**\*\*\*\*\*\*\*\*\*\*\*\*\*TableScript\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**##Please run the below DDL query before you execute this application.**

CREATE TABLE student

(studentid NUMBER(6) PRIMARY KEY,

name VARCHAR2(25));

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*src/META-INF/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=*"JPA-PU"* transaction-type=*"RESOURCE\_LOCAL"*>

<provider>org.hibernate.ejb.HibernatePersistence</provider>

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:oracle:thin:@localhost:1521:XE"* />

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

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

<property name=*"javax.persistence.jdbc.driver"* value=*"oracle.jdbc.driver.OracleDriver"* />

</properties>

</persistence-unit>

</persistence>

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*StudentService.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.service;

import com.cg.jpacrud.entities.Student;

public interface StudentService {

public abstract void addStudent(Student student);

public abstract void updateStudent(Student student);

public abstract void removeStudent(Student student);

public abstract Student findStudentById(int id);

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*StudentServiceImpl.java\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.service;

import com.cg.jpacrud.dao.StudentDao;

import com.cg.jpacrud.dao.StudentDaoImpl;

import com.cg.jpacrud.entities.Student;

public class StudentServiceImpl implements StudentService {

private StudentDao dao;

public StudentServiceImpl() {

dao = new StudentDaoImpl();

}

@Override

public void addStudent(Student student) {

dao.beginTransaction();

dao.addStudent(student);

dao.commitTransaction();

}

@Override

public void updateStudent(Student student) {

dao.beginTransaction();

dao.updateStudent(student);

dao.commitTransaction();

}

@Override

public void removeStudent(Student student) {

dao.beginTransaction();

dao.removeStudent(student);

dao.commitTransaction();

}

@Override

public Student findStudentById(int id) {

//no need of transaction, as it's an read operation

Student student = dao.getStudentById(id);

return student;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Student.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.entities;

import java.io.Serializable;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.Table;

@Entity

@Table(name="student")

public class Student implements Serializable {

private static final long serialVersionUID = 1L;

@Id

private int studentId;

private String name;

public int getStudentId() {

return studentId; }

public void setStudentId(int studentId) {

this.studentId = studentId;

} public String getName() { return name;

}

public void setName(String name) {

this.name = name;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*JPAUtil.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.dao;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class JPAUtil {

private static EntityManagerFactory factory;

private static EntityManager entityManager;

static {

factory = Persistence.createEntityManagerFactory("JPA-PU");

}

public static EntityManager getEntityManager() {

if(entityManager==null || !entityManager.isOpen()) {

entityManager = factory.createEntityManager();

}

return entityManager;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*StudentDao.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.dao;

import com.cg.jpacrud.entities.Student;

public interface StudentDao {

public abstract Student getStudentById(int id);

public abstract void addStudent(Student student);

public abstract void removeStudent(Student student);

public abstract void updateStudent(Student student);

public abstract void commitTransaction();

public abstract void beginTransaction();

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*StudentDaoImpl.java\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.dao;

import javax.persistence.EntityManager;

import com.cg.jpacrud.entities.Student;

public class StudentDaoImpl implements StudentDao {

private EntityManager entityManager;

public StudentDaoImpl() {

entityManager = JPAUtil.getEntityManager();

}

@Override

public Student getStudentById(int id) {

Student student = entityManager.find(Student.class, id);

return student;

}

@Override

public void addStudent(Student student) {

entityManager.persist(student);

}

@Override

public void removeStudent(Student student) {

entityManager.remove(student);

}

@Override

public void updateStudent(Student student) {

entityManager.merge(student);

}

@Override

public void beginTransaction() {

entityManager.getTransaction().begin();

}

@Override

public void commitTransaction() {

entityManager.getTransaction().commit();

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Client.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpacrud.client;

import com.cg.jpacrud.entities.Student;

import com.cg.jpacrud.service.StudentService;

import com.cg.jpacrud.service.StudentServiceImpl;

public class Client {

public static void main(String[] args) {

//Debug this program as Debug -> Debug as Java Application

StudentService service = new StudentServiceImpl();

Student student = new Student();

student.setStudentId(100);

student.setName("Sachine");

service.addStudent(student);

//at this breakpoint, we have added one record to table

student = service.findStudentById(100);

System.out.print("ID:"+student.getStudentId());

System.out.println(" Name:"+student.getName());

student.setName("Sachin Tendulkar");

service.updateStudent(student);

//at this breakpoint, we have updated record added in first section

student = service.findStudentById(100);

System.out.print("ID:"+student.getStudentId());

System.out.println(" Name:"+student.getName());

//at this breakpoint, record is removed from table

service.removeStudent(student);

System.out.println("End of program..."); }

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Inheritance\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Join SubClass Inheritence\*\*\*\*\*\*\*\*\*JPAJSInheritance\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*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=*"JPA-PU"* transaction-type=*"RESOURCE\_LOCAL"*>

<provider>org.hibernate.ejb.HibernatePersistence</provider>

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:oracle:thin:@localhost:1521:XE"* />

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

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

<property name=*"javax.persistence.jdbc.driver"* value=*"oracle.jdbc.driver.OracleDriver"* />

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

<!-- for auto create/update tables -->

</properties>

</persistence-unit>

</persistence>

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***\*\*\*\*\*\*\***Employee.java\*\*\*\*\*\***\*\*\*\*\*\*\***\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.Inheritance;

import javax.persistence.InheritanceType;

import javax.persistence.Table;

@Entity

@Table(name="emp\_store")

@Inheritance(strategy=InheritanceType.JOINED) //This annotation must be written only on parent class

public class Employee implements Serializable {

private static final long serialVersionUID = 1L;

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int employeeId;

private String name;

private double salary;

public int getEmployeeId() {

return employeeId;

}

public void setEmployeeId(int employeeId) {

this.employeeId = employeeId;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

public double getSalary() {

return salary;

}

public void setSalary(double salary) {

this.salary = salary;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Manager.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.Entity;

import javax.persistence.Table;

@Entity

@Table(name="mgr\_store")

public class Manager extends Employee {

private static final long serialVersionUID = 1L;

private String departmentName;

public String getDepartmentName() {

return departmentName;

}

public void setDepartmentName(String departmentName) {

this.departmentName = departmentName; } }

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*InheritanceTest.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class InheritanceTest {

public static void main(String[] args) {

EntityManagerFactory factory = Persistence.createEntityManagerFactory("JPA-PU");

EntityManager em = factory.createEntityManager();

em.getTransaction().begin();

//create one employee

Employee employee = new Employee();

employee.setName("John");

employee.setSalary(5000);

em.persist(employee);

//create one manager

Manager manager = new Manager();

manager.setName("Trisha");

manager.setSalary(8000);

manager.setDepartmentName("Sales");

em.persist(manager);

em.getTransaction().commit();

System.out.println("Added one employee and manager to database.");

em.close();

factory.close();

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Single Table Inheritence\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*JPASTInheritance\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*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=*"JPA-PU"* transaction-type=*"RESOURCE\_LOCAL"*>

<provider>org.hibernate.ejb.HibernatePersistence</provider>

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:oracle:thin:@localhost:1521:XE"* />

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

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

<property name=*"javax.persistence.jdbc.driver"* value=*"oracle.jdbc.driver.OracleDriver"* />

<property name=*"hibernate.hbm2ddl.auto"* value=*"update"*/> <!-- for auto create/update tables -->

</properties>

</persistence-unit>

</persistence>

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Employee.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import javax.persistence.DiscriminatorColumn;

import javax.persistence.DiscriminatorType;

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;

import javax.persistence.Table;

@Entity

@Table(name="emp\_store")

@Inheritance(strategy=InheritanceType.SINGLE\_TABLE) //This annotation must be written only on parent class

@DiscriminatorColumn(name="emp\_type",discriminatorType=DiscriminatorType.STRING) //additional column to differ parent and child

@DiscriminatorValue("EMP") //parent rows will have this value in Discriminator Column

public class Employee implements Serializable {

private static final long serialVersionUID = 1L;

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int employeeId;

private String name;

private double salary;

public int getEmployeeId() {

return employeeId;

}

public void setEmployeeId(int employeeId) {

this.employeeId = employeeId;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

public double getSalary() {

return salary;

}

public void setSalary(double salary) {

this.salary = salary;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Manager.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.DiscriminatorValue;

import javax.persistence.Entity;

@Entity

@DiscriminatorValue("MGR") //value for manager rows in Discriminator column

public class Manager extends Employee {

private static final long serialVersionUID = 1L;

private String departmentName;

public String getDepartmentName() {

return departmentName;

}

public void setDepartmentName(String departmentName) {

this.departmentName = departmentName;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*InheritanceTest.java\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class InheritanceTest {

public static void main(String[] args) {

EntityManagerFactory factory = Persistence.createEntityManagerFactory("JPA-PU");

EntityManager em = factory.createEntityManager();

em.getTransaction().begin();

//create one employee

Employee employee = new Employee();

employee.setName("John");

employee.setSalary(5000);

em.persist(employee);

//create one manager

Manager manager = new Manager();

manager.setName("Trisha");

manager.setSalary(8000);

manager.setDepartmentName("Sales");

em.persist(manager);

em.getTransaction().commit();

System.out.println("Added one employee and manager to database.");

em.close();

factory.close();

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*TablePerClass\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*JPATPCInheritance \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*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=*"JPA-PU"* transaction-type=*"RESOURCE\_LOCAL"*>

<provider>org.hibernate.ejb.HibernatePersistence</provider>

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:oracle:thin:@localhost:1521:XE"* />

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

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

<property name=*"javax.persistence.jdbc.driver"* value=*"oracle.jdbc.driver.OracleDriver"* />

<property name=*"hibernate.hbm2ddl.auto"* value=*"update"*/> <!-- for auto create/update tables -->

</properties>

</persistence-unit>

</persistence>

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Employee.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.Inheritance;

import javax.persistence.InheritanceType;

import javax.persistence.Table;

@Entity

@Table(name="emp\_store")

@Inheritance(strategy=InheritanceType.TABLE\_PER\_CLASS) //This annotation must be written only on parent class

public class Employee implements Serializable {

private static final long serialVersionUID = 1L;

@Id

@GeneratedValue(strategy=GenerationType.AUTO)

private int employeeId;

private String name;

private double salary;

public int getEmployeeId() {

return employeeId;

}

public void setEmployeeId(int employeeId) {

this.employeeId = employeeId;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

public double getSalary() {

return salary;

}

public void setSalary(double salary) {

this.salary = salary;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Manager.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.Entity;

import javax.persistence.Table;

@Entity

@Table(name="mgr\_store")

public class Manager extends Employee {

private static final long serialVersionUID = 1L;

private String departmentName;

public String getDepartmentName() {

return departmentName;

}

public void setDepartmentName(String departmentName) {

this.departmentName = departmentName;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*InheritanceTest.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class InheritanceTest {

public static void main(String[] args) {

EntityManagerFactory factory = Persistence.createEntityManagerFactory("JPA-PU");

EntityManager em = factory.createEntityManager();

em.getTransaction().begin();

//create one employee

Employee employee = new Employee();

employee.setName("John");

employee.setSalary(5000);

em.persist(employee);

//create one manager

Manager manager = new Manager();

manager.setName("Trisha");

manager.setSalary(8000);

manager.setDepartmentName("Sales");

em.persist(manager);

em.getTransaction().commit();

System.out.println("Added one employee and manager to database.");

em.close();

factory.close();

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Many-To-Many-Birectional\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Table Script\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**##Please run the below DDL query before you execute this application.**

CREATE TABLE order\_master

(id NUMBER(6) PRIMARY KEY,

order\_date DATE);

CREATE TABLE product\_master

(id NUMBER(6) PRIMARY KEY,

name VARCHAR2(30),

price NUMBER(6,2));

CREATE TABLE product\_orders

(order*\_id NUMBER(6) REFERENCES order\_*master(id),

product*\_id NUMBER(6) REFERENCES product\_*master(id),

PRIMARY KEY(order*\_id,product\_*id));

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*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=*"JPA-PU"* transaction-type=*"RESOURCE\_LOCAL"*>

<provider>org.hibernate.ejb.HibernatePersistence</provider>

<properties>

<property name=*"javax.persistence.jdbc.url"* value=*"jdbc:oracle:thin:@localhost:1521:XE"* />

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

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

<property name=*"javax.persistence.jdbc.driver"* value=*"oracle.jdbc.driver.OracleDriver"* />

</properties>

</persistence-unit>

</persistence>

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Order.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import java.util.Date;

import java.util.HashSet;

import java.util.Set;

import javax.persistence.CascadeType;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.JoinTable;

import javax.persistence.ManyToMany;

import javax.persistence.Table;

import javax.persistence.Temporal;

import javax.persistence.TemporalType;

@Entity

@Table(name = "order\_master")

public class Order implements Serializable {

private static final long serialVersionUID = 1L;

@Id

private int id;

@Temporal(TemporalType.DATE) //required for Date and Calendar Types

@Column(name = "order\_date")

private Date purchaseDate;

@ManyToMany(cascade = CascadeType.ALL)

@JoinTable(name = "product\_orders",

joinColumns = { @JoinColumn(name = "order\_id") },

inverseJoinColumns = { @JoinColumn(name = "product\_id") }

)

private Set<Product> products = new HashSet<>(); //required to avoid NullPointerException

public int getId() {

return id;

}

public void setId(int id) {

this.id = id;

}

public Date getPurchaseDate() {

return purchaseDate;

}

public void setPurchaseDate(Date purchaseDate) {

this.purchaseDate = purchaseDate;

}

public Set<Product> getProducts() {

return products;

}

public void setProducts(Set<Product> products) {

this.products = products;

}

public void addProduct(Product product) {

this.getProducts().add(product);

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Product.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import java.util.HashSet;

import java.util.Set;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.Id;

import javax.persistence.ManyToMany;

import javax.persistence.Table;

@Entity

@Table(name="product\_master")

public class Product implements Serializable {

private static final long serialVersionUID = 1L;

@Id

private int id;

private String name;

private double price;

@ManyToMany(fetch=FetchType.LAZY,mappedBy="products")

private Set<Order> orders = new HashSet<>();

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 double getPrice() {

return price;

}

public void setPrice(double price) {

this.price = price;

}

public Set<Order> getOrders() {

return orders;

}

public void setOrders(Set<Order> orders) {

this.orders = orders;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*Client.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.util.Date;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class Client {

public static void main(String[] args) {

EntityManagerFactory factory = Persistence

.createEntityManagerFactory("JPA-PU");

EntityManager em = factory.createEntityManager();

em.getTransaction().begin();

// first define few products before we place order

Product elecProduct = new Product();

elecProduct.setId(1);

elecProduct.setName("LED TV");

elecProduct.setPrice(4500);

Product beautyProduct = new Product();

beautyProduct.setId(2);

beautyProduct.setName("Face Wash");

beautyProduct.setPrice(80);

Product babyProduct = new Product();

babyProduct.setId(3);

babyProduct.setName("Pampers");

babyProduct.setPrice(15);

Product eleProduct = new Product();

eleProduct.setId(4);

eleProduct.setName("CFL Bulb");

eleProduct.setPrice(250);

// now define first order and add few products in it

Order firstOrder = new Order();

firstOrder.setId(1000);

firstOrder.setPurchaseDate(new Date());

firstOrder.addProduct(babyProduct);

firstOrder.addProduct(elecProduct);

firstOrder.addProduct(beautyProduct);

// now define second order and add few products in it

Order secondOrder = new Order();

secondOrder.setId(1001);

secondOrder.setPurchaseDate(new Date());

secondOrder.addProduct(babyProduct);

secondOrder.addProduct(elecProduct);

secondOrder.addProduct(eleProduct);

// save orders using entity manager

em.persist(firstOrder);

em.persist(secondOrder);

System.out.println("Added orders along with order details to database.");

em.getTransaction().commit();

em.close();

factory.close();

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*OneToManyBi\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*table\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**##Please run the below DDL query before you execute this application.**

CREATE TABLE dept\_master

(id NUMBER(6) PRIMARY KEY,

name VARCHAR2(30));

CREATE TABLE emp\_master

(id NUMBER(6) PRIMARY KEY,

name VARCHAR2(30),

salary NUMBER(6,2),

dept*\_no NUMBER(6) REFERENCES dept\_*master(id));

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*department.java\*\*\*\*\*\*\*\*\*\*\*\***\*\*\*\*\*\*\*\*\*\*\*\*\*\***\*\***

package com.cg.jpastart.entities;

import java.util.HashSet;

import java.util.Set;

import javax.persistence.CascadeType;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.OneToMany;

import javax.persistence.Table;

@Entity

@Table(name = "DEPT\_MASTER")

public class Department {

@Id

private int id;

private String name;

@OneToMany(mappedBy="department",cascade=CascadeType.ALL)

private Set<Employee> employees = new HashSet<>(); //Initialization required to avoid NullPointerException

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 Set<Employee> getEmployees() {

return employees;

}

public void setEmployees(Set<Employee> employees) {

this.employees = employees;

}

//the method below will add employee to department

//also serves the purpose to avoid cyclic references.

public void addEmployee(Employee employee) {

employee.setDepartment(this); //this will avoid nested cascade

this.getEmployees().add(employee);

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Employee.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import java.io.Serializable;

import javax.persistence.Entity;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.Table;

@Entity

@Table(name="EMP\_MASTER")

public class Employee implements Serializable{

private static final long serialVersionUID = 1L;

@Id

private int id;

private String name;

private double salary;

@ManyToOne

@JoinColumn(name="dept\_no")

private Department department;

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 double getSalary() {

return salary;

}

public void setSalary(double salary) {

this.salary = salary;

}

public Department getDepartment() {

return department;

}

public void setDepartment(Department department) {

this.department = department;

}

}

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Client.java\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

package com.cg.jpastart.entities;

import javax.persistence.EntityManager;

import javax.persistence.EntityManagerFactory;

import javax.persistence.Persistence;

public class Client {

public static void main(String[] args) {

EntityManagerFactory factory = Persistence.createEntityManagerFactory("JPA-PU");

EntityManager em = factory.createEntityManager();

em.getTransaction().begin();

//create a new department

Department department = new Department();

department.setId(10);

department.setName("Sales");

//create two instances of employees

Employee e1 = new Employee();

e1.setId(1001);

e1.setName("Priya Sharma");

e1.setSalary(4500);

Employee e2 = new Employee();

e2.setId(1002);

e2.setName("Dinesh Kumar");

e2.setSalary(5500);

//add both employees to department

department.addEmployee(e1);

department.addEmployee(e2);

//save department and its employees using entity manager

em.persist(department);

System.out.println("Added department along with two employees to database.");

em.getTransaction().commit();

em.close();

factory.close();

}

}