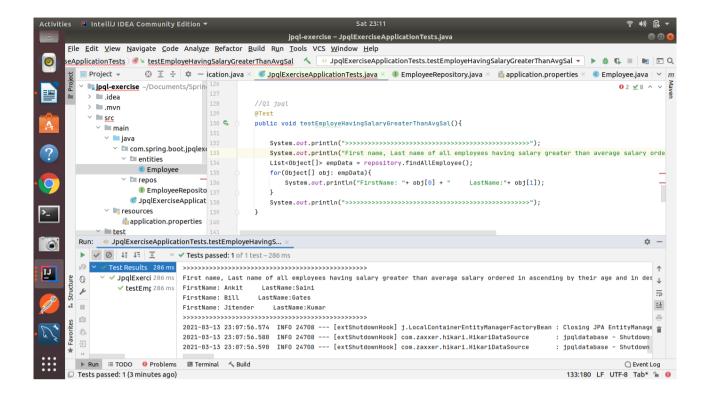
Spring Data JPA with Hibernate Part 2 Exercise

JPQL:

1. Display the first name, last name of all employees having salary greater than average salary ordered in ascending by their age and in descending by their salary.





2. Update salary of all employees by a salary passed as a parameter whose existing salary is less than the average salary.

```
@Query("select avg(salary) from Employee")
Integer averageSalary();
@Modifying
@Query(value = "UPDATE Employee SET salary=:salaryval WHERE salary<:averagesalary")
void updateSalaryLessThanAverage(@Param("salaryval")Integer salary,@Param("averagesalary")Integer averagesalary);</pre>
```

```
@Transactional
public void updateSalaryLessThanAverage()
{
    Integer average = repository.averageSalary();
    System.out.println(">>>>>>"+average);
    repository.updateSalaryLessThanAverage( salary: 20000, average);
}

// employeeController.jinucmplogeeorder.bySalaryandA
employeeController.updateSalaryLessThanAverage();
    //employeeController.deleteMinSalary();
```

3. Delete all employees with minimum salary.

```
//delete min salary
@Query("select min(salary) from Employee")
Integer minSalary();
@Modifying
@Query(value = "Delete FROM Employee WHERE salary=:minsalary")
void deleteMinSalary(@Param("minsalary")Integer minsalary);

@Transactional
public void deleteMinSalary()
{
    Integer minSal = repository.minSalary();
    System.out.println(">>>>>>>>>>>>>+minSal);
    repository.deleteMinSalary(minSal);
}
```

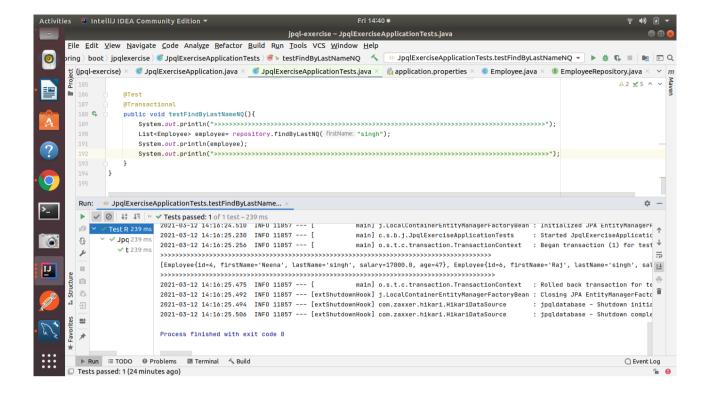
Native SQL Query:

1. Display the id, first name, age of all employees where last name ends with "singh"

```
Activities 📱 IntelliJ IDEA Community Edition 🔻
                                                                                    Fri 14:38 •
                                                                                                                                                               (I) F
                                                                          jpql-exercise – Employee.java
      File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
0
      ql-exercise ) src ) main ) java ) com ) spring ) boot ) jpqlexercise ) entities ) 🖲 Employee – 🔨 🔠 JpqlExerciseApplicationTests.testFindByLastNameNQ 🔻 🕨 🐞 🕟 🔳 📭 🖸 Q
       🖁 (jpql-exercise) × 🈻 JpqlExerciseApplication.java × 🦸 JpqlExerciseApplicationTests.java × 🍴 application.properties × 🌘 Employee.java × 😻 EmployeeRepository.java × 🔻 m
                 package com.spring.boot.jpglexercise.entities;
                 import javax.persistence.*;
                 @Table(name = "employeeTable")
                 public class Employee {
                    // @GeneratedValue(strategy = GenerationType.AUTO)
                     @GeneratedValue(strategy = GenerationType.IDENTITY)
                    @Column(name = "empId")
                     private int id;
                     @Column(name = "empFirstName")
                    private String firstName;
                     private String lastName;
                    @Column(name = "empSalary")
                     private double salary;
IJ
                     @Column(name = "empAge")
                    private int age;
                    public int getId() { return id; }
                     public void setId(int id) { this.id = id; }
         Run: 

    JpqlExerciseApplicationTests.testFindByLastName...
                                                                                                                                                                 ф –
         P Run ≔ TODO ● Problems ☑ Terminal 〈 Build
                                                                                                                                                            C Event Log
       ☐ Tests passed: 1 (22 minutes ago)
```

```
//Q1 NQ
@Query(value = "select * from employee_table where emp_last_name=:lastName", nativeQuery = true)
List<Employee> findByLastNQ(@Param("lastName") String firstName);
```



2. Delete all employees with age greater than 45(Should be passed as a parameter)

```
//q2 Nq
@Modifying
@Query(value = "delete from employee_table where emp_age>:age", nativeQuery = true)
void deleteEmployeeHavingAgeGreaterThan(@Param("age") int age);

//Q2 NQ
@Test
@Transactional
@Rollback(value = false)
public void testDeleteEmployeeHavingAgeGreaterThan(){
    repository.deleteEmployeeHavingAgeGreaterThan(45);
}
```



Inheritance Mapping:

1. Implement and demonstrate Single Table strategy.

```
create table payment(
id int PRIMARY KEY,
pmode varchar(2),
amount decimal(8,3) ,
cardnumber varchar(20),
checknumber varchar(20));
```

```
Intellij IDEA Community Edition
                                                                                          Thu 22:04
                                                                            inheritancemapping – Payment.java
       <u>F</u>ile <u>E</u>dit <u>V</u>iew <u>N</u>avigate <u>C</u>ode Analy<u>z</u>e <u>R</u>efactor <u>B</u>uild R<u>u</u>n <u>T</u>ools VCS <u>W</u>indow <u>H</u>elp
       \textbf{inheritance mapping} \ \rangle \ \text{src} \ \rangle \ \text{main} \ \rangle \ \text{java} \ \rangle \ \text{com} \ \rangle \ \text{hibernate inheritance} \ \rangle \ \text{inheritance mapping} \ \rangle \ \text{entities} \ \rangle \ \textcircled{@} \ \text{Payment}
                                                                                                                                   ■ Project *
                             🕀 📱 🕏 🕒 📵 Payment,java × 🌀 CreditCard.java × 🌀 Check.java × 📵 PaymentRepository.java ×
          inheritancemapping ~/Documents/S
                                                          @Entity
                                                          @Inheritance(strategy = InheritanceType.SINGLE_TABLE)
            > III .mvn
                                                          @DiscriminatorColumn(name = "pmode", discriminatorType = DiscriminatorType.STRING)
            ∨ I src
                                                   8 ol public abstract class Payment {
               ∨ 🖿 main
                 ∨ 🖿 java
                                                              private int id;
                    ∨ com.hibernateinheritance. 10
                                                              private double amount;

→ entities

                           © Check
                                                              public int getId() {
                           © CreditCard
                                                                  return 1d;
                           Payment

    PaymentRepository
    17
public void setId(int id) {
                  resources
                      application.properties
               > limitest
               aitianore.
                                                             public double getAmount() {
               # HELP.md
                                                                  return amount:
               finheritancemapping.iml
               ■ mvnw
                                                              public void setAmount(double amount) {
               # mvnw.cmd
                                                                   this.amount = amount;
               m pom.xml
          > III External Libraries
            Scratches and Consoles
          ○ Event Log
                                                                                                                                                      29:1 LF UTF-8 4 spaces 🚡 🕕
```

```
Activities 📱 IntelliJ IDEA Community Edition 🔻
                                                                    inheritancemapping – CreditCard.java
      File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
       \textbf{inheritance mapping} \ \rangle \ \text{src} \ \rangle \ \text{main} \ \rangle \ \text{java} \ \rangle \ \text{com} \ \rangle \ \text{hibernate inheritance} \ \rangle \ \text{inheritance mapping} \ \rangle \ \text{entities} \ \rangle \ \textcircled{e} \ \text{CreditCard}
                                                                                                                     ■ Project ▼

✓ Inheritancemapping ~/Documents/S 1

                                                   package com.hibernateinheritance.inheritancemapping.entities;
            > idea
                                                    import lavax.persistence.DiscriminatorValue:
            > 🖿 .mvn
           ∨ ■ src
                                                    import javax.persistence.Entity;
              ∨ I main
                                                    @Entity
                ∨ 🖿 java
                                                    @DiscriminatorValue("cc")
                    com.hibernateinheritance.i
                                                     public class CreditCard extends Payment {

✓ ■ entities

                                                        private String cardnumber:
                         © Check
                         CreditCard
                         Payment
                                                        public String getCardnumber() {
                       InheritancemappingApp 13
                                                          return cardnumber;

    PaymentRepository

∨ In resources

                     application.properties
                                                        public void setCardnumber(String cardnumber) {
                                                           this.cardnumber = cardnumber:
              🚜 .gitignore
              # HELP.md
              inheritancemapping.iml

    mvnw

              m pom.xml
          > Illi External Libraries
            Scratches and Consoles
          C Event Log
                                                                                                                                      20:1 LF UTF-8 4 spaces 🕯 🕕
           IntelliJ IDEA Community Edition
                                                                      inheritancemapping – Check.java
       <u>F</u>ile <u>E</u>dit <u>V</u>iew <u>N</u>avigate <u>C</u>ode Analy<u>z</u>e <u>R</u>efactor <u>B</u>uild R<u>u</u>n <u>T</u>ools VCS <u>W</u>indow <u>H</u>elp
                                                                                                                     🔨 Add Configuration... 🕨 🐞 🖏 🔳 📭 🗈 Q
       \textbf{inheritance mapping} \ \rangle \ \text{src} \ \rangle \ \ \text{main} \ \rangle \ \ \text{java} \ \rangle \ \ \text{com} \ \rangle \ \ \text{hibernate inheritance} \ \rangle \ \ \text{inheritance mapping} \ \rangle \ \ \text{entities} \ \rangle \ \ \text{\textcircled{o}} \ \ \text{Check}
                            ⊕ ₹ † □ Payment.java × © CreditCard.java × © Check.java × © PaymentRepository.java
                                                    package com.hibernateinheritance.inheritancemapping.entities;
            inheritancemapping ~/Documents/S 1
            > ■ .idea
                                                    import javax.persistence.DiscriminatorValue;
            > 🖿 .mvn
                                                    import javax.persistence.Entity;
            ∨ I src
              ∨ 🖿 main
                                                     @DiscriminatorValue("ch")

✓ I com.hibernateinheritance.i

                                                    public class Check extends Payment{

∨ I entities

                                                        private String checknumber;
                         © Check
                         © CreditCard
                                                        public String getChecknumber() {
                         Payment

    PaymentRepository

 resources
                                                        public void setChecknumber(String checknumber) {
                     application.properties
                                                            this.checknumber = checknumber:
 IJ
              > In test
              .gitignore
              HELP.md
              🚛 inheritancemapping.iml
              ■ mvnw
              m pom.xml
          > IIII External Libraries
            Scratches and Consoles
          ☐ Event Log
                                                                                                                                      7:24 LF UTF-8 4 spaces 🗎 \rm \rm \varTheta
Payment.java × © CreditCard.java × © Check.java × I PaymentRepository.java ×
           package com.hibernateinheritance.inheritancemapping;
2
3
           import com.hibernateinheritance.inheritancemapping.entities.Payment;
4
           import org.springframework.data.repository.CrudRepository;
5
           public interface PaymentRepository extends CrudRepository Payment, Integer {
6
7
          }-
```

```
public void createPayment(){
    CreditCard cc = new CreditCard();
    cc.setId(213);
    cc.setAmount(5000);
    cc.setCardnumber("9876543210");
    repository.save(cc);
}

@Test
public void createCheckPayment(){
    Check ch = new Check();
    ch.setId(214);
    ch.setAmount(6000);
    ch.setChecknumber("9876543210");
    repository.save(ch);
}
```

#	id	pmode	amount	cardnumber	checknumber
1	213	СС	5000.000	9876543210	NULL
2	214	ch	6000.000	NULL	9876543210
*	HULL	NULL	NULL	HULL	NULL

2. Implement and demonstrate Joined strategy.

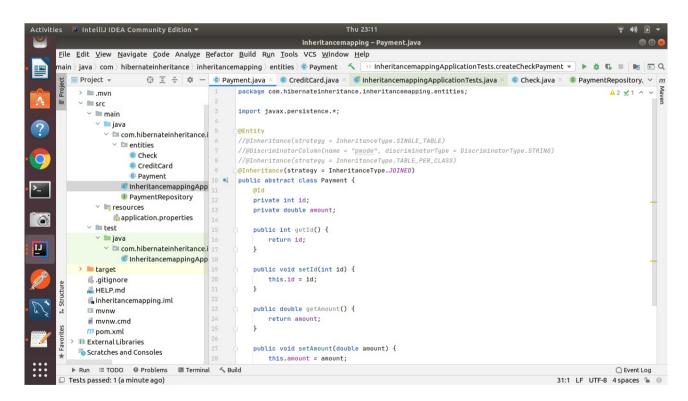
```
create table payment(
id int PRIMARY KEY NOT NULL AUTO_INCREMENT,
amount decimal(8,3)
);

create table card(
id int ,
    cardnumber varchar(20),
    FOREIGN KEY (id)

REFERENCES payment(id)
)

create table bankcheck(
id int ,
    checknumber varchar(20),
FOREIGN KEY (id)

REFERENCES payment(id)
)
```



```
Activities 🛮 IntelliJ IDEA Community Edition 🔻
                                                                   inheritancemapping – CreditCard.java
      File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
      in 〉 java 〉 com 〉 hibernateinheritance 〉 inheritancemapping 〉 entities 〉 ® CreditCard 🔨 🕒 InheritancemappingApplicationTests.createCheckPayment 🔻 🕨 🐞 🕟 🔳
                           😌 📱 🌣 🗕 🅲 Payment.java × 🌑 CreditCard.java × 🍔 InheritancemappingApplicationTests.java × 🚳 Check.java × 📵 PaymentRepository, 🗸 🕏
          ■ Project →
           > 🔳 .mvn
                                                    import javax.persistence.Entity;
                                                    import javax.persistence.PrimaryKeyJoinColumn;
           ∨ I src
                                                    import javax.persistence.Table;
             ∨ I main
                ∨ 🖿 java
                  com.hibernateinheritance.i

∨ ■ entities

                                                    @Entity
                         Check
                                                    //@DiscriminatorValue("cc")
                         © CreditCard
                                                    @Table(name = "card")
                         Payment
                                                    @PrimaryKeyJoinColumn(name="id")
                     public class CreditCard extends Payment {
                      PaymentRepository
                                                        private String cardnumber;

∨ I≡ resources

                    application.properties
∨ ■ test
                                                        public String getCardnumber() {
               ∨ 🖿 java
                                                           return cardnumber;
                  ✓ Com.hibernateinheritance.i 19
                     © InheritancemappingApp 20
            > lestarget
                                                        public void setCardnumber(String cardnumber) {
             🚜 .gitignore
                                                            this.cardnumber = cardnumber;
             # HELP.md
              inheritancemapping.iml
             m pom.xml
          > III External Libraries
           Scratches and Consoles
          ▶ Run ≔ TODO ● Problems ☑ Terminal < Build
                                                                                                                                                     ☐ Event Log
      ☐ Tests passed: 1 (a minute ago)
                                                                                                                                      25:1 LF UTF-8 4 spaces 🚡 \rm \rm \varTheta
```

```
public void createPayment(){
    CreditCard cc = new CreditCard();
    cc.setId(213);
    cc.setAmount(5000);
    cc.setCardnumber("9876543210");
    repository.save(cc);
}

@Test
public void createCheckPayment(){
    Check ch = new Check();
    ch.setId(214);
    ch.setAmount(6000);
    ch.setChecknumber("9876543210");
    repository.save(ch);
}
```

#	id	amount
1	213	5000.000
2	214	6000.000
*	NULL	NULL

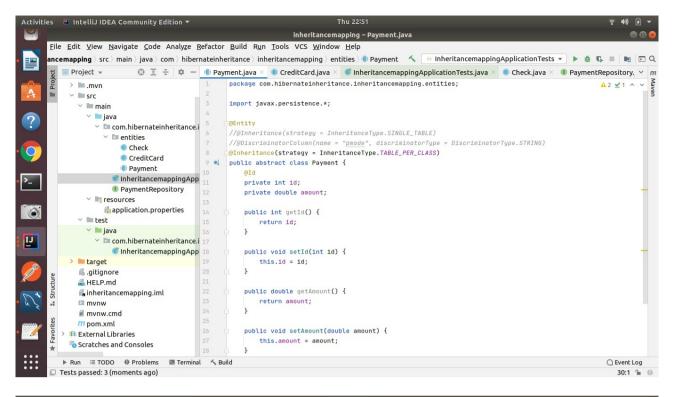
#	id	checknumber	
1	214	9876543210	

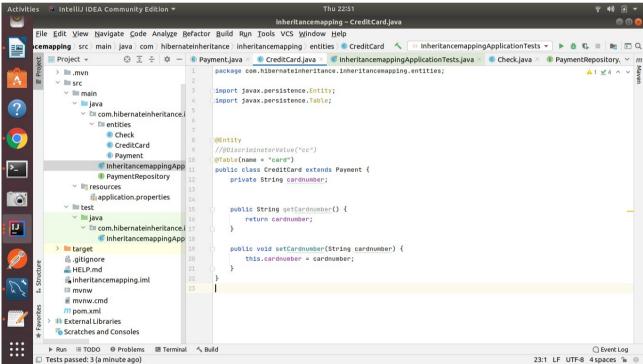
#	id	cardnumber	
1	213	9876543210	

3. Implement and demonstrate Table Per Class strategy.

```
create table card(
id int PRIMARY KEY,
amount decimal(8,3),
cardnumber varchar(20)
)

create table bankcheck(
id int PRIMARY KEY,
amount decimal(8,3),
checknumber varchar(20)
)
```





```
Activities 💹 IntelliJ IDEA Community Edition 🤻
                                                                             inheritancemapping – Check.java
       File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
       ritancemapping \rangle src \rangle main \rangle java \rangle com \rangle hibernateinheritance \rangle inheritancemapping \rangle entities \rangle @ Check \langle \langle \langle \langle Inheritancemapping Application Tests \forall \rangle \rangle \rangle \rangle \rangle
           ■ Project →
                              😌 📱 🌣 🛑 🔞 Payment.java 🗵 🅲 CreditCard.java 🗡 🦸 InheritancemappingApplicationTests.java 🗡 🕲 Check.java 🔻 🔞 PaymentRepository, 🗡 🛚
                                                         package com.hibernateinheritance.inheritancemapping.entities:
             > 🔳 .mvn
            ∨ I src
                                                          import lavay persistence DiscriminatorValue:
               ∨ I main
                                                         import javax.persistence.Entity;
                 ∨ 🖿 java
                    com.hibernateinheritance.i

✓ ■ entities

                           Check
                                                         //@DiscriminatorValue("ch")
                           © CreditCard
                                                         @Table(name = "bankcheck")
                           Payment
                                                          public class Check extends Payment{
                       InheritancemappingApp 11
                                                              private String checknumber;
                        PaymentRepository

∨ I≡ resources

                                                              public String getChecknumber() {
                      application.properties
                                                                  return checknumber;
               ∨ ■ test
                 ∨ 🖿 java
                   ✓ Com.hibernateinheritance.i 17
                                                              public void setChecknumber(String checknumber) {
                       © InheritancemappingApp 18
                                                                  this.checknumber = checknumber;
               🚜 .gitignore
               # HELP.md
               inheritancemapping.iml
               m pom.xml
           > IIII External Libraries
            Scratches and Consoles
           ▶ Run ≔ TODO ● Problems ☑ Terminal < Build
                                                                                                                                                                    C Event Log
       ☐ Tests passed: 3 (a minute ago)
                                                                                                                                                    21:1 LF UTF-8 4 spaces 庙 🕕
```

```
public void createPayment(){
    CreditCard cc = new CreditCard();
    cc.setId(213);
    cc.setAmount(5000);
    cc.setCardnumber("9876543210");
    repository.save(cc);
}

@Test
public void createCheckPayment(){
    Check ch = new Check();
    ch.setId(214);
    ch.setAmount(6000);
    ch.setChecknumber("9876543210");
    repository.save(ch);
}
```

#	id	amount	checknumber
1	214	6000.000	9876543210
*	NULL	NULL	NULL



Component Mapping:

1. Implement and demonstrate Embedded mapping using employee table having following fields: id, firstName, lastName, age, basicSalary, bonusSalary, taxAmount, specialAllowanceSalary.

```
create table employee(
id int,
firstname varchar(20),
lastname varchar(20),
age int,
basicsalary decimal(8,3),
bonussalary decimal(8,3),
taxamount decimal(8,3),
specialallowancesalary decimal(8,3))

select * from employee
```

