Hibernate :

Main :

**package** com.softra;

**import** java.util.List;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityManagerFactory;

**import** javax.persistence.Persistence;

**import** javax.persistence.Query;

**import** org.hibernate.Session;

**import** org.hibernate.SessionFactory;

**import** org.hibernate.Transaction;

**import** org.hibernate.cfg.Configuration;

**import** com.softra.utility.EntityManagerHelper;

**public** **class** Main {

**static** EntityManager *em* = EntityManagerHelper.*getEntityManager*();

/\*

private static final String PERSISTENCE\_UNIT\_NAME = "JPAProj";

private static EntityManagerFactory factory;

\*/

**public** **static** **void** create() {

Configuration configuration = **new** Configuration();

configuration.configure("hibernate.cfg.xml");

SessionFactory factory = configuration.buildSessionFactory();

Session session = factory.openSession();

Transaction transaction = session.beginTransaction();

User user = **new** User("nag","nagnath");

session.saveOrUpdate(user);

session.flush();

transaction.commit();

session.close();

factory.close(); //If factory is closed then only thread completes.

}

**public** **static** **void** retrieve() {

Configuration configuration = **new** Configuration();

configuration.configure("hibernate.cfg.xml");

SessionFactory factory = configuration.buildSessionFactory();

Session session = factory.openSession();

Transaction transaction = session.beginTransaction();

User user =(User)session.get(User.**class**, "nag");// get will do eager loading and instead of get if we use load it will do lazy loading

//System.out.println("password is : " + user.getPassword());

session.flush();

transaction.commit();

session.close();

factory.close(); //If factory is closed then only thread completes.

}

**public** **static** **void** update() {

Configuration configuration = **new** Configuration();

configuration.configure("hibernate.cfg.xml");

SessionFactory factory = configuration.buildSessionFactory();

Session session = factory.openSession();

Transaction transaction = session.beginTransaction();

User user = **new** User("nag","nagmani");

session.saveOrUpdate(user);

session.flush();

transaction.commit();

session.close();

factory.close(); //If factory is closed then only thread completes.

}

**public** **static** **void** delete() {

Configuration configuration = **new** Configuration();

configuration.configure("hibernate.cfg.xml");

SessionFactory factory = configuration.buildSessionFactory();

Session session = factory.openSession();

Transaction transaction = session.beginTransaction();

User user =(User)session.get(User.**class**, "nag");

session.delete(user);

session.flush();

transaction.commit();

session.close();

factory.close(); //If factory is closed then only thread completes.

}

**public** **static** **void** createJPA() {

*em*.getTransaction().begin();

User user = **new** User();

user.setUsername("Golu");

user.setPassword("Golu");

*em*.persist(user);

*em*.getTransaction().commit();

*em*.close();

}

**public** **static** **void** RetrieveJPA() {

User user =*em*.find(User.**class**,"Dipti");

System.***out***.println(user.getPassword());

}

**public** **static** **void** updateJPA() {

*em*.getTransaction().begin();

User user = **new** User("Dipti","Ujjain");

*em*.merge(user);

*em*.getTransaction().commit();

*em*.close();

}

**public** **static** **void** deleteJPA() {

*em*.getTransaction().begin();

User user =*em*.find(User.**class**,"Golu");

*em*.remove(user);

*em*.getTransaction().commit();

*em*.close();

}

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

/\*RetrieveJPA();\*/

*deleteJPA*();

//updateJPA();

//createJPA();

/\*create();

retrieve();

update();

delete();\*/

EntityManagerHelper.*closeFactory*();

}

}

User :

**package** com.softra;

**import** javax.persistence.Column;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.Table;

@Entity

@Table(name="users")

**public** **class** User {

@Id

@Column(name="username1")

**private** String username;

//@Column(name="password")

@Column

**private** String password;

**public** User() {

}

**public** User(String uname,String pwd) {

**this**.username = uname;

**this**.password = pwd;

}

**public** String getUsername() {

**return** username;

}

**public** **void** setUsername(String username) {

**this**.username = username;

}

**public** String getPassword() {

**return** password;

}

**public** **void** setPassword(String password) {

**this**.password = password;

}

}

User.hbm.xml

<?xml version=*"1.0"*?>

<!DOCTYPE hibernate-mapping PUBLIC "-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://hibernate.sourceforge.net/hibernate-mapping-3.0.dtd">

<!-- Generated Jan 9, 2018 7:23:05 PM by Hibernate Tools 3.5.0.Final -->

<hibernate-mapping>

<class name=*"com.softra.User"* table=*"USERS"*>

<id name=*"username"* type=*"java.lang.String"*>

<column name=*"USERNAME"* />

<generator class=*"assigned"* />

</id>

<property name=*"password"* type=*"java.lang.String"*>

<column name=*"PASSWORD"* />

</property>

</class>

</hibernate-mapping>

Entity Manager Helper :

**package** com.softra.utility;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityManagerFactory;

**import** javax.persistence.Persistence;

**public** **class** EntityManagerHelper {

**private** **static** EntityManagerFactory *factory* = **null**;

//private EntityManager entitymanager = null;

**static** {

*factory* = Persistence.*createEntityManagerFactory*("JPAProj");

}

**public** **static** EntityManager getEntityManager() {

**return** *factory*.createEntityManager();

}

**public** **static** **void** closeFactory() {

*factory*.close();

}

}

Persistence.xml :

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

<persistence version=*"2.1"* xmlns=*"http://xmlns.jcp.org/xml/ns/persistence"* xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"* xsi:schemaLocation=*"http://xmlns.jcp.org/xml/ns/persistence http://xmlns.jcp.org/xml/ns/persistence/persistence\_2\_1.xsd"*>

<persistence-unit name=*"JPAProj"* transaction-type=*"RESOURCE\_LOCAL"*>

<class>com.softra.User</class>

<!-- <class>com.softra.manytomany.Employee</class>

<class>com.softra.manytomany.TechSkill</class> -->

<!-- <class>com.softra.manytomany.Employee</class>

<class>com.softra.manytomany.TechSkill</class> -->

<!-- <class>com.softra.manytoone.Department</class>

<class>com.softra.manytoone.Employee</class> -->

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:mysql://localhost:3306/login"*/>

<property name=*"javax.persistence.jdbc.user"* value=*"root"*/>

<property name=*"javax.persistence.jdbc.password"* value=*"root"*/>

<property name=*"javax.persistence.jdbc.driver"* value=*"com.mysql.jdbc.Driver"*/>

<property name=*"hibernate.dialect"* value=*"org.hibernate.dialect.MySQL5Dialect"* />

<property name=*"hibernate.hbm2ddl.auto"* value=*"update"* />

<property name=*"hibernate.show\_sql"* value=*"true"* />

</properties>

</persistence-unit>

</persistence>

JPA :

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 http://maven.apache.org/xsd/maven-4.0.0.xsd"*>

<modelVersion>4.0.0</modelVersion>

<groupId>br.com.fredericci.playground</groupId>

<artifactId>JPAAssociation</artifactId>

<version>0.0.1-SNAPSHOT</version>

<properties>

<project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

<maven.compiler.source>11</maven.compiler.source>

<maven.compiler.target>11</maven.compiler.target>

</properties>

<dependencies>

<!-- JPA/Hibernate -->

<dependency>

<groupId>org.hibernate</groupId>

<artifactId>hibernate-entitymanager</artifactId>

<version>5.4.4.Final</version>

</dependency>

<!-- Database -->

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<version>1.4.199</version>

</dependency>

<dependency>

<groupId>mysql</groupId>

<artifactId>mysql-connector-java</artifactId>

<version>5.1.13</version>

</dependency>

</dependencies>

</project>

Persistence.xml :

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

<persistence xmlns=*"http://java.sun.com/xml/ns/persistence"*

xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"*

xsi:schemaLocation=*"http://java.sun.com/xml/ns/persistence http://java.sun.com/xml/ns/persistence/persistence\_2\_0.xsd"*

version=*"2.0"*>

<persistence-unit name=*"JPAAssoc"* transaction-type=*"RESOURCE\_LOCAL"*>

<description>Hibernate EntityManager Demo</description>

<provider>org.hibernate.jpa.HibernatePersistenceProvider</provider>

<exclude-unlisted-classes>false</exclude-unlisted-classes>

<properties>

<property name=*"hibernate.dialect"* value=*"org.hibernate.dialect.MySQL5Dialect"*/>

<property name=*"hibernate.hbm2ddl.auto"* value=*"update"*/>

<property name=*"javax.persistence.jdbc.driver"* value=*"com.mysql.jdbc.Driver"*/>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:mysql://localhost:3306/jpakeys"*/>

<property name=*"javax.persistence.jdbc.user"* value=*"root"*/>

<property name=*"javax.persistence.jdbc.password"* value=*"root"*/>

<property name=*"hibernate.show\_sql"* value=*"true"*/>

</properties>

</persistence-unit>

</persistence>

Entity Manager Helper :

**package** com.jd.utility;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityManagerFactory;

**import** javax.persistence.Persistence;

**public** **class** EntityManagerHelper {

**private** **static** EntityManagerFactory *factory* = **null**;

//private EntityManager entitymanager = null;

**static** {

*factory* = Persistence.*createEntityManagerFactory*("JPAAssoc");

}

**public** **static** EntityManager getEntityManager() {

**return** *factory*.createEntityManager();

}

**public** **static** **void** closeFactory() {

*factory*.close();

}

}

Employee.java :

**package** com.jd.model;

**import** javax.persistence.Column;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.Table;

@Entity

@Table(name="employee")

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

@Id

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

**private** **int** id;

@Column

**private** String fname;

@Column

**private** String lname;

**private** Address addr;

**public** Employee() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** **int** getId() {

**return** id;

}

**public** **void** setId(**int** id) {

**this**.id = id;

}

**public** String getFname() {

**return** fname;

}

**public** **void** setFname(String fname) {

**this**.fname = fname;

}

**public** String getLname() {

**return** lname;

}

**public** **void** setLname(String lname) {

**this**.lname = lname;

}

**public** Address getAddr() {

**return** addr;

}

**public** **void** setAddr(Address addr) {

**this**.addr = addr;

}

}

Address.java :

**package** com.jd.model;

**import** javax.persistence.Column;

**import** javax.persistence.Embeddable;

@Embeddable

**public** **class** Address {

@Column(name="city", nullable=**false**)

**private** String city;

@Column(name="zip", nullable=**false**)

**private** String zip;

**public** Address() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** String getCity() {

**return** city;

}

**public** **void** setCity(String city) {

**this**.city = city;

}

**public** String getZip() {

**return** zip;

}

**public** **void** setZip(String zip) {

**this**.zip = zip;

} }

Idao :

**package** com.jd.dao;

**public** **interface** IDao {

**int** createEmployee(**int** id, String fname, String lname);

**boolean** updateEmployee(**int** id, String newfname);

}

Employee Dao :

package com.jd.dao;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.model.Address;

import com.jd.model.Employee;

import com.jd.utility.EntityManagerHelper;

public class EmployeeDao implements IDao {

public int createEmployee(int id, String fname, String lname) {

Employee e = new Employee();

// e.setId(id);

e.setFname(fname);

e.setLname(lname);

Address a = new Address("Pune", "411013");

e.setAddr(a);

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

em.getTransaction().begin();

em.persist(e);

System.out.println("Employee added with empId" +id);

em.getTransaction().commit();

em.close();

/\* em.flush();

tx.commit();

em.close();\*/

return id;

}

public boolean updateEmployee(int id, String newfname) {

// TODO Auto-generated method stub

return false;

}

}

Main :

import com.jd.dao.EmployeeDao;

import com.jd.dao.IDao;

public class Main {

public static void main(String[] args) {

IDao dao = new EmployeeDao();

dao.createEmployee(6, "Saleel", "Prabhu");

}

}

One to One classes :

Employee ;

package onetoone;

import javax.persistence.CascadeType;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.OneToOne;

import org.hibernate.annotations.Cascade;

@Entity(name="EMPL1")

public class Employee {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="FIRSTNAME")

private String fname;

@Column(name="LASTNAME")

private String lname;

@OneToOne(cascade=CascadeType.ALL)

@JoinColumn

private Address addr;

public Employee() {

super();

// TODO Auto-generated constructor stub

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

public Address getAddr() {

return addr;

}

public void setAddr(Address addr) {

this.addr = addr;

}

}

Address:

package onetoone;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

@Entity(name="ADDR1")

public class Address {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column

private String city;

@Column

private String zip;

@javax.persistence.OneToOne(mappedBy="addr")

private Employee emp;

public Address() {

super();

// TODO Auto-generated constructor stub

}

public Address(String city, String zip) {

super();

this.city = city;

this.zip = zip;

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getCity() {

return city;

}

public void setCity(String city) {

this.city = city;

}

public String getZip() {

return zip;

}

public void setZip(String zip) {

this.zip = zip;

}

public Employee getEmp() {

return emp;

}

public void setEmp(Employee emp) {

this.emp = emp;

}

}

Employee Dao :

package onetoone;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.utility.EntityManagerHelper;

public class EmployeeDao {

public int createEmployee(int id, String fname, String lname) {

Employee e = new Employee();

// e.setId(id);

e.setFname(fname);

e.setLname(lname);

Address a = new Address("Pune", "411013");

e.setAddr(a);

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

em.getTransaction().begin();

em.persist(e);

System.out.println("Employee added with empId" +id);

em.getTransaction().commit();

em.close();

/\* em.flush();

tx.commit();

em.close();\*/

return id;

}

public boolean updateEmployee(int id, String newfname) {

// TODO Auto-generated method stub

return false;

}

}

Main :

**package** onetoone;

**import** onetoone.Employee;

**public** **class** Main\_onetoone {

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

EmployeeDao e = **new** EmployeeDao();

e.createEmployee(1, "Gaurav", "Jain");

}

}

One to Many:

Employee:

package onetomany;

import javax.persistence.CascadeType;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.OneToOne;

import onetoone.Address;

@Entity(name="EMPL2")

public class Employee {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="FIRSTNAME")

private String fname;

@Column(name="LASTNAME")

private String lname;

//@ManyToOne

//private Department department;

public Employee() {

super();

// TODO Auto-generated constructor stub

} // Many employees can have single dept.

public Employee(int id, String fname, String lname, Department department) {

super();

this.id = id;

this.fname = fname;

this.lname = lname;

//this.department = department;

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

/\* public Department getDepartment() {

return department;

}

public void setDepartment(Department department) {

this.department = department;

}

\*/

}

Dept.:

package onetomany;

import java.util.List;

import javax.persistence.CascadeType;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.OneToMany;

@Entity(name="DEPT2")

public class Department {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="dname")

private String name;

//@OneToMany(targetEntity=Employee.class, mappedBy="department")

@OneToMany(targetEntity=Employee.class,cascade=CascadeType.ALL)

@JoinColumn(name="deptid")

private List<Employee> employees;

public Department() {

super();

// TODO Auto-generated constructor stub

}

public Department(int id, String name, List<Employee> employees) {

super();

this.id = id;

this.name = name;

this.employees = employees;

}

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 List<Employee> getEmployees() {

return employees;

}

public void setEmployees(List<Employee> employees) {

this.employees = employees;

}

}

EmployeeDao :

package onetomany;

import java.util.ArrayList;

import java.util.List;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.utility.EntityManagerHelper;

public class EmployeeDao {

public void createEmployee() {

Employee e1 = new Employee();

//e1.setId(1);

e1.setFname("Dipti");

e1.setLname("Jain");

Employee e2 = new Employee();

//e2.setId(2);

e2.setFname("Saleel");

e2.setLname("Prabhu");

Department d1 = new Department();

d1.setName("IT");

/\*e1.setDepartment(d1);

e2.setDepartment(d1);\*/

List<Employee> li = new ArrayList<Employee>();

li.add(e1);

li.add(e2);

d1.setEmployees(li);

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

tx.begin();

em.persist(d1);

// System.out.println("Employee added with empId" +id);

tx.commit();

em.close();

//return id;

}

}

Main :

**package** onetomany;

**public** **class** MainOnetoMany {

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

EmployeeDao e = **new** EmployeeDao();

e.createEmployee();

}

}

Many to One :

Employee:

package manytoone;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.ManyToOne;

@Entity(name="EMPL3")

public class Employee {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="FIRSTNAME")

private String fname;

@Column(name="LASTNAME")

private String lname;

@ManyToOne

private Department department;

public Employee() {

super();

// TODO Auto-generated constructor stub

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

public Department getDepartment() {

return department;

}

public void setDepartment(Department department) {

this.department = department;

}

}

Dept:

package manytoone;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

@Entity(name="DEPT3")

public class Department {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="dname")

private String name;

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;

}

}

Main :

package manytoone;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.utility.EntityManagerHelper;

public class Main {

public static void main(String[] args) {

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

tx.begin();

Department d = new Department();

d.setName("Finance");

em.persist(d);

Employee e1 = new Employee();

e1.setFname("Gaurav");

e1.setLname("Jain");

e1.setDepartment(d);

Employee e2 = new Employee();

e2.setFname("Golu");

e2.setLname("Jain");

e2.setDepartment(d);

Employee e3 = new Employee();

e3.setFname("Ranu");

e3.setLname("Jain");

e3.setDepartment(d);

em.persist(e1);

em.persist(e2);

em.persist(e3);

tx.commit();

em.close();

}

}

Many to Many:

package manytomany;

import java.util.List;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.ManyToMany;

@Entity(name="EMPL4")

public class Employee {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="FIRSTNAME")

private String fname;

@Column(name="LASTNAME")

private String lname;

@ManyToMany(targetEntity=TechSkills.class)

private List<TechSkills> techskills;

public Employee() {

super();

// TODO Auto-generated constructor stub

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

public List<TechSkills> getTechskills() {

return techskills;

}

public void setTechskills(List<TechSkills> techskills) {

this.techskills = techskills;

}

}

Tech skils:

package manytomany;

import java.util.List;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.ManyToMany;

@Entity(name="TECH4")

public class TechSkills {

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int id;

@Column(name="skillname")

private String skillname;

@ManyToMany(targetEntity=Employee.class)

private List<Employee> employees;

public TechSkills() {

super();

// TODO Auto-generated constructor stub

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getSkillname() {

return skillname;

}

public void setSkillname(String skillname) {

this.skillname = skillname;

}

public List<Employee> getEmployees() {

return employees;

}

public void setEmployees(List<Employee> employees) {

this.employees = employees;

}

}

Main :

**package** manytomany;

**import** java.util.ArrayList;

**import** java.util.List;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityTransaction;

**import** com.jd.utility.EntityManagerHelper;

**public** **class** Main {

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

EntityManager em = EntityManagerHelper.*getEntityManager*();

EntityTransaction tx = em.getTransaction();

tx.begin();

Employee e1 = **new** Employee();

e1.setFname("Dipti");

e1.setLname("Jain");

Employee e2 = **new** Employee();

e2.setFname("Ayansh");

e2.setLname("Tiwari");

TechSkills ts1 = **new** TechSkills();

ts1.setSkillname("Java");

TechSkills ts2 = **new** TechSkills();

ts2.setSkillname("Selenium");

TechSkills ts3 = **new** TechSkills();

ts2.setSkillname("Python");

List<TechSkills> list1 = **new** ArrayList<TechSkills>();

list1.add(ts1);

list1.add(ts2);

e1.setTechskills(list1);

e2.setTechskills(list1);

List<Employee> list2 = **new** ArrayList<Employee>();

list2.add(e1);

list2.add(e2);

ts1.setEmployees(list2);

ts2.setEmployees(list2);

em.persist(e1);

em.persist(ts1);

em.persist(e2);

em.persist(ts2);

tx.commit();

em.close();

}

}

Inheritence :

Employee :

**package** com.jd.singletable;

**import** javax.persistence.DiscriminatorColumn;

**import** javax.persistence.DiscriminatorValue;

**import** javax.persistence.Entity;

**import** javax.persistence.GeneratedValue;

**import** javax.persistence.GenerationType;

**import** javax.persistence.Id;

**import** javax.persistence.Inheritance;

**import** javax.persistence.InheritanceType;

@Entity(name="empsingle")

@Inheritance(strategy=InheritanceType.***SINGLE\_TABLE***)

@DiscriminatorColumn(name="EMPTYPE")

@DiscriminatorValue(value="e")

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

@Id

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

**private** **int** id;

**private** String fname;

**private** String lname;

**public** Employee() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** Employee(**int** id, String fname, String lname) {

**super**();

**this**.id = id;

**this**.fname = fname;

**this**.lname = lname;

}

**public** **int** getId() {

**return** id;

}

**public** **void** setId(**int** id) {

**this**.id = id;

}

**public** String getFname() {

**return** fname;

}

**public** **void** setFname(String fname) {

**this**.fname = fname;

}

**public** String getLname() {

**return** lname;

}

**public** **void** setLname(String lname) {

**this**.lname = lname;

}

}

Contract Employee :

package com.jd.singletable;

import javax.persistence.DiscriminatorValue;

import javax.persistence.Entity;

@Entity

@DiscriminatorValue(value="CE")

public class ContractEmployee extends Employee {

private String contractName;

public ContractEmployee() {

super();

// TODO Auto-generated constructor stub

}

public ContractEmployee(int id, String fname, String lname, String contractName) {

super(id, fname, lname);

this.contractName = contractName;

}

public String getContractName() {

return contractName;

}

public void setContractName(String contractName) {

this.contractName = contractName;

}

}

Permanent Employee :

package com.jd.singletable;

import javax.persistence.DiscriminatorColumn;

import javax.persistence.DiscriminatorValue;

import javax.persistence.Entity;

@Entity

@DiscriminatorValue(value="PE")

public class PermanentEmployee extends Employee {

private int pfacctno;

public PermanentEmployee() {

super();

// TODO Auto-generated constructor stub

}

public PermanentEmployee(int id, String fname, String lname, int pfacctno) {

super(id, fname, lname);

this.pfacctno = pfacctno;

}

public int getPfacctno() {

return pfacctno;

}

public void setPfacctno(int pfacctno) {

this.pfacctno = pfacctno;

}

}

Main :

**package** com.jd.singletable;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityTransaction;

**import** com.jd.utility.EntityManagerHelper;

**public** **class** Main {

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

EntityManager em = EntityManagerHelper.*getEntityManager*();

EntityTransaction tx = em.getTransaction();

tx.begin();

PermanentEmployee pe1 = **new** PermanentEmployee();

pe1.setFname("Dipti");

pe1.setLname("Jain");

pe1.setPfacctno(12345);

PermanentEmployee pe2 = **new** PermanentEmployee();

pe2.setFname("Saleel");

pe2.setLname("Prabhu");

pe2.setPfacctno(56789);

ContractEmployee ce1 = **new** ContractEmployee();

ce1.setFname("Arun");

ce1.setLname("Korasne");

ce1.setContractName("TCS");

ContractEmployee ce2 = **new** ContractEmployee();

ce2.setFname("Gaurav");

ce2.setLname("Jain");

ce2.setContractName("Cognizant");

Employee e = **new** Employee();

e.setFname("Ritesh");

e.setLname("Dubey");

em.persist(pe1);

em.persist(pe2);

em.persist(ce1);

em.persist(ce2);

em.persist(e);

tx.commit();

em.close();

}

}

Table Per Class :

package tableperclass;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.Inheritance;

import javax.persistence.InheritanceType;

@Entity(name="empperclass")

@Inheritance(strategy=InheritanceType.TABLE\_PER\_CLASS)

public class Employee {

@Id

private int id;

private String fname;

private String lname;

public Employee() {

super();

}

public Employee(int id, String fname, String lname) {

super();

this.id = id;

this.fname = fname;

this.lname = lname;

}

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

}

Contract Employee:

**package** tableperclass;

**import** javax.persistence.Entity;

@Entity(name="contractemployee")

**public** **class** ContractEmployee **extends** Employee {

**private** String contractName;

**public** ContractEmployee() {

**super**();

// **TODO** Auto-generated constructor stub

}

**public** ContractEmployee(**int** id, String fname, String lname, String contractName) {

**super**(id, fname, lname);

**this**.contractName = contractName;

}

**public** String getContractName() {

**return** contractName;

}

**public** **void** setContractName(String contractName) {

**this**.contractName = contractName;

}

}

Permanent Employee:

package tableperclass;

import javax.persistence.DiscriminatorValue;

import javax.persistence.Entity;

@Entity(name="permanentemployee")

public class PermanentEmployee extends Employee {

private int pfacctno;

public PermanentEmployee() {

super();

}

public PermanentEmployee(int id, String fname, String lname, int pfacctno) {

super(id, fname, lname);

this.pfacctno = pfacctno;

}

public int getPfacctno() {

return pfacctno;

}

public void setPfacctno(int pfacctno) {

this.pfacctno = pfacctno;

}

}

Main :

package tableperclass;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.utility.EntityManagerHelper;

public class Main {

public static void main(String[] args) {

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

tx.begin();

PermanentEmployee pe1 = new PermanentEmployee(1, "Dipti", "Jain", 12345);

PermanentEmployee pe2 = new PermanentEmployee(2, "Saleel", "Prabhu", 34567);

ContractEmployee ce1 = new ContractEmployee(3, "Arun", "Korasne", "TCS");

ContractEmployee ce2 = new ContractEmployee(4, "Gaurav", "Jain", "Infosys");

Employee e = new Employee();

e.setId(5);

e.setFname("Ritesh");

e.setLname("Dubey");

em.persist(e);

em.persist(pe1);

em.persist(pe2);

em.persist(ce1);

em.persist(ce2);

tx.commit();

em.close();

}

}

Join Table :

package com.jd.jointable;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.Inheritance;

import javax.persistence.InheritanceType;

@Entity(name="empjoined")

@Inheritance(strategy=InheritanceType.JOINED)

public class Employee {

@Id

private int empid;

private String fname;

private String lname;

public Employee() {

super();

// TODO Auto-generated constructor stub

}

public Employee(int empid, String fname, String lname) {

super();

this.empid = empid;

this.fname = fname;

this.lname = lname;

}

public int getEmpid() {

return empid;

}

public void setEmpid(int empid) {

this.empid = empid;

}

public String getFname() {

return fname;

}

public void setFname(String fname) {

this.fname = fname;

}

public String getLname() {

return lname;

}

public void setLname(String lname) {

this.lname = lname;

}

}

Contract Employee:

package com.jd.jointable;

import javax.persistence.Entity;

import javax.persistence.PrimaryKeyJoinColumn;

@Entity(name="PERMJOINED")

@PrimaryKeyJoinColumn(referencedColumnName="empid")

public class ContractEmployee extends Employee {

private String contractName;

public ContractEmployee() {

super();

// TODO Auto-generated constructor stub

}

public ContractEmployee(int id, String fname, String lname, String contractName) {

super(id, fname, lname);

this.contractName = contractName;

}

public String getContractName() {

return contractName;

}

public void setContractName(String contractName) {

this.contractName = contractName;

}

}

Permanent Employee:

package com.jd.jointable;

import javax.persistence.DiscriminatorValue;

import javax.persistence.Entity;

import javax.persistence.PrimaryKeyJoinColumn;

@Entity(name="CONTRAJOINED")

@PrimaryKeyJoinColumn(referencedColumnName="empid")

public class PermanentEmployee extends Employee {

private int pfacctno;

public PermanentEmployee() {

super();

// TODO Auto-generated constructor stub

}

public PermanentEmployee(int id, String fname, String lname, int pfacctno) {

super(id, fname, lname);

this.pfacctno = pfacctno;

}

public int getPfacctno() {

return pfacctno;

}

public void setPfacctno(int pfacctno) {

this.pfacctno = pfacctno;

}

}

Main :

package com.jd.jointable;

import javax.persistence.EntityManager;

import javax.persistence.EntityTransaction;

import com.jd.utility.EntityManagerHelper;

public class Main {

public static void main(String[] args) {

EntityManager em = EntityManagerHelper.getEntityManager();

EntityTransaction tx = em.getTransaction();

tx.begin();

PermanentEmployee pe1 = new PermanentEmployee();

pe1.setEmpid(1);

pe1.setFname("Dipti");

pe1.setLname("Jain");

pe1.setPfacctno(12345);

PermanentEmployee pe2 = new PermanentEmployee();

pe2.setEmpid(2);

pe2.setFname("Saleel");

pe2.setLname("Prabhu");

pe2.setPfacctno(56789);

ContractEmployee ce1 = new ContractEmployee();

ce1.setEmpid(3);

ce1.setFname("Arun");

ce1.setLname("Korasne");

ce1.setContractName("TCS");

ContractEmployee ce2 = new ContractEmployee();

ce2.setEmpid(4);

ce2.setFname("Gaurav");

ce2.setLname("Jain");

ce2.setContractName("Cognizant");

Employee e = new Employee();

e.setEmpid(5);

e.setFname("Ritesh");

e.setLname("Dubey");

em.persist(pe1);

em.persist(pe2);

em.persist(ce1);

em.persist(ce2);

em.persist(e);

tx.commit();

em.close();

}

}

JPA JQL :

package com.jd.data;

import java.util.List;

import com.jd.model.Employee;

public interface IDao {

void createEmployee(int id, String fname, String lname);

boolean updateEmployee(int id , String newfname);

boolean removeEmployee(int id);

public List<Employee> getEmployee();

public List<Employee> getEmployeeWithIdGrX(int x);

public List<String> getEmployeeName();

public List<Employee> getEmployees(int startindex, int number);

public List<Employee> getEmployeesUsingNamedQuery();

List<Employee> getEmployeesUsingNativeNamedQuery();

List<Employee> getEmployeesUsingNativeNamedQuery2();

void getDataUsingCriteria(int id, String fname);

List<Employee> getDataUsingCriteria1();

}

Employee Dao :

**package** com.jd.data;

**import** java.util.ArrayList;

**import** java.util.List;

**import** javax.persistence.EntityManager;

**import** javax.persistence.EntityTransaction;

**import** javax.persistence.Query;

**import** javax.persistence.criteria.CriteriaBuilder;

**import** javax.persistence.criteria.CriteriaQuery;

**import** javax.persistence.criteria.Predicate;

**import** javax.persistence.criteria.Root;

**import** com.jd.model.Employee;

**import** com.jd.utility.EntityManagerHelper;

**public** **class** EmployeeDao **implements** IDao {

@Override

**public** **void** createEmployee(**int** id, String fname, String lname) {

EntityManager em = EntityManagerHelper.*getEntityManager*();

EntityTransaction tx = em.getTransaction();

tx.begin();

Employee e1 = **new** Employee(id, fname, lname);

em.persist(e1);

tx.commit();

em.close();

}

@Override

**public** **boolean** updateEmployee(**int** id, String newfname) {

EntityManager em = EntityManagerHelper.*getEntityManager*();

EntityTransaction tx = em.getTransaction();

tx.begin();

System.***out***.println("Inside Update1");

Employee e1 = em.getReference(Employee.**class**, id);

//.find(Employee.class, id);

System.***out***.println(e1.toString());

e1.setFname(newfname);

em.merge(e1);

tx.commit();

System.***out***.println(e1.toString());

em.close();

**return** **true**;

}

@Override

**public** **boolean** removeEmployee(**int** id) {

EntityManager em = EntityManagerHelper.*getEntityManager*();

EntityTransaction tx = em.getTransaction();

tx.begin();

Employee e = em.find(Employee.**class**,id);

em.remove(e);

em.getTransaction().commit();

em.close();

**return** **true**;

}

@Override

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

System.***out***.println("inside List<Employee> getEmployee()");

EntityManager em = EntityManagerHelper.*getEntityManager*();

List<Employee> list = em.createQuery("From Employee").getResultList();

em.close();

**return** list;

}

@Override

**public** List<Employee> getEmployeeWithIdGrX(**int** x) {

System.***out***.println("List<Employee> getEmployeeWithIdGrX(int x)");

EntityManager em = EntityManagerHelper.*getEntityManager*();

Query q = em.createQuery("From Employee where id>= :eid order by id");

q.setParameter("eid", x);

List<Employee> list = q.getResultList();

em.close();

**return** list;

}

@Override

**public** List<String> getEmployeeName() {

System.***out***.println("inside List<String> getEmployeeName");

EntityManager em = EntityManagerHelper.*getEntityManager*();

List<String> list = em.createQuery("select fname From Employee").getResultList();

em.close();

**return** list;

}

@Override

**public** List<Employee> getEmployees(**int** startindex, **int** number) {

System.***out***.println("inside List<Employee> getEmployees");

EntityManager em = EntityManagerHelper.*getEntityManager*();

Query q = em.createQuery("From Employee");

q.setFirstResult(startindex);

q.setMaxResults(number);

List<Employee> list = q.getResultList();

em.close();

**return** list;

}

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

System.***out***.println("inside List<Employee> getEmployees");

EntityManager em = EntityManagerHelper.*getEntityManager*();

Query q = em.createNamedQuery("get.all");

List<Employee> list = q.getResultList();

em.close();

**return** list;

}

@Override

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

System.***out***.println("inside getEmployeesUsingNativeNamedQuery()");

//List<Employee> list = new ArrayList<Employee>();

EntityManager em = EntityManagerHelper.*getEntityManager*();

List<Employee> list = em.createNamedQuery("get.all.native").getResultList();

/\* for(Employee li : list) {

System.out.println("Employee List" +li);

}\*/

em.close();

**return** list;

}

**public** List<Employee> getEmployeesUsingNativeNamedQuery2(){

System.***out***.println("inside List<Employee> getEmployees");

List<Employee> list = **new** ArrayList<Employee>();

EntityManager em = EntityManagerHelper.*getEntityManager*();

Query q = em.createNamedQuery("get.all.native");

List<Object[]> objlist = q.getResultList();

**for**(Object[] obj : objlist)

{

**int** id = **new** Integer(obj[0].toString());

String fname = obj[1].toString();

String lname = obj[2].toString();

list.add(**new** Employee(id, fname, lname));

}

em.close();

**return** list;

}

**public** **void** getDataUsingCriteria(**int** id, String fname) {

System.***out***.println("inside getDataUsingCriteria()");

EntityManager em = EntityManagerHelper.*getEntityManager*();

CriteriaBuilder builder = em.getCriteriaBuilder();

CriteriaQuery<String> query = builder.createQuery(String.**class**);

Root<Employee> rootemp = query.from(Employee.**class**);

query.select(rootemp.get("fname"));

List<String> resultList = em.createQuery(query).getResultList();

System.***out***.println("Resultlist" +resultList);

System.***out***.println("criteria new code ends1");

}

**public** List<Employee> getDataUsingCriteria1() {

System.***out***.println("inside getDataUsingCriteria1()");

EntityManager em = EntityManagerHelper.*getEntityManager*();

CriteriaBuilder builder = em.getCriteriaBuilder();

CriteriaQuery<Object[]> query = builder.createQuery(Object[].**class**);

Root<Employee> rootemp = query.from(Employee.**class**);

query.multiselect(rootemp.get("fname"), rootemp.get("lname"));

List<Object[]> resultList = em.createQuery(query).getResultList();

System.***out***.println("Resultlist" +resultList);

System.***out***.println("criteria new code ends2");

List<Employee> list = **new** ArrayList<Employee>();

**for**(Object[] obj : resultList)

{

**int** id = **new** Integer(obj[0].toString());

String fname = obj[1].toString();

String lname = obj[2].toString();

list.add(**new** Employee(id, fname, lname));

}

em.close();

**return** list;

}

**public** **void** getDataUsingCriteria2(**int** id, String fname) {

System.***out***.println("inside getDataUsingCriteria2()");

EntityManager em = EntityManagerHelper.*getEntityManager*();

CriteriaBuilder cb = em.getCriteriaBuilder();

CriteriaQuery<Employee> cq = cb.createQuery(Employee.**class**);

Root<Employee> from = cq.from(Employee.**class**);

System.***out***.println("Root:" +from);

Predicate predicate1 = cb.equal(from.get("id"), id);

Predicate predicate2 = cb.equal(from.get("fname"), fname);

cq.select(from);

cq.where(cb.and(predicate1));

cq.where(cb.and(predicate2));

}

}

Employee:

**package** com.jd.model;

**import** javax.persistence.Column;

**import** javax.persistence.Entity;

**import** javax.persistence.Id;

**import** javax.persistence.NamedNativeQueries;

**import** javax.persistence.NamedNativeQuery;

**import** javax.persistence.NamedQueries;

**import** javax.persistence.NamedQuery;

**import** javax.persistence.Table;

@Entity(name="Employee")

@NamedQueries(

{@NamedQuery(name="get.all", query="Select e.fname from Employee e")}

)

@NamedNativeQueries(

{@NamedNativeQuery(name="get.all.native", query="Select \* from employee")}

)

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

@Id

**private** **int** id;

@Column(name="fname1")

**private** String fname;

@Column(name="lname1")

**private** String lname;

**public** Employee() {

**super**();

}

**public** Employee(**int** id, String fname, String lname) {

**super**();

**this**.id = id;

**this**.fname = fname;

**this**.lname = lname;

}

**public** **int** getId() {

**return** id;

}

**public** **void** setId(**int** id) {

**this**.id = id;

}

**public** String getFname() {

**return** fname;

}

**public** **void** setFname(String fname) {

**this**.fname = fname;

}

**public** String getLname() {

**return** lname;

}

**public** **void** setLname(String lname) {

**this**.lname = lname;

}

@Override

**public** String toString() {

**return** "Employee [id=" + id + ", fname=" + fname + ", lname=" + lname + "]";

}

}

Main :

import java.util.List;

import com.jd.data.EmployeeDao;

import com.jd.data.IDao;

import com.jd.model.Employee;

public class Main {

public static void main(String[] args) {

IDao edao = new EmployeeDao();

/\* edao.createEmployee(1, "Dipti", "Jain");

edao.createEmployee(2, "DJ", "Tiwari");

edao.createEmployee(3, "Ashish", "Tiwari");\*/

edao.createEmployee(2, "DJ", "Tiwari");

edao.updateEmployee(2, "Gaurav");

edao.removeEmployee(2);

List<Employee> li = edao.getEmployee();

System.out.println(li);

List<String> li1 = edao.getEmployeeName();

System.out.println(li1);

List<Employee> li2 = edao.getEmployees(1, 3);

System.out.println(li2);

List<Employee> li3 = edao.getEmployeeWithIdGrX(3);

System.out.println(li3);

List<Employee> li4 = edao.getEmployeesUsingNamedQuery();

System.out.println(li4);

List<Employee> li5 = edao.getEmployeesUsingNativeNamedQuery();

System.out.println(li5);

List<Employee> li6 = edao.getEmployeesUsingNativeNamedQuery2();

System.out.println(li6);

edao.getDataUsingCriteria(1, "Dipti");

edao.getDataUsingCriteria1();

}

}

Entity Manager Helper:

package com.jd.utility;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class EntityManagerHelper {

private static EntityManagerFactory factory = null;

//private EntityManager entitymanager = null;

static {

factory = Persistence.createEntityManagerFactory("JPQL");

}

public static EntityManager getEntityManager() {

return factory.createEntityManager();

}

public static void closeFactory() {

factory.close();

}

}